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The TIM Dual-use dashboard TIM DU

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Contents

Abstract

TIM Dual-Use is a web-based platform tailored to the mapping of:

1. **Dual-use technologies** listed in the **"EU dual-use control list"** (Annex I to Regulation 2021/821, as amended under annual delegated Acts), divided into ten categories covering multiple areas:

— Category 0 Nuclear Materials, Facilities and Equipment

— Category 1 Special Materials and Related Equipment

— Category 2 Material Processing

— Category 3 Electronics

— Category 4 Computers

— Category 5 Telecommunications and Information Security

— Category 6 Sensors and Lasers

— Category 7 Navigation and Avionics

— Category 8 Marine

— Category 9 Aerospace and Propulsion

2. **Selected emerging and critical technologies**, generally not listed, but with several potential dual-use applications (i.e., having both civilian and military applications):

— Additive Manufacturing

— Advanced Materials

— Advanced Semiconductors

— Artificial Intelligence

— Biotechnology

— Cyber-Surveillance

— Quantum Technology

The purpose of TIM DU is to interrogate the TIM database, containing over 102 million documents derived from SCOPUS abstracts, PATSTAT international patents and EU-funded research projects (CORDIS database), to retrieve documents with a dual-use potential content which, pending further assessment, could be subject to export authorisations prior to publication or sharing, as required by Regulation (EU) 2021/821.

TIM DU's mapping of ***Dual-use technologies*** is performed by means of more than 380 search algorithms based on keywords related to the **"EU dual-use control list"** text, as well as some **emerging and critical technologies**, with their scientific and technical synonyms.

The results encompass lists of papers, statistics, connection networks, lists of organisations, semantic analysis and world distribution.

Potential users of TIM DU include researchers in areas related to dual-use technologies, compliance officers, export licensing authorities, European Commission DG TRADE, FPI, RTD, JRC, ENER, GROW and the EEAS.

The applications of TIM Dual-Use can be multiple:

— Mapping of a country's R&D international cooperation networks related to dual-use;

— Mapping of specific research institutes, companies, Universities, researchers' scientific publications with regard to potential dual-use technologies;

— Monitoring of emerging technologies (technological development and trends, as appearing from chronological and geographical developments).

For research entities in particular, TIM DU can help to:

— Assess the past scientific production to identify articles, patents or EU-funded project results already produced and published, which could have had a potential dual-use content;

— Identify areas for targeted awareness-raising activities to reinforce internal compliance for technology transfers.

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The professional technical support and kind contribution of JRC.T.5 Text Mining and Analysis Competence Centre is greatly acknowledged. In particular, we would like to thank Olivier Eulaerts, Michela Bergamini, Sergio Perani and their previous colleagues, Geraldine Joanny and Sotirios Fragkiskos.

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[1] JRC.T5's Technical support

1. Introduction

Dual-use and emerging, critical technologies are key elements of the EU economy and defence, as recognised in the EU economic security strategy document, international treaties and export control regimes.

The purpose of TIM DU is to interrogate the TIM database, containing over 102 million documents derived from SCOPUS abstracts, PATSTAT international patents and EU-funded research projects (CORDIS database), to map part of worldwide countries' scientific production with a dual-use potential.

TIM DU's mapping of ***Dual-use technologies*** is performed by means of more than 380 search algorithms based on keywords related to the **"EU dual-use control list"** text, as well as some **emerging and critical technologies**, with their scientific and technical synonyms.

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For research entities in particular, TIM DU can help to:

— Assess the past scientific production to identify articles, patents or EU-funded project results already produced and published, which could have had a potential dual-use content;

— Identify areas for targeted awareness-raising activities to reinforce internal compliance for technology transfers.

The objectives of the present report are to provide a description of the motivation to set up TIM Dual-use, how it was done relying on the "Tools For Innovation Monitoring" (TIM) environment, how to use the dashboards, a detailed description of the TIM Dual-use Index (Annex I to this report) and of the more than 380 queries contained (Annex II to this report).

2. The TIM Dual-Use project and Strategic Trade Control

A relevant part of the activities conducted by the JRC.G.II.7 unit in the area of non-proliferation of weapons of mass destruction (WMD) and in support to the strategic trade control policy, are primarily focused on dual-use goods and technologies—i.e., items having both civilian and military applications as defined in the EU Dual-Use Regulation.[2]

Dual-use trade controls are, above all, designed to prevent dual-use items from being misused or diverted for military purposes to undermine peace or security or in connection with internal repression or serious violations of human rights and international humanitarian law,[3] and they apply not only to tangible goods but also to sensitive technologies. These technologies are defined as specific information necessary for the development, production, or use of (dual-use) goods and they can take the form of technical data (e.g., blueprints, plans, diagrams, models, formulae, tables, engineering designs, manuals) or technical assistance (e.g., instructions, skills, training, working knowledge and consulting services).[4]

In an increasingly dynamic global landscape, the rapid advancement and dissemination of technological innovations present significant opportunities but can also pose new proliferation risks.

Controlling technology transfers presents significant challenges due to their multifaceted nature. Technology transfers can occur also intangibly through various channels, including collaborations in scientific publications, co-patenting initiatives, and joint research projects. As pointed out in the European Commission Recommendation 2021/1700 for research involving dual-use items, dual-use trade controls present distinct challenges for research organisations, particularly in relation to the necessity of disseminating research findings and the 'publish or perish' paradigm prevalent within the research community.[5]

These diverse forms of dissemination make it inherently difficult to monitor and regulate the flow of sensitive technological information, thereby complicating efforts to enforce strategic trade controls effectively.

Mitigating these risks necessitates a comprehensive strategy encompassing a robust export control system, as well as increased public awareness and internal compliance programmes (both in industry and research organisations) to prevent the dissemination of such sensitive technology.

TIM Dual-Use is a data-mining tool developed in 2020 by the European Commission Joint Research Centre in collaboration with the European Studies Unit of the University of Liège to map intangible technology transfers—taking the form of scientific publications, R&D projects or co-patenting—with a potential dual-use content in order, among other things, to raise public awareness and strengthen internal compliance by facilitating the identification of specific areas requiring awareness-raising activities.

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2 Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items (recast), OJ L 206, 11.6.2021, p. 1–461.

3 European Commission, White Paper on options for enhancing support for research and development involving technologies with dual-use potential, COM(2024) 27 final, Brussels, 24.1.2024, p. 6.

4 Commission Delegated Regulation (EU) 2024/2547 of 5 September 2024 amending Regulation (EU) 2021/821 of the European Parliament and of the Council as regards the list of dual-use items, OJ L, 2024/2547, 7.11.2024, p. 23.

5 Commission Recommendation (EU) 2021/1700 of 15 September 2021 on internal compliance programmes for controls of research involving dual-use items under Regulation (EU) 2021/821 of the European Parliament and of the Council setting up a Union regime for the control of exports, brokering, technical assistance, transit and transfer of dual-use items, OJ L 338, 23.9.2021, p. 8.

3. TIM Dual-Use objectives and scope

TIM Dual-use is a dashboard allowing to navigate over one hundred million scientific documents, EU-funded projects, and patents potentially related to dual-use technologies.[6]

It builds upon the analytical tool TIM, Tools for Innovation Monitoring, developed by the Joint Research Centre's Text Mining and Analysis Competence Centre (JRC.T.5 unit) to extract information, visualise and analyse technological development and trends in science and innovation.[7]

Relying on the TIM environment, the JRC decided to create a TIM platform dedicated to dual-use technologies to exploit the tool's search algorithms for getting open access information about activities potentially related to dual-use items (scientific publications, conference proceedings, patents, EU-funded projects) performed by a range of actors (States, companies, universities, research centres, and other organisations). The definition of hundreds of search algorithms was made possible thanks to the intensive collaboration with the University of Liege (European Studies Unit).

The objectives of the TIM dual-use dashboard are to map the scientific production respectively related to:

— Items controlled in Annex I to Regulation (EU) 2021/821—also known as the "EU dual-use control list", amended annually as Commission Delegated Act 8 9

— Emerging and critical technologies with potential dual-use applications.

The *EU dual-use control list* presents an organised structure classifying the controlled dual-use items in the following ten categories:

— Category 0 Nuclear materials, facilities and equipment;

— Category 1 Special materials and related equipment;

— Category 2 Material processing;

— Category 3 Electronics;

— Category 4 Computers;

— Category 5 Telecommunications and "information security";

— Category 6 Sensors and lasers;

— Category 7 Navigation and avionics;

— Category 8 Marine;

— Category 9 Aerospace and propulsion;

This structure served as a basis for the organisation of the TIM dual-use 'spaces' (see, *infra*, Figure 1).

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6 TIM Dual-Use, https://knowledge4policy.ec.europa.eu/text-mining/tim-dual-use_en.

7 EU, Joint Research Centre, TIM Analytics, http://www.timanalytics.eu/.

8 Commission Delegated Regulation (EU) 2024/2547 of 5 September 2024 amending Regulation (EU) 2021/821 of the European Parliament and of the Council as regards the list of dual-use items, OJ L, 2024/2547, 7.11.2024.

9 Annex I to Regulation (EU) 2021/821 is updated regularly in order to comply with international security obligations and commitments adopted by the Member States and, where applicable, the European Union as members of the multilateral export control regimes—namely, the Australia Group, the Missile Technology Control Regime, the Nuclear Suppliers Group, and the Wassenaar Arrangement—and the Chemical Weapons Convention.

Emerging and critical technologies are mostly not controlled by the multilateral export control regimes (MECRs), hence not yet, or just partly, included in the aforementioned "EU dual-use control list". However, they are referenced in EU official documents, such as the 2023 Commission Recommendation on critical technology areas and the EU Economic Security Strategy, as well as in relevant technical and scientific literature on the subject. [10] [11] [12]

The mapping of activities associated with dual-use and critical technologies is based on search queries that retrieve documents from three databases:

- Scopus, which is the largest abstract and citation database of peer-reviewed literature, covering scientific publications in all languages provided that at least the title and the abstract are written in English;
- PATSTAT, from the European Patent Office, covering world patents from more than 90 patent authorities, including all the major countries;13
- CORDIS, covering all EU-funded Research & Development projects.

TIM DU contains, therefore, three types of documents: scientific publications (more particularly, articles, conference proceedings, reviews, and book chapters), patents, and EU-granted R&D projects from the above-listed databases.

TIM DU's search algorithms scan over one hundred million documents indexed in TIM's database. Its coverage depends on what is available at the time of indexing the data from the providers. The database retrieves documents since 1996 and is updated every six months—generally, in Spring and Autumn—and the already existing datasets automatically incorporate news documents corresponding to their queries.[14]

In chapter 4 we will explain how the TIM DU web-based platform was developed.

In chapter 5 we will show how to use the TIM DU platform and its dashboards.

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[10] Commission Recommendation on critical technology areas for the EU's economic security for further risk assessment with Member States, C(2023) 6689 final, Strasbourg, 3.10.2023.

[11] European Commission, Joint Communication To The European Parliament, The European Council And The Council On "European Economic Security Strategy", JOIN(2023) 20 final, Brussels, 20.06.2023.

[12] See: Christopher, G. (2015). 3D printing: a challenge to nuclear export controls. Strategic Trade Review, 1(1), 18-25; Brockmann, K., & Kelley, R. (2018). The challenge of emerging technologies to non-proliferation efforts: Controlling additive manufacturing and intangible transfers of technology; Sevini, F. et al. (2018). Emerging dual-use technologies and global supply chain compliance, European Commission Joint Research Centre; Sevini, F., Charatsis, C., Novau, X. A., Stringa, E., Barrero, J., Lequarre, A., & Michel, Q. (2018, November). Emerging dual-use technologies and global supply chain compliance. In IAEA Symposium on International Safeguards; Craglia, M. (Ed.). (2018). Artificial intelligence: A European perspective. Publications Office of the European Union.

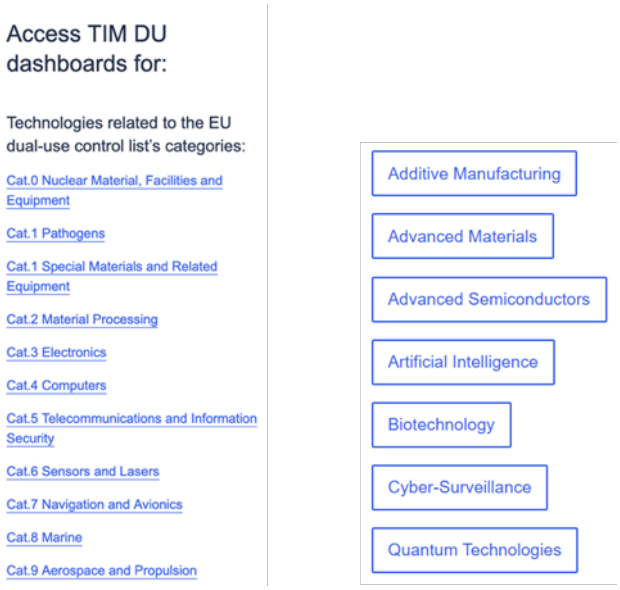
[13] It is noteworthy that, for PATSTAT, TIM uses DOCDB patent families, which means that one patent family can include several (identical or very similar) applications whose technical content is considered to be identical. The DOCDB family ID is provided directly by PATSTAT.

[14] As the term suggests, the dataset is a collection of data, treated in greater depth in the next section.

4. Building the TIM DU dashboard

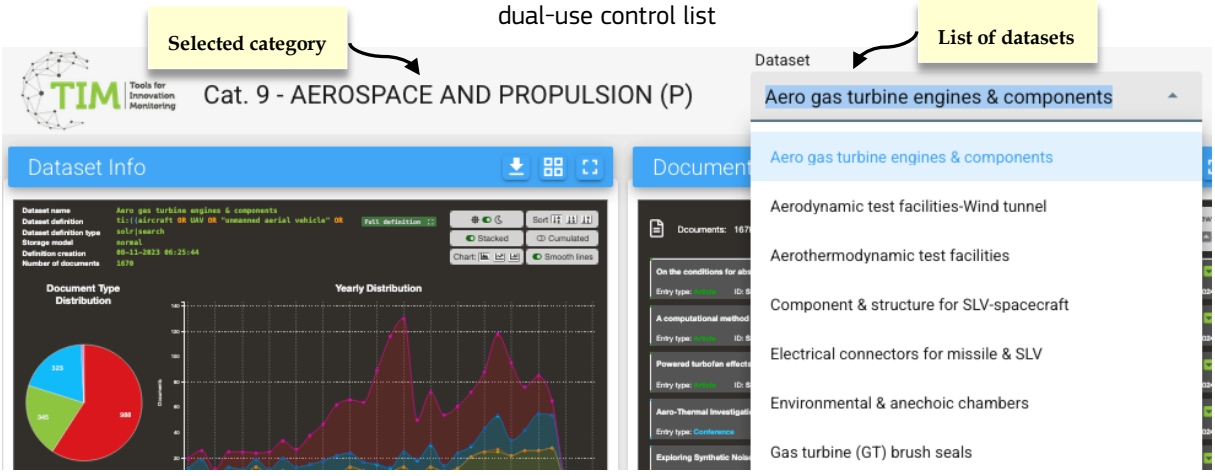
TIM DU is structured into 18 ‘spaces’, corresponding to the ten categories of the EU dual-use control list, and some emerging/critical technology with potential dual-use applications (see Figure 1). Each space can contain multiple ‘datasets’ roughly corresponding to either a specific dual-use item, or an emerging/critical technology, or to a group of them (see Figure 2).

Figure 1. TIM dual-use spaces



Source: European Commission

Figure 2. TIM DU organisation into spaces and datasets. Example of space dedicated to category 9 of the EU dual-use control list



Source: European Commission

4.1 Creation of a dataset: the search queries

As already introduced, all the data analysed by TIM DU are contained in datasets. Each dataset is the result of a search query, whose elaboration must abide by the rules of TIM's algorithms and is a combination of three elements:

a. **Terms**: what is searched for (i.e., keywords which are dual-use related, mainly taken from the EU dual-use control list);[15]

b. **Fields**: where to search for the terms (e.g., title, abstract, location, year. See Figure 3)

Figure 3. Examples of some searchable fields in TIM (source: TIM)

operator name	Searches in	Refers to the
ti	field `title` of documents.	title of the publication, patent or EU granted project.
ti_abs	fields `title` and `abstract` of documents. It will retrieve documents containing the searched terms in the title or in the description.	abstract of the publication, patent or EU granted project.
ti_abs_key	fields `title`, `abstract` and `author keywords` of documents. It will retrieve documents containing the searched terms in the title or in the abstract or in the author keywords.	author keywords, which are the ones attributed by the authors to their publications. Patents or granted EU projects don't have author keywords.
topic	Used to search in the fields `title`, `abstract`, `author keywords` and `automatic keywords` of documents. It will retrieve documents containing the searched terms in the same fields as title_abs_key and in the automatic keywords.	Automatic keywords are terms generated automatically by natural language processing algorithms. Automatic keywords are generated for all types of documents.

Source: European Commission

It is to be noted that when using the "topic" field, the combination of terms matches documents only if the search terms are in the same field (e.g., two terms are both present in the title, or both in the abstract). Therefore, if one term is present only in the title and the other term is present only in the abstract, the search query will not be able to retrieve that document unless a Boolean operator establishes an operation between the two fields in which the terms are requested to be searched.

c. **Boolean operators**: AND, OR, NOT (they apply Boolean logic to queries, requiring the presence or absence of specific terms or conditions in fields to match documents. See Figure 4).

Figure 4. Boolean operators supported by TIM (source: TIM)

AND	All search terms must occur to be retrieved	The search string: (nanomaterial AND toxicity) will retrieve documents that contain both terms.
OR	Any one of the search terms must occur to be retrieved. Use when searching variants and synonyms.	The search string: (nanomaterial OR nanotube OR nanoparticle) will retrieve documents that contain at least one of the terms.
NOT	Excludes records that contain a given search term	The search string: (nanomaterial NOT inflammation) will retrieve documents that contain *nanomaterial* excluding any which also contain *inflammation.*

Source: European Commission

Each query is therefore the combination of these three components, tailored to retrieve the most relevant set of documents.

The intensive analyses and iterative trials performed for each dataset resulted in nearly 400 search algorithms. They constitute the heart of TIM DU and for reasons of transparency and data quality assessment, the JRC decided to make them visible in each dataset available on the public TIM DU dashboard, as detailed in the following and summarised in Annex II.

[15] TIM applies stemming on search terms to broaden document matches and simplify queries by reducing the need for multiple word variants.

For each category and emerging/critical technology, "*Global queries"* were also created, combining all the related datasets. These global queries make it easier to perform thematic searches on large sets of documents.

4.2 Data mining process language

TIM limits its searches to documents written in English. However, it is important to note two key points: first, the predominant language for scientific documents, patents, and projects is English; second, Scopus includes scientific publications in all languages, provided that the title and abstract are in English. Consequently, TIM encompasses scientific publications that are not exclusively in English.

4.3 Dataset quality

The quality of the dataset depends on the quality of the search query. However, there are some significant aspects that need to be accommodated when creating a dataset.

First of all, the maximum amount that a TIM dataset can contain is 250.000 documents per query.

Second, the retrieval of documents is realised via a semantic search of a combination of keywords in some specific fields of the documents. The choice of keywords is therefore of paramount importance, but it is not that obvious. Creating a very detailed search query with highly relevant associations of keywords taken from the EU dual-use control list might not result in a dataset of good quality. For instance, there may be discrepancies between the highly technical language of Annex I to Regulation 2021/821 and the scientific literature. Thus, certain adaptations of terminology may be necessary to bridge the gap between the export control and the scientific community, taking into consideration also alternative names.

Third and most importantly, obtaining all potential documents from TIM database on a specific subject is fundamentally impractical, if not unfeasible, given that incorporating an AND operator in the search query would omit any documents lacking the specified terms. While the retrieved documents may exhibit high relevance, the dataset's comprehensiveness would be significantly compromised. This is due to the fact that the precision of the dataset is inversely related to its comprehensiveness (i.e., the total number of relevant documents in the database). Furthermore, the ratio between these two concepts is also affected by the objective of the search. In particular, such a logic explains why search queries for emerging technologies are less articulated than those for listed dual-use technologies, in order to conduct a more inclusive search (i.e., placing more emphasis on the comprehensiveness than on the accuracy of the dataset), given that the potential applications of these disruptive technologies may not be known at this time.

In conclusion, an effective query should aim to strike a balance between the maximization of results and their relevance. The evaluation of the quality of TIM DU queries, being of considerable significance, has undergone a refinement process, which is detailed in the subsequent section.

4.4 The 2021 refinement of TIM DU

In 2021, as part of a framework contract, JRC requested the implementation of the action entitled "Mapping dual-use related intangible technology transfers in EUP2P partner countries and other third countries through TIM Dual-Use", jointly carried out by the University of Liège and King's College London.

The main objective of the action was the enhancement of TIM DU datasets. The first part of the action was to test and validate the TIM DU datasets in order to verify and improve the quality of the search queries used against the relevance of the retrieved documents. Another objective was to develop an index document of the TIM DU datasets to facilitate the user experience. Finally, the last

part consisted of using the new datasets for mapping third countries' scientific production on dual-use and emerging technologies, highlighting the actors involved and collaborative networks.

The evaluation of each query's quality was based on balancing the equation of two main variables:

— The "accuracy" or dual-use relevance of the results (qualitative variable);

— The "recall" or completeness of the results (quantitative variable).

— General introduction to the issue – policy context and background

The study of these variables was guided by the following:

— The correctness of the dataset name (which should correspond to one or a group of dual-use or emerging technologies);

— If some datasets are missing or should be organised differently;

— The relevance of the keywords' association;

— The relevance of the documents retrieved.

Following the initial assessment of the TIM DU platform's queries, the research team recognised the quality of the platform and its potential. While some of the over 400 datasets remained unchanged, many others were changed in order to improve the balance between accuracy and recall variables. The changes introduced mainly consisted of the addition or removal of keywords, modification of the syntax or combination of Boolean operators, as well as merging of datasets. This provided a final list of 384 refined datasets, currently at the heart of TIM DU.

For convenience, all the search queries – individual datasets and global ones - are summarised and listed in Annex II of this report.

One of the main conclusions of such a review was that the challenge of achieving a balance between relevance (accuracy) and comprehensiveness (recall) is particularly pronounced in the context of dual-use items, which are inherently characterised by their potential for both civilian and strategic applications, or more specifically, their potential misuse in relation to weapons of mass destruction or human rights violations. The distinguishing features of these dual-use technologies, as compared to similar items intended solely for civilian use, often lie in specific technical parameters, such as the tensile strength of a material or the precision of testing equipment. These details are rarely mentioned in the title or abstract of a document. As a result, despite the formulation of a meticulous search query, the task of linking a particular item to its specific strategic applications remains technically arduous. Consequently, the retrieved documents contained in datasets are, to a different extent, dual-use related, but an assessment by a technical expert is always needed.

4.5 Elaboration of a TIM Dual-Use Index

As part of the review process, a TIM Dual-Use Index was elaborated to enhance users' navigation experience of the TIM Dual-Use dashboard by facilitating access to the various technology categories and datasets.

The Index is organised into three main sections: an interactive table of contents redirecting the user to the selected technology category (TIM DU space); a short guide explaining how to read and use the Index; and a table of three columns (See Figure 5) displaying:

— The names of the datasets, contained in the respective TIM DU spaces (indicated at the top of each page), which correspond approximately to a specific dual-use item or a group of these;

— The keywords of the dataset query;

— Control codes for the specific items of the EU dual-use control list.

Figure 5. TIM Dual-Use Index (by datasets)

Cat. 2 – MATERIAL PROCESSING

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Robots, controllers, end-effectors	• Robot • End-Effector • End Effector • Resistant To Radiation • Radiation hardened • Extreme Conditions • Explosive • Nuclear • Plutonium	• 2B007 • 2B207
Rotors fabrication/assembly equipment	• Rotor • Bellows • Baffles • End Caps • Gas Centrifuge • Single-Convolution Bellows • Uranium	• 2B228

Source: European Commission

The TIM Dual-Use Index operates as a correlation table, helping TIM DU users to more easily identify in which space and dataset of the platform is possible to find data on a specific dual-use or emerging technology.

Users more familiar with dual-use items may identify the relevant datasets starting the search either from the control code of Annex I to the EU Dual-Use Regulation (ordered **Index by control codes**) or from a keyword (ordered **Index by datasets**). Conversely, users less acquainted with dual-use items and their control codes may begin their search from the most familiar space name, utilising displayed keywords for further exploration.

Both versions of the TIM Dual-Use Index are available on TIM DU's landing page. The Index by datasets is included as Annex I in this report.

5. How to use the TIM Dual-Use Dashboard: visualisations and functionalities

After selecting a TIM DU *space*, the user is redirected to the dashboard, which displays a number of analytical and informative panels, for instance, highlighting the number of documents per year, the involved actors, the collaborative network of countries and organisations, chronological and geographical distributions.

In the first instance, the various panels of the TIM DU dashboard will be briefly presented to offer an overview of the diversified information provided by the data-mining tool. Later, the attention will be focused on the filtering options of TIM DU, allowing an easier access to targeted information and analyses, as well as on other useful functionalities.

5.1 TIM DU Dashboard panels

The TIM DU dashboard counts 17 panels, which can be categorised into the following four main types:

— Dataset Info

— Lists

— Time series

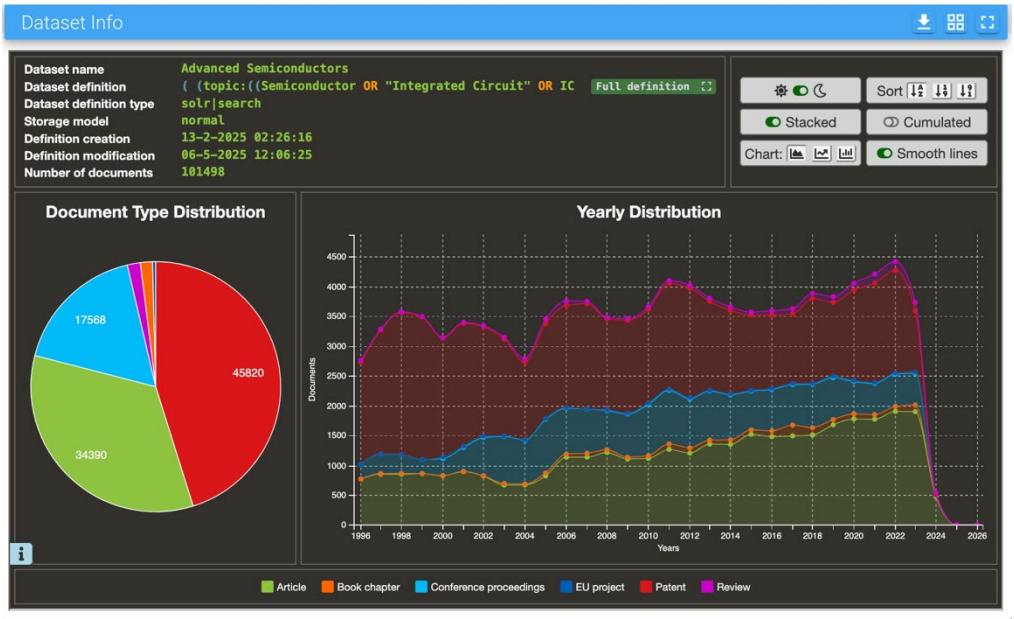
— Collaboration network graphs

In the following sections, we describe the main characteristics and potential usefulness of each type of panel.

Dataset Info

This is the first panel displayed in the TIM DU dashboard, as it offers a general overview of the dataset. This panel contains information on the construction of the dataset—such as its name, search query (whose formulation can be seen in its entirety by hoovering the pointer on the space next to the entry “Dataset definition”), creation date—, as well as on the composition of the dataset—the pie chart illustrates the proportion of retrieved results per document type (i.e., articles, conference proceedings, reviews, book chapters, patent and EU projects), while the chart displays the yearly distribution of documents (the area chart can be switched to line or bar chart from the icons at the top-right of the chart). Some additional features can be found by clicking on the “i” icon on the bottom-left of the panel.

Figure 6. Panel "Dataset Info" of the TIM DU dataset "Advanced Semiconductors" (TIM DU space: Advanced Semiconductors)



Source: European Commission

This panel can be useful to understand the chronological trend of the concerned technology. The information in the pie chart suggests whether the activities are mainly research-related (i.e., articles, conference proceedings, etc) or practical applications (i.e., patents). The area chart indicates

the evolution of the activities over time. As an example, the "Advanced Semiconductors" dataset in Figure 6 shows a very significant level of practical applications (high level of patents) and a continuous increase in activity, the amount of which is considerable since the total number of documents retrieved is over 100,000.

Panels showing different lists

The TIM DU dashboard offers multiple panels, notably: Documents list, Countries summary, Journal categories (List), Automatic Keywords (List), Authors top 1000 (List).

Documents

The "document" panel lists essential details regarding the documents included in the dataset, along with access to their respective summaries or descriptions.

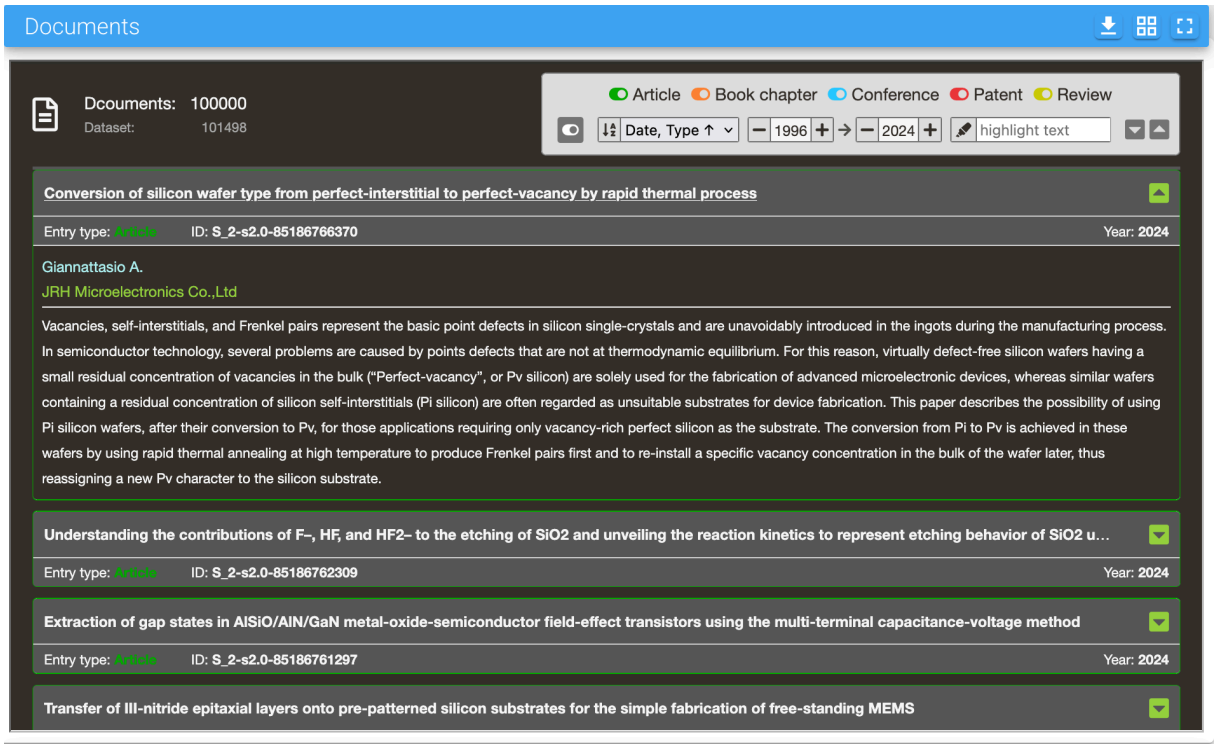
As illustrated in Figure 7, the "documents" panel lists a maximum of 100.000 documents contained in the dataset—if the search query retrieves more than 100.000 results, it is still possible to visualise all documents through the use of filters (see *infra*)—specifying their type (e.g., articles, conference papers, EU projects, etc.), ID number, and year of publication. TIM also enables users to view the abstract and authorship details of the documents (i.e., the names of the authors and the affiliated entities) by clicking on the green arrow icon situated to the right of the document title.[16]

In addition, for scientific publications, a hyperlink redirecting to the original article location is provided in the title of the document; full access to the article will depend on whether the user's institution has the necessary subscription. For patents, a link to the relevant entry in Espacenet is provided.

Access to such detailed information enables users to gain a deeper understanding of the collaborative relationships among organisations, authors, and their respective fields of activity. Ultimately, this data can facilitate the retrospective identification of potential transfers of sensitive technology related to dual-use items.[17]

[16] Users can visualise such details for all documents at once by clicking on the grey arrow to the right of the top menu of the panel.
[17] However, as mentioned above, an assessment of the dual-use nature of the content by a technical expert remains essential.

Figure 7. Panel "Documents" of the TIM DU dataset "Advanced Semiconductors" (TIM DU space: Advanced Semiconductors)



Source: European Commission

Countries summary

This panel is a table listing all the countries and related total number of documents (Values) and separately articles and patents. The countries and the related values can be sorted according to the options in the top row.

A panel of this kind offers an ordered overview of the data from a country perspective.

Journal categories

This panel is specifically designed for scientific publications, as it enumerates the scientific categories associated with the journals in which these publications appear.

The ordered view of the table facilitates the identification of the scientific fields most pertinent to the dual-use technology within the selected dataset.

Automatic keywords

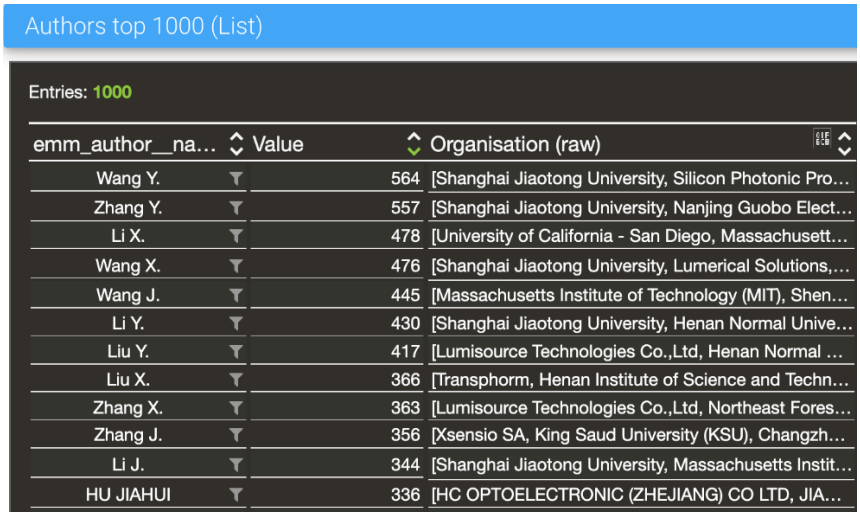
The table lists the top 1000 Automatic keywords generated by language processing algorithms (i.e., automatically detected by TIM DU in the documents retrieved by the query; these keywords are therefore different from those used to define the dataset query) for all types of documents.

Such a panel provides a quantitative sense of the validity of the query, with an indication of the total number of recurrences of each inferred keyword. Also, it allows performing an advanced search by filtering the selected automatic keywords from the retrieved papers.

Authors top 1000 (List)

The dashboard provides an ordered view of the top 1000 authors of scientific articles and their affiliating entity. The list can be sorted alphabetically or by value (number of scientific articles attributed).

Figure 8. Panel "Authors top 1000 (List)" of the TIM DU dataset "Advanced Semiconductors" ordered by value (TIM DU space: Advanced Semiconductors)



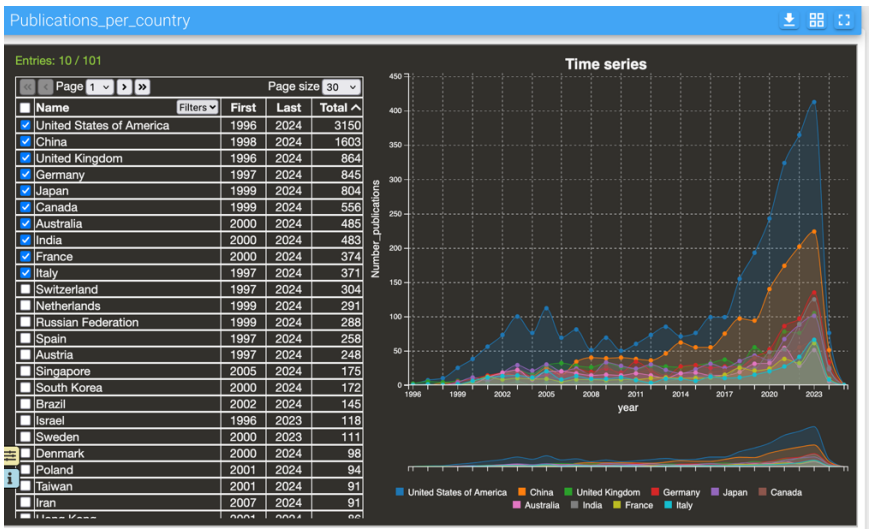
emm_author__na...	Value	Organisation (raw)
Wang Y.	564	[Shanghai Jiaotong University, Silicon Photonic Pro...
Zhang Y.	557	[Shanghai Jiaotong University, Nanjing Guobo Elect...
Li X.	478	[University of California - San Diego, Massachusett...
Wang X.	476	[Shanghai Jiaotong University, Lumerical Solutions,...
Wang J.	445	[Massachusetts Institute of Technology (MIT), Shen...
Li Y.	430	[Shanghai Jiaotong University, Henan Normal Unive...
Liu Y.	417	[Lumisource Technologies Co.,Ltd, Henan Normal ...
Liu X.	366	[Transphorm, Henan Institute of Science and Techn...
Zhang X.	363	[Lumisource Technologies Co.,Ltd, Northeast Fores...
Zhang J.	356	[Xsensio SA, King Saud University (KSU), Changzh...
Li J.	344	[Shanghai Jiaotong University, Massachusetts Instit...
HU JIAHUI	336	[HC OPTOELECTRONIC (ZHEJIANG) CO LTD, JIA...

Source: European Commission

Time series panels

These panels show the evolution over time of a given technology per country, or organisation and, as such, they can be instrumental for monitoring technological advancements and trends, particularly in the context of emerging technologies. As an example, the graph in Figure 9 illustrates a nearly exponential activity rate, especially over the past few years. This pattern is characteristic of emerging technologies, which are typically defined by their radical novelty and relatively rapid growth, while exhibiting a certain coherence over time—a feature that distinguishes them from technologies still in flux and not yet fully emerged.

Figure 9. Panel "Publications per country" of the TIM DU dataset "Quantum computer" (TIM DU space: Quantum technology)



Name	First	Last	Total
United States of America	1996	2024	3150
China	1998	2024	1603
United Kingdom	1996	2024	864
Germany	1997	2024	845
Japan	1999	2024	804
Canada	1999	2024	556
Australia	2000	2024	485
India	2000	2024	483
France	2000	2024	374
Italy	1997	2024	371
Switzerland	1997	2024	304
Netherlands	1999	2024	291
Russian Federation	1999	2024	288
Spain	1997	2024	258
Austria	1997	2024	248
Singapore	2005	2024	175
South Korea	2000	2024	172
Brazil	2002	2024	145
Israel	1996	2023	118
Sweden	2000	2023	111
Denmark	2000	2024	98
Poland	2001	2024	94
Taiwan	2001	2024	91
Iran	2007	2024	91

Source: European Commission

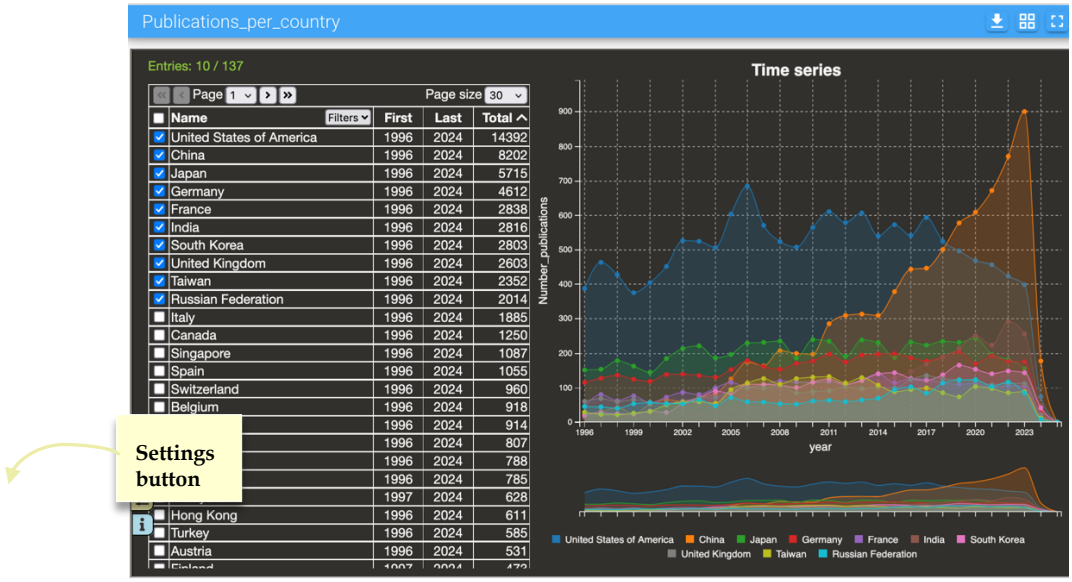
Publications/patents/EU projects per country

These panels are divided into two sections. On the left, a table presents the data contained within the dataset. On the right, a chart visually represents the selected data.

The chart displays line, area, or bar graphs—the visualisation can be modified from the settings button (see Figure 10)—illustrating the number of publications/patents/EU projects by country and year. By default, it includes data for the top 10 countries in terms of output, although additional countries can be selected from the table on the left. Hovering the mouse over a country's name, located below the chart, highlights the corresponding line or graph for that country.

The table encompasses all available data, which can be displayed and sorted according to the options provided in the top row. By default, only 30 entries are displayed at a time, but this can be easily changed by selecting a different value in the “Page size” selection box.

Figure 10. Panel "Publications per country" of the TIM DU dataset "Advanced Semiconductors" (TIM DU space: Advanced Semiconductors")



Source: European Commission

Documents per organisation

Contrary to the preceding dashboards, which present a country-level perspective categorized by type of activity—such as scientific publications, patents, and EU projects—, this panel offers a more detailed examination focused on the activities of individual organisations over time. This specific view is particularly valuable for compliance officers within organisations, as it aids in identifying potential sectors of activity related to dual-use technologies.

Collaboration network graphs

Collaboration network graphs offer the possibility to investigate potential transfers of sensitive technologies related to dual-use items.

TIM DU provides the following six network graph panels:

- Countries
- EU vs World
- Organisations

— Journal categories

— Automatic keywords

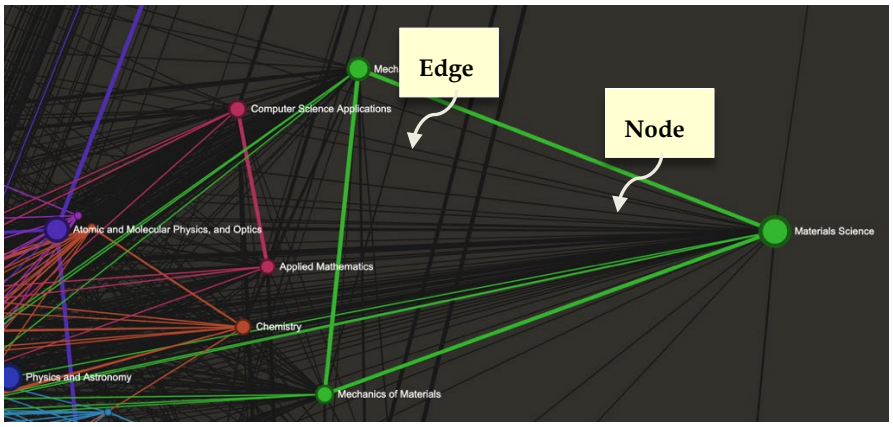
— Authors top 1000

The network graphs show the connections among all the nodes, which can represent a country, an organisation, an author/inventor, a journal category, or a keyword, depending on the panel. The size of the nodes is proportional to the number of documents attributed to them. The edges (lines between two nodes) have a thickness proportional to the number of documents in common between two nodes. Therefore, the edges represent co-publishing, co-patenting or co-granting of EU projects. The colours highlight communities of nodes that tend to collaborate.

To give an illustration, the network graph "Journal categories" is specific to scientific publications as it depicts a network of scientific categories, showcasing how different academic disciplines are interconnected through the shared classification of scientific articles. In this graph (see Figure 11), the nodes are the scientific categories to which the journals, where the scientific publications are published, belong; while the edges represent the co-occurrence of two categories in the same document, i.e. documents published in journals that are assigned to both categories.

This panel can be helpful for quickly identifying the scientific areas concerned by the activities of a given country, organisation, or author (or group of them).[18]

Figure 11. Panel "Journal categories" of the TIM DU dataset "Advanced Semiconductors" (TIM DU space: Advanced Semiconductors)



Source: European Commission

The collaborative network graphs allow the user to zoom in or out to get more insight. In addition, various actions can be performed from the following top toolbar's options:[19]

— Search bar: Type one name to zoom in;

— Info: View the full list of nodes (i.e., countries, organisations, authors/inventors) and zoom in by clicking on one of them;

— Vis: Visualise nodes with a specific size and number of connections;

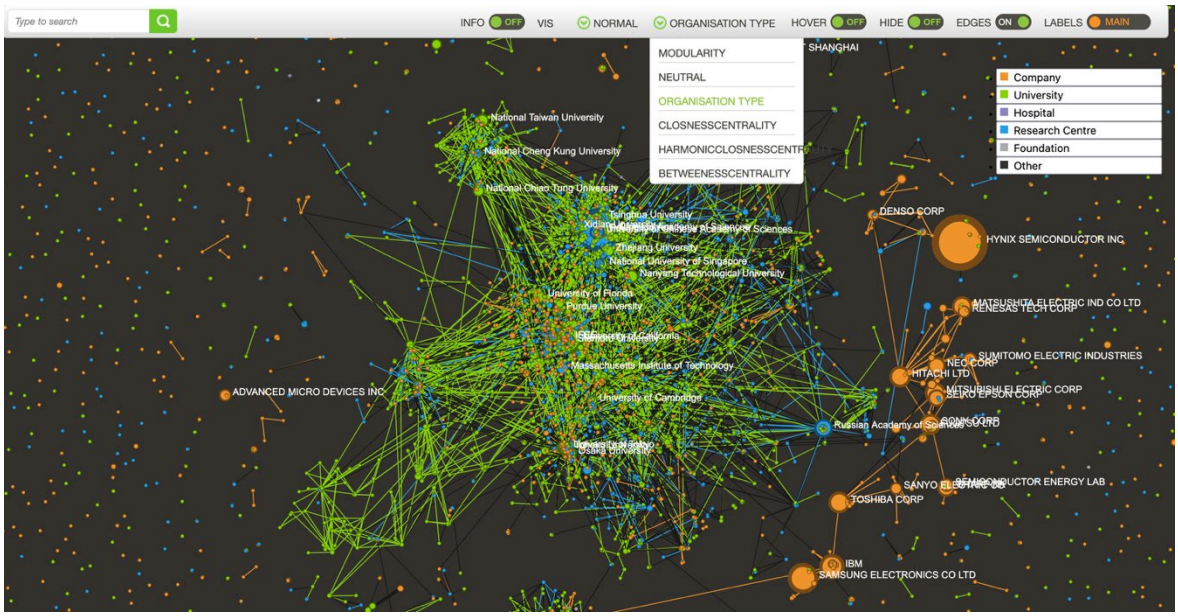
— Order / Size: Visualise the nodes ordered by size, year, or connections;

[18] For more information on how TIM DU can filter data—namely, per country, organisation, or author—, see *infra* "TIM DU filters".
[19] For other details of the toolbar's options please check the user instructions posted on the TIM DU landing page.

— Colours: Change nodes' colour according to the different modes, such as neutral, modularity,20 organisation type—i.e., company, university, hospital, research centre, foundation, other (see Figure 12);

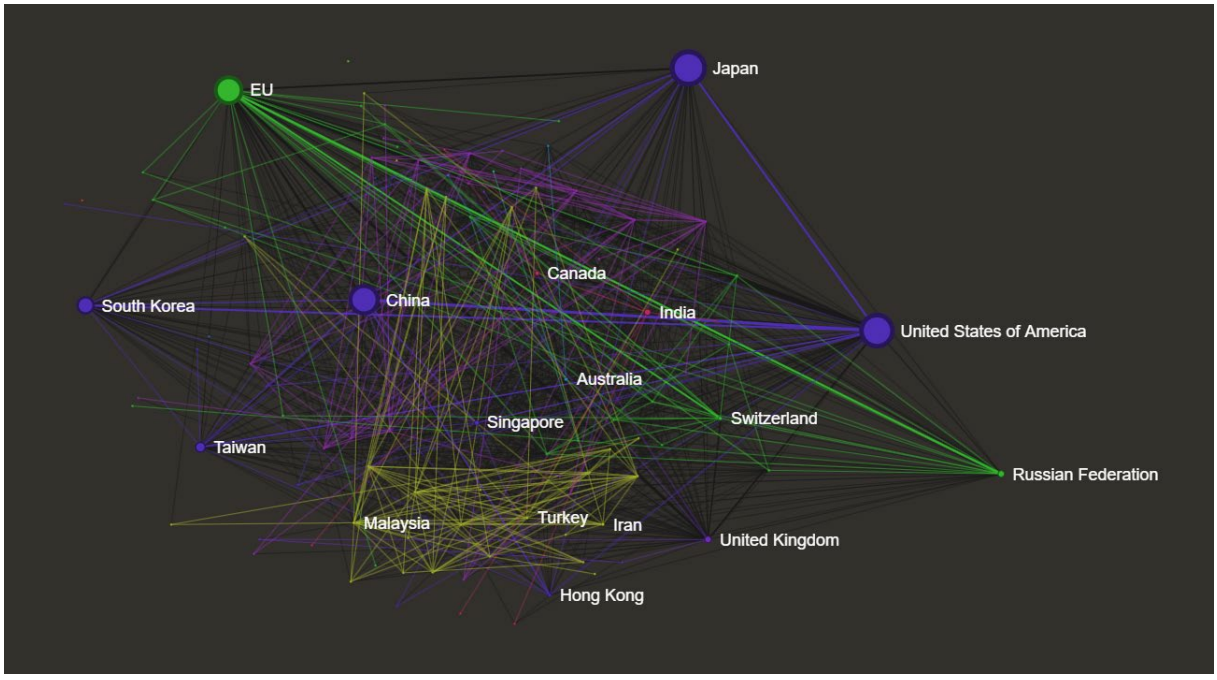
— Labels: Toggle on labels to show MAIN, ALL or NO labels.

Figure 12. Panel "Organisations" of the TIM DU dataset "Advanced Semiconductors"



Source: European Commission

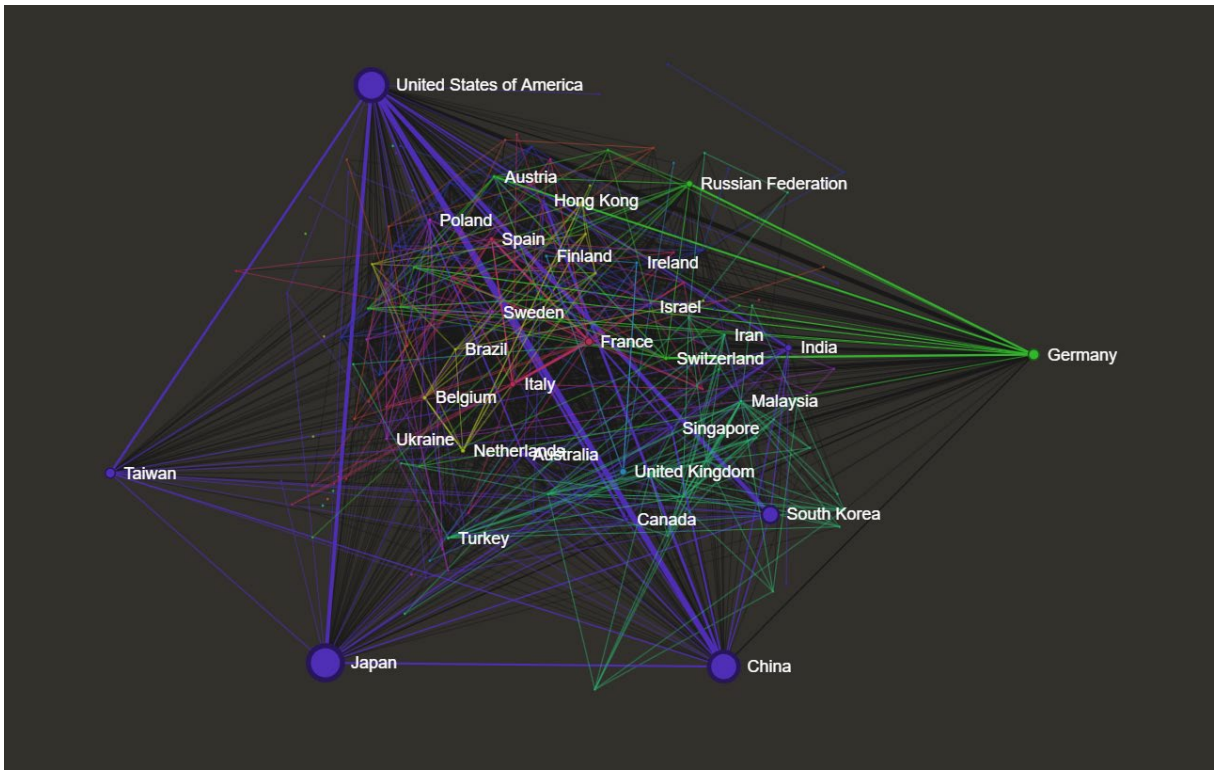
Figure 13. Panel "EU vs World" of the TIM DU dataset "Advanced Semiconductors"



Source: European Commission

[20] This affiliation is realized on the basis of the "Louvain Modularity algorithm" (for more information, see: londel, V. D., Guillaume, J. L., Lambiotte, R., & Lefebvre, E. (2008). Fast unfolding of communities in large networks. Journal of statistical mechanics: theory and experiment, 2008(10), P10008).

Figure 14. Panel "Countries" of the TIM DU dataset "Advanced Semiconductors" (TIM DU space: Advanced Semiconductors)



Source: European Commission

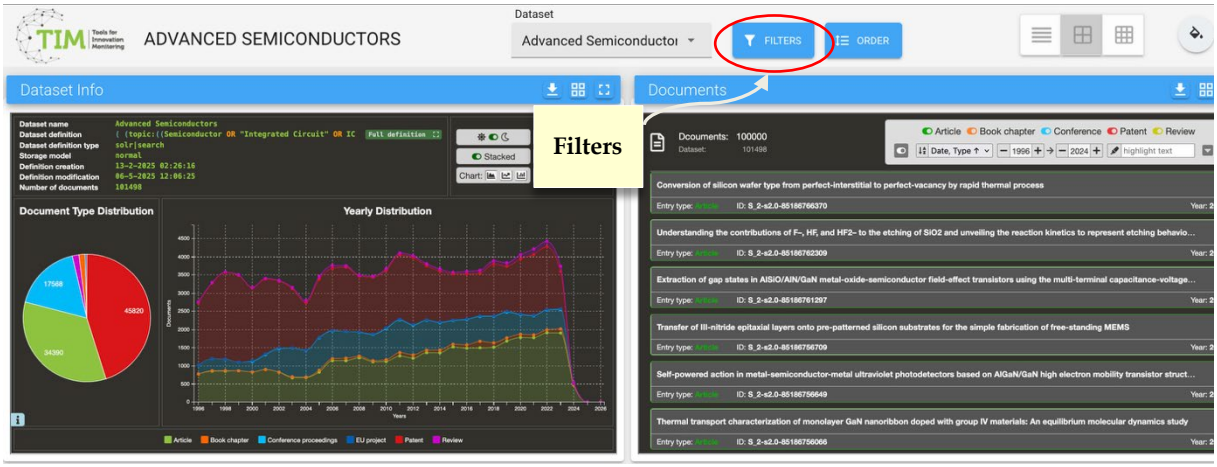
5.2 TIM DU Filters

TIM's datasets are capable of processing a vast amount of information, which can sometimes pose challenges in managing and utilising this data to extract pertinent insights. One of the most significant features of TIM is its filtering capability, which provides users with more targeted information.

TIM's filters facilitate the identification of activities conducted by specific organisations, countries, or even authors/inventors, on subjects and over a period of time of particular interest.

In TIM DU, a filter can be applied from the filters button at the top of the dataset (see Figure 15). This section presents just a few examples of their possible applications.

Figure 15. Filters button in TIM DU

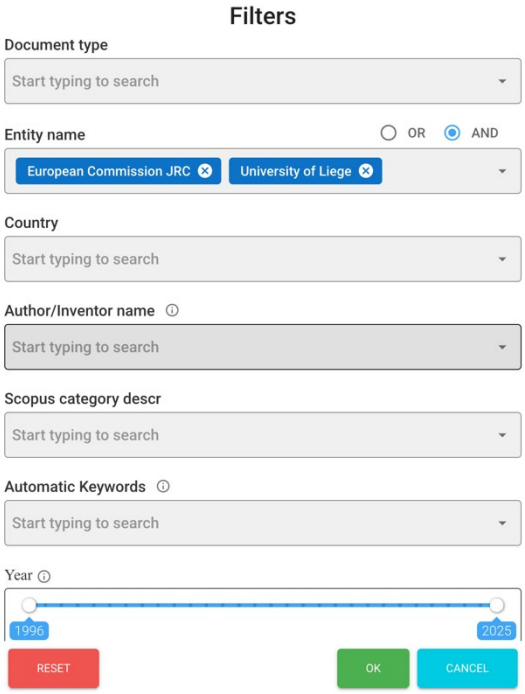


Source: European Commission

As illustrated in Figure 16, TIM DU can apply filters to the following seven different fields:

- **Document type** (article, book, conference paper, EU project, patent, review paper);
- Organisation name;
- Country;
- Name of the authors or inventor;
- **Scopus category** (scientific areas);
- **Automatic keywords** (allowing to focus on a specific topic);
- **Time period** (year of publication of the scientific article, priority year of the patent, or starting year of the project).

Figure 16. Filters box in TIM DU



Source: European Commission

AND, OR filtering operations

Additionally, when more than one element is selected within the same filter field (e.g., Entity name), it is possible to perform two types of filtering operations: OR, AND (see Figure 16).

By employing the OR operation within the concerned filters field, TIM DU will cumulatively display all documents attributed to the selected entities (i.e., every document attributed to either the European Commission JRC or the University of Liège). Consequently, this filtering process will omit any documents that are not linked to at least one of the selected entities.

Conversely, applying the AND operation within the designated filters field, TIM DU will display exclusively those documents commonly attributed to all selected entities (i.e., only the documents jointly attributed to both the European Commission JRC and the University of Liège).

To provide an illustrative example, consider a dataset comprising a total of 8,000 documents. Within this dataset, 100 documents are attributed to the European Commission JRC, 100 to the University of Liège. Out of the 200 documents, 5 of them are co-attributed to both the European Commission JRC and the University of Liège. Upon applying a filter in the 'Entity name' field by selecting both the European Commission JRC and the University of Liège, the following outcomes arise:

— Selecting the OR operation: TIM DU will display 200 documents, encompassing all documents attributed to at least one of the selected entities.

— Selecting the AND operation: TIM DU will display 5 documents, representing only those documents that are collaborations among the selected entities.

Employing the AND operation within the same filters field is particularly beneficial for facilitating the visualisation of collaborations among specific entities, countries, or authors.

Moreover, it is important to note that when applying filters across various fields—such as Entity names, Country, and Author/Inventor name— TIM DU consistently performs an AND-like operation among the different filters. Thus, TIM DU will display only those results that satisfy the criteria specified in each respective field.

As illustrated in Figure 17, following the application of 7 filters, which is indicated by the appearance of a little number on the top right of the Filters button, TIM DU presents only three documents satisfying the combination of filtering criteria:

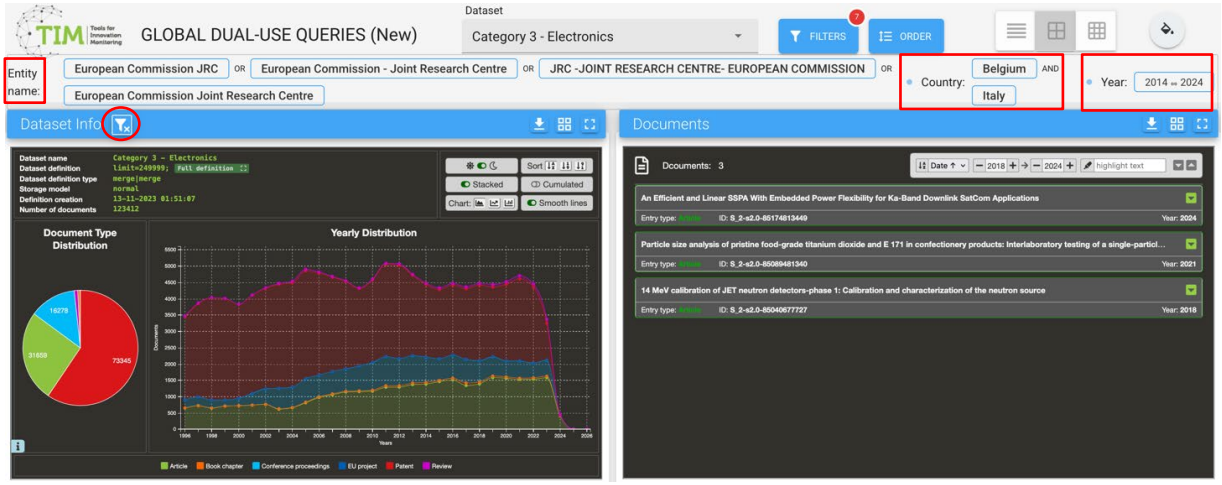
— Entity name: 4 name variants of the European Commission JRC (OR operation);

— Country: Belgium, Italy (AND operation)

— Year: from 2014 to 2024

One can notice that the Dataset info panel is not affected by filters, and this is indicated in TIM DU by the image representing the filters icon (funnel) with an “x” (see Figure 17).

Figure 17. Application of filters in the Entity name (OR operation), Country (AND operation), and Year fields (TIM DU space: GLOBAL DUAL-USE Queries)



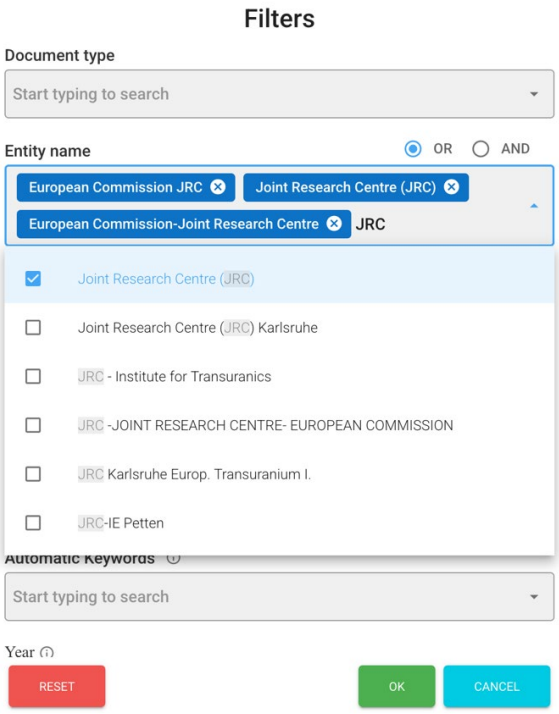
Source: European Commission

Name variants

Finally, when applying filters, it is important to select all name variants of the concerned entity in order to avoid excluding relevant data. For instance, the European Commission JRC can be found under multiple names (see Figure 18).

Although TIM incorporates an "entity matcher" designed to harmonise organisations' names under a common denomination, this process depends on the raw data available. Therefore, if authors specify their affiliated entity using various names—such as European Commission JRC; Joint Research Centre; or JRC-JOINT RESEARCH CENTRE-EUROPEAN COMMISSION—it will be necessary to select multiple name variants in the "Entity name" filters field to ensure a more complete representation of the data.

Figure 18. Name variables in the filters field "Entity name"



Source: European Commission

4.3 Viewing options: "global dual-use queries" VS "Show this panel for each dataset" button

As previously exposed (see Chapter 3 *supra*), TIM DU is structured into *spaces*—corresponding to one for each of the ten categories of the EU dual-use control list, or to an emerging/critical technology with potential dual-use applications—, and each space can contain multiple 'datasets'—roughly corresponding to either a specific dual-use item, or an emerging/critical technology, or to a group of them—whose data is displayed in the panels.

However, TIM DU also offers two panoptic viewing options, each presenting different advantages:

— The "global dual-use queries";

— The "Show this panel for each dataset" button.

The “global dual-use queries”

The “global dual-use queries” is a specialised space within TIM DU, wherein each dataset comprises aggregated data from each of the ten dual-use categories and emerging/critical technologies. Additionally, there is an inclusive dataset that consolidates all ten dual-use categories and emerging/critical technologies, although limited to the period from 2021 to 2024 due to the extensive volume of data. The primary advantage of these datasets is that they offer an aggregated and comprehensive perspective on each category—such as nuclear, special materials, aerospace, etc.—rather than focusing on individual dual-use items or specific groups thereof.

Employing this analytical perspective helps in identifying the main actors or collaborations within a specific domain, whether within the dual-use categories and emerging/critical technologies or across the entire dual-use spectrum, through the “Global query Cat 0-9 & EmT (2021-2024)” dataset.

However, this approach poses challenges in precisely determining the scope of intervention of actors or collaborations, except through the detailed analysis of individual documents, a process that necessitates a greater investment of resources.

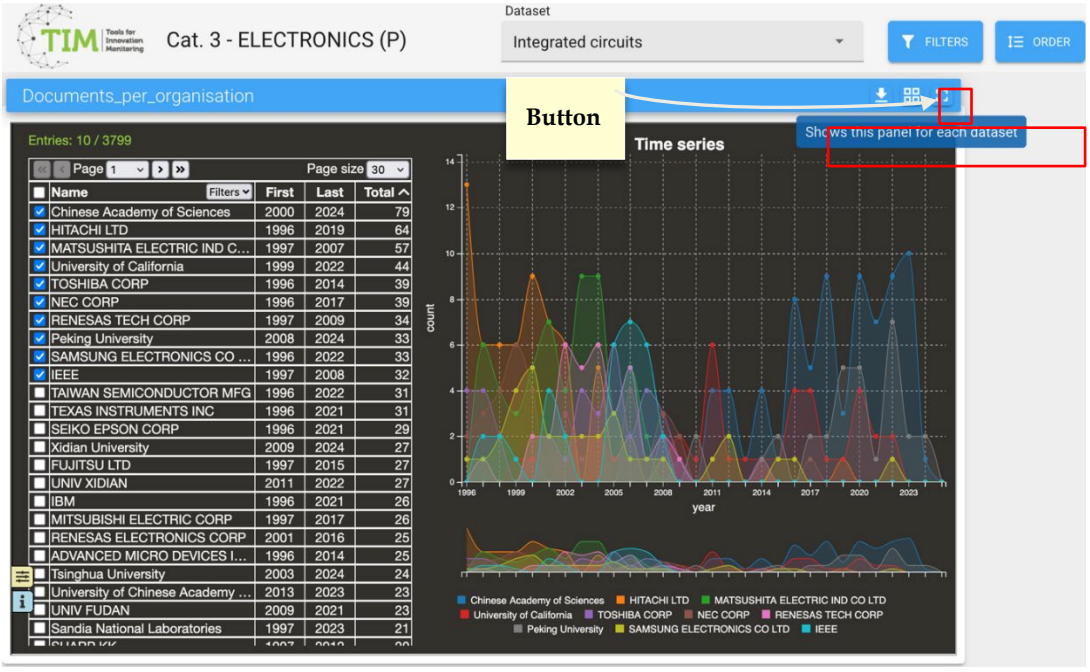
The “Show this panel for each dataset” button

Compared to the previous viewing option, the “Show this panel for each dataset” button addresses its shortcomings by providing both a comprehensive overview and an enhanced level of detail.

This viewing option is accessible from any dataset (see Figure 19) and enables the replication of the panel of interest (e.g., Documents per organisation) for each dataset within the space. Upon application, the dataset takes the name of the selected panel, while the panels themselves display the names of the various datasets contained within the space (see Figure 20).

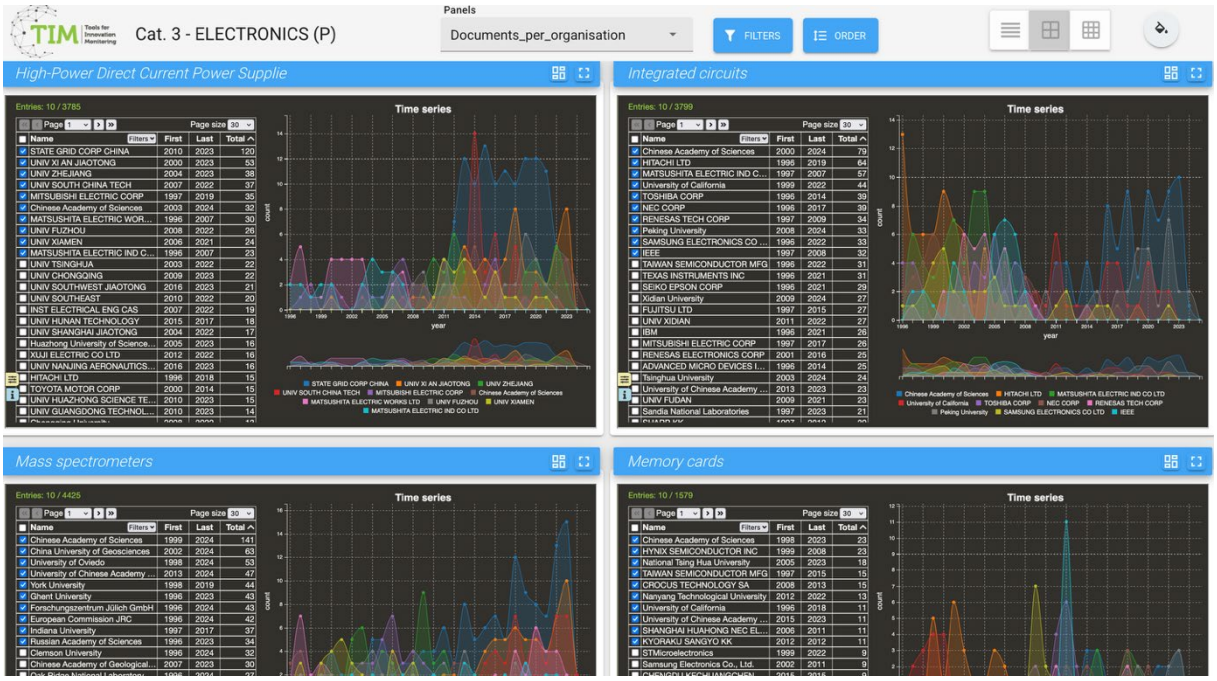
This view affords the user a global outlook of the given dual-use category or emerging/critical technology, while simultaneously providing more detailed insights regarding the scope of activities. Consequently, it facilitates the identification of specific areas within a particular dual-use technology where the actor is most active.

Figure 19. "Show this panel for each dataset" button



Source: European Commission

Figure 20. "Show this panel for each dataset": Documents per organisation (TIM DU space: Cat. 3 - Electronics)



Source: European Commission

List of Figures

Annexes

Annex I: TIM DU index

INDEX of TIM Dual-Use platform

Contents

How to read the TIM Dual-Use Index

The Index is composed by the headings and three columns displaying the "EU Dual-Use Control List" **control codes** and the corresponding TIM DU's **spaces**, **datasets** and **queries' keywords**.

- Each heading indicates the name of the TIM DU **space** (one of the ten categories of the EU Dual-Use Control List, or an emerging/critical technology) containing the item.s which refer to the control code.
- The first column on the left specifies the TIM DU **dataset** (contained in the TIM DU space indicated by the heading) related to the control code. These datasets correspond approximately to a specific dual-use item or a group of them.
- The second column contains the **query's keywords** on which the search algorythm of each dataset is based. These keywords are related to the EU dual-use control list text, as well as emerging technologies, with their scientific and technical synonyms.
- Finally, the third column lists the EU dual-use control list's **control codes** of the specific items contained in the TIM DU platform (this field is empty for emerging technologies).

A second format of the Index, with the **control codes** in the first column on the left is also available.

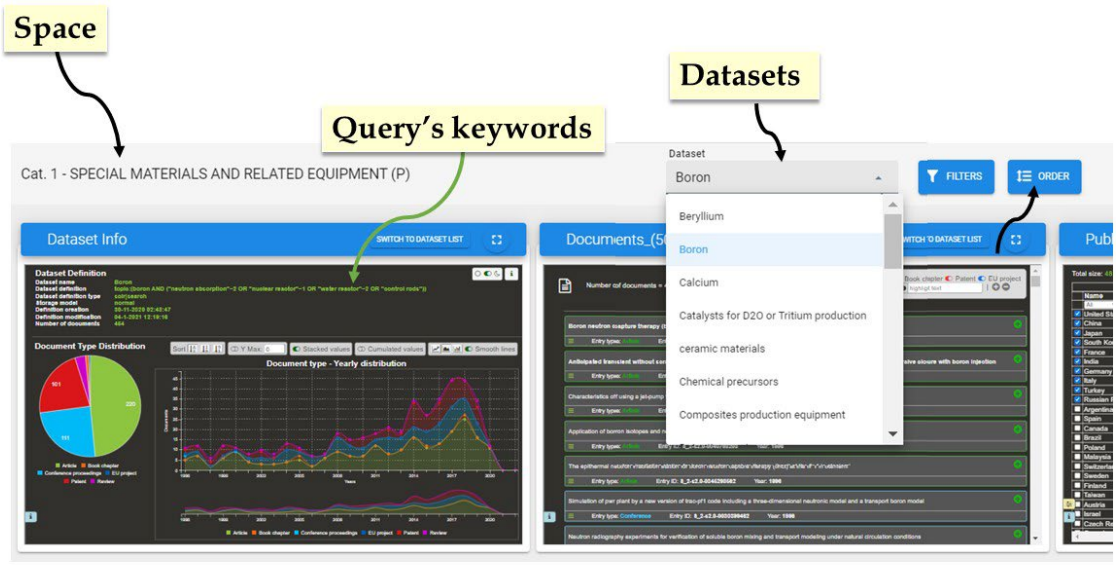
On the basis of a control code, the name of the dual-use item, or some keywords, this Index will help to perform structural searches through the TIM Dual-Use platform, either by:

- choosing the heading corresponding to the name of a controlled category, or emerging technology ("Space"), to get an overview of the items and related topics ("datasets") covered by that "space";
- using the control code number of an item to identify in the Index second column which dataset contains data related to that code.
- looking for the name of a dual-use item, or topic ("query's keyword"), to identify in which TIM DU space and datasets it is possible to find data related to this item or topic;

The Index can also be navigated by word search ("ctrl" + "F" – keyboard shortcut of "Find" option) to look for specific keywords, topics or control codes and identify the corresponding relevant TIM DU *Space* and *Dataset*.

Once obtained the necessary *space* and *dataset* information, it is easy to enter the TIM DU dashboard performing the relevant choices.

Figure 21. Spaces and datasets



Source: European Commission

CAT. 0 – NUCLEAR MATERIAL, FACILITIES AND EQUIPMENT

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Aerodynamic separation nozzles-tube	• Aerodynamic • Uranium • Enrichment	• 0B001.d.
Chemical exchange separation equipment	• Uranium Chemical Exchange • Uranium Solvent Extraction • Uranium • Enrichment • Separation • Chemical exchange • Solvent extraction • PEREX	• 0B001.e.
Conversion plants Plutonium	• Conversion • Reprocessing • Fuel • Fuel-cycle • Plutonium • Plutonium dioxide • Plutonium nitrate • Plutonium metal	• 0B007
Conversion plants Uranium	• Conversion • Uranium • UF6 • UO2 • UO3 • UF4 • Fuel • Fuel-cycle	• 0B003
Cooling system	• Cooling system • Nuclear reactor • Primary • Heat-exchanger • Coolant pumps	• 0A001
Criticality safe tanks & vessels	• Dissolvers • Storage Vessel • Storage Tank • Spent Fuel • Irradiated Nuclear	• 0B006.c. • 0B006.e.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Electromagnetic isotope separators	• Electromagnetic • Isotope • Separation • Uranium • Calutron • Enrichment • UF6 • Ion Source	• 0B001.j.
Enrichment by Gaseous Diffusion	• Gaseous Diffusion • Uranium • UF6 • Compressor • Centrifugal Blowers • Gas Blowers • Nuclear • Isotope Separation • Enrichment • Copper • Stainless steel • Aluminium • Nickel • Fluorinated hydrocarbon poly-mers	• 0B001.b. • 0B001.c.
Fast Neutron Reactors	• Reactor • Fast Neutron • FNR • Fast Breeder • FBR • Liquid Metal Cooled • LMCR • Molten Salt • MSR • Gas Cooled Fast • GCFR • Lead-cooled • Fast cooled • Reduced Moderation Water • RMWR	• 0A001
Flasks for irradiated fuel	• Flask • Cask • Irradiated Fuel • Spent Fuel	• 0B006

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Gas centrifuge	• Gas Centrifuge • Uranium • UF6 • Hexafluoride Gas • Isotope separation • Molecular Pump • Nuclear Reactor • Nuclear Power • Enrichment • Motor Stators • Dampers • Scoops • Magnetic Bearing • Bearing Assembly • Centrifuge Housing • Rotor Tube • Bellows • Centrifuge Housing	• 0B001.a. • 0B001.b.
Heavy Water or Deuterium	• Hydrogen Isotope Separation • Hydrogen Isotope Enrichment • Heavy Water • D2o • Deuterium • Hydrogen Water • Hydrogen Sulphide • Water Hydrogen • Cascade • Girdler Sulfide	• 0B004 • 0C003
Hot Cells	• Hot Cells • Remote Manipulators • Lead Glass • Spent Fuel • Irradiated Fuel	
Laser-based isotopes separation	• Atomic Vapour Laser • Molecular Laser • MLIS • AVLIS • Isotope Separation • Uranium • F6 • Enrichment	• 0B001.a. • 0B001.g. • 0B001.h.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Nuclear Grade Graphite	• Graphite • Nuclear Grade • Boron • Nuclear Reactor • Nuclear Plant • Nuclear Power	• 0C004
Reactor control rods	• Control Rods • Nuclear • Reactor • CRDM • Control Rod Drive Mechanism • Neutron-Absorbing • Nuclear Reactor • Nuclear Power • Nuclear Facility	• 0A001.d.
Reprocessing of nuclear fuel	• Reprocessing • Pyroprocessing • Plutonium • Uranium • Spent fuel • Reactor waste • PUREX • UREX • UNEX • TRUEX • Tributyl phosphate • Tributylphosphate • TBP	• 0B006
Seals	• Seal • Bellows • Metal Gasket Seal • Rotary Shaft Seal	• 0B001.c.4 • 0B001.d.3 • 0B001.h.3.
Thermal Neutron Reactors	• Reactor • Nuclear • Uranium • Pressurised Water • PWR • Boiling Water • BWR • Gas Cooled • GCR	• 0A001

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Graphite Moderated • Pressurized Heavy Water • PHWR • Advanced Heavy Water • AHWR • Supercritical Water • SCWR • Liquid Fluoride Thorium • LFTR • Aqueous Homogeneous • AHR • Small Modular • SMR • Pool-Type	
Tritium	• Tritium • Production • Recovery • Extraction • Concentration • Retention • Tritium Processing • Hydrogen Isotope Exchange Re-action	• 1B231
Uranium & Thorium	• Uranium • Depleted Uranium • Thorium • Nuclear • Fission	• 0C001
Uranium Isotopes separation	• Isotope Separation • Atomic Vapour Laser • Plasma Separation • Aerodynamic Separation • Ion-Exchange Separation • Electromagnetic Separation • Gas Centrifuge • Chemical Exchange • Gaseous Diffusion • Uranium • Uf6	• 0B001.a.
Uranium plasma generation system	• Uranium Plasma • Generation	• 0B001.i.3.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Vacuum pumps	• Vacuum • Pump • Vacuum System • Manifolds • Headers • Uranium • Isotope Separation • UF6 • Gas Centrifuge	• 0B002.f.
Zirconium tubes	• Zirconium Tubes • Zirconium • Zircaloy • Uranium Dioxide • UO2	• 0A001.f.

Cat. 1 – SPECIAL MATERIALS AND RELATED EQUIPMENT

SPECIAL MATERIALS AND RELATED EQUIPMENT (excl. pathogens)

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Beryllium	• Beryllium • Reflector • Nuclear Reactor • Neutrons Scatter	• 1C230
Boron	• Boron-10 • Neutron Absorption • Nuclear Reactor • Water Reactor • Control Rods	• 1C011.b. • 1C225
Calcium	• Calcium • Uranium • Plutonium • High purity • Conversion	• 1C227
Catalysts for D2O or Tritium production	• Platinum Catalyst • Platinized Catalyst • Platinum-Catalyzed • Catalytic Membrane • Palladium Catalyst • Rhodium Catalyst • Palladium • Rhodium • Platinum • Heavy Water • D2O • Tritium Recovery • Tritium Separation • Tritium Production • Tritiated Water • Hydrogen Isotope Exchange	• 1A225
Ceramic materials 1C007	• Titanium Diboride • Tib2 • Powder • Aluminium Oxide • Al2O3 • Silicon Nitride	• 1C007

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Si-N • Silicon Carbon Nitrate • Si-C-N • Silicon Carbide • Silicon Alumina • Ceramic fibres • Ceramic fibers • Zirconium Carbide • Zirconium Nitride • Boron Carbide • Boron Nitride • Polysilazanes • Polycarbosilazanes • Nickel Aluminides • Titanium Aluminides • Polysilazanes • Organosilicon Compounds • Aerospace • Rocket Motor • Rocket Engine • Gas Turbines • Body Armour • Space Shuttle • Spacecraft • Launch Vehicle • Landing Gear • Carrier Rock	
Ceramic materials 1C107	• Ceramic • Ceramic composite • Silicon-carbide • Carbon fiber reinforced carbon • Carbon fibre reinforced carbon • Reinforced carbon-carbon • Ultra high temperature • UHTC • Rocket Nozzle • Reentry Vehicle • Re-Entry Vehicle • MARV • Heat Shield • Thermal Protection Systems • Missile • Space Launch Vehicle • Carrier Rocket • Spacecraft • Space Shuttle • Sounding Rocket	• 1C107

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Research Rocket	
Chlorine trifluoride	• Chlorine trifluoride	• 1C238
Composites production equipment	• Composites Production Equipment • Filament Winding Machine • Fiber Placement Machine • Tape-Laying Machine • Filament Winding • Tape-Laying • Axis • Axes	• 1B001.a. • 1B001.b. • 1B101 • 1B201
Electrolytic cells	• Fluorine Electrolytic • Cells	• 1B225
Electromagnetic isotope separator	• Electromagnetic Isotope Separator	• 1B226
Explosive detonators & charges	• Exploding Bridge • Exploding Foil • Slapper • Detonator • Initiator • Igniter • Linear Shaped Charge • Detonating Cord	• 1A007 • 1A008
Fibrous or filamentary materials	• Launch Vehicle • Spacecraft • Rocket • Aerospace • Gas centrifuges • P-Aramids • Para-Aramids • Kevlar • Twaron • Carbon Fiber • Carbon Fibre • Carbon Fibrous • Carbon Coated • Glass fiber • Glass fibre • Resin Impregnated • Pitch Based	• 1C010 • 1A003

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Epoxy Prepregs • Epoxy Resin • Polyepoxides • Polyimides • Bismaleimides • Aromatic Polyimides • Aromatic Polyetherimides • Fiber • Filament • Tensile strength • Filament winding machine • Filament bundles • Tows • Rovings • Yarns • Strands • Tape • Centrifuge • Nuclear • Rotor	
Fluorinated compounds	• Fluorinated Polyimides • Fluorinated Phosphazenes	• 1C009
Graphite 1C107	• Graphite • Rocket Nozzle • Reentry Vehicle • Re-Entry Vehicle • MARV • Heat Shield • Thermal Protection Systems • Missile • Space Launch Vehicle • Carrier Rocket • Spacecraft • Space Shuttle • Sounding Rocket • Research Rocket	• 1C107
Hafnium metal	• Hafnium • Metal	• 1C231
High explosive containment chamber	• High Explosive Containment • High Explosive Chamber	• 1B234

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Hydrogen isotope separation equipment	• Hydrogen Cryogenic Distillation • Girdler Sulfide • Exchange Tower • Exchange Process • Hydrogen • Deuterium • Tritium • Liquid Ammonia • Sulfide • Sulphide • Heavy Water • Gas • Liquid • Circulating Pump	• 1B228 • 1B231
Improvised explosive devices disruptors	• Explosive • Disruptor • Ordnance Disposal • Remotely operated vehicles • Vehicle-borne IED • Disruptors • Projectile • Liquid • Solid • Frangible • Water jet • Waterjet • EOD vehicle	• 1A006
Lithium isotope separation equipment	• Lithium-6 Enrichment • Li-6 Enrichment • Lithium-7 Enrichment • Li-7 Enrichment • Lithium Isotope Enrichment • Lithium Amalgam • Lithium Hydroxide • Lioh • Evaporator • Lithium • Light Water • Nuclear Weapon • Ion Exchange • Chemical Exchange • Lithium Isotope • Lithium Isotope Separation • Isotopic Separation Lithium • Li6	• 1B233 • 1B235

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Li7 • Lithium • Fusion Power • Fusion Reaction • Tritium • Tritium Processing System	
Lubricating materials	• Lubricating Materials • Lubricant • Damping • Phenylene • Thio-Ethers • Fluorinated Silicone • PCTFE • Polytrifluorochloroethylene • Dibromotetrafluoroethane • Halon 2402 • Polybromotrifluoroethylene • Perfluoropolyalkylether-triazines • Perfluoroaliphatic-ethers • Perfluoroalkylamines • Perfluorocycloalkanes • Perfluoroalkanes	• 1C006
Magnetic metals	• Magnetostrictive Alloy • Nanocrystalline Alloy • Iron • Cobalt • Nickel	• 1C003
Metal alloys	• Titanium-stabilized duplex stainless steel • Ti-DSS • Nickel alloy • Nickel aluminides • Titanium aluminides • Titanium alloys • Maraging steel • Niobium alloys • Inconel • Monel • Zircaloy • Tungsten • Molybdenum • Superalloy • Resistant corrosion	• 1C002

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Chemical resistance • Strain strength • Tensile strength • Production • Equipment • Missile • Rocket • Aerospace • Aluminum alloy • Series • 7000 • 8000 • 7039 • 7150 • 8019	
Metal powder production equipment	• Propellant • Metal powder • Metallic particles • Metallic powders • Spherical particles • Electroburst • Plasma generator • Pyrometallurgical • Electrolytic refining • Chemical refining • Atomisation furnace • Splat quenching • Rotary atomization • Electrolytic bath • Melt spinning	• 1B102
Mixer and mills	• Mixer • Under vacuum • Batch • Continuous • Fluid energy mills • Material	• 1B117 • 1B118 • 1B119
Other technology	• Polybenzothiazoles • Polybenzoxazoles • Development • Production • Fluoroelastomer • Vinylether monomer • Ceramic powder • Oxides of zirconium	• 1E002

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Zirconium oxide • Complex oxides of silicon • Complex silicon oxide • Complex oxides of aluminium • Complex aluminium oxide • Single nitrides of boron • Single boron nitride • Single • Complex • Carbides of silicon • Silicon carbide • Nitrites of silicon • Silicon nitrite	
Polymeric substances (thermoplastic)	• Bismaleimides • Aromatic Polyimides • Aromatic Polyamide-Imides • PAI • Aromatic Polyetherimides • Thermoplastic Polymers • Chemical Resistance • Resistant Corrosion • High Temperature	• 1C008
Propellants	• Spherical Aluminium Powder • Spherical Aluminum Powder • Aluminium Powder • Spheroidal Aluminum Powder • Zirconium Powder • Beryllium Powder • Magnesium Powder • Boron Powder • Guanidine Nitrate • Nitroguanidine • Carboranes • Dinitrogen Trioxide • Nitrogen Dioxide • Dinitrogen Pentoxide • Mixed Oxides Nitrogen • Carboxy-Terminated Polybutadi-ene • Carboxyl-Terminated Polybuta-diene • Polybutadiene-Acrylic Acid • Polyglycidyl Nitrate • 2-Nitrodiphenylamine • Trimethylolethane Trinitrate • Diethylene Glycol Dinitrate	• 1C111 • 1C011 • 1C230

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Butadienes • Ferrocenes • Slurries • Hydrazine • Hydroxy-Terminated Polybutadi-ene • Hydroxyl-Terminated Polybuta-diene • Triethylene Glycol Dinitrate • Propellant • Propulsion • Solid Fuel • Liquid Fuel • Rocket • Gel Propellant	
Protective & detection equipment	• Detection • Monitor • Sensor • Biological Agents • Chemical Warfare Agent • Radioactive Material • NBC • CBRN • Biosensor • Biological Agent • Mass Spectrometer • Chemical • Biological • Agent • Warfare Agent • Radiation • Radioactive • Detection Equipment • Detection Instrument • Personal Radiation Detectors • Gaseous Diffusion • Radiation • Uranium • Body Contamination Monitor • Body Contamination Measure • Chemical Agents • Biological Agents • Biological Warfare • Chemical Warfare • Tritium • Riot Control Agents • Protective Mask	• 1A004

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Filter Canister • Full-Face Mask • Gas Mask • Glovebox • Body Armour • Protective Suits • Protective Vest • Protective Gloves • Protective Shoes • Protective Clothes	
Pumps	• Pump • Potassium amide • KNH2 • Liquid ammonia • NH3	• 1B230
Radiation shielding windows	• Lead Glass • Radiation • Shield • Radiation Protection Window • Radiation Protection Shield • Radiation Shielding Glass	• 1A227
Radionuclides	• Actinium-225 • Actinium-227 • Polonium-210 • Radium-223 • Californium-253 • Curium-240 • Curium-241 • Curium-242 • Curium-243 • Curium-244 • Einsteinium-253 • Einsteinium-254 • Gadolinium-148 • Plutonium-236 • Plutonium-238 • Polonium-208 • Polonium-209 • Thorium-227 • Thorium-228 • Uranium-230 • Uranium-232	• 1C236

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Radium 226	• Radium-226 • Radium 226 • Nuclear	• 1C237
Resaturated pyrolised carbon-carbon comp	• Carbon-carbon • Pyrolitic • Space	• 1A102
Rhenium	• Rhenium • Cylinder	• 1C241
Stealth materials	• Reflective • Absorbing • Coating • Electromagnetic Waves • Frequency • Radiation • Infrared • Surface electrical properties • Microwaves • Polypyrrole • Polyaniline • Polythiophene • Poly Phenylene-Vinylene • Poly Thienylene-Vinylene • Carbonyl Iron • Carbon Black • Radiation-Absorbent Material • Radar Absorbing Materials • Split-Ring Resonators • Absorb • Reflect • Electromagnetic Waves • Frequency • Radiation	• 1C001 • 1C101
Steels	• Maraging steel • Missile • Rocket • Aerial • Solution annealed • Nickel • Titanium-stabilised duplex stainless steel	• 1C116 • 1C118

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Ti-DSS • Chromium	
Superconductive composite conductors	• Superconductive • Composite • Conductor • Niobium-Titanium • Filaments • Wire • Tape • Cylinder • Film • Ribbon	• 1C005
Toxic chemicals & chemical precursors	• Chemical Weapon • Warfare Agents • Blood Agents • Chocking Agents • Blistering Agents • Vesicant Agents • Nerve Agents • Incapacitating Agents • Novichok • Intermediate of synthesis • Reaction vessel • Structural elucidation • Solvent • Distillation • Organophosphorus • Gas chromatography • Liquid chromatography • Microreactor • Mass spectrometry • Reagents • Solid-phase synthesis	• 1C350
Tritium system	• Tritium • Heavy Water • Deuterium • Extraction • Recovery • Production • Concentration • Hydrogen Isotope • Purification System • Hydrogen • Cryogenic Distillation	• 1B231 • 1C235

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Water Detritiation • Catalytic Exchange Column • Palladium • Diffusers • Permeators • Tritium Breeding	
Turboexpanders	• Turboexpander • Turbo-expander • Hydrogen	• 1B232

PATHOGENS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
African horse sickness virus	• African Horse • Virus • African horse • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
African swine fever virus	• African Swine • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• RNA • Ribonucleic acid • Isolation	
Andes virus	• Andes • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Avian influenza virus	• Avian Influenza • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Bacillus anthracis	• Bacillus Anthracis • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• RNA • Ribonucleic acid • Isolation	
B. Brucella abortus	• Brucella Abortus • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Brucella melitensis	• Brucella Melitensis • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Brucella suis	• Brucella Suis • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
B. Burkholderia pseudomallei	• Burkholderia Pseudomallei • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Chlamydia psittaci	• Chlamydia Psittaci • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Clostridium argentinense	• Clostridium Argentinense • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
	• Clostridium Botulinum • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Clostridium baratii	• Clostridium Baratii • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Clostridium butyricum	• Clostridium Butyricum • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
B. Clostridium perfringens	• Clostridium Perfringens • Clostridium welchii • Bacillus welchii • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Coxiella burnetii	• Coxiella Burnetii • Rickettsia burnetii • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
B. Francisella tularensis	• Francisella Tularensis • Pasteurella tularensis • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Mycoplasma capricolum	• Mycoplasma Capricolum • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Mycoplasma mycoides	• Mycoplasma Mycoides • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Isolation	
B. Rickettsia prowazekii	• Rickettsia Prowazekii • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Salmonella enterica Typhi	• Salmonella Enterica • Typhi • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Shiga toxin	• Shiga Toxin Producing • Escherichia Coli • E coli • STEC • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
B. Shigella dysenteriae	• Shigella Dysenteriae • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Vibrio cholerae	• Vibrio Cholerae • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
B. Yersinia pestis	• Yersinia Pestis • Y pestis • Pasteurella pestis • Bacterium • Bacteria • Synthetic biology	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
B.Burkholderia mallei Pseudomonas mallei	• Burkholderia Mallei • Pseudomonas Mallei • Malleomyces mallei • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Bluetongue virus	• Bluetongue • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Chapare virus	• Chapare • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Chikungunya virus	• Chikungunya • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Choclo virus	• Choclo • Virus • Orthohantavirus • Hantavirus Cardiopulmonary Syndrome • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Classical swine fever virus	• Hog Cholera • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Congo-Crimean haemorrhagic fever virus	• Crimean-Congo • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Dobrava-Belgrade virus	• Dobrava-Belgrade • Dobrava • Dobrava-Belgrade orthohanta-virus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Eastern equine encephalitis virus	• Eastern Equine Encephalitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Ebola virus	• Ebola • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
F. Coccidioides immitis	• Coccidioides Immitis • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
F. Coccidioides posadasii	• Coccidioides Posadasii • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Foot-and-mouth disease virus	• Foot-And-Mouth Disease • Hoof-and-mouth disease • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Goatpox virus	• Goatpox • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Guanarito virus	• Guanarito • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Hantaan virus	• Hantaan • Korean Hemorrhagic Fever • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Hendra virus	• Hendra • Equine Morbillivirus • Hendra henipavirus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Ribonucleic acid • Isolation	
Japanese encephalitis virus	• Japanese Encephalitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Junin virus	• Junin • Argentine Hemorrhagic Fever • Argentinian mammarenavirus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Kyasanur Forest disease virus	• Kyasanur Forest • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• RNA • Ribonucleic acid • Isolation	
Laguna Negra virus	• Laguna Negra • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Lassa fever virus	• Lassa Fever • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Louping ill virus	• Louping Ill • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Ribonucleic acid • Isolation	
Lujo virus	• Lujo • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Lumpy skin disease virus	• Lumpy Skin Disease • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Lymphocytic choriomeningitis virus;	• Lymphocytic Choriomeningitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Isolation	
Lyssavirus genus	• Lyssavirus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Machupo virus	• Machupo • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Marburg virus	• Marburg • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Monkeypox virus;	• Monkeypox • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Murray Valley encephalitis virus	• Murray Valley • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Newcastle disease virus	• Newcastle Disease • VND • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Nipah virus	• Nipah • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Omsk hemorrhagic fever virus	• Omsk • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Oropouche virus	• Oropouche • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
P. Andean potato latent virus	• Andean Potato • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Clavibacter michiganensis sepedonicus	• Clavibacter Michiganensis • Corynebacterium sepedonicum • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Cochliobolus miyabeanus	• Helminthosporium Oryzae • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA	• 1C354

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Ribonucleic acid • Isolation •	
P. Colletotrichum kahawae	• Colletotrichum Kahawae • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Magnaporthe oryzae	• Magnaporthe Oryzae • Pyricularia oryzae • Rice Blast • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Microcyclus ulei	• Microcyclus Ulei • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics	• 1C354

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
P. Peronosclerospora philippinensis	• Peronosclerospora Philippinensis • Philippine Downy Mildew • Peronosclerospora Sacchari • Diseases • P. Philippinensis	• 1C354
P. Potato spindle tuber viroid	• Potato Spindle Tuber • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Puccinia graminis	• Puccinia Graminis • Fungus • Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Puccinia striiformis	• Puccinia Striiformis • Fungus	• 1C354

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Fungi • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
P. Ralstonia solanacearum	• Ralstonia Solanacearum • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Sclerophthora rayssiae var. zeae	• Sclerophthora rayssiae • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Synchytrium endobioticium	• Synchytrium Endobioticium • Potato Wart Disease	• 1C354

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Black Scab • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
P. Thecaphora solani	• Thecaphora Solani • Potato Smut	• 1C354
P. Tilletia indica	• Tilletia Indica • Karnal Bunt • Neovossia indica • Fungi • Fungus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Xanthomonas albilineans	• Xanthomonas Albilineans • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication	• 1C354

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Sequencing • RNA • Ribonucleic acid • Isolation	
P. Xanthomonas axonopodis	• Xanthomonas Axonopodis • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
P. Xanthomonas oryzae pv. oryzae	• Xanthomonas Oryzae Pv. Oryzae • Xanthomonas oryzae pathovar oryzae • Pseudomonascampestris pv.oryzae • Pseudomonascampestris pathovar oryzae • Bacterium • Bacteria • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C354
Peste-des-petits-ruminants virus	• Peste-Des-Petits-Ruminants • Virus • Synthetic biology • GMO • Genetically Modified Organisms	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Porcine Teschovirus	• Porcine Teschovirus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Powassan virus	• Powassan • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Reconstructed 1918 influenza virus	• 1918 Influenza • Spanish flu • Virus • Synthetic biology • GMO • Genetically Modified Organisms	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Rift Valley fever virus	• Rift Valle • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Rinderpest virus	• Rinderpest • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Rocio virus	• Rocio • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Sabia virus	• Sabia • Virus • Brazilian mammarenavirus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Seoul virus	• Seoul Virus • Hantavirus Hemorrhagic Fever • Seoul orthohantavirus • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
SARS-CoV-1	• SARS-CoV-1 • Synthetic biology • GMO • Genetically Modified Organisms	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Sheeppox virus	• Sheeppox • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Sin Nombre virus	• Sin Nombre • Muerto Canyon • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
St. Louis encephalitis virus	• St. Louis Encephalitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Suid herpesvirus 1 (Pseudorabies virus)	• Pseudorabies • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Swine vesicular disease virus	• Swine Vesicular Disease • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T-2 toxin	• T-2 Toxin • T-2 mycotoxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Abrin	• Abrin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Aflatoxins	• Aflatoxins • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Botulinum toxins	• Botulinum • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Cholera toxin	• Cholera • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Clostridium perfringens	• Clostridium Perfringens • Clostridium welchii • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Conotoxins	• Conotoxin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Diacetoxyscirpenol	• Diacetoxyscirpenol • Anguidine • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. HT-2 toxin	• HT-2 • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Microcystins (Cyanginosins)	• Microcystins • Cyanginosins • Toxic • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Modeccin	• Modeccin • Modecca digitata • Adenia digitata • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Ricin	• Ricin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Saxitoxin	• Saxitoxin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Shiga toxins(shiga-like toxins)	• Shiga-Like Toxin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Staphylococcus aureus	• Staphylococcus aureus • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. Tetrodotoxin	• Tetrodotoxin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
T. Viscumin	• Viscumin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
T. volkensin	• Volkensin • Toxin • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Tick-borne encephalitis virus	• Tick-Borne Encephalitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Variola virus	• Variola • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Venezuelan equine encephalitis virus	• Venezuelan Equine Encephalitis • Equine encephalomyelitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Vesicular stomatitis virus	• Vesicular Stomatitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome	• 1C351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	
Western equine encephalitis virus	• Western Equine Encephalitis • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351
Yellow fever virus	• Yellow Fever • Virus • Synthetic biology • GMO • Genetically Modified Organisms • PCR • Polymerase Chain Reaction • Genome • Genetics • Replication • Sequencing • RNA • Ribonucleic acid • Isolation	• 1C351

Cat. 2 – MATERIAL PROCESSING

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Aerosol inhalation equipment	• Aerosol Inhalation System • Inhalation Exposure Chamber • Aerosol Inhalation • Aerosol challenge test • Inhalation • Nose-Only Exposure • Rodents • Rats • Mouses	• 2B352.g.
Automatic filling equipment	• Automatic Filling Machine • Corrosive Filler • Corrosive Resistant • Toxic chemical • Machine • Filler	• 2B350.f.
Balancing machine	• Balancing Machine • Rotor • Centrifugal	• 2B119
Bearing systems	• Bearing • Anti-Friction • Monel • Beryllium • Active magnetic bearings • Position sensor • Self-Sensing Active Magnetic Bearing	• 2A001
Bellows-sealed scroll compressors/v.pump	• Scroll Compressors • Scroll Vacuum Pump • Spiral Vanes • Bellows-Sealed • Gas Centrifuge • Uranium • Tritium • Hermetic Seal	• 2B233
Biocontainment facilities/equipment	• Biosafety cabinet • Isolator • Glovebox • Biocontainment chamber • Autoclave	• 2B352.a • 2B352.f.2

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Facility • Chamber • HEPA • BL3 • BL4 • Class III • Class IV • BSL-3 • BSL-4 •	
Bioreactor	• Bioreactor • Fermenter • Disposable fermenter • Cultivation chamber • Disposable bioreactor • Single-use bioreactor • Holding device • HEPA • ULPA • Human pathogens • Vaccines •	• 2B352.b.
Centrifugal separators	• Centrifugal Separator • Centrifuge • Decanter • HEPA • ULPA • Human pathogens • Vaccines	• 2B352.c.
Chemical manufacturing equipment	• Reaction Vessel • Reaction Reactor • Chemical Reactor • Agitator • Impellers • Storage Tanks • Receiver • Heat Exchanger • Condenser • Absorption Columns • Distillation Columns • Distillation Tower • Fractionating Column • Liquid Distributor • Filling Machines • Valves • Walled Pipe • Pump	• 2B350

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Made Of • Coated With • Lined With • Nickel • Fluoropolymers • Tantalum • Nobium • Zirconium • Titanium • Glass • Silicon carbide • Monel • Inconel • Hastelloy • Zirconium • Graphite • Corrosion resistant	
Controlled atmosphere induction furnace	• Furnace • Vacuum • Inert Gas • Arc Remelt • Electron Beam • Computer Control • Monitoring System • Plasma Torches • Nuclear • Uranium • Plutonium • Metal Fuel • Actinide • Yellow cake • Uranium ores •	• 2B226
Crucible	• Crucible • Uranium • Plutonium • Coated With • Made Of • Lined With • Calcium Fluoride • Calcium Zirconate • Cerium Sulphide • Erbium Oxide • Erbia • Hafnium Oxide • Hafnia • Magnesium Oxide	• 2A225

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Magnesia • Yttrium Oxide • Yttria • Zirconium Oxide • Zirconia • Tantalum	
Dimensional inspection&measuring systems	• Coordinate Measuring Machine • Fizeau Interferometer • Displacement Sensor • Three-Dimensional • Linear Displacement • Angular Displacement • Measuring • Linear Variable Differential Transformers • Lvdts	• 2B006
Flow filtration equipment and components	• Cross-Flow Filtration • Tangential Flow Filtration • Bioreactor • Microorganisms • Virus • Toxins • Cells Culture • Vaccine • Cartridge Filter • Membrane Filter • Filtration Membrane	• 2B352.d.
Gas detectors	Toxic Gas Detector Monitoring System Detection System Sensor Cholinesterase Achei Neurotransmitter Gas Detect* Cholinesterase	• 2B351

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	Inhibit* Chemical Warfare Agents	
Heat exchangers	• Heat Exchanger • Condenser • Made Of • Coated With • Lined With • Nickel • Fluoropolymers • Glass • Graphite • Carbon Graphite • Tantalum • Titanium • Nobium Zirconium • Silicon Carbide	• 2B350.d.
High velocity gun systems	• Gas Guns • Propellant Guns • Coil guns • Electromagnentic guns • Electrothermal guns • High Velocity Guns • Hydrodynamic • Equation Of State • Spall Strength • Sound Speed • Strain-Rate • Nuclear • High-Stress • High-Temperature • Shock-Pressure	• 2B232
Incinerators for chemicals	• Incinerator • Incineration • Thermal treatment • Toxic chemicals • Chemical weapons • Warfare agents • Hazardous chemicals • Pesticides • Nerve agents •	• 2B350.j.
Isostatic press (applications)	• Isostatic Press • Hydraulic Powder Press	• 2B004 • 2B104

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Powder Compacting System • Mox Fuel • Alloy Powder • High-Tech • Turbine Blade	• 2B204
Isostatic press (general)	• Isostatic Press • Hydraulic Powder Press • Powder Compacting System • Nuclear • Explosive • Pbx • Mox Fuel • Uo2 • Fuel Pellets • Turbine Blade	• 2B004 • 2B104 • 2B204
Machine tools	• Machine Tool • Grinding • Cutting • Milling • Turning • Computer Numerical Control • CNC • Subtractive manufacturing	• 2B001 • 2B002 • 2B003 • 2B201
Motion simulators, rate&position tables	• Motion Simulator • Rate Table • Positioning Table •	• 2B120
Positioning control units	• Linear Position • Rotary Position • Contouring Control • Tilting Spindle • Rotary Tables • Machine Tool	• 2B121
Pressure transducers	• Pressure Sensor • Pressure Transducer • Pressure Transmitter • Pressure Sender • Pressure Indicator • Piezometer • Manometer • Pressure Gauge	• 2B230

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Vacuum Gauge • Absolute Pressure • Uranium • Gas Centrifuge • Isotope Separation • Gaseous Diffusion	
Remote manipulator	• Remote Manipulator • Mechanic Arm • Remote Arm • Hot Cells • Radioactive • Radiochemical • Plutonium • Reprocessing • Nuclear Plant	• 2B225
Robots, controllers, end-effectors	• Robot • End-Effector • End Effector • Resistant To Radiation • Radiation hardened • Extreme Conditions • Explosive • Nuclear • Plutonium	• 2B007 • 2B207
Rotors fabrication/assembly equipment	• Rotor • Bellows • Baffles • End Caps • Gas Centrifuge • Single-Convolution Bellows • Uranium	• 2B228
Spin-forming & flow-forming machines	• Flow-Forming • Flow Forming • Spin-Forming • Spin Forming • Metal Spinning • CNC • Computer numerical control	• 2B009
Storage tanks	• Storage Tanks • Receiver • Made Of	• 2B350.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Coated With • Lined With • Nickel • Fluoropolymers • Glass • Tantalum • Titanium • Nobium • Zirconium	
Surface treatment equipment	• Chemical vapour deposition • CVD • CNTD • Ion implantation • Electron beam physical vapour deposition • PVD • EB-PVD • TE-PVD • Ion plating • Plasma spraying • Sputter deposition • Cathodic arc deposition • Aluminides • Salicides • Carbides • Diamond • Boron nitride • Tungsten carbide • Molybdenum • Beryllium • MCrAlX • Superalloys • Modified zirconia • Titanium boride • Titanium nitride • Nickel-graphite • Ni-Cr-Al • Cemented tungsten carbide • Coating	• 2B005
Vacuum pump	• Vacuum Pump • Vacuum • Pump • Uranium • Enrichment • Uf6	• 2B231

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Gas Centrifuge • Separation Plant • Isotope Separation • Turbopump • Turbomolecular Pump	
Valves	• Valves • Made Of • Coated With • Lined With • Nickel • Fluoropolymers • Glass • Tantalum • Titanium • Nobium • Zirconium	• 2A226
Vibration testing system	• Vibration Test • Vibration Control • Vibration testing • Digital Controller • Vibration Thruster • Shaker Unit	• 2B116

CAT. 3 – ELECTRONICS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Absolute rotary encoder	• Absolute Rotary Encoder • Rotary Position Encoders • Absolute Encoder • Angle Encoders • Rings • Discs • Scales • Rotary Encoder • Position Encoders	• 3A001.f.
Acoustic wave devices	• Surface Acoustic Wave • Saw Resonators • Bulk Acoustic Wave • Baw Resonators • Surface Acoustic Wave Filter • Saw Filter • Bulk Acoustic Wave Filter • Baw Filter • Surface Acoustic Wave • Saw Oscillators • Bulk Acoustic Wave Oscillators • Baw Oscillators • Surface Acoustic Wave Delay Lines • Saw Delay Lines • Bulk Acoustic Wave Delay Lines • BAW Delay Lines • Surface Acoustic Wave Device • Saw Devices • Bulk Acoustic Wave Device • Baw Devices • Acoustic Optic Signal Processing Devices • Military • Telecommunications • Radar • Space	• 3A001.c.
Amplifiers (microwave)	• Solid State Amplifier • SSPA • Microwave • Millimetre wave • Travelling Wave Tube Amplifier • TWTA • Microwave	• 3A001.b.2 • 3A001.b.4.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Cross Field Amplifier • Monolithic Microwave Integrated Circuits • Amplifier • Mmic Amplifier • Microwave Amplifier • Millimetre Wave Amplifier • Satellite • Communication • Hopping • Frequency • Wideband • Radar • Jammer • Jamming	
Digitizer	• Analogue-To-Digital • Digital-to-analogue • ADC • DAC • Conversion • Converter • Digitization • Equipment • Modules • Data Processing • Data Storage • Data Transmission • High GSPS • High Giga Sample per Second • High bits	• 3A001.a.5.
Fabrication Processes IC Design	• IC • Integrated circuit • ASIC • SoC • System on a chip • Multi-chip module • MCM • Hardware Descriptive Language • VHDL • Very high speed • Design automation • Logic synthesis •	• 3E001 • 3E002
Frequency changer/ generator	• Frequency Changer • Frequency Generator • Frequency Converters • Frequency Inverters	• 3A225

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Variable Frequency Drives • ASDs • Adjustable Frequency Drive • Variable Speed Drives • Gas Centrifuge • Uranium • High-Frequency AC Power • Three-Phase Asynchronous Motors • Three-Phase AC • High-Speed AC Motor	
Frequency signal processing	• Band-Stop Filter • Band-Rejection Filter • Band-Pass Filter • Tunable • Emi Receivers • Spectrum Analyzer • Optical Spectrometer • Radio • Frequency Switching Time • Frequency Switching Speed • Frequency Synthesizer • Transmit/Receive Module • Duplex Transceiver • Transmit/Receive • MMIC	• 3A001.b.5. • 3A001.b.7. • 3A001.b.11 • 3A001.b.12
High energy devices	• High Energy • Primary Cell • Secondary Cell • High Energy Capacitors • Superconductive Electromagnets • Superconductive Solenoids	• 3A001.e.
High-Power Direct Current Power Supplies	• High-Power • High-Voltage • Direct Current Power Supply • Dc Power Supply • Led Power Supply	• 3A226 • 3A227
Integrated circuits	• Microprocessor Microcircuits • Microcomputer Microcircuits • Microcontroller Microcircuits • Integrated Circuits	• 3A001

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Analogue-To-Digital Converter • Digital-To-Analogue Converter • Semiconductor • Signal Processing • Programmable Logic Device • Flash Memories • Static Random-Access Memories • Srams • Magnetic Random Access Memories • Mrams • FFT Processor • Fast Fourier Transform Processor • Electrical Erasable Programmable Read-Only Memories • EEPROM • Temperature • Radiation • Field Programmable Logic Device • Fast Fourier Transform Processor • Optical Integrated Circuit • Signal Processing • Electro-Optical • Optical Integrated Circuit • Signal Processing • Laser Diode • Optical Waveguide	
Mass spectrometers	• Mass Spectrometers • Microfluorination ion • Uranium • Plutonium • Actinides • Reprocessing • Inductively Coupled Plasma • Glow Discharge • Electron Bombardment • Thermal Ionization	• 3A233
Memory cards	• Flash Memories • Static Random-Access Memories • SRAMs • Magnetic Random Access Memories • MRAMs	• 3A001.a.2.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Electrical Erasable Programmable Read-Only Memories • EEPROM • NAND Flash • Satellite • Infrared • Extreme conditions • Extreme climate • Extreme temperature • Harsh environment • Low temperature • High temperature •	
Neutron generator	• Neutron Generator • Fission • Radioactive • Nuclear Reactor • Deuterium • Tritium • Electrostatic Acceleration • Titanium • Scandium	• 3A231
Semiconductors	• Semiconductors • Coating • Etching • Doping • Photolithography • Metallizing • Silicon • Transistors • Cluster tools • Lithography masks • Integrated circuits • Microprocessors • Memory modules • Logic circuits • Diodes • CCD chips • Cameras • Opto-electronic sensors • Laser diodes • Light emitting diodes • High frequency transistors • Micromechanics • MEMS • Weapon • Combat systems	• 3A001 • 3B001 • 3B002 • 3C005

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Optical reconnaissance • Reconnaissance • Infrared • Multispectral • Visible wavelength range • Ultraviolet • Encryption • Electronic warfare • ECCM • Avionics cockpit displays • Search and Rescue • Tracing • Disaster control • Switching frequency • Temperature resistance • Gallium • Arsenic • Gallium arsenide	
Semiconductors Fabrication processes	• Semiconductor • Silicon • Fabrication • Photolithography • Physical vapour deposition • PVD • Chemical vapour deposition • CDV • Electrochemical deposition • ECD • Molecular beam epitaxy • MBE • Atomic layer deposition • ALD • Wafer fab • Through silicon via • TSV • Chip scale packaging • Wafer scale integration • WSI	• 3E001 • 3E003
Semiconductor Production Technology	• Semiconductor • Integrated Circuit • IC • Microeletronics • Microsystems • MEMS • Integrated device	• 3E001 • 3E003

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Multi Chip Module • MCM • 3D-IC • ASIC • System-on-chip • SoC • Production • Fabrication	
Superconductivity & electronic devices	• Superconductive Material • Circuit • Electronic • Digital • Frequency • Low Temperature • Critical Temperature	• 3A001.d.
Switching devices Thyristor	• Thyristor • Pulsed Power • Switch • Thyristor Modules • Switch • Triggering Thyristors • Integrated Gate Commutated Thyristors • Gate Turn-Off Thyristors • MOS Controlled Thyristors • SolidTRON • Semiconductor Switches • Semiconductor Diodes • Semiconductor Modules • Operating Temperature • Junction Temperature • Operation Temperature • Operating Temperature • Junction Temperature • Operation Temperature • Bipolar Junction Transistors • Field Effect Transistors • Pin Diodes • Schottky Diodes • Silicon Controlled Rectifier • Controlled Rectifier • Gate Turn-Off Thyristors • Switch • Emitter Turn-Off Thyristors	• 3A001.g. • 3A001.h.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Switching devices NSG	• Switching Device • Cold-Cathode Tubes • Sprytrons • Fast-Switching Modules • Triggered Spark Gaps • Thyratrons • Explosive • Detonation • Pulsed Power • Pulse Generator • Implosion • Exploding • Capacitor Discharge Units • Pulse Generator	• 3A228
Vacuum electronic devices	• Amplif* • Oscillator • Thermionic • Traveling-Wave Tube • Klystrons • Klystro • Vacuum Electronic Devices • Vacuum Tube • Pulsed And Continuous Wave • Continuous Wave And Pulsed • Amplitron • Diode Vacuum	• 3A001.b.1.

CAT. 4 - COMPUTERS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Digital computers-enhanced performance	• TeraFLOPS • TeraFLOP • TFLOPS • DPFLOPS • Digital computer • Vector processors • Array processors • Digital signal processor • Logic processor • Image enhance • Supercomputer • Numerical wind tunnel • Battlefield visualisation • OLAP • Massively parallel processing • Hypersonic aerodynamics • Cryptanalysis • Air and Missile Defence	• 4A003
Intrusion software control	• Intrusion Software • Cyber Security Technologies • Cyber Weapons • Control • Command • Delivery • Generation • Production	• 4A005
Neuronal-Optical-Systolic array computer	• Neural Computer • Neuters • Optical Computers • Systolic Array Computers	• 4A004
Ruggedized Computer	• Computer • Radiation hardened • Rad-hard • Rad hard • Specially designed • Extreme temperature • Extreme conditions • Rugged • Ruggedized • Satellite borne • Heat resistant	• 4A001 • 4D001

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Software	
Space lunch & Computer	• Space Launch Vehicle • Carrier Rocket • Spacecraft Bus • Spacecraft Payload • Spacecraft System • Model* • Simulat* • Design Integrat* • Computer • Digital Differential Analyser	• 4A101 • 4A102

CAT. 5 - TELECOMMUNICATIONS & INFORMATION SECURITY

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Counter Improvised Explosive Device eq	• Improvised Explosive Device • IED • Explosive • Radio controlled improvised device • RCIED • Electronic counter measure • ECM • Counter • Radio • Frequency • Communication • Detonation • Equipment	• 5A001.h.
Cryptography	• Cryptography • Spread spectrum • Frequency-hopping • User programmable spreading codes • Cryptanalysis • Code breaking • Information security • Data • Storage • Data confidentiality • Crypto variables • Information security • Quantum • Quantum key distribution • QKD	• 5A001.b.3. • 5A002 • 5A004
Interception & jamming equipment	• Interception • Telecommunication • IP • Internet Protocol Network • Surveillance Systems • Intrusion Software • Extraction • Voice • Data • Signalling • Identifier • Jamming devices • Jamming equipment	• 5A001.f.1 • 5A001.f.2 • 5A001.f.3

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Device • Equipment • Interference • Wave • Frequency • Signal • Reception • Transmission	
IP network communication surveillance	• IP Network • Internet Protocol network • Communication • Surveillance • Analysis • Application Layer • Layer 7 • Layer 8 • Layer 9 • Layer 10 • 7 layer • 8 layer • 9 layer • 10 layer • Carrier-class • Extraction • Metadata • Voice • Video • Messages • Attachments • Track • Map • People • Individual • Group	• 5A001.j.
Optical fibers (high performance)	• Optical fiber • Optical fibre • Fiber-optic • Tensile stress • Fluorinated cladding • Fluorozirconate • Fluoroaluminate Chalcogenide • Spacecraft • Aerospace • Military	• 5A001.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Phased array antennae (satellites)	• Phased Array Antenna • Phased Array Antennae • Phased-Array Antenna • Satellite	• 5A001.d.
Ruggedized equipment	• Telecommunication • Equipment • Devices • Component • Circuit • Instrumentation • Radiation hardened • Thermal resistance • Thermal resistant • Thermal insulation • Extreme temperature • Ruggedized • Rugged • Harsh environment •	• 5A001
Radio equiment Ultra-wideband	• Channelising Code • Scrambling Code • Network Identification Code • Ultra-Wideband Modulation	• 5A001.b.4.
Long-range radio equipment	• Radio • Linear amplifier • Linear PA • Modulation • Signal • Automatic selection • Frequencies • Channel • Ultra-wideband modulation • Instantaneous bandwidth • Ultra wideband • UWB • Impulse radio ultra-wideband • IR-UWB • Military VHF • Military UHF • Airborne • Combat radio • Tactical radio • Digitally controlled radio receiv-ers • Digital radio receiver	• 5A001.b.2.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Signal processing • Voice coding • Transmission • Transfer • Data transfer rates • Automatic selection	
Satellite telecommunication equipment-5E	• On Board • Satellite • Communication • Trasmit	• 5E002
Spread spectrum & Frequency-hopping tech	• Radio • Spread Spectrum • Frequency-Hopping • Military VHF • Military JTIDS • Military EJS • ATCRBS • Air traffic control radar beacon system • FHSS • Frequency-hopping spread spectrum • DSSS • Direct-sequence spread spectrum • Military MIDS • DME/TACAN • Distance Measuring Equipment • Tactical Air Navigation	• 5A001.b.3.
Superconductive materials devices - 5E	• Superconductive • Electronic • Devices • Circuits • Telecommunication • Communication	• 5E002
Telecom & Info security software	• Software • Specially Designed • Communication • Equipment • Devices • Hardened • Radiation	• 5D002

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Undersea • Underwater • Communication • Untethered • Radio • Digital Transfer Rates • Automatic Selection • Frequencies • Channel • Linear Amplifier • Simultaneous • Signal • Spread Spectrum Frequency • Frequency-Hopping Spread Spectrum • Ultra-Wideband Modulation • Digitally Controlled Radio Re-ceivers • Digital Signal Processing • Voice Coding • Optical Fibres • Tensile • Electronically Steerable • Phased Array Antenna • Telecommunication • Transmission • Switching Equipment • Laser • Quadrature-Amplitude-Modula-tion • QAM • Telecontrol • Telemetry • Missiles • Rocket • Jamming Devices • Jamming Equipment • Interference • Wave • Frequency • Signal • Reception • Transmission • Interception • IP • Internet Protocol Network • Surveillance Systems • Intrusion Software •	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Telecom/switching equipment-Laser or QAM	• Telecommunication • Transmission • Telecommunication • Switching • Laser • Quadrature-Amplitude-Modula-tion • QAM	• 5B001.b.
Telecontrol equipm for missiles	• Telecontrol • Telemetry • Equipment • Device • Missiles • Rocket • Unmanned aerial vehicle • UAV • Command • Control	• 5A101
Tracking moving objects detection system	• Passive Coherent Location • PCL • Radar • Detect • Track • Moving Object • System • Equipment • Device	• 5A001.g.
Underwater untethered telecom equipm	• Undersea • Underwater • Deep-Water • Sub-Sea • Communication • Component • Untethered • Acoustic • Electromagnetic • Electronic Beam • Laser • Leds • Light-Emitting Diodes	• 5A001.b.1.

CAT. 6 - SENSORS AND LASERS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Cameras and components NSG	• High-Speed Cameras • Radiation hardened camera • High-Speed Imaging • Streak Cameras • Framing Cameras • Solid-State Cameras • Intensified Charge Coupled Device • ICCD • Explosive • Nuclear • Cameras • Plug-Ins	• 6A203
Cryocoolers & optical sensing fibres	• Cryocoolers • Space qualified • Mean-Time-To-Failure • MTTF • Mean-Time-Between-Failure • MTBF • Joule-Thompson • Optical Fibres • Optical sensing fibres • Acoustically • Thermally • Inertially • Electromagnetically • Nuclear Radiation • Ionizing Radiation • Sensitive • Sensing	• 6A002.d.
Direct view imaging equip	• Direct View • Image Intensifier • Focal Plane Array • Solid State Detectors • Focal Plane Array • Linear • Two-dimensional • Planar layer • Infrared Camera • Thermal imager • Imaging sensor • Thermal sensor • Thermal detector	• 6A002.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Solid State Detectors • Optical • Image Intensifier Tubes • View • Vision	
Electrooptic& nonlinear optical material	• Potassium Titanyl Arsenate • KTA • Silver Gallium Selenide • Aggase2 • Thallium Arsenic Selenide • Tl3AsSe3 • Zinc Germanium Phosphide • Zngep2 • Gallium Selenide • Gase • CO2 Lasers • Detection CWA • Detection Chemical Warfare Agent • Detection Explosive • Second-Harmonic Generation • SHG • Infrared • Non-Linear Optical • Third Order Non-Linear Susceptibility • Response Time • Second Order Non-Linear Susceptibility • Space-Borne Lasers • High-Performance Computer	• 6C004.b.
Gravity meters	• Gravity Meters • Gravimeters • Gravity Gradiometer • Ballistic • Missile • Guidance • Gravimetric map • Military • Launching • Launch facilities • Missile silos	• 6A007 • 6A107
Laser - Optical Phased Array	• Fibre Laser • Fiber Laser • High Power	• 6A005.f.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Digital Control • Optical Phased Array • Coherent Beam Combining • Optical Phased Array • Coherent Beam Combining	
Laser materials	• Laser • Titanium Doped Sapphire • Sapphire Crystal • Rare-Earth-Doped Fibres	• 6C005
Laser NSG	• Laser • Uranium • Enrichment • Isotope Separation • UF6 • Dye Laser Oscillator • Dye Laser Amplifier • Co2 laser • Carbon dioxide laser • CO laser • Dye laser	• 6A205
Laser WA	Continuous Wave Laser Pulsed Laser Quantum Generators Masers Laser Machining Laser Cutting Laser Welding CO Laser Carbon Monoxide Laser • Carbon Dioxide Laser • CO2 Laser • Laser Range-Finders • Laser Radar • Laser Lidar • Excimers Laser • Chemical Laser • Nd:Glass Laser • Neodymium Laser • Weapon	• 6A005

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Missile • Bombs • Guidance Systems • Projectiles • Anti-Aircraft • Ballistic • Satellite • Defense • Military • Navigation Systems • Laser Communications • Uranium • Nuclear • Separation • Nuclear Reactor • Laser • Pulsed duration	
Magnetometers	• Superconducting Quantum Interference Device • Optically Pumped Magnetometer • Nuclear Precession Magnetometer • Fluxgate Magnetometer • Induction Coil Magnetometers • Superconducting Ring • Quantum Magnetometers • SQUID • Magnetic Gradiometers • Electric Field Sensors • Submarine • U-Boat • Submersible • Radio Communication • Rocket • Spacecraft • Aerospace • Ship • Vessel • Craft • Mines • Unexploded Ordnance • Non-Destructive Testing • Defectoscopy	• 6A006
Marine Active Sensors	• Acoustic	• 6A001.a.1.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Marine • Seabed survey • Survey equipment • Vessel survey • Sonar • Side Scan Sonar • Synthetic Aperture Sonar • Piezoelectric • Acoustic projector • Acoustic transducer • Transducers • Magnetostrictive • Side-lobe suppression • Correlation Velocity • CVL • Doppler velocity • DVL • Sonar • Underwater vehicle • UUV	• 6A001.b.
Marine Passive Sensors	• Acoustic • Marine • Hydrophone • Hydrophone array • Piezoelectric composite • Towed acoustic hydrophone • Accelerometer-based • Heading sensor • Processing equipment	• 6A001.a.2.
Mono/Multispectral Imaging sensors	• Monospectral Imaging • Multispectral Imaging • Remote Sensing • IFOV • Instantaneous Field Of View • Space Qualified • Airborne	• 6A002.a.3.b.
Optical control equipment	• Gimbal • Fast Steering Mirrors • High Energy Lasers • High Accuracy • Line Of Sight • Alignment • Target Tracking	• 6A004.d.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Free-Space Optical Communication • High Resolution Imaging • Infrared • High-Bandwidth • Resonator • Asphere • Optic • Mirror • Lens • Cones • Missile • Guidance Systems • Satellite • Ballistic	
Optical detectors	• Laser • Optical • Sensor • Detector • Space Qualified • Solid State • Focal-Plane Array • Charge Multiplication • Spectrometr • LIDAR • Wave-Front Sensing • Missile • Weapon • Image Intensifier Tube	• 6A002.a.
Optical eq measure absolute reflectance	• Measuring Absolute Reflectance • Equipment • Instrument • Devices • Laser • Light Beam • Spectrometer	• 6B004.a.
Optical measurement precision equip	Laser Interferometer High Power Laser Space-Based Optical Measurement Precision	• 6B004.b.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Optical mirrors/reflectors	• Deformable Mirror • Deformable Reflector • High Energy Laser • Missile • Defense • Telescope • Laser Communication • Laser Damage Threshold • Laser Induced Damage • Laser Induced Damage Thresh-old • LIDT • Fast beam steering mirror • FBSM • Lightweight • Monolithic Mirrors • Composite Mirror • Foam Mirror • Mirror • Laser Beam Steering	• 6A004.a.
Optical sensor material (Tellurium)	• Tellerium • HgCdTe • Mercury cadmium telluride • Cadmium telluride • CdTe • Night vision • Sea borne • Space borne • Surveillance • Reconnaissance • Laser system • Warhead	• 6C002
Photomultiplier Tubes	• Photomultiplier Tubes • Tubes • Photocathode • Anode pulse • Hydrodynamic • Radiographic Images • Gamma Radiation • Nuclear • Explosive	• 6A202
Pulse radar cross-section measurement	• Radar Cross-Section System • Radar Cross-Section	• 6B008

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Stealth • Low observability • Radar Cross-Section • Aircraft • Missile • Ship • Vehicle • Unmanned aerial vehicle • UAV • Target	
Radar systems & tracking systems	• Fire Control Radar • Targeting Control Radar • Anti-Aircraft Radar • Gun Laying Radars • Radar • Homing Head • Air Defence Radar • SAM Radar • AMD Radar • Missile Defence Radar • Anti-Missile Radar • Airborne Early Warning And Control System • AEWCS • Radar Altimeter • Aircraft • 3D Radars • Drone Radars • Surveillance Radar • Target Detection Radar • Target Recognition Radar • Target Tracking Radar • Military • Weapon Control Radars • Side-Looking Airborne Radar • Synthetic Aperture Radar • Inverse Synthetic Aperture Radar • Surveillance • Ship Navigation Radars • Marine Navigation Radars • Synthetic Aperture Radar • Inverse Synthetic Aperture Radar • Space Radars • Steerable Antenna	• 6A008 • 6A108

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Space Radar Phased Antenna Arrays • Height-Finding Radar • Frequency Agility Radar • Spread Spectrum • Guidance • Target Identification • Light Detection And Ranging • LIDAR • Bathymetric Surveys • Rescue Mission • Rescue Operation • Aerial Reconnaissance • Space Reconnaissance • Photonic • Heterodyne • Homodyne • Demodulation • Pulse-Compression • Ground Radars • Airborne Radars • Automatic Target Tracking • Laser Detection And Ranging • LADAR • Light Detection And Ranging • Missile • Space Launch • Sounding Rocket • Tracking System	
Radiation rugged detectors	• Radiation Hardened Detectors • Radiation Resistant Detectors • Radiation Hardened Sensor • Radiation Resistant Sensor • Radiation rugged detectors	• 6A102
Space-qualified components optical syst	• Mirror • Glass-Ceramic • Silicon Carbide • Telescope • Surface Coatings • Single-Layer • Multi-Layer • Metallic • Dielectric • Conducting • Semiconducting • Insulating	• 6A004.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Substrate blanks (SiC or Be/Be)	• Substrate • Wafer • Beryllium beryllium • Be Be • Silicon carbide • SiC • Mirror • Optical component	• 6C004.d.
Velocity interferometers	• Velocity Interferometers • VISAR • Fabry-Perot Interferometer • Doppler Laser Interferometer • Photonic Doppler Velocimeters • Heterodyne Velocimeters • DLIs • Het-V • PDV • Velocity Interferometer Systems for Any Reflector • Hydrodynamic • Detonation • Explosive • Nuclear • Implosion	• 6A225
Zinc Selenide/sulphide optical component	• Zinc Selenide • Znse • Zinc Sulphide • Zns • Missile • CO2 Laser • Lenses • Mirror • Optical • Infrared • Window • Sights • Defence • Defense • Satellite • Missile • Night Vision • Coating • Optical	• 6A004.b.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Composite	

CAT. 7 - NAVIGATION AND AVIONICS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Airborne altimeters	• Airborne Altimeters • Altitude Meter • Altitude Gauge • Radar Altimeter • Aircraft • Satellite • Missile • Landing • Coherent-pulse • Terrain following radar • Phase shift • Power management • Power control	• 7A006
Altimeters for space launch	• Radar Altimeter • Laser Altimeter • Spacecraft bus • Launch Vehicle • Sounding Rocket	• 7A106
GNSS receiving equipment	• Global Navigation Satellite Systems Receivers • GNSS Receivers • GPS Receivers • GLONASS Receivers • Galileo Receivers • Decryption • Defence • Countermeasures • Interference • Jamming • Adaptive Antenna • Ballistic • Missile • Naval Ship • Unmanned Air Vehicles • UAV • Noise-Immune • Launch Vehicle • Sounding Rocket • Spacecraft • Anti-Jam	• 7A005 • 7A105

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Guidance sets of high accuracy	• Guidance Set • Guidance System • Navigation • Flight control • Missile • Rocket • ICBM • CEP • Circular Error Probable • Accuracy • High Precision	• 7A117
Gyros	• Gyroscope • Gyros • Angular rate sensors • Missile • Ballistic • Rocket • UAV • Submarines • Underwater • Marine • Aircraft • Spacecraft • Torpedoes • Tank guns • Armament • Fibre optic gyroscopes • Ring laser gyroscopes • Scatterometers • Profilometers • Reflectometers • Ring laser • RLG mirror	• 7A002 • 7A102 • 7B002
Inertial measurement equipment MTCR	• Attitude And Heading Reference Systems • Gyrocompasses • Inertial Navigation Systems • Inertial Reference Systems • Inertial Reference Units • Inertial Measurement System • IMU • Linear Accelerometer • Angular Accelerometers • Rotational Accelerometer • Gyros	• 7A003 • 7A103.a.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Angular Rate Sensors • Missiles • UAV • Rocket • Ballistic	
Accelerometers	• Linear Accelerometers • Angular Accelerometers • Rotational accelerometer • Missile • Rocket • Navigation • Guidance • Military • Combat • Submarine • Aircraft • Vessel • Laser	• 7A101
Navigation equipment & systems	• Attitude And Heading Reference Systems • Inertial Navigation Systems • Gyrocompasses • Inertial Reference Systems • Inertial Reference Units • Inertial Measurement System • Inertial Measurement Unit • IMU • Inertial Guidance System • Gyrostabiliser • Automatic Pilot • Flight Instrument System • Missiles • UAV • Rocket • Ballistic • Land Vehicle • Carrier Vehicle • True North • Heading Estimation • Acceleration • Two Axes • Three Axes • Angle Random Walk	• 7A116

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Passive sensor for heading determination	• Passive Sensor • Electromagnetic • Space launch • Heading • Angular Orientation • Bearing • Imaging Sensor • Interferometer • Mapping • Missile • Rocket • Launch Vehicle • Spacecraft • Radio Frequency • Electromagnetic Source	• 7A115
Source code for inertial navigation eq	• Source Code • Inertial Navigation • Attitude And Heading Reference System • Navigational Error	• 7D002
Star trackers / gyro-astro compasses	• Star Trackers • Astronavigation System • Celestial Navigation • Stellar attitude sensors • Gyro-astro compasses • Spacecraft • Space bus • Satellite • Space probe • Missile • Rocket • AUV	• 7A004
Test, calibration, alignment equipment	• Testing equipment • Calibration equipment • Alignment equipment • Missile navigation system • UAV navigation system • Spacecraft navigation system • Ship navigation system • Land vehicle navigation system • Ground vehicle navigation system • Inertial systems	• 7B001

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Inertial sensors • Accelerometers • Gyros • GNSS • Sonar systems • Star trackers • Altimeters • Test equipment • Calibration • Alignment • Test benches • Navigation system • Ship • Land vehicle • Inertial measurement unit • Gyros test station • Accelerometer Test Station	
Underwater sonar navigation systems	• Doppler Velocity Sonar • Correlation Velocity Sonar • Correlation Velocity Log • Doppler Velocity Log • Navigation • Submarine	• 7A008

CAT. 8 – MARINE

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Air-independent power systems	• Air-Independent Power • Air Independent Power • Air Independent Propulsion • Air-Independent Propulsion • Rankine • Brayton • Fuel Cells • Stirling • Close Cycle Diesel • Submarine • AUV • Autonomous underwater vehicle • Underwater • Subsea • AIP • Absorber • Air-Independent • Scrubber • Closed Diesel Engine • Carbon Dioxide • CO2 • Carbon Monoxide • Submersible	• 8A002.j.
Diver deterrent acoustic systems	• Diver Deterrent • Underwater Sound Projector • Acoustic Cannon • Diver • Acoustic • Disrupt	• 8A002.r.
Fibre optic pressure hull penetrators	• Hull Penetrators • Pressure Hull • Fiber Optic • Optical Fiber • Connectors • Fiber Optic Connector • Optical Fiber Connector • Submarine • Submersible • Underwater • Subsea • Deep Water • Remotely Operated Vehicle • ROV	• 8A002.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• AUV • Autonomous underwater vehicle	
Manned underwater vehicle	• Underwater vehicle • Remotely operated vehicles • ROV • Deep sea submersible • Submarine • Submersible vehicles • Magnetic compass • Optical gyroscope • Mechanical gyroscope • Roll and pitch sensor • Depth gauge • Hydrostatic pressure • Fathometer • Echo sounding • Doppler sonar lag • Hydrodynamic lag • Strap-down inertial navigation system • SINS • Strap-down INS • Satellite navigation • Sonar transceiver • Transceiver satellite • Manned • Depth • Deep sea • Underwater vehicle • Submersible vehicles • Manned submersible vehicles •	• 8A001.a. • 8A001.b.
Marine systems, equipment and components	• Pressure Hulls • Pressure Housing • Underwater Vehicles • Remotely Operated Vehicles • Submersibles • Submarine • Underwater Systems • Deep-Sea • Deep Water • Deep-Diving • Depth • Direct Current Propulsion Motors • DC Propulsion Motor • DC Thrusters • Propulsion Motors	• 8A002.a.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Steering Motors • Thrusters • Underwater Robot • Umbilical Cables • Tether Cables • Underwater • Subsea • Optical Fiber Cables • Fiber Optic Cables • Fiber Optic Connectors	
Ocean salvage systems	• Salvage Sunken Ship • Rescue Sunken Ship • Lifting Sunken Object • Raising Sunken Object • Raising Sunken Ship • Salvage Sunken Vessel • Rescue Sunken Vessel • Raising Sunken Vessel • Salvage Sunken Submarine • Rescue Sunken Submarine • Raising Sunken Submarine • Gripper • ROV • Remotely Operated Vehicle • Rescue • Submarine • Underwater • Sea • Vessel • Ship • Dynamic Positioning • System • Seafloor navigation • Navigation integration • Rescue Vessels	• 8A001.e.
Pressure hulls & housing	• Pressure Hulls • Pressure Housing • Underwater Vehicles • Remotely Operated Vehicles • Submersibles • Submarine • Underwater Systems • Deep-Sea • Deep Water • Deep-Diving	• 8A002.a.1.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Depth	
Propellers & noise reduction systems	• Controllable-Pitch Propellers • Ship • Vessel • Water Cooled Electric Motors • Superconductive Propulsion • Superconductive Motor • Permanent Magnet Electric Propulsion • Permanent Magnetic Machine • Permanent Magnet Motor • Naval • Submarine • Electric Propulsion Permanent Magnet • Ventilated Propeller • Supercavitating Propellers • Active Noise Reduction • Noise Cancellation • Vibration Rubber Mounts • Vibration Isolating Mount • Acoustic Isolation • Diesel Engines • Diesel Generator Sets • Gas Turbines • Propulsion Motors • Propulsion Reduction Gears	• 8A002.o.
Propulsion motors & thrusters	• Direct Current Propulsion Motors • DC Propulsion Motor • DC Thrusters • Propulsion Motors • Steering Motors • Thrusters • Underwater Vehicles • Underwater Robot • Remotely Operated Vehicles • ROV • Submersibles • Submarine • Deep-Sea • Deep Water	• 8A002.a.2.
Pumpjet propulsion systems	• Pumpjet • Pump Jet	• 8A002.p.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Water-Jet • Divergent nozzle • Hydrodynamic propulsion • Propelling • Propulsion • Propeller • Propellant • Marine	
Remotely controlled manipulators	• Remotely Controlled Manipula-tors • Underwater • Submarine • AUV • Automated underwater vehicle • Submersible • Sensor • Torque • Manipulator • Sensors • Tactile Sense • Master Slave	• 8A002.i.
Syntactic foams	• Syntactic Foams • Neutrally Buoyant • Neutral Buoyancy • Epoxy Coating • Epoxy Resin • Deep-Sea • Sub-Sea • Deep Water • Marine • Underwater Vehicle • Submersibles • Buoyancy	• 8C001
Umbilical cable and tether cables	• Umbilical Cables • Tether Cables • Underwater Vehicles • Remotely Operated Vehicles • Submersibles • Submarine • Deep-Sea • Deep Water • Underwater • Subsea	• 8A002.a.3.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Optical Fiber Cables • Fiber Optic Cables • Fiber Optic Connectors	
Underwater light systems	• Underwater Light System • Stroboscopic Light Systems • Underwater Strobe • Underwater Searchlight • Underwater Lamps	• 8A002.g.
Underwater Robots	• Underwater Robot	• 8A002.h.
Underwater swimming & diving equipm	• Underwater Swimming Equip-ment • Closed Rebreather • Semiclosed Rebreather • Atmospheric diving suit • Man Diving Bell	• 8A002.q.
Underwater vision systems	• Underwater Vision Systems • Underwater Imaging Systems • Underwater LIDAR • Underwater Laser Systems • Underwater Laser Vision • Range-Gated Imaging System • Underwater Cameras • 3D Camera • Underwater Imaging • Stereoscopic Imaging • Vision-Based System • Laser Vision • Remotely Operated Vehicle • ROV • Underwater Vehicle • AUV • Submarine	• 8A002.d.
Unmanned underwater vehicles	• Unmanned underwater vehicle • UUV • Autonomous underwater vehicle • AUV • Remotely operated vehicles • ROV • Submersible vehicle • Magnetic compass • Optical gyroscope	• 8A001.c.

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Mechanical gyroscope • Roll and pitch sensor • Depth gauge • Hydrostatic pressure • Fathometer • Echo sounding • Doppler sonar lag • Hydrodynamic lag • Strap-down inertial navigation system • SINS • Strap-down INS • Satellite navigation • Sonar transceiver • Transceiver satellite • Underwater glider • AUV gliders • Navigation • Propulsion •	
Water tunnels	• Water Tunnel • Propellers • Propulsion • Rudders • Cavitation • Acoustic Fields • Acoustic Measure	• 8B001

CAT. 9 - AEROSPACE AND PROPULSION

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Aero gas turbine engines & components	• Aircraft • UAV • Unmanned Aerial Vehicle • Helicopter • Missile • Gas Turbine Engines • Afterburner • Turbojet • Turbofan • Turboprop • Turboshaft • Directional Solidification • Single Crystal • Gas Turbine • Mach	• 9A001
Aerodynamic test facilities-Wind tunnel	• Aerodynamic Test • Wind Tunnel Test • Shock Tunnel • Shock Tube • Air Flow • Airflow • Missile • Rocket • UAV • Unmanned Aerial Vehicle • Reentry Vehicle • Re-Entry Vehicle • Automated data • Online control • On-line control • Wind tunnel • Missiles • Aircraft • UAV • Aerial vehicle • Air vehicle • Propulsion • Aeropropulsion • Aerospace • Aeroengine • Data acquisition • Data processing • Airflow measurements • Real-time control • Hot-shot tunnel	• 9B105

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Plasma arc tunnel • Shock tubes • Shock tunnel • Gas tunnel • Light gas guns	
Aerothermodynamic test facilities	• Aerothermodynamic Test • Arc Jet System • Arc Jet Facility • Arc Jet Simulation • Arc Jet Test • Plasma Wind Tunnel • Aerodynamic Heating Facility • Missile • Rocket • UAV • Unmanned Aerial Vehicle • Reentry Vehicle • Re-Entry Vehicle • Atmospheric Reentry • Thermal Protection Systems • Heat Shield • Reentry Aero-Heating • Hypersonic	• 9B107
Component & structure for SLV-spacecraft	• Launch Vehicle • Spacecraft • Rocket • Space vehicle • Payload • Space bus • Satellite • Space probe • P-aramids • Para-aramids • Kevlar • Twaron • Carbon fiber • Carbon fibre • Carbon fibrous • Carbon coated • Resin impregnated • Pitch based • Epoxy prepregs • Epoxy resin • Polyepoxides • Polyimides	• 9A010

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Bismaleimides • Aromatic polyimides • Aromatic polyetherimides • Titanium diboride • TiB2 • Aluminium oxide • Al2O3 • Silicon nitride • Si-N • Silicon carbon nitrate • Si-C-N • Silicon carbide • Silicon alumina • Zirconium carbide • Zirconium nitride • Boron carbide • Boron nitride • Polysilazanes • Nickel aluminides • Titanium aluminides • Active vibration isolation • Active vibration suppression • Vibration isolation • Remote sensing • Orientation systems • Pulsed liquid rocket • Pulsed detonation • Liquid rocket	
Electrical connectors for missile & SLV	• Space Launch Vehicle • Carrier Rocket • Rocket • UAV • Unmanned Aerial Vehicle • Missile • Electrical Connectors • Umbilical Connectors • Interstage Connectors	• 9A121
Environmental & anechoic chambers	• Environmental Chambers • Anechoic Chambers • High Pressure Chambers • Thermal Chambers • Temperature Chambers • Acoustic Chamber • Temperature Vibration Test • High-Altitude Test • Temperature Vibration Test • Thermal Vibration Test	• 9B106

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Missile • Rocket	
Gas turbine (GT) brush seals	• Brush Seals • Gas Turbine • Aircraft • Aero-Engine • Turbojet • Turbofan • Turboprop • Turboshaft • Missiles • UAV • Aerial Vehicle • Air Vehicle • Production • Test • Development • Gas Turbine • Test Bench • Electron-Beam Welding • Production Lines • Heat-Resistant Superalloys • Cobalt • Nickel • Aramid Fibres • Carbographite • Electrochemical Machining • Electrochemical • High Temperature Brush Seal	• 9B003
Superalloy joining for gas turbines	• Tools • Dies • Fixtures • Blisks • Blings • Bladed Disks • Aeroengine • Airfoil • Disk Blade • Gas turbine • Joining • Linear Friction Welding • Superalloy • Titanium • Metal Matrix Composite • Ceramic Matrix	• 9B004

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Ceramic Composite • Titanium Diboride • Tib2 • Aluminium Oxide • Al2O3 • Silicon Nitride • Si-N • Silicon Carbon Nitrate • Si-C-N • Silicon Carbide • Silicon Alumina • Zirconium Carbide • Zirconium Nitride • Boron Carbide • Boron Nitride • Polysilazanes • Nickel Aluminides • Titanium Aluminides • Filamentary Material • P-Aramids • Para-Aramids • Kevlar • Twaron • Carbon Fiber • Carbon Fibre • Carbon Fibrous • Carbon Coated • Resin Impregnated • Pitch Based • Epoxy Prepregs • Epoxy Resin • Polyepoxides • Polyimides • Bismaleimides • Aromatic Polyimides • Aromatic Polyetherimides	
Hybrid rocket propulsion systems	• Hybrid Rocket Propulsion • Hybrid Rocket Engines • Hybrid Rocket • Missile • Rocket Stages • Launch Vehicles • Sounding Rockets	• 9A009 • 9A109

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Insulation material for rocket engine	• Insulator • Insulation coating • Thermal resistant • Thermal insulation • Thermal shield • Insulating material • Rocket Motor • Rocket Engine • Missile	• 9C108
Launch support equipment	• Space Launch Vehicle • Spacecraft • Rocket • Missile • Air launch • Sounding rockets • Sub-orbital • Launch Pad • Launch System • Launcher • Command-And-Control • Command And Control • Mobile launcher • Boat-tail • Swing arm • Umbilical release • Space Launch Vehicle • Spacecraft Bus • Spacecraft Payload • Spacecraft System • Rocket • Missile • Missile Support Equipment • Transporter-Erector-Launcher • Mobile Erector Launcher • Transporter-Erector • Transfer Alignment • Fueling Equipment • Propellant Supplying	• 9A115
Liquid/gel propellant rocket engines	• Gelled Propellant • Gel Propellant • Liquid Propellant Rocket Engine • Rocket Motor • Rocket Engine • Unmanned Aerial Vehicle • Unmanned Air Vehicle	• 9A005 • 9A006 • 9A105

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• UAV • Missile • Thrust Control • Fuel Injectors • Control System • Combustion Chamber	
Manifacture tools gas turbing blades etc	• Directional Solidification • Single Crystal • Gas Turbine Component • Gas Turbine Blade • Vanes • Core • Shell • Mould • Additive Manufacturing • Gas Turbine • Refractory • Metal • Ceramic	• 9B001.b.
Marine gas turbine engines	• Marine Gas Turbine • Gas Turbine Propulsion • Heavy Duty Gas Turbine • Industrial Gas Turbine • Aeroderivative Gas Turbine • Aero-Derivative Gas Turbine • Ship • Vessel • Marine	• 9A002
On-board systems and equipment	• Payload Data • Orbit Control • Telemetry Data • Data Handling • Command data • Spacecraft • Satellite • Space vehicle • Space probe	• 9A004.e.
On-line control systems for gas turbine	• FADEC • Full Authority Digital Engine Control Systems • Automated Data	• 9B002 • 9D003

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Engine Stability • Flow Control • Flow Path • Gas Turbine • Missiles • Aircraft • UAV • Aerial Vehicle • Air Vehicle • Vessels • Submarine • Aeroderivative • Propulsion • Aeropropulsion • Aerospace • Aeroengine • Aero Gas Turbine • Marine Gas Turbine • Software	
On-line control wind tunnels	• Automated Data • Wind Tunnel • Missiles • Aircraft • UAV • Aerial Vehicle • Air Vehicle • Propulsion • Aeropropulsion • Aerospace • Aeroengine	• 9B005.a.
Powder metallurgy for gas turbine engine	• Powder Metallurgy • Cold Isostatic Press • Furnace Coatings • Metal Injection Moulding • Selective Laser Sintering • Gas Turbine • Isostatic Press • Aerospace • Powder Metallurgy	• 9B009
Pulse jet engine	• Pulse Jet Engine • Pulsejet Engine • Pulse Jet • Pulsejet • UAV • Unmanned Aerial Vehicle	• 9A111

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Missile • Rocket • Supersonic • Hypersonic • Aircraft • Fuel Injection • Propulsion System	
Ramjet, scramjet & combined cycle engine	• Ramjet • Scramjet • Combined Cycle Engines • Fuel Injection • Air Flow Alignment • Diverting Valves • Dividers • Moving Blades • Aerodynamic Grids • Combustion Stabilisers • Feed System • Control Unit • Fuel Controller • Electronic Control • Missile • Weapon • Rocket • Supersonic • Hypersonic	• 9A011
Reentry vehicle	• Rocket • Missile • Hypersonic • HGV • Reentry Vehicle • Re-Entry Vehicle • MARV • Heat Shield • Thermal Protection Systems • Heat Sink • Ultra High Temperature Ceramic • Silicon-Carbide	• 9A116
Resin/metal coated fibre prepegs/preform	• Rocket • Unmanned Aerial Vehicle • UAV • Missile • Heat Shield	• 9C110

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• P-Aramids • Para-Aramids • Kevlar • Twaron • Carbon Fiber • Carbon Fibre • Carbon Fibrous • Carbon Coated • Resin Impregnated • Epoxy Prepregs • Epoxy Resin • Epox Foam • Epoxy Filament • Epoxy Composite • Polyepoxides • Polyimides • Bismaleimides • Aromatic Polyimides • Aromatic Polyetherimides • Resin Prepegs • Metal Coating Fibre • Metal coated fiber • Organic matrix composite • Metal matrix composite	
Rocket motor Non-destructive test	• Rocket • ICBM • Non Destructive Test • Non Destructive Inspection • Ultrasonic Test • X-Ray Test • X-Ray Radiography • Tomography	• 9B007
Skin friction transducers	• Skin Friction • Transducers • Supersonic • Hypersonic • Friction	• 9B008
Solid rocket propulsion systems	• Solid Rocket Propulsion Systems • Solid Rocket • SRM • Propulsion System • Motor grain • Propellant grain	• 9A007

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Total Impulse • Specific Impulse • Motor Insulation • Heat Insulating • Thermal Insulation • Bonding System • Propellant Bonded • Filament-Wound • Movable Nozzle • Flexible Nozzle • Thrust Vector Control • Thrust Control • Thrust Tabs • Omni-Axial • Angular Vector	
Sounding rocket	• Sounding Rocket • Rocketsonde • Research Rocket • Long range • Sub-orbital • Orbital • Satellite • Aeronomy • Meteorology	• 9A104
Space launch vehicle - Spacecraft	• Space Launch Vehicle • Carrier Rocket • Spacecraft Bus • Spacecraft Payload • Spacecraft System • Anti-Missile • Anti-Satellite • ASAT • Destruction Systems • Earth Satellite Vehicles • Space Weapon • Ground simulators • Sub-orbital vehicle • Satellite • Space probe • Launch • Spacecraft	• 9A004
Spraying-fogging systems	• UAV • Unmanned Aerial Vehicle • Drone • Aircraft	• 9A350

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Airplane • Helicopter • Air Vehicle • Controlled Droplet Application • Aerial Atomisers • Aerial Sprayers • Aerial Spraying • Sprayer System • Aerosol Device • Chemical Spray Device • Chemical Spray Apparatus • Chemical Spray System • Spray Pods • Arrays Aerosol • Spray Booms • Rotary Atomiser • Pressure Nozzle • Spray Nozzle	
Staging/separation mechanisms	• Rocket • Missile • Staging Mechanisms • Explosive Bolts • Stage Separation • Missile Separation • Rocket Separation • Linear Shaped Charges • Rocket Stage	• 9A117
Telemetry-telecommand eq & Simulators	• Telemetry • Control • Guidance • Telemetry System • Telecommand • Spacecraft • Space Shuttle • Satellite • Ground Simulator • Air-Bearing Spacecraft Simula-tors	• 9A004.f.
Test bench/stand for rocket engine	• Test Bench • Test Stand • Rocket Motor • Rocket Engine	• 9B117

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Turbojet & turbofan engines	• UAV • Unmanned Air Vehicle • Unmanned Aerial Vehicle • Drone • Missile • Turbojet • Turbofan • Air Breathing • Airbreathing	• 9A101
Turboprop engine (UAV)	• UAV • Unmanned Air Vehicle • Unmanned Aerial Vehicle • Rotary combustion • Rotary engine • Wankel engine • Drone • Gearbox • Turboprop	• 9A102
UAV, unmanned airships, equipm & comp	• Remotely piloted vehicle • Remotely piloted aerial systems • RPAS • Optionally piloted • Optionally piloted vehicle • OPV • UAV • Unmanned Aerial Vehicle • Uninhabited Aerial Vehicle • Unmanned Airship • Drone • Turbojet • Ground Control Station • Forward-Looking Camera • Weapon Systems • Navigation System • Remote Piloting • Rotary Combustion • Rotary Engine • Wankel Engine • Air Breathing • Airbreathing • Target Identification • Autonomous Flight Control • Spray System • Spray Device • Spray Mechanism	• 9A012 • 9A112

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Convert Aircraft UAV • Convert Aircraft Unmanned Aerial Vehicle • Conversion aircraft UAV	

CRITICAL TECHNOLOGIES

ADDITIVE MANUFACTURING

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
AD-focus on metal-ceramics powder	• Fused deposition • Fused filament • Polymer • Carbon fibre • Digital Light Processing • Powder bed • Electron-beam melting • Selective laser melting • Selective heat sintering • Selective laser sintering • Direct metal laser sintering • Stereolithography • Directional solidification • Single crystal • Beryllium • Aluminium • Maraging steel • Inconel • Superalloys • Ceramics • Additive manufacturing • 3D print	
Additive manufacturing	• Fused Deposition • Fused filament • Polymer • Carbon fibre • Digital Light Processing • Metal • Ceramic • Powder Bed • Electron-Beam Melting • Selective Laser Melting • Selective Heat Sintering • Selective Laser Sintering • Direct Metal Laser Sintering • Stereolithography • Fused Filament • Additive Manufacturing • 3D Print	

ADVANCED MATERIALS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Biochip	• Biochip	
Lab-on-a-chip	• Lab-On-A-Chip • Nanosensor • Microfluidics • Nanofluidics • Molecular Biology • Nanotechnology • Pathogens • Toxins • Resistance to chemicals • Virus • Bacteria • Bacterium • Fungus • Fungi	
Micro electromechanical systems	• Microfluidic systems • Micromachines • Design • Development • Production • Testing	
Nano electromechanical systems	• Nano Electromechanical Systems • Nanoelectromechanical Systems • Smart Dust	
Nanorobots	• Nanorobot • Nanobots • Nanoids • Nanites • Nanomachines • Nanomites	
Nanosensor	• Nanosensor • Nanotechnology • Nanomaterial • Chemical Sensors • Acoustic Sensors • Biosensors	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Nanotoxicology	• Nanotoxicology • Toxic Nanoparticles • Biosecurity • Nanoparticles • Nanocomposites	
Semiconductor nanowires (nanocircuitry)	• Semiconductors Nanowires • Carbon Nanotube • Field-Effect Transistor • Nano-Field Effect Transistor • Carbon Nanotube • Transistor • Nanocircuitry • Nanowires • Integrated Circuits	
Smart materials (general)	• Smart Material • Smart Composite • Intelligent • Responsive • Shape memory • Polymer • Alloys •	
Smart materials (specific)	• Smart Materials • Smart Composite • Camouflage • Piezoelectric • Thermoelectric • Electrostrictive • Magnetostrictive • Photovoltaic • Electroactive Polymers • Smart Glasses • Smart Paints • Coatings • Smart Structures • Self-Healing Materials • Sensory Structures • Halocromic • Chromogenic • Ferrofluids • Photomechanical • Polycaprolactone • Dielectric • Magnetocaloric • Chemoresponsive	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Shape Memory	
Smart materials electronics	• Smart Material • Smart Composites • Piezoelectric • Shunted • Transducers • Shunted Circuit • Tuning Circuits • Resonant Circuits • Switching Circuits • Negative Capacitance • Linear Quadratic Regulator • Microelectronic Sensor • Supercapacitor • Graphene • Ferroelectrics • Ferromagnets • Microelectronic Systems •	
Smart nanomaterials	• Smart Nano Materials • Smart Nanomaterials • Smart Nanotechnology • Smart Nano Technology • Smart Material • Smart Composite • Nanotechnology	

ADVANCED SEMICONDUCTORS

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Advanced semiconductors	• Semiconductor • Integrated Circuit • IC • Microelectronics • Microsystems • MEMS • Integrated device • Multi Chip Module • MCM • 3D-IC • ASIC • System-on-chip • SoC • Field Programmable Gate Arrays • FPGA • Field programmable logic devices • Production • Fabrication • Coating • Etching • Doping • Photolithography • Metallizing • Cluster tools • Lithography masks • Microprocessors • Memory modules • Logic circuits • Transistors • Diodes • CCD chips • Cameras • Opto-electronic sensors • Laser diodes • Light emitting diodes • High frequency transistors • Micromechanics • Weapon • Combat systems • Optical reconnaissance • Reconnaissance • Infrared • Multispectral • Visible wavelength range • Ultraviolet • Encryption	

	• Electronic warfare • ECCM • Avionics cockpit displays • Search Rescue • Tracing • Disaster control • Switching frequency • Temperature resistance • Gallium • Arsenic • Gallium arsenide • Ion implantation • Physical vapour deposition • PVD • Chemical vapour deposition • CDV • Electrochemical deposition • ECD • Molecular beam epitaxy • MBE • Atomic layer deposition • Atomic layer deposited • ALD • Wafer fabrication • Chip-on-wafer-on-substrate • CoWoS • Through silicon via • TSV • Chip scale packaging • Wafer scale integration • WSI • Silicon • GaAs • Gallium nitride • GaN • Indium-phosphide • InP • Silicon carbide • SiC	

ARTIFICIAL INTELLIGENCE

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
AI chipsets	• Artificial Intelligence • Micro-chip • High-performance computing • HPC • Semiconductors • Semi-conductors • Integrated circuits • Microprocessor • Field Programmable Gate Arrays • FPGA • Field programmable logic de-vices • CPU • Application specific integrated circuit • ASIC • System on chip • System on a chip	
Automatic hazard detection	• Hazard detection • Buried explosive • Buried target • Cyber attack detection • Early warning systems • Cyber • Defence • Defense • Genetic algorithms • Genetic programming • Artificial neural networks • ANN • Deep learning • Machine learning • Data analysis • Artificial intelligence	
Autonomous weapons systems	• Autonomous Weapons Systems • Unmanned weapon • Robotic weapon • Warfare system • Combat system • Target identification • Airborne reconnaissance • Sensor • Image recognition	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Gravity • Military logistics • Autonomous driving • Autonomous flying • Genetic algorithms • Genetic programming • Artificial neural networks • ANN • Deep learning • Machine learning • CPU • FPGA • Field Programmable Gate Array • Application specific integrated circuit • ASIC	
Genetic algorithms & genetic programming	• Genetic Algorithms • Genetic Programming • Weapon • Cyber Security • Computer Security • Information Security • Nuclear • Missile • Rocket • Blockchain • Block Chain • Distributed Ledger • Cryptography • Nanotechnology • Biometrics • Air defense • AI • Artificial Intelligence • Artificial Neural Networks • Anns • High-performance computing • Deep learning • Machine learning • CPU • FPGA • Field Programmable Gate Array • Application specific integrated circuit • ASIC	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Machine learning technology	• AI • Artificial Intelligence • Artificial Neural Networks • Anns • Weapon • Cyber Security • Computer Security • Information Security • Nuclear power • Nuclear reactor • Missile • Rocket • Drone • UAV • Unmanned aerial vehicle • Unmanned aircraft system • Blockchain • Block Chain • Distributed Ledger • Cryptography • Nanotechnology • Machine Learning	
Swarm intelligence	• Swarm • Swarms • Artificial intelligence • AI • Robot • Robotic • Drone • UAV • Unmanned aerial vehicle • UAS • Unmanned aerial systems	

BIOTECHNOLOGY

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Biochip	• Biochip	
Biosensors	• Biosensor • Nanostructured • Nanomaterial • Nanowires	
Genome editing	• Transcription Activator-Like Effector Nuclease • Talen • Meganuclease • Endodeoxyribonuclease • Zinc-Finger Nucleases • DNA double-strand break • CRISPR/Cas9 • Gene • Genome • Editing • Engineering • Pathogen • Virus • Bacteria • Bacterium • Fungus • Fungi	
Molecular/DNA sensing-programming	• Molecular Sensing • Molecular Computing • DNA Computing • Molecular Programming • Analogue • Digital • Signal Processing • Integrated Circuits	
Nanobiology	• Nanobiotechnology • Bionanotechnology • Nanobiology • Nanotechnology • Biology	
Pathogen alteration	• Altering Pathogen • Altering Virus • Modified Virus • Mutant Virus	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Transmissible • DNA Sequencing • Virus AND Transmi* • Bacteria • Antibiotic Resistance • Genotyping • Bioweapon • Dual Use • Virus • Pathogen • Synthetic Biology • Genome Editing	
Synthetic biology	• Genetic engineering • DNA sequencing • DNA synthesis • Genome synthesis • Constructing • Biological • System • Machine • Molecular assembling • Cell-free protein • Pathogens • Toxins • Virus • Bacteria • Bacterium • Fungus • Fungi	

CYBER-SURVEILLANCE

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Communication monitoring	• ICT • Information Communications Technology • Internet • Telecommunications • Mobile communication • Telephone • Computer • Mass Surveillance • Global Surveillance • Public Surveillance • Eavesdropping • Spyware • Surveillance software	
Data retention	• Data Retention	
Facial recognition technology	• Facial Recognition • Biometrics Authentication • Biometrics identification • Face detection • Software • Thermal cameras • Surveillance • Track • System • Technology	
Interception & Jamming equipment	• Interception • Telecommunication • IP • Internet protocol Network • Surveillance systems • Intrusion software • Extraction • Voice • Data • Signalling • Identifier • Jamming devices • Jamming equipment • Device • Equipment • Interference • Wave • Frequency	

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
	• Signal • Reception • Transmission	
Intrusion software	• Intrusive Software • Malware • Intrusion • Intrusion Detection System • Network • Security • Attack • Computer • Information • Cyber	

QUANTUM TECHNOLOGY

Dataset (Specific DU item or a group of them)	**Query's** keywords	**EU Dual-use Control List code**
Post quantum cryptography	• Post Quantum • Quantum-Proof • Quantum-Safe • Quantum-Resistant • Cryptography	
Quantum computer	• Quantum Computer • Qubit	
Quantum cryptography	• Quantum Key Distribution • QKD • Cryptography • Quantum Cryptography	
Quantum network	• Quantum Network • Distributed Quantum • Quantum Internet • Networked quantum computing	
Quantum sensoring	• Quantum Sensor • SQUID • Magnetic Sensor • Superconducting Quantum • Sensor • Sensing • Quantum • Spin qubits • Trapped ions • Flux qubits • Neutral atoms • Atomic vapor • Cold clouds • Rydberg atoms • NMR sensors • Nuclear Magnetic Resonance sensors • Semiconductor quantum dots • Superconducting circuits • SQUID • Flux qubit	

Annex II: TIM DU queries

CATEGORY 0 - NUCLEAR MATERIALS, FACILITIES AND EQUIPMENT

Dataset	Query
Aerodynamic separation process	topic:(Aerodynamic AND uranium AND enrichment)
Chemical exchange separation equipment	topic:("uranium chemical exchange"~10 OR "uranium solvent extraction"~10 OR (uranium AND (enrichment OR separation) AND ("chemical exchange"~1 OR "solvent extraction"~1 OR PUREX)))
Conversion plants Plutonium	topic:(conversion AND reprocessing AND (fuel OR "fuel-cycle") AND (plutonium OR "plutonium dioxide" OR "plutonium nitrate" OR "plutonium metal") NOT (environment OR vitrification))
Conversion plants Uranium	topic:(conversion AND (uranium OR UF6 OR UO2 OR UO3 OR UF4) AND (fuel OR "fuel-cycle"))
Cooling system	topic:(("cooling system" AND "nuclear reactor" AND "primary") OR ("heat-exchanger" AND "nuclear reactor" AND "primary") OR ("steam generator" AND "primary circuit") OR ("Coolant pumps" AND "nuclear reactor" AND "primary"))
Criticality safe tanks G vessels	topic:(((dissolvers OR "storage vessel" OR "storage tank") AND ("spent fuel" OR "irradiated nuclear"~2)) NOT (geochemistry OR geophysical))
Electromagnetic isotope separators	topic:(electromagnetic AND ((isotope AND separat* AND uranium) OR calutron OR (enrichment AND (uranium OR "UF6")) OR (Uranium AND "ion source")))
Enrichment by Gaseous Diffusion	topic:(("gaseous diffusion" AND (uranium OR UF6)) OR (((compressor OR "centrifugal blowers" OR "gas blowers") AND (nuclear OR "isotope separation"~5 OR "gaseous diffusion"~5 OR enrichment) AND (uranium OR UF6)) NOT exposure) OR ((compressor OR "centrifugal blowers" OR "gas blowers") AND ("made of" OR "protected by" OR "coated with" OR "lined with") AND (copper OR "stainless steel" OR aluminium OR nickel OR "fluorinated hydrocarbon polymers")))
Fast Neutron Reactors	ti:(Reactor AND topic:("Fast Neutron" OR FNR OR "Fast Breeder" OR FBR OR "Liquid Metal Cooled" OR LMCR OR "Molten Salt" OR MSR OR "Gas Cooled Fast" OR GCFR OR "Lead-cooled" OR "fast cooled" OR "Reduced Moderation Water" OR "RMWR"))
Flasks for irradiated fuel	topic:((flask OR cask) AND ("irradiated fuel"~4 OR "spent fuel"))
Gas centrifuge	topic:(("gas centrifuge"~1 AND (uranium OR UF6 OR "hexafluoride gas" OR "isotope separation"~2 OR "molecular pump"~1 OR "nuclear reactor"~2 OR "nuclear power"~1 OR enrichment)) OR (("Motor stators"~2 OR dampers OR scoops OR "magnetic bearing"~2 OR "bearing assembly"~2 OR "molecular pumps"~2 OR "Centrifuge housing"~2 OR "rotor tube"~2 OR (bellows AND "gas centrifuge"~1) OR "centrifuge housing"~1) AND ("gas centrifuge"~2 OR uranium OR UF6 OR "hexafluoride gas"~2 OR enrichment)))

Heavy Water or Deuterium	topic:((("hydrogen isotope separation"~10 OR "hydrogen isotope enrichment"~10) AND ("Heavy water" OR D2O OR deuterium)) OR (("hydrogen water" OR "hydrogen sulphide" OR "water hydrogen") AND cascade) OR "Girdler Sulfide")
Hot Cells	topic:(("hot cells" OR "remote manipulators" OR "manipulative equipment" OR "lead glass") AND ("spent fuel" OR "irradiated fuel"~2))
Laser-based isotopes separation	topic:(("atomic vapour laser"~3 OR "molecular laser"~3 OR MLIS OR AVLIS) AND ("isotope separation" OR uranium OR UF6 OR enrichment) NOT (arsenolipids OR inflammatory OR realgar))
Neutron detectors	topic:(("neutron detectors"~2 OR "neutron flux levels"~2) AND (reactor OR "nuclear core"~2 OR "reactor core"~2 OR "in core"))
Nuclear Grade Graphite	topic:(graphite AND ("nuclear grade"~2 OR (boron AND "nuclear reactor"))) OR ti:(graphite AND ("nuclear reactor"~2 OR "nuclear plant"~2 OR "nuclear power"~2))
Nuclear reactor internals	ti:"nuclear reactor internals"~3 OR (ti:reactor AND topic:(nuclear AND ("core support"~2 OR "fuel channels" OR "calandria tubes" OR "thermal shield"~2 OR baffles OR "diffuser plates"~2 OR "core instrumentation"~6 OR "fuel alignment"~3 OR "grid plates")))
Pressure tubes	topic:(("pressure tubes"~2 AND (reactor AND nuclear)) OR ("nuclear fuel elements"~2 AND (reactor OR "nuclear core"~2 OR "reactor core"~2)))
Reactor control rods	(ti:("control rod") AND topic:(nuclear OR reactor)) OR topic:((CRDM AND ("control rod" OR nuclear OR reactor)) OR "control rod drive mechanism") OR (ti:("neutron-absorbing"~2 AND ("control rod" OR "nuclear reactor"~2 OR
Reactor pressure vessel	ti:("nuclear reactor") AND topic:("pressure vessel" OR "reactor vessel" OR "metal vessel" OR "vessel head"~4 OR "reactor head"~4 "neutron embrittlement"~4 OR "irradiation embrittlement"~4)
Reprocessing of nuclear fuel	ti:((reprocessing OR pyroprocessing) AND (plutonium OR uranium OR "spent fuel"~2 OR "reactor waste" OR PUREX OR UREX OR UNEX OR TRUEX OR "Tributyl phosphate" OR Tributylphosphate OR TBP))
Seals	ti:((seal* AND bellows) OR "metal gasket seal" OR "rotary shaft seal")

Thermal Neutron Reactors	ti:(reactor AND topic:((nuclear OR uranium) AND ("Pressurised Water" OR PWR OR "Boiling Water" OR BWR OR "Gas Cooled" OR GCR OR "Graphite Moderated" OR "pressurized Heavy Water" OR "pressurised Heavy Water" OR PHWR OR "Advanced Heavy Water" OR AHWR OR "Supercritical Water" OR SCWR OR "Liquid Fluoride Thorium" OR LFTR OR "Aqueous Homogeneous" OR AHR OR "Small Modular" OR SMR OR "Pool-Type")))
Tritium	ti:((((production OR recovery OR extraction OR concentration OR retention) AND tritium) OR "tritium processing" OR (tritium AND "hydrogen isotope exchange reaction"~3)) NOT (topic:(fusion OR waste OR environment)))
Uranium & Thorium	ti:((uranium OR "depleted uranium" OR thorium) AND (nuclear OR fission))
UraniumIsotopes separation	topic:(("isotope separation"~3 OR "isotope separator"~3 OR "isotope separate"~3 OR "atomic vapour laser"~3 OR "plasma separation" OR "plasma separator" OR "plasma separate" OR "aerodynamic separation"~3 OR "ion- exchange separation"~4 OR "ion-exchange separator"~4 OR "ion-exchange separate"~4 OR "electromagnetic separation"~2 OR "electromagnetic separate"~2 OR "electromagnetic separator"~2 OR "gas centrifuge"~2 OR "chemical exchange"~2 OR "gaseous diffusion") AND (uranium OR "UF6"))
Uranium plasma generation system	topic:("uranium plasma"~3 AND generat*)
Vacuum pumps	(topic:((vacuum AND pump) OR "vacuum system" OR manifolds OR headers) AND topic:(uranium OR "isotope separation"~4 OR UF6 OR "gas centrifuge"))
Zirconium tubes	topic:(("Zirconium tubes"~2) OR ((zirconium OR zircaloy) AND ("uranium dioxide" OR UO2)))

CATEGORY 1 - PATHOGENS

Dataset	Query
African horse sickness virus	topic: (("African horse" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
African swine fever virus	topic: (("African swine" AND virus AND ("synthetic biology" OR GMO OR
Andes virus	topic: ((andes AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT ((epidemiology AND outbreak) OR lake OR mummy))
Avian influenza virus	topic: (("avian influenza" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Bacillus anthracis	topic: (("bacillus anthracis" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Brucella abortus	topic: (("brucella abortus" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology
B. Brucella melitensis	topic: (("brucella melitensis" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Brucella suis	topic: (("brucella suis" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Burkholderia pseudomallei	topic: (("Burkholderia pseudomallei" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Chlamydia psittaci	topic: (("Chlamydia psittaci" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

B. Clostridium argentinense	topic: (("Clostridium botulinum" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Clostridium baratii	topic: (("Clostridium baratii" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Clostridium butyricum	topic: (("Clostridium butyricum" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Clostridium perfringens	topic: ((("Clostridium perfringens" OR "Clostridium welchii" OR "Bacillus welchii")AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Coxiella burnetii	topic: ((("Coxiella burnetii" OR "Rickettsia burnetii") AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Francisella tularensis	topic: ((("Francisella tularensis" OR "Pasteurella tularensis") AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Mycoplasma capricolum	topic: (("mycoplasma capricolum" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Mycoplasma mycoides	topic: (("mycoplasma mycoides" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))T
B. Rickettsia prowazekii	topic: (("Rickettsia prowazekii" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

B. Salmonella enterica Typhi	topic: (("Salmonella enterica" AND typhi AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Shiga toxin	topic: ((("Shiga toxin producing" AND ("Escherichia coli" OR "E coli" or STEC)) AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Shigella dysenteriae	topic: (("Shigella dysenteriae" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Vibrio cholerae	topic: (("Vibrio cholerae" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B. Yersinia pestis	topic: ((("Yersinia pestis" OR "Y pestis" OR "Pasteurella pestis")AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
B.Burkholderia mallei Pseudomonas mallei	topic: ((("Burkholderia mallei" OR "Pseudomonas mallei" OR "Malleomyces mallei") AND (bacterium OR bacteria) AND ("synthetic
Bluetongue virus	topic: ((Bluetongue AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Chapare virus	topic: ((Chapare AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Chikungunya virus	topic: ((Chikungunya AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

Choclo virus	topic: ((((Choclo AND (virus OR orthohantavirus)) OR "Hantavirus Cardiopulmonary Syndrome") AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Classical swine fever virus	topic: (("hog cholera" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Congo-Crimean haemorrhagic fever virus	topic: (("crimean-congo" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Dobrava-Belgrade virus	topic: ((("Dobrava-Belgrade" OR Dobrava OR "Dobrava-Belgrade orthohantavirus") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Eastern equine encephalitis virus	topic: (("eastern equine encephalitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Ebola virus	topic: ((ebola AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
F. Coccidioides immitis	topic: (("Coccidioides immitis" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
F. Coccidioides posadasii	topic: (("Coccidioides posadasii" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Foot-and-mouth disease virus	topic: ((("Foot-and-mouth disease" OR "hoof-and-mouth disease") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

Goatpox virus	topic: ((goatpox AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Guanarito virus	topic: ((guanarito AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Hantaan virus	topic: (((Hantaan OR "Korean Hemorrhagic Fever") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT
Hendra virus	topic: (((Hendra OR "Equine morbillivirus" OR "Hendra henipavirus") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR
Japanese encephalitis virus	topic: (("Japanese encephalitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Junin virus	topic: (((junin OR "Argentine hemorrhagic fever" OR "Argentinian mammarenavirus") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR
Kyasanur Forest disease virus	topic: (("Kyasanur Forest" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Laguna Negra virus	topic: (("laguna negra" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Lassa fever virus	topic: (("lassa fever" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

Louping ill virus	topic: (("Louping ill" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Lujo virus	topic: ((Lujo AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Lumpy skin disease virus	topic: (("lumpy skin" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Lymphocytic choriomeningitis virus	topic: (("lymphocytic choriomeningitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Lyssavirus genus	topic: ((lyssavirus AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Machupo virus	topic: ((machupo AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Marburg virus	topic:((marburg AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
MERS-related Coronavirus	topic: (("Middle East respiratory syndrome" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Monkeypox virus	topic: ((Monkeypox AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Murray Valley encephalitis virus	topic: (("Murray Valley" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

Newcastle disease virus	topic: ((("Newcastle disease" OR VND) AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Nipah virus	topic: ((nipah AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Omsk hemorrhagic fever virus	topic: ((omsk AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Oropouche virus	topic: ((Oropouche AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Andean potato latent virus	topic: (("andean potato" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Clavibacter michiganensis sepedonicus	topic: ((("Clavibacter michiganensis" OR "Corynebacterium sepedonicum") AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA
P. Cochliobolus miyabeanus	topic: (("Helminthosporium oryzae" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT
P. Colletotrichum kahawae	topic: (("Colletotrichum kahawae" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Magnaporthe oryzae	topic: ((("Magnaporthe oryzae" OR "Pyricularia oryzae" OR "rice blast") AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR
P. Microcyclus ulei	topic: (("Microcyclus ulei" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

P. Peronosclerospora philippinensis	topic:("Peronosclerospora philippinensis" OR "Philippine downy mildew" OR "Peronosclerospora sacchari" OR (diseases AND "P. philippinensis"))
P. Potato spindle tuber viroid	topic: (("potato spindle tuber" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Puccinia graminis	topic: (("Puccinia graminis" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Puccinia striiformis	topic: (("Puccinia striiformis" AND (fungus OR fungi) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Ralstonia solanacearum	topic: (("Ralstonia solanacearum" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Sclerophthora rayssiae var. zeae	topic: (("Sclerophthora rayssiae" AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Synchytrium endobioticium	topic:((("Synchytrium endobioticium" OR " potato wart disease" OR "black scab") AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Thecaphora solani	topic:("Thecaphora solani" OR "potato smut")
P. Tilletia indica	topic: ((("Tilletia indica" OR "Karnal bunt" OR "Neovossia indica") AND (Fungi OR fungus) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Xanthomonas albilineans	topic: (("Xanthomonas albilineans" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

P. Xanthomonas axonopodis	topic: (("Xanthomonas axonopodis" AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
P. Xanthomonas oryzae pv. oryzae	topic: ((("Xanthomonas oryzae pv. oryzae" OR "Xanthomonas oryzae pathovar oryzae" OR "Pseudomonascampestris pv.oryzae" OR "Pseudomonascampestris pathovar oryzae") AND (bacterium OR bacteria) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Peste-des-petits-ruminants virus	topic: (("Peste-des-petits-ruminants" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Porcine Teschovirus	topic: (("Porcine Teschovirus" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Powassan virus	topic: (("Powassan virus" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Reconstructed 1G18 influenza virus	topic: ((("1918 influenza" OR "Spanish flu") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Rift Valley fever virus	topic: (("Rift Valley" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Rinderpest virus	topic: ((Rinderpest AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Rocio virus	topic: ((Rocio AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Sabia virus	topic:((((Sabia AND virus) OR "Brazilian mammarenavirus") AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

SARS-CoV-1	topic:(("SARS-CoV-1" AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Seoul virus	topic:((("Seoul virus" OR "Hantavirus hemorrhagic fever" OR "Seoul orthohantavirus") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Sheeppox virus	topic: ((Sheeppox AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Sin Nombre virus	topic:((("Sin Nombre" OR "Muerto Canyon") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
St. Louis encephalitis virus	topic: (("Louis encephalitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Suid herpesvirus 1 (Pseudorabies virus)	topic: (("Pseudorabies virus" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Swine vesicular disease virus	topic: (("Swine vesicular disease" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Abrin	topic: ((abrin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))

T. Aflatoxins	topic: ((aflatoxin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Botulinum toxins	topic: ((Botulinum AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
T. Cholera toxin	topic: ((cholera AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Clostridium perfringens	topic: ((("Clostridium perfringens" OR "Clostridium welchii") AND (alpha OR "beta 1" OR "beta 2" OR epsilon OR iota) AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Conotoxins	topic: ((Conotoxin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Diacetoxyscirpenol	topic: (((Diacetoxyscirpenol OR anguidine) AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. HT-2 toxin	topic: (("HT-2" AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Microcystins (Cyanginosins)	topic: ((((Microcystins OR Cyanginosins) AND toxin) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Modeccin	topic: (((Modeccin OR "Modecca digitata" OR "Adenia digitata") AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))

T. Ricin	topic: ((ricin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Saxitoxin	topic:((saxitoxin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Shiga toxins(shiga-like toxins)	topic:(("shiga-like toxin" AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Staphylococcus aureus	topic: (("Staphylococcus aureus" AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Tetrodotoxin	topic:((Tetrodotoxin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. Viscumin	topic:((viscumin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T. volkensin	topic:((volkensin AND toxin AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat* OR extraction)) NOT (epidemiology AND outbreak))
T-2 toxin	topic:((("T-2 toxin"~3 OR "T-2 mycotoxin"~3) AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Tick-borne encephalitis virus	topic: (("Tick-borne encephalitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

Variola virus	topic: ((variola AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Venezuelan equine encephalitis virus	topic: ((("Venezuelan equine encephalitis" OR "equine encephalomyelitis") AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR
Vesicular stomatitis virus	topic: (("Vesicular stomatitis" AND virus AND ("synthetic biology" OR GMO OR PCR OR genom* OR genetics OR replication OR sequenc* OR RNA OR isolat*)) NOT (epidemiology AND outbreak))
Western equine encephalitis virus	topic: (("Western equine encephalitis" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))
Yellow fever virus	topic: (("Yellow fever" AND virus AND ("synthetic biology" OR GMO OR "Genetically Modified Organism" OR PCR OR "Polymerase Chain Reaction" OR genom* OR genetics OR replication OR sequenc* OR RNA OR "ribonucleic acid" OR isolat*)) NOT (epidemiology AND outbreak))

CATEGORY 1 - SPECIAL MATERIALS AND RELATED EQUIPMENT

Dataset	Query
Beryllium	topic:(beryllium AND (reflector OR "nuclear reactor" OR "neutrons scatter"))
Boron	topic:("boron-10" AND ("neutron absorption"~2 OR "nuclear reactor"~1 OR "water reactor"~2 OR "control rods"))
Calcium	topic:(calcium AND (Uranium OR plutonium) AND ("high purity" OR conversion OR converter))
Catalysts for D2O or Tritium production	topic:(("platinum catalyst"~3 OR "platinized catalyst"~3 OR "platinum-catalyzed"~3 OR "catalytic membrane"~2 OR "palladium catalyst"~3 OR "Rhodium catalyst"~3 OR palladium OR rhodium OR platinum) AND ("heavy water"~2 OR "D2O" OR "tritium recovery"~3 OR "tritium separation"~3 OR "tritium production"~3 OR "tritiated water" OR "hydrogen isotope exchange"~2))
ceramic materials 1C007	topic:(((("titanium diboride" OR TiB2) AND powder) OR (("aluminium oxide" OR Al2O3 OR "silicon nitride" OR "Si-N" OR "silicon carbon nitrate" OR "Si-C- N" OR "silicon carbide" OR "silicon alumina") AND "ceramic fibres" or "ceramic fibers") OR "zirconium carbide" OR "zirconium nitride" OR "boron carbide" OR "boron nitride" OR polysilazanes OR Polycarbosilazanes OR "nickel aluminides" OR "titanium aluminides" OR Polysilazanes OR "Organosilicon compounds") AND (aerospace OR "rocket motor" OR "rocket engine" OR "gas turbines" OR "body armour" OR "space shuttle" OR spacecraft OR "launch vehicle" OR "landing gear" OR "carrier rocket"))
Ceramic materials 1C107	topic:(((ceramic OR ceramics) AND ("Silicon-carbide" OR "Carbon fiber reinforced carbon" OR "Carbon fibre reinforced carbon" OR "reinforced carbon-carbon" OR "ultra high temperature" OR UHTC)) AND ("rocket nozzle"~1 OR "reentry vehicle"~1 OR "re-entry vehicle"~1 OR MARV OR "heat shield" OR "thermal protection systems" OR missile OR "Space launch vehicle" OR "carrier rocket" OR spacecraft OR "space shuttle"~2 OR "sounding rocket" OR "research rocket"))
Chlorine trifluoride	topic:("Chlorine trifluoride")
Composites production equipment	topic:(("composites production equipment"~6 OR "Filament winding machine"~6 OR "fiber placement machine"~6 OR "Tape-laying machine"~6 OR "filament winding" OR "Tape-laying") AND (axis OR axes))
Electrolytic cells	topic:("Electrolytic cells" AND fluorine)
Electromagnetic isotope separator	topic:("Electromagnetic isotope separator" OR "Electromagnetic isotope separation")
Explosive detonators & charges	topic:((("exploding bridge" OR "exploding foil" OR slapper) AND (detonator OR initiator OR igniter OR ignition)) OR ti:("linear shaped charge"~1 OR "detonating cord"~1 OR "detonation cord"~1))
Fibrous or filamentary materials	topic:(("launch vehicle" OR spacecraft OR rocket OR aerospace OR "gas centrifuges") AND ("p-aramids" OR "para-aramids" OR Kevlar OR Twaron OR "carbon fiber" OR "Carbon fibre" OR "carbon fibrous" OR "carbon coated" OR "glass fiber" OR "glass fibre" OR "resin impregnated" OR "pitch based"

fluorinated compounds	topic:("fluorinated polyimides"~1 OR "fluorinated phosphazenes"~1)
Graphite 1C107	topic:((graphite) AND ("rocket nozzle"~1 OR "reentry vehicle"~1 OR "re- entry vehicle"~1 OR MARV OR "heat shield" OR "thermal protection systems" OR missile OR "Space launch vehicle" OR "carrier rocket" OR spacecraft OR "space shuttle"~2 OR "sounding rocket" OR "research rocket"))
Hafnium metal	ti:(Hafnium AND metal)
High explosive containment chamber	ti:(("explosive containment"~2) AND (chamber OR vessel OR container OR diamond))
hydrogen isotope separation equipment	topic: ("hydrogen Cryogenic distillation"~10 OR "Girdler Sulfide" OR (("exchange tower" OR "exchange process") AND (hydrogen OR deuterium OR tritium OR "liquid ammonia"~3 OR Sulfide OR sulphide OR "heavy water")) OR (gas AND liquid AND ("exchange tower"~2 OR "exchange process"~2)) OR ("circulating pump" AND hydrogen))
Improvised explosive devices disruptors	topic:((("explosive disruptor"~4 OR "Ordnance Disposal") AND ("remotely operated vehicle" OR "vehicle IED"~3)) OR (projectile AND ("disruptor liquid"~4 OR "disruptor solid"~4 OR "disruptor frangible"~4 OR "disruptor water jet"~4 OR "disruptor waterjet~4")) OR "EOD vehicle"~3)
Lithium isotope separation equipment	topic:(("Lithium-6 enrichment"~2 OR "Li-6 enrichment"~2 OR "Lithium-7 enrichment"~2 OR "Li-7 enrichment"~2 OR "lithium isotope enrichment"~3) OR (("lithium amalgam"~2 OR "lithium hydroxide" OR LiOH) AND (evaporator)) OR (lithium AND ("light water" OR "nuclear weapon")) OR (("ion exchange"~1 OR "chemical exchange"~1) AND "lithium isotope"~1)) OR ti:(("lithium isotope separation"~3 OR "isotopic separation lithium"~3 OR ((Li6 OR Li7 OR lithium) AND ("fusion power"~2 OR "fusion reaction"~2 OR tritium))) OR "Tritium processing system"~2)
Lubricating materials	topic: (("Lubricating materials" OR lubricant OR damping) AND (phenylene OR thio-ethers OR "Fluorinated silicone" OR PCTFE OR polytrifluorochloroethylene OR Dibromotetrafluoroethane OR "Halon 2402" OR Polybromotrifluoroethylene OR "perfluoropolyalkylether-triazines" OR "perfluoroaliphatic-ethers" OR Perfluoroalkylamines OR Perfluorocycloalkanes OR Perfluoroalkanes))
Magnetic metals	topic:("magnetostrictive alloy" OR (("nanocrystalline alloy") AND (iron OR cobalt OR nickel)))
Metal alloys	topic:((("Titanium-stabilized duplex stainless steel" OR "Ti-DSS" OR "nickel alloy"~2 OR "nickel aluminides"~2 OR "titanium aluminides"~2 OR "titanium alloy"~2 OR "maraging steel" OR "niobium alloys" OR inconel OR monel OR zircaloy OR tungsten OR Molybdenum OR superalloy) AND ("resistance corrosion"~4 OR "resistant corrosion"~4 OR "chemical resistance"~4 OR "strain strength"~1 OR "tensile strength"~1) AND (production OR equipment OR missile OR rocket OR aerospace)) OR ("aluminum alloy"~ 2 AND series AND (7000 OR 8000 OR 7039 OR 7150 OR 8019)))

Metal powder production equipment	topic: ((propellant OR "metal powder" OR "metallic particles" OR "metallic powders" OR "spherical particles") AND (Electroburst OR "plasma generator" OR "plasma generation" OR "plasma generated" OR pyrometallurgical OR "Electrolytic refining" OR "chemical refining" OR "atomisation furnace" OR "splat quenching" OR "rotary atomisation" OR "electrolytic bath" OR "melt spinning"))
Mixers and mills	topic:((mixer AND "under vacuum" AND (batch OR continuous)) OR ("fluid energy mills" AND "material"))
Other technology	topic:(((polybenzothiazoles OR polybenzoxazoles) AND (development OR production)) OR (fluoroelastomer AND "vinylether monomer" AND (development OR production)) OR ((design OR production) AND "Ceramic powder" AND ("Oxides of zirconium" OR "zirconium oxide" OR "complex oxides of silicon" OR "complex silicon oxide" OR "complex oxides of aluminium" OR "complex aluminium oxide")) OR "Single nitrides of boron" OR "Single boron nitride" OR ((Single OR complex) AND ("carbides of silicon" OR "silicon carbide" OR "nitrites of silicon" OR "Silicon nitrite")))
Polymeric substances (thermoplastic)	topic:((Bismaleimides OR "aromatic polyimides"~1 OR "aromatic polyamide-imides"~1 OR PAI OR "aromatic polyetherimides" OR "thermoplastic polymers") AND ("chemical resistance"~2 OR "resistant corrosion"~2 OR "resistance corrosion"~2 OR "high temperature"~1))
Propellants	ti_abs:(("spherical aluminium powder"~2 OR "spherical aluminum powder"~2 OR "aluminium powder"~2 OR "spheroidal aluminum powder"~2 OR "zirconium powder"~2 OR "beryllium powder"~2 OR "magnesium powder"~2 OR "boron powder"~2 OR "guanidine nitrate" OR nitroguanidine OR carboranes OR "Dinitrogen trioxide"~1 OR "Nitrogen dioxide"~1 OR "Dinitrogen pentoxide"~1 OR "mixed oxides Nitrogen"~2 OR "Carboxy-terminated polybutadiene" OR "carboxyl-terminated polybutadiene" OR "Polybutadiene-acrylic acid" OR "Polyglycidyl nitrate" OR 2-Nitrodiphenylamine OR "Trimethylolethane trinitrate" OR "Diethylene glycol dinitrate") AND (propellant OR propulsion OR "solid fuel" OR "liquid fuel" OR rocket)) OR ti:(((butadienes OR ferrocenes OR slurries OR hydrazine OR "Hydroxy-terminated polybutadiene" OR "hydroxyl-terminated polybutadiene" OR "Triethylene glycol dinitrate") AND (propellant OR propulsion OR "solid fuel" OR "liquid fuel" OR rocket)) OR "gel propellant"~1)

Protective and detection equipment	ti:(((detection OR detector OR monitor OR sensor) AND ("biological agents" OR "chemical warfare agent" OR "radioactive material"~1 OR NBC OR CBRN)) OR (biosensor AND "biological agent"~1) OR ("mass spectrometer" AND (chemical OR biological) AND (agent OR "warfare agent")) OR (((radiation OR radioactive) AND ("detection equipment"~2 OR "detection instrument"~2)) OR "Personal Radiation Detectors") OR ("gaseous diffusion" AND (radiation OR detection OR detector OR uranium))) OR topic:("body contamination monitor"~3 OR "body contamination measure"~3 OR (("Chemical agents"~2 OR "biological agents"~2 OR "biological warfare"~2 OR "chemical warfare"~1 OR uranium OR tritium OR "radioactive material"~1 OR "riot control agents") AND ("protective mask" OR "filter canister" OR "full-face mask" OR "gas mask" OR glovebox OR "body armour" OR "protective suits" OR "protective vest" OR "protective gloves" OR "protective shoes" OR ("protective clothes"~3 OR "protective clothing"~3))))
Pumps	topic:(Pump AND ("potassium amide" OR KNH2) AND ("liquid ammonia" OR NH3))
Radiation shielding windows	topic:(((("lead glass"~1) AND (radiation OR shield)) OR ("radiation protection window"~2 OR "radiation protection shield"~2 OR "radiation shielding glass"~2)) NOT syringe NOT stained)
Radionuclides	ti:(((Actinium-225 OR Actinium-227 OR Polonium-210 OR Radium-223) NOT (tobacco OR cancer OR therapy OR metastase OR radiopharmaceutical)) NOT emm_journalCategoryScopus:(Oncology OR "Cancer Research" OR pharmacology OR "Agricultural and Biological Sciences(all)" OR Medicine(all))) OR topic:(((Actinium-225 OR Actinium- 227 OR Californium-253 OR Curium-240 OR Curium-241 OR Curium-242 OR Curium-243 OR Curium-244 OR Einsteinium-253 OR Einsteinium-254 OR Gadolinium-148 OR Plutonium-236 OR Plutonium-238 OR Polonium- 208 OR Polonium-209 OR Thorium-227 OR Thorium-228 OR Uranium-230 OR Uranium-232) NOT (tobacco OR cancer OR therapy OR metastase OR radiopharmaceutical)) NOT emm_journalCategoryScopus:(Oncology OR "Cancer Research" OR pharmacology OR "Agricultural and Biological Sciences(all)" OR Medicine(all)))
radium 226	topic:(("radium 226" OR radium-226) AND nuclear)

Resaturated pyrolised carbon-carbon comp	topic:("carbon-carbon" AND pyrolitic AND space)
Rhenium	topic:(Rhenium AND cylinder)
Stealth materials	topic:(((reflect* OR ((reflect* OR absorb*) AND coating)) AND ("electromagnetic waves" OR frequency OR radiation OR Infrared OR ("surface electrical properties" AND microwaves)) AND (polypyrrole OR Polyaniline OR Polythiophene OR "Poly phenylene-vinylene" OR "Poly thienylene-vinylene" OR "carbonyl iron" OR "carbon black")) OR "Radiation-absorbent material" OR "radar absorbing materials" OR ("Split-ring resonators" AND (absorb* OR reflect*) AND ("electromagnetic waves" OR frequency OR radiation)))
Steels	topic:(("Maraging steel" AND (missile OR rocket OR aerial)) OR ("solution annealed" AND nickel) OR "High-Performance Stainless Steels" OR "Ti-DSS" OR "Titanium stabilised stainless steel"~1 OR "Titanium stabilized stainless steel"~1 OR (titanium AND "duplex stainless steel"))
Superconductive composite conductors	topic:(Superconductive AND composite AND conductor AND ("Niobium-Titanium" OR (filaments AND (wire OR tape OR cylinder OR film OR ribbon))))
Toxic chemicals & chemical precursors	topic: (("chemical weapon" OR "warfare agents" OR "blood agents" OR "chocking agents" OR "blistering agents" OR "vesicant agents" OR "nerve agents" OR "incapacitating agents" OR Novichok) AND ("intermediate of synthesis" OR "reaction vessel" OR "structural elucidation" OR solvent OR distillation OR organophosphorus OR "gas chromatography" OR "liquid chromatography" OR microreactor OR "mass spectrometry" OR reagents OR "solid-phase synthesis"))
Tritium system	recovery OR production OR concentration)) OR (("hydrogen isotope" OR deuterium OR tritium) AND "purification system"~3) OR (tritium AND ((hydrogen AND "cryogenic distillation") OR "Water Detritiation" OR "catalytic exchange column"~5 OR (palladium AND (diffusers OR permeators))))) OR ti:("tritium breeding")
Turboexpanders	topic:((Turboexpander OR "turbo-expander") AND hydrogen)

CATEGORY 2 - MATERIALS PROCESSING

Dataset	Query
Aerosol inhalation	topic:("Aerosol inhalation system"~2 OR "inhalation exposure chamber"~5 OR
Automatic filling equipment	ti:("automatic filling machine"~2 OR "corrosive filler" OR ("corrosive resistant" AND "toxic chemical" AND (machine OR filler)))
Balancing machine	topic:(("balancing machine" AND rotor) OR (centrifugal AND "balancing machine"))
Bearing systems	topic:(((bearing OR bearings OR "anti-friction") AND (monel OR beryllium)) OR (("active magnetic bearing"~2 OR "active magnetic bearings"~2) AND ("position sensor"~2 OR "self sensing")))
Bellows-sealed scroll compressors/v.pump	topic:(("scroll compressors"~3 OR "scroll vacuum pump"~3) AND ("spiral vanes"~5 OR "bellows-sealed"~5 OR "gas centrifuge"~5 OR uranium OR tritium OR "hermetic seal") NOT refrigeration)
Biocontainment facilities/equipment	topic: (("biosafety cabinet" OR isolator OR glovebox OR "Biocontainment chamber" OR autoclave OR facility OR chamber) AND (HEPA OR BL3 OR BL4 OR "class III" or "class IV" OR "BSL-3" OR "BSL-4"))
Bioreactor	topic: ((bioreactor OR fermenter OR fermentation OR "cultivation chamber" OR "bio reactor" OR "holding device") AND (HEPA OR ULPA OR "human pathogen" OR vaccine))
Centrifugal separators	topic: (("centrifugal separator" OR centrifuge OR decanter) AND ("HEPA" OR "ULPA" OR "human pathogens" OR "vaccines"))
Chemical manufacturing equipment	topic:(("reaction vessel" OR "reaction reactor" OR "chemical reactor" OR agitator OR impellers OR "storage tanks" OR receiver OR "heat exchanger" OR condenser OR "absorption columns" OR "distillation columns" OR "distillation tower" OR "fractionating column" OR "liquid distributor" OR "filling machines"~5 OR valves OR "walled pipe"~2 OR pump) AND (equipment OR instrument OR "chemical process" OR "chemical manufacturing" OR "chemical industry") AND (nickel OR Fluoropolymers OR tantalum OR nobium OR zirconium OR titanium OR glass OR "silicon carbide" OR monel OR inconel OR hastelloy OR zirconium OR graphite OR "corrosion resistant"))
controlled atmosphere induction furnace	topic:((furnace AND (vacuum OR "inert gas" OR "arc remelt"~2 OR "electron beam"~2 OR "computer control" OR "monitoring system" OR "plasma torches")) AND (nuclear OR Uranium OR plutonium OR "metal fuel"~5 OR actinide OR "yellow cake" OR "uranium ores"))
Crucible	topic: (crucible AND ((uranium OR plutonium) OR (("coated with" OR "made of" OR "lined with") AND ("calcium fluoride" OR "calcium zirconate" OR "cerium sulphide" OR "erbium oxide" OR erbia OR "hafnium oxide" OR hafnia OR "magnesium oxide" OR magnesia OR "yttrium oxide" OR yttria OR "zirconium oxide" OR zirconia OR tantalum))))
Dimensional inspection & measuring systems	ti:("coordinate measuring machine" OR "Fizeau interferometer" OR ("displacement sensor" AND "three-dimensional") OR (("linear displacement"~5 OR "angular displacement"~5)AND measuring) OR "linear variable differential transformers" OR LVDTs)

flow filtration components	topic:(("Cross-flow filtration" OR "tangential flow filtration") AND (modules OR elements OR cassettes OR cartridges OR units OR "plates" OR bioreactor OR microorganisms OR virus OR toxins OR "cells culture" OR vaccine OR "cartridge filter"~3 OR "membrane filter"~3 OR "filtration membrane"))
Gas detectors	topic:((("toxic gas" AND (detect* OR "monitoring system" OR "sensor" OR cholinesterase OR AChEI OR neurotransmitter)) OR (gas AND detect* AND cholinesterase AND inhibit*)) OR (gas AND detect* AND "chemical warfare agents"))
Heat exchangers	(ti:("heat exchanger" OR condenser) AND topic: (nickel OR Fluoropolymers OR glass OR graphite OR "carbon graphite" OR tantalum OR titanium OR nobium OR zirconium OR "silicon carbide"))
High velocity gun systems	topic:(("Gas guns"~2 OR "propellant guns"~2 OR "coil guns" OR "electromagnetic guns" OR "electrothermal guns" OR "high velocity guns"~2) AND (hydrodynamic OR "equation of state" OR "spall strength"~2 OR "sound speed" OR "strain- rate"~2 OR nuclear OR "high-stress"~2 OR "high-temperature"~2 OR "shock-pressure"~2))
Incinerators for chemicals	topic:(("incinerator" OR "incineration" OR "thermal treatment") AND ("toxic chemicals" OR "chemical weapons" OR "warfare agents" OR "hazardous chemicals" OR pesticides OR "nerve agents")) NOT topic:("plastic waste" OR "recycling" OR "circular economy" OR pollution OR tobacco OR garbage OR "heavy metals" OR environment)
isostatic press (applications)	topic:(("isostatic press" OR "isostatic pressing" OR "isostatically pressed" OR "Hydraulic Powder Press" OR "Powder Compacting System") AND ("MOX fuel" OR "alloy powder" OR "high-tech" OR "turbine blade"))
isostatic press (general)	topic:(("isostatic press" OR "isostatic pressing" OR "isostatically pressed" OR "Hydraulic Powder Press"~2 OR "Powder Compacting System"~2)AND (nuclear OR explosive OR PBX OR "MOX fuel" OR UO2 OR "fuel pellets" OR "turbine blade"))
Machine tools	(ti:("machine tool") AND ti_abs:((grinding OR cutting OR milling OR turning) AND ("computer numerical control"~2 OR CNC))) OR ti_abs:(("computer numerical control"~2 OR CNC) AND "subtractive manufacturing")
motion simulators, rate&position tables	ti:(("motion simulator" OR "motion simulation" OR "rate table" OR "positioning table") NOT "single axe")
positioning control units	topic:((("linear position" OR "rotary position") AND "contouring control") OR (("tilting spindle" OR "rotary tables") AND "machine tool"))

Pressure transducers	topic:(("Pressure sensor" OR "pressure transducer" OR "pressure transmitter" OR "pressure sender" OR "pressure indicator" OR piezometer OR manometer OR "pressure gauge" OR "vacuum gauge") AND ("absolute pressure" OR uranium OR "gas centrifuge"~2 OR "isotope separation"~3 OR "gaseous diffusion"~3))
Remote manipulator	topic:(("remote manipulator"~3 OR "remote manipulation"~3 OR "remotely manipulator"~3 OR "mechanic arm"~5 OR "mechanical arm"~5 OR "remote arm"~5 OR "remotely arm"~5) AND ("hot cells" OR radioactive OR radiochemical
robots, controllers, end-effectors	topic:((robot OR "end effector") AND ("resistant radiation"~5 OR "radiation hardened" OR "extreme condition"~3 OR explosive OR nuclear OR plutonium))
Rotors fabrication/assembly equipment	topic:((rotor OR bellows OR baffles OR "end caps") AND ("gas centrifuge"~3 OR "gas centrifugal"~3 OR "single-convolution bellows"~5 OR uranium))
Spin-forming & flow-forming machines	topic:(("flow-forming" OR "flow forming" OR "spin-forming" OR "spin forming" OR "metal spinning") AND (CNC OR "computer numerical control") NOT ("two axes" OR "single axe"))
Storage tanks	ti:("storage tank" OR receiver) AND topic:(nickel OR Fluoropolymers OR glass OR tantalum OR titanium OR nobium OR zirconium)
Surface treatment equipment	topic: ((("Chemical vapour deposition" OR CVD OR CNTD OR "ion implantation" OR "electron beam physical vapour deposition" OR PVD OR "EB-PVD" OR "TE- PVD" OR "ion plating" OR "plasma spraying" OR "sputter deposition" OR "cathodic arc deposition") AND (aluminides OR salicides OR carbides OR diamond OR "boron nitride" OR "tungsten carbide" OR molybdenum OR beryllium OR MCrAlX OR superalloys OR "modified zirconia" OR "titanium boride" OR "titanium nitride" OR "nickel-graphite" OR Ni-Cr-Al OR "Cemented tungsten carbide") AND coat*) NOT (semiconductors))
vacuum pump	topic:(("vacuum pump" OR (vacuum AND pump)) AND ((uranium AND enrichment) OR UF6 OR "gas centrifuge" OR "separation plant" OR "isotope separation"~5)) OR ti:(turbopump OR "turbomolecular pump")
Valves	(ti:(valves) AND topic:(("made of" OR "coated with" OR "lined with") AND (nickel OR Fluoropolymers OR glass OR tantalum OR titanium OR nobium OR zirconium)))
vibration testing system	topic:((("vibration test"~1 OR "vibration control"~1 OR "vibration testing"~1) AND ("digital controller" OR "digital control")) OR ("vibration thruster" OR "shaker unit"))

CATEGORY 3 - ELECTRONICS

Dataset	Query
Absolute rotary encoder	topic:("absolute rotary encoder" OR "rotary position encoders" OR "absolute encoder" OR "Angle Encoders" OR ((rings OR discs OR scales) AND ("rotary encoder" OR "position encoders")))
Acoustic wave devices	topic:(("surface acoustic wave" OR "SAW resonator" OR "bulk acoustic wave" OR "BAW resonator" OR "surface acoustic wave filter" OR "SAW filter" OR "bulk acoustic wave filter" OR "BAW filter" OR "surface acoustic wave" OR "SAW oscillators" OR "bulk acoustic wave oscillators" OR "BAW oscillators" OR "surface acoustic wave delay line" OR "SAW delay line" OR "bulk acoustic wave delay line" OR "BAW delay line" OR "Surface acoustic wave device" OR "SAW device" OR "bulk acoustic wave device" OR "BAW device" OR "Acoustic optic signal processing devices") AND (military OR telecommunication* OR radar OR space))
Amplifiers (microwave)	topic:(("solid state amplifier" OR (SSPA AND (microwave OR "millimetre wave")) OR (("travelling wave tube amplifier" OR TWTA) AND microwave) OR "cross field amplifier" OR ("Monolithic Microwave Integrated Circuits" AND amplifier) OR "MMIC amplifier" OR "microwave amplifier" OR "millimetre wave amplifier"~2) AND ((satellite AND communication*) OR (hopping AND frequency) OR (wideband AND radar) OR jammer OR jamming))
Electronic converters	((ti_abs:(("Analogue-to-digital" OR "digital-to-analogue" OR ADC OR DAC) AND (conversion OR converter)) OR ti_abs:(digitization AND (equipment OR modules) AND ("data processing" OR "data storage" OR "data transmission"))) AND topic:("high GSPS" OR "high Giga Sample per Second" OR "high bits"))
Fabrication Processes IC Design	topic: ((IC OR "integrated circuit" OR ASIC OR SoC "system on a chip" OR "Multi- chip module" OR MCM) AND ("Hardware Descriptive Language" OR "Hardware Description Language" OR VHDL OR "very high speed" OR "design automation" OR "logic synthesis"))
Frequency changer/generator	topic:(("Frequency changer"~3 OR "frequency generator"~3 OR "frequency converters"~3 OR "frequency inverters" OR "variable frequency drives"~3 OR ASDs OR "adjustable frequency drive"~3 OR "variable speed drives") AND ("gas centrifuge"~5 OR uranium OR "high-frequency AC power"~3 OR "three-phase asynchronous motors"~3 OR "three-phase AC" OR "high-speed AC motor"~6))
Frequency signal processing	ti:((("band-stop filter" OR "band-rejection filter" OR "band-pass filter") AND tunable) OR "EMI receivers" OR (("Spectrum Analyzer" OR "Optical spectrometer") AND radio) OR "frequency switching time" OR "frequency switching speed" OR "frequency synthesizer" OR "transmit/receive module" OR "duplex transceiver" OR ("transmit/receive" AND MMIC))
High energy devices	topic:(("high energy" AND ("primary cell" OR "secondary cell")) OR "high energy capacitors"~1 OR (("Superconductive electromagnets" OR "Superconductive solenoids") NOT "Magnetic Resonance Imaging") OR ("space qualified" AND ("solar panel" OR "solar cells" OR "solar array" OR "cell-interconnect- coverglass")))

High-Power Direct Current Power Supplie	topic:(("High Power" OR "High voltage") AND ("Direct Current Power Supply"~5 OR "Direct Current Power Supplies" OR "DC power supply"~3 OR "LED power supply"~3))
Integrated circuits	topic:(((((("Microprocessor microcircuits" OR "microcomputer microcircuits" OR "microcontroller microcircuits" OR "integrated circuits") AND ("analogue-to- digital converter" OR "digital-to-analogue converter" OR semiconductor OR "signal processing" OR "programmable logic device" OR "flash memories" OR "Static Random-Access Memories" OR SRAMs OR "Magnetic Random Access Memories" OR MRAMs)) OR ("FFT processor" OR "fast Fourier transform processor" OR "Electrical Erasable Programmable Read-Only Memories" OR EEPROM)) AND (temperature OR radiation)) OR "field programmable logic device" OR "fast Fourier transform processor" OR ("optical integrated circuit" AND "signal processing") OR (("electro-optical" OR "optical integrated circuit")
Mass spectrometers	topic: ("Mass spectrometers" AND ("microfluorination ion" OR uranium OR plutonium OR actinides OR reprocessing OR "Inductively Coupled Plasma" OR "glow discharge" OR "Electron Bombardment" OR "Thermal Ionization"))
Memory cards	topic:(("flash memories" OR "Static Random-Access Memories" OR SRAMs OR "Magnetic Random Access Memories" OR MRAMs OR "Electrical Erasable Programmable Read-Only Memories" OR EEPROM OR "NAND flash") AND (satellite OR infrared OR "extreme conditions" OR "extreme climate" OR "extreme temperature" OR "harsh environment" OR "low temperature" OR "high temperature"))
Neutron generator	topic:(("Neutron generator" OR "Neutron generation" OR "Neutron generated") AND (fission OR radioactive OR "nuclear reactor"~2 OR deuterium OR tritium OR "electrostatic acceleration"~2 OR titanium OR scandium))
Semiconductor production technology	ti:((Semiconductor OR "Integrated Circuit" OR IC OR microeletronics OR microsystems OR MEMS OR "integrated device" OR "Multi Chip Module" OR MCM OR "3D-IC" OR ASIC OR "system-on-chip" OR SoC) AND (production OR fabrication))

Semiconductors	ti:(Semiconductors AND (coating OR etching OR doping OR photolithography OR metallizing OR (silicon AND transistors) OR "cluster tools" OR "lithography masks" OR "integrated circuits" OR microprocessors OR "memory modules" OR "logic circuits" OR transistors OR diodes OR ("CCD chips" AND cameras) OR "opto-electronic sensors" OR "laser diodes" OR "light emitting diodes"~1 OR "high frequency transistors"~1 OR Micromechanics OR MEMS OR weapon OR "combat systems"~2 OR "Optical reconnaissance" OR (reconnaissance AND (infrared OR multispectral OR "visible wavelength range"~2 OR ultraviolet)) OR encryption OR "electronic warfare" OR ECCM OR "avionics cockpit displays"~2 OR "Search Rescue"~2 OR tracing OR "disaster control" OR (("switching frequency" OR "temperature resistance") AND ((gallium AND arsenic) OR "gallium arsenide"))))
Semiconductors Fabrication processes	ti:((Semiconductor OR Silicon OR Fabricat*) AND (photolithography OR "physical vapour deposition" OR PVD OR "chemical vapour deposition" OR CDV OR "electrochemical deposition" OR ECD OR "molecular beam epitaxy" OR MBE OR "atomic layer deposition" OR "atomic layer deposited" OR ALD OR "wafer fab" OR "through silicon via" OR TSV OR "chip scale packaging" OR "wafer scale integration" OR WSI))
Superconductivity G electronic devices	topic:("superconductive material" AND (circuit OR electronic OR digital OR frequency) AND ("low temperature" OR "critical temperature"))
Switching devices NSG	topic:(("switching device"~4 OR "Cold-cathode tubes"~5 OR sprytrons OR "fast-switching modules"~4 OR "triggered spark gaps"~4 OR thyratrons)AND (explosive OR detonation OR "pulsed power"~2 OR "pulse generator"~4 OR implosion OR exploding OR "Capacitor Discharge Units"~5 OR "pulse generator"))
Switching devices thyristors	topic:(((thyristor AND "pulsed power" AND switch) OR "thyristor modules") OR (switch AND ("Triggering Thyristors" OR "Integrated Gate Commutated Thyristors" OR "Gate Turn-off Thyristors" OR "MOS Controlled Thyristors")) OR SolidTRON OR (("semiconductor switches" OR "semiconductor diodes" OR "semiconductor modules") AND ("operating temperature" OR "junction temperature" OR "operation temeprature"))OR (("operating temperature" OR "junction temperature" OR "operation temeprature") AND ("Bipolar Junction Transistors" OR "Field Effect Transistors" OR "PiN Diodes" OR "Schottky Diodes")) OR (("silicon controlled rectifier" OR "Thyristor controlled rectifier" OR "gate Turn-Off Thyristors") AND switch) OR "emitter Turn-Off Thyristors")
Vacuum electronic devices	topic:(((amplif* OR oscillat* OR Thermionic OR "travelling wave tube" OR klystrons OR klystron) AND ("vacuum electronic device" OR "vacuum tube" OR "continuous wave pulsed"~4 OR "pulsing continuous wave"~3)) OR Amplitron OR "diode vacuum")

CATEGORY 4 - COMPUTERS

Dataset	Query
Digital computers-enhanced performance	topic: ((teraFLOPS OR teraFLOP OR TFLOPS OR DPFLOPS) AND ("digital computer" OR "vector processors" OR "array processors" OR "digital signal processor" OR "logic processor" OR "image enhance" OR "supercomputer" OR "numerical wind tunnel" OR "battlefield visualisation" OR OLAP OR "Massively parallel processing" OR "hypersonic aerodynamics" OR cryptanalysis OR "Air and Missile Defence"))
Intrusion software control	topic:((("intrusion software"~3 OR "cyber security technologies"~3 OR "cybersecurity technologies"~1 OR "cyber-weapons" OR cyberweapons) AND (control OR command OR delivery OR deliver OR generation OR generated OR production OR product OR produced OR producer))NOT
Neural-Optical-Systolic array computer	ti:((("Neural computers" OR "Neural computing" AND neuters) OR "Optical computers" OR "Optical computing" OR neuters OR "Systolic array computers"~4) NOT ("CT scans" OR "radiation therapy" OR arthiritus))
Ruggedized computers	topic:((((comput* AND "radiation hardened"~3) OR (comput* AND "rad- hard") OR (comput* AND radhard) OR (comput* AND "specially designed" AND ("extreme temperature"~2 OR "extreme conditions"~2)) OR (comput* AND rugged) OR (comput* AND ruggedized) OR (comput* AND "satellite
Space launch & Computer	ti:(("Space launch vehicle"~3 OR "carrier rocket" OR "spacecraft bus" OR "spacecraft payload" OR "spacecraft system") AND (model* OR simulat* OR "design integration" OR "design integrated"~1 OR computer OR computing OR "digital differential analyser"~5))

CATEGORY 5 - TELECOMMUNICATION AND INFORMATION SECURITY

Dataset	Query
Counter Improvised Explosive Device eq	topic:(("improvised explosive device" OR (IED AND explosive) OR "radio controlled improvised device"~1 OR (RCIED OR RCI) OR "electronic counter measure" OR ECM) AND (counter OR (radio AND (frequency OR communication)) OR ((detonation OR detonate OR detonator) AND equipment)))
Cryptography	topic:(cryptography AND ("spread spectrum" OR "Frequency-hopping" OR "user programmable spreading codes")) OR topic:((Cryptanalysis OR "code breaking") AND "information security"~3) OR topic: (Cryptography AND (((information OR data) AND storage) OR "data confidentiality" OR "crypto variables" OR "information security")) OR ti:((quantum AND cryptography) OR "quantum key distribution" OR QKD)
Interception &jamming equipment	topic:(interception AND (telecommunication OR IP OR "internet protocol Network" OR "surveillance systems"~3 OR "intrusion software"~3 OR (extraction AND (voice OR data OR signalling OR identifier)))) OR topic:("jamming devices" OR "jamming equipment" OR ((device OR equipment) AND interference AND (wave OR frequency) AND signal AND (reception OR transmission)))
IP network communication surveillance	topic:(("IP network" OR "Internet Protocol network") AND (((communication OR communications) AND surveillance) OR (analysis AND ("application layer" OR "layer 7" OR "layer 8" OR "layer 9" OR "layer 10" OR "7 layer" OR "8 layer" OR "9 layer" OR "10 layer" OR "carrier-class")) OR ((extraction OR extract) AND (metadata OR voice OR video OR messages OR attachment OR attached)) OR ((track OR map) AND (people OR individual OR group) NOT (QoS OR QoE OR marketing))))
Long-range radio equipment	ti:(((radio) AND ((("linear amplifier"~3 OR "linear PA"~3) AND modulation AND signal) OR ("automatic selection"~2 AND frequencies AND channel) OR "ultra-wideband modulation"~5 OR "instantaneous bandwidth" OR "ultra wideband" OR UWB OR "Impulse radio ultra-wideband" OR "IR-UWB" OR "Military VHF" OR "Military UHF" OR airborne OR "combat radio" OR "tactical radio")) OR "digitally controlled radio receivers"~9 OR "digital radio receiver" OR ("signal processing" AND "voice coding")) OR ti:((radio OR transmission OR transfer) AND ("data transfer rates" OR "data transfer rate" OR ("automatic selection"~2 AND frequencies AND channel)))
Optical fibres (high performance)	topic: (("optical fiber" OR "optical fibre" OR "fiber-optic") AND ("tensile stress" OR "fluorinated cladding" OR "fluorozirconate" OR "fluoroaluminate" OR "chalcogenide" OR "spacecraft" OR "aerospace" OR military)NOT "umbilical Cable")
Phased array antennae (satellites)	topic:(("phased array antenna" OR "phased array antennae" OR "phased-array antenna"~5) AND satellite)
Radio equipment Ultra-wideband	ti:("channelising code" OR "scrambling code" OR "network identification code"~3 OR "ultra-wideband modulation"~3)

Radio equipment-Digital transfer rates	ti:((radio OR transmission OR transfer) AND ("data transfer rates" OR ("automatic selection"~2 AND frequencies AND channel)))
Ruggedized equipment	topic: ((telecommunication OR telecommunications) AND (equipment OR devices OR component OR circuit OR instrumentation) AND ("radiation hardened" OR "thermal resistance" OR "thermal resistant" OR "thermal insulation" OR "extreme temperature" OR ruggedized OR rugged OR ("harsh environment"~2)))
Satellite telecommunication equipment-5E	ti:(("on-board" OR "onboard") AND satellite) AND topic:(communicat* OR trasmit)
Spread spectrum & Frequency-hopping tech	topic:(radio AND ("spread spectrum" OR "Frequency-hopping") AND ("Military VHF" OR "Military JTIDS" OR "Military EJS" OR ATCRBS OR "Air traffic control radar beacon system" OR FHSS OR "Frequency-hopping spread spectrum" OR DSSS OR "Direct-sequence spread spectrum" OR "Military MIDS" OR "DME/TACAN" OR "Distance Measuring Equipment" OR "Tactical Air Navigation"))
Superconductive materials devices - 5E	topic:(Superconductive AND (electronic OR electron OR electronics) AND (devices OR circuits)AND ((telecommunication OR communication OR telecommunications OR communications)))
Telecom & Info security software	topic:((software AND "designed") AND (((communication OR communications) AND (equipment OR devices) AND hardened AND radiation) OR ((undersea OR underwater) AND (communication OR communications) AND untethered) OR (radio AND ("digital transfer rates"~3 OR ("automatic selection" AND frequencies AND channel))) OR
Telecom/switching equipment-Laser or QAM	topic:((((telecommunication OR telecommunications) AND transmission) OR ((telecommunication OR telecommunications) AND switching)) AND (laser OR "Quadrature-Amplitude-Modulation" OR QAM) NOT TV)
Telecontrol equipment for missiles	topic:(((Telecontrol OR telemetry) AND ((equipment OR equipped) OR device) AND (missiles OR rocket OR "unmanned aerial vehicle" OR UAV)) AND (command OR control OR controller) NOT satellite)
Tracking moving objects detection system	topic:(("passive coherent location" OR PCL) AND radar) OR ti:((detect OR track) AND ("moving object") AND (system OR equipment OR device OR radar))
Underwater untethered telecom equipm	ti:(undersea OR "under-sea" OR underwater OR deep-water OR "subsea" OR "sub-sea") AND topic:((communication OR communications OR communicate) AND (system OR device OR component OR equipment OR equipped) AND (untethered OR acoustic OR electromagnetic OR "electronic beam"~5 OR laser OR LEDs OR "light-emitting diodes"))

CATEGORY 6 – SENSORS AND LASERS

Dataset	Query
Cameras and components NSG	topic:((("High-speed cameras"~2 OR "radiation hardened camera"~2 OR "High-speed imaging"~2 OR "Streak cameras" OR "framing cameras" OR "Solid-state cameras"~2 OR "intensified charge coupled device"~2 OR ICCD) AND ((explosive OR explosion) OR nuclear)) OR (cameras AND "plug-ins"))
Cryocoolers & optical sensing fibres	topic:((cryocoolers AND ("space qualified" OR "Mean-time-to-failure" OR MTTF OR "Mean-time-Between-failure" OR MTBF OR "Joule-Thompson")) OR (("optical fibres" OR "optical sensing fibres") AND (acoustically OR thermally OR inertially OR electromagnetically OR "nuclear radiation"~3 OR "ionizing radiation") AND (sensitive OR sensing OR senses OR sensitivity)))
Direct view imaging equip	topic:(("Direct view"~3 AND ("image intensifier"~2 OR "focal plane array"~3 OR "solid state detectors"~2)) OR ("focal plane array" AND (((linear OR "two-dimensional") AND "planar layer") OR ("infrared camera" OR "thermal imager" OR "imaging sensor" OR "termal sensor" OR "thermal detector"))) OR ("solid state detectors"~2 AND optical) OR ("image intensifier tubes"~2 AND (view OR vision)))
ElectroopticG nonlinear optical material	topic:((("Potassium titanyl arsenate" OR KTA OR "Silver gallium selenide" OR "AgGaSe2" OR "Thallium arsenic selenide" OR "Tl3AsSe3" OR "Zinc germanium phosphide" OR "ZnGeP2" OR "Gallium selenide" OR "GaSe") AND ("CO2 lasers" OR "detection CWA"~3 OR "detection Chemical warfare agent"~3 OR "detection explosive"~2 OR (("second-harmonic generation" OR SHG) AND infrared))) OR (("non-linear optical") AND ("third order non-linear susceptibility" OR "Response time" OR "second order non-linear susceptibility" OR "space-borne lasers" OR "high-performance computer"~2)))
Gravity meters	topic:(("Gravity meters" OR gravimeters OR "gravity gradiometer") AND (ballistic OR missile OR guidance OR "Gravimetric map" OR military OR launching OR "launch facilities" OR "missile silos"))
Laser materials	topic:(laser AND ("titanium doped sapphire" OR "synthetic crystalline" OR "Ti:sapphire crystal" OR "Rare-earth-doped fibres"~5))
Laser NSG	topic: ((laser AND uranium AND (enrichment OR "isotopes separation"~4 OR UF6)) OR "dye laser oscillator"~2 OR "dye laser amplifier"~2 OR (("Co2 laser"~3 OR "carbon dioxide laser" OR "CO laser"~3 OR "dye laser"~2) AND (uranium OR UF6)))

Laser WA	topic:((("continuous wave laser"~3 OR "pulsed laser"~2 OR "Quantum generators" OR "masers" OR "laser machining"~3 OR "laser cutting"~3 OR "laser welding"~3 OR "CO laser"~2 OR "carbon monoxide laser"~2 OR "carbon dioxide laser"~2 OR "CO2 laser"~2 OR "Laser range-finders" OR "laser radar"~2 OR "laser lidar"~3 OR "excimers laser"~2 OR "chemical laser"~2 OR "Nd:glass laser"~3 OR "neodymium laser"~3) AND (weapon OR missile OR bombs OR "guidance systems" OR projectiles OR "anti-aircraft" OR ballistic OR (satellite AND defense) OR military OR "navigation systems"~3 OR "laser communications"~3 OR (uranium AND (nuclear OR separation)) OR "nuclear reactor")) OR (("continuous wave laser"~3 OR "pulsed laser"~2 OR (laser AND "pulsed duration") OR "Quantum generators" OR "masers" OR "laser
Magnetometers	topic:(("superconducting quantum interference device" OR "optically pumped magnetometer" OR "nuclear precession magnetometer" OR "fluxgate magnetometer" OR "induction coil magnetometers" OR "superconducting ring"~2 OR "Quantum magnetometers"~2 OR SQUID OR "magnetic gradiometers"~3 OR "Electric Field Sensors") AND (submarine OR u-boat OR submersible OR "radio communication"~2 OR rocket OR spacecraft OR aerospace OR ship OR vessel OR craft OR mines OR "Unexploded ordnance" OR "non-destructive testing" OR defectoscopy) NOT (biomagnetic OR medical OR fish OR fishery OR animal OR nature OR ocean OR cetacean OR ecosystem OR reptile OR Cephalopod OR acoustic OR giant OR albatross OR reproduction OR waste OR "SCUBA divers" OR environment OR cephalopoda))
Marine active sensors	topic:(acoustic AND marine AND ("seabed survey" OR "survey equipment" OR "vessel survey" OR sonar OR "Side Scan Sonar" OR "Synthetic Aperture Sonar" OR piezoelectric OR "acoustic projector" OR "acoustic transducer" OR transducers OR magnetostrictive OR "Side-lobe suppression")) OR ti_abs:(("Correlation Velocity"~3 OR CVL OR "doppler velocity"~3 OR DVL) AND (sonar OR "underwater vehicle" OR UUV))
Marine passive sensors	topic:(acoustic AND marine AND (hydrophone OR "hydrophone array" OR "piezoelectric composite" OR "Towed acoustic hydrophone" OR "accelerometer-based" OR "heading sensor" OR "processing equipment"))
Mono/Multispectral Imaging sensors	topic:(("monospectral imaging"~3 OR "multispectral imaging") AND ("remote sensing" OR "IFOV" OR "instantaneous field of view" OR "space qualified" OR airborne))
Optical control equipment	topic:(((gimbal OR gimbaled OR gimballed OR "fast steering mirrors"~2) AND ("high energy lasers" OR "high accuracy" OR "line of sight" OR "lines of sight" OR alignment OR aligned OR "target tracking"~4 OR "free-space optical communication"~4 OR "free-space optical communications"~4 OR "high resolution imaging"~4 OR infrared)) OR ("High-bandwidth" AND gimbal) OR (resonator AND ("high energy lasers" OR "line of sight") AND alignment) OR (asphere AND (optic OR mirror OR lens OR cones) AND (missile OR "guidance systems" OR satellite OR ballistic)))

Optical detectors	topic:(((laser OR (optical AND (sensor OR detector))) AND "space qualified" AND "solid state") OR ("focal-plane array" AND "space qualified") OR ("charge multiplication" AND sensor) OR ("focal-plane array" AND (spectrometer OR LIDAR OR "wave-front sensing" OR missile OR weapon)) OR "image intensifier tube")
Optical eq measure absolute reflectance	topic:(("measuring absolute reflectance"~5 OR "measurement absolute reflectance"~8 OR "measurement absolute reflectivity"~8) AND (equipment OR equipped OR instrument OR instrumental OR device OR laser OR "light beam"
Optical measurement precision equip	topic:((("laser interferometer"~5 OR "high power laser"~5 OR "space-based" OR "based on space") AND (("optics measurable precision"~8 OR "optics measurable precise"~8 OR "optics measurable precisely"~8 OR "optics measure precision"~8 OR "optics measure precise"~8 OR "optics measure precisely"~8 OR "optics measured precision"~8 OR "optics measured precise"~8 OR "optics measured precisely"~8 OR "optics measurement precision"~8 OR "optics measurement precise"~8 OR "optics measurement precisely"~8 OR "optic measurable precision"~8 OR "optic measurable precise"~8 OR "optic measurable precisely"~8 OR "optic measure precision"~8 OR "optic measure precise"~8 OR "optic measure precisely"~8 OR "optic measured precision"~8 OR "optic measured precise"~8 OR "optic measured precisely"~8 OR "optic measurement precision"~8 OR "optic measurement precise"~8 OR "optic measurement precisely"~8 OR "optical measurable precision"~8 OR "optical measurable precise"~8 OR "optical measurable precisely"~8 OR "optical measure precision"~8 OR "optical measure precise"~8 OR "optical measure precisely"~8 OR "optical measured precision"~8 OR "optical measured precise"~8 OR "optical measured precisely"~8 OR "optical measurement precision"~8 OR "optical measurement precise"~8 OR "optical measurement precisely"~8 OR "optically measurable precision"~8 OR "optically measurable precise"~8 OR "optically measurable precisely"~8 OR "optically measure precision"~8 OR "optically measure precise"~8 OR "optically measure precisely"~8 OR "optically measured precision"~8 OR "optically measured precise"~8 OR "optically measured precisely"~8 OR "optically measurement precision"~8 OR "optically measurement precise"~8 OR "optically measurement precisely"~8))) NOT (planar OR flat OR microscope OR microscopic OR microscopy))
Optical mirrors/reflectors	topic:((("deformable mirror"~5 OR "deformation mirror"~5 OR "deformable reflector"~5 OR "deformation reflector"~5) AND ("high energy laser" OR missile OR (defense OR defensive OR defensible) OR telescope OR "laser communication" OR "laser communications" OR "laser damage threshold" OR
Optical sensor material (Tellurium)	topic:((tellurium OR HgCdTe OR "mercury cadmium telluride" OR "Cadmium telluride" OR CdTe) AND ("night vision" OR "sea borne" OR "space borne" OR surveillance OR reconnaissance OR "laser system" OR warhead))

Photomultiplier Tubes	topic:(("Photomultiplier Tubes" OR (tubes AND (Photocathode OR "anode pulse"))) AND (hydrodynamic OR "radiographic images" OR "Gamma radiation"~3 OR nuclear OR explosive))
Pulse radar cross-section measurement	topic:("radar cross-section system"~2 OR ("radar cross-section" AND (stealth OR "low observability")) OR ("radar cross-section" AND (aircraft OR missile OR ship OR vehicle OR "unmanned aerial vehicle" OR UAV OR target)))
Radar systems & tracking systems	topic:(("fire control radar"~4 OR "targeting control radar"~4 OR "anti-aircraft radar"~4 OR "gun laying radars"~3 OR (radar AND "homing head"~3) OR "air defence radar"~5 OR "SAM radar"~6 OR "AMD radar"~5 OR "missile defence radar"~6 OR "anti-missile radar"~3 OR "Airborne Early Warning and Control System"~2 OR AEWCS OR ("radar altimeter" AND aircraft) OR "3D radars"~1 OR "drone radars"~2 OR (("Surveillance radar"~2 OR "target detection radar"~3 OR "target recognition radar"~3 OR "target tracking radar"~3) AND military) OR "weapon control radars"~5 OR "Side-looking airborne radar"~3 OR (("synthetic aperture radar" OR "inverse synthetic aperture radar") AND (surveillance OR military)) OR "Ship Navigation Radars"~2 OR "marine navigation radars"~2 OR ("space radars"~4 AND "steerable antenna"~5) OR "space radar phased antenna arrays"~9 OR "height-finding radar"~4 OR "frequency agility radar"~1 OR
Radiation hardened detectors	topic:("Radiation hardened detectors"~4 OR "Radiation hardened detection"~4 OR "Radiation resistant detectors"~4 OR "Radiation resistance detectors"~4 OR "Radiation resistant detection"~4 OR "Radiation resistance detection"~4 OR "Radiation hardened sensor"~4 OR "Radiation resistant sensor"~4 OR "Radiation resistance sensor"~4 OR "Radiation rugged detectors"~4 OR "Radiation rugged detection"~4)
Space-qualified components optical syst	topic:(mirror AND ((("glass-ceramic" OR "silicon carbide") AND telescope) OR ("surface coatings" AND (single-layer OR multi-layer OR metallic OR dielectric OR conducting OR semiconducting OR insulating))))
Substrate blanks (SiC or Be/Be)	topic: (("substrate" OR wafer) AND ("beryllium beryllium" OR "Be Be" OR "Silicon carbide" OR SiC) AND (mirror OR "optical component"))
Velocity interferometers	topic:(("Velocity interferometers"~3 OR VISAR OR "Fabry-Perot interferometer"~3 OR "Doppler laser interferometer" OR "photonic Doppler velocimeters" OR "heterodyne velocimeters"~3 OR DLIs OR "Het-V" OR PDV OR "Velocity Interferometer Systems for Any Reflector") AND (hydrodynamic OR detonation OR explosive OR nuclear OR implosion))
Zinc Selenide/sulphide optical component	topic:(("Zinc Selenide" OR ZnSe OR "zinc sulphide" OR Zns) AND (missile OR ("CO2 laser" AND (lenses OR mirror OR optical)) OR (infrared AND (window OR mirror OR lenses OR sights OR defence OR defense OR satellite OR missile)) OR "night vision" OR (coating AND "optical" AND composite)))

CATEGORY 7 - NAVIGATION AND AVIONICS

Dataset	Query
Accelerometers	topic:(("Linear Accelerometers"~3 OR "Angular Accelerometers"~3 OR "rotational accelerometer"~3) AND (missile OR rocket OR navigation OR guidance OR military OR combat OR submarine OR aircraft OR vessel OR laser)NOT (inclinometer OR car OR drilling OR civil))
Airborne altimeters	topic:(("Airborne altimeters" OR "Altitude meter" OR "Altitude gauge" OR "Radar altimeter") NOT civilian AND (aircraft OR satellite OR missile OR landing OR "coherent-pulse"~2 OR "terrain following radar"~2))
Altimeters for space launch	topic:(("radar altimeter" OR "laser altimeter")AND ("spacecraft bus" OR "launch vehicle" OR "sounding rocket"))
GNSS receiving equipment	topic:(("Global Navigation Satellite Systems receivers" OR "GNSS receivers" OR "GPS receivers" OR "GLONASS receivers" OR "Galileo receivers") AND (decryption OR
Guidance sets of high accuracy	topic:(("guidance set" OR "guidance system") AND (navigation OR "flight control") AND (missile OR rocket OR ICBM) AND (CEP OR "circular error probable" OR accuracy OR "high precision"~3))
Gyros	(ti:(gyroscope OR gyros OR "angular rate sensors"~3) AND topic:(missile OR ballistic OR rocket OR UAV OR submarines OR underwater OR marine OR aircraft OR spacecraft OR torpedoes OR "tank guns"~3 OR armament)) OR topic:("fibre optic gyroscopes" OR "ring laser gyroscopes") OR ((scatterometers OR profilometers OR reflectometers) AND ("ring laser" OR gyroscope OR "RLG mirror"))
Inertial measurement equipment MTCR	topic:((("Attitude and Heading Reference Systems" OR "Gyrocompasses" OR "Inertial Navigation Systems" OR "Inertial Reference Systems" OR "Inertial Reference units" OR "Inertial Measurement system"~3 OR IMU OR "linear accelerometer"~2 OR "Angular Accelerometers"~3 OR "rotational accelerometer"~3 OR Gyros OR "angular rate sensors") AND (missiles OR UAV OR rocket OR ballistic))NOT (civil OR drilling OR "gravity mapping"))
Navigation equipment & systems	topic:((("Attitude and Heading Reference Systems" OR "Inertial Navigation Systems" OR "Gyrocompasses" OR "Inertial Reference Systems" OR "Inertial Reference units" OR "Inertial Measurement system" OR "Inertial Measurement unit" OR IMU OR "inertial guidance system" OR gyrostabiliser OR "automatic pilot" OR "Flight Instrument System") AND ((missiles OR UAV OR rocket OR ballistic OR "land vehicle" OR "carrier vehicle" OR "true north" OR "heading estimation") OR (acceleration AND ("two axes"~2 OR "three axes"~2)) OR "angle random walk")NOT (civil OR drilling OR "gravity mapping" OR golf)) OR (("three axis magnetic sensors"~2 OR "3 axis magnetic sensors"~2)AND ("navigation system" OR "flight control system")))
Passive sensor for heading determination	topic:("passive sensor" AND (electromagnetic OR "space launch" OR headingOR head OR "angular orientation" OR bearing OR bearings OR "imaging sensor"~3 OR interferometer OR mapping OR map) AND (missile OR rocket OR "launch vehicle" OR spacecraft OR "radio frequency" OR "electromagnetic source"))
Source code for inertial navigation eq	topic:("source code" AND ("inertial navigation" OR "Attitude and Heading Reference system" OR "navigational error"))
Star trackers / gyro-astro compasses	topic:("Star trackers" OR "astronavigation system" OR (("celestial navigation" OR "stellar attitude sensors" OR "gyro-astro compasses") AND (spacecraft OR "space bus" OR satellite OR "space probe" OR missile OR rocket OR AUV)))

Test, calibration, alignment equipment	topic:((("testing equipment"~15 OR "testing equip"~15 OR "calibration equipment"~10 OR "calibration equip"~10 OR "calibrate equipment"~10 OR "calibrate equip"~10 OR "alignment equipment"~10 OR "alignment equip"~10) AND ("missile navigation system"~4 OR "UAV navigation system"~4 OR "spacecraft navigation system"~4 OR "ship navigation system"~5 OR "land vehicle navigation system"~5 OR "ground vehicle navigation system"~5 OR "inertial systems" OR "inertial sensors" OR accelerometers OR gyros OR GNSS OR "sonar systems" OR "star trackers" OR altimeters)) OR (("test equipment"~15 OR "test equip"~15 OR calibration OR calibrate OR alignment OR "test benches"~2) AND "navigation system" AND (ship OR "land vehicle" OR "inertial systems" OR "inertial sensors" OR accelerometers OR gyros OR GNSS OR "sonar systems" OR "star trackers" OR altimeters OR "inertial measurement unit")) OR "gyros test station"~3 OR "Accelerometer Test Station"~3)
Underwater sonar navigation systems	topic:("doppler velocity sonar"~3 OR "correlation velocity sonar"~3 OR (("correlation velocity log" OR "doppler velocity log") AND (navigation OR submarine)))

CATEGORY 8 - MARINE

Dataset	Query
Air-independent power systems	topic:("air-independent power"~3 OR "air-independent propulsion"~3 OR ((Rankine OR Brayton OR "fuel cells" OR Stirling OR "Close Cycle Diesel") AND (submarine OR AUV OR underwater OR subsea)) OR ((Rankine OR Brayton OR "fuel cells" OR Stirling OR "Close Cycle Diesel") AND (AIP OR "air independent propulsion" OR "air independent power"~4)) OR ((absorber AND "air-independent") OR ((scrubber OR absorber OR "closed Diesel engine"~2) AND ("carbon dioxide" OR CO2 OR "carbon monoxide") AND (submarine OR AUV OR submersible))) OR (("air-independent" OR AIP) AND submarine))
Automated control motion equipment	topic:((("automated control" OR autopilot OR "automatic control system") AND (underwater OR "remotely operated vehicles" OR ROV)) OR ("underwater glider" AND (autonomous OR navigation OR propulsion OR "servo-control")) OR ("servo-control" AND (underwater OR "remotely operated vehicles" OR ROV OR submersible OR "deep- sea")) OR (("autonomous underwater vehicle" OR "remotely operated vehicles" OR ROV) AND (control OR guidance OR "automated control" OR autopilot OR "automatic control system") AND navigation))
Diver deterrent acoustic systems	topic:("Diver Deterrent"~3 OR "underwater sound projector" OR "acoustic cannon" OR (diver AND acoustic AND disrupt))
Fibre optic pressure hull penetrators	topic:((("Hull Penetrators" OR "pressure hull") AND ("fiber optic" OR "optical fiber" OR connectors)) OR (("fiber optic connector" OR "optical fiber connector") AND (submarine OR submersible OR underwater OR subsea OR "deep water" OR "pressure hull" OR "remotely operated vehicle" OR ROV OR AUV OR "autonomous underwater vehicle")))
Manned underwater vehicles	topic:((("underwater vehicle" OR "remotely operated vehicles" OR ROV OR "deep sea submersible"~2 OR submarine OR "submersible vehicles") AND ("magnetic compass" OR "optical gyroscope" OR "mechanical gyroscope" OR "roll and pitch sensor" OR "depth gauge" OR "hydrostatic pressure" OR fathometer OR "Echo sounding" OR "Doppler sonar lag" OR "hydrodynamic lag" OR "strap-down inertial navigation system" OR SINS OR "strap-down INS" OR "satellite navigation" OR "sonar transceiver"OR "transceiver satellite")) OR ((manned AND (depth OR "deep sea") AND ("underwater vehicle" OR "submersible vehicles")) OR ("manned submersible vehicles"~4 AND (depth OR "deep sea"))))
Marine systems, equipment and components	topic:((("pressure hulls" OR "pressure housing") AND ("underwater vehicles"~2 OR "remotely operated vehicles" OR submersibles OR submarine OR "underwater systems" OR deep-sea OR "deep water" OR "deep-diving" OR depth)) OR (("Direct current propulsion motors"~3 OR "DC propulsion motor"~3 OR "DC thrusters"~3) OR (("propulsion motors" OR "steering motors" OR thrusters)AND ("underwater vehicles"~2 OR "underwater robot"~2 OR "remotely operated vehicles" OR submersibles OR submarine OR "deep-sea" OR "deep water"))) OR ((("umbilical cables" OR "tether cables") AND ("underwater vehicles"~2 OR "remotely operated vehicles" OR submersibles OR submarine OR "deep-sea" OR "deep water" OR underwater OR subsea)) OR (("optical fiber cables"~2 OR "fiber optic cables"~2 OR

Ocean salvage systems	topic:("salvage sunken ship"~5 OR "rescue sunken ship"~20 OR "lifting sunken object"~2 OR "raising sunken object"~2 OR "raising sunken ship"~2 OR "salvage sunken vessel"~5 OR "rescue sunken vessel"~20 OR "raising sunken vessel"~2 OR
Pressure hulls & housing	topic:(("pressure hulls" OR "pressure housing") AND ("underwater vehicles"~2 OR "remotely operated vehicles" OR submersibles OR submarine OR "underwater systems" OR deep-sea OR "deep water" OR "deep-diving" OR depth))
Propellers & noise reduction systems	topic:((("Controllable-pitch propellers") AND (ship OR vessel)) OR "Water cooled electric motors"~2 OR "Superconductive propulsion" OR "superconductive motor" OR (("permanent magnet electric propulsion"~2 OR (("permanent magnetic machine"~2 OR "permanent magnet motor"~2) AND (ship OR vessel OR naval OR submarine)) OR "Electric Propulsion Permanent Magnet"~2)) OR (("ventilated propeller" AND (ship OR vessel OR submarine)) OR "Supercavitating propellers") OR ((("active Noise reduction" OR "noise cancellation"~3 OR "vibration rubber mounts"~3 OR "vibration isolating mount"~3) AND (ship OR vessel)) OR (("acoustic isolation"~3)
Propulsion motors & thrusters	topic:(("Direct current propulsion motors"~3 OR "DC propulsion motor"~3 OR "DC thrusters"~3) OR (("propulsion motors" OR "steering motors" OR thrusters)AND ("underwater vehicles"~2 OR "underwater robot"~2 OR "remotely operated vehicles" OR "ROV" OR submersibles OR submarine OR "deep-sea" OR "deep water")))
Pumpjet propulsion systems	topic: ((pumpjet OR "pump jet" OR "pump-jet" OR "water-jet") AND ("divergent nozzle" OR "hydrodynamic propulsion" OR propelling OR propulsion OR propeller OR propellant) AND marine)
Remotely controlled manipulators	topic:((("remotely controlled manipulators"~4 OR "remotely controlled manipulation"~4) AND (underwater OR submarine OR AUV OR "automated underwater vehicle" OR submersible OR submerge OR submergence OR sensor OR torque)) OR ((manipulator OR manipulation) AND sensors AND (torque OR "tactile sense")) OR ((manipulators OR manipulation) AND "master slave"))
Syntactic foams	topic:(("Syntactic foams" AND ("neutrally buoyant" OR "neutral buoyancy" OR "epoxy coating" OR "epoxy resin" OR "deep-sea" OR "sub-sea" OR "deep water" OR marine OR
Umbilical cable and tether cables	topic:((("umbilical cables" OR "tether cables") AND ("underwater vehicles"~2 OR "remotely operated vehicles" OR submersibles OR submarine OR "deep-sea" OR "deep water" OR underwater OR subsea)) OR (("optical fiber cables"~2 OR "fiber optic cables"~2 OR "Fiber optic connectors") AND ("underwater vehicles"~2 OR "remotely operated vehicles" OR submersibles OR submarine)))
Underwater light systems	topic:("underwater light system"~1 OR "Stroboscopic light systems"~1 OR "Underwater strobe"~1 OR "underwater searchlight" OR "Underwater lamps")
Underwater Robots	topic:("underwater robot")
Underwater swimming & diving equipm	topic:(("Underwater swimmer equipment"~4 OR "Underwater swimming equipment"~4 OR "Underwater swimming equipped"~4) OR ("closed rebreather"~3 OR "closed rebreathing"~3) OR ("semiclosed rebreather"~3 OR "semiclosed rebreathing"~3) OR "atmospheric diving suit" OR "Man Diving Bell")

Underwater vision systems	topic:("Underwater vision systems"~6 OR "Underwater imaging systems"~1 OR "underwater LIDAR"~2 OR "underwater laser systems"~2 OR "underwater laser vision"~4 OR "range-gated imaging system"~2 OR (("Underwater cameras"~2 OR "3D camera"~2 OR "underwater imaging" OR "stereoscopic imaging" OR "vision-based

Unmanned underwater vehicles	topic:((("unmanned underwater vehicle" OR UUV OR "autonomous underwater vehicle" OR AUV OR "remotely operated vehicles" OR ROV OR "submersible vehicle") AND ("magnetic compass" OR "optical gyroscope" OR "mechanical gyroscope" OR "roll and pitch sensor" OR "depth gauge" OR "hydrostatic pressure" OR fathometer OR "Echo sounding" OR "Doppler sonar lag" OR "hydrodynamic lag" OR "strap-down
Water tunnels	topic:("water tunnel"~2 AND (propellers OR propellant OR propellent OR propel OR propulsion OR propulsive OR propulsors OR propulse OR propulser OR rudders OR cavitation OR "acoustic fields"~2 OR "acoustic measure"~2 OR "acoustic measurement"~2 OR "acoustic measured"~3))

CATEGORY 9 - AEROSPACE AND PROPULSION

Dataset	Query
Aero gas turbine engines & components	ti:((aircraft OR UAV OR "unmanned aerial vehicle" OR helicopter OR missile) AND ("gas turbine engines" OR afterburner OR Turbojet OR Turbofan OR Turboprop OR turboshaft OR "Directional solidification" OR "single crystal" OR ("gas turbine" AND mach)))
Aerodynamic test facilities-Wind tunnel	topic:(("Aerodynamic test" OR "wind tunnel test"~3 OR (("shock tunnel" OR "shock tube") AND ("air flow" OR airflow))) AND (missile OR rocket OR UAV OR "unmanned aerial vehicle" OR "reentry vehicle" OR "re-entry vehicle")) OR (("automated data" OR "online control" OR "on-line control") AND "wind tunnel" AND (missiles OR aircraft OR UAV OR "aerial vehicle" OR "air vehicle" OR Propulsion OR aeropropulsion OR aerospace OR aeroengine)) OR topic:(("automated data" OR "online control"~2 OR "on-line control"~2 OR "data acquisition" OR "data processing" OR "airflow measurements" OR "Real-time control"~2) AND ("wind tunnel" OR "hot-shot tunnel" OR "plasma arc tunnel" OR "shock tubes" OR "shock tunnel" OR "gas tunnel" OR "light gas guns") AND (missiles OR aircraft OR UAV OR "aerial vehicle" OR "air vehicle" OR Propulsion OR aeropropulsion OR aerospace OR aeroengine))
Aerothermodynamic test facilities	topic:("Aerothermodynamic test" OR (("arc jet system"~2 OR "arc jet facility"~2 OR "arc jet simulation"~2 OR "arc jet test"~2 OR "plasma wind tunnel" OR "Aerodynamic Heating Facility") AND (missile OR rocket OR UAV OR "unmanned aerial vehicle" OR "reentry vehicle" OR "re-entry vehicle" OR "Atmospheric reentry"~1 OR "thermal protection systems" OR "heat shield"
Component & structure for SLV-spacecraft	topic:(("launch vehicle" OR spacecraft OR rocket OR "space vehicle" OR payload OR "space bus" OR satellite OR "space probe") AND ("p-aramids" OR "para-aramids" OR Kevlar OR Twaron OR "carbon fiber" OR "Carbon fibre" OR "carbon fibrous" OR "carbon coated" OR "resin impregnated" OR "pitch based" OR "epoxy prepregs" OR "epoxy resin" OR polyepoxides OR polyimides OR bismaleimides OR "aromatic polyimides" OR "aromatic polyetherimides" OR "titanium diboride" OR TiB2 OR "aluminium oxide" OR Al2O3 OR "silicon nitride" OR "Si-N" OR "silicon carbon nitrate" OR "Si-C-N" OR "silicon carbide" OR "silicon alumina" OR "zirconium carbide" OR "zirconium nitride" OR "boron carbide" OR "boron nitride" OR polysilazanes OR "nickel aluminides" OR "titanium aluminides" OR "Active vibration isolation"~1 OR "Active vibration suppression" OR ("vibration isolation" AND ("remote sensing" OR "orientation systems")) OR ("pulsed liquid rocket"~3 OR ("pulsed detonation" AND "liquid rocket"~1))))
Electrical connectors for missile & SLV	topic:(("Space launch vehicle" OR "carrier rocket" OR rocket OR UAV OR "Unmanned aerial vehicle" OR missile) AND ("electrical connectors" OR "umbilical connectors" OR "interstage connectors"))

Environmental & anechoic chambers	topic:((("Environmental chambers" OR "Environment chambers" OR "Environmental chamber" OR "Environment chamber") OR ("anechoic chambers" OR "anechoic chamber")OR ("high pressure chambers" OR "high pressure chamber") OR ("thermal chambers"~2 OR "thermal chamber"~2) OR ("temperature chambers" OR "temperature chamber") OR ("Acoustic chamber" OR "Acoustic chambers") OR "temperature vibration test"~3 OR "high-altitude test" OR "temperature vibration test"~3 OR "thermal vibration
Gas turbine (GT) brush seals	ti_abs:(("brush seals" AND ("gas turbine" OR aircraft OR "aero-engine" OR Turbojet OR Turbofan OR Turboprop OR turboshaft OR missiles OR UAV OR "aerial vehicle" OR "air vehicle"))) OR ti:((production OR test OR development) AND "gas turbine" AND "brush seals") OR topic:("brush seals" AND ("test bench" OR "electron-beam welding" OR "production lines" OR "heat-resistant superalloys"~2 OR cobalt OR nickel OR "aramid fibres" OR carbographite OR "Electrochemical machining"~3 OR electrochemical OR "High temperature brush seal"~2))
Hybrid rocket propulsion systems	topic:("Hybrid rocket propulsion"~1 OR "hybrid rocket engines"~1 OR ("hybrid rocket" AND (missile OR "rocket stages" OR "launch vehicles" OR "sounding rockets")))
Insulation material for rocket engine	topic:((insul* OR ("insulation coating" OR "insulator coating" OR "insulating coating") OR "thermal resistant" OR ("thermal insulation" OR "thermal insulator" OR "thermal insulating") OR "thermal shield" OR ("insulation material" OR "insulator material" OR "insulating material")) AND ("rocket motor"~2 OR "rocket engine"~2 OR missile))
Launch support equipment	ti:(("Space launch vehicle" OR spacecraft OR rocket OR missile OR "air launch" OR "sounding rockets" OR "sub-orbital") AND ("launch pad" OR "launch system" OR launcher OR "command-and-control" OR "command and control" OR "mobile launcher" OR "boat-tail" OR "swing arm" OR "umbilical release")) OR topic:(("Space launch vehicle" OR "spacecraft bus" OR "spacecraft payload" OR "spacecraft system" OR rocket OR missile OR "air launch" OR "sounding rockets" OR "sub-orbital") AND ("missile support equipment" OR "Transporter-Erector-Launcher" OR "Mobile Erector
Liquid/gel rocket propulsion systems	topic:("Liquid rocket propulsion systems"~2 OR "liquid rocket propulsion"~2 OR ("gel propellant" AND rocket AND "propulsion system") OR ((("rocket engine" AND liquid) OR "liquid rocket"~2 OR "gelled propellant" OR "gel propellant") AND ("turbo pumps"~1 OR "expander cycle"~1 OR " thrust chamber"~1 OR "propellant storage"~2 OR "fuel storage"~2 OR "fuel tank"~2 OR "propellant injectors"~1 OR "fuel injectors"~1 OR "combustion chamber" OR "control system" OR "thrust control")))
Manifacture tools gas turbing blades etc	topic:(("Directional solidification" OR "single crystal") AND ("gas turbine component" OR "gas turbine blade"~2 OR vanes OR ((core OR shell OR mould OR "additive manufacturing") AND "gas turbine") OR (refractory AND (metal OR ceramic))))

Marine gas turbine engines	topic:("Marine gas turbine"~2 OR (("gas turbine propulsion"~2 OR "heavy duty gas turbine" OR "industrial gas turbine" OR "aeroderivative gas turbine" OR "aero-derivative gas turbine") AND (ship OR vessel OR marine)))
On-board systems and equipment	topic:(("payload data" OR "orbit control" OR "telemetry data" OR "data handling" OR "command data") AND (spacecraft OR satellite OR "space vehicle" OR "space probe"))
On-line control systems for gas turbine	topic:((FADEC OR "Full Authority Digital Engine Control Systems" OR (("automated data" OR "engine stability" OR "flow control" OR "flow path") AND (("gas turbine" AND (missiles OR aircraft OR UAV OR "aerial vehicle" OR "air vehicle" OR vessels OR submarine OR aeroderivative OR Propulsion OR aeropropulsion OR aerospace OR aeroengine)) OR "aero gas turbine" OR "marine gas turbine "))) OR (software AND (FADEC OR "Full Authority Digital Engine Control Systems")))
Powder metallurgy for gas turbine engine	topic:((("Powder metallurgy" OR "cold isostatic press"~2 OR "furnace coatings"~2 OR ("Metal Injection Moulding" OR "Metal Injection moulded") OR "Selective laser sintering") AND "gas turbine") OR (("isostatic press" OR "isostatic pressing" OR "isostatic pressed") AND aerospace AND "powder metallurgy"))
Pulse jet engine	topic:("pulse jet engine" OR "pulsejet engine" OR (("pulse jet" OR pulsejet) AND (UAV OR "unmanned aerial vehicle" OR missile OR rocket OR supersonic OR hypersonic OR aircraft OR "Fuel Injection" OR "propulsion system")))
Ramjet, scramjet & combined cycle engine	topic:((Ramjet OR scramjet OR "combined cycle engines") AND ("fuel injection" OR "air flow alignment"~3 OR "diverting valves"~1 OR dividers OR "moving blades" OR "aerodynamic grids"~2 OR "combustion stabilisers"~2 OR "feed system"~2 OR "control unit" OR "fuel controller" OR "electronic control" OR missile OR weapon OR rocket OR supersonic OR hypersonic))
Reentry vehicle	topic:((rocket OR missile OR hypersonic OR HGV) AND ("reentry vehicle"~1 OR "re-entry vehicle"~1 OR MARV OR "heat shield" OR "thermal protection systems" OR "heat sink" OR "Ultra High Temperature Ceramic" OR "Silicon-carbide"))
Resin/metal coated fibre prepegs/preform	topic:((rocket OR "unmanned aerial vehicle" OR UAV OR missile OR "heat shield") AND ("p-aramids" OR "para-aramids" OR Kevlar OR Twaron OR "carbon fiber" OR "Carbon fibre" OR "carbon fibrous" OR "carbon coated" OR "resin impregnated" OR "epoxy prepregs" OR "epoxy resin" OR "epox foam" OR "epoxy filament" OR "epoxy composite" OR polyepoxides OR polyimides OR bismaleimides OR "aromatic polyimides" OR "aromatic polyetherimides" OR "resin prepegs"~2 OR "metal coating fibre"~2 OR "metal coated fiber"~2 OR "organic matrix composite"~2 OR "metal matrix composite"~2))
Rocket motor Non-destructive test	topic:((rocket OR ICBM) AND ("non destructive test" OR "non destructive inspection"OR "ultrasonic test"~2 OR "X-ray test" OR "x-ray radiography" OR tomography))
Skin friction transducers	topic:(("Skin friction" AND transducers) OR (transducer AND (supersonic OR hypersonic) AND (friction)))

Solid rocket propulsion systems	topic:("Solid rocket propulsion systems"~2 OR (("solid rocket"~1 OR SRM) AND ("propulsion system" OR "motor grain" OR "propellant grain" OR "total impulse" OR "specific impulse" OR "motor insulation" OR "heat insulating" OR "thermal insulation" OR "bonding system" OR "propellant bonded"~1 OR "filament-wound" OR "movable nozzle" OR "flexible nozzle" OR "thrust vector control" OR "thrust control" OR "thrust tabs" OR "omni-axial"~2 OR "angular vector"~2)))
Sounding rocket	topic: ((("sounding rocket" OR rocketsonde OR "research rocket") AND ("long range" OR sub-orbital OR orbital OR satellite OR Aeronomy OR meteorology)) NOT telescope)
Space launch vehicle - Spacecraft	topic:("Space launch vehicle" OR "carrier rocket" OR "spacecraft bus" OR "spacecraft payload" OR "spacecraft system" OR (("anti-missile" OR "anti- satellite" OR ASAT OR "destruction systems" OR "earth satellite vehicles" OR "space weapon" OR "ground simulators" OR "sub-orbital vehicle" OR ((satellite OR "space probe") AND launch)) AND spacecraft))
Spraying-fogging systems	topic:(((UAV OR "Unmanned aerial vehicle" OR drone OR aircraft OR airplane OR helicopter OR "air vehicle") AND ("controlled droplet application" OR "aerial atomisers" OR "aerial sprayers" OR "aerial spraying" OR "sprayer system"~3 OR "aerosol device"~2 OR "chemical spray device"~4 OR "chemical spray apparatus"~3 OR "chemical spray system"~3 OR "spray pods" OR "arrays aerosol"~2 OR "spray booms"~2 OR "Rotary atomiser" OR "Pressure nozzle" OR "spray nozzle")) NOT (snow OR deicing OR fire OR extinguisher OR suppression))
Staging/separation mechanisms	topic:((rocket OR missile) AND ("Staging mechanisms" OR "explosive bolts" OR "stage separation" OR "missile separation" OR "rocket separation" OR "linear shaped charges")) OR ti:((rocket OR missile) AND ("rocket stage"))
Superalloy joining for gas turbines	topic:((tools OR dies OR fixtures OR blisks OR blings OR "bladed disks" OR airfoil OR aerofoil OR "disk blade" OR "gas turbine"~1) AND (joining OR "Linear friction welding"~2) AND (superalloy OR titanium OR "metal matrix composite" OR "ceramic matrix"~2 OR "ceramic composite"~2 OR "titanium diboride" OR TiB2 OR "aluminium oxide" OR Al2O3 OR "silicon nitride" OR "Si- N" OR "silicon carbon nitrate" OR "Si-C-N" OR "silicon carbide" OR "silicon alumina" OR "zirconium carbide" OR "zirconium nitride" OR "boron carbide" OR "boron nitride" OR polysilazanes OR "nickel aluminides" OR "titanium aluminides" OR "filamentary material" OR "p-aramids" OR "para-aramids" OR Kevlar OR Twaron OR "carbon fiber" OR "Carbon fibre" OR "carbon fibrous" OR "carbon coated" OR "resin impregnated" OR "pitch based" OR "epoxy prepregs" OR "epoxy resin" OR polyepoxides OR polyimides OR bismaleimides OR "aromatic polyimides" OR "aromatic polyetherimides"))
Telemetry-telecommand eq & Simulators	topic:((((telemetry AND (control OR guidance)) OR "telemetry system" OR telecommand) AND (spacecraft OR "space shuttle" OR satellite)) OR (("ground simulator" AND (spacecraft OR "space shuttle" OR satellite)) OR "air-bearing spacecraft simulators"~2))
Test bench/stand for rocket engine	topic:(("Test bench" OR "test stand") AND ("rocket motor" OR "rocket engine"))

Turbojet &turbofan engines	topic:((UAV OR "unmanned air vehicle" OR "Unmanned aerial vehicle" OR drone OR missile) AND (turbojet OR turbofan OR "air breathing" OR Airbreathing))
Turboprop engine (UAV)	topic:((UAV OR "unmanned air vehicle" OR "Unmanned aerial vehicle" OR "rotary combustion" OR "rotary engine" OR "Wankel engine" OR drone OR gearbox) AND (turboprop))
UAV, unmanned airships, equipm & comp	topic:((((("remotely piloted vehicle" OR "remotely piloted aerial systems" OR RPAS OR "optionally piloted" OR "optionally piloted vehicle" OR OPV OR UAV OR "Unmanned aerial vehicle" OR "uninhabited aerial vehicle" OR "unmanned airship" OR drone)AND (turbojet OR "Ground Control Station" OR "forward-looking camera"~2 OR "weapon systems" OR "navigation

ADDITIVE MANUFACTURING

Dataset	Query
Additive manufacturing	topic:(((((("fused deposition" OR "fused filament") AND (polymer OR "carbon fibre")) OR "Digital Light Processing" OR ("Powder bed" AND (metal OR ceramic)) OR "Electron- beam melting" OR "Selective laser melting" OR "Selective heat sintering" OR "selective laser sintering" OR "Direct metal laser sintering" OR "Stereolithography") AND ("additive manufacturing" OR "3D print"~3)) NOT (surgery OR medical))
AD-focus on metal-ceramics powder	topic:(((("fused deposition" OR "fused filament") AND (polymer OR "carbon fibre")) OR "Digital Light Processing" OR "Powder bed" OR "Electron-beam melting" OR "Selective laser melting" OR "Selective heat sintering" OR "selective laser sintering" OR "Direct metal laser sintering" OR "Stereolithography" OR "directional solidification"~1 OR "single crystal"~1) AND (Beryllium OR aluminium OR "maraging steel" OR Inconel OR superalloys OR ceramics) AND ("additive manufacturing" OR "3D print"~3))

ADVANCED MATERIALS

Dataset	Query
Biochip	ti:(biochip)
lab-on-a-chip	topic:(lab-on-a-chip AND (nanosensor OR microfluidics OR nanofluidics OR "molecular biology" OR nanotechnology) AND (pathogens OR toxins OR "resistance to chemicals" OR virus OR bacterium OR bacteria OR fungus OR fungi))
Micro electromechanical systems	topic:((("microfluidic systems" OR "micromachines") AND (design OR development OR develop OR production OR testing)) NOT (nanotechnology OR micromachinable OR micromach OR micromaching))
Nano electromechanical	topic:("Nano electromechanical systems" OR "Nanoelectromechanical systems" OR "smart dust")
Nanorobots	topic:((nanorobot OR nanobots OR nanoids OR nanites OR nanomachines OR nanomites) NOT nanitics)
Nanosensor	(ti:(nanosensor) OR ti:((nanotechnology OR nanomaterial) AND topic:("chemical sensors" OR "acoustic sensors" OR biosensors)))
Nanotoxicology	topic:(nanotoxicology OR "toxic nanoparticles" OR (biosecurity AND (nanoparticles OR nanocomposites)))
Semiconductor nanowires (nanocircuitry)	ti:("semiconductors nanowires" OR ("carbon nanotube" AND "field-effect transistor") OR "Nano-field effect transistor" OR ("Carbon nanotube" AND transistor) OR (nanocircuitry OR (nanowires AND "integrated circuits")))
Smart materials (general)	topic:((("smart material" OR "smart composite") AND (intelligent OR responsive OR "shape memory") AND (polymer OR alloys)) NOT (nanomaterial OR nanotechnology))
Smart materials (specific)	topic:((("Smart materials") AND ("smart composite" OR camouflage OR piezoelectric OR thermoelectric OR electrostrictive OR magnetostrictive OR photovoltaic OR "Electroactive polymers" OR "Smart glasses" OR "smart paints" OR coatings OR "Smart structures" OR "self-healing materials" OR "sensory structures")) OR (("smart composite") AND (camouflage OR piezoelectric OR thermoelectric OR electrostrictive OR magnetostrictive OR photovoltaic OR halocromic OR chromogenic OR ferrofluids OR photomechanical OR polycaprolactone OR dielectric OR magnetocaloric OR chemoresponsive OR "Smart glasses" OR "smart paints" OR coatings OR "Smart structures" OR "self-healing materials" OR "sensory structures" OR "shape memory")))
Smart materials electronics	topic:(("Smart material" OR "Smart composites") AND ((piezoelectric AND (shunted AND transducers)) OR "shunted circuit" OR "tuning circuits" OR "resonant circuits" OR "switching circuits" OR "negative capacitance" OR "linear quadratic regulator" OR "microelectronic sensor" OR supercapacitor OR Graphene OR ferroelectrics OR ferromagnets OR "microelectronic systems"))
Smart nanomaterials	ti:("Smart nano materials"~2 OR "Smart nanomaterials"~2 OR "Smart nanotechnology"~2 OR "Smart nano technology"~2 OR (("smart material" OR "smart composite") AND nanotechnology))

ADVANCED SEMICONDUCTORS

Dataset	Query
Advanced Semiconductors	((topic:((Semiconductor OR "Integrated Circuit" OR IC OR microelectronics OR microsystems OR MEMS OR "integrated device" OR "Multi Chip Module" OR MCM OR "3D-IC" OR ASIC OR "system-on-chip" OR SoC OR "Field Programmable Gate Arrays" OR FPGA OR "Field programmable logic devices") AND (production OR fabrication)) OR (topic:(Semiconductors AND (coating OR etching OR doping OR photolithography OR metallizing OR "cluster tools" OR "lithography masks" OR "integrated circuits" OR microprocessors OR "memory modules" OR "logic circuits" OR transistors OR diodes OR ("CCD chips" AND cameras) OR "opto-electronic sensors" OR "laser diodes" OR "light emitting diodes"~1 OR "high frequency transistors"~1 OR Micromechanics OR MEMS OR weapon OR "combat systems"~2 OR "Optical reconnaissance" OR (reconnaissance AND (infrared OR multispectral OR "visible wavelength range"~2 OR ultraviolet)) OR encryption OR "electronic warfare" OR ECCM OR "avionics cockpit displays"~2 OR "Search Rescue"~2 OR tracing OR "disaster control" OR (("switching frequency" OR "temperature resistance") AND ((gallium AND arsenic) OR "gallium arsenide"))))) OR (topic:(Semiconductor AND ("ion implantation" OR photolithography OR "physical vapour deposition" OR PVD OR "chemical vapour deposition" OR CDV OR "electrochemical deposition" OR ECD OR "molecular beam epitaxy" OR MBE OR "atomic layer deposition" OR "atomic layer deposited" OR ALD OR "wafer fabrication" OR "chip-on-wafer- on-substrate" OR CoWoS OR "through silicon via" OR TSV OR "chip scale packaging" OR "wafer scale integration" OR WSI)))) AND topic:(silicon OR "gallium arsenide" OR GaAs OR "gallium nitride" OR GaN OR "indium- phosphide" OR InP OR "silicon carbide" OR SiC))

ARTIFICIAL INTELLIGENCE

Dataset	Query
AI chipsets	topic:(("artificial intelligence") AND (micro-chip OR "high-performance computing" OR HPC OR semiconductors OR semi-conductors OR "integrated circuits" OR microprocessor OR "Field Programmable Gate Arrays" OR FPGA OR "Field programmable logic devices" OR CPU OR "application specific integrated circuit" OR ASIC OR "System on chip" OR "System on a chip"))
Automatic hazard detection	topic:(("hazard detection" OR "buried explosive" OR "buried target" OR "cyber attack detection"~2 OR ("early warning systems" AND (cyber OR defence OR defense))) AND ("genetic algorithms" OR "genetic programming" OR "artificial neural networks" OR ANN OR "deep learning" OR "machine learning" OR ("data analysis" AND "artificial intelligence")) NOT (medical OR disease))
Autonomous weapons systems	topic:((("Autonomous weapons"~1 OR "unmanned weapon"~1 OR "robotic weapon" OR "warfare system"~1 OR "combat system" OR "target identification"~2 OR "airborne reconnaissance"~2 OR (sensor AND ("image recognition" OR gravity)) OR "military logistics"~2 OR "Autonomous driving" OR "Autonomous flying") AND ("genetic algorithms" OR "genetic programming" OR "artificial neural networks" OR ANN OR
Genetic algorithms & genetic programming	topic:((("genetic algorithms" OR "genetic programming") AND (weapon OR "cyber security" OR "computer security" OR "information security" OR nuclear OR missile OR rocket OR blockchain OR "block chain" OR "distributed ledger" OR cryptography OR nanotechnology OR biometrics OR "air defense") AND (AI OR "artificial intelligence" OR "artificial neural networks" OR ANNs OR "high-performance computing" OR "deep learning" OR "machine learning" OR CPU OR FPGA OR "Field Programmable Gate Array" OR "application specific integrated circuit" OR ASIC)) NOT medical)
Machine learning technology	topic:(((AI OR "artificial intelligence" OR "artificial neural networks" OR ANNs) AND (weapon OR "cyber security" OR "computer security" OR "information security" OR "nuclear power" OR "nuclear reactor" OR missile OR rocket OR drone OR UAV OR "unmanned aerial vehicle" OR UAS OR "unmanned aircraft system" OR blockchain OR "block chain" OR "distributed ledger" OR cryptography OR nanotechnology) AND "machine learning") NOT (surgery OR pulmonary))
Swarm intelligence	topic:(((Swarm OR swarms) AND ("artificial intelligence" OR AI OR robot OR robotic OR drone OR UAV OR "unmanned aerial vehicle" OR UAS OR "unmanned aerial systems")) NOT (honey OR bee OR queen OR pheromones OR colony OR ants))

BIOTECHNOLOGY

Dataset	Query
Biochip	ti:(biochip)
Biosensors	topic:(biosensor AND (nanostructured OR nanomaterial OR nanowires))
Genome editing	topic:(("Transcription activator-like effector nuclease" OR Talen OR
Molecular/DNA sensing-programming	topic:(("Molecular Sensing" OR "molecular computing" OR "molecular computation" OR "DNA computing" OR "DNA computer" OR "DNA computation" OR "molecular programming")AND (analogue OR digital OR "signal processing" OR "integrated circuits"))
Nanobiology	topic:(Nanobiotechnology OR bionanotechnology OR nanobiology OR (nanotechnology AND biology))
Pathogen alteration	topic:((("altering pathogen"~2 OR "altering virus"~2 OR "modified virus" OR "mutant virus") AND transmi*) OR ("DNA sequencing" AND virus AND transmi*) OR (bacteria AND "antibiotic resistance" AND genotyping) OR ((bioweapon OR "dual use" OR virus OR pathogen)AND ("synthetic biology" OR "genome editing")))
Synthetic biology	ti_abs:(("genetic engineering" OR "genetically engineered" OR "DNA sequencing" OR "DNA synthesis" OR "genome synthesis" OR (constructing AND biological AND (system OR machine)) OR "molecular assembling" OR "cell-free protein") AND ti:(pathogens OR toxins OR bacterium OR bacteria OR virus OR fungus OR fungi))

CYBER SURVEILLANCE

Dataset	Query
Communication monitoring	topic:(((ICT OR "information communications technology"~2 OR internet OR telecommunications OR "mobile communication" OR telephone OR computer) AND ("mass surveillance"~2 OR "global surveillance"~2 OR eavesdropping OR spyware OR "surveillance software"~3)) NOT (hospital OR medical OR health OR patient))
Data retention	topic:("data retention")
Facial recognition technology	ti:(("facial recognition" OR "biometrics authentication" OR "biometrics identification" OR "face detection") AND topic:(software OR "thermal cameras"~2 OR surveillance OR track OR system OR technology))
Interception & Jamming equipment	topic:(interception AND (telecommunication OR IP OR "internet protocol Network" OR "surveillance systems"~3 OR "intrusion software"~3 OR (extraction AND (voice OR data OR signalling OR identifier)))) OR topic:("jamming devices" OR "jamming equipment" OR ((device OR equipment) AND interference AND (wave OR frequency) AND signal AND (reception OR transmission)))
Intrusion software	ti_abs:(("intrusive software" OR "intrusion software") OR (malware AND (intrusion OR intrusive)) OR (("intrusion detection system" OR "intrusive detection system") AND (network OR security OR attack)¾AND (computer OR compute OR computation OR information OR cyber)))

QUANTUM TECHNOLOGY

Dataset	Query
Post quantum cryptography	topic:(("post quantum" OR "quantum-proof" OR "quantum-safe" OR "quantum-resistant") AND cryptography)
Quantum computer	topic:(("quantum computer" OR "quantum computing" OR "quantum computation") AND qubit) OR (topic:("quantum computer" OR "quantum computing" OR "quantum computation") AND class:patent)
Quantum cryptography	topic:((("Quantum Key Distribution" OR QKD) AND cryptography) OR "quantum cryptography"~3)
Quantum network	topic:("Quantum network" OR "distributed quantum" OR "quantum internet" OR "Networked quantum computing")
Quantum sensoring	topic:("quantum sensor" OR (SQUID AND "magnetic sensor")OR ("Superconducting quantum" AND sensor)) OR topic:((sensing OR sensor) AND quantum AND ("spin qubits"~2 OR "trapped ions"~2 OR "flux qubits"~2 OR "neutral atoms" OR "atomic vapor" OR "cold clouds" OR "Rydberg atoms" OR "NMR sensors" OR "Nuclear Magnetic Resonance sensors" OR "Semiconductor quantum dots" OR "Superconducting circuits" OR SQUID OR "Flux qubit"))

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