



Five Approaches to Producing Actionable Science in Conservation

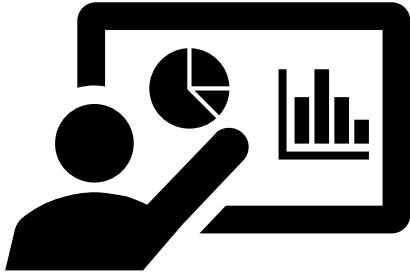
Candice Carr Kelman, Chris Barton, Kyle Whitman, Simon Lhoest, Derrick Anderson, Leah Gerber

International Congress on Conservation Biology 2023
Kigali, Rwanda,
July 27, 2023



LIÈGE université
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Agro-Bio Tech

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Scientists'Basic'
scienceUse-inspired
researchScience
communicationBoundary
spanning**Supply-side dynamics**

Scientists



'Basic' science

Use-inspired research

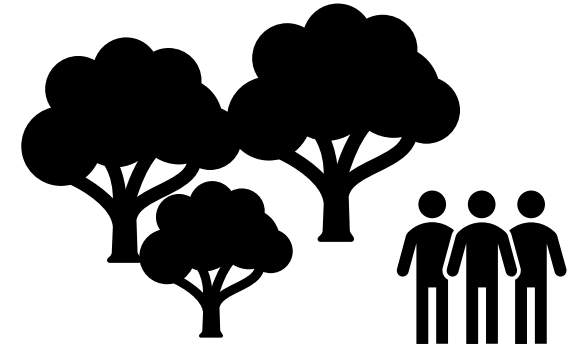


Science communication

Boundary spanning

Supply-side dynamics

Conservation practitioners



Understudied models of demand-driven science

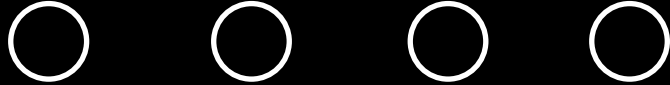
Demand-side dynamics

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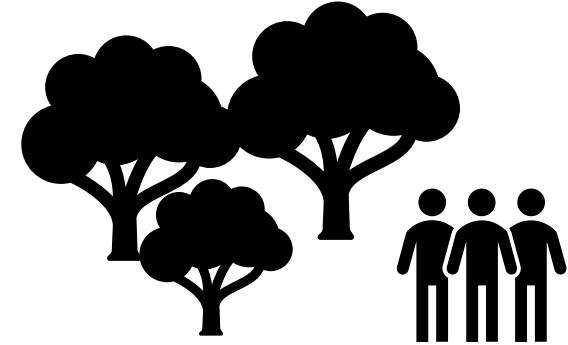


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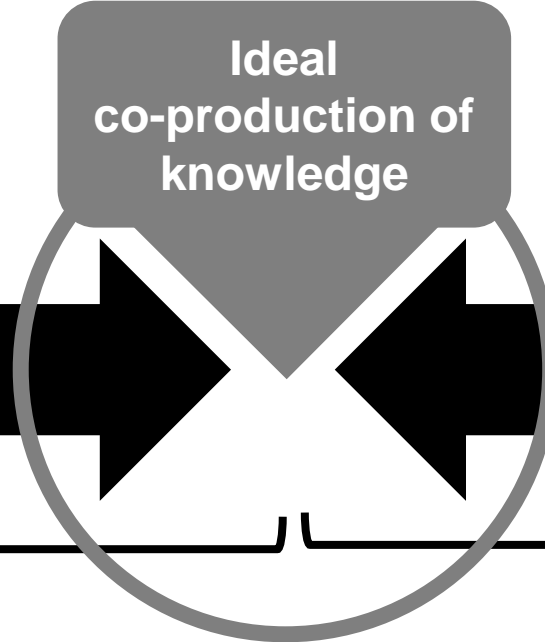
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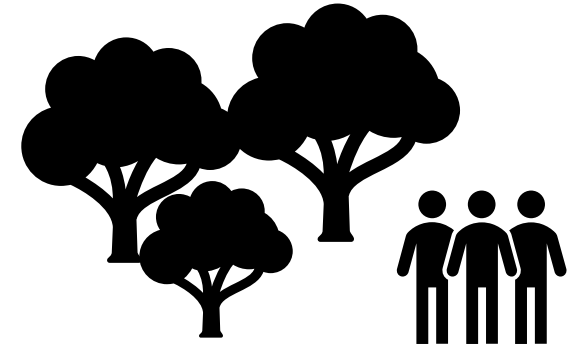
Ideal co-production of knowledge



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Step 1

Interviews with engaged conservation scientists

Step 3

Knowledge partnerships scorecards

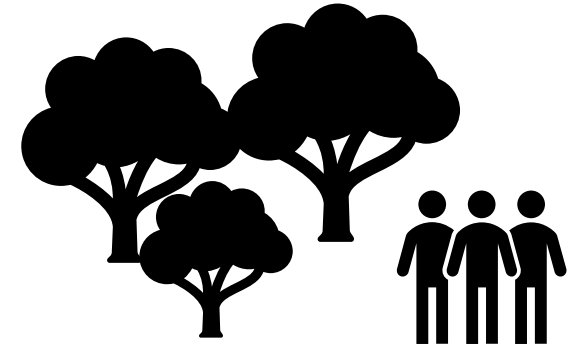
Step 2

Interviews with knowledge users

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**How can we produce more actionable conservation science?
How are conservation practitioners using science?**

Producing actionable science in conservation: Best practices for organizations and individuals

Leah R. Gerber¹ | Chris J. Barton^{1,2} | Samantha H. Cheng^{1,3} |
Derrick Anderson^{1,4,5}

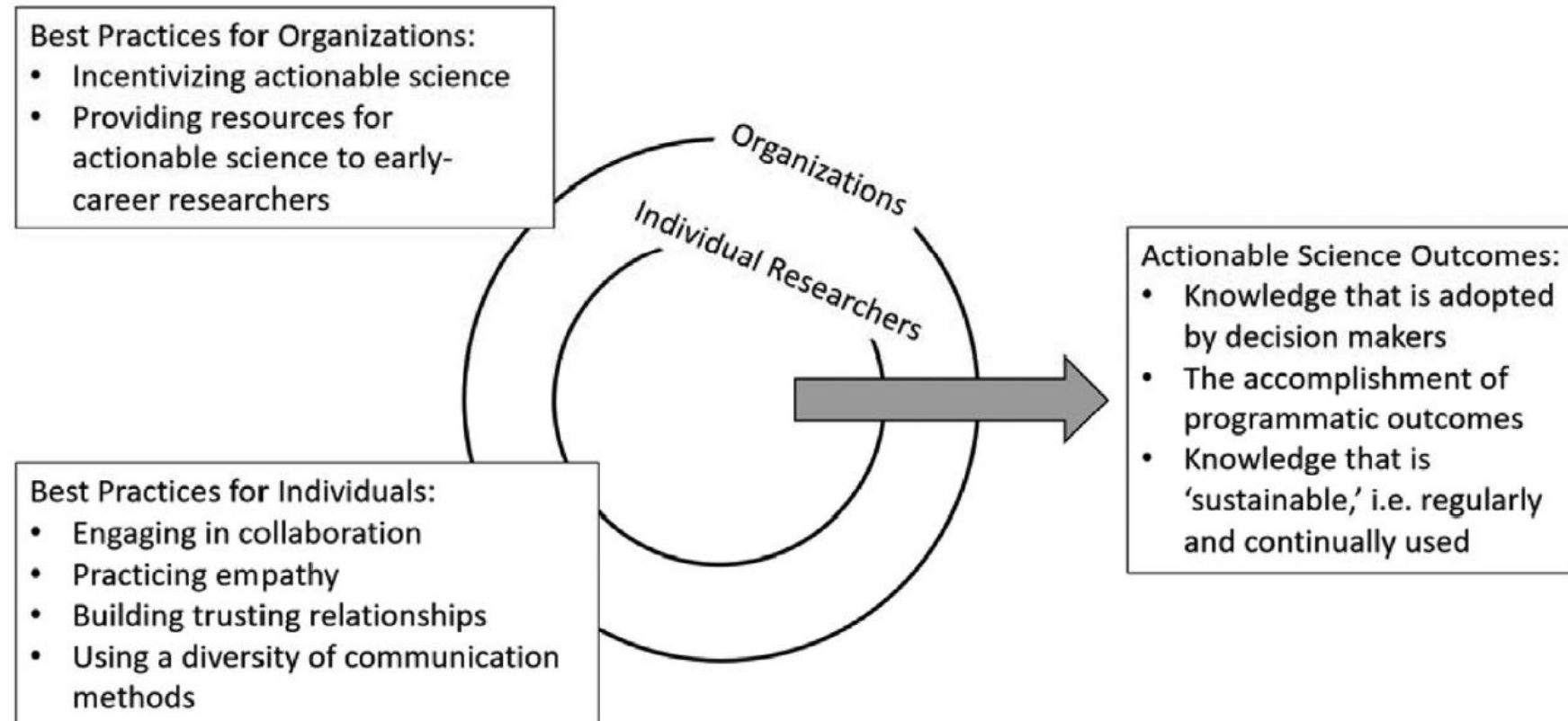


FIGURE 1 Best practices at the individual and organizational level and expected actionable science outcomes

Conservation Biology



Candice Carr Kelman, Chris Barton, Kyle Whitman, Simon Lhoest, Derrick Anderson & Leah Gerber (accepted). Five approaches to producing actionable science in conservation, ***Conservation Biology***.

Conservation Biology

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Interview of 71 conservation scientists who had participated in one of three fellowship programs focused on leadership to become agents of change:

- Leopold Fellows
- Pew Fellows
- Wilberforce Fellows



General questions + specific questions about actionable science:

















- **What do you do** to make your research more actionable?
- **What would you do differently** to make your research more actionable?
- Have you had **training / mentorship / experiences** that enhance your capacity to produce actionable science?
- What does your **institution / organization do to help you** produce actionable science?
- What are some **barriers from your institution/organization** to producing actionable science?
- Do you **work with others** to make your research more actionable?
- Who in your field is doing **exemplary work**?

16 activities of action-oriented scientists:

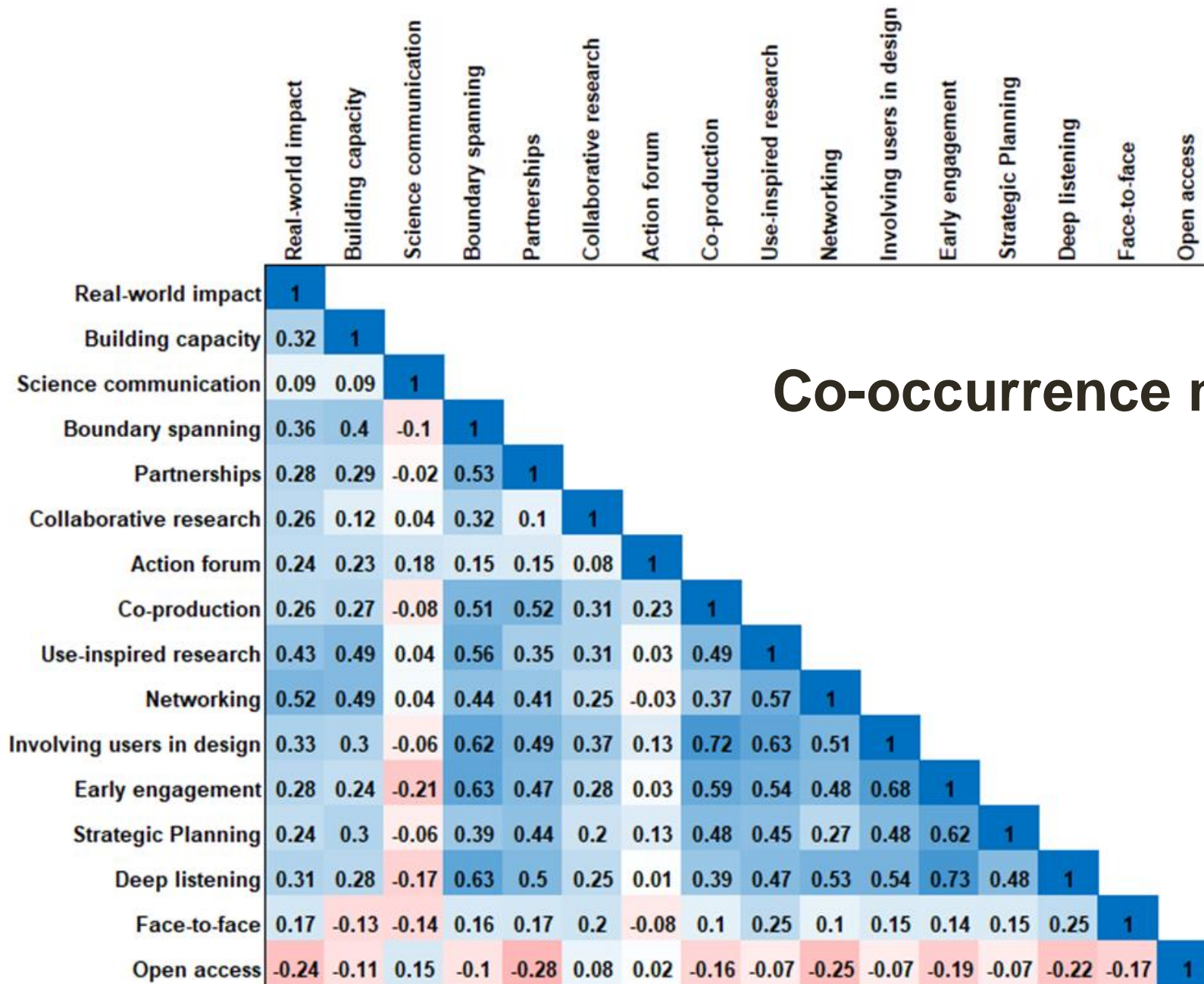
16 activities of action-oriented scientists:

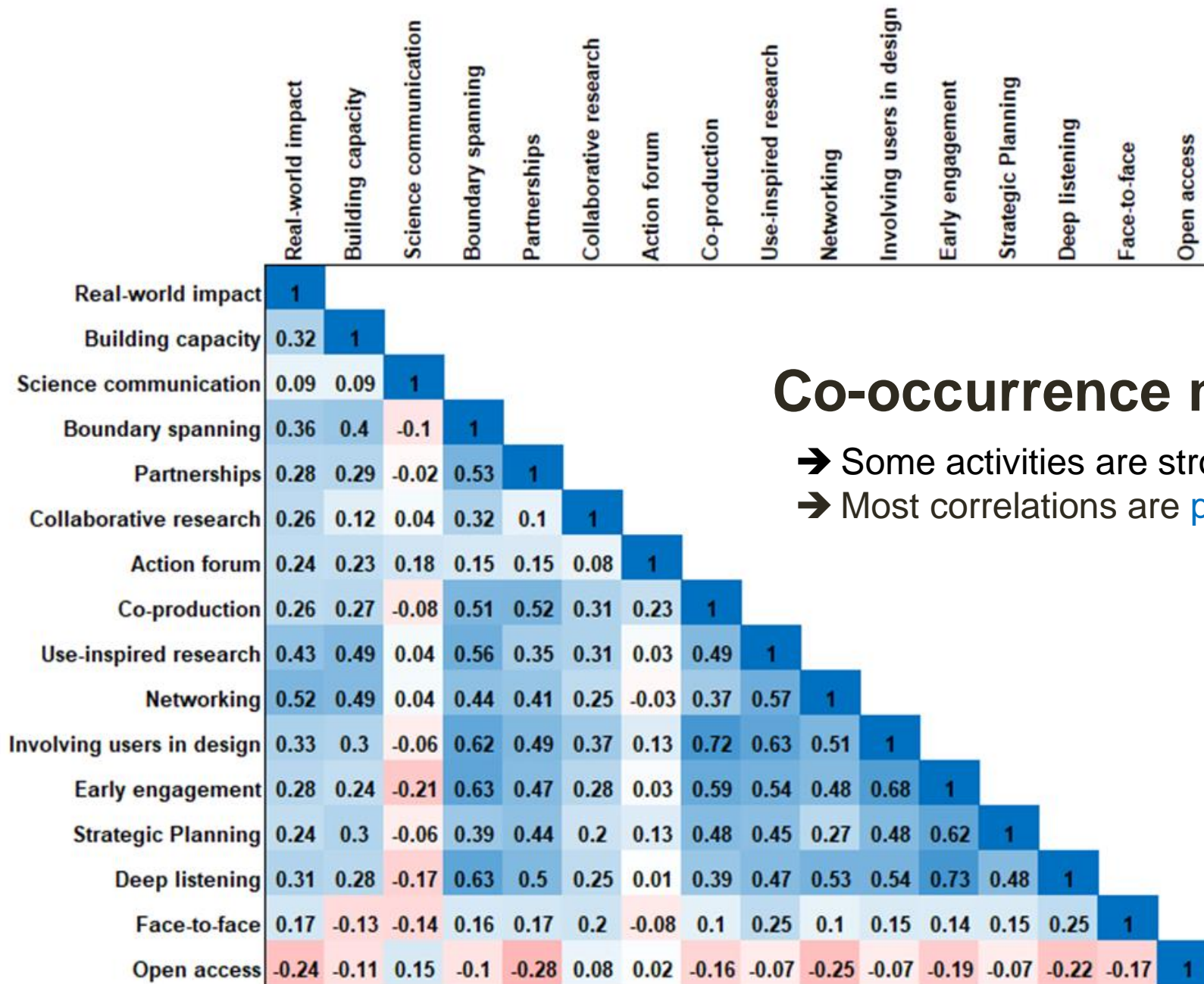
1. Focus on real-world impacts 
2. Science communication to the public, policymakers, and other scientists 
3. Building agency / capacity / knowledge 
4. Focus on user needs 
5. Networking & building relationships 
6. Boundary spanning 
7. Creating long-standing partnerships with managers 
8. Collaborative interdisciplinary / transdisciplinary research 
9. Involving intended users in design of research & research questions 
10. Involvement in management / policy / action forums 
11. Strategic planning 
12. Deep listening / understanding 
13. Early engagement of stakeholders / end users of science 
14. Co-production of research questions, process, and results of value to both science and policy 
15. Face-to-face interaction 
16. Open access / open-source data or findings 

3 Nested levels of actions: Why, How, What

Level of activity	Themes
<p>Why respondents pursued actionable science:</p> <p style="text-align: center;">Motivations</p> <p>(Values / Overall intended outcomes / Goals of research activity)</p>	<p>Focus on real-world impacts </p> <p>Building agency / capacity / knowledge </p>
<p>How respondents pursued actionable science :</p> <p style="text-align: center;">Strategies</p>	<p>Science communication </p> <p>Boundary spanning </p> <p>Creating long-standing partnerships with managers </p> <p>Collaborative inter/transdisciplinary research </p> <p>Involvement in management / policy / action forums </p> <p>Co-production </p>
<p>What respondents did to pursue actionable science:</p> <p style="text-align: center;">Tactics</p> <p>(Specific behaviors & skills)</p>	<p>Focus on user needs </p> <p>Networking and building relationships </p> <p>Involving intended users in design of research </p> <p>Early engagement of stakeholders </p> <p>Strategic planning </p> <p>Deep listening / understanding </p> <p>Face-to-face interaction </p> <p>Open access / open-source data or findings </p>

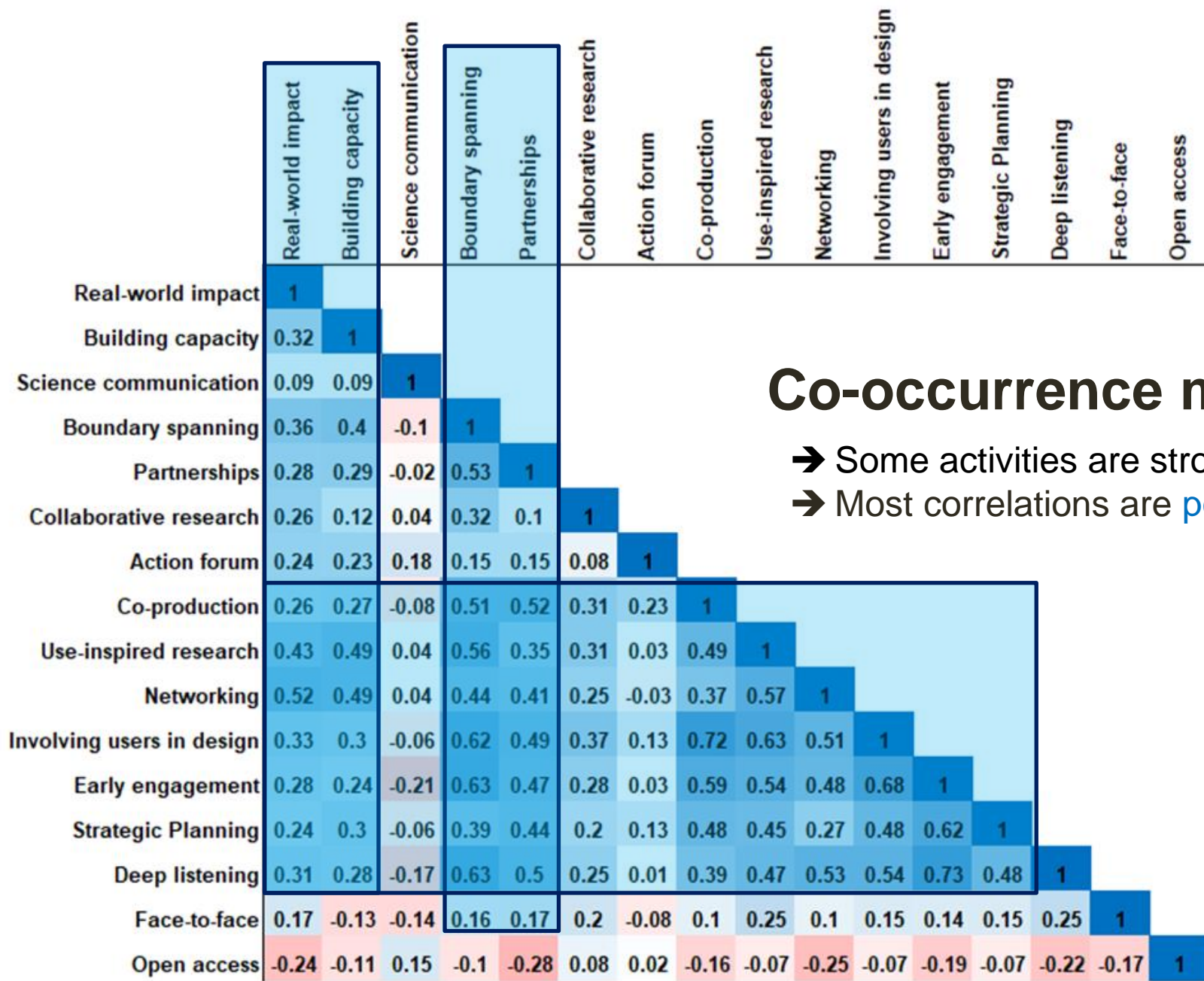
Co-occurrence matrix





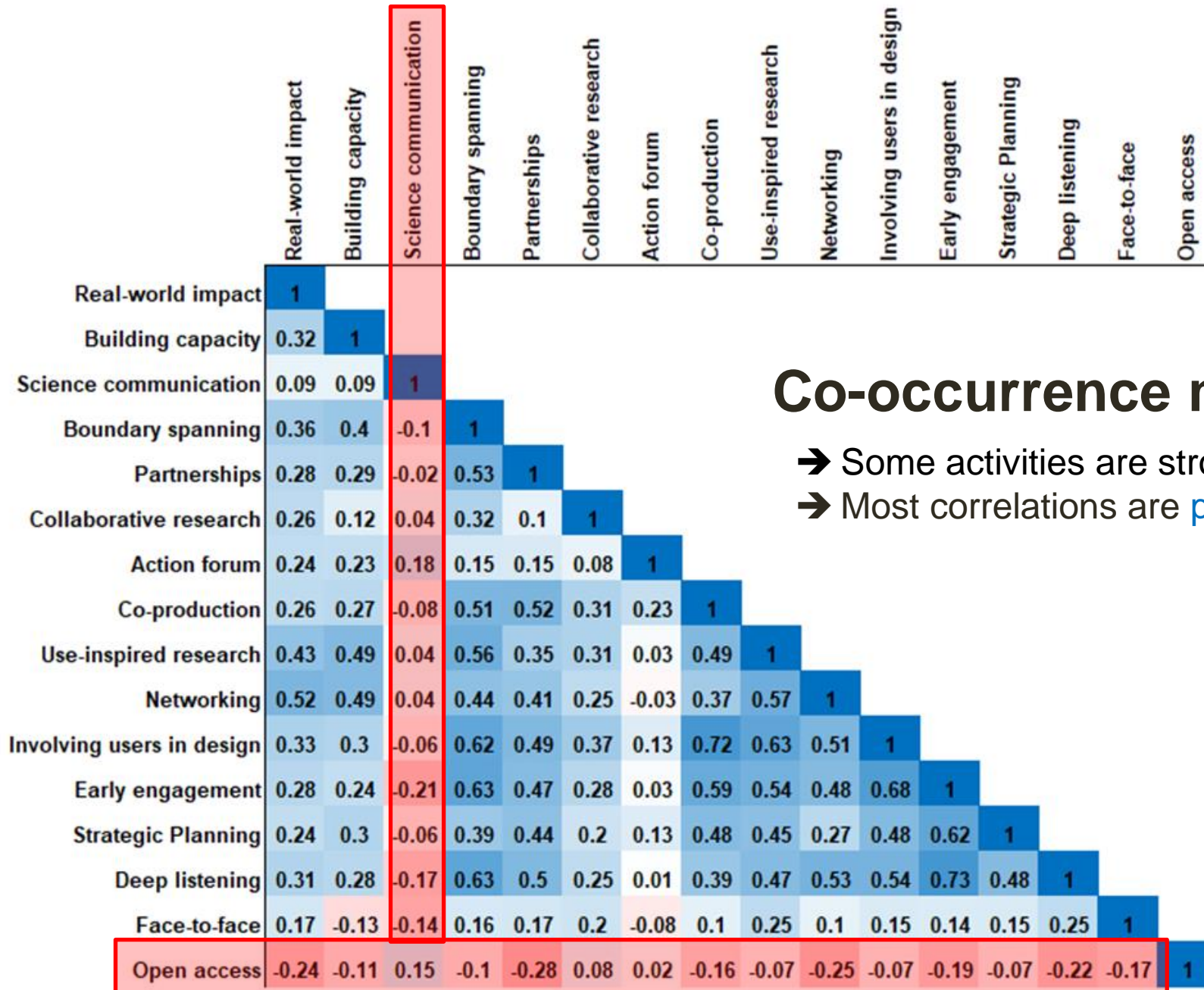
Co-occurrence matrix

- ➔ Some activities are strongly correlated
- ➔ Most correlations are **positive**, some are **negative**



Co-occurrence matrix

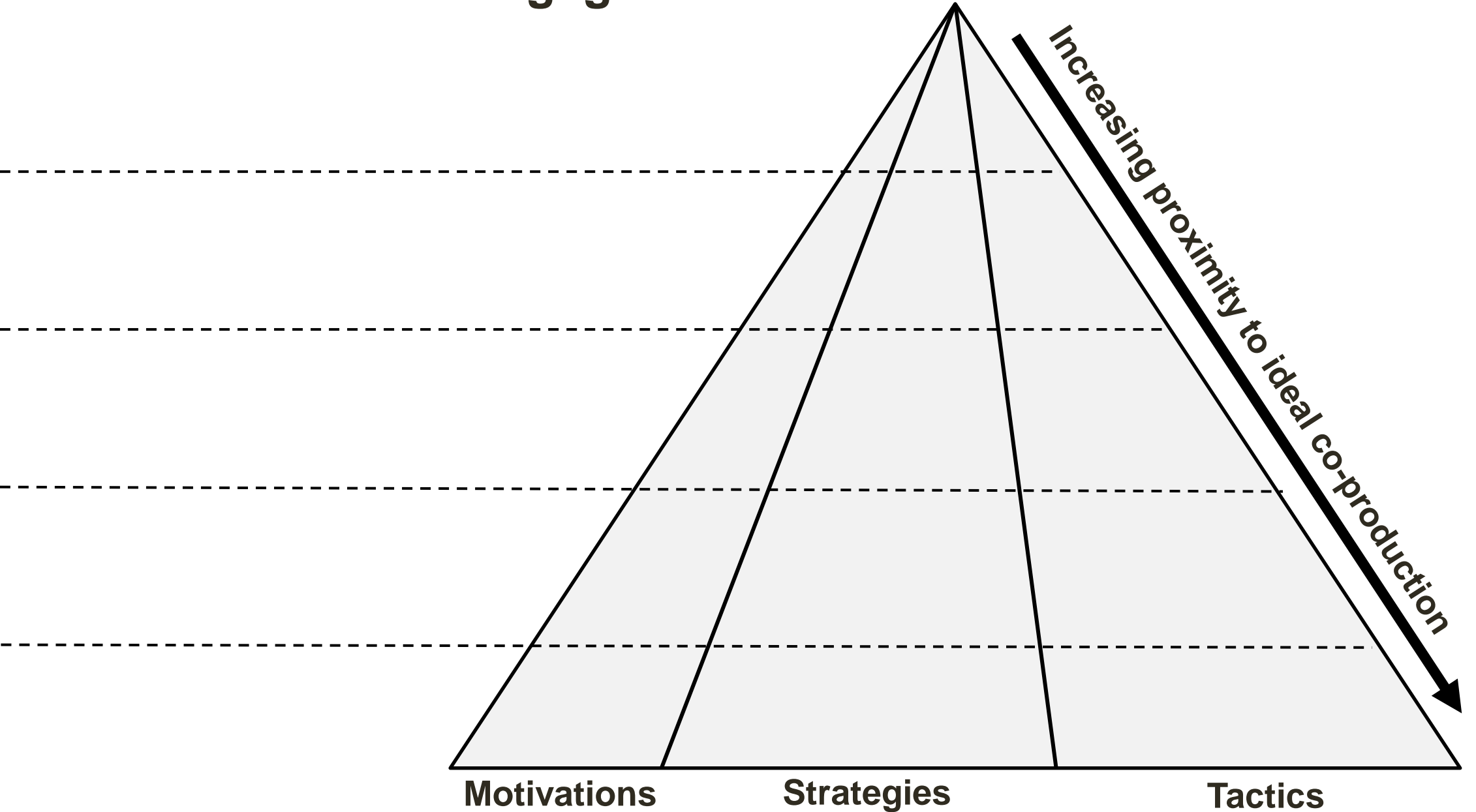
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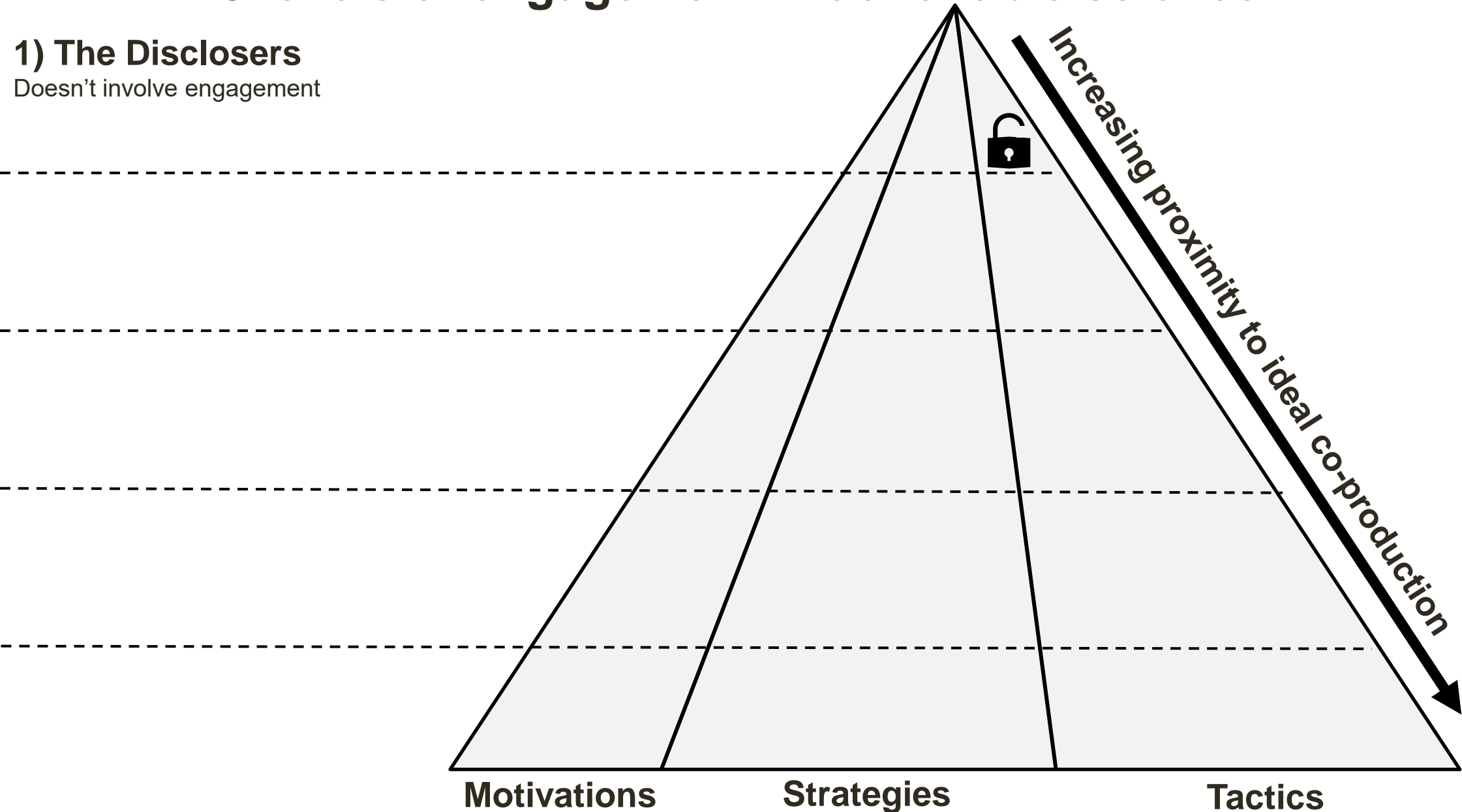
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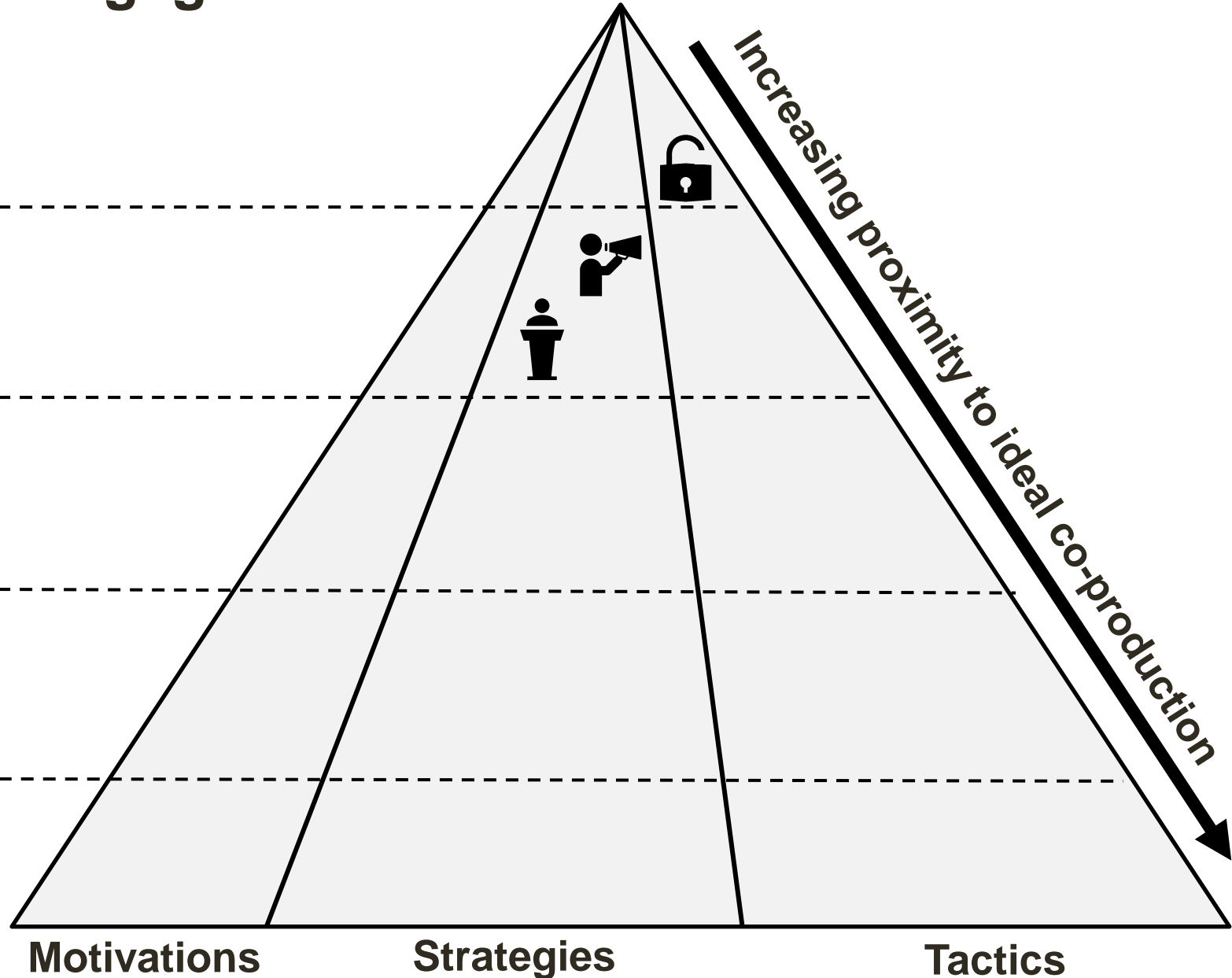
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Doesn't involve engagement



5 levels of engagement in actionable science

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Doesn't involve engagement

2) The Educators
One-way information flow

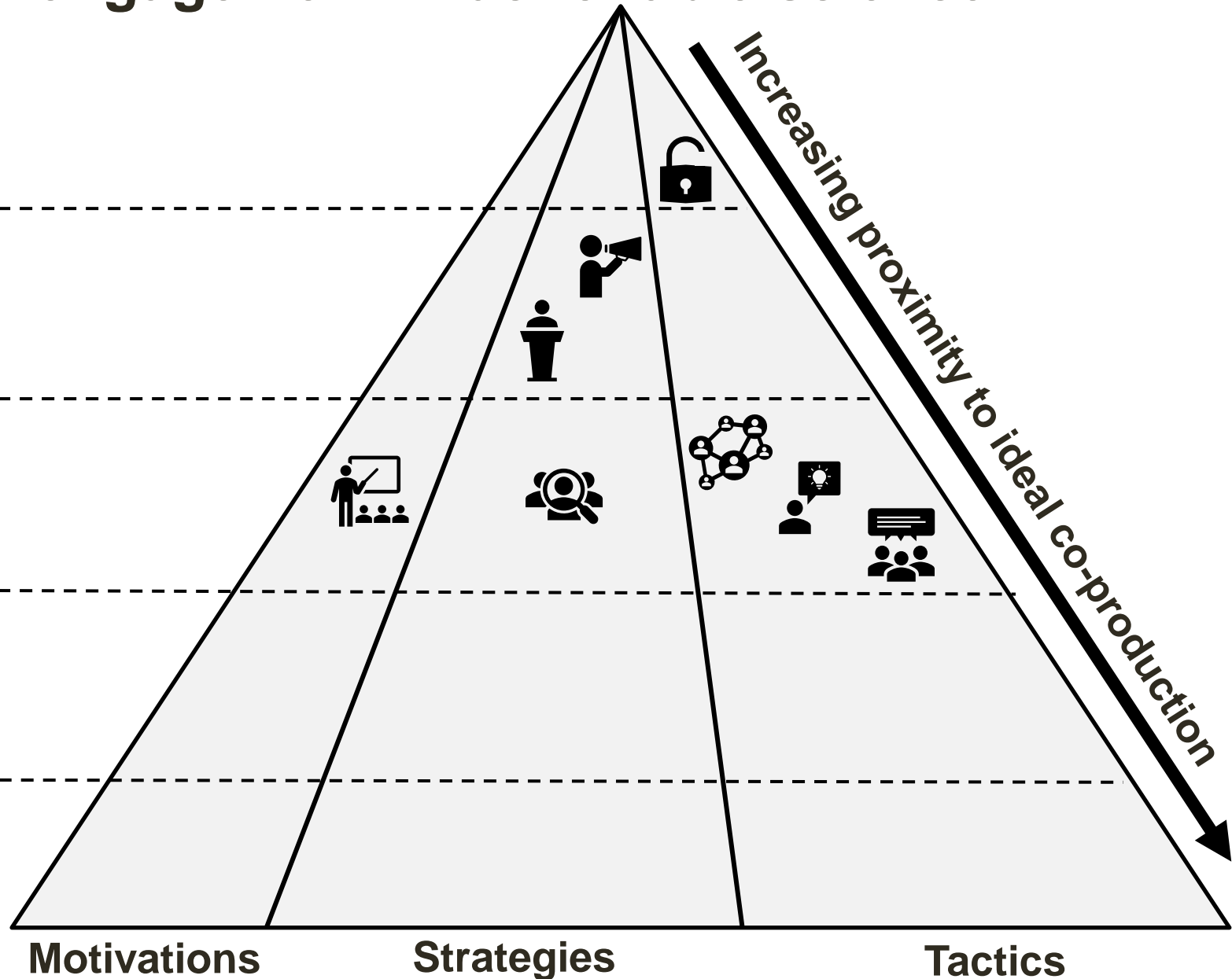


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One-way information flow

3) The Networkers
Two-way information flow;
Specific user groups



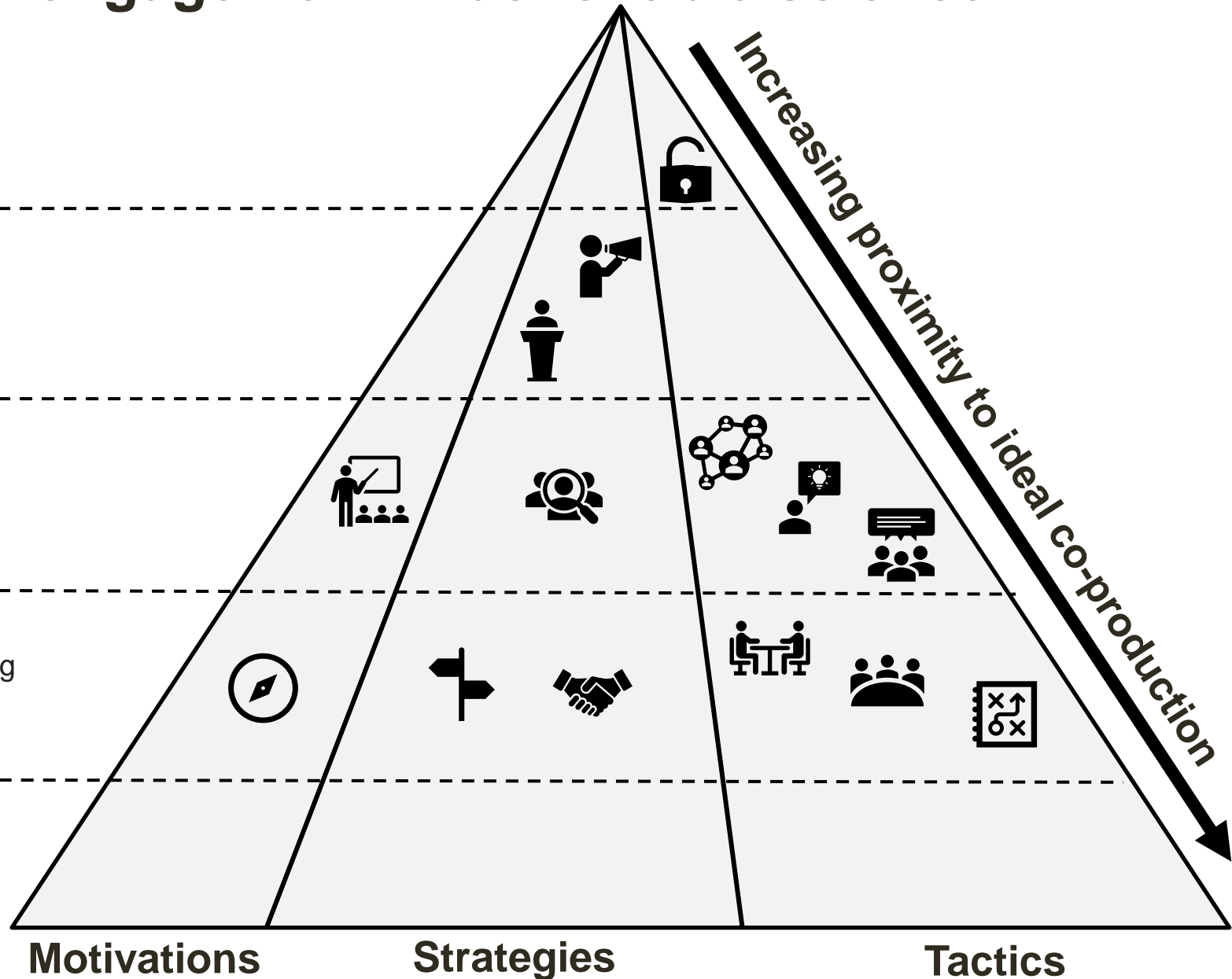
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Engage in long-term, boundary-spanning
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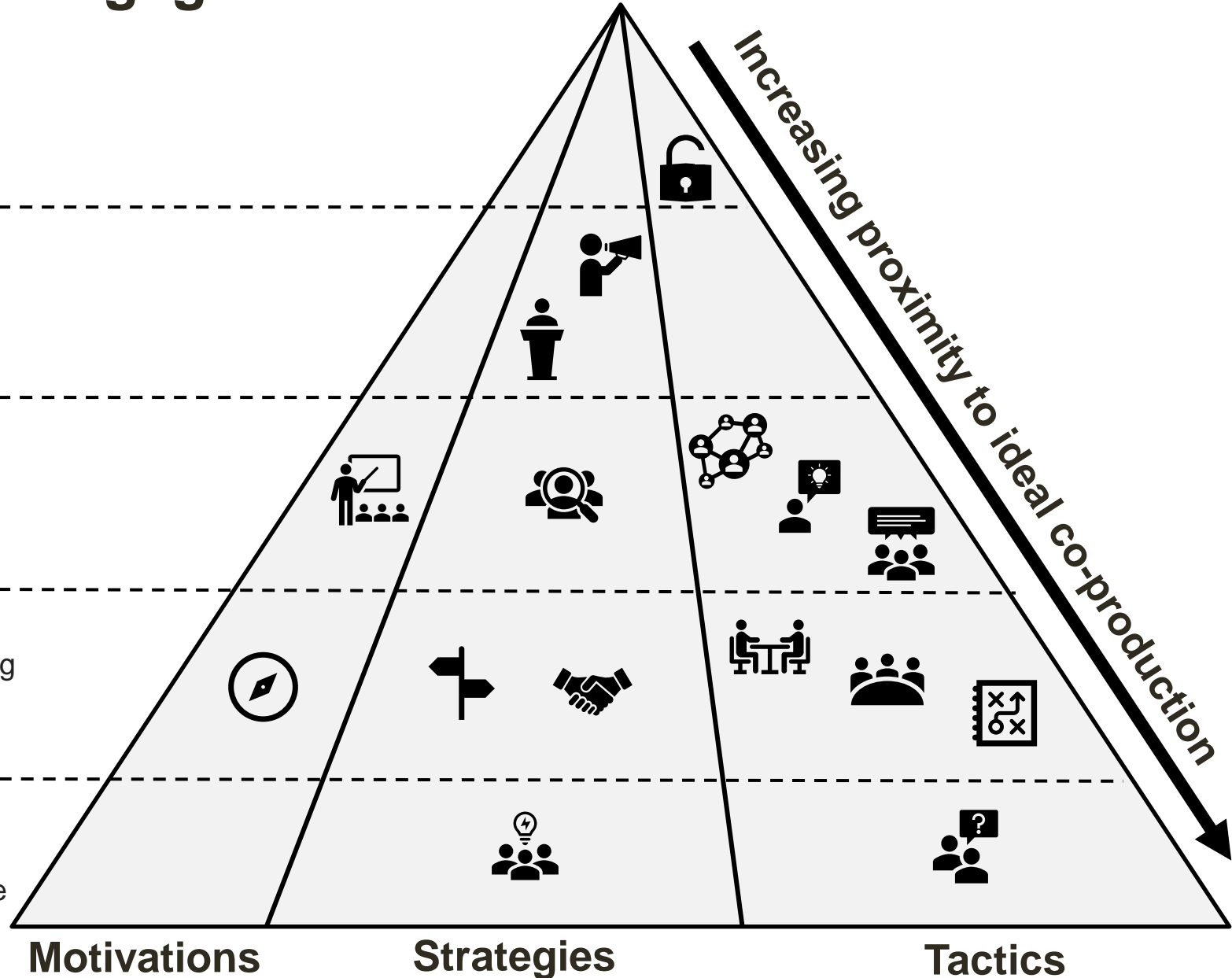
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5) The Pluralists
Coproductio requires that value be
produced for – and by – both knowledge
users (practitioners) and knowledge
producers (researchers)



The Disclosers

- Publish papers in open access / open-source data
- Generally, only engage in this activity
- Science outreach and engagement with conservation practitioners is still needed

The Educators

= **The Disclosers**

- + Engage in science communication: public, policymakers, other scientists (**one-way information flow**)
- + Framing and tailoring scientific findings to fit communication methods, formats, and sources that are most likely to effectively reach desired audiences
- + Not related to any other activity (strategy itself)

The Networkers

= **The Educators**

- + Desire to build agency and capacity in others
- + Engage in use-inspired and stakeholder-engaged research (**two-way information flow**)
- + Asking questions about who will be using their research, and attempting to reach out to these groups

The Collaborators

= The Networkers

- + Focus on real-world impacts and capacity building
- + Aim to connect with knowledge users, identify their needs, and produce knowledge that meets these needs, by engaging all stakeholders in the overall research process
- + Engage in long-term, boundary-spanning* knowledge partnerships
- + Empathy and willingness to learn

*Boundary-spanning = intense activity that requires specific skill sets: deep listening, understanding of the science, ability to recognize and control for power differentials among all parties involved, navigating the incentives and information needs of various stakeholders

The Pluralists

= The Collaborators

- + Engage in knowledge coproduction: value is produced for – and by – both knowledge users (practitioners) and knowledge producers (researchers)
- + Transparency on what is being produced for whom and why
- + Early engagement of stakeholders and involvement of the intended users in the design of research projects
- + Dynamic processes and **multidirectional information flows**
- + Strategic planning, patience and persistence, to set common agendas and collective goals
- + Communication, deep engagement, co-defining research questions and project co-leadership

Which actionable science type are you?

The Pluralist

The Collaborator

The Networker

The Educator

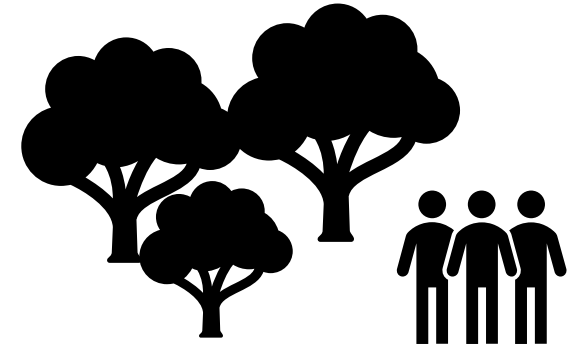
The Discloser



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Conservation practitioners

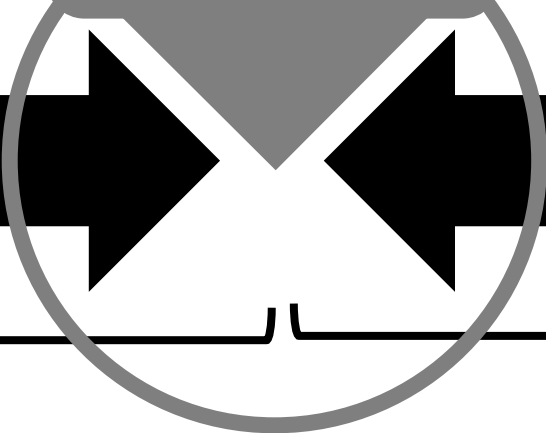


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How are conservation practitioners using science?



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Simon Lhoest



Paola Sangolquí

Martha Arízaga

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for your
attention!

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Our website and publications: <https://sites.google.com/asu.edu/actionablesoci/home>