



Context Matters! In Assessing Research and Technology (RTD) Programs

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Why Context Matters

- Current rationale and assessment for RTD programs use a limited and fragmented picture of the innovation process.
- Not enough is known about this complicated process and the surrounding innovation ecosystem.
- The RTD side over simplifies the diffusion side and visa versa.
- Current logical frameworks and evaluations may answer what happened and why, but neglect to add “under what circumstances” (CONTEXT).
- Which means evaluators provide incomplete or inaccurate answers to questions and responses to evaluation findings.

What Can We Do to Improve?

- Develop Better Theory-Based Logical Frameworks
- Build theory with studies of the discovery/innovation process

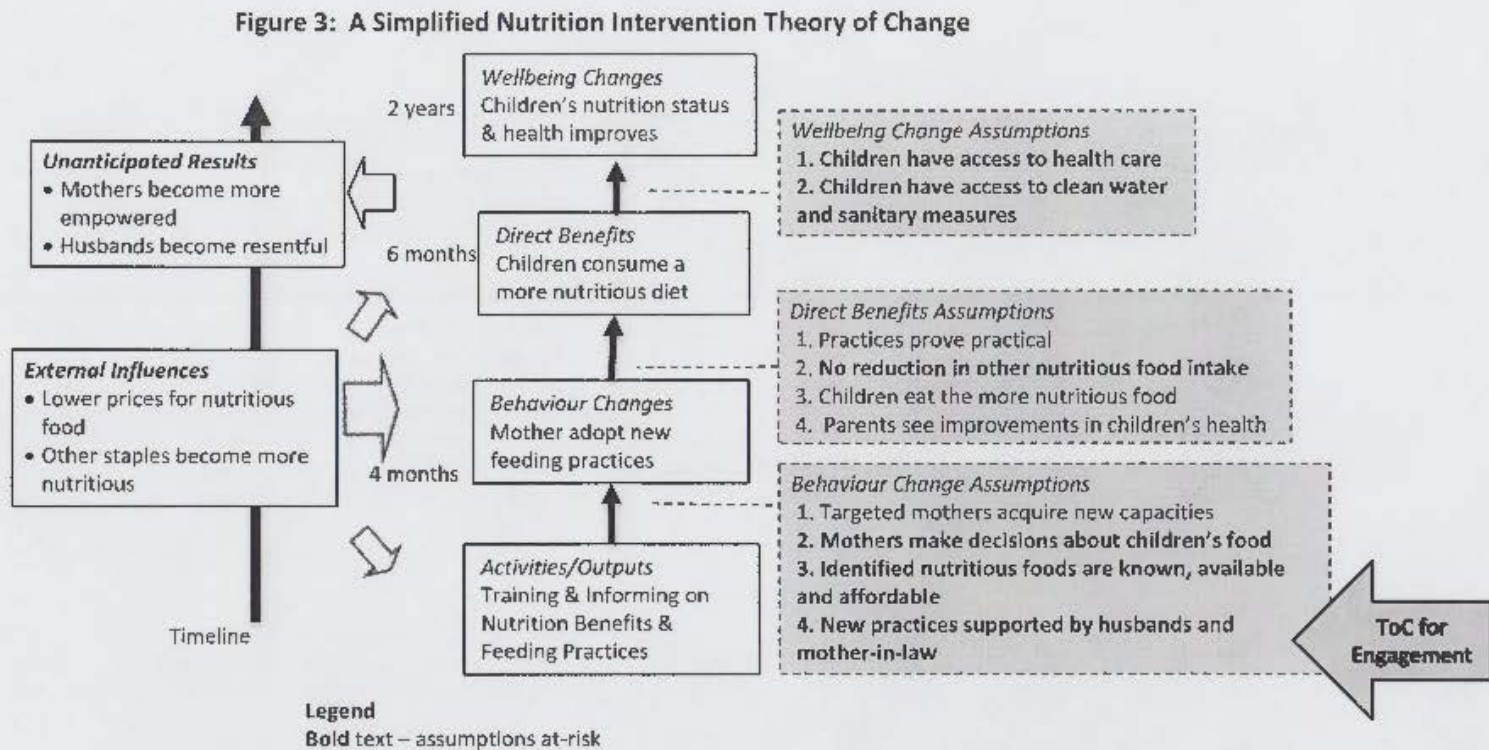
*Where do you start?
Where are you going?
How will you get there?
Who must go with you?
When will you arrive?*



A Beginning: Examples of Relevant Theory-Based Logical Frameworks

- Include assumptions about context
- Take a systems view
- Categorize aspects of the innovation system
- Categorize RTD strategic Profiles
- Categorize changes in product value chains
- Categorize multiple pathways to outcomes
- Categorize major aspects of context

Example 1. Good Theories of Change have assumptions about risks, context

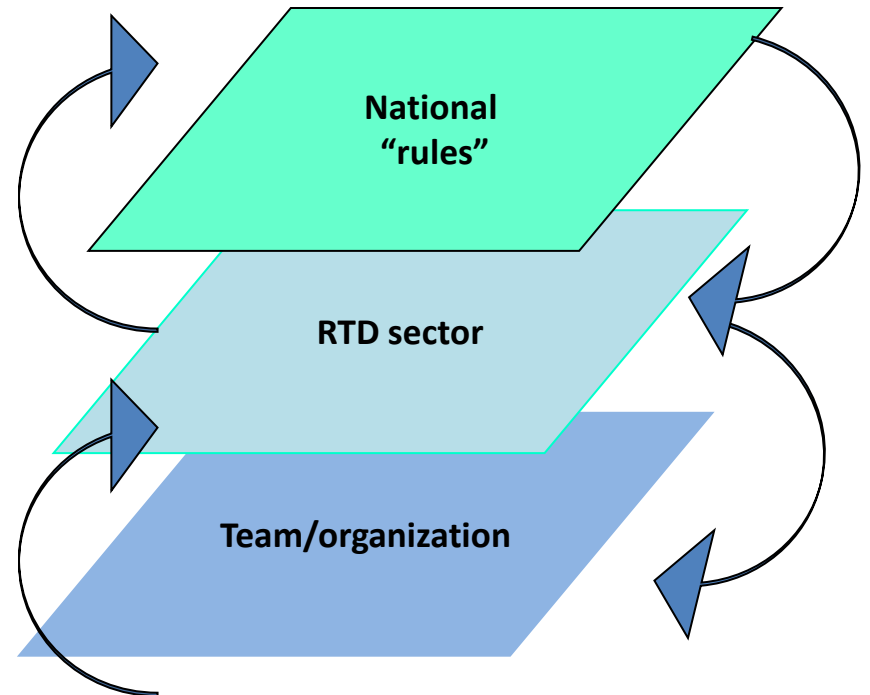


John Mayne

A **theory** is (1) a set of interrelated concepts, definitions, and propositions that explains or predicts events or situations by specifying relations among variables; (2) a statement of what causes what, and why, and under what circumstances.

Take a systems view, with focus on the Meso level (RTD sector)

- Meso level connects macro with micro
- Bottlenecks to innovation can be spotted more easily here
- Mission and policy decisions are often sector specific
- Policy impacts differ by sectors because sectors differ in
 - Amount of investment by RTD arena
 - Rates of technical change



Eric Arnold 2004

Example 2. One systems view of RTD and adoption, with focus on the RTD sector level

Where are bottlenecks?

High risk capital – availability?

Capabilities – Level, mix, availability?

Modes of coordination – effective?



RTD



Market Diffusion

Socio-economic Outcomes?

Technical Progress?

Connectedness?



Micro Actors, Institutions, and Interactions

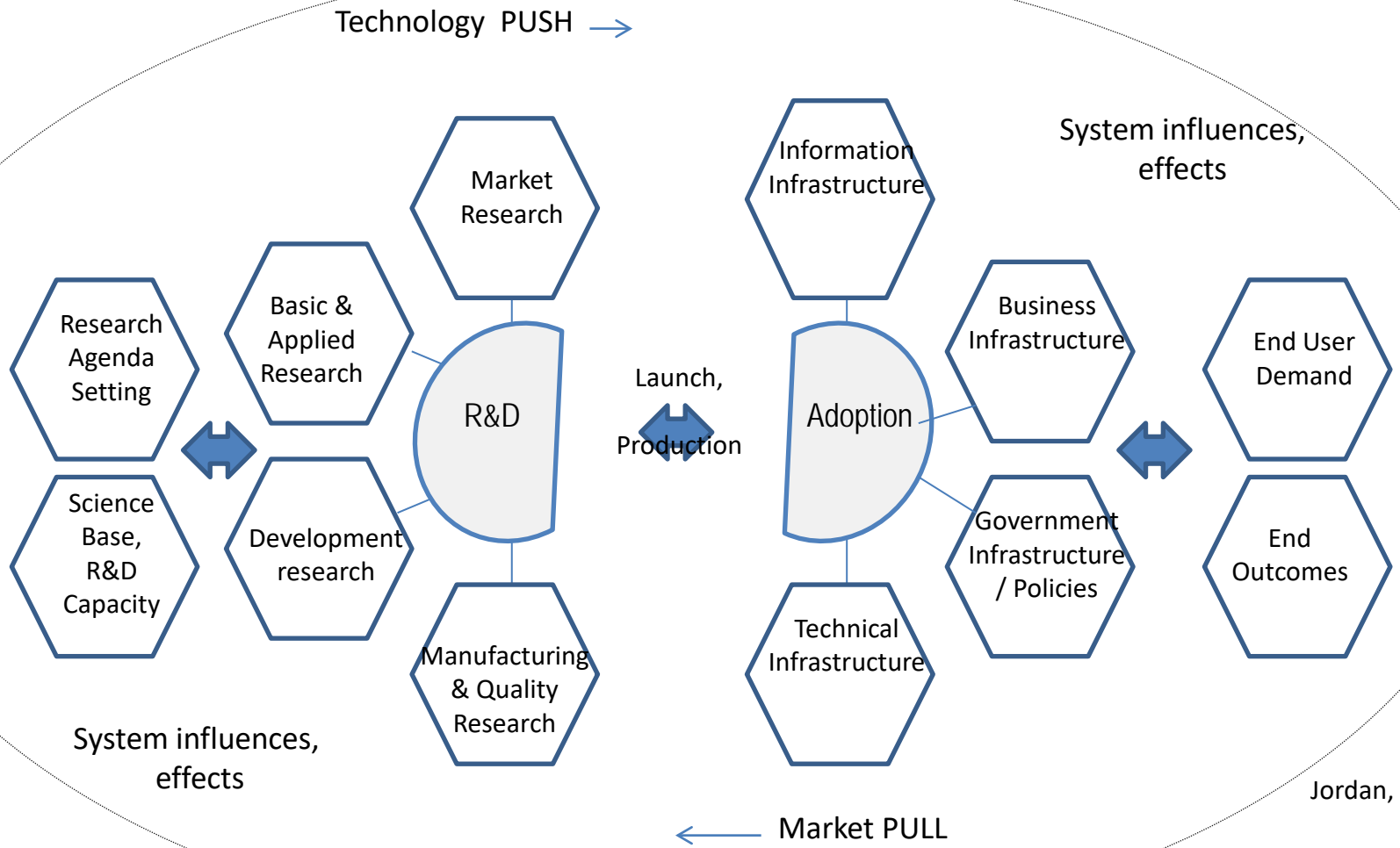
RTD arenas – what to fund, how much

Organization - strategies & structure

Collaborations & Involvement of users

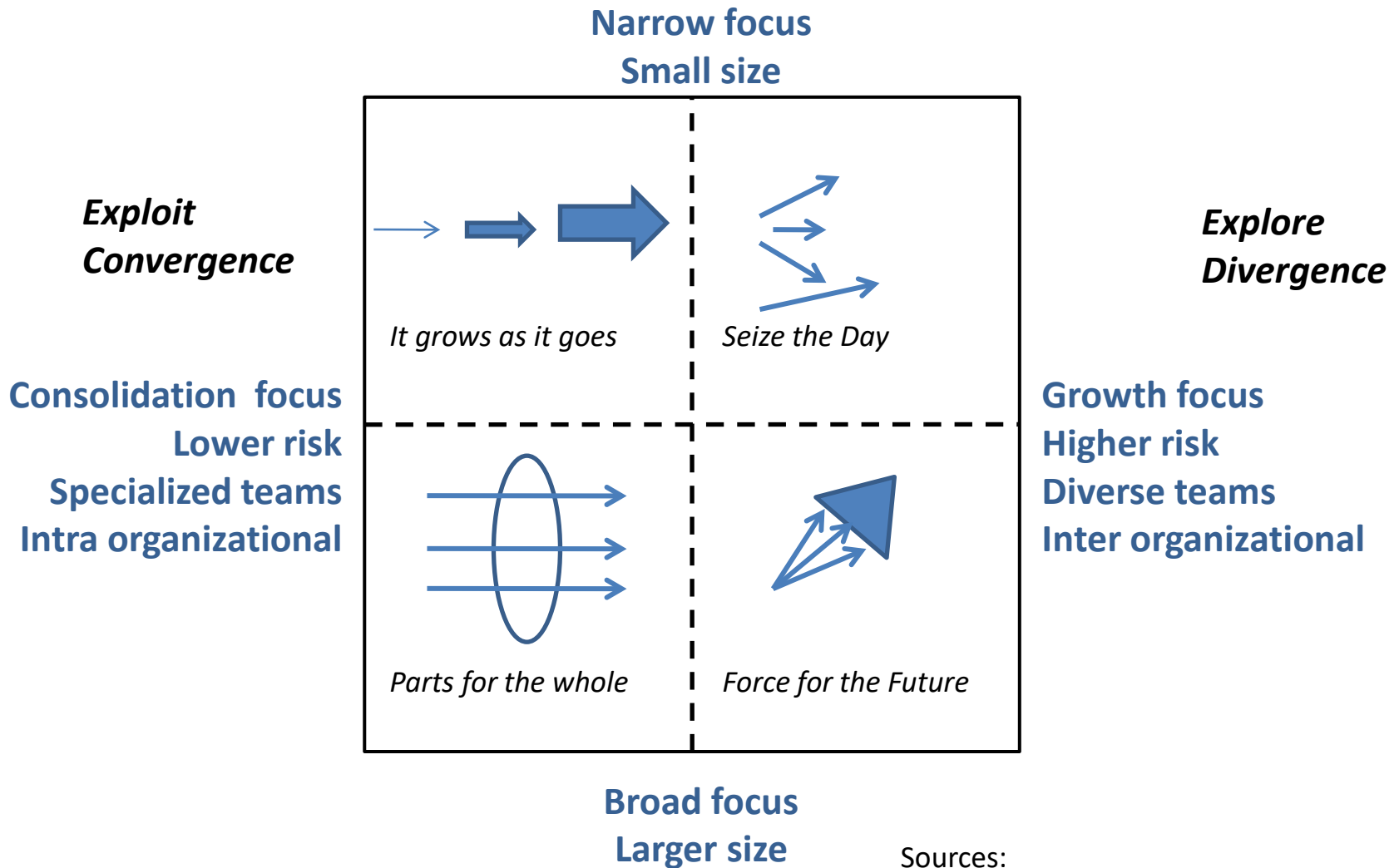
Modified from Jordan, Hage, and Mote, January 2008.

Example 3. A Systems Logic Model shows key aspects of R&D to adoption continuum



Jordan, 2010

Example 4. Micro level considerations, organizational strategies and structures



Sources:
G Jordan, Research Profiles 2006, 2011;
VanDevender 2003

Example 5. A Product Value Chain and Innovation Ecosystem

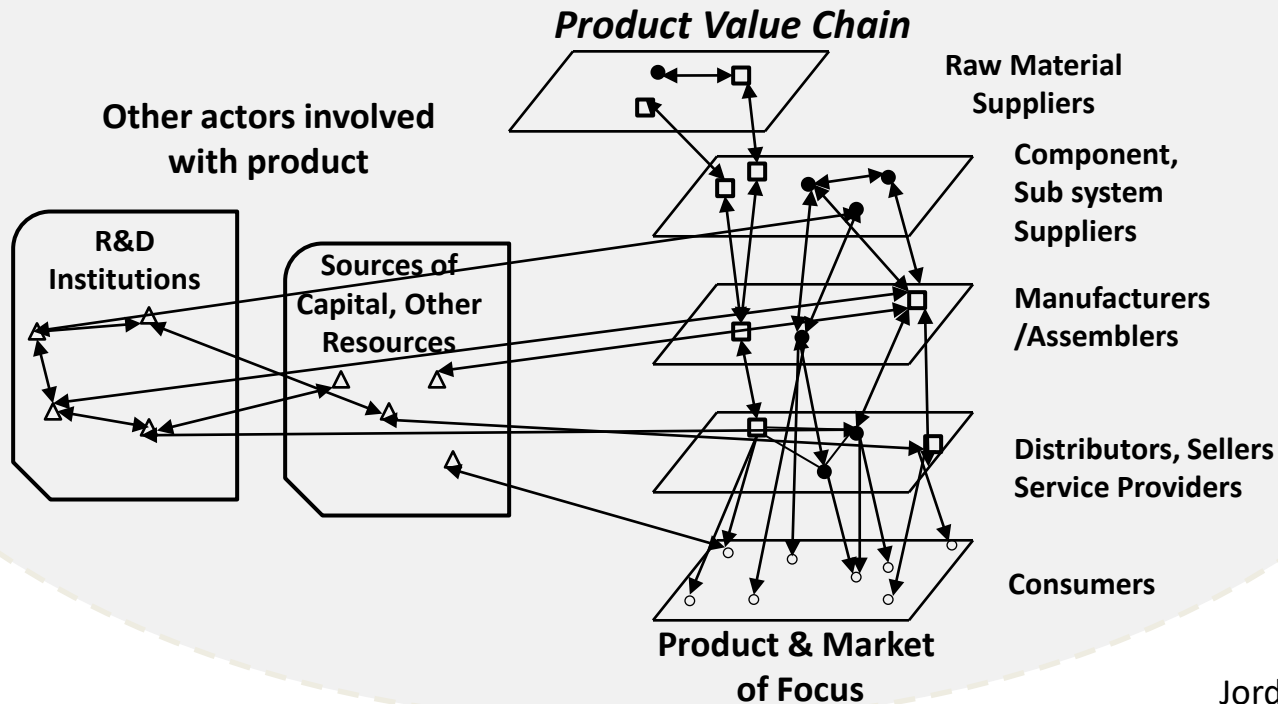
Innovation Ecosystem

Technical:
Competing,
complementary
technologies...

Economic:
Market
characteristics,
NGOs...

Government:
Policies,
procurement ...
(including EERE)

Information,
Culture:
Human resources,
networks, beliefs...



- Product Supply Chain firms
- Other firms in the industry
- △ Other elements contributing to product, market

Example 6. Research Influences Decisions

Collective action to co-identify and support R4D focus areas

Produces conditions and evidence for use of R4D outputs

That informs decisions about innovations in agri-food systems supporting policies & institutions

That result in improved agri-food system outcomes and performance at increasing scale and scope

Modified from CHSPRA 2018

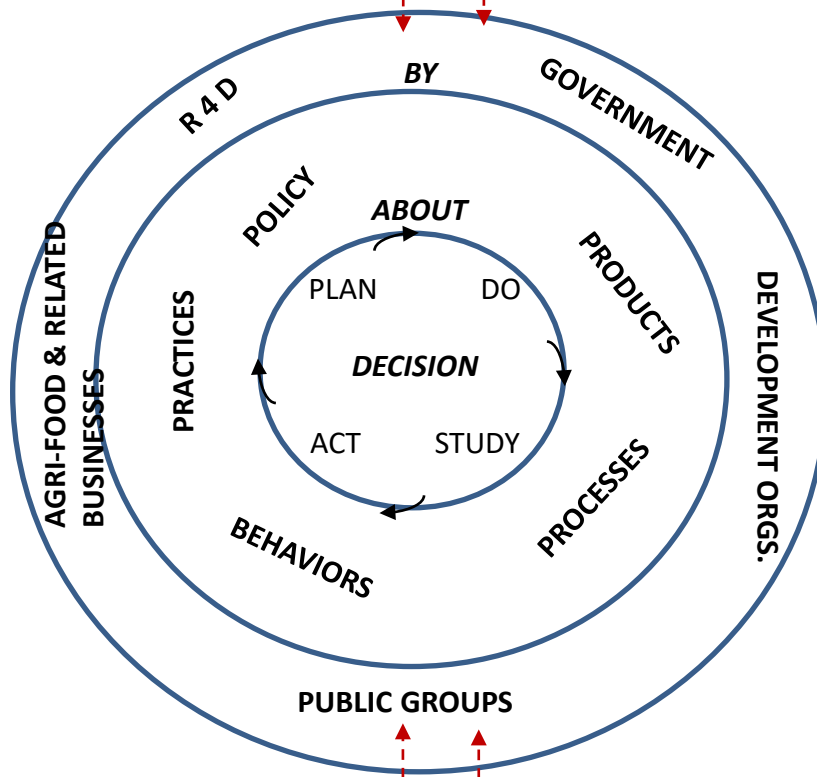
Engagement among researchers, end-users, and decision makers

Problem & Priority Co-Identification at multiple stages

Translatable R4D findings, tools

Targeted R4D and R4D Capacity Building

User capacity to Use and Implement



More efficient, effective ag. system

More access to nutritious, safe food

Multiple Goals

Sustainable natural resource use

Reduced Poverty

Impacts feedback into collective action throughout the pathway

CONTEXT: Individual/Organization Location/Crop Macro Institutions

Example 7. Categories of Key Elements of Possible RTD Contexts

Macro

- a. Availability of Capital, Capabilities
- b. Ease of coordination
- c. Legal, political, regulatory
- d. Culture, Societal values

Meso/Sector

<p>Characteristics of Interactions:</p> <ul style="list-style-type: none"> a. Who? b. Diversity c. Continuity d. Mechanisms 	<p>Nature of science impact:</p> <ul style="list-style-type: none"> a. Knowledge b. Infrastructure c. Structure d. Agility 	<p>Nature of the application:</p> <ul style="list-style-type: none"> a. Breadth, Timing b. Radicalness of change c. Mission, Application sector d. Speed of technical change e. Absorptive capacity
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Micro

<p>Characteristics of team</p> <ul style="list-style-type: none"> a. Size, diversity b. Experience c. Organization/management 	<p>Nature of the research problem</p> <ul style="list-style-type: none"> a. Research type b. Profile: Radicalness and Scope 	<p>Nature of the research field</p> <ul style="list-style-type: none"> a. Maturity b. Availability of tools c. Cost of research
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Conclusion – How we build theory using better logical frameworks

The process of building theory: Iterate three steps (Observation, Categorization, Association) and form a body of understanding that researchers build cumulatively.

- Develop/use generic logical frameworks (templates) to guide community toward using more similar evaluation frameworks. Find support for larger, coordinated studies of parts of the discovery/innovation process.
- Demonstrate that these provide more strategic information for program decision makers.
- Plan for and do synthesis evaluations.
- Assess process vs. performance when “natural experiments” present themselves.

Selected References

Canadian Health Services and Policy Research Alliance. 2018. Making an Impact: A Shared framework for assessing impact of health services and policy research on decision-making. <https://www.chspra.ca/blank-7>

Howarth, E., Devers, K., Moore, G., O’Cathain, A., & Dixon-Woods, M. (2016). Contextual issues and qualitative research. In *Challenges, solutions and future directions in the evaluation of service innovations in health care and public health*. NIHR Journals Library.

Jordan, G. 2010. A Theory-Based Logic Model for Innovation Policy and Evaluation, *Research Evaluation*, 19(4), October 2010, 263-274.

Jordan, Gretchen B and other members of the American Evaluation Association Research, Technology and Development Topical Interest Group, 2015. Evaluating Outcomes of Publicly Funded Research, Technology and Development Programs: Recommendations for Improving Current Practice, February, available at <http://tinyurl.com/RTDTIGWhitePaper2015>.

Jordan, Gretchen, Jonathan Mote, Rosalie Ruegg, Thomas Choi, and Angela Becker-Dippmann. 2014. A Framework for Evaluating R&D Impacts and Supply Chain Dynamics Early in a Product Life Cycle: Looking inside the black box of innovation, prepared for the U.S. Department of Energy.

http://www1.eere.energy.gov/analysis/pdfs/evaluating_rd_impacts_supply_chain_dynamics.pdf

Jordan, Gretchen B (2013). A Logical Framework for Evaluating the Outcomes of Team Science, prepared for the Workshop on Institutional and Organizational Supports for Team Science, National Research Council, Board on Behavioral, Cognitive and Sensory Sciences, Committee on the Science of Team Science, October.

Jordan, G. B., Hage, J., & Mote, J. 2008. A theories-based systemic framework for evaluating diverse portfolios of scientific work, part 1: Micro and meso indicators. In C.L.S. Coryn & Michael Scriven (Eds.), *Reforming the evaluation of research. New Directions for Evaluation*, 118, 7–24.

Jordan, G.B. 2006. Factors Influencing Advances in Basic and Applied Research: Variation Due to Diversity in Research Profiles. In *Innovation, Science, and Institutional Change: A Handbook of Research*, J. Hage and M. Meeus (eds). Oxford University Press: Oxford, 173-195.

Thank You!

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