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A smart answer to a complex question: Applying complexity theory to the evaluation of Smart Specialization Strategy

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Presentation outline

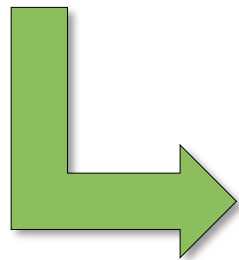
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1. **Main challenges in evaluating Smart Specialisation Strategies**
2. **Complexity concept to evaluation**
3. **Developmental Evaluation**
4. **How to apply Developmental Evaluation to S3**

Main challenges in evaluating Smart Specialisation Strategies

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- The role and the rationale of an evaluation system for a smart specialization strategy is widely acknowledged, but ...
- ... **no agreement** about **how to evaluate the effectiveness of the strategy** and about **which methodology** is more suited to this end



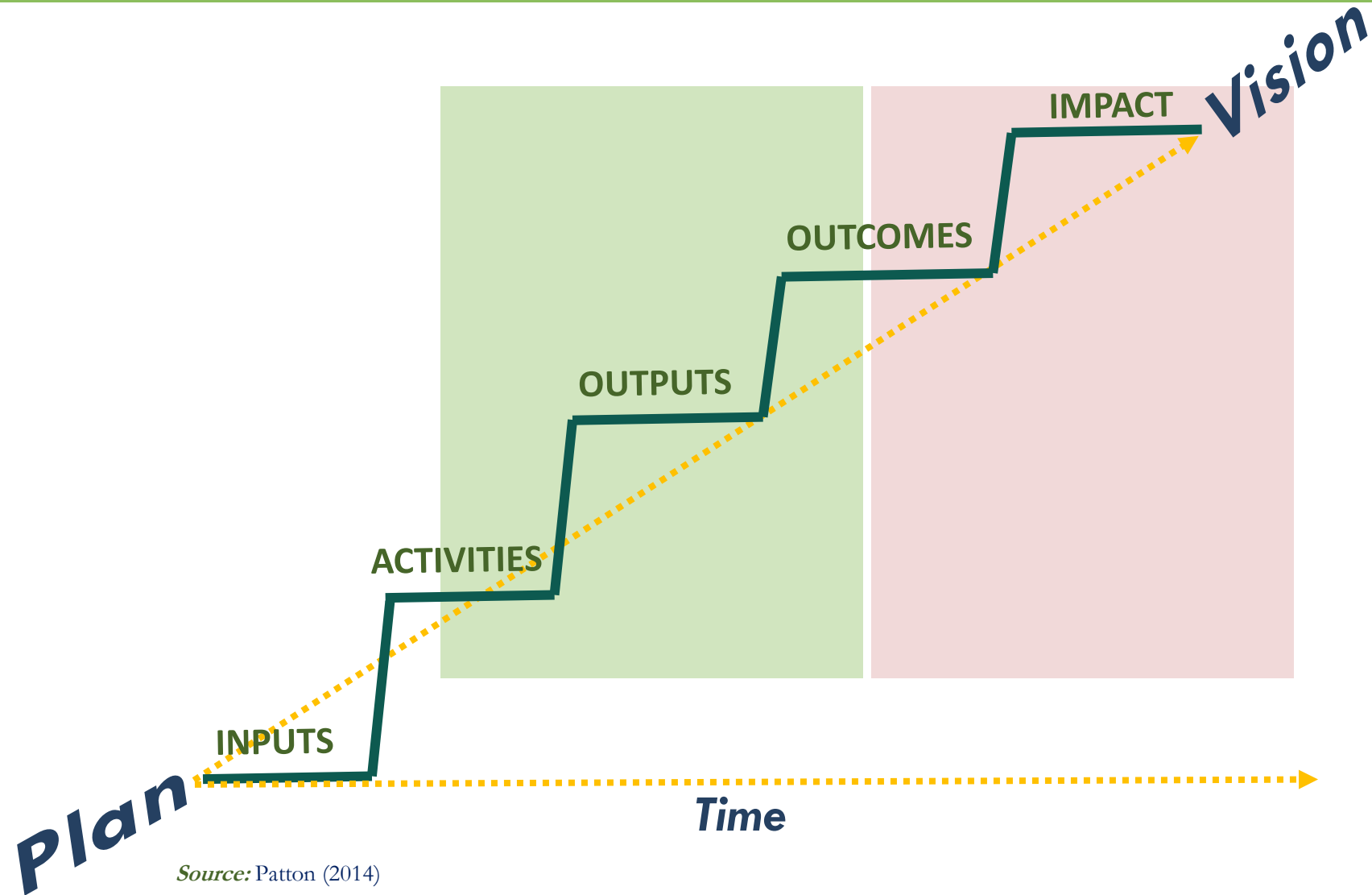
Why?

Main challenges in evaluating Smart Specialisation Strategies

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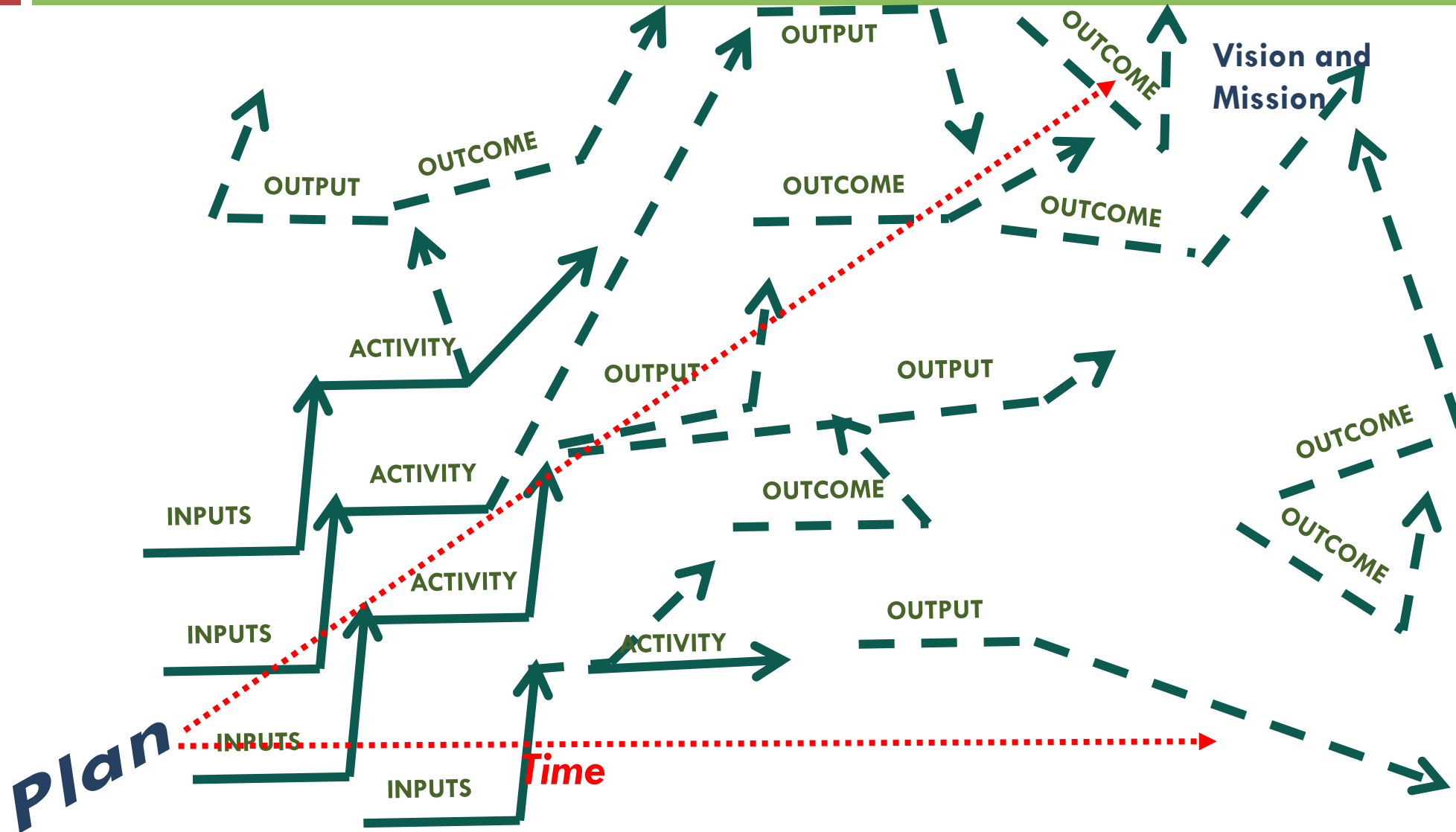
- Some specific features of Smart Specialisation Strategies
 - Quadruple helix stakeholder engagement
 - Mix of innovation policy instruments
 - No one-size-fits-all solution
 - To leverage on existing strengths
 - To involve different forms of innovation including soft forms of innovations, which are intrinsic in the system and more difficult to measure

Situations in which this ...



Source: Patton (2014)

... turns out to be this ...



Main challenges in evaluating Smart Specialisation Strategies

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- **Mainstream evaluation is not suitable** for judging the effectiveness of **complex innovation policies** and for considering the **non-linear** and **multi-directional nature** of relationships between the initiative and its outcomes.
- Mainstream evaluation **lacks the systemic properties** that are relevant for the evaluation of smart specialization strategies.

Main challenges in evaluating Smart Specialisation Strategies

- The state-of-the-art, ad-hoc, counterfactual evaluations that answer with statistical rigor the single question ‘does it work’ for matured and standardized individual innovation policy instruments have become less relevant.
- **Continuous learning** why certain actions produce effects, for whom, and under which conditions, intentionally or un-intentionally has become **more relevant**.

Main challenges in evaluating Smart Specialisation Strategies

- Challenges for evaluating RIS3 are based on the distinctive elements of territorial strategies
 - Important to focus not only on policy effectiveness but on their **contribution to strategy**
 - Need to move from accountability approaches to **policy and strategic learning ones**
 - Evaluation as a **strategic intelligence tool** for monitoring the advancement of priorities.

Main challenges in evaluating Smart Specialisation Strategies

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- Relevance of **participatory evaluation methodologies** to be embedded in the entrepreneurial discovery process [*the need for high trust and quick feedback*].
- Implication for the governance of the RIS3.

Complexity concept to evaluation

- Complexity science is the study of complex adaptive systems.
- **Complex adaptive systems** are characterized by a large number of agents or elements interacting dynamically and exchanging information through relatively rich means, and whose actions are interconnected among all agents in the system.
- Interactions are **nonlinear**, meaning that small, random changes in one component or element of the system can lead to large changes in that system.
- Over the time, the character of a complex system emerges through **spontaneous self-organization**.

Complexity concept to evaluation

- The capacity for self-organization enables complex adaptive systems to **create or change their structures**. This may cause **new system properties to emerge**.
- These **emergent properties** have **synergistic characteristics**. Order can emerge naturally from fluctuations within a system.
- Although there may be a lack of detailed predictability, complex adaptive systems can form a **specific type of patterns around attractors** and follow **overall predictable path of development**.
- The **system's history** is “**co-responsible**” for its **current and future behavior**.

Complexity concept to evaluation

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- Complexity theory may provide a useful conceptual framework for economic evaluation in innovation.
- Complexity theory foregrounds concepts of **self-organization**, **emergence**, **non-linearity**, and **co-evolution**, and it is these notions that may provide added value and which are missing from the existing economic evaluation frameworks.
- Non-linear interactions and potential for sudden system transformation suggest that evaluation should, if possible, occur **concurrently alongside programme development and implementation**.

Developmental Evaluation

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- **Developmental Evaluation (DE)** was identified as explicitly drawing upon complexity concepts (Patton, 2011).

Characteristics of Developmental Evaluation

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- **Continuous learning** is intentionally embedded into the developmental evaluation process.
- An **emergent** and **adaptive evaluation design** ensures that the evaluation has purpose and that it can respond in nimble ways to emerging issues and questions.
- The developmental **evaluator** is a **strategic learning partner** and **facilitator**
 - bring a **complex systems orientation** to the evaluation
 - elucidate the **innovation and adaptation processes**, track their implications and results, and facilitate **ongoing, real-time data-based decision-making**.

Traditional *vs* developmental evaluations

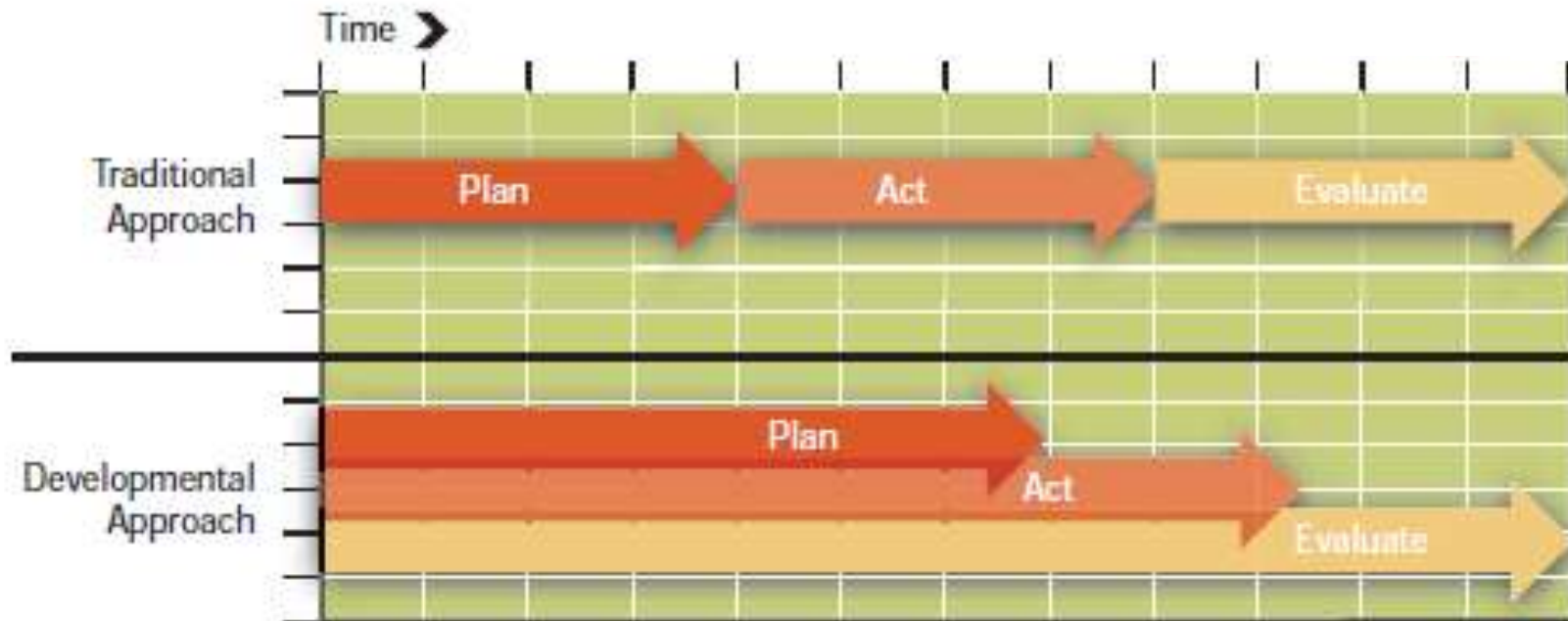
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Traditional evaluations	Developmental evaluations
Render definitive judgment of success or failure	Provide feedback, generate learnings, support changes in direction
Measure success against predetermined goals	Develop new measures and monitoring mechanisms as goals emerge and evolve
Position the evaluator outside to assure independence and objectivity	Position evaluation as internal, team function integrated into action and ongoing interpretive processes
Design the evaluation based on linear cause-and-effect logic models	Design the evaluation to capture system dynamics, interdependencies, models and emergent interconnections
Aim to produce generalizable findings across time and space	Aim to produce context-specific understanding that inform ongoing innovation
Accountability focused on and directed to external authorities, stakeholders and funders	Accountability centered on the innovators' deep sense of fundamental values and commitment
Accountability to control and located responsibility	Learning to respond to lack of control and stay in touch with what's unfolding and thereby respond strategically
Evaluation results in opinion of success or failure, which creates anxiety in those evaluated	Evaluation supports ongoing learning

Source: Westley, Zimmerman and Patton (2006)

Traditional *vs* developmental evaluations

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Source: Gamble (2008)

Why to apply Developmental Evaluation to S3

- DE focuses on **understanding an innovation in context**, and explores how both the innovation and its context evolve and interact over time.
- DE is specifically designed to improve innovation. By engaging **early** and **deeply** in an exploration of what a new innovation is and how it responds to its context, DE enables stakeholders **to document and learn from their experiments**.

Why to apply Developmental Evaluation to S3

- DE supports **timely decision-making** in a way that monitoring and later-stage evaluation cannot. By providing real-time feedback, DE supports rapid strategic adjustments and quick course corrections that are critical to success under conditions of complexity.
- Well-executed DE uses an **inclusive, participatory approach** that helps build relationships and increase learning capacity while boosting performance.

Developmental Evaluation: a few guidelines

- **Developmental evaluation** is an **adaptive, context-specific approach**. As such, there is **no prescribed methodology**.

The “right” method is determined by need and context.

- While it's not possible to offer step-by-step instructions for Developmental evaluation, it is possible **to outline some of the broader functions and practices associated with this work**.

Developmental Evaluation: a few guidelines

- 1. Positioning the Developmental Evaluator**
- 2. Giving authority to do the work** (*the effectiveness of DE is tied to one's level of access to all relevant components of the decision-making chain*)
- 3. Developing a learning framework** (*co-created with key stakeholders, a learning framework helps to guide development by mapping key challenges and opportunities, highlighting potential areas for learning, and identifying feedback mechanisms*)

Developmental Evaluation: a few guidelines

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4. Orienting the group

- Defining the problem/opportunity
- Identifying key aspects of the system (e.g., those parts that contribute to, influence, and/or are affected by the situation)
- Understanding the patterns associated with system behavior, including *how* and *why* each of the critical parts function the way they do, and how they interact to reinforce or stabilize other parts of the system
- Identifying leverage points that will create shifts in the system

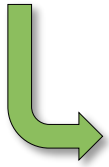
Developmental Evaluation: a few guidelines

- 5. Intervening** (*the DE role extends well beyond data collection and analysis; the evaluator actively intervenes to shape the course of development, helping to inform decision-making and facilitate learning*)

How to apply Developmental Evaluation to S3

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➤ Policy lab



a dedicated space (real or virtual) where practitioners meet researchers and users to co-create solutions and test them on small scale (experimentation and developing new solutions).

➤ Why a lab?

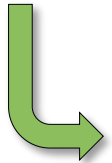


the idea of a policy lab has gained momentum in recent years and in many ways this suggests that people want to collaborate, brainstorm, cooperate, learn and experiment.

How to apply Developmental Evaluation to S3

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- Policy Lab supports **organisational learning**, exploring **future policy making capabilities** that can be routinized
- Policy Lab sets up and enables **collective learning cycles** in which **problems** and **solutions co-evolve** and **problems are reframed**



Generating and building confidence in new insights and new policy ideas, which can then be developed via more conventional means leading to faster delivery and implementation

How to apply Developmental Evaluation to S3

- Combining: (i) Systems thinking (holistic, interconnectedness) (ii) Design thinking (action, making things concrete) (iii) User-orientation (outcomes, consequences)
- From “what must be” to “what might be” – exploration and experimentation (‘manageable risk’ – systematic design process)



Thank you for your attention!

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