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Managing the innovation process

TU-E2110 Innovation in operations and services
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Innovation management topics

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Today's learning objectives

After the session, you are able to:

1. **Define** innovation

2. **Describe** a framework for innovation management

3. **Identify** multiple innovation process models and **evaluate** their applicability in concrete innovation contexts

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What is innovation?

How do we define innovation?

Schumpeter's (1934) definition

Innovation is something:

1. Carried into practice
    (an novel idea or invention without market application not (yet) an innovation)

2. Which benefits its developer
    (entrepreneurial profit motivating innovators)

3. Reproduced across contexts
    (more than one situated application)

4. That changes the economy beyond the developing firm
    (through the adoption of the innovation by other companies)

Types of innovation

Schumpeter (1934):

1. New good
2. New method of production
3. Opening of a new market
4. Conquest of a new supply of raw materials
5. New organization of an industry

+

6. Innovation in services
7. Social / societal innovation

Are these innovations? Of what kind?

1. A biotech startup develops a new material for transplant organs. This significantly contributes to the bankruptcy of the startup, but with eventual clinical success, the drug is brought to market by a major pharma company.
2. A relatively new ICT solution is picked up by a manufacturing company, which enables it to improve the efficiency of current production processes and thus increase profit margin.
3. A team in a consultancy firm develops a solution to a client company's service process issue and initiates an internal development process to sell it to other customers.
4. The ongoing evolution of a software within an open source community
5. The restructuring of a national health care system that leads to better quality care for those in rather good physical condition, but increases cost and deteriorates service for those with severe medical conditions

Innovation in services

1. **"Product" and "process"** *inseparable*
    - There is no service outcome in the absence of a collaborative process – the locus of innovation always in the process
2. **New solutions often emerge first as** *"ad hoc"*
    - In response to specific needs or situated contingencies, with formalization following afterwards
3. **Innovation often in close** *collaboration with customers*
    - New process develops through 2-way collaboration and mutual adjustment
4. **Innovation rarely confined within a separate** *R&D unit*
    - Involves personnel across the organization
    - Particularly operative-level employees and middle managers
5. **Innovation has** *few clear-cut transitions* **from "old" to "new" services**
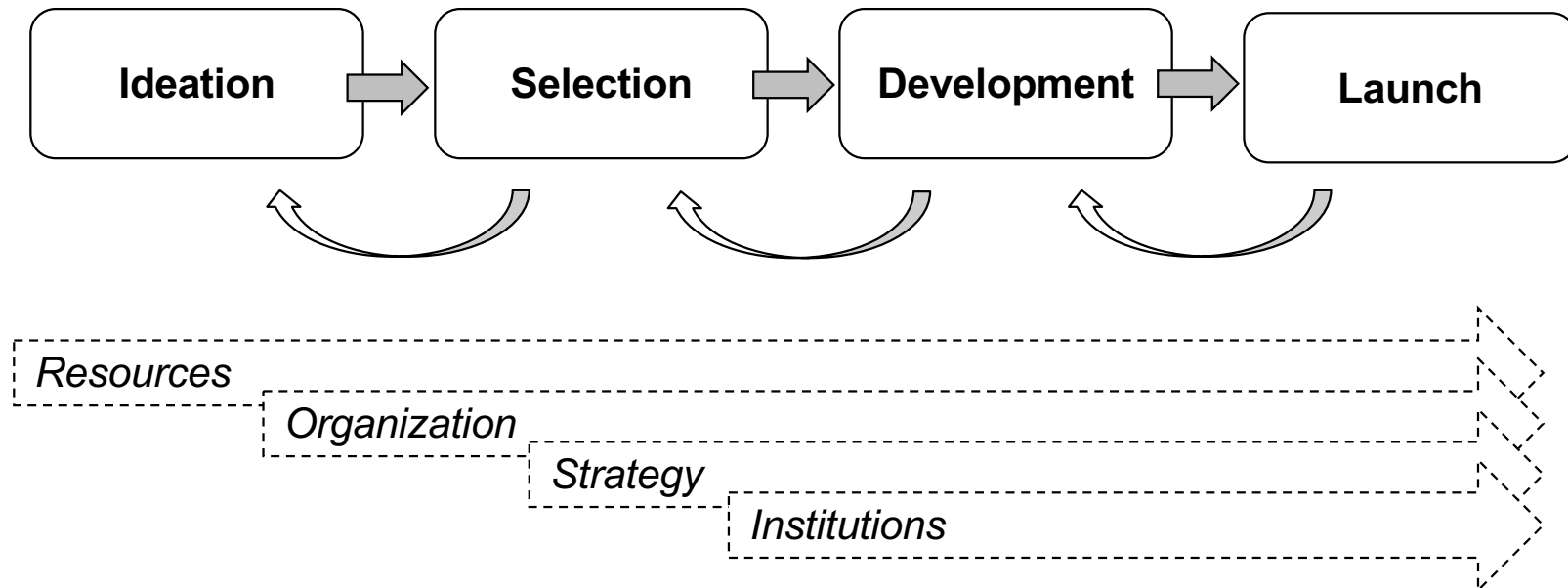   - Instead, solutions evolve as a continuous collaborative process

Innovation management

Innovation management

A working definition:

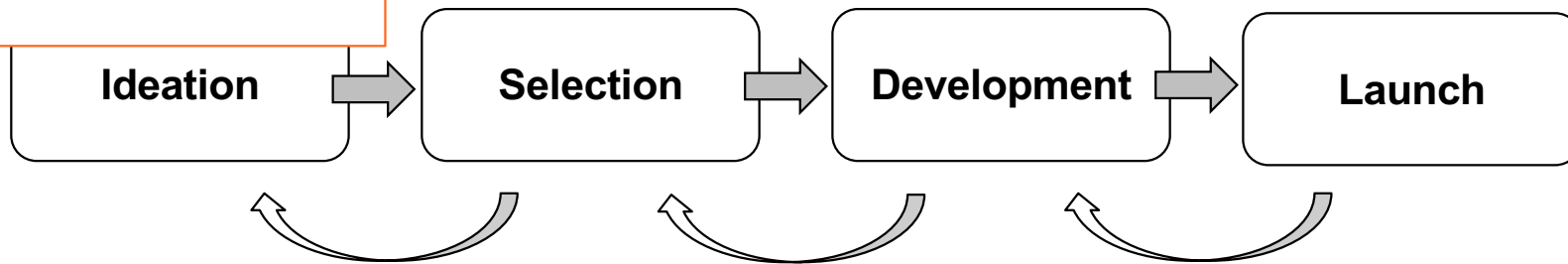**The systematic efforts taken to improve the capacity of an organization to develop, introduce and capture value from new solutions**

A framework

A framework

1. Turning ideas and insights into solutions

Ideation → Selection → Development → Launch

Resources

Organization

Strategy

Institutions

2. Creating prerequisites for the organization successfully introduce new solutions

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Scope of innovation management

Systemic

Organizational

Individual

Scanning competitors and market changes

Boosting the adoption of new solutions

Sourcing and leveraging external resources

Allocating resources to innovation activities

Systematizing innovation activities & processes

Facilitating interactions and new knowledge creation

Acquiring and developing competences

Fostering individual-level creativity
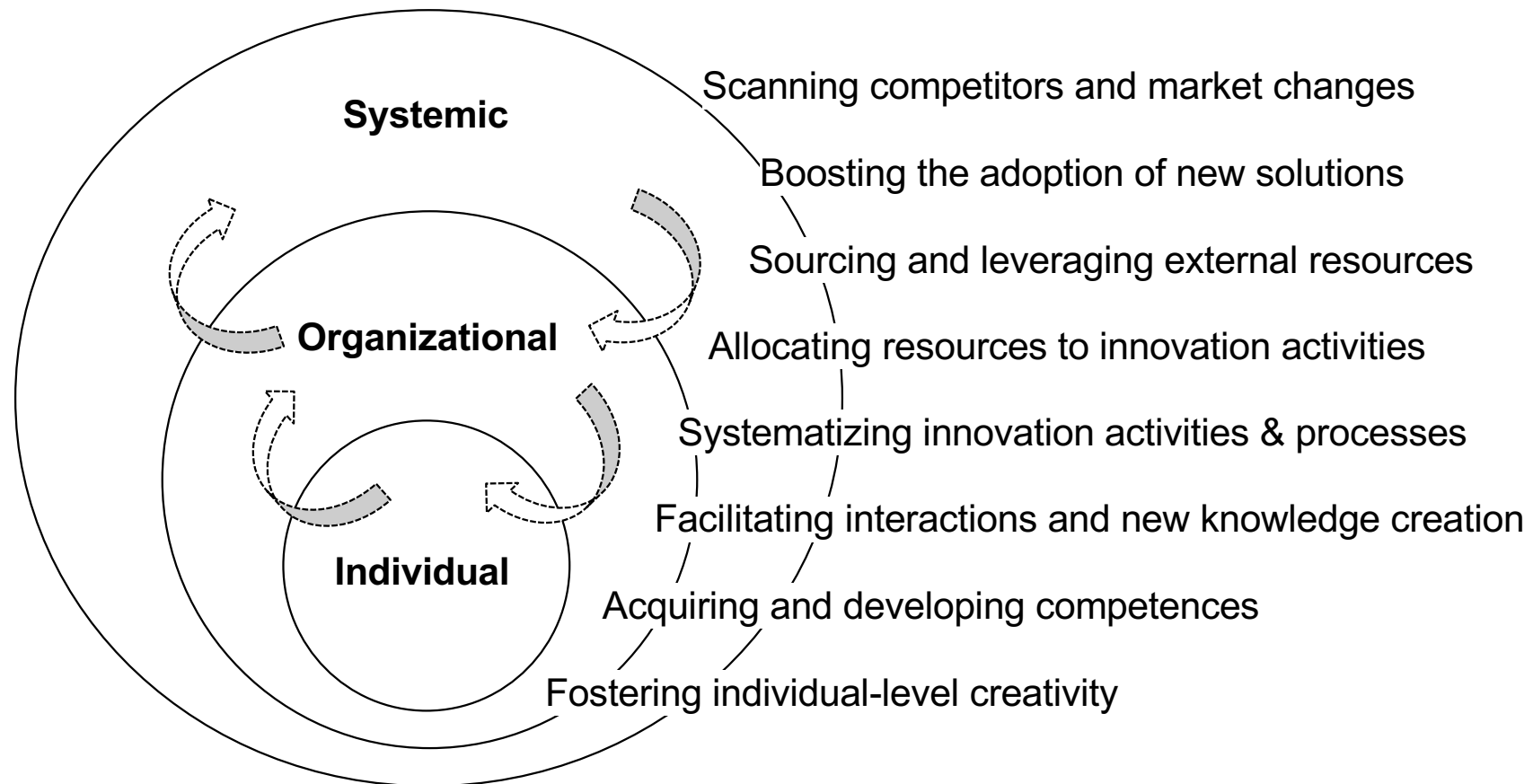
Innovation process

The scale of the innovation process

"Innovation in use"

"Invention of technology"

THE SPHERE OF
THE COMPANY

"every one adopts"	**Third order effects**: context of use is transformed for good and bad
"surprise adopters"	**Second order effects**: technologies are combined and configured in new ways
"first adopters"	**First order effects**: getting some (but not all) intended benefits
1 inventor	**Enabling adoption**: Convincing potential users
10 inventors	**Working solution**: Proving it works
100 inventors	**Details specified**: Design a specific solutions
1000 inventors	**Idea how**: Describing an approach for solution
10,000-1000 inventors	**Possibility**: Recognizing an opportunity for solution

Jan Holmström

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The reality of innovation process…

Van de Ven et al. (1999)
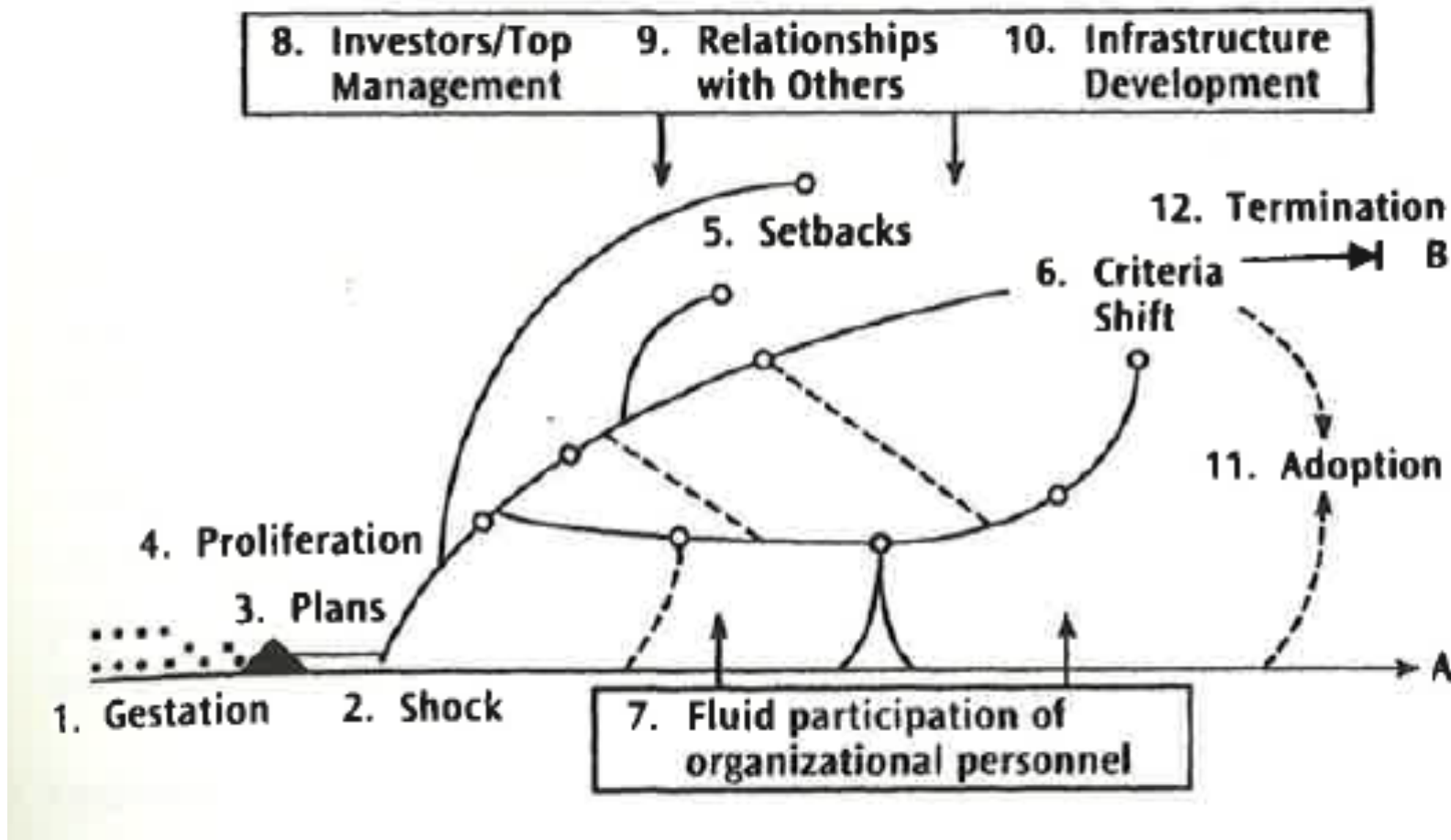
…And the simplified model representing it

Ideation/ invention	Selection / development	Launch & implementation

→ **Bracketing of distinct sub-processes for effective management intervention**

Managing innovation process

| Ideation/ invention | Selection / development | Launch & implementation |

Facilitate *new knowledge creation*

- Accommodating interactive, non-linear processes
- Bridging intra-organizational boundaries to cross-pollinate knowledge domains
- Supporting individual creativity
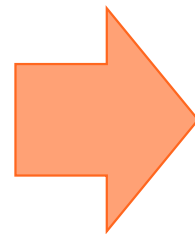
Examples:
- Codifying and sharing knowledge
- Rotating employees
- Slack resources (e.g., 15% rule)

Garud et al. (2013)

Managing innovation process

| Ideation/ invention | Selection / development | Launch & implementation |

Facilitate transformations

- Supporting experimental, iterative processes that transform material artifacts, organizational resources (and potentially strategic direction)
- Dealing with multiple dead ends, changes of targets
- Coupling the emergent evolution of solutions with strategic direction
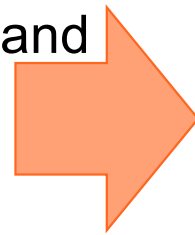
Examples:

- Use of prototypes as boundary objects
- Projects as forums for pursuing new ideas
- Stage-gate models structuring project progress

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Garud et al. (2013)

Managing innovation process

Ideation/ invention	Selection / development	Launch & implementation

Facilitate institutionalization
- Supporting the integration of new solution to existing ecosystems
- Continuing refinement & expansion of the solution to new customer segments
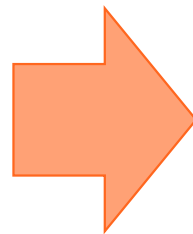
Examples:
- Modularity of product designs
- Recognizable product families
- Pushing for change in the industry (e.g., new standards)

Garud et al. (2013)

Reflections: Corpus.e

Implementation phase: Facilitating institutional change in the shoe retail ecosystem
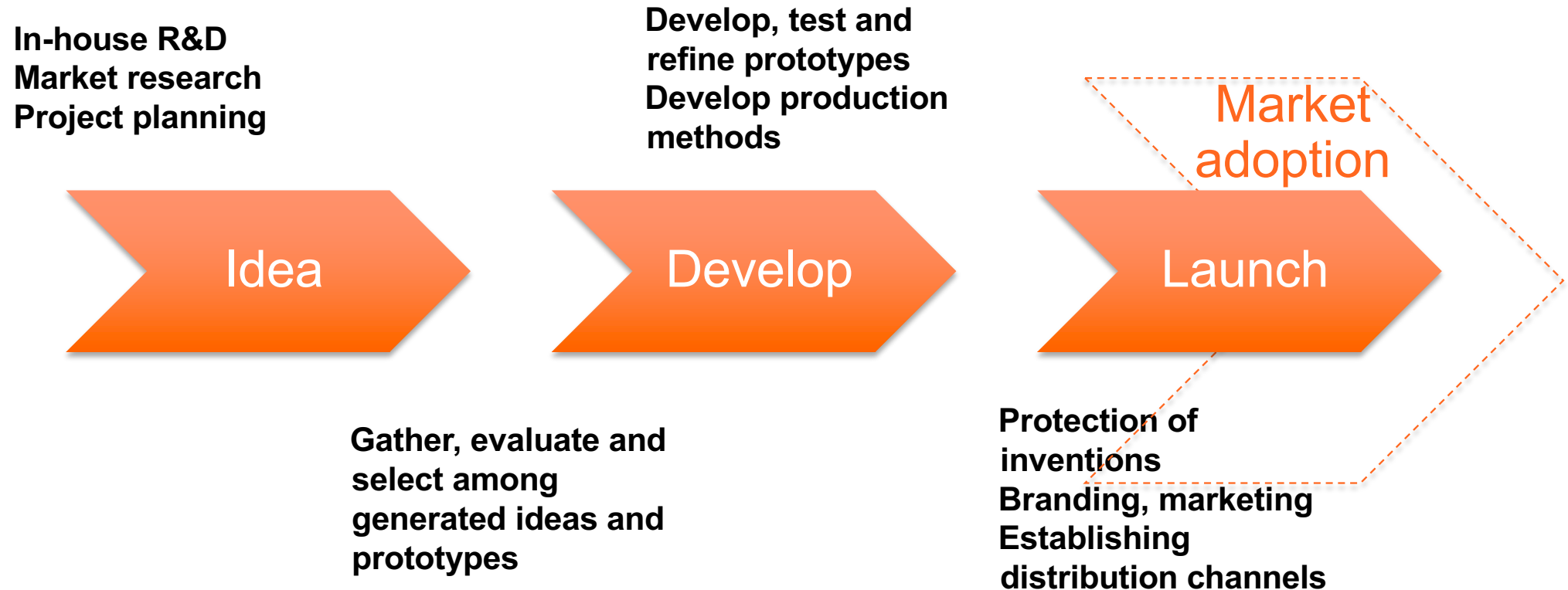
- Securing the first pilot case
- 'Lobbying' among retailers and shoe manufacturers (any way to create demand pull from the users?)
- Continuing adaptation of the software platform to retailers' systems

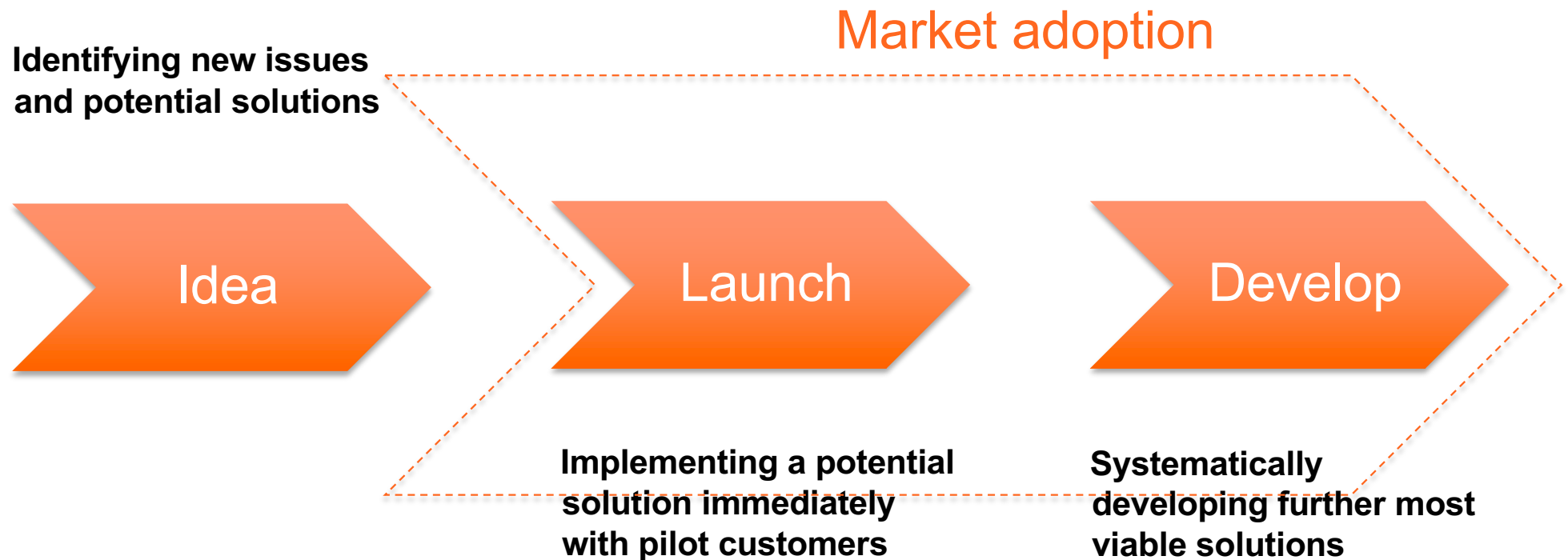**Development phase: Transforming the resources and organization for ecosystem building**

- Reconsidering organizational boundaries, partnerships, business model
- Acquisition of new competences
- Separating the project into new company (with retailer backing)?

Ideation: ?

The R&D model

In-house R&D
Market research
Project planning

Develop, test and refine prototypes
Develop production methods

Market adoption

Idea

Develop

Launch

Gather, evaluate and select among generated ideas and prototypes

Protection of inventions
Branding, marketing
Establishing distribution channels

Toivonen & Tuominen (2009)

Innovation in services: The rapid application model

Market adoption

Identifying new issues and potential solutions

Idea

Launch

Develop

Implementing a potential solution immediately with pilot customers

Systematically developing further most viable solutions

Innovation in services: The practice-driven model

Market adoption

Launch

Existing service solutions tailored to client needs

Idea

Identifying wider business potential in a customer-specific solution

Develop

Formalizing and developing further the solution into a service concept

Toivonen & Tuominen (2009)
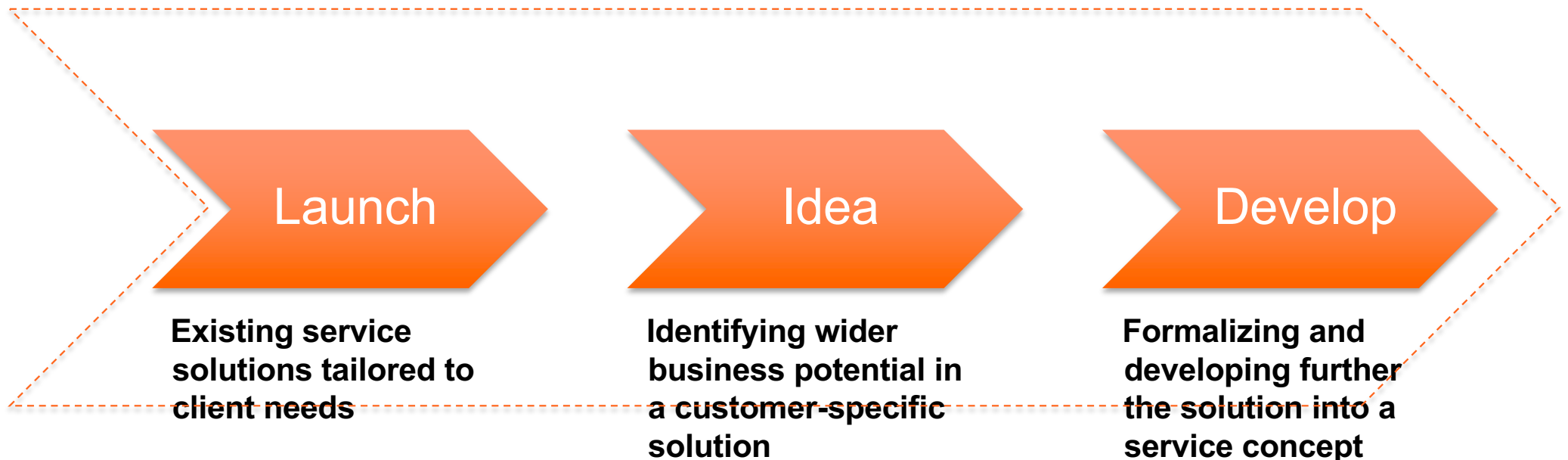
Innovation process at Corpus.e

Reflecting the design presentation, discuss the following questions:

1. How do the components – technological & new ecosystem configuration - of the proposed solution differ in terms of the requirements on the development process?

2. Which innovation process model(s) should the focal actor utilize in developing the proposed solution? Why?

Discuss in groups (5-8 min) + Summary

Contingencies on innovation process

Industrial sector and solution characteristics

- Technological components demand separate R&D & planning
- Interactive service components evolve through execution
- Planning ensures uniformity required for efficient B2C offerings

Organization size

- Small firms lack planning resources, can execute new ideas rapidly
- Large firms delay execution to ensure solution viability and uniform brand / offering
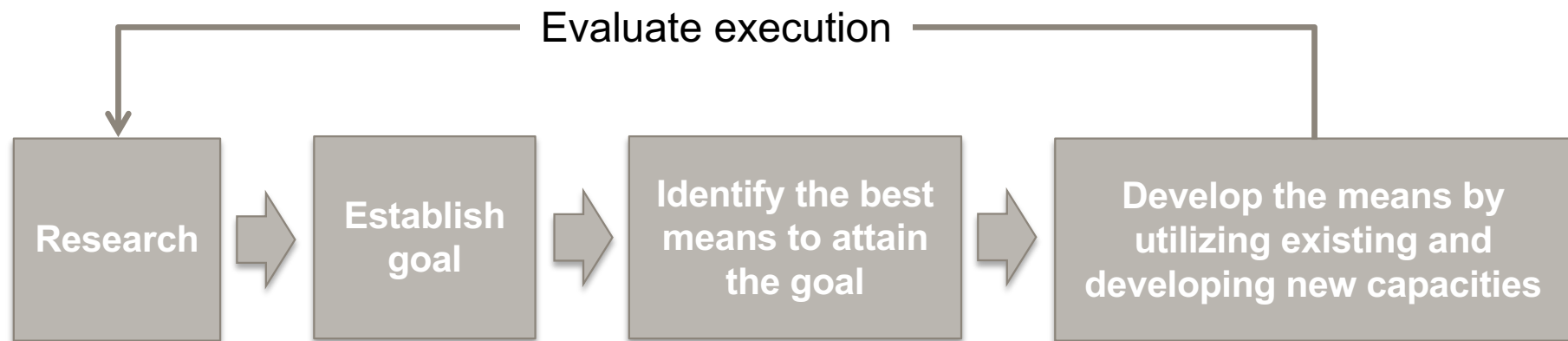
Technology life cycle

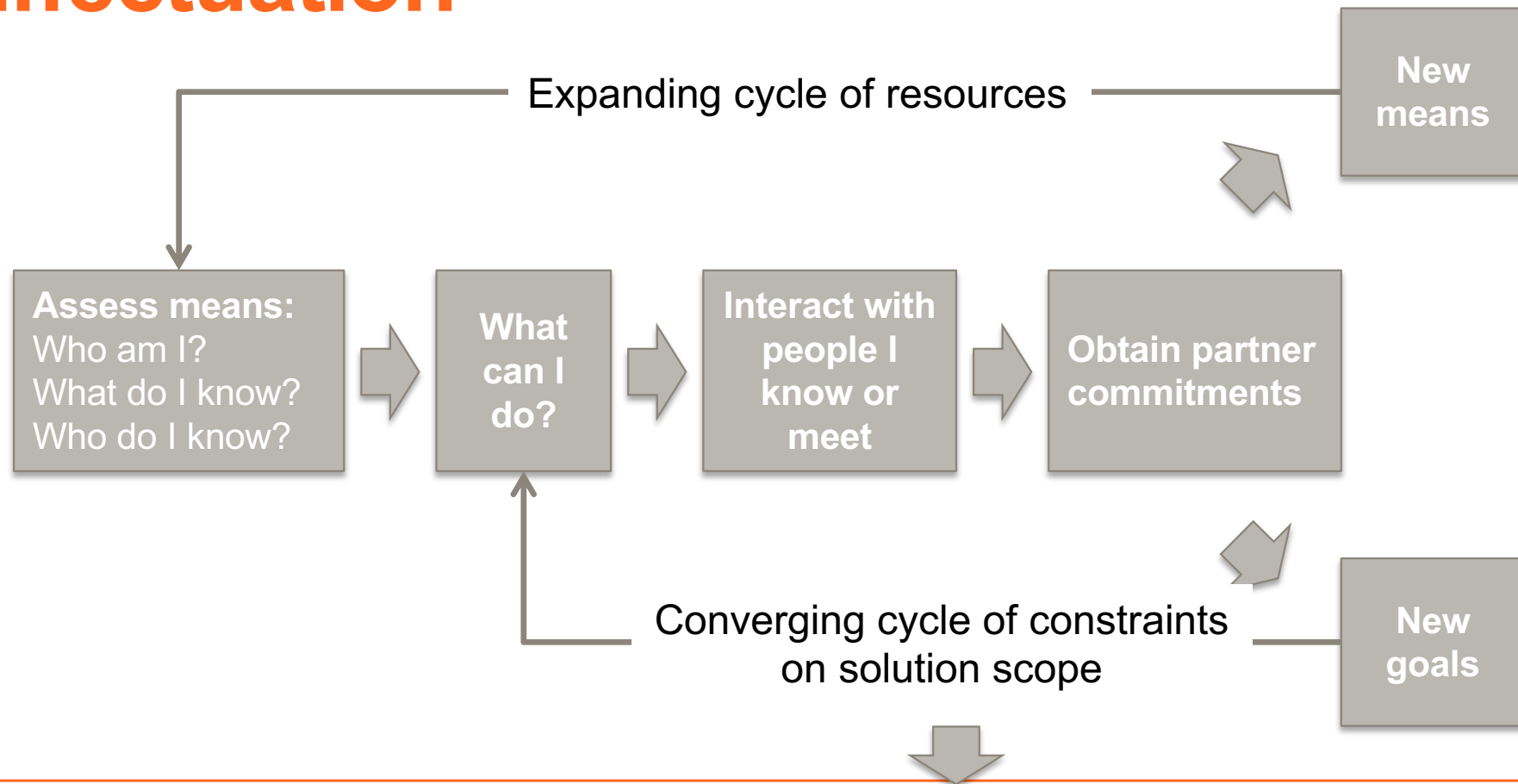- Maturity pushes innovation from tech development (planning) to service provision (execution)

Degree of novelty

- Radical or 'architectural' innovations require execution together with new adjacent components

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Innovation process logic 1: Planning

Evaluate execution

| Research | | Establish goal | | Identify the best means to attain the goal | | Develop the means by utilizing existing and developing new capacities |

Innovation process logic 2: Effectuation

Expanding cycle of resources

New means

Assess means:
Who am I?
What do I know?
Who do I know?

→

What can I do?

→

Interact with people I know or meet

→

Obtain partner commitments

Converging cycle of constraints on solution scope

New goals

New solutions

Sarasvathy (2001)

Converging planning and execution

Not either-or but both-and:

- *Strategic goals* create boundaries and direction for situationally emergent solutions

- *Organization design* and culture shape the relation between managerial control and bottom-up innovation activities

- *Iterations* between plans and execution on specific (sub-) solutions anchor the innovation process to practical problems

- Execution generates *information* for planning processes

Complexity of the innovation process

1. **Evolutionary complexity**
   - Multiple, unpredictable selection pressures on new solutions
   - Path-dependency & lock-in to current trajectory
2. **Relational complexity**
   - Interplay between material & social elements (change in one influences others ->> ongoing resolution of emergent issues)
3. **Temporal complexity**
   - Multiple temporal rhythms and frequent asynchrony
   - An 'failure' now can enable success at a later time
4. **Cultural complexity**
   - Cultures emerge around specialized groups and influence how solutions are evaluated as novel, useful or something to advocate

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Garud et al. (2013)

Managing complexity by reducing it

Management may focus on *reducing* complexity

- Impose architecture on solutions
- Impose hierarchic structure on the organization
- Specify a stage-gate model for innovation process
- Undervalue culture, emphasize "objective" knowledge

While renders the innovation process *more manageable* (and quasi-predictable), *constrains* the natural emergence and flow of innovation as complex process

Garud et al. (2013)

Harnessing complexity for innovation

Break the linear structure **of the innovation processes**

- Introducing multiple 'models' for innovation, and foregrounding iteration, alleviates issues of temporal asynchrony
- But: requires higher tolerance for uncertainty

Blur boundaries **between "exploration" and "exploitation" in work routines**

- Involving front-line workers in innovation activities and developers in solving day-to-day issues connects "tech push" and "market pull"
- But: often clash with bureaucratic structures and efficiency pressures

Garud et al. (2013)

Harnessing complexity for innovation

Instill practices (and systems) to *share and integrate knowledge* **across projects and sub-units**

- Bridging functional "silos" (e.g., by creating multi-functional teams) facilitate the sharing and integration of knowledge
- But: have to avoid rigidity and inter-unit competition, on the one hand, and over-fragmentation and divergence of team focus, on the other

Cultivate tolerance for diversity

- Tolerating professional and ethnic diversity, celebrating deviances and failures, instills a culture supportive of innovation
- But: Does not accommodate 'rigid' personalities or management based on 'one truth'

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Garud et al. (2013)

Summary

1. **Innovation has specific definition**
   - Application of novel ideas that benefit users (and developer) and change the market

2. **Innovation management about creating organizational capabilities for innovation**
   - Facilitating creative and emergent processes

3. **Innovation process non-linear and messy**
   - Phased process models useful for bracketing distinct spheres and demands for management

4. **The ordering and iteration between the phases varies**
   - Type of solution and other contingency factors impact the most appropriate process model

Literature

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