Technology and Innovation Management
5. Technology Management

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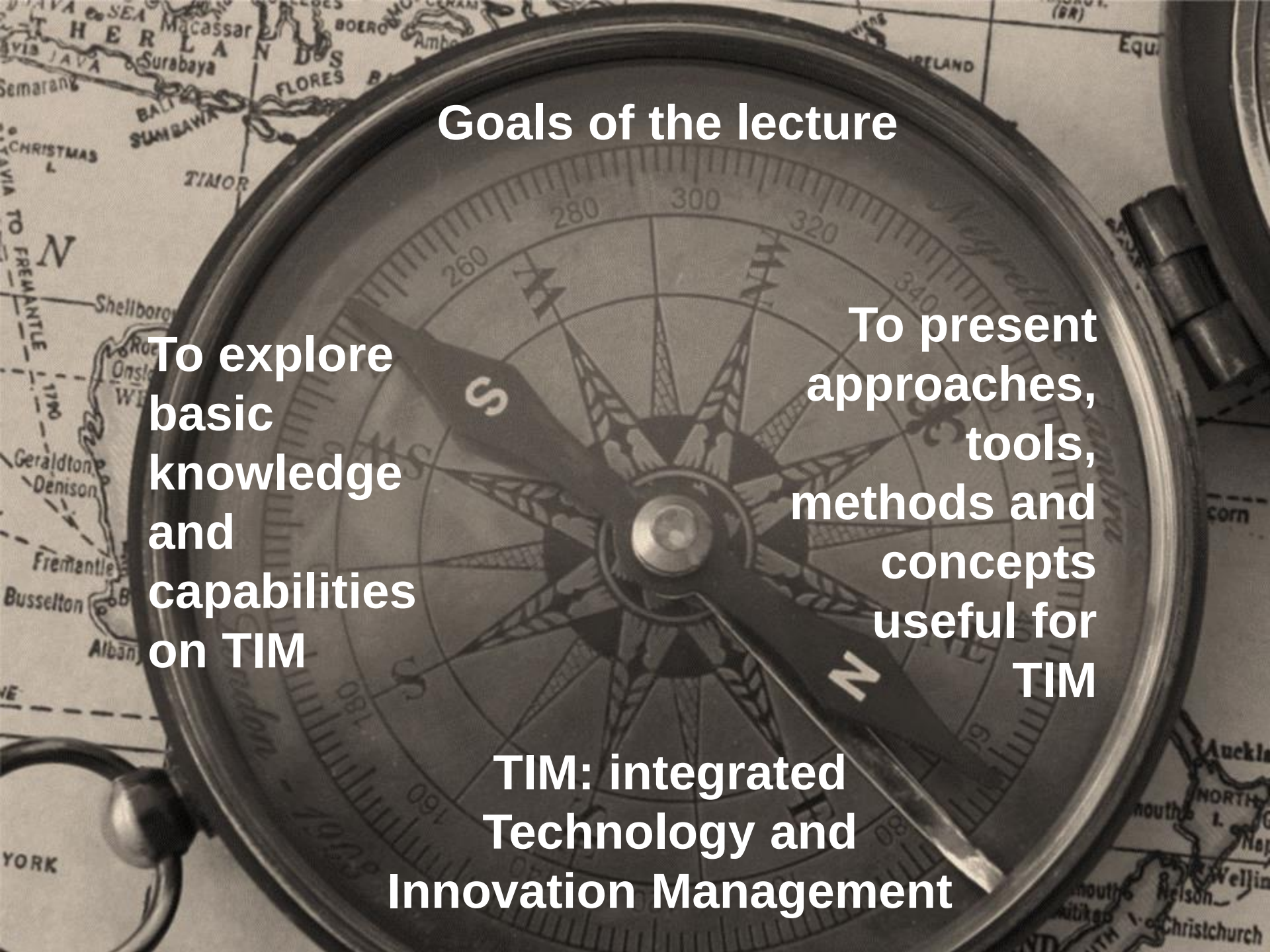


Goals of the lecture

To explore basic knowledge and capabilities on TIM

To present approaches, tools, methods and concepts useful for TIM

TIM: integrated Technology and Innovation Management

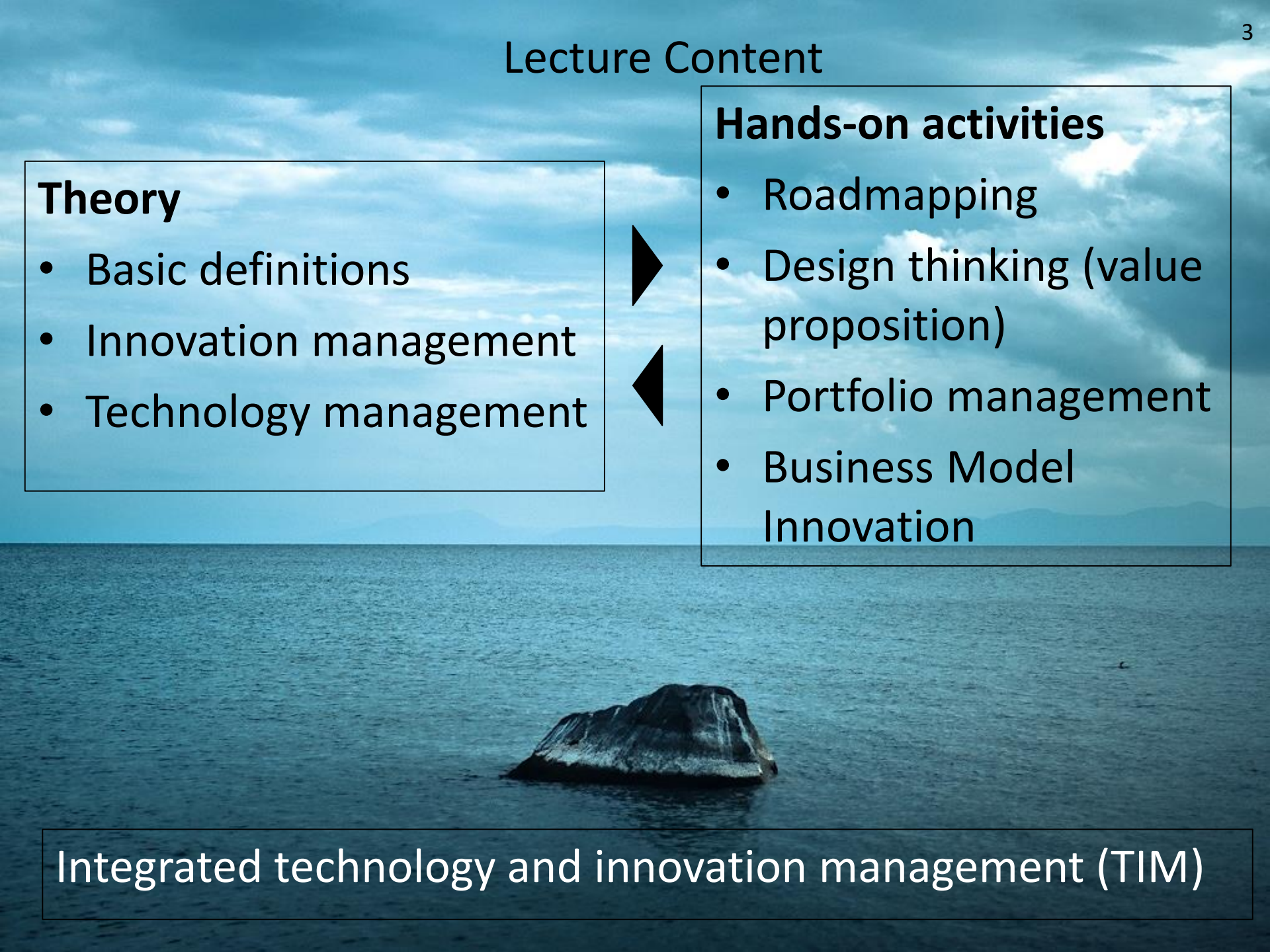
Lecture Content

Theory

- Basic definitions
- Innovation management
- Technology management

Hands-on activities

- Roadmapping
- Design thinking (value proposition)
- Portfolio management
- Business Model Innovation



Integrated technology and innovation management (TIM)

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Objective of this presentation

- To present the main concepts of technology management

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What is technology?

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Definition of Technology

in dictionary

- the application of scientific knowledge for practical purposes, especially in industry.
- machinery and equipment developed from the application of scientific knowledge.
- the branch of knowledge dealing with engineering or applied sciences.

my synthesis

Technology is a set of:

- explicit knowledge formalized in processes, procedures, rules, patents, results of previous developments
- people tacit knowledge (relies on training and experience)
- people skils, abilities, capabilities, competences
- organizational capabilities, competences
- machinery, equipment, etc.

applied for product and service development and improvements of infrastructure and knowledge

What is technology management?

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Definition of technology management

Planning, directing, control and coordination of the development and implementation of technological capabilities so that firms can shape and accomplish their strategic and operational objectives (static definition).

However:

- This definition does not make an explicit distinction between the technical and managerial issues associated with TM.
- Technological changes are continuously creating new challenges and opportunities.

What is missing?

read: Dilek p.21 - TM definition

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Definitions used ….

- Capability
- Operational capabilities
- Dynamic capabilities
- Routine
- Activity
- Process

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Technology management framework

Technology management framework - 2016

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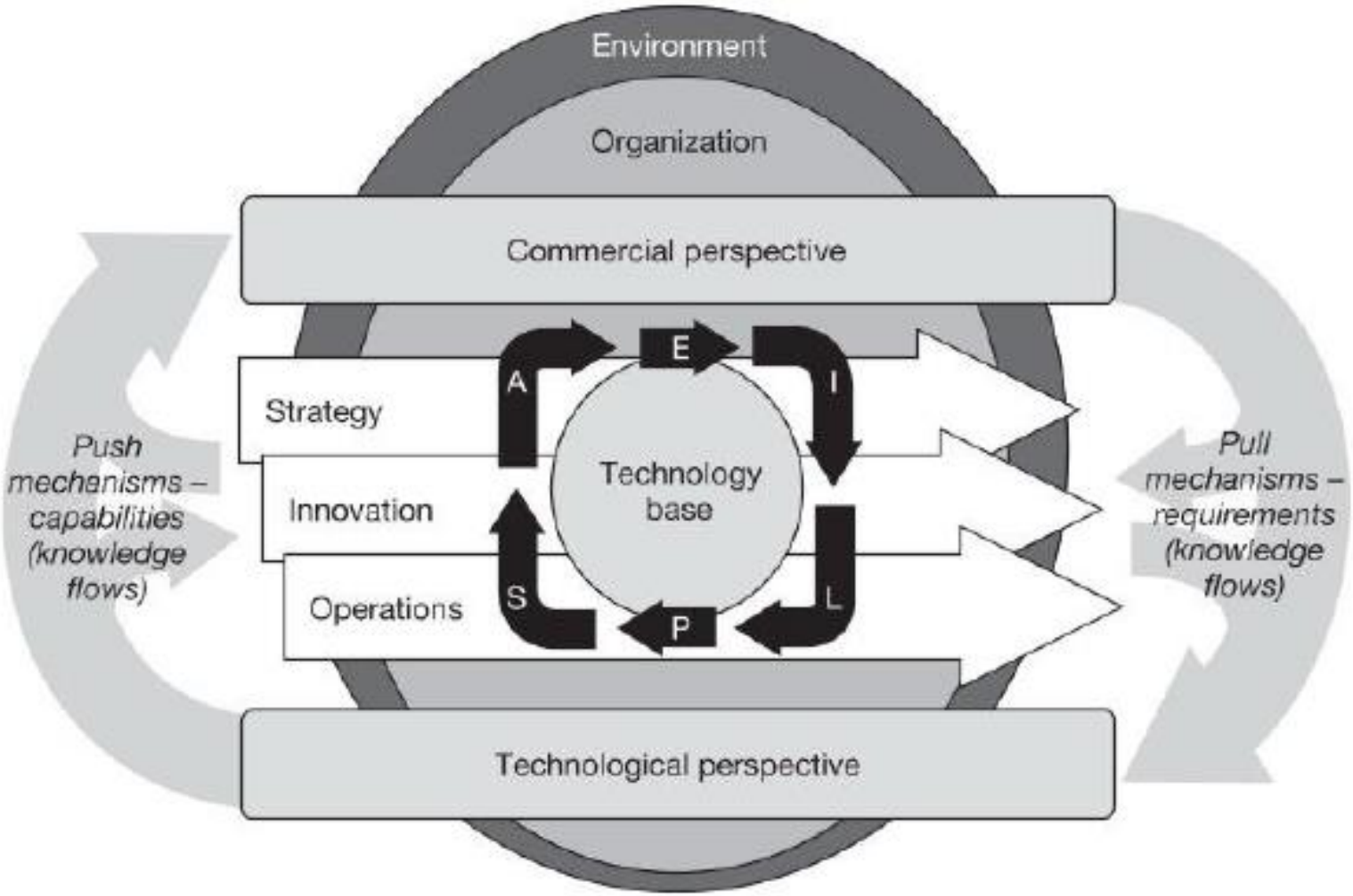
A: acquisition
E: exploitation
I: identification
L: learning
P: protection
S: selection



Read: Dilek p.24 - TM framework

Dilek Cetindamar, Rob Phaal, David Probert - Technology Management_ Activities and Tools (2016)

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Technology management framework - 2004

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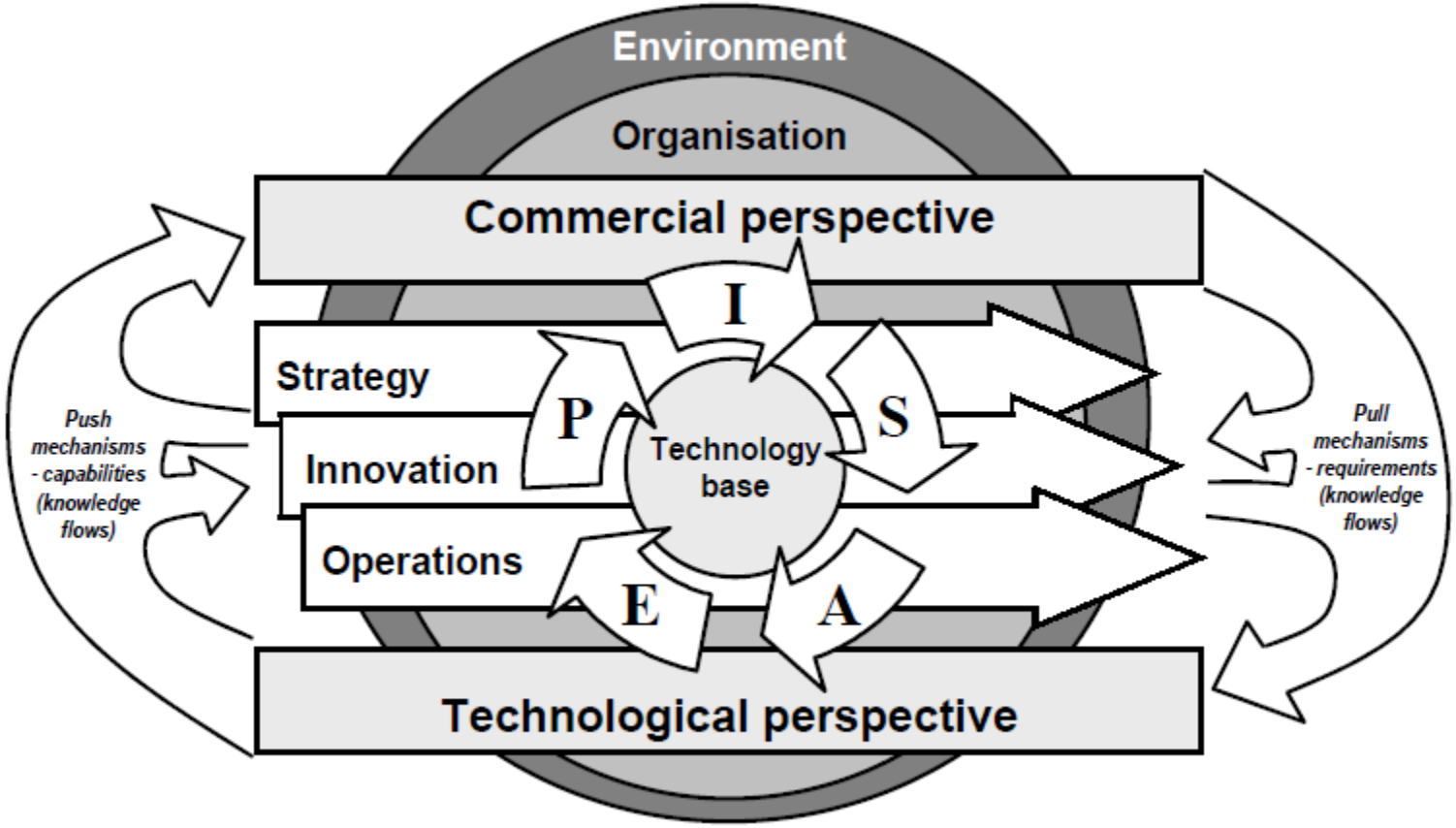

Phaal, Robert, David R Probert, e Clare J.P. Farrukh. 2004. "A framework for supporting the management of technological knowledge". *International Journal of Technology Management* 27(1): 1–15.

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Technology management activities

Read: Dilek p.26 - TM activities

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Six key questions that must be answered in technology management

1 How do we exploit our technology assets?

2 How do we identify technology that will have a future impact on our business?

3 How do we select technology for business benefit?

4 How should we acquire new technology?

5 How can we protect our technology assets?

6 How can we learn from our experience to improve our ability to develop and exploit the value of technology?

Technology management processes (2004) / generic activities (2016)

- *Identification* of technologies that are not currently part of the firm's technology base, but may be important in the future (for example, by attending conferences, reading journals, visiting trade fairs, questioning suppliers and conducting pure research)
- *Selection* of those technologies that the firm needs for its future products and technologies (for example, by using portfolio-type methods, expert judgement, pilot studies and financial methods).
- *Acquisition* of the technologies that have been selected (for example, by R&D, licensing, purchase of equipment, hiring of staff and acquisition of firms)
- *Exploitation* of the technologies that have been acquired (for example, by incorporating into products and services and licensing)
- *Protection* of the technological assets of the firm (for example, by legal means such as patenting, contracts, trademarks, copyright, together with security measures and retention of key staff).
- *Learning* involves reflections on technology projects and processes carried out within or outside the firm. There is a strong link between this process (sic!) and the broader field of knowledge management (only in 2016 version).

Sequence of TM activities and supporting activities

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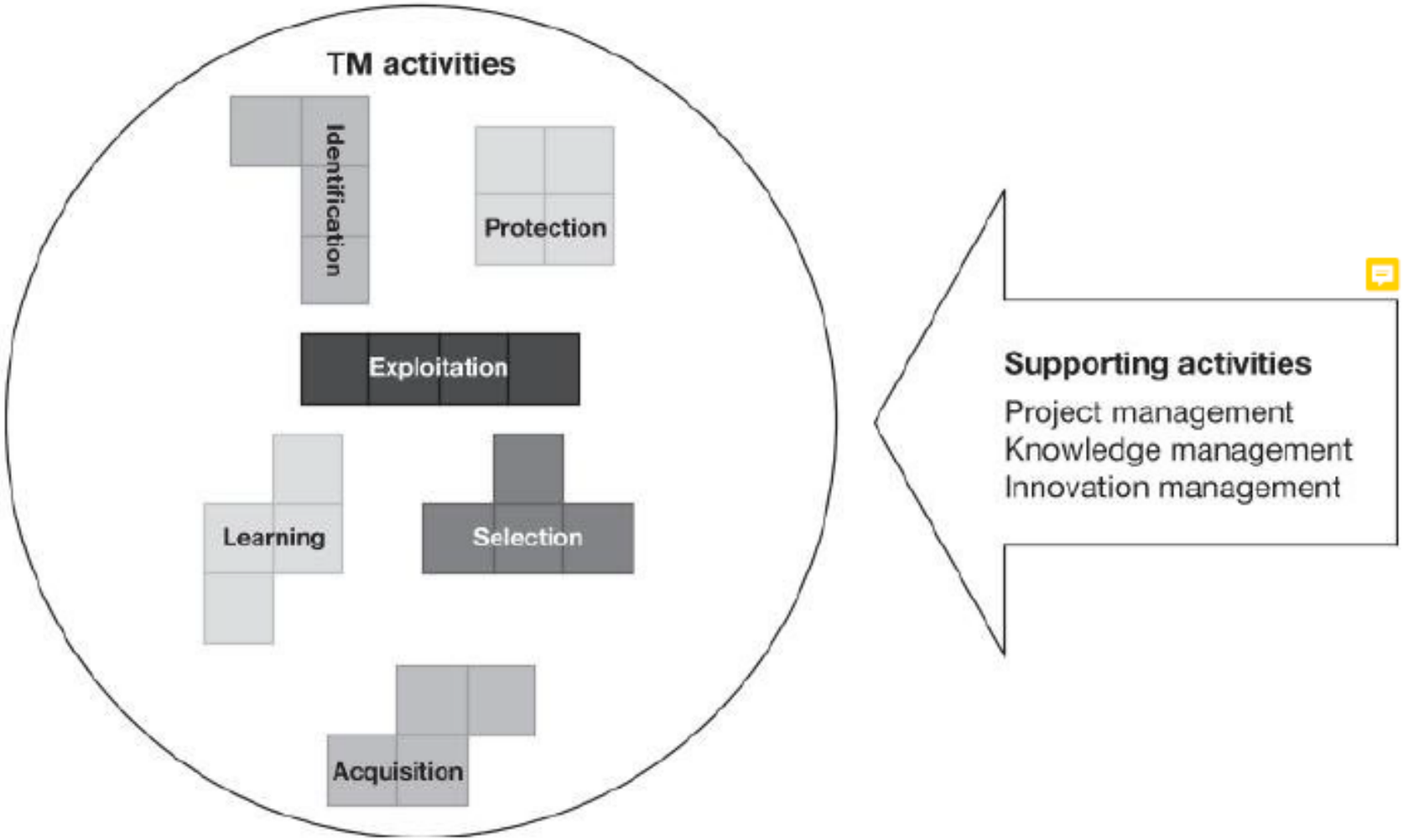

Dilek Cetindamar, Rob Phaal, David Probert - Technology Management_ Activities and Tools (2016)

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Which is the right sequence of activities?

Technology management framework – version 2016

A: acquisition
E: exploitation
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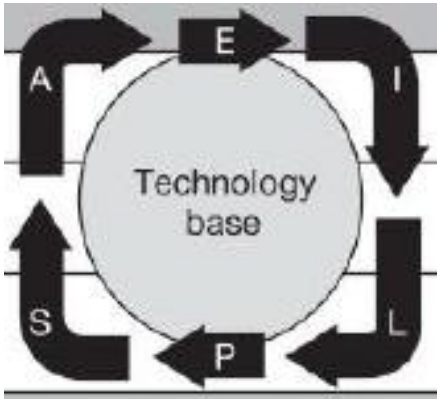

Technology management framework – version 2004

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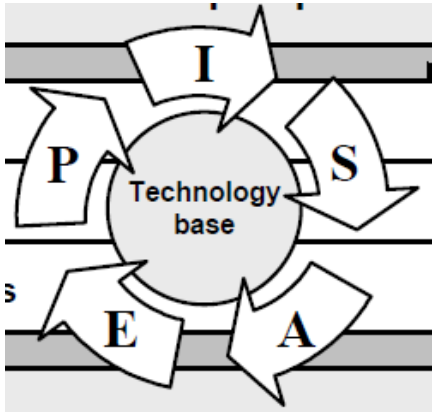

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Nonlinearity of TM activities

A: acquisition
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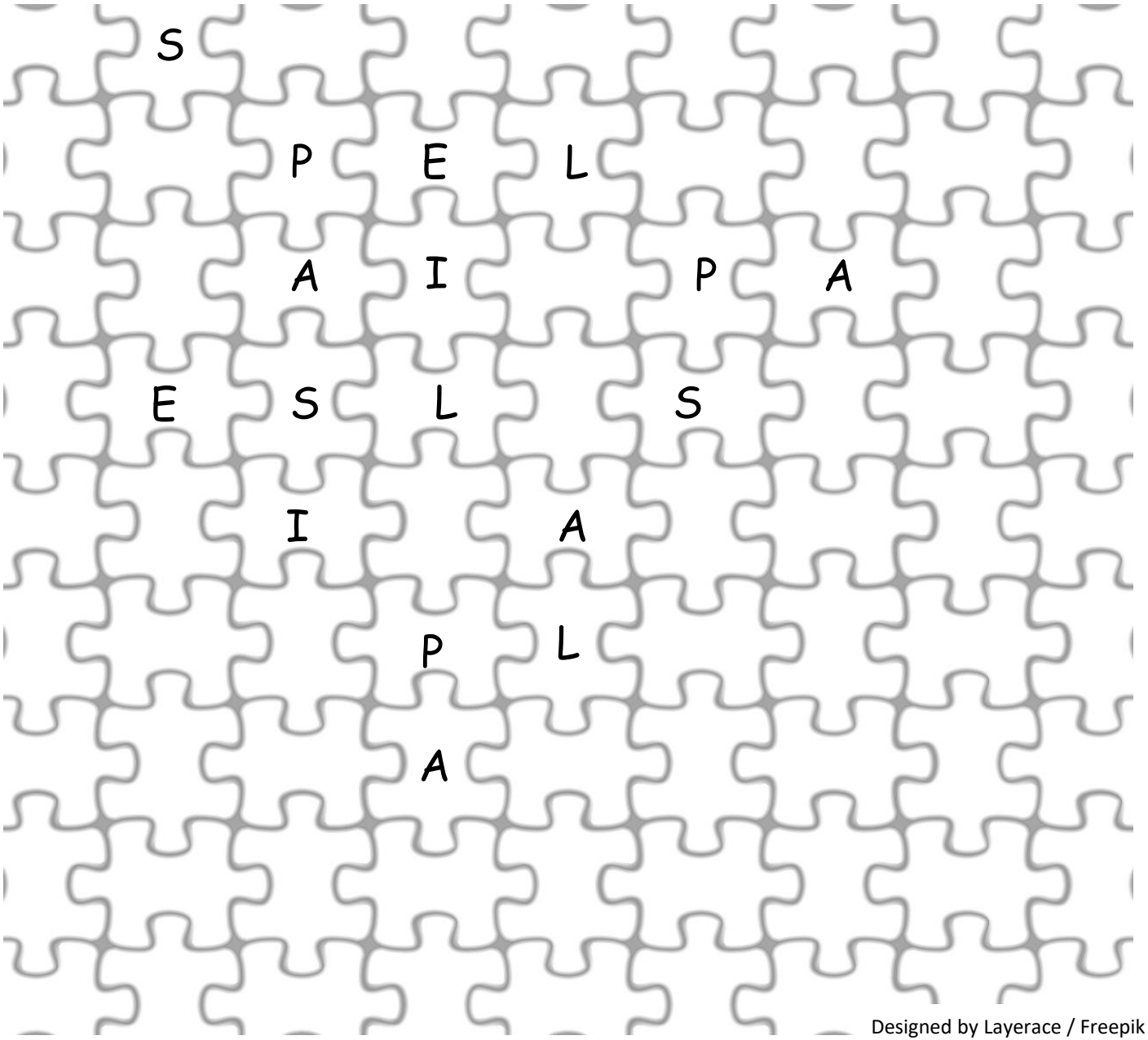

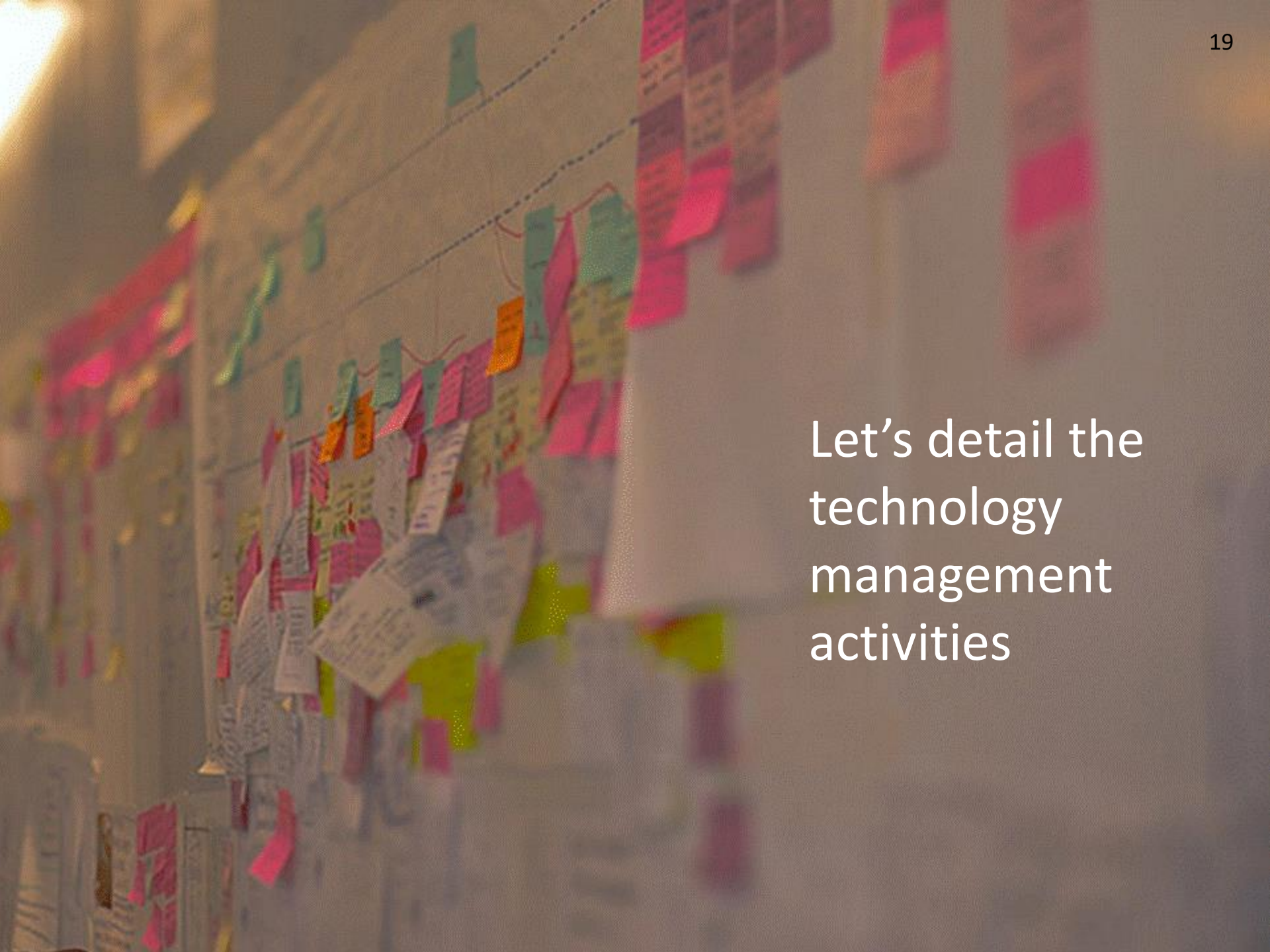

Let’s detail the technology management activities