Topic-based innovation

Whitepaper

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Strengthen the innovative power of your organisation

In innovation, people with different competencies and backgrounds work together in various roles. Discussions are held and decisions are made on many topics. Organisations lack a common structure for knowledge exchange and reuse. Pernosco's topic-based innovation provides an overview and strengthens interdisciplinary collaboration.

Building successful innovation ecosystems

Housing, healthcare, digitalisation, climate, circularity, nitrogen, safety, all urgent social challenges. Innovation is essential to find solutions to these challenges. The government wants to strengthen and stimulate Dutch ecosystems (see Figure 1) with regard to key technologies and social challenges, with coherence and close cooperation.

In ecosystems, governmental organisations encourage businesses to launch new products to the market and consumers to purchase them. Knowledge institutes have the role to train people and to inform consumers independently about product characteristics, such as performance, health, safety and sustainability.

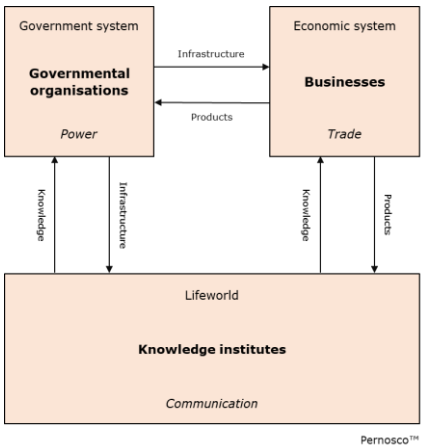

Figure 1. Stimulating ecosystems

In today's complex world, it is difficult to build and manage collaboration in an innovation ecosystem. More and more partners are needed to integrate a new or improved product into the customer's process: design agencies, component builders, suppliers of raw materials, software developers, launching customers, et cetera. In addition, there are more and more regulations that products must comply with, such as privacy, safety, health and environmental requirements. Many organisations struggle to define and adjust their innovation strategy if, for example, work on an innovation takes more time than planned, raw materials become more expensive or open issues prove persistent.

Lack of a common structure

The realisation of an innovation proceeds according to an s-curve (see Figure 2) in four phases: *pre-development*, *take-off*, *acceleration* and *stabilization*. An *innovation strategy* is needed to choose the right moment of take-off and the right pace of acceleration. Scaling up *too early* carries the risk that there are still too many open issues, and *too late* that other organisations have already conquered the market. Growing *too fast* carries the risk that the collaborating organizations are not yet ready to scale up, and *too slowly* that customers switch to the competitor.

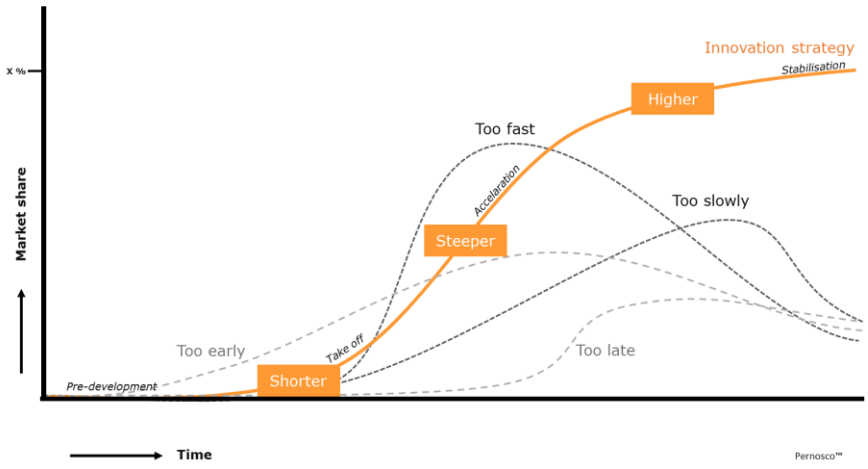

Figure 2. Steering the innovation strategy

Innovation involves many experts and managers to solve complex problems. They develop knowledge, make decisions and use different methods to record them. Lack of a common structure hinders knowledge exchange and reuse, to make the s-curve *shorter*, *steeper* and *higher*:

1. Shorter, there is no overview how to keep the business case positive and, if necessary, to deploy experts to more urgent tasks.
2. Steeper, there is a lack of insight into what knowledge and instructions production and service require to configure and customise products for customers..
3. Higher, it is difficult to reuse functions, concepts and components as standard for product variants in subsequent markets.

Improve interdisciplinary collaboration

Going through an s-curve represents the realisation of a product-market combination (PMC) in innovation projects. Innovation projects are characterised by interdisciplinary collaboration, in which experts iteratively analyse requirements from milestone to milestone, think out concepts, design prototypes, set up assembly, try out the process and prepare for scale-up (see Figure 3). In each innovation phase, a role makes content-related decisions in as many iterations as necessary, but takes into account the information and opinions of the other roles.

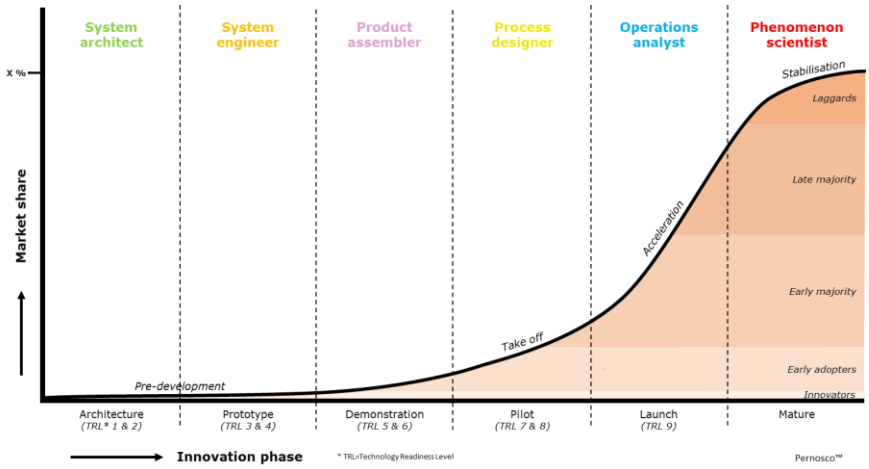

Figure 3. **Interdisciplinary collaboration**

Pernosco learns organisations to innovate topic-based, where all disciplines discuss according to a strict agenda of topics. A common collection of topics is needed to record the knowledge acquired and decisions taken. It provides structure to interdisciplinary collaboration, so that::

1. The content-related discussions on each topic between your experts and your partners are iterative and decisions are made in a logical order.
2. The goals of your desired transition and/or challenges are directly translated into PMCs and projects.
3. The results of your projects are planned, monitored and adjusted per topic.
4. The acquired knowledge per topic is complete, correct, actual and retrievable for your (new) colleagues.

Topic-based products Pernosco

Pernosco offers four topic-based products (see Figure 4) to strengthen the innovative power of your organisation:

1. *Transition management*. To achieve the transition to a new system more quickly (for example the transition 'From a fossil to a renewable energy system').
2. *Challenge management*. To realise the renewal of a system part (or aspect) more quickly (for example the 'Sustainable mobility' challenge of the Energy Transition).
3. *PMC management*. To achieve the scaling up of a new product (variant) in a market more quickly within a specific challenge (for example PMC 'Hydrogen van').
4. *Project management*. To deliver the results of a project more quickly (for example pilot project 'Learning from parcel distribution with hydrogen vans').

Steering the innovation strategy is a combination of setting goals and adjusting on results achieved. This makes the four Pernosco products interdependent: each product requires knowledge and information from the other products for planning and accountability.

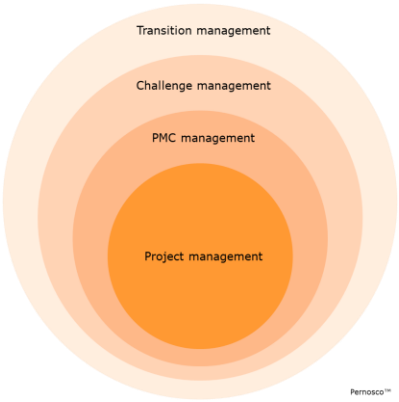

Figure 4. Products Pernosco

In four practical steps, we develop and implement topic-based innovation in your organisation together with your employees. We start with the for you most urgent Pernosco product and work according to the s-curve:

1. *Pre-development*. Together with a group of innovators in your organisation, we design, build and test a prototype for the Pernosco product to be implemented.
2. *Take-off*. A group of early adopters tries and optimises the developed innovation process with our support.
3. *Acceleration*. The other colleagues receive training from the early adopters under our guidance.
4. *Stabilization*. The Pernosco products interact optimally with each other in your organisation, so that steering the innovation strategy is possible.

A selection of our customers and cases

Pernosco improves collaboration on innovations within and between businesses, knowledge institutes and governmental organisations. Below is a selection of our customers and cases since Pernosco was founded in 2001:

Businesses	A.L.S.I.	PHILIPS	
Knowledge institutes	CEDR Conference of European Directors of Roads	MVO NEDERLAND	Kunststoffenhuis
Governmental organisations	Rijksdienst voor Ondernemend Nederland	Ministerie van Economische Zaken en Klimaat	Electric Mobility Europe

Transition management
The National Energy System Plan (NPE) describes the strategy for the transition to the energy system of 2050. Together with RVO, Pernosco organised a topic-based discussion for the Ministry of Economic Affairs and Climate Policy in six dialogue sessions with approximately 100 professionals per session.

Challenge management
ALSI is a spin-off of Philips. When it was founded, the challenge was to develop a competitive system that cuts wafers with laser technology. Pernosco, together with their employees, developed a topic-based way of work to organise collaboration in the network of partners.

PMC management
RVO project advisors advise organizations on launching new product-market combinations (PMC). Pernosco developed a topic-based way of work that supports project advisors to grasp the goals and problems of innovation projects faster.

Project management
CEDR is a partnership of European organizations in road management. Pernosco developed a topic-based system to assess the results of CEDR-subsidised projects.

Topic-based innovation

Pernosco's topic-based innovation is based on an innovation architecture using four concepts: 1) the topic model, 2) the governance model, 3) the project scope and 4) the topic life cycle. The concepts provide an agenda in every innovation phase and lead to high-quality discussions on the relevant topics. Everyone contributes on behalve of his/her role and expertise, aimed at a common goal.

Innovation architecture

Pernosco organises inspiration sessions in which you are introduced to topic-based innovation.
Architecture is the ideal instrument to express a vision and direct the quality of the whole. It provides support for all those involved in every innovation phase and lead to high-quality discussions about the relevant topics. Everyone contributes on behalve of his/her role and expertise, aimed at a common goal. To design an innovation architecture, Pernosco's topic-based innovation is using four concepts (see Figure 5).

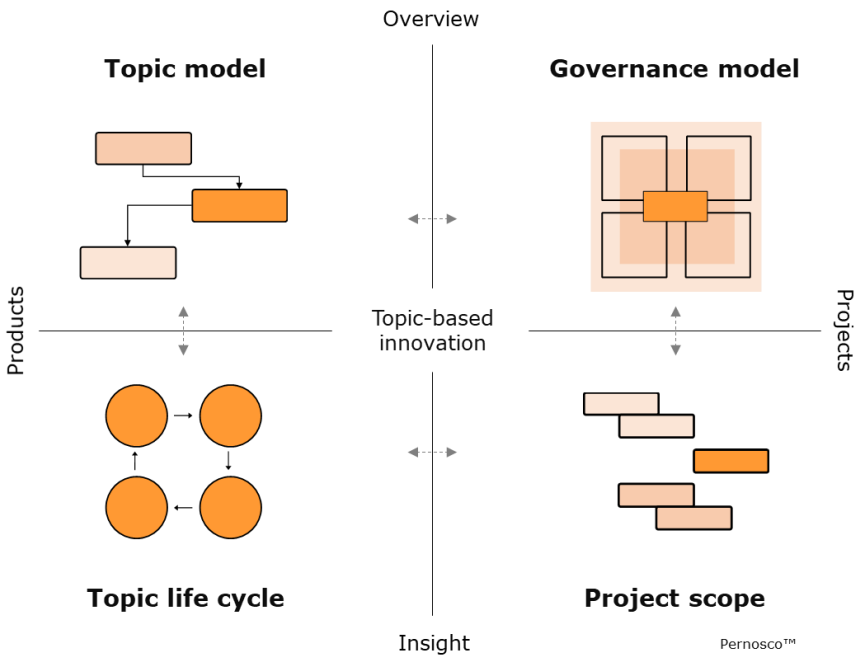

Figure 5. The four concepts of topic-based innovation

The Topic model provides an *overview* of the topics when defining the functions, concepts and parts and how they work together and connect in the *products*. The Governance model provides an *overview* when translating the challenge into *projects* to be carried out. The Project scope provides *insight* into the (progress of the) goals and results of current and completed *projects*. The Topic life cycle provides *insight* into the available knowledge about the topics of *products*.

Topic model for a common language

Pernosco learns your experts to coherently define and manage the topics of the system.

To make the s-curve shorter, steeper and higher, many topics require consideration by people from different disciplines. Experts working in their own silos are disastrous for getting high-quality decisions. A common language of the topics to be discussed helps to quickly realise an operational product, which is made up of reusable components and functions.

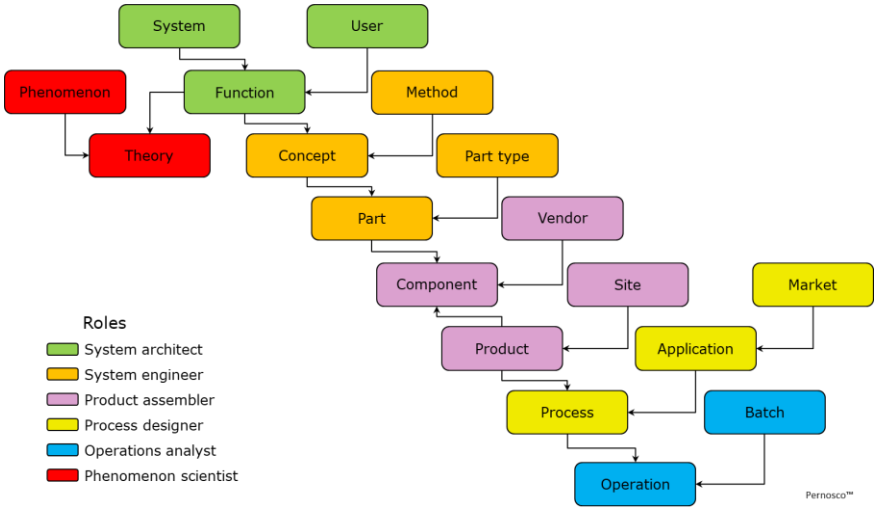

Figure 6. Topic model

The Pernosco Topic model (see Figure 6) contains the complete collection of topics that is discussed in each system innovation. Experts jointly define the topics that are covered in their role.

By making the connection with the nearby topics when adding, the operation of the entire system will be understood by all involved. For example, it is possible to determine which functions a system contains, which concepts have been thought out for a function, which components are required for a concept, et cetera. Such an agenda of topics is helpful during development, but also for production and service employees who (will) support customers. They immediately see the function of a component and the concept behind it.

Governance model for collaboration

Pernosco learns your managers to translate their challenge into product-markets and projects.
The bigger the challenge, the more organisations are needed. Discussions about (shared) values and goals provide insight into motivations and create a bond of trust between managers and visionaries of organisations. From here, plans can be made for multi-year collaboration on projects.

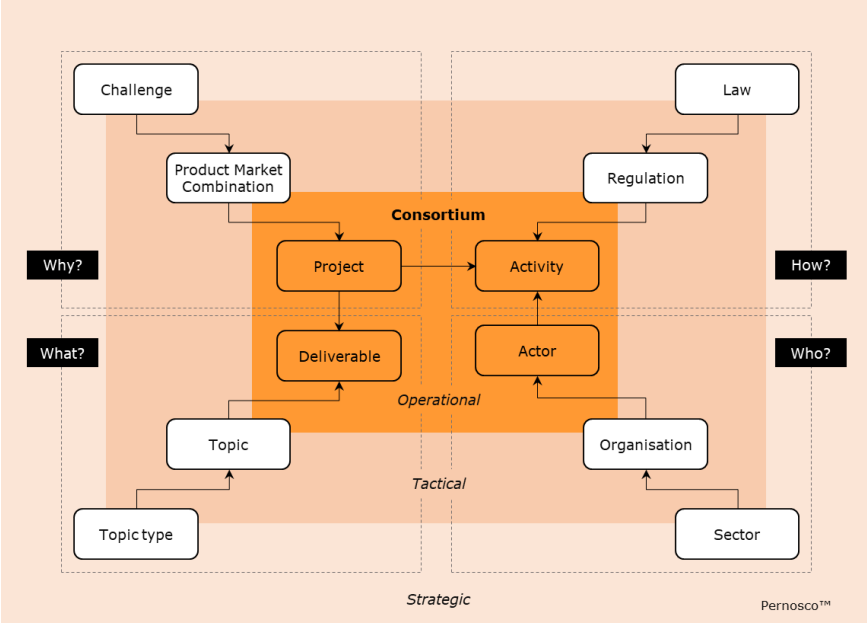

Figure 7. Governance model

The Governance model (see figure 7) provides topic-based the topics on which decisions are made when forging and managing a collaboration. It is the joint translation of the challenge into product-market combinations and projects (the 'Why'), in which organisations work together ('Who'). These projects deliver the required results ('What') by carrying out activities ('How'), with or without government incentives.

Enforcing relations with other subjects when adding, makes it possible to create overviews from any subject, for example showing all organisations involved in the projects of a challenge.

Project scope for project deliverables

Pernosco learns your project leaders to scope their project deliverables and to adjust them.

Serving a product-market combination requires projects in which people with different competencies and background work together in various roles. Project leaders define milestones and activities to plan, monitor and, if necessary, adjust the *process*. However, this does not provide insight into whether the *content* to be achieved is on track.

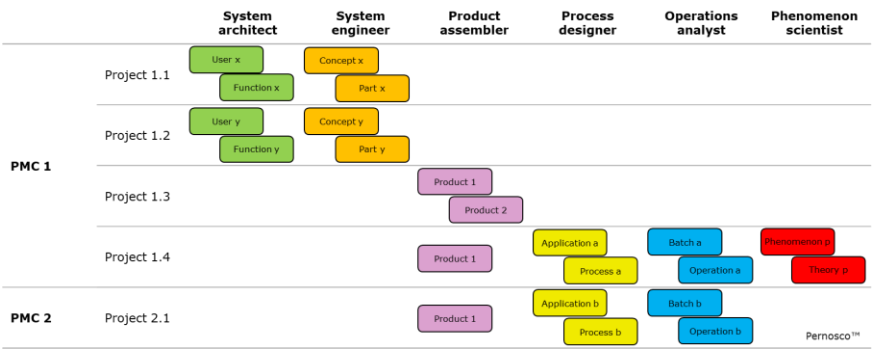

Figure 8. Project scope

The Project scope (see Figure 8) contains the topics of the topic model to be edited. These topics are derived from the goal of the project within the product-market combination (PMC) to which it contributes. The broader the scope of the project, the more deliverables are required, with consequences for the project costs and time of project completion.

From start to completion of a project, employees work in parallel on the deliverables. Gradually, more and more *content* is created on each topic, such as resolved issues, desired specifications, relevant tests and fixed problems.

By describing and/or scoring the status of the topic deliverables at each milestone, it becomes clear whether adjustments to the *process* are necessary in the next milestone. For example, transferring budget from one project activity to another.

Topic life cycle for topic management

Pernosco learns your employees to write down their knowledge per topic according to fixed templates.
Knowledge about each topic grows as time goes by. What has been developed is tested and will prove itself in practice. Where problems still occur or new customer wishes arise, it is important to anticipate quickly. At such times there is little time to search for the available knowledge about a topic in documents.

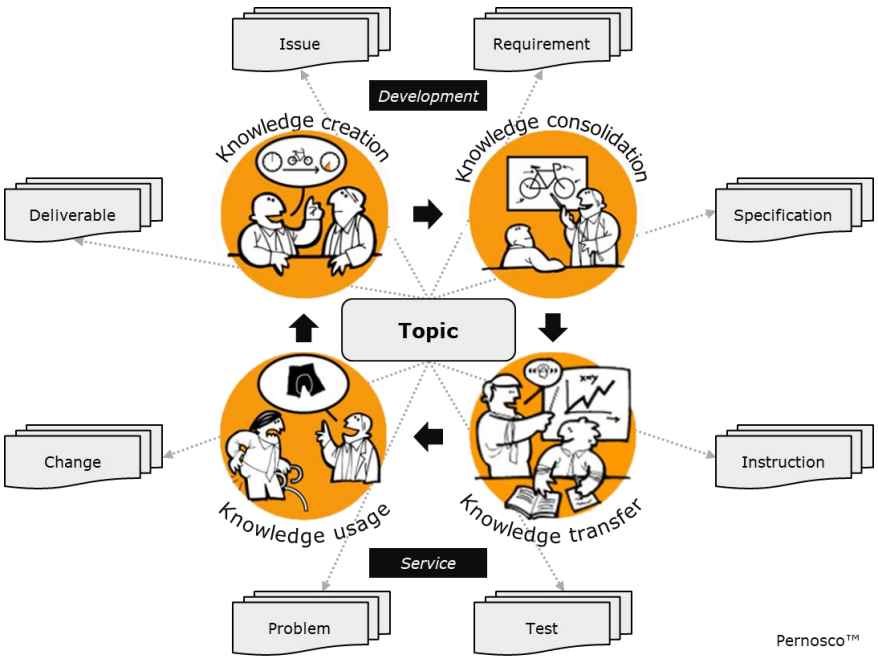

Figure 9. Topic life cycle

In the Topic life cycle (see Figure 9) the items are shown that development and service employees discuss for each topic of the topic model. By relating employees to each topic based on their expertise, it becomes visible whether all the required competencies are in-house. These employees are jointly responsible for adding relevant items to the topic in their daily work according to fixed templates and writing down their knowledge about it. It ensures that the available knowledge about a topic is complete, correct, current and will also be found by (new) colleagues via the topic model.

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