

R&D and EU innovation policy

What will you learn in this module?

In this module you will learn about ...

- The concepts of R&D and innovation, Innovation policy on a European level, and Smart Specialisation
- The linkages between these different concepts
- Understanding these concepts within the context of the Horizon Europe framework

R&D and Innovation

Research and development (R&D) are activities that focus on the innovation of new technologies, products, services or methods. The drive for valorisation of research calls for stronger roles of researchers as developers and innovators. However, the formal education still lags behind the processes of upskilling academics for these new roles. Training and support in R&D and innovation processes would be helpful not only for professionals from technical and natural sciences fields of study, but also from social sciences and humanities (Demir & Davey, 2022).

Both HEIs and SMEs (especially those without R&D components) would highly benefit from having a better understanding of 1) how innovation processes start and are implemented, 2) how prototyping, testing and validation of solutions is conducted, 3) learning to use different road mapping tools and 3) learning how to valorize or commercialize R&D, to foster the translation of fundamental knowledge into applied research.

Innovation processes

For innovation to be successful, it should be designed as a process (Blank & Newell, 2017). Such a process would support innovators and stakeholders to curate and prioritise problems, ideas and technologies. Lean Innovation is a model developed in 2014, that can be used as a step by step guide for an innovation journey. The model includes the following phases, see figure 1.

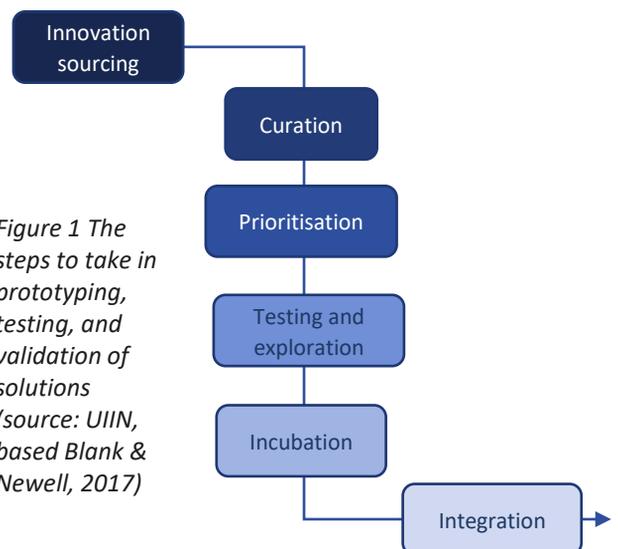


Figure 1 The steps to take in prototyping, testing, and validation of solutions (source: UIIN, based Blank & Newell, 2017)

1. **Innovation sourcing** – generate a list of problems, ideas and technologies
2. **Curation** – internal and external survey to identify related projects and commercially available solutions
3. **Prioritization** – classification and prioritisation of ideas (see the Three Horizons Framework in suggested tools)
4. **Hypothesis testing and exploration** – create a business or mission model for the ideas (see suggested tools)
5. **Incubation** – incubation of the project
6. **Integration** – integrate the project into the existing organisation

Prototyping, testing, and validation of solutions

Prototyping, testing, and validation of solutions is an essential step in the innovation process. Qualaroo (2021) has created a step by step guide, outlining the following steps in figure 2 (see the suggested readings for the step by step guide).



Figure 2 The steps to take in prototyping, testing, and validation of solutions (source: UIIN, based Blank & Newell, 2017)

The phase of prototyping, testing and validation is also crucial in the evaluation of Horizon Europe proposals, both in the Research and Innovation Actions (RIA), as in the Innovation Actions (IA) (EC, 2021). The proposals needs to include ‘activities to establish new knowledge or to explore the feasibility of a new or improved technology, product, process, service or solution’ in the case of RIAs and ‘activities to produce plans and arrangements or designs for new, altered or improved products, processes or services’ in the case of IAs.

Road mapping tools

An R&D roadmap is an overarching strategic plan, rather than a detailed plan. It will include what you want to accomplish with your R&D activity, and how you will accomplish that. A roadmap is a visual representation of the strategic plan. There

are many different tools that can be used to create a roadmap, such as Word, Excel, and Powerpoint (Sopheon, n.d.). G2 has created an overview of the best Strategy and Innovation Roadmapping tools in 2022 (see suggested tools).

Suggested readings

What your innovation process should look like – [link](#)

Focus: innovation process – Article on Harvard Business Review

A Step-by-Step Guide: Testing your prototype – [link](#)

Focus: guide to prototype testing, steps that should be taken in the process.

An Introduction to Strategic Roadmapping – [link](#)

Focus: fundamentals behind road mapping, including business examples and their results.

Tools

Enduring Ideas: The three horizons of growth – [link](#)

An interactive presentation on McKinsey’s three horizon framework that can be used to prioritise innovation ideas

Building Blocks of Business Model Canvas – [link](#)

An explanation of the Business Model Canvas and its three main areas.

The Mission Model Canvas – [link](#)

An Adapted Business Model Canvas For Mission-Driven Organisations

Best Strategy and Innovation Roadmapping Tools in 2022 – [link](#)

An overview of strategy and innovation roadmapping tools

Innovation policy on a European level

The Research & Innovation (R&I) policy of the European Commission, has the goal of reinforcing the scientific and technological base, to promote innovation, and to turn societal challenges into innovation opportunities. “The R&I policy is an engine of the green and digital transitions on the continent and stairways to ‘the future we want’” (European Commission, 2020). Through the R&I policy, the DG Research and Innovation will contribute to all six headline ambitions of the von der Leyen Commission (see figure 3 below).

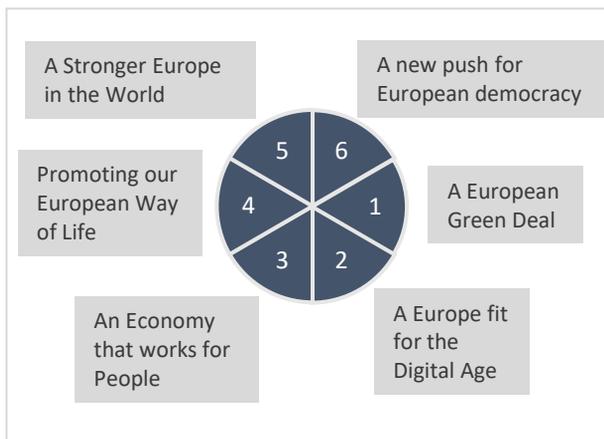


Figure 3 Targeted impacts for the von der Leyen political guidelines. Source: European Commission, 2020

Through a modernised European Research Area and a new EU R&I Framework Programme ‘Horizon Europe’, the European Commission aims to boost the achievement of our climate and digital goals. The Horizon Europe framework, succeeding the Horizon 2020 framework, has a more ambitious association policy and has the following key novelties: missions, partnerships and the European Innovation Council. Another important aspect is that a large share of the R&I activities and measures will be co-designed and co-created with citizens and stakeholders, to strengthen ‘a common ownership of research and innovation policy and promoting the common research and innovation values.’

The R&I policies and programmes, aim to generate new knowledge and breakthrough innovation for the green and digital transformations and to support the transition towards a sustainable, safe, fair and prosperous future for people and planet.

EU green policies

The drive to address environmental issues, particularly the climate change, has been translated into top-level strategic and policy platforms on the European and national level. Consequently, HEIs and SMEs are interested in developing sustainable solutions when proposing their UBC initiatives and projects not only in environmental sciences, but basically in all industries and fields. Especially the EU Green Deal has made a strategic impact onto different European policies and has been a powerful dynamic behind development of green economy solutions. The EU environmental regulation also fosters research and UBC as it requires novel solutions. Also, these European policies have trickled down to national strategies and funding, if not already being there in place. These developments seek more extensive training and education in EU Green policies from both sides, HEIs and SMEs, which are interested to learn more how to incorporate the “green elements” into their work and projects (Demir & Davey, 2022).

Suggested readings

Open innovation, Open Science, open to the world. A vision for Europe – [link](#) (book)

This book published by the DG Research and Innovation brings together some of the key conceptual insights behind Open Innovation, Open Science and Open to the World and highlights actions that are already taking place or are being prepared.

Strategic Plan 2020-2024 – [link](#)

Focus: the strategic plan of the DG Research and Innovation for the period 2020-2024.

A European Green Deal – [link](#)

Focus: introduction to the European Green Deal, the benefits, and actions being taken.

Smart specialization

Smart specialisation is an approach to identify the strategic areas for intervention for regions or countries (European Commission, n.d.-a). The priorities that are set in a Smart Specialisation Strategy (S3) are based on:

1. Objective analysis of the region: the strengths and potential of the economy
2. An Entrepreneurial Discovery Process (EDP) with wide stakeholder involvement, identification of strategic areas for intervention. Utilizing entrepreneurial knowledge existing in a region or country.

The S3s are designed around the following key principles:

- Place-based approach, building on assets and resources in the regions and Member States + challenges
- Make choices for investment. Focus on competitive strengths and realistic growth potentials.
- Setting priorities should be an inclusive process of stakeholders' involvement centred on "entrepreneurial discovery".
- Embrace a broad view of innovation. Support technological and practice-based and social innovation.
- Include a sound monitoring and evaluation system and revision mechanism.

Over the years, more than 120 Smart Specialisation Strategies have been developed in EU regions and Member States. 10 years after the launch of S3, the European Commission has introduced the Smart Specialisation Strategies for Sustainability (S4) in 2020 (European Commission, n.d.-b). These strategies aim at improving sustainability and inclusiveness through an innovation-driven policy. The strategies connect strategies and actors at both a regional and national level with EU-wide policies (such as European Green Deal, see EU green policies above).

Suggested readings

What is Smart Specialisation? – [link](#)

Focus: in-depth explanation of Smart Specialisation

Tools

Smart specialisation platform – [link](#)

It provides advice to EU member states to design and implement Smart Specialisation Strategies

EYE@RIS – [link](#)

EYE@RIS is a platform that visualises the innovation priorities in Europe. Here you can find the 180+ Smart Specialisation Strategies that have been developed at regional and national level.

Smart Stories – [link](#)

The Smart Stories provide a direct account from managing authorities on the ways in which they implement their Smart Specialisation Strategies.

References

Blank, S. & Newell, P. (2017). What Your Innovation Process Should Look Like. Harvard Business Review. <https://hbr.org/2017/09/what-your-innovation-process-should-look-like>

Demir, E., Davey, T. (2022). Towards Coalition Excellence. Report on University-SME collaboration in Europe. <https://unite4horizon.eu/horizon-europe-engagement-programme-framework/>

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Sopheon (n.d.). An Introduction to Strategic Roadmapping. https://www.sopheon.com/wp-content/uploads/WhitePaper_IntrotoRoadmapping.pdf