

# Innovation Caucus

## INNOVATION SKILLS FRAMEWORK SUMMARY

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## About the Innovation Caucus

The Innovation Caucus supports sustainable innovation-led growth by promoting engagement between the social sciences and the innovation ecosystem. Our members are leading academics from across the social science community, who are engaged in different aspects of innovation research. We connect the social sciences, Innovate UK and the Economic and Social Research Council (ESRC), by providing research insights to inform policy and practice. Professor Tim Vorley is the Academic Lead. The initiative is funded and co-developed by the ESRC and Innovate UK, part of UK Research and Innovation (UKRI). The support of the funders is acknowledged. The views expressed in this piece are those of the authors and do not necessarily represent those of the funders.

# 1. CONTEXT AND RATIONALE

Innovation is a catalyst for growth, prosperity, and wellbeing and is at the core of Government economic policy. The 2020 R&D Roadmap argued that fueling an efficient system of innovation will “improve lives, services and businesses right around the UK and beyond – creating a fairer, healthier, more prosperous and more resilient society” (HM Government 2021, 5). The Innovation Strategy (BEIS 2021a, 7) states that encouraging innovation in the private sector is “an essential part of the UK’s future prosperity and key to achieving UK objectives to be a force for good on global challenges around climate, biodiversity, prosperity and security”. An expanding library of policy documents have been produced to outline the Government’s role in supporting the translation of these ambitions into practice.

These documents all highlight the importance of attracting and supporting people as vectors of innovation. The Innovation Strategy aims to make the UK “the most exciting place for innovation talent” (BEIS 2021a, 52). The Innovate UK Strategic Delivery Plan includes “innovation talent and skills” as one of the elements of its strong foundations and prioritises people and careers as one of its strategic objectives (Innovate UK 2022, 6-7). The BEIS R&D People and Culture Strategy (BEIS 2021b) specifically focuses on the role of people, arguing that they are at the core of R&D and that there is nothing more important than attracting, developing, and retaining enough people to meet ambitions around innovation.

Notably, many of these initiatives make reference to enhancing a set of leadership, management, commercialisation, and entrepreneurial skills that contribute to innovation, commercialisation, innovation adoption, and innovative business growth. These have been broadly labelled “innovation skills”. However, what innovation skills actually are in practice has not been clearly defined. In response to this challenge, Innovate UK partnered with the Institute for Apprenticeships and Technical Education (IfATE) to develop an evidence base and understanding of innovation skills to influence its programmes and qualifications. The Innovation Caucus was commissioned to develop an Innovation Skills Framework to identify the skills critical for innovation, support the development of an innovative workforce, encourage the next generation of entrepreneurs and innovators to drive economic growth, and support the UK’s position as a leader in innovation. As part of this process, we worked closely with Innovate UK, IfATE, and their stakeholders to develop, test, and refine the Framework.

This report summarises the logic and components of the Framework and proposes some scenarios for applying it within a wide variety of organisations and innovation contexts. We wrote this document with both policy and practitioner audiences in mind. While the Framework itself will be of primary interest to both, Section 2 provides important background on how we conceptualise innovation, where it happens within organisations, and how we define innovation skills. An important part of this section outlines how we connect innovation skills to tasks in order to better understand what skills contribute to each part of the innovation process. As we developed the Framework, presented in detail in Section 3, we consulted closely with organisations from IfATE Route Panels, businesses involved in Innovate UK programmes, and the policy community to get feedback on how well our approach was aligning with how stakeholders think about innovation and skills and to learn how they might apply the final product. These interactions led us to include Section 4 in which we outline a selection of ways that this Framework can be used within organisations to enhance their innovation skills profiles. The Framework was designed to be flexible and highly adaptable, and so these scenarios represent just some of the ways that it can be translated into practice across a variety of contexts. Future work will focus on lessons learned from implementing the Framework and on refining both the Framework itself and the adoption process.





## 2. OUR APPROACH TO INNOVATION AND SKILLS

### 2.1 What is innovation?

For the purpose of this framework, we have adopted a very broad definition of innovation. We opted for this expansive approach to ensure that the Framework would be applicable across the widest possible range of contexts. The UK Innovation Survey (BEIS 2021c), adapting its definition from OECD Oslo Manual, lists the following as examples of innovation:

- The introduction of a new or significantly improved product (good or service) or process
- Engagement in innovation projects not yet complete, scaled back, or abandoned
- New and significantly improved forms of organisation, businesses structures or practices, and marketing concepts or strategies
- Investment activities in areas such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities

As this definition makes plain, innovation can happen in any part of an organisation, from the product or service offering (the output itself), to ways of producing output (production processes), to ways of organising (such as business models).

#### The innovation process

In developing the Framework, we focused on innovation, and the skills required to execute, at the organisation level, although we aimed to understand the innovation process and design a Framework relevant to organisations across different sectors and of different sizes, from very small to very large. Through an extensive review of the literature, we distilled the most commonly cited stages of the innovation process: prospecting, ideating, selecting, and implementing. Prospecting involves gaining an understanding of the domain and problems, organisational, market, and/or customer needs. Ideating is the process of coming up with potential solutions. In the selecting phase, innovators evaluate and choose between high potential solutions against feasibility, practicality, market acceptance, market size, costs, fit with internal resources and capabilities or other criteria. Finally, the implementation phase involves turning those ideas into reality. Crucially, while this process is often discussed in very linear terms, where the expectation is that innovation occurs across the neatly delineated stages in order from prospecting to implementation, we acknowledge that the reality is much more complex and dynamic. This is reflected in the way we depict the process in the background of Figure 1 (page 4) as a series of interlocking rings.

#### Who are the innovators?

From our perspective, every organisation in the economy - public, private or third sector; large or small; across all industries - relies on some form of innovation to evolve, grow and respond to the changing environment. Every organisation is capable of innovation. We have structured this framework with the assumption that innovation can originate from anywhere in an organisation and is not necessarily tied to specific roles, occupations, or technical qualification categories.



## 2.2 Defining innovation skills

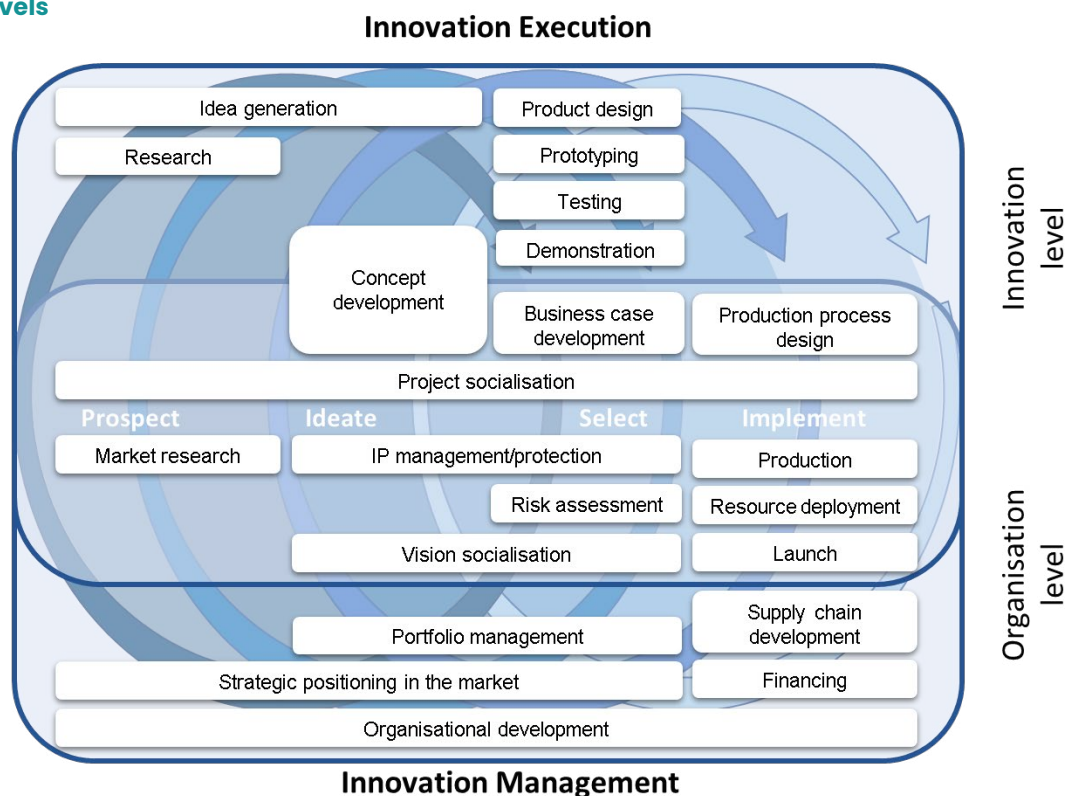
The term “skill” is often confused, misused, or used interchangeably with a variety of other concepts, including talents, behaviours, knowledge, tasks, traits, values, and outcomes. IfATE (n.d.) recognises this tendency and clearly distinguishes between knowledge (technical ‘know how’ needed to carry out duties), behaviours (mindsets, attitudes, or approaches needed for competence), and skills (the practical application of knowledge needed to carry out duties) in its standards development processes. We build off this model and particularly focus on disentangling and identifying the relationships between skills and tasks.

### The tasks-skills nexus

In this framework, we define skills as the socially determined personal capacities that can add value (to a process, organisation, or endeavour) and can be enhanced or developed through learning and development. Tasks, by contrast, are the discrete but connected pieces of work that need to be undertaken as part of the innovation process. In other words, skills are the capacities required to complete tasks.

By approaching the innovation process as a series of tasks and then considering what skills are necessary to complete them, we open up the possibility that specific tasks may require the application of multiple skills to accomplish and that certain skills can enhance one’s capacity to complete several different tasks. We also argue that disentangling tasks from skills enables organisations to more effectively map the elements of work that go into their own innovation processes to more accurately identify and pair them with relevant skill sets for evaluation, development, or selection/recruitment purposes.

**Figure 1: Innovation phases, tasks, and levels**

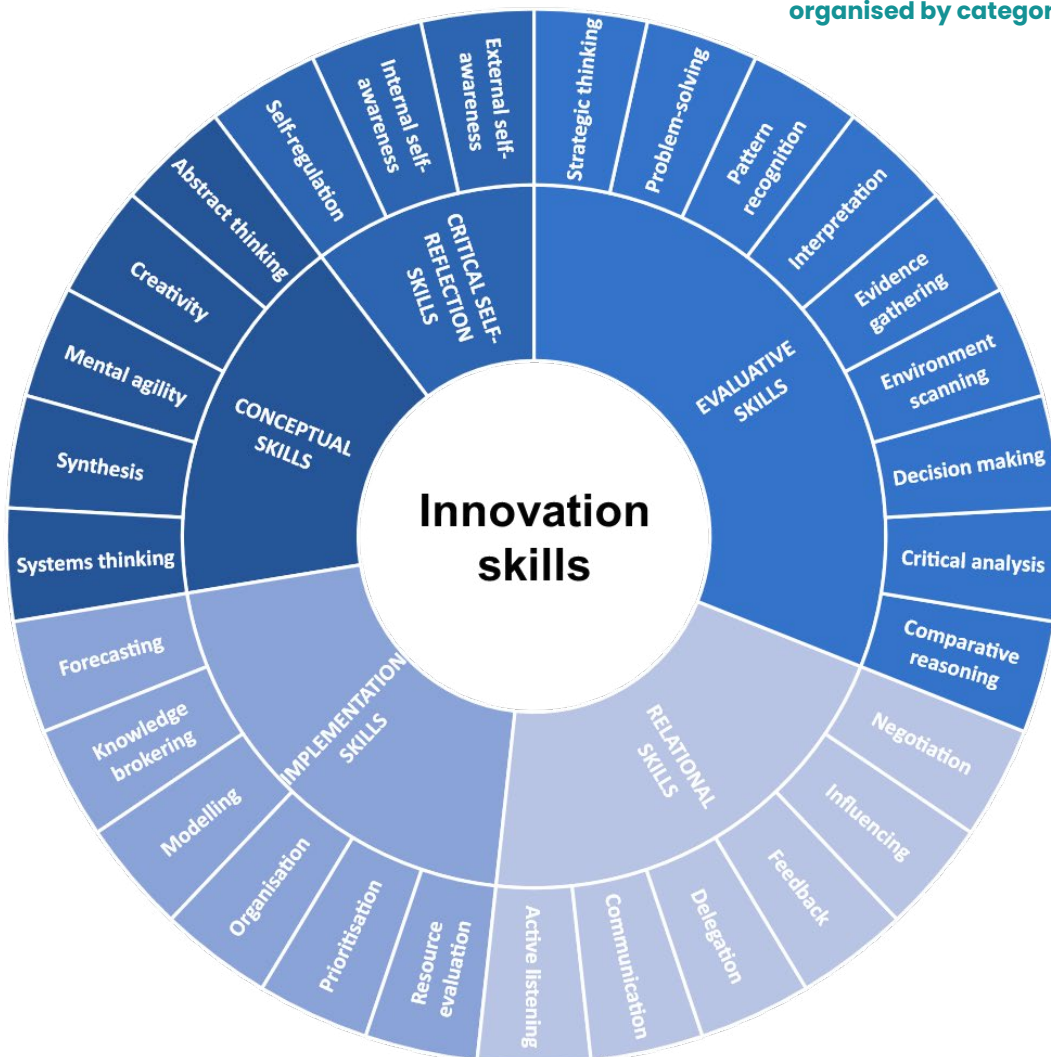


**Innovation skills**

Innovation skills are those socially determined personal capacities that can add value (to a process, organisation, or endeavour) and can be enhanced or developed through learning and development that contribute to the completion of innovation-related tasks. These tasks are depicted in Figure 1 in their approximate positions relative to the innovation process.

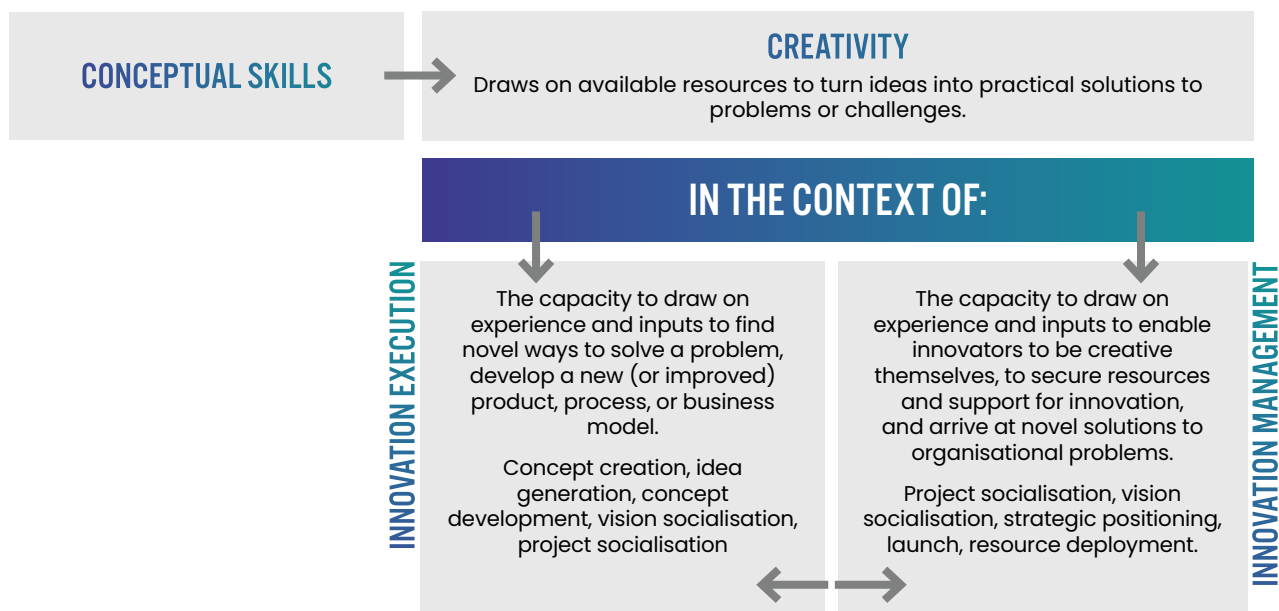
In addition to associating innovation tasks with specific stages of the innovation process, we also classify them according to the scale of the organisation the activity takes place. Here we distinguish between innovation execution, which are tasks that contribute to doing the innovation, and innovation management, which are tasks that contribute to enabling innovation by creating a supportive organisational environment or mobilising resources (etc.) for execution activities. Some activities, depicted in the overlapping middle section of Figure 1, are important for both innovation execution and management. These innovation management tasks are not (always) considered innovative in and of themselves, but are widely regarded as essential to increasing the frequency and potential for success of innovation within organisations. Making this distinction enables us to include both execution and management tasks in the same framework and emphasises our contention that innovation skills are not only necessary for occupations or roles above a certain level but are critical across the entire organisation.

**Figure 2: Innovation skills organised by category**



In our framework, we assign innovation skills to each of the innovation tasks. We divide innovation skills into five categories (see Figure 2). Conceptual skills are those that constitute an individual's capacity to generate, process, and engage with ideas. Evaluative skills are those that shape an individual's capacity to find, select, and use information. Implementation skills are technical skills associated with the active planning and undertaking of innovation execution and management and shape how one relates to discrete tasks. Relational skills are interpersonal and social skills associated with the effective interaction and management of human resources and particularly affect how one relates to others. Critical self-reflection skills are a set of intrapersonal skills that underpin the development of positive self-concept and affect how one relates to oneself as an innovator and/or leader.

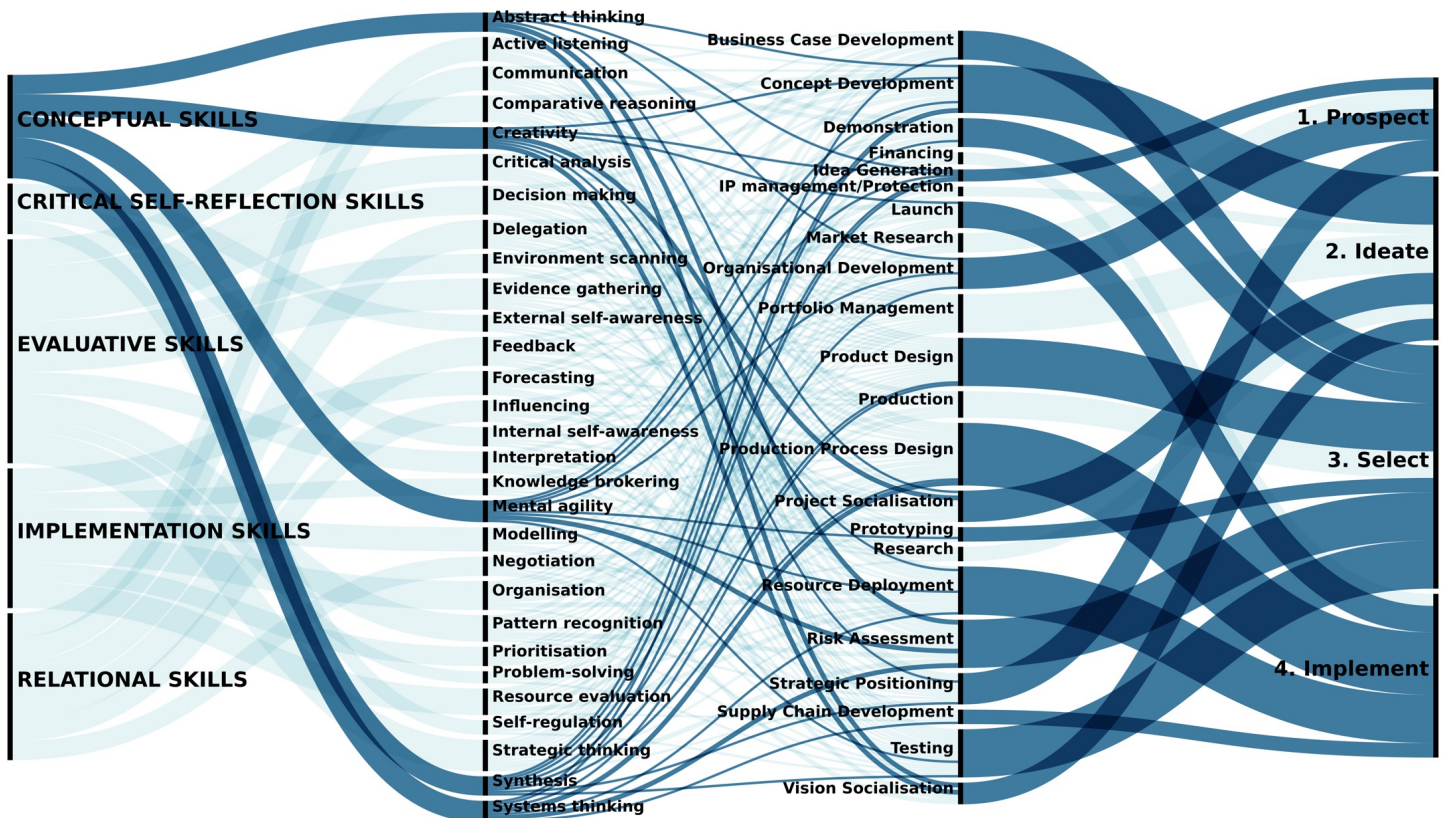
**Figure 3: The innovation skill of “creativity” described generally and elaborated in the context of innovation execution and innovation management.**



At a high level, the skills we identify here are not unique to the innovation process and are desirable qualities for most roles. However, in the Framework we elaborate how they apply specifically to the context of innovation execution and innovation management (see Figure 3 for an example). Furthermore, the interrelationship and interdependence between skills and tasks (Figure 4) emphasises that it is not sufficient to develop a single group of these skills, or the underlying technical knowledge required to complete them, but that innovation tasks require the cultivation of skills across the categories of this framework.



Figure 4: A visualisation of the relationship between innovation skills, innovation tasks, and the innovation process - emphasising the relationships between the skills in the Conceptual Thinking category (in dark blue) and their related tasks.





### 3. INNOVATION SKILLS FRAMEWORK

**How to read this framework:**

Each table outlines the innovation skills within one of the five core skills groups. The Description column gives a general definition of the component skill. The Innovation Execution column provides more detail for how that skill underpins innovation activities, while the Innovation Management column describes how the same skill also underpins activities required to enable, encourage, and disseminate innovation. Tasks associated with each component skill appear in each cell in bold and underlined. In digital versions, these are hyperlinked to the glossary of tasks in Appendix A.



**Table 1: Conceptual skills**

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>CONCEPTUAL SKILLS</b> Cognitive skills concerned with the relationship between the abstract and the concrete and that act as the basis for evaluation</p> <p><i>How one relates to ideas</i></p>	Creativity	Draws on available resources to turn ideas into practical solutions to problems or challenges.	The capacity to draw on experience and inputs to find novel ways to solve a problem, develop a new (or improved) product, process, or business model. <a href="#">Concept development, idea generation, vision socialisation, project socialisation</a>	The capacity to draw on experience and inputs to enable innovators to be creative themselves, to secure resources and support for innovation, and arrive at novel solutions to organisational problems. <a href="#">Project socialisation, vision socialisation, strategic positioning, launch, resource deployment</a>
	Synthesis	Integrates information from multiple sources to formulate conclusions as the basis for action.	The ability to combine and integrate different sources of information to identify opportunities and envision solutions. <a href="#">Concept development, idea generation, testing, product design</a>	The ability to combine and integrate different sources of information to identify innovative solutions/exploitable opportunities, to make the case to internal and external stakeholders regarding the potential impact of innovation. <a href="#">Business case development, production process design, organisational development, strategic positioning</a>
	Systems thinking	Makes evidence-based connections between multiple inputs in a scenario and infer the determinants of identified outputs.	The ability to connect and infer causality between conceptual or practical inputs to a problem and its outputs, and the feedback between the two. <a href="#">Concept development, idea generation, product design, production process design, risk assessment</a>	The ability to develop productive and efficient systems that enable the delivery of a product or service, and to perceive the organisation’s positioning within external systems. <a href="#">Risk assessment, supply chain development, resource deployment, production process design</a>
	Mental agility	Flexibly responds to changing circumstances by moving quickly between different ideas and foci.	The capacity to move quickly between close focus on detail to the bigger picture, switch between different ideas, and consider different parts of a problem without losing sight of the whole. <a href="#">Concept development, demonstration, idea generation, prototyping, risk assessment, testing</a>	The capacity to move quickly between strategic and operational concerns, and between those of the short and longer term. <a href="#">Resource deployment, risk assessment, organisational development</a>
	Abstract thinking	Understands abstract (non-physical) concepts and can apply them productively.	The ability to conceptualise and simplify complex problems as the basis for identifying possible solutions. <a href="#">Concept development, idea generation, risk assessment, vision socialisation</a>	The ability to understand the value and application of abstract concepts to strategic development of the organisation – e.g., creating cultures of innovation etc. <a href="#">Project socialisation, vision socialisation, risk assessment, organisational development</a>



Table 2: Evaluative skills

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>EVALUATIVE SKILLS</b> Cognitive skills concerned with the ongoing processing of information as the basis for action</p> <p><i>How one relates to information</i></p>	Environment scanning	Continually monitors and evaluates activity in the internal and external environment that bear on the current and future success of an organisation or initiative.	The practice of continuously gathering information from the internal and external environment to identify opportunities or solutions. <a href="#">Concept development, market research, product design, research, risk assessment</a>	The practice of gathering information from the internal and external environment that bear on the current and future success of the organisation. <a href="#">Market research, business case development, risk assessment</a>
	Evidence gathering	Searches, locates, generates, collects, extracts, and/or organises information that is relevant to a particular concern.	The ability to purposefully (and judiciously) seek and collect information to bring to bear on the problem for which innovation is the solution. <a href="#">Business case development, concept development, research, market research, product design, prototyping, testing</a>	The ability to purposefully (and judiciously) seek and collect information relevant to the enablement of innovation. <a href="#">Business case development, concept development, market research, production process design, strategic positioning, portfolio management</a>
	Interpretation	Assesses and identifies the relative significance of information, data, or explanation.	The capacity to understand relevant evidence, to arrive at conclusions that will shape paths of inquiry around concept and product development. <a href="#">Concept development, research, prototyping, risk assessment, testing</a>	The capacity to understand relevant evidence to arrive at conclusions that will shape decision-making to enable and support innovation(s). <a href="#">Concept development, risk assessment, strategic positioning, portfolio management</a>
	Pattern recognition	Recognises emotional, intellectual, and physical patterns to identify and articulate how they logically connect and to predict future connections.	The ability to seek and understand patterns and apply those insights to the innovation process. <a href="#">Concept development, market research, product design, research, risk assessment, testing</a>	The ability to seek and understand patterns and apply those insights to the interaction between innovation, the organisation and the external context. <a href="#">Concept development, market research, risk assessment, strategic positioning, portfolio management</a>
	Critical analysis	Draws on available evidence to challenge assumptions and produce well-reasoned analysis and understanding that lead to new ideas, applications, and questions.	The ability to develop and apply cognitive tools and techniques to available evidence in order to evaluate the comparative value of ideas, solutions or courses of action. <a href="#">Concept development, risk assessment, product design, research, testing</a>	The ability to develop and apply cognitive tools and techniques to available evidence in order to evaluate the comparative value of solutions or courses of action, in context of organisational constraints and opportunities. <a href="#">Business case development, concept development, portfolio management, resource deployment, strategic positioning, risk assessment</a>

Table 2 Continued: Evaluative skills

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>EVALUATIVE SKILLS</b> Cognitive skills concerned with the ongoing processing of information as the basis for action</p> <p><i>How one relates to information</i></p>	Problem- solving	Applies a range of cognitive approaches to define and diagnose the cause of difficult and complex problems, and identifies, prioritises, and selects practical solutions.	The ability to define the range of feasible options from which to determine optimal ideas, solutions, or courses of action. <a href="#">Testing, product design</a>	The ability to define the range of feasible options from which to determine optimal solutions or courses of action in context of organisational constraints and opportunities. <a href="#">Production process design, portfolio management, resource deployment</a>
	Comparative reasoning	Draws on evidence and prior experience to compare two entities or states as the basis for interpretation and explanation.	The capacity to analyse the relative strengths, weaknesses, and trade-offs of ideas, concepts, and solutions in relation to the problem being addressed. <a href="#">Concept development, risk assessment, testing, product design</a>	The capacity to analyse the relative strengths, weaknesses, and trade-offs of options and courses of action in context of organisational constraints. <a href="#">Concept development, strategic positioning, production process design, resource deployment, portfolio management, organisational development, risk assessment</a>
	Strategic thinking	Evaluates and anticipates threats and vulnerabilities to protect advantage and pursue value-creating opportunities.	The ability to account for the broader context within which innovation is taking place in evaluating the strengths, weaknesses, and feasibility of various courses of action. <a href="#">Market research, product design, risk assessment</a>	The ability to account for the broader context within the organisation and its environment in evaluating the strengths, weaknesses, and feasibility of various courses of action. <a href="#">Business case development, launch, IP management/ protection, market research, strategic positioning, production process design, resource deployment, portfolio management, organisational development, risk assessment</a>
	Decision making	Draws on available credible evidence to determine an appropriate course of action in pursuit of a defined objective or goal.	The ability to select between multiple viable courses of action within the context of a project based on credible evidence. <a href="#">Concept development, product design, production process design, prototyping, resource deployment, testing</a>	The ability to select between multiple viable courses of action within and across different projects based on credible evidence. <a href="#">Concept development, strategic positioning, production process design, resource deployment, portfolio management, organisational development</a>

**Table 3: Implementation skills**

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>IMPLEMENTATION SKILLS</b> Technical skills associated with the active planning and undertaking of innovation execution and management</p> <p><i>How one relates to discrete tasks</i></p>	Knowledge brokering	Purposefully and judiciously collects, assesses, organises, extracts, and shares informational assets to maximise their productive value.	The ability to construct and manage a practice of information clearing, knowledge access/distribution, sharing knowledge (tacit -> codified, etc). <a href="#">Product design, research, testing, IP management/protection</a>	The ability to create and manage processes and incentives for information and knowledge sharing. <a href="#">Organisational development, production process design, IP management/protection</a>
	Organisation	Purposefully initiates plans of action to achieve desired outcomes.	The capacity to design workflows and task allocation for project execution. <a href="#">Product design, production process design, production, resource deployment, testing</a>	The capacity to design innovation workflows and tasks allocation in the context of organisational plans, resources, and priorities. <a href="#">Launch, production, production process design, resource deployment, portfolio management, business case development, financing</a>
	Resource evaluation	Systematically assess the value of resources (financial, human, capital, time) in relation to their productive utility.	The ability to identify and acquire the necessary resources for the operational execution of the project. <a href="#">Concept development, research, prototyping, risk assessment, testing</a>	The ability to identify and acquire the necessary resources to support innovation and ensure organisational efficiency and effectiveness. <a href="#">Financing, IP management/protection, organisational development, production, production process design, supply chain development, launch, resource deployment</a>
	Prioritisation	Assesses the relative importance of tasks and actions to ensure their timely completion.	The ability to assess the relative importance of tasks and actions as the basis for efficient project execution. <a href="#">Production process design, production</a>	The ability to assess the relative importance of tasks, actions and projects as the basis for the effective achievement of organisational objectives. <a href="#">Launch, portfolio management, production, production process design, organisational development, financing</a>
	Modelling	Discerns the relationship between relevant variables to understand, define, quantify, visualise or simulate these relationships (for experimentation or forecasting).	The capacity to apply data and modelling techniques to generate insights about potential project outcomes. <a href="#">Business case development, product design, production process design, prototyping, testing</a>	The capacity to apply data and modelling techniques to generate insights about potential organisational or market outcomes. <a href="#">Business case development, portfolio management, strategic positioning, supply chain development, financing</a>
	Forecasting	Draws upon past and current data to predict the likelihood of a future scenario.	The ability to use past and current data and predictive methodologies to envision possible futures related to the problem. <a href="#">Business case development, production process design, production, testing</a>	The ability to use past and current data and predictive methodologies to envision possible futures for the innovation and its impact for/in the organisation. <a href="#">Business case development, portfolio management, strategic positioning, production process design, supply chain development, financing</a>



**Table 4: Relational skills**

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>RELATIONAL SKILLS</b> Interpersonal and social skills associated with the effective interaction and management of human resources in innovation execution and management</p> <p><i>How one relates to discrete tasks</i></p>	Communication	Effectively conveys messages and their meaning employing a variety of media and modes appropriate to the intended audience.	The ability to effectively convey ideas and their value to stakeholders at all phases of project conceptualisation and execution. <a href="#">Vision socialisation</a> , <a href="#">concept development</a> , <a href="#">product design</a> , <a href="#">production process design</a> , <a href="#">demonstration</a> , <a href="#">testing</a>	The ability to communicate solutions and their inter- and intra-organisational significance to stakeholders at all phases of project conceptualisation and execution. <a href="#">Demonstration</a> , <a href="#">project socialisation</a> , <a href="#">business case development</a> , <a href="#">strategic positioning</a>
	Active listening	Attentively listens and responds to others in a manner that improves mutual understanding.	The capacity to listen to a wide variety of sources to collect input and feedback about idea or project development. <a href="#">Concept development</a> , <a href="#">demonstration</a> , <a href="#">product design</a> , <a href="#">production process design</a> , <a href="#">risk assessment</a> , <a href="#">testing</a>	The capacity to listen to a wide variety of sources to collect input and feedback about process management and improvement and strategic positioning. <a href="#">Production process design</a> , <a href="#">strategic positioning</a> , <a href="#">risk assessment</a> , <a href="#">demonstration</a>
	Negotiation	Engages in dialogue with others that enables the positive resolution of difference or conflict..	The ability to overcome differences by discerning and achieving agreement to trade-offs related to project execution. <a href="#">Vision socialisation</a> , <a href="#">project socialisation</a> , <a href="#">resource deployment</a>	The ability to overcome differences by discerning and achieving agreement to trade-offs within and between projects relative to organisational constraints. <a href="#">Vision socialisation</a> , <a href="#">project socialisation</a> , <a href="#">organisational development</a> , <a href="#">supply chain development</a> , <a href="#">resource deployment</a>
	Influencing	Positively transforms the behaviour and attitudes of others through persuasion and conviction.	The ability to persuade project stakeholders of the value of a course of action to project execution. <a href="#">Vision socialisation</a> , <a href="#">launch</a> , <a href="#">project socialisation</a> , <a href="#">production process design</a>	The ability to persuade organisational stakeholders of the value of a course of action. <a href="#">Launch</a> , <a href="#">vision socialisation</a> , <a href="#">production</a> , <a href="#">project socialisation</a> , <a href="#">production process design</a>
	Feedback	Provides timely, unambiguous, and constructive guidance to others in a way that leads to enhanced performance or added value.	The ability to communicate with stakeholders on an ongoing basis about what is working, or not, and what is needed in the development of the project. <a href="#">Demonstration</a> , <a href="#">launch</a> , <a href="#">project socialisation</a> , <a href="#">production</a> , <a href="#">testing</a>	The ability to communicate with stakeholders on an ongoing basis about what is working, or not, and what is needed for effective project execution relative to organisational priorities and constraints. <a href="#">Demonstration</a> , <a href="#">launch</a> , <a href="#">production</a> , <a href="#">project socialisation</a> , <a href="#">resource deployment</a> , <a href="#">portfolio management</a> , <a href="#">supply chain development</a>
	Delegation	Equitably transfers and distributes tasks and responsibilities to appropriate others to better achieve desired results.	The ability to effectively identify and manage who does what in project execution. <a href="#">Launch</a> , <a href="#">product design</a> , <a href="#">production process design</a> , <a href="#">resource deployment</a> , <a href="#">prototyping</a> , <a href="#">production</a> , <a href="#">testing</a>	The ability to effectively identify and manage who does what in project execution and implementation in context of competing demands for resources across projects. <a href="#">Launch</a> , <a href="#">production</a> , <a href="#">production process design</a> , <a href="#">resource deployment</a> , <a href="#">portfolio management</a>

**Table 5: Critical self-reflection skills**

Skills Group	Component Skills	Description	Innovation Execution The act of doing the innovation – skills are used in the execution of the innovation project.	Innovation Management Is required to enable innovation – skills are used to manage innovation within an organisation.
<p><b>CRITICAL SELF-REFLECTION SKILLS</b> Intrapersonal skills that underpin the development of positive self concept as the basis for effective relationships</p> <p><i>How one relates to self</i></p>	Internal self-awareness	Understands one’s own values, aspirations, thoughts, feelings, behaviours, strengths, and weaknesses, and their impact on others.	The capacity to understand personal limitations in relation to the project, how these can be mitigated. <a href="#">Product design, demonstration, testing</a>	The capacity to understand personal limitations in relation to project management and how these can be mitigated. <a href="#">Demonstration, organisational development, resource deployment, portfolio management, project socialisation</a>
	External self-awareness	Understands how others’ view one’s values, aspirations, thoughts, feelings, behaviours, strengths, and weaknesses.	The capacity to understand how others perceive oneself in order to manage these perceptions to enhance project execution. <a href="#">Demonstration, product design, testing</a>	The capacity to understand how others perceive oneself in order to manage these perceptions in the course of project execution and management. <a href="#">Organisational development, resource deployment, portfolio management, project socialisation</a>
	Self-regulation	Understands and manages one’s emotions and behavioural responses to external stimuli.	The ability to create an effective environment for multilateral feedback by ensuring that behaviours do not limit the ability or willingness of others to contribute. <a href="#">Product design, demonstration, testing</a>	The ability to create an effective environment for multilateral feedback by ensuring that behaviours do not undermine the contribution of others to the project portfolio in its organisational context. <a href="#">Demonstration, organisational development, project socialisation</a>

## 4. APPLYING THE INNOVATION SKILLS FRAMEWORK

One of the main advantages of the Innovation Skills Framework is its versatility. The Framework was originally developed to inform IfATE's development of standards and qualifications; however, it became clear through the design process that it could have broader applications in organisations of all kinds. Here we present three stylised scenarios and outline the process to guide the translation of the Framework into concrete outcomes. These three scenarios reflect the fact that organisations may apply the Framework with different outcomes in mind, targeting either organisational effectiveness, employee development, or recruitment.

### 4.1 Three stylised scenarios

Note that while we present these as distinctive scenarios, they should not be considered mutually exclusive. For instance, evaluating organisational effectiveness in the deployment of skills relative to innovation tasks might lead naturally to the conclusion that further training or hiring is necessary. Incorporating innovation skills into recruitment processes may prompt discussions about whether roles should be redesigned in light of innovation goals. What is vital is that an organisation can use the Framework from any starting point and to achieve any number of desired outcomes and that it is flexible enough to be used to develop solutions as skills strategies evolve.

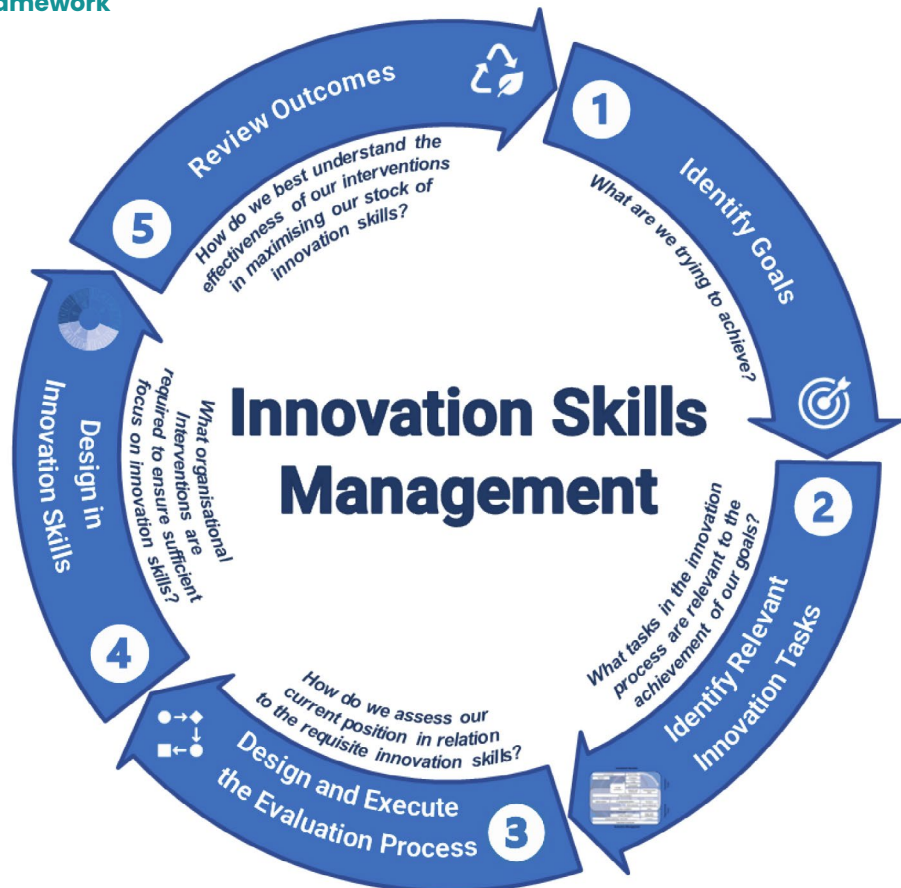
<b>1. Deploying skills</b>	<b>Target: Organisational effectiveness</b>
<p>The Framework can be used to assess the alignment between the skills that employees already possess and the functions they perform in the innovation process. In other words, what roles contribute to which innovation tasks, and to what degree do the individuals in those roles have mastery of the innovation skills necessary to perform them? This exercise might help an organisation rethink the configuration of roles related to innovation and/or the skill sets required of the employees in those positions. The outcome of this scenario is better informed decisions regarding the effective utilisation and organisation of available human resources to support innovation through an assessment of 'fit' between individuals and roles. Once skills gaps or weaknesses have been identified they can be addressed by using the Innovation Skills Framework to either develop (scenario 2) or source (scenario 3) relevant skill sets.</p>	
<b>2. Developing skills</b>	<b>Target: Human resources development</b>
<p>Organisations may seek to integrate the improvement of innovation skills into existing development interventions or initiate bespoke programmes to increase innovation skills performance can use the Framework to establish curricula and assessment processes. In higher or further education, this might be related to curriculum mapping exercises to determine when and how innovation skills are introduced, reinforced, mastered, and assessed in degree programmes. For training and development organisations, like IfATE, this process can be used to evaluate whether existing professional standards and frameworks capture innovation skills and update standards to integrate these more effectively. Businesses can use the process to survey and refresh their training interventions.</p>	
<b>3. Sourcing skills</b>	<b>Target: Recruitment and candidate selection processes</b>
<p>The Framework can also be used to integrate innovation skills into organisational resourcing strategies. This may involve using the Framework as a guideline to develop role descriptors and person specifications to ensure that innovation skills are among those prioritised in recruitment activity and candidate selection. It can also be used to develop selection methods to assess the innovation skills of candidates. For instance, the framework could be selectively used to develop assessment centre activities to evaluate either the possession of - or potential to develop - required innovation skills.</p>	



## 4.2 A roadmap for implementation

The Innovation Skills Framework is most effectively conceptualised as a point of reference and not a solution in and of itself. To effectively apply it requires reflection about organisational goals and the development of contextually appropriate strategies.

**Figure 5: Steps in applying the Innovation Skills Framework**



Reflecting established models in human resource development and organisational development to offer a roadmap to guide the implementation of the Innovation Skills Framework. Figure 5 shows this process at a high level while Table 6 breaks it down in more detail for each of the scenarios described above.

	Step	Description	Scenario 1: Deploying Skills Organisational effectiveness	Scenario 2: Developing Skills HR development	Scenario 3: Sourcing Skills Candidate selection
1.	<b>Identify Goals</b>	<i>What are we trying to achieve?</i>	Better informed decisions regarding the effective utilisation and organisation of available human resources to support innovation	Learning interventions that effectively develop relevant innovation skills	Candidate selection techniques better able to target the demonstrable possession of relevant innovation skills
2.	<b>Identify Relevant Innovation Tasks</b>	<i>What tasks in the innovation process are relevant to the achievement of our goals?</i>	What innovation tasks are critical to successful job performance at different levels and sections of the organisations?	What innovation tasks are critical to the work of the target population for whom the learning and development intervention is to be designed?	What tasks are important in the execution of the advertised post?
3.	<b>Design and Execute the Evaluation Process</b>	<i>How do we assess our current position in relation to the required innovation skills?</i>	Review the application of innovation skills in relevant tasks by using the Framework (or parts thereof) to inform, for example, direct observation of job performance, peer assessment, or self-reporting	Use the template to map the coverage of required innovation skills development across a learning intervention (for instance, a training or educational programme) through review of the curriculum, pedagogy, and assessment to identify gaps	Draw on the Framework to review the candidate assessment and selection processes to ensure appropriate focus on critical innovation skills
4.	<b>Design in Innovation Skills</b>	<i>What organisational interventions are required to ensure sufficient focus on necessary innovation skills?</i>	Collect and use innovation skills-related performance data as the basis for decisions on role assignment and structure, or team/work unit composition.	(Re)design programmes or development interventions to ensure alignment of content and approach to delivery to best develop and assess the required innovation skills	Develop candidate selection tasks and activities oriented towards an active assessment of specified innovation skills
5.	<b>Review outcomes</b>	<i>How do we best understand the effectiveness of our interventions in maximising our stock of necessary innovation skills?</i>	Draw on the Framework to evaluate the task performance of individuals, teams and units, post-intervention	Draw on the Framework to evaluate effectiveness of the programme via participation reaction, formal pre- and post-assessment, evaluating behavioural change, and subsequent impact on individual and/or unit performance.	Draw on the Framework to review the innovation skills performance of new hires during initial job performance

### 4.3 Tips for implementation

We describe this as a roadmap, rather than the roadmap, for implementation to emphasise the fact that there is no one correct way to adapt the Framework to your unique organisational circumstances. The proposed process can be pursued formulaically, with the development of formalised assessment models and criteria and documentation appropriate to internal bureaucratic processes, but it can be just as effective as a starting point for informal discussion (and everything in between). Regardless of approach to engaging with the Framework, the following points may be useful:

- **Customise implementation with your organisation and its goals in mind:** Like the Framework itself, the scenarios and processes we offer here are meant to be a starting point. Consider these guidelines, not a recipe that needs to be executed in a specific way to ensure success.
- **Take advantage of modularity:** We encourage you to adopt what resonates for your organisation and application and leave out what doesn't. For example, not every innovation task listed will be relevant to your organisation, roles, or objectives. In that case, focus on what does matter and what you want to emphasise. Or, if it's more suitable to your context, you can divide up the tasks maps across different divisions, training offerings, or departments. That you can start from tasks and identify skills or work from desired skills back to the tasks that they support creates flexibility to adapt the Framework in whichever way makes sense.
- **Consider existing templates for inspiration:** In refining the Framework we developed our own tools to envision how it might be applied in different contexts. We offer a selection of these templates in Appendix B. These can be adapted or used as inspiration to design context-specific evaluation tools.



## REFERENCES

BEIS. (2021a). UK Innovation Strategy - Leading the Future by Creating It.

BEIS. (2021b). R&D People and Culture Strategy - People at the Heart of R&D.

BEIS (2021c) UK Innovation Survey 2021: Report covering the survey period 2018 to 2020. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1074069/UK\\_Innovation\\_Survey\\_2021\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1074069/UK_Innovation_Survey_2021_Report.pdf)

HM Government. (2020). UK Research and Development Roadmap.

IfATE (n.d.) Developing an occupational standard. Retrieved from: <https://www.instituteforapprenticeships.org/developing-new-apprenticeships/developing-occupational-standards/>

Innovate UK. (2022). Strategic Delivery Plan 2022-2025



Task	Description	Innovation Execution skills	Innovation Management skills
Business case development	Creating a compelling argument for investing in and pursuing an innovation.	<a href="#">Evidence gathering</a> <a href="#">Forecasting</a> <a href="#">Modelling</a>	<a href="#">Communication</a> <a href="#">Critical analysis</a> <a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">Forecasting</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Strategic thinking</a> <a href="#">Synthesis</a>
Concept development	Exploring and refining ideas, turning them into a well-defined and feasible concept that can be tested, validated and implemented.	<a href="#">Abstract thinking</a> <a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">Comparative reasoning</a> <a href="#">Creativity</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">Interpretation</a> <a href="#">Mental agility</a> <a href="#">Pattern recognition</a> <a href="#">Synthesis</a> <a href="#">Systems thinking</a>	<a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Evidence gathering</a> <a href="#">Interpretation</a> <a href="#">Pattern recognition</a>
Demonstration	Showcasing an innovation to potential customers, investors and partners.	<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">External self-awareness</a> <a href="#">Feedback</a> <a href="#">Internal self-awareness</a> <a href="#">Mental agility</a> <a href="#">Self-regulation</a>	<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">External self-awareness</a> <a href="#">Feedback</a> <a href="#">Internal self-awareness</a> <a href="#">Mental agility</a> <a href="#">Self-regulation</a>
Financing	Determining and obtaining the funding to develop and commercialise an innovation.		<a href="#">Forecasting</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a> <a href="#">Resource evaluation</a>
Idea generation	Creating and producing new and innovative ideas to solve problems or meet needs.	<a href="#">Abstract thinking</a> <a href="#">Creativity</a> <a href="#">Mental agility</a> <a href="#">Synthesis</a> <a href="#">Systems thinking</a>	
IP management/ protection	Identifying and securing the rights to any potential patents, trademarks, copyrights and trade secrets related to the innovation.	<a href="#">Knowledge brokering</a>	<a href="#">Knowledge brokering</a> <a href="#">Resource evaluation</a> <a href="#">Strategic thinking</a>
Launch	Bringing an innovation to end users in a timely and cost effective way by marketing and selling to the target audience.	<a href="#">Delegation</a> <a href="#">Feedback</a> <a href="#">Influencing</a>	<a href="#">Creativity</a> <a href="#">Delegation</a> <a href="#">Feedback</a> <a href="#">Influencing</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a> <a href="#">Resource evaluation</a> <a href="#">Strategic thinking</a>

Task	Description	Innovation Execution skills	Innovation Management skills
Market research	Gathering and analysing information about customer needs, market trends, and potential competition to inform the development and commercialization of an innovation.	<a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">Pattern recognition</a> <a href="#">Strategic thinking</a>	<a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">Pattern recognition</a> <a href="#">Strategic thinking</a>
Organisational development	Improving and transforming an organisation's structure, processes, culture and capabilities to enhance its ability to innovate.		<a href="#">Abstract thinking</a> <a href="#">Comparative reasoning</a> <a href="#">Decision making</a> <a href="#">External self-awareness</a> <a href="#">Internal self-awareness</a> <a href="#">Knowledge brokering</a> <a href="#">Mental agility</a> <a href="#">Negotiation</a> <a href="#">Prioritisation</a> <a href="#">Resource evaluation</a> <a href="#">Self-regulation</a> <a href="#">Strategic thinking</a> <a href="#">Synthesis</a>
Portfolio management	Considering and optimising the risks, impacts, market, and resource use of an innovation in the context of the basket of innovation within an organisation.		<a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Evidence gathering</a> <a href="#">External self-awareness</a> <a href="#">Feedback</a> <a href="#">Forecasting</a> <a href="#">Internal self-awareness</a> <a href="#">Interpretation</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Pattern recognition</a> <a href="#">Prioritisation</a> <a href="#">Problem-solving</a> <a href="#">Strategic thinking</a>
Product design	Developing the functional and aesthetic aspects of an innovation.	<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">External self-awareness</a> <a href="#">Internal self-awareness</a> <a href="#">Knowledge brokering</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Pattern recognition</a> <a href="#">Problem-solving</a> <a href="#">Resource evaluation</a> <a href="#">Self-regulation</a> <a href="#">Strategic thinking</a> <a href="#">Synthesis</a> <a href="#">Systems thinking</a>	

Task	Description	Innovation Execution skills	Innovation Management skills
Production	Producing the new product, process, service, or business model.	<a href="#">Delegation</a> <a href="#">Feedback</a> <a href="#">Forecasting</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a>	
Production process design	Developing the processes used to deliver a new or improved product or service to end users.	<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Forecasting</a> <a href="#">Influencing</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a> <a href="#">Resource evaluation</a> <a href="#">Systems thinking</a>	<a href="#">Delegation</a> <a href="#">Feedback</a> <a href="#">Influencing</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a> <a href="#">Resource evaluation</a>
Project socialisation	Communicating and aligning the tasks, timelines, responsibilities and objectives of a project across an organisation and its stakeholders.	<a href="#">Creativity</a> <a href="#">Feedback</a> <a href="#">Influencing</a> <a href="#">Negotiation</a>	<a href="#">Active listening</a> <a href="#">Comparative reasoning</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Evidence gathering</a> <a href="#">Forecasting</a> <a href="#">Influencing</a> <a href="#">Knowledge brokering</a> <a href="#">Organisation</a> <a href="#">Prioritisation</a> <a href="#">Problem-solving</a> <a href="#">Resource evaluation</a> <a href="#">Strategic thinking</a> <a href="#">Synthesis</a> <a href="#">Systems thinking</a>
Prototyping	Creating a functional model for testing and evaluation.	<a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Evidence gathering</a> <a href="#">Interpretation</a> <a href="#">Mental agility</a> <a href="#">Modelling</a>	
Research	Collecting and analysing information to inform decision-making and support the development of innovations.	<a href="#">Critical analysis</a> <a href="#">Environment scanning</a> <a href="#">Evidence gathering</a> <a href="#">Interpretation</a> <a href="#">Knowledge brokering</a> <a href="#">Pattern recognition</a>	
Resource deployment	Obtaining, allocating, prioritising, and managing competing demands for the infrastructure, assets and talent needed to develop and implement an innovation.	<a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Negotiation</a> <a href="#">Organisation</a> <a href="#">Resource evaluation</a>	<a href="#">Comparative reasoning</a> <a href="#">Creativity</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">External self-awareness</a> <a href="#">Feedback</a> <a href="#">Internal self-awareness</a> <a href="#">Mental agility</a> <a href="#">Negotiation</a> <a href="#">Organisation</a> <a href="#">Problem-solving</a> <a href="#">Resource evaluation</a> <a href="#">Strategic thinking</a> <a href="#">Systems thinking</a>



Task	Description	Innovation Execution skills	Innovation Management skills
Risk assessment	Identifying and evaluating the risks associated with an innovation and ensuring that they are adequately mitigated and mitigated.	<a href="#">Abstract thinking</a> <a href="#">Active Listening</a> <a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Environment scanning</a> <a href="#">Interpretation</a> <a href="#">Mental agility</a> <a href="#">Pattern recognition</a> <a href="#">Strategic thinking</a> <a href="#">Systems thinking</a>	<a href="#">Abstract thinking</a> <a href="#">Active listening</a> <a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Environment scanning</a> <a href="#">Interpretation</a> <a href="#">Mental agility</a> <a href="#">Pattern recognition</a> <a href="#">Strategic thinking</a> <a href="#">Systems thinking</a>
Strategic positioning	Determining the price, unique benefits, target segment and messaging for an innovation that will maximise its success.		<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">Comparative reasoning</a> <a href="#">Creativity</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Evidence gathering</a> <a href="#">Forecasting</a> <a href="#">Interpretation</a> <a href="#">Modelling</a> <a href="#">Pattern recognition</a> <a href="#">Strategic thinking</a> <a href="#">Synthesis</a>
Supply chain development	Creating and managing a network of suppliers and distribution channels that support the development, implementation and accessibility of an innovation.		<a href="#">Feedback</a> <a href="#">Forecasting</a> <a href="#">Modelling</a> <a href="#">Negotiation</a> <a href="#">Resource evaluation</a> <a href="#">Systems thinking</a>
Testing	Evaluating the quality, performance and functionality of an innovation.	<a href="#">Active listening</a> <a href="#">Communication</a> <a href="#">Comparative reasoning</a> <a href="#">Critical analysis</a> <a href="#">Decision making</a> <a href="#">Delegation</a> <a href="#">Evidence gathering</a> <a href="#">External self-awareness</a> <a href="#">Feedback</a> <a href="#">Forecasting</a> <a href="#">Internal self-awareness</a> <a href="#">Interpretation</a> <a href="#">Knowledge brokering</a> <a href="#">Mental agility</a> <a href="#">Modelling</a> <a href="#">Organisation</a> <a href="#">Pattern recognition</a> <a href="#">Problem-solving</a> <a href="#">Self-regulation</a> <a href="#">Synthesis</a>	

Task	Description	Innovation Execution skills	Innovation Management skills
Vision socialisation	Communicating and aligning the vision for an innovation with stakeholders including colleagues, customers, investors and partners.	<a href="#">Abstract thinking</a> <a href="#">Communication</a> <a href="#">Creativity</a> <a href="#">Influencing</a> <a href="#">Negotiation</a>	<a href="#">Abstract thinking</a> <a href="#">Creativity</a> <a href="#">Influencing</a> <a href="#">Negotiation</a>



# APPENDIX B: EXAMPLE INNOVATION SKILL TEMPLATES

Building innovation into curricula and training programmes

Innovation Curriculum Builder / Mapper			Click the + on the above to see details for each year																
SKILLS GROUP	COMPONENT SKILLS	INTENDED LEARNING OUTCOMES	Year ONE				Year TWO				Year THREE				Year FOUR				
			LEARNING UNIT 1.1	LEARNING UNIT 1.2	LEARNING UNIT 1.3	LEARNING UNIT 1.4	LEARNING UNIT 1.1	LEARNING UNIT 1.2	LEARNING UNIT 1.3	LEARNING UNIT 1.4	LEARNING UNIT 1.1	LEARNING UNIT 1.2	LEARNING UNIT 1.3	LEARNING UNIT 1.4	LEARNING UNIT 1.1	LEARNING UNIT 1.2	LEARNING UNIT 1.3	LEARNING UNIT 1.4	
CONCEPTUAL SKILLS	Includes: Creativity, Synthesis, Systems thinking, Mental agility, Abstract thinking	Cognitive skills concerned with the relationship between the abstract and the concrete and that act as the basis for evaluation.																	
	Creativity	Develop a viable, successful solution to a practical problem or challenge.								X			X				X		
	Synthesis	Manipulate information to formulate a solution to a problem or challenge.	X		X	X			X	X		X					X		X
	Systems thinking	Make evidence-based connections between multiple problem scenarios and the characteristics of identified outputs.	X		X	X						X					X		X
	Mental agility	Flexibly responds to changing circumstances by moving quickly between different ideas and facts.								X								X	
	Abstract thinking	Understands abstract (non-physical) concepts and can apply them productively.	X		X												X		X
EVALUATING SKILLS	Includes: Environment scanning, Evidence gathering, Interpretation, Pattern recognition, Critical analysis, Problem-solving, Comparative reasoning, Strategic thinking, Decision making	Cognitive skills concerned with the ongoing processing of information as the basis for action.																	
	Environment scanning	Continuously monitors and evaluates activity in the internal and external environment that bears on the current and future success of an organisation or initiative.	X			X			X			X							X
	Evidence gathering	Searches, locates, generates, collects, extracts and organises information that is relevant to a particular concern.	X			X			X		X	X				X			X
	Interpretation	Assesses and distils the relative significance of information, data, or situations.		X		X				X	X	X				X			X
	Pattern recognition	Recognises patterns, intellectual and physical patterns to identify and anticipate how they logically connect and to predict future connections.	X							X						X			
	Critical analysis	Draws on available evidence to challenge assumptions and produce well-reasoned analysis and understanding that lead to new ideas, decisions, and questions.	X							X		X							
	Problem-solving	Applies a range of cognitive approaches to define and diagnose the cause of difficult and complex problems, and identifies, prioritises, and selects practical solutions.	X	X						X							X		
	Comparative reasoning	Draws on evidence and prior experience to compare two or more options on the basis of a clear criterion and justification.	X							X	X						X		
	Strategic thinking	Evaluates and anticipates the risks and vulnerabilities to protect advantage and pursue value-adding opportunities.	X									X					X		
	Decision making	Draws on available evidence to determine an appropriate course of action in pursuit of a defined objective or goal.									X						X		
MANAGING SKILLS	Includes: Knowledge brokering, Organisation, Resource evaluation, Prioritisation, Modelling, Forecasting	Technical skills associated with the active planning and undertaking of innovation execution and management.																	
	Knowledge brokering	Regularly and judiciously collects, assesses, organises, acts on, and shares information to maximise their productive value.																	
	Organisation	Regularly makes plans of action to achieve desired outcomes.			X														
	Resource evaluation	Systematically assess the value of resources (financial, human, capital, time) in relation to the productive utility.																	
	Prioritisation	Assesses the relative importance of tasks and actions to ensure a timely completion.															X		
	Modelling	Discovers the relationship between relevant variables to understand, define, quantify, visualise or simulate these relationships for implementation or forecasting.									X								
	Forecasting	Draws upon past and current data to predict the likelihood of a future scenario.																	
RELATIONAL SKILLS	Includes: Communication, Active listening, Negotiation, Influencing, Feedback, Delegation	Interpersonal and social skills associated with the effective interaction and management of human resources in innovation execution and management.																	
	Communication	Effectively conveys messages and their meaning employing a variety of media and media appropriate to the intended audience.																	
	Active listening	Attentively listens and responds to others in a manner that engenders mutual understanding.	X																
	Negotiation	Engages in dialogue with others that enables the positive resolution of differences or conflict.		X															
	Influencing	Positively transforms the behaviour and attitudes of others through persuasion and conviction.																	
	Feedback	Provides timely, unambiguous, and constructive guidance to others in a way that leads to enhanced performance or added value.																X	
	Delegation	Equitably formulates and distributes tasks and responsibilities to appropriate others to better achieve desired results.																	
CRITICAL SELF-REFLECTIVE SKILLS	Includes: Internal self-awareness, External self-awareness, Self-regulation	Interpersonal skills that underpin the development of positive self-concept as the basis for effective relationships.																	
	Internal self-awareness	Understands one's own values, strengths, thoughts, feelings, behaviours, attitudes, and weaknesses and their impact on others.																X	
	External self-awareness	Understands how others view one's values, strengths, thoughts, feelings, behaviours, attitudes, and weaknesses.		X															
	Self-regulation	Understands and manages one's emotions and behavioural responses to external stimuli.								X									



Organisational innovation building

<b>Organisational Innovation Builder</b>			<small>Click on a cell to see details for each Experiment</small>															
SKILLS GROUP	COMPONENT SKILLS	DESCRIPTION	Dept 1 (e.g. Finance)	Role 1	Role 2	Role 3	Role 4	Dept 2 (e.g. Sales)	Role 1	Role 2	Role 3	Role 4	Dept 3 (e.g. Ops)	Role 1	Role 2	Role 3	Role 4	
COGNITIVE SKILLS	Includes: Creativity, Synthesis, Systems thinking, Mental agility, Abstract thinking	Cognitive skills concerned with the relationship between the abstract and the concrete and that act as the basis for evaluation																
	Creativity	Brainstorm solutions to a problem and develop a solution to a problem or challenge.							X			X		X				
	Synthesis	Bring together information from multiple sources to form a new whole or a new solution.		X		X	X		X	X		X			X			
	Systems thinking	Identify and describe the connections between multiple parts of a system or a broader system or the entire system.		X		X	X					X			X		X	X
	Mental agility	Flexibly respond to changing circumstances by moving quickly between different ideas and facts.							X								X	
Abstract thinking	Understands abstract (non-physical) concepts and can apply them creatively.		X		X									X		X		
EVALUATIVE SKILLS	Includes: Environment scanning, Evidence gathering, Interpretation, Pattern recognition, Critical analysis, Problem-solving, Comparative reasoning, Strategic thinking, Decision making	Cognitive skills concerned with the ongoing processing of information as the basis for action																
	Environment scanning	Continually monitor and evaluate activity in the internal and external environment that has an impact on the current and future success of an organisation or initiative.		X			X		X			X						X
	Evidence gathering	Searches, locates, generates, collects, extracts, and organises information that is relevant to a particular concern.		X			X		X		X	X			X			X
	Interpretation	Assesses and identifies the relative significance of information, data, or an operation.			X		X			X	X	X			X			X
	Pattern recognition	Recognises patterns, sequences, and physical patterns to identify and establish how they logically connect and to predict future outcomes.		X					X						X			
	Critical analysis	Uses an objective evidence to challenge assumptions and produce well-reasoned analysis and understanding that lead to new ideas, breakthroughs, and solutions.		X					X		X							
	Problem-solving	Identifies the cause of difficult and complex problems, and analyses, prioritises, and seeks practical solutions.		X	X				X						X			
	Comparative reasoning	Draws on evidence and gives an opinion to compare or analyse or address the basis for interpretation and explanation.		X					X	X					X			
	Strategic thinking	Evaluates and anticipates the impact and vulnerability to protect advantage and pursue value-realising opportunities.		X							X				X			
Decision making	Draws on available evidence to determine the appropriate course of action in the face of a defined objective or goal.							X						X				
MANIPULATIVE SKILLS	Includes: Knowledge brokering, Organization, Resource allocation, Prioritization, Modelling, Forecasting	Technical skills associated with the active planning and undertaking of innovation execution and management																
	Knowledge brokering	Purposefully and judiciously collect, organise, organise, update, and share information assets to maximise their productive value.																
	Organization	Purposefully initiate plans or actions to achieve desired outcomes.				X												
	Resource allocation	Systematically assess the value of resources (financial, human, capital, time) in relation to their productive utility.																
	Provisioning	Assesses the relative importance of tasks and actions to ensure their timely completion.														X		
	Modelling	Understands the relationship between relevant variables to understand, define, quantify, visualize or simulate these relationships (for experimentation or forecasting).								X								
	Forecasting	Draws upon past and current data to predict the likelihood of a future scenario.																
RELATIONAL SKILLS	Includes: Communication, Active listening, Negotiation, Influencing, Feedback, Delegation	Interpersonal and social skills associated with the effective interaction and management of human resources in innovation execution and management																
	Communication	Effectively conveys messages and the meaning employing a variety of media and modes appropriate to the intended audience.																
	Active listening	Actively listens and responds to others in a manner that improves mutual understanding.		X														
	Negotiation	Engage in dialogue with others that enables the positive resolution of differences or conflict.			X													
	Influencing	Positively influence the behaviour and attitudes of others through persuasion and conviction.																
	Feedback	Provides timely, unambiguous, and constructive guidance to others in a way that leads to enhanced performance and added value.														X		
Delegation	Equitably formulates and distributes tasks and responsibilities to engage others who better achieve desired results.																	
OTHER SELF-REGULATORY SKILLS	Includes: Internal self-awareness, External self-awareness, Self-regulation	Intrapersonal skills that underpin the development of positive self-concept as the basis for effective relationships																
	Internal self-awareness	Understands one's own values, capabilities, thoughts, feelings, behaviours, strengths, and weaknesses, and their impact on others.															X	
	External self-awareness	Understands how one's own values, capabilities, thoughts, feelings, behaviours, strengths, and weaknesses.			X													
	Self-regulation	Understands and manages one's own internal behavioural responses to external stimuli.							X									



Personnel innovation skills management

Innovation Caucus Personnel Innovation Builder			Click the + on the table to see details for each role															
SKILLS GROUP	COMPONENT SKILLS	DESCRIPTION	Dept 1 (e.g. Finance)	Employee 1	Employee 2	Employee 3	Employee 4	Dept 2 (e.g. Sales)	Employee 1	Employee 2	Employee 3	Employee 4	Dept 3 (e.g. Ops)	Employee 1	Employee 2	Employee 3	Employee 4	
COGNITIVE SKILLS	Includes: Creativity, Synthesis, Systems Thinking, Mental agility, Abstract thinking	Cognitive skills concerned with the relationship between the abstract and the concrete and that act as the basis for evaluation																
	Creativity	Develop available resources to create practical solutions to problems or challenges.							X			X		X				X
	Synthesis	Integrate information from multiple sources to formulate conclusions or theories for action.		X		X	X		X	X		X		X				X
	Systems thinking	Make evidence-based connections between the multiple inter-connected parts of a complex system to predict the outputs.		X		X	X					X		X			X	X
	Mental agility	Flexibly responds to changing circumstances by moving quickly between different ideas and facts.							X								X	
	Abstract thinking	Understands abstract (non-physical) concepts and can apply them productively.		X		X									X		X	
EVALUATIVE SKILLS	Includes: Environment scanning, Evidence gathering, Interpretation, Pattern recognition, Critical analysis, Problem-solving, Comparative reasoning, Strategic thinking, Decision making	Cognitive skills concerned with the ongoing processing of information as the basis for action																
	Environment scanning	Continually monitors and evaluates activity in the internal and external environment that bears on the success and future success of an organisation or initiative.		X			X		X			X						X
	Evidence gathering	Searches, locates, generates, collects, selects, and/or generates information that is relevant to a particular concern.		X			X		X		X	X		X				X
	Interpretation	Analyze and identify the relative significance of information, data, or information.			X		X			X	X	X			X			X
	Pattern recognition	Recognize patterns, sequences, and physical patterns to identify and describe how they regularly connect and to predict future connections.		X					X						X			
	Critical analysis	Use a critical lens to assess evidence to challenge assumptions and produce value-added analysis and understanding that lead to new ideas, innovations, and solutions.		X					X		X							
	Problem-solving	Identify a problem, diagnose the cause of difficult and complex problems, and identify, prioritize, and select practical solutions.		X	X				X						X			
	Comparative reasoning	Draw conclusions and give evidence to compare two or more ideas on the basis of interpretation and explanation.		X					X	X					X			
	Strategic thinking	Diagnose and anticipate threats and vulnerabilities to protect advantage and pursue value-creating opportunities.		X								X			X			
	Decision making	Draw on a variety of evidence to determine an appropriate course of action in pursuit of a defined objective or goal.							X						X			
MANAGEMENT SKILLS	Includes: Knowledge brokering, Organisation, Resource allocation, Prioritisation, Modelling, Forecasting	Technical skills associated with the active planning and undertaking of innovation execution and management																
	Knowledge brokering	Responsibly and judiciously collect, organise, aggregate, select, and share information so as to maximise their productive value.																
	Organisation	Responsibly and ethically plan of action to achieve desired outcomes.				X												
	Resource allocation	Systematically assess the value of resources (financial, human, capital, time) in relation to their productive utility.																
	Prioritisation	Analyze the relative importance of tasks and actions to ensure their timely completion.														X		
	Modelling	Construct and communicate power and leverage models to understand, define, quantify, visualize, and simulate the relationships (to elements) in a system.								X								
Forecasting	Draw upon past and current data to predict the likelihood of a future scenario.																	
RELATIONAL SKILLS	Includes: Communication, Active listening, Negotiation, Influencing, Feedback, Delegation	Intrapersonal and social skills associated with the effective interaction and management of human resources in innovation execution and management																
	Communication	Effectively convey messages and their meaning employing a variety of media and modes appropriate to the intended audience.																
	Active listening	Attentively listens and responds to others in a manner that improves mutual understanding.		X														
	Negotiation	Engages in dialogue with others that enables the peaceful resolution of differences or conflict.			X													
	Influencing	Effectively influences the behaviour and attitudes of others through persuasion and conviction.																
	Feedback	Provides timely, unambiguous, and constructive guidance to others in a way that leads to enhanced performance or added value.														X		
Delegation	Equitably transfer and distribute tasks and responsibilities to appropriate others who better achieve desired results.																	
INTERNAL SELF-REGULATION SKILLS	Includes: Internal self-awareness, External self-awareness, Self-regulation	Intrapersonal skills that underpin the development of positive self-concept as the basis for effective relationships																
	Internal self-awareness	Understands one's own values, preferences, thoughts, feelings, behaviour, strengths, and weaknesses, and their impact on others.																
	External self-awareness	Understands how others view one's values, preferences, thoughts, feelings, behaviour, strengths, and weaknesses.			X													X
	Self-regulation	Understands and manages one's emotions and behaviour responses to external stimuli.							X									

# INNOVATION SKILLS FRAMEWORK SUMMARY