Tools4LEAs

A project of the European Anti-Cybercrime Technology Development Association (EACTDA)

EACTDA

D5.1 Design of the NNs overall solution

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TABLE OF CONTENTS

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1. Introduction

1.1. Overview of the Tools4LEAs project

EACTDA is the acronym of the European Anti-Cybercrime Technology Development Association, which is a private non-profit association, established in San Sebastian, Spain. The members of the Association include European Union (EU) public entities fighting cybercrime, universities and research technology organisations, for-profit private companies, and other relevant actors in the field of the EU security research and innovation.

The Tools4LEAs projects are a series of projects that receive a Direct Award under the ISFP programme, and which main goal is to facilitate and promote the uptake of innovative technologies by EU public entities fighting cybercrime. EACTDA, via the Tools4LEAs projects, aims at further developing pre-existing assets, mainly from EU-funded security research and development projects, so that they are offered with no license cost and with access to the source code to EU public entities fighting cybercrime.

In the first Tools4LEAs project (v1; Jul'21 to Jun'23), the focus was on designing and setting up the infrastructures, processes, and governance / decision-making mechanisms, whilst delivering the first set of "fully-tested and operational-ready" tools via Europol's Tool Repository. Though 11 tools were further developed in the v1 project, it is expected that 3 of them will not be released to their targeted audience as they do not pass the pre-established quality threshold of "operational-ready". Also, an End-User Advisory Board (EUAB) composed as of Jul'23 by 23 members from 14 EU member states and co-chaired by two Europol units (EC3 and Innovation Lab) was established and it is the body responsible for identifying and prioritising end-user needs and which has veto right over the decisions done by EACTDA/Tools4LEAs with regard to the tool development roadmap.

In the second Tools4LEAs project (v2; Jul'23 to Jun'25), it is proposed to double the number of tools delivered. Also, the repository of tools implemented in v1, and currently used to host the results of the Tools4LEAs projects, will be enhanced and reused to host the results of EU-funded security research projects (when relevant in the field of cybercrime). EACTDA will play the role of custodian of these results, and the technical, IPR, and administrative aspects needed to create this new repository of security research results will be put in place. In addition, the v2 project will include a pilot to proof the concept of initial and limited support&maintenance periods for a selection of tools. Besides, a pilot of the concept of EACTDA National Nodes (NN) will be included, with nodes planned in Lithuania, France, Spain, and maybe one or two additional ones. Also, a platform for end-users to evaluate online tools will be implemented. Finally, the v2 project will include activities to further build the community of Tools4LEAs stakeholders and to promote the creation and/or adoption of technical blueprints, and in general, of commonly accepted best practices.

1.2. Main objective of this document

The Tools4LEAs-v2 project describes this deliverable as:

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"*A PDF document in English describing the design of a prototypical NN and of the inter-NNs governance and coordination structure and mechanisms, as well as the legal, financial, and administrative aspects.*".

This deliverable is part of task 5.1, which is described as:

"*This task includes all the activities related to the definition of the characteristics of a "prototypical" national node (NN) as well as of the design of the coordination and governance mechanisms for the inter-NNs. This task also includes all the activities related to the specific designs of the NNs included in the pilot, including for each NN: the specific objectives and scope, the composition/members, and a detailed work-plan for the preparation and implementation of the pilot."*

This deliverable focuses on the first part of the task described above.

1.3. Relation to other deliverables

This deliverable is closely related to the following deliverables:

- **D5.2 Report on the MVP PoC and on the validation in non-operational environments of the NNs**: Deliverable D5.2 will report on the validation of the minimum viable product proof-of-concept of the NNs and the network of NNs in non-operational environments, which will follow the design presented in this deliverable D5.1. The conclusions and lessons learned reported in D5.2 will serve to fine-tune and/or improve the design of the NNs and of the network of NNs presented in D5.1 so that their implementation in operational environments considers those improvements.
- **D5.3 Report on the validation in operational environments and on the adoption, roll-out, and use of the NNs**: Deliverable D5.3 will report on the validation of the NNs and the network of NNs in operational environments, which will follow the design presented in this deliverable D5.1. The conclusions and lessons learned reported in D5.2 will serve to fine-tune and/or improve the design of the NNs and of the network of NNs presented in D5.1 so that their implementation in future additional NNs (beyond those included in the pilot of Tools4LEAs-v2) considers those improvements.

1.4. Structure of the deliverable

Section 2 of this document introduces the concept of a National Node as well as it is considered a very important instrument to support the implementation of the Tools4LEAs series of projects goals and objectives.

Section 3 presents the proposed design of the EACTDA network of national nodes, including the following topics: membership, governance and coordination, legal aspects, financial and administrative aspects, and non-human resources.

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Section 4 the proposed design of a prototypical EACTDA national node, including the following topics: membership, governance and coordination, legal aspects, financial and administrative aspects, and non-human resources.

Section 5 presents a high-level work plan for the national nodes pilot.

Finally, section 6 summarises which is the goal and key aspects of this document, it acknowledges that there is still work to be done to improve the document, and it presents some of the areas of future work that have already been identified.

ANNEX I presents a set of innovation management related resources (models, frameworks, taxonomies, etc.) which might be useful when designing an EACTDA NN.

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2. What is a National Node and why is it included as a pilot in the Tools4LEAs project

2.1. Which need or problem NNs are trying to tackle

2.1.1. The goal

EACTDA National Nodes initiative's main goal is to facilitate, promote, and contribute at national (or regional) level to the successful adoption in a sustainable manner of innovative solutions by public entities fighting cybercrime by creating local ecosystems at each of the nodes that work in a coordinated way.

By innovation we refer to the process by which a product, a service, and/or a domain is renewed and/or brought up to date by introducing new tools or techniques, applying new processes, or establishing successful ideas to create new value. Hence, the creation of value is a defining characteristic of innovation.

2.1.2. The problem

One of the main public mechanisms to facilitate, promote, and contribute at European level to the successful adoption of innovative solutions by public entities are the EU research and innovation programmes.

However, adoption of innovative security research results by EU public entities fighting cybercrime is not happening at the speed nor at the extent that would be desired by them or by the European Commission, that is spending large amounts of money with several funding mechanisms to promote and facilitate research on security (e.g., ISF Police, Horizon Europe).

2.1.3. The causes

The level of innovation maturity within a Law Enforcement Agency (LEA) is influence by a range of factors that reflect the agency's reediness and ability to effectively integrate innovative solutions. However, a significant number of LEAs face significant obstacles in the process of adopting innovations, primarily due to the unique organizational characteristics:

- *Completeness*: the solutions those are treated as high TRL solution are still far away from complete and packaged IT product or service, therefore there is natural gap followed by doubts from end-user representatives for solution adoption in the operational environment
- *Distance from daily operations*: most of the solutions are developed with generic perspective to the problems they are addressing. Definitely there are some of the situations where this fits for the end-users, however in most of the cases end-users lack of adoption to their specific operational context and it creates big barrier.
- *Confidentiality*: LEAs operate in an environment where discretion and confidentiality is paramount. This culture is integrated in their practices and coming from the need to protect sensitive information, investigations, tactics and methods. As a result, LEAs may be reserved

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to openly share their vulnerabilities, challenges, or needs with external stakeholders, including researchers and technology providers.

- *Partnerships*: Law enforcement agencies often have longstanding relationships with technology suppliers. These relationships can influence the adoption of new technologies, as agencies may be more inclined to stick with familiar suppliers. Lack of trust in unfamiliar suppliers prevents from exploring a wider spectrum of innovative technologies.
- *Resistance to Change*: Law enforcement agencies often rely on established protocols, procedures, and methodologies that have evolved over time. These traditions can make them resistant to change and slow to adopt new technologies or new practices. Fear of changing the way LEA usually work can stop from being innovative.
- *Skill and knowledge*: Integration of innovative technologies impose a shift in the skills required by law enforcement personnel. Training and upskilling officers and staff to effectively use new tools can be resource-intensive and time-consuming.
- *Legal and Ethical Considerations*: Law enforcement agencies operate within a complex of legal and ethical constraints. Navigating these legal and ethical frameworks while adopting new innovations can be very challenging task for police officers.
- *Societal acceptance and Trust*: LEAs are acutely aware of public perception and the need to maintain trust with their communities. Adopting new technologies, particularly those that may be perceived controversial, can pose reputational risks. Agencies are cautious not to undermine public trust, which can result in a more conservative approach to innovation.
- *New risks*: Policing involves a high degree of risk, and LEA often prioritize safety and stability. They may be reluctant to adopt new technologies or practices that have not been thoroughly tested and proven to be safe and effective.
- *Lack of Awareness or Understanding*: In some cases, law enforcement agencies may simply be unaware of the potential benefits of innovation or may not fully understand how they can be integrated into their operations.
- *Resource Allocation*: Law enforcement agencies must prioritize their resources to address daily public safety concerns. This can sometimes lead to a focus on traditional methods and a delay in exploring and adopting new innovations.

In addition, the poor adoption of innovation project results can be attributed to a complex of various factors. These factors often revolve around the challenges related to the transition from research and development (R&D) phases, such as Technology Readiness Levels (TRLs) 6-7, to actual operational use of technology (TRL9) by law enforcement agencies. Here are some of the key reasons for this problem:

- *Lack of Clear Exploitation Pathways*: As mentioned, one of the primary issues is the absence of clear pathways for transitioning from the research phase to practical implementation. The gap between TRLs 6-7 and operational use means that many innovative solutions remain in a level of prototype, without a structured plan for integration into law enforcement operations.
- *Operational Viability*: Law enforcement agencies often require solutions that are not only innovative but also operationally viable. This means the technology or solution must be robust, reliable, and capable to function in the specific environments in which law enforcement operates.
- *Complex Procurement Processes*: Government agencies, including law enforcement, typically have complex and lengthy procurement processes. These processes can be a significant barrier to the rapid adoption of new technologies and innovations, particularly those developed through research projects.
- *Interoperability and Integration Challenges*: Many innovative solutions may not easily integrate with existing law enforcement systems and infrastructure. The effort required for integration and customization can be a significant deterrent.

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- *Evaluation and Validation*: Agencies may be reluctant to adopt unproven innovations, especially in mission-critical applications. The lack of robust validation and evaluation mechanisms can hinder adoption.
- *Maintenance and support*: despite the potential for unrestricted access to the outcomes of research projects, it is observed that the maintenance and support of the innovation is typically excluded from research endeavours. LEA often require customization of technology to meet their specific operational needs. Maintenance and support services are vital for making adjustments and adaptations to ensure the technology aligns with the agency's workflows and requirements.

As it has been presented, there are multiple factors that can be enablers that facilitate the adoption of innovative solutions resulted from security research programmes, or barriers that impede it, depending on whether they are present or absent. From a satellite point of view, these factors can be grouped in two categories:

- Factors related to the *innovation maturity level of the organisation adopting the innovative solutions*.
- Factors related to the *maturity level of the innovative solution*, including the maturity of the product(s) as well as of the service(s) that compose it.

The design of the EACTDA NNs and the design of a prototypical NN must consider the aforementioned two categories.

2.1.4. The way to tackle the problem

Being able to improve something, anything really, starts by being able to define it and to measure it. Assessing the maturity level of organisations managing the processes related to a specific domain or topic can be done using existing maturity model(s) for that topic. Most of the maturity models are based on or highly influenced by the Capability Maturity Model Integration[1] (CMMI) model, originally defined for software development projects. In short, the CMMI defines 5 different maturity levels:

- *Level 1 – Initial*: in this level, the processes are unpredictable, poorly controlled, and reactive.
- *Level 2 – Managed*: in this level, the processes are characterized for specific projects/actions and the organisation is reactive.
- *Level 3 – Defined*: in this level, the processes are characterized for the organisation and the organisation is proactive, this is, processes are tailored from the organisation's standards to the specific needs of each project/action.
- *Level 4 – Quantitatively Managed*: in this level, the processes are measured and controlled.
- *Level 5 – Optimizing*: in this level, the focus is on process improvement.

[1] https://en.wikipedia.org/wiki/Capability_Maturity_Model_Integration

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Though the CMMI model can and has been used as a reference to create new maturity models tailored to the specific characteristics of domains and topics different to software development, including innovation management[2].

2.1.4.1. Maturity level of the innovation management practices of the adopting organisations

Effectively and efficiently managing innovation in an organisation and being able to benefit from it requires that the organisation has reached a certain maturity level in its innovation management practices. Innovation management must be embedded as part of the core business, as part of the way the organisation works, because innovation activities that don't integrate with the core business do not produce substantial results.

No matter how good the innovative solutions are and how accessible they are to the organisation, if the organisation has a low innovation maturity level it will, in most if not all cases, fail to adopt those innovative solutions successfully and in a sustainable way. In other words, the chances of high-quality innovative solutions (products and services) being adopted by an organisation depends greatly on the innovation maturity level of the adopter organisation.

There are several innovation management maturity models[3] which could be used to assess the maturity of adopter organisations.

	Beginner	Traditional	Scaling	Advanced
DESCRIPTION	Innovation relies primarily on heroic individuals, little formal processes	Centralized R&D/innovation unit responsible for all innovation and development	Focused on building innovation capabilities of business units	Coordinated innovation across entire organization, separate unit for disruptive initiatives
KEY CHALLENGES	Vision, strategy, leadership	Lack of scale, speed and strategic alignment	Lack of capabilities & alignment, process immaturity	Continuous improvement, new business innovations
LEVEL OF CENTRALIZATION	Low	High	Medium	Low
NEXT STEPS	Management buy-in, leadership capabilities, innovation strategy	Incremental innovation in business units, new unit for disruptive innovation	Align actions w/ strategy, ensure implementation success	Continuous improvement, new breakthrough innovation

Figure 1 - Example of 4 innovation maturity level definitions (source: viima.com)

2 A couple of examples being: [1] Innovation Maturity Levels/Matrix - https://www.viima.com/blog/innovation-maturity-matrix; and [2] Corporate Innovation Maturity Model - https://www.riseaccel.com/cimm

[3] such as https://publicadministration.un.org/unpsa/Portals/0/UNPSA_Submitted_Docs/2019/58A33C26-C4B6-42F5-9AD4-9DD555899F32/INCM%20-%20Innovation%20Management%20Maturity%20Assessment.pdf?ver=2018-11-30-141700-467, https://www.riseaccel.com/cimm or https://www.viima.com/blog/innovation-maturity-matrix

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Some of the key success factors in innovation management are:

- *Innovation culture:* promote and facilitate the establishment of the innovation culture in all levels of the organisation, starting from the management, which must define an innovation management strategy.
- *Continuous improvement:* cultivate a continuous improvement culture and mindset in the organisation.
- *Value creation:* do not lose sight of the end-goal, which is to create value for the organisation's customers. It is important to remember that the needs of the customers evolve, and therefore the value perceived by them of the value proposition you offer to them can vary significantly. Therefore, it is critical to continuously monitor the current needs of the customers, as well as conducting foresight activities to predict how those needs might change in the future, so that you can prepare with sufficient time the changes needed in your value proposition.
- *Pace of innovation:* velocity is a critical factor, so conceive, design, build, test/deploy, measure, learn, and complete the feedback loop as fast as possible.
- *Allocation of resources:* make sure the organisation allocates the necessary resources, human and non-human, to implement and continuously improve its innovation management processes.
- *Focus and Perseverance:* maintain focus and persist despite difficulties, barriers, and opposition.

The design of the NNs must acknowledge the importance and impact of the innovation maturity level of the end-user organisations and therefore include as part of it the capabilities needed to appropriately adapt what it offers as well as what it can expect from the end-user adopting organisations depending on their innovation maturity level. Hence, one essential capability that NNs must have is to allow them to appropriately assess the innovation maturity level of its targeted end-user organisations.

2.1.4.2. Maturity level of the innovative solutions

Regardless of it being innovative or not, there are a few characteristics thing that all organisations would like to find in any solution before they consider using/adopting it[4], including:

- *Completeness:* A complete solution provides a great experience that includes service, support, and a string of enhancements.
- *Depth:* A comprehensive set of features that in addition to satisfy all current needs of the users, it also anticipates what they will need.
- *Intelligence:* A solution that solves people's problems in smart ways, in ways that look simple in retrospect, are user friendly, and which benefits can easily be quantified.

4 https://www.forbes.com/sites/martinzwilling/2011/04/17/look-for-these-five-qualities-of-a-great-solution/

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- *Empowering ability:* A solution that allows you to do "old" things better as well as to do "new" things you could not do before.
- *Elegance:* In addition to all the above, a perfect solution is also graceful and stylish in appearance or manner.

The higher the solution scores in the abovementioned characteristics, the higher chances it will have to be successfully adopted. Innovative solutions are not an exception.

2.2. Definition of the concept of EACTDA NNs

An EACTDA National Node (NN) is composed of all the key stakeholders in the security research and innovation value chain at national (or regional) level. Its goal is to facilitate and boost the successful operational adoption in a sustainable way of innovative solutions by the targeted end users, by whom we refer to EU public entities fighting cybercrime.

The node has to ensure that all the necessary elements are available and working efficiently to allow building the capacities and capabilities needed by the targeted end-users.

By the necessary elements we refer to, for example, whatever is needed to supply on a timely manner high-quality innovative products and services that respond to the needs and priorities of the targeted end-users. This includes, for example, to build the capabilities and capacities needed to produce and/or to get access to high-quality innovative solutions, the capabilities and capacities at the NN level to allow testing, validating, piloting and executing in controlled environment(s) the innovative solutions in order to ensure that they add value by appropriately solving the needs of the end-users' defined use cases and scenarios. Also, another necessary element is to have complementary educational and training materials and programmes. And another example of necessary element is to have high-quality services (e.g., value added services on top of the products, support and maintenance) that complement the products.

In addition, the EACTDA NNs are part of a larger network at EU level. Within this network, all EACTDA NNs have been designed and have all agreed to establish and implement collaboration and coordination mechanisms, with the support and participation of EACTDA. Participation in this network must ensure maximising synergies and exchange of information and resources.

It is worth and important noting that the design of the NNs network as well as of the prototypical node should find the right balance between establishing effective and efficient, clear, and straightforward coordination, governance, decision making, and collaboration mechanisms, whilst at the same time allowing the NNs to have the sufficient level of flexibility to adjust and tailor the implementation and operational mechanisms of the node to the interests, goals, and resources available to its members.

2.3. Why is it expected that EACTDA NNs can contribute to the Tools4LEAs series of projects objectives

The goal of the Tools4LEAs series of projects is not to deliver high-quality innovative solutions that meet end-user needs and demands. The goal of the Tools4LEAs series of projects is to deliver high-

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quality innovative solutions that meet end-user needs and demands AND that are widely and successfully adopted by its targeted end-users in a continuous and sustainable way.

EACTDA NNs are an essential part of EACTDA's strategy, as, if successfully implemented, they can go beyond what EACTDA can achieve when working at EU-level. EACTDA NNs and the network of nodes can bring critical success factors such as:

- *Capillarity*, allowing reaching not only national/central units and organisations, but also regional and even local ones.
- *Local Stakeholder Engagement*: engaging relevant national stakeholders, including employees, customers, partners, and regulators, throughout the innovation uptake process. This ensures national perspectives and aids in buy-in and adoption.
- *Localisation of the solutions*, not only to the language, but also to the national regulations, policies, etc.
- *Integration and Scaling*: national guidelines and processes for integrating innovations into existing systems, workflows, or products and scaling them across the national ecosystem.
- *Better time-to-market*, as it can speed-up the delivery and distribution of the solutions by the end-users.
- *Testing and Validation*: Implement testing and validation procedures to assess the technology's performance under real-world conditions. This can involve field trials, and simulations to ensure the technology meets the established standards.
- *Feedback Loops*: Establish feedback mechanisms to continually gather input from targeted end-users. This ongoing dialogue allows for adjustments and improvements to be made as technology is developed and refined.
- *Training and Support*: Provide training and ongoing support to the targeted end-users during the adoption phase to ensure that they can effectively integrate and utilize the technology.
- *Compliance with Regulations*: Ensure that the technology complies with national legal and regulatory requirements relevant to the end-users' operations, including privacy and data protection standards.
- *Critical capability development*: for each innovation to be effectively used/adopted there is some threshold of competent resources to be reached. In most of the cases it needs some centralized approach and guidance from national authorities. Therefore, it is critical component for successful innovation uptake on national level.

2.4. Implementation of an EACTDA NN

2.4.1. Tailoring the implementation plan of the NN to the maturity and specific characteristics of each node

Implementing an EACTDA NN cannot follow a "one solution fits all" approach, as it is will be greatly dependant on the maturity level of the node. Building an EACTDA NN requires meeting a set of key success factors, which can be grouped in the following categories:

- Vision, strategy, and governance
- Management and leadership
- Membership

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- Funding
- Legal and regulatory aspects
- Innovation uptake specific capabilities (e.g., Infrastructure, equipment, and other non-human resources such as: training materials, labs / testbeds, legal and technical sandboxes, data-spaces/lakes, access to innovative products and services, …)

Once the capabilities corresponding to each of the key success factors required to build a NN are defined, they have to be mapped to the different maturity level. The figure below illustrates the aforementioned approach, where the maturity of the EACTDA NN is determined on the confirmed presence (or not) of certain capabilities related to key success factors.

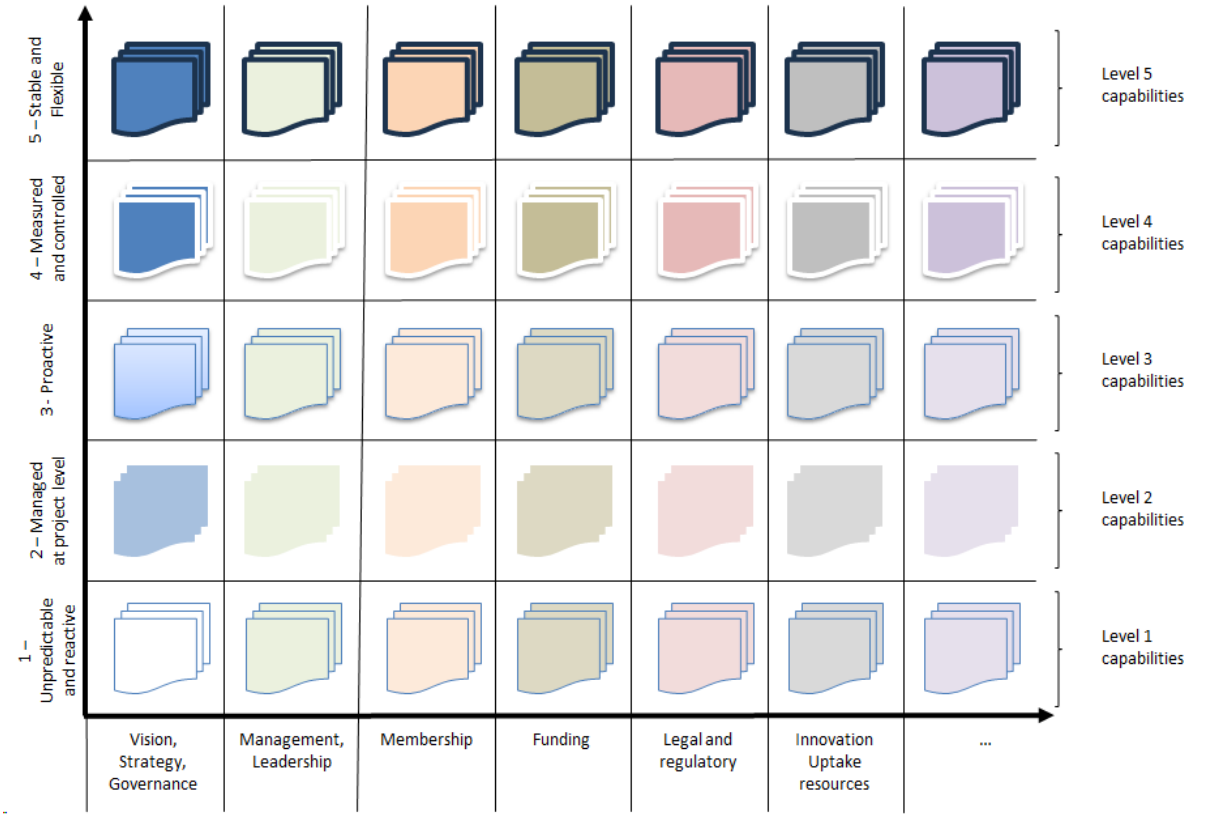

Figure 2 - Assessing the maturity level of EACTDA NNs

Next, we present the initial set of capabilities identified per each of the key success factor categories and maturity levels.

Vision, Strategy, and Governance related capabilities

Below we present a list of capabilities related to the Vision, Strategy, and Governance category mapped to the different maturity level definitions:

Level	Capabilities
1 – Unpredictable and reactive – processes undefined and/or unpredictable	• Only very high-level discussions and agreements have taken placed with regard to the Mission, Vision, Strategy and Objectives of the NN.

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	• The members of the NN are known, but no formal and agreed upon Governance rules and mechanisms are in place. • There is no legal entity representing the node.
2 – Managed – processes defined and controlled at project level	• The Mission, Vision, Strategy, and Objectives of the NN have been agreed by its members; including the alignment with as well as the specificities of the NN with regard to other NNs and the network of NNs. • Different projects and initiatives are identified and launched to try to meet the NN's Objectives. There is no structured common approach to the management of the different projects and initiatives. • The Governance rules and decision-making body(ies) and mechanisms of the NN are formally defined (e.g., Statutes, Internal Rules, Terms-of-Reference) and approved by all the members. • There is no legal entity representing the node, but there is some formal framework/artifact that establishes the rights and obligations of those that participate in it (e.g., a MoU).
3 – Proactive – processes standardised at NN level	• The Governance rules and decision-making body(ies) and mechanisms of the NN are applied and followed as agreed. • The Governance bodies follow the agreed rules and decision-making mechanisms. • There is a legal entity representing the node (e.g., a non-profit association/foundation).
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• Key Performance Indicators (KPI) associated to the objectives of the NN are defined. • The degree of completion / implementation of Objectives, Strategy, Vision, and Mission of the NN are monitored by the Management and reported to the Governance body(ies) on regular basis. Corrective actions are launched to ensure compliance with the defined processes when/as needed.
5 – Stable and Flexible - Focus on continuous improvement; Respond to opportunities and changes; Agile and Innovative	• The Governance bodies proactively review and update the Mission, Vision, Strategy, and Objectives of the NN not only based on information provided by the Management, but also based on: (i) the interests, priorities, and resources available at the NN, (ii) the coordination and inputs obtained from the network of EACTDA NNs, and (iii) proactive foresight, identification or future trends, agile reaction to unforeseen situations, and risk-based efficient innovation management.

Table 1 - Vision, Strategy, and Governance related capabilities

Management and Leadership related capabilities

Below we present a list of capabilities related to the Management and Leadership category mapped to the different maturity level definitions:

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Level	Capabilities
1 – Unpredictable and reactive – processes undefined and/or unpredictable	• Weak authority of the management and leadership roles. • Undocumented management processes. • There is no legal entity representing the node. • Organization relies on activities of individuals only.
2 – Managed – processes defined and controlled at project level	• Leadership and management authority based more on "Potestas" (formal power), with unclear or no real "Auctoritas" (authority tied to reputation, status, and recognition). • Some documented management processes. • There is no legal entity representing the node, but there is some legal framework/artifact that establishes the rights and obligations of those that participate in it (e.g., a MoU).
3 – Proactive – processes standardised at NN level	• Leadership and management roles based on "Potestas" and certain level of "Auctoritas". • Management processes documented and repeatable. • There is a legal entity representing the node (e.g., a non-profit association/foundation).
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• Leadership and management roles based on "Potestas" and high level of "Auctoritas". • Management processes are benchmarked and tracked through KPIs. Corrective actions are launched to ensure compliance with the defined processes when/as needed. • There is a legal entity representing the node (e.g., a non-profit association/foundation).
5 – Stable and Flexible - Focus on continuous improvement; Respond to opportunities and changes; Agile and Innovative	• Continuous improvement culture and activities are embedded in the management and leadership practices • Management processes are updated regularly based on improvements and adjustments • Legal entity representing the node is recognised and active in relevant decision making on national (or regional) level.

Table 2 - Management and Leadership related capabilities

Membership related capabilities

Below we present a list of capabilities related to the Membership category mapped to the different maturity level definitions:

Level	Capabilities
1 – Unpredictable and reactive – processes undefined and/or unpredictable	• There are no members in some of the categories of key stakeholders that should be part of the node (i.e., end-users, policy makers, research and academia, technology providers, service providers). • The membership application and/or termination rules and criteria are not clear nor formally defined.

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2 – Managed – processes defined and controlled at project level	• There is at least one member in all of the categories of key stakeholders that should be part of the node. • The rules and decision-making criteria used for membership application and/or termination, and the rights and obligations of the members, are formally defined and accepted by all the members of the node.
3 – Proactive – processes standardised at NN level	• In all the categories of members there are sufficient number of members (pro)actively and positively contributing to the node. • The membership application and/or termination processes and the rights and obligations of all members are followed as defined and agreed upon by the members of the node. • Functions and responsibilities are distributed among the members. • Members have at least one coordinated meeting a year.
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• The Management of the node monitors and controls that: (i) the membership rules and processes are followed as agreed, and (ii) the level of participation and contribution of all the members of the node is adequate to their resources, rights and obligations, and commitments. Corrective actions are launched to ensure compliance with the defined processes when/as needed. • In all the categories of members, the majority of the members contribute (pro)actively and positively, as expected, in compliance with their rights and obligations, and in compliance to their individual commitments. • The majority of the members of the node are satisfied and willing to continue being part of it and contributing to its activities.
5 – Stable and Flexible - Focus on continuous improvement; Respond to opportunities and changes; Agile and Innovative	• To ensure the best alignment possible with the Mission, Vision, Strategy and Objectives of the node, the Governance body(ies) conducts regular assessments and makes whatever necessary updates/adjustments to the membership rules and procedures, rights and obligations, and of the composition of the node's membership/community as a whole and in each of its key stakeholder categories. • Members have well-structured several common meetings. • Opportunities and challenges are identified and assessed at the early stage.

Table 3 – Membership related capabilities

Funding related capabilities

Below we present a list of capabilities related to the Funding category mapped to the different maturity level definitions:

Level	Capabilities

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1 – Unpredictable and reactive – processes undefined and/or unpredictable	• There is no "financial management" done at the node level. • Some funding instruments are known but there is no clear picture of which are all the possible funding instruments available. • The funds are obtained and used by individual members of the node, but there is no centralised/shared pool of funds. • The funds available are related to specific actions and activities of the node, therefore some actions and activities get sufficient funds whilst other actions and activities do not have sufficient funds.
2 – Managed – processes defined and controlled at project level	• "Financial management" processes are defined to: (i) create a financial plan for the node, identifying the financial needs associated to the actions and activities planned for the node, (ii) identify all the possible funding instruments available, both at national as well as at European/International level, (iii) monitor the funding instruments regularly to make sure that all funding opportunities are identified with sufficient time, and (iv) build and maintain capabilities within the node to access and benefit from the funding instruments that are chosen. • The Governance body(ies) and Management of the node make sure that there is sufficient level of financial management done at the node so that the most important actions and activities of the node receive/have sufficient level of funding. • NN is funded by short / mid-term projects. • Funding might have gaps as long-term funding is not ensured. • Members do not have any stable funding dedicated to NN.
3 – Proactive – processes standardised at NN level	• The "financial management" processes are implemented as defined at node level as well as within each of the individual actions and activities of the node. • A centralised/shared pool of funds is created which can obtain funds directly and/or receive funds from the members of the node. • The total funds of the node combine those obtained and used directly by the members with those in the centralised/shared pool of fund.
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• The Management of the node conducts regularly quality assurance and control activities on the financial management processes to: (i) ensure that the processes are followed, (ii) report to the Governance body(ies) the financial status of the node and of each of its actions and activities, and (iii) recommend financial management related actions to tackle risks and opportunities. Corrective actions are launched to ensure compliance with the defined processes when/as needed. • NN is capable to generate some income by own activities.

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5 – Stable and Flexible - Focus on continuous improvement; Respond to opportunities and changes; Agile and Innovative	• To ensure the best alignment possible with the Mission, Vision, Strategy and Objectives of the node, the Governance body(ies) conducts regular assessments and makes whatever necessary updates/adjustments to the financial management processes of the node. • Self-sufficient funding capabilities are developed.

Table 4 – Funding related capabilities

Legal and Regulatory aspects related capabilities

Below we present a list of capabilities related to the Legal and Regulatory aspects category mapped to the different maturity level definitions:

Level	Capabilities
1 – Unpredictable and reactive – processes undefined and/or unpredictable	• Hard-law obligations (e.g., regulation) related to the governance and operations of the node are not fully clear. Soft-law obligations (e.g., internal policies, procedures) are informal. • The node as such does not have legal services / capabilities, it has to rely on the capabilities of its members. • There are no formal processes defined to ensure an appropriate level of legal and regulatory management practices.
2 – Managed – processes defined and controlled at project level	• Hard-law obligations are known. Soft-law obligations are defined and accepted by the members of the node. • A minimum level of legal service capabilities are available and guaranteed for the node by one or more of its members, but on a voluntary basis. • Formal processes have been defined to ensure an appropriate level of legal and regulatory management practices, but this is not done in a holistic manner across all actions and activities of the node.
3 – Proactive – processes standardised at NN level	• The node has its own legal service capabilities and/or a formal agreement/contract with one or more of its members (or an external service). • Formal processes have been defined to ensure an appropriate level of legal and regulatory management practices across all actions and activities of the node.
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• The Management of the node monitors compliance of the legal and regulatory related aspects in the actions and activities of the node with the defined processes, and reports to the Governance body(ies) on a regular basis. Corrective actions are launched to ensure compliance with the defined processes when/as needed.
5 – Stable and Flexible - Focus on continuous improvement;	• To ensure the best alignment possible with the Mission, Vision, Strategy and Objectives of the node, the Governance body(ies)

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Respond to opportunities and changes; Agile and Innovative	conducts regular assessments and makes whatever necessary updates/adjustments to the legal and regulatory related processes of the node.

Table 5 – Legal and Regulatory aspects related capabilities

Innovation Uptake specific capabilities

By innovation uptake specific capabilities, we refer to things such as infrastructure, equipment, and other non-human resources (e.g., training materials, labs / testbeds, legal and technical sandboxes, data-spaces/lakes, access to innovative products and services, …).

Below we present a list of capabilities related to the Innovation Uptake resources category mapped to the different maturity level definitions:

Level	Capabilities
1 – Unpredictable and reactive – processes undefined and/or unpredictable	• There is no formal process established to identify which are the innovation uptake specific capabilities needed for the node. • There is not an inventory of which are the innovation uptake specific capabilities available for the node. • The innovation uptake specific capabilities available for the node are provided on a voluntary basis by its members, but there is no formal commitment to do so. • No support and maintenance services can be provided.
2 – Managed – processes defined and controlled at project level	• There is a formal process established to identify the innovation uptake specific capabilities needed for the node. Also, to prioritise those that are more important to meet the Objectives, Strategy, Vision, and Mission of the node, and to plan for their acquisition. • There is an inventory of which are the innovation uptake specific capabilities available for the node. • The innovation uptake specific capabilities available for the node are provided on a voluntary basis by its members but there is a formal commitment to provide/offer those capabilities for a period of time and under well-known conditions. • For each of the innovation uptake specific capabilities there is a process defined for its management, but there can be important differences from one to another. • The individual innovation uptake specific capabilities are managed and operated in all or most cases by individual members of the node. • NN has available infrastructure to carry out basic training and testing activities, workshops, and other relevant events.
3 – Proactive – processes standardised at NN level	• The processes related to the management of all the innovation uptake specific capabilities are harmonised and standardised so that for the same type of capability, if there are more than one asset, the management processes are the

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	same. Also, the management processes of different types of capabilities are as harmonised as possible. • The node proactively builds and/or acquire all the high-prioritised innovation uptake capabilities and as many of the not-prioritised ones. • The innovation uptake specific capabilities available for the node are provided directly by the node (if a legal entity has been established) or under a contract with one or more of the members of the node or by third parties. • NN has access to infrastructure to carry out hackathons, testing, validation activities. • Support activities can be coordinated.
4 – Measured and controlled – Data-driven with quantitative performance improvement objectives	• The Management of the node monitors compliance of the innovation uptake specific capabilities related aspects in the actions and activities of the node with the defined processes, and reports to the Governance body(ies) on a regular basis. Corrective actions are launched to ensure compliance with the defined processes when/as needed. • NN has a stable HR resource for administrative implementation of work. • NN has capabilities to organize and implement testing, validation and evaluation activities on own or easy to access infrastructure. • Support activities can be coordinated.
5 – Stable and Flexible - Focus on continuous improvement; Respond to opportunities and changes; Agile and Innovative	• To ensure the best alignment possible with the Mission, Vision, Strategy and Objectives of the node, the Governance body(ies) conducts regular assessments and makes whatever necessary updates/adjustments to the innovation uptake specific capability needs and priorities related processes of the node. • NN has access to required data storage facilities. • NN has capabilities to organize and implement testing, validation and evaluation activities meeting end-user requirements (e.g.: safety, use of actual data, etc.). • NN has capabilities to provide support activities for the innovative solutions deployed by end-users.

Table 6 – Innovation Uptake resources related capabilities

2.4.2. Phases of an EACTDA NN implementation plan

In order to define an implementation plan tailored to the circumstances and characteristics of each EACTDA NN, the following steps have to be followed:

1. Define and agree among the members of the node the Mission, the Vision, the Strategy, and the General Objectives for the EACTDA NN, which should be in alignment (and in agreement)

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with those of the network of EACTDA NNs, but which can also be tailored to the interests, characteristics, and capabilities of the node.
2. Assess the maturity level of the EACTDA NN as a whole (and of its members individually) to identify the capabilities available and the gaps that should be tackled.
3. Based on the available resources, define the implementation plan so that it builds the missing capabilities considering the priorities of the EACTDA NN as determined by its Governance bodies.
4. Track progress regularly and adjust the plan when/as necessary in order to make sure it meets the objectives, which will allow meeting the vision and the mission of the node.
5. Report progress and coordinate efforts with the other nodes within the network of EACTDA NNs.
6. Define milestones at which to review and update as/if necessary, the mission, the vision, and the objectives of the node (always in alignment with those of the network of EACTDA NNs).

2.5. Future scenarios once the pilot ends

At the end of the EACTDA NNs pilot that is part of the Tools4LEAs-v2 project, an evaluation of it will take place to assess how the pilot has gone in order to draw the proper conclusions, identify the things that have gone well, the things that ought to be improved, and the things that are to be avoided in future occasions. The evaluation will also include a set of recommendations and proposals for next steps. Also, one of the expected outcomes by the end of the pilot will be to identify the most appropriate key success factors and capabilities required for each of the different maturity levels.

Once the pilot ends in June 2025, there will be basically two scenarios. One scenario would be to decide to cancel the initiative and discard the idea of implementing EACTDA NNs and the corresponding network. And the other scenario would be to continue with the NNs already piloted and adding new NNs in other countries or regions.

On the latter scenario, an update of this document will have to be done in order to make sure it reflects the conclusions and recommendations of the evaluation that will take place at the end of the pilot. The updated version of this document will then serve as a starting point for those additional new NNs to be added to the network.

Also, should it be decided to continue with the implementation of the EACTDA NNs and its network, the goal would be to cover as many countries as well as to have as much geographical distribution across the EU as possible.

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3. Design of the network of EACTDA NNs

3.1. Membership

The network of EACTDA NNs will be composed of authorised representatives of:

- Each of the NNs
- EACTDA Secretariat
- EACTDA Board

3.2. Governance and coordination structure(s)

Good governance requires having a clear purpose and a system of rules, practices, and processes by which an entity is directed and controlled. Governance requires balancing the interests of all key stakeholders. Good governance defines the decision-making process so that it is clear and transparent, and that establishes roles and responsibilities.

During the EACTDA NNs pilot, part of the Tools4LEAs-v2 project, a kick-off meeting has been planned for the first quarter of 2024. At this meeting, authorised representatives of the pilot NNs, EACTDA Secretariat, and EACTDA Board will formally constitute and establish the network.

Besides, the founding members of the network will approve the Charter and the Terms of Reference (ToR) of the network, detailing the purpose, governance, and operational structures of the network. Below we present the governance and coordination structures that will be presented to the authorised representatives of the founding members for approval.

3.2.1. Governance bodies

A governing body is the group of people given the power and authority to form the policy and steer the overall direction of an organisation. All key stakeholders should be represented in the governance bodies so that their perspectives interests and perspectives are considered when forming the policy and steering the overall direction, and to win their commitment.

Issues and conflicts are a natural state. Unresolved issues and conflicts of interests can quickly toxic if they are not timely and appropriately addressed. Therefore, the governance bodies must try to think about potential issues and conflicts upfront and define and establish mechanisms to deal with those that are considered most likely so that, if the issue or conflict arises it can be managed promptly and efficiently.

In the case of EACTDA NNs network, the following governance bodies are envisioned:

- EACTDA NNs network General Assembly.
- EACTDA NNs network Board.

The EACTDA NNs network General Assembly is the highest decision-making body and is responsible for:

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- Determining the Mission, the Vision, and the core Principles of the network.
- Determining the overall policy and strategy of the network.
- Determining the Terms of Reference (ToR) of the network.
- Agreeing budgets.
- Dealing with membership issues.
- Appointing the members of the EACTDA NNs network Board.
- Endorsing external agreements.

The NNs GA members will be:

- One authorised representative from each EACTDA NN.
- One authorised representative from EACTDA Board.

All members of the NNs network GA will have equal voting rights.

Besides, other key stakeholders (including but not limited to representatives from the European Commission) may attend as counsellors to provide valuable advice. However, counsellors will have no right to vote.

The NNs GA members will decide who will play the role of President, Treasurer, and Secretary of the NNs network GA. These three roles will form the EACTDA NNs network Board that will represent the NNs network GA for the day-to-day high-level decision-making needs that the network might have. In addition, EACTDA NNs network GA may appoint among its members zero or up to 2 more members of the NNs network Board.

In addition, EACTDA Secretariat will be the Secretariat of EACTDA NNs network. Consequently, EACTDA Secretariat's Business Manager will support and participate in the meetings of the NNs network GA, though with no voting rights.

EACTDA is an association that is end-user driven "by-design". This is implemented by establishing in its Statutes, Internal Rules, and operational mechanisms elements that ensure that the major decisions as well as the direction towards which the Association has to work are decided, or at least validated, by its targeted end-users, this is, by EU public entities fighting cybercrime. This same approach is to be implemented both at the EACTDA NNs network level as well as at each of the EACTDA NNs. At least one member of the EACTDA NNs network GA, and at least one member of the EACTDA NNs network Board has to be an end-user. In addition, in for all decisions, the end-users of the GA and/or the Board will have veto right[5].

[5] The veto right will be exercise when there is a majority of the end-user members of the GA in favour of it (the same rule will apply to the Board).

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3.3. Legal aspects

Before starting any collaboration, it is essential to comprehend the legal requirements to mitigate potential legal issues. Starting a collaboration with a robust legal foundation, can save a significant amount of time time, alleviate stress, and prevent problems in the future.

It is important to note that legal aspects encompass both hard-law and soft-law considerations. Hard law pertains to legal obligations that are binding on the involved parties and can be legally enforced before a court. On the other hand, soft law refers to cooperation with other parties based on instruments that are not legally binding and or it may involve adherence to internal rules, policies, and procedures.

In terms of the legal structure of the network, there are basically two types: incorporated and unincorporated.

- *Incorporated entities* adhere toa legal structure determined by the local laws (e.g., EACTDA is a non-profit association under the Spanish law registered in the Basque Governments registry).
- *Unincorporated entities* are groups of individuals with no authority outside of the entity.

When assessing the legal aspects of the network, not only for the duration of the pilot but also for the longer-term, the following matters should be considered:

- It is necessary to determine the preferred and commonly agreed-upon legal form for the entity. This decision revolves around whether it should be an incorporated or an unincorporated entity. The choice significantly depends on the legal form of the different members of the network. To establish an incorporated entity for the network, the individual members of the network (the nodes) must previously have their own incorporated entity or, at the very least, an authorised representative of the node.
- If an incorporated entity is chosen:
    - It is to be decided whether to use EACTDA or something new/different.
    - If EACTDA is chosen:
        - The Governance body of the network decides the Terms of Reference (ToR) of the network.
        - Each and all of the EACTDA NN members must sign a document with EACTDA agreeing with the ToR of the network.
        - EACTDA assumes the role of “Custodian” and “Secretariat” of the network and of the compliance of the ToR approved by the governance body of the network.
    - The Bylaws or Statues of the incorporated entity must be created (or modified) to adjust to the needs of the network based on the agreement reached by its members.
    - The Bylaws (and possibly the accompanying Internal Rules) must clearly determine the governance, decision-making, and membership terms and conditions that will rule the network.
- If (or whilst) an unincorporated entity is chosen:
        - The decision-making framework, the governance rules, etc. have to be defined and agreed by all the members via a ToR or equivalent document that all members have to sign.

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    - The ToR must clearly determine the governance, decision-making, and membership terms and conditions that will rule the network.
- Regardless of the legal structure chosen, the governance body of the network must decide how to manage the agreements, contracts, and collaborations with third parties. This includes determining the rules to follow, and specifically who/how to handle this type of agreements with third parties, etc.

It is also important to distinguish between what can and will be done in the EACTDA national nodes pilot, which is part of the Tools4LEAs-v2 project and what can be envisioned and planned for the future of the network leading to the sustained existence network and the NNs beyond the pilot's duration.

The rrecommended legal structure for the Network of EACTDA NNs during the pilot that is part of the Tools4LEAs-v2 project is to be an unincorporated entity.

3.3.1. Hard Law

The hard law aspects impacting the network will be significantly influenced by the chosen legal structure. Opting for an incorporated entity legal structure is means that the legal rights and responsibilities will predominantly pertain the incorporated entity, its governance and management, and subsequently its members. Conversely, selecting an unincorporated legal entity implies that the legal rights and responsibilities will apply to each individual member.

Therefore, the determination of legal rights and responsibilities as well as the obligation to develop and provide the necessary capabilities for effectively managing the legal aspects of the network (including all applicable legal practice areas) will depend on the legal structure chosen for the network.

3.3.2. Soft law

In addition to the hard law aspects that impose obligations, the members of the network of EACTDA NNs should define and agree on a certain set of soft law artifacts that can make the operation of the network much more efficient. These soft law elements play a pivotal role in augmenting the efficiency and effectiveness of the network's operations by providing a flexible and cooperative framework. Some of these soft law artifacts to be considered are:

- Terms of Reference related to the operation and governance of the network.
- Procedures and guidelines to undertake the activities of the network at operational level.
- Code of conduct of the members of the network.

3.4. Financial and other business management aspects

Financial management is a critical aspect of business management areas of practice for which special attention and care must be paid. However, other business management areas of practice must not be neglected, as they are also very important. Some of these other business management areas of practice include:

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- Marketing, dissemination and communication.
- Human resources.
- Operations and/or project management.
- Ethical, legal, and social aspects.
- Information Technology(ies).

When designing the financial and other business management capabilities of the network of EACTDA NNs, it is important to consider the following aspects:

- Identification of short- and long-term financial and other business management resources needed to implement the Mission, Vision, Strategy, and General Objectives of the network.
- Acquisition of the financial and other business management resources previously identified.
- Identification and acquisition of the human and non-human resources needed to conduct the necessary financial and other business management activities of the network.
- Identification of all the possible / available funding instruments, private and public, national, European, and international.

Acquisition and management of the network's portfolio of financial resources in the most effective and efficient way.

3.5. Innovation uptake specific capabilities

Facilitating innovation uptake depends on the combined availability and effective and efficient use of various specific capabilities. Some of these specific capabilities which should be considered for acquisition and used by the network so that they can be shared with its members include:

- Information Technology infrastructure (i.e., hardware and software equipment).
- Knowledge building and Training and educational resources, including:
  - Training and educational curricula, materials, and services.
  - Methodologies, best practices.
- Community building and shared resources, such as:
  - Collaboration platforms and services.
  - Shared repositories.
  - Laboratories, testbeds.
  - Sandboxes (legal and technical).
  - Data-spaces/lakes.
- Innovation management capabilities.
  - Culture
  - Skills

The governance body of the network will have to decide upon which of the innovation uptake specific capabilities should be acquired and offered centrally by the network to all its nodes, which others will be offered by one of nodes to the other nodes of the network, and which ones will have to be acquired and offered locally at each of the nodes. Note that it might be decided to acquire and offered certain

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innovation uptake specific capabilities both at network level as well as by one or more of the network members.

4. Design of a prototypical EACTDA NN

As presented in section *2.4.2 Phases of an EACTDA NN implementation plan*, the first step when thinking and designing the implementation of an EACTDA NN is to define its Mission, Vision, Strategy and General Objectives (aligned with those of the network of NNs) and then to assess the maturity level of the node so that an implementation plan to establish the node and to build the minimum necessary capabilities can be defined.

Therefore, the capabilities associated to the different maturity levels per each of the categories presented in section *2.4.1 Tailoring the implementation plan of the NN to the maturity and specific characteristics of each node* must be considered.

Below a set of additional important considerations that should be taken into account when designing an EACTDA NN are presented. These considerations have been grouped around the topics of membership, governance, legal aspects, financial and other business management aspects, and other innovation uptake specific capabilities.

4.1. Membership

Though each national node has to assess and tailor to its specific context, circumstances, etc., a prototypical node would normally include the following types of stakeholders:

Stakeholder category	Key stakeholders	Main roles and responsibilities	Main interests
End-Users (Public entities at national and EU level fighting cybercrime and cyber enabled crimes)	National LEAs	• TRLs up to 7: end-user needs, priorities, evaluation and feedback during R&D, … • TRL 8: validation in operational environment • TRL 9: adoption, roll-out, use, and feedback	• TRLs up to 7: ensure R&D is aligned with their real needs • TRL 8: validate from all perspectives (i.e., technical, regulatory, sustainability) R&D results that can help them better fight crime • TRL 9: smooth, low-cost, trustworthy, innovative solutions being adopted and used
	Ministry of Interior	• TRLs up to 7: end-user needs, priorities, evaluation and feedback during R&D, … • TRL 8: validation in operational environment; central hub and repository • TRL 9: Delivery, distribution; support (TBC)? service (TBC)?	• Promotion of innovation uptake • Acquisition of innovative solutions for further distribution among the EU end-user community

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	National cybercrime / cyberdefence / infocrime competence centres	• TRLs up to 7: (TBC) • TRL 8: (TBC) • TRL 9: (TBC)	• TRLs up to 7: (TBC) • TRL 8: (TBC) • TRL 9: (TBC)
Training and educational providers	National end-users	• TRLs up to 8: Needs identification and prioritisation; evaluation and feedback during training and educational products design and creation phases • TRL 9: adoption of training products and services	• TRLs up to 8: ensure that the innovative solutions being design meet their needs • TRL 9: adopt the training and educational solutions
	National end-user academies (e.g., police academies)	• TRLs up to 8: Needs identification and prioritisation; Collaboration with CEPOL and ECTEG; Design and creation of training and educational products; Localisation of EU-level training and educational products and materials. • TRL 9: delivery of training and educational products	• TRLs up to 8: ensure that the innovative solutions being design meet their needs • TRL 9: adopt the training and educational solutions
	Universities National specialized competence centers	• TRLs up to 8: collaboration with end-user academies in the design and creation of training and educational products based on end-user needs priorities; train the trainers • TRL 9: delivery of training and educational products	• TRLs up to 8: design and create innovative solutions that meet end-user needs • TRL 9: provide training services
Technology product providers	Universities	• TRLs up to 7: basic and applied research in various fields (e.g.,	• TRLs up to 7: Basic and applied research; Scientific papers

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		technology, ethical / legal / social aspects, criminology) • TRLs 7 to 8: same as TRLs up to 7 • TRL 9: no direct players in this TRL	• TRL 8: not their main interest, though sometimes participate directly or via spin-offs • TRL 9: not their main interest, though sometimes participate via spin-offs
	RTOs	• TRLs up to 7: conduct applied research in various fields (e.g., technology, ethical / legal / social aspects, criminology) • TRLs 7 to 8: same as TRLs up to 7 • TRL 9: no direct players in this TRL	• TRLs up to 7: applied research; scientific papers • TRL 8: not their main interest, though sometimes participate directly or via spin-offs • TRL 9: income through licenses (normally they are non-profit that do not provide services); sometimes participate via spin-offs
	Industry	• TRLs up to 7: conduct applied research in various fields (e.g., technology, ethical / legal / social aspects, criminology) • TRLs 7 to 8: same as TRLs up to 7 with special focus on exploitation related tasks • TRL 9: Product and service providers	• TRLs up to 7: Though some consultancies make a business of participating in applied research projects, for the majority this TRLs are not their main interest, though sometimes they participate for (a) financial reasons, or for (b) co-funding of their new product development programmes • TRL 8: mainly new product development and reaching their markets/customers • TRL 9: profit
	EACTDA	• TRLs up to 7: advise • TRLs 7 to 8: active player; conducting "last mile development" projects to enhance pre-existing prototypes (TRLs 6-7) and make them fully-tested and operational ready software products (with no licence costs and with access to the source	• TRLs up to 7: No direct player in these TRLs; interested in increasing the efficiency of the work done and in the quality of the results produced in these TRLs; possibly "custodian" of security research results (hosting a repository). • TRLs 7 to 8: delivering via as many no-license costs, with access to the source code, fully-tested, and operational-ready software

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		code for EU public entities fighting cybercrime). • TRL 9: no direct player in this TRL	products as possible following the priorities set by its End-User Advisory Board. • TRL 9: Interested in facilitating the faster and wider possible adoption of the software products delivered via its "last mile" development projects within Tools4LEAs.
Technology service providers	Industry	• TRLs up to 8: normally they are no direct players in these TRLs unless they are also technology providers, in which case see "Technology product providers" above. • TRL 9: service provider (in all or part of the service levels, depending on the case)	• TRL 8: identification of business opportunities; design and preparation of the services to be provided • TRL 9: for-profit; commercial interests
	EACTDA	• TRLs up to 8: not a direct player in these TRLs • TRL 9: (Co)funding and/or service provider for a limited period of time right after a new Tools4LEAs product is released	• TRLs up to 8: facilitator of service layer creation; with special focus on those Tools4LEAs products that require having a complementary service to the product • TRL 9: as much adoption and use of Tools4LEAs products as possible
Policy makers	Government and Parliament	• Regulation, policies, and funding instruments across the whole research and innovation value chain.	• Alignment of national and EU regulations. • Alignment of regulation and policies with the priorities and interests of the country(ies).

4.2. Governance and coordination structure(s)

When defining the governance and decision-making rules and criteria, the following aspects should be considered:

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- The node must be end-user driven "by-design".
- The desired membership composition of the node should be decided upfront (e.g., x% of end-users, % of RTO, % of Industry, % of public governance institutions, % of central EACTDA).
- The rules should establish undoubtedly who decides what, when, and how.
- The governance rules and decision-making mechanisms have to be accepted by all key members of the node, avoiding "unbalanced" situations in which some of the key stakeholders disagree or do not feel comfortable enough with the rules.
- The governance structure and rules should have a sufficient level of mapping and alignment with EACTDA as well as with the network of EACTDA NNs.

Considering the difference between EU MS and EACTDA ecosystem on national level, we assume that there will be no single standard organisation structure of national nodes and we foresee the following variations for the NN implementation:

- Scenario 1: Dedicated organisation.
- Scenario 2: Association of individual entities representing different stakeholders (NGO, Cluster, Association, DIH).
- Scenario 3: Virtual organisation (various PPP models).

Also, there are three conceptual approaches how to address the governance and organisational structure of a national node:

- Synchronize with EACTDA central node (General management, ELSA board, Technical board, etc.).
- Define lean and specialized structure for national nodes uptake.
- Add-hoc organisation that is defined project by project basis.

In addition, it is worth considering which will be the key components of a national node. Therefore, when designing the node, a reflection and decision should be made in relation to aspects such as:

- Which services will the node offer or provide. Some of the services that could be considered include:
  - Tools' showcasing for national community: demonstration, presentation.
  - National priorities definition: workshops on priorities, needs, open questions and gaps.
  - Innovations' local uptake from central EACTDA.
  - Local innovations' uptake into central EACTDA repository.
  - Shared maintenance and support.
- Which should be the organisational structure of the node.
  - National board / Steering Committee / End-Users Board.
  - Innovation experts' board.
  - NN operational management and coordination team.
  - Who will do the work.
- From a technological point of view, which are the capabilities that the node would like to have. Some of the assets that could be considered include:
  - National repository.
  - Innovations' governance platform.
  - NN operational environment – Tools, Instruments, Licenses.

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4.3. Legal aspects

In addition to the considerations presented in section *3.3 Legal aspects*, when designing legal aspects that affect a node, it is important to consider the following aspects:

- Soft law
  - Internal Rules.
  - Internal policies, guidelines, and procedures.
  - Collaboration framework with the network of EACTDA national nodes.
- Hard law
  - National, European, and international regulation that applies to the different actions and activities of the node.
- There are multiple legal domains that affect the actions and activities of the node. It is important to assess which are the most important ones and to decide which internal VS external resources will have to be acquired to appropriately manage each of them. A non-comprehensive list of these domains include:
  - Intellectual Property Law.
  - Data Protection Law.
  - Human Rights Law.
  - Insurance Law.
  - Commercial law.
  - Civil litigation Law.
  - Corporate Law.
  - Criminal Law.
  - Employment Law.
  - Tax Law.

4.4. Financial and other business management aspects

Financial management is a critical aspect of business management areas of practice for which special attention and care must be paid. However, other business management areas of practice must not be neglected, as they are also very important. Some of these other business management areas of practice include:

- Marketing, dissemination and communication.
- Human resources.
- Operations and/or project management.
- Ethical, legal, and social aspects.
- Information Technology(ies).

When designing the financial and other business management capabilities of the node, it is important to consider the following aspects:

- Identification of short- and long-term financial and other business management resources needed to implement the Mission, Vision, Strategy, and General Objectives of the node.
- Acquisition of the financial and other business management resources previously identified.

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- Identification and acquisition of the human and non-human resources needed to conduct the necessary financial and other business management activities of the node.
- Identification of all the possible / available funding instruments, private and public, national, European, and international.
- Acquisition and management of the node's portfolio of financial resources in the most effective and efficient way.

4.5. Innovation uptake specific capabilities

Facilitating innovation uptake depends on the combined availability and effective and efficient use of various specific capabilities. Some of these specific capabilities which should be considered for acquisition and used by the node include:

- Information Technology infrastructure (i.e., hardware and software equipment).
- Knowledge building and Training and educational resources, including:
  - Training and educational curricula, materials, and services.
  - Methodologies, best practices.
- Community building and shared resources, such as:
  - Collaboration platforms and services.
  - Shared repositories.
  - Laboratories, testbeds.
  - Sandboxes (legal and technical).
  - Data-spaces/lakes.
- Innovation management capabilities.
  - Culture
  - Skills

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5. High level work plan for the pilot

The EACTDA National Nodes pilot has been planned as per the Gantt chart presented below:

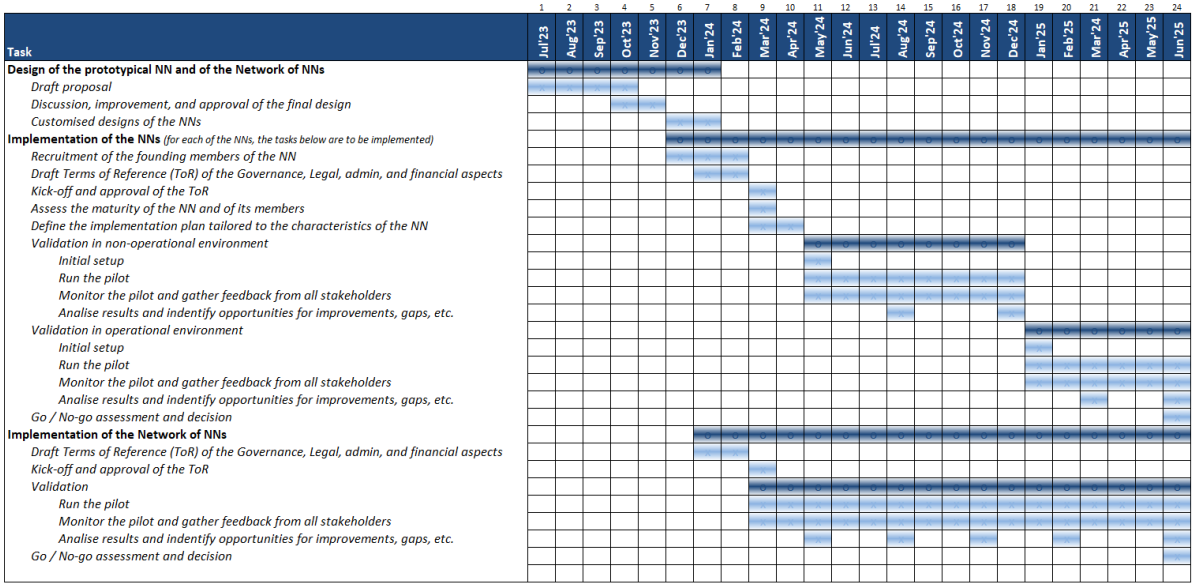

Figure 3 - Gantt chart of the EACTDA NNs pilot

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6. Summary

6.1. Conclusion

In this document we have introduced the concept of EACTDA national nodes and of the network of EACTDA national nodes as well as why they are considered to be a necessary instrument to facilitate the better, faster, and wider adoption of innovative solutions by European Union public entities fighting cybercrime.

In addition, this document presents the framework, which is based on the capabilities maturity model concept, that has been used to propose the designs of the EACTDA national nodes network as well as of a prototypical EACTDA national node.

Finally, a high-level implementation work plan is presented which focuses on the pilot that is being conducted as part of the Tools4LEAs-v2 project.

6.2. Evaluation

The designs proposed in this document have been commented and validated, even if only at high-level, by the key stakeholders/members of the nodes that are included as of November 2023 in the pilot of the Tools4LEAs-v2 project. Therefore, it is considered that the design of the network and of the prototypical node presented in this deliverable has been validated as a good start point.

6.3. Future work

The design of the network and of the prototypical node presented in this deliverable will most likely be adjusted during the pilot. The experience gained during the pilot will allow making all the necessary changes to the designs in order to have, by the end of the pilot, an updated and improved version of the designs which will be useful in case it is decided to give continuation to the network and to the national nodes, and when new/additional nodes are to be created.

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ANNEX I – Innovation management related reference resources

Below we present a series of well-known and generally accepted good/best practice frameworks, models, taxonomies, and in general artifacts related to innovation management which could serve as reference when designing EACTDA NNs.

Accept Mission "Innovation Framework"

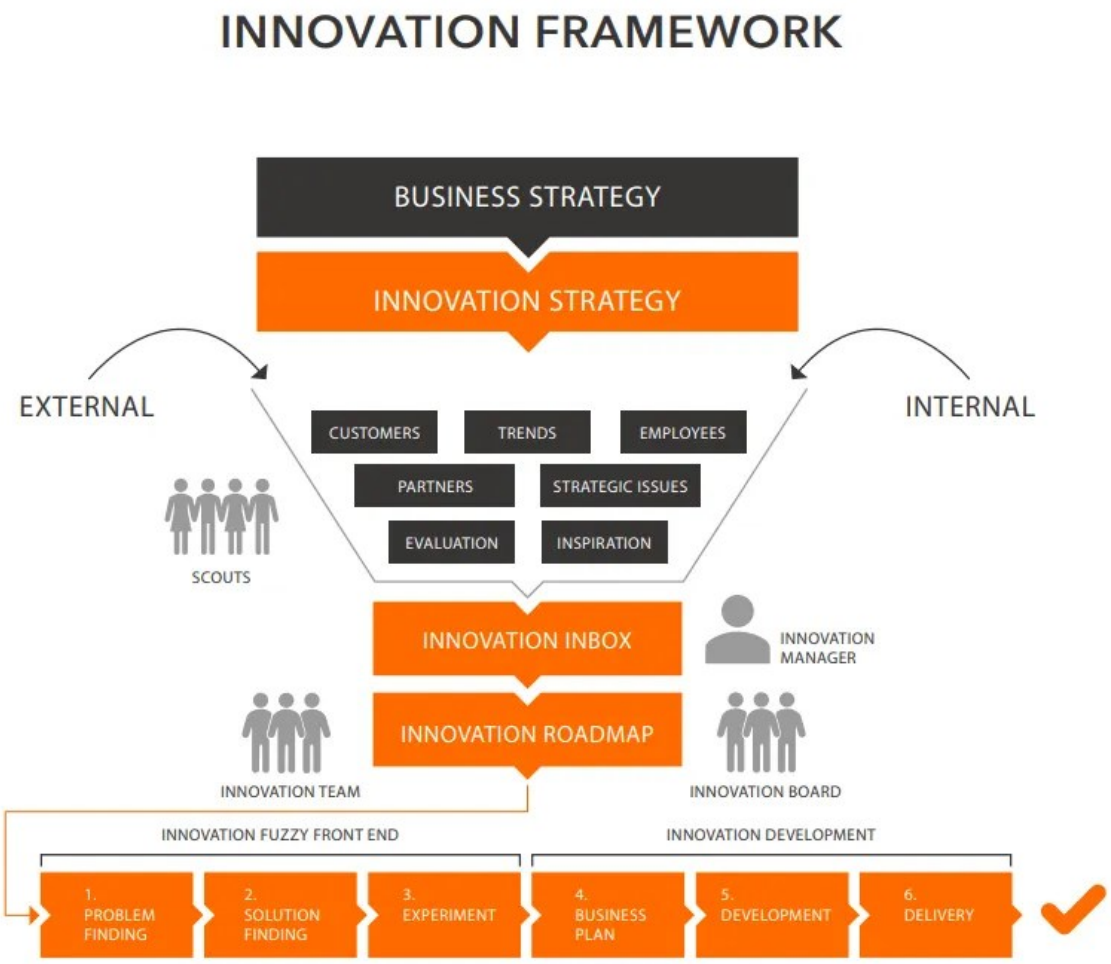

Figure 4 - Accept Mission Innovation Framework

More information at: https://www.acceptmission.com/blog/guide-to-organize-innovation/

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Innovation Idea Funnel

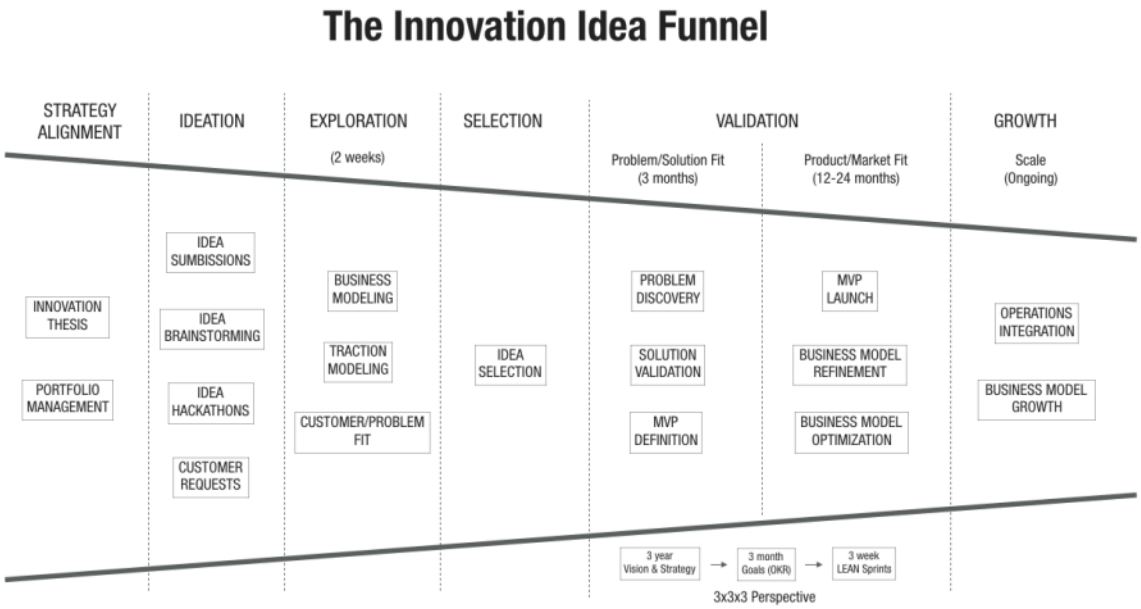

Figure 5 - The innovation Idea Funnel

More information at: https://blog.leanstack.com/the-idea-funnel/

Cambridge Business Model Innovation Process

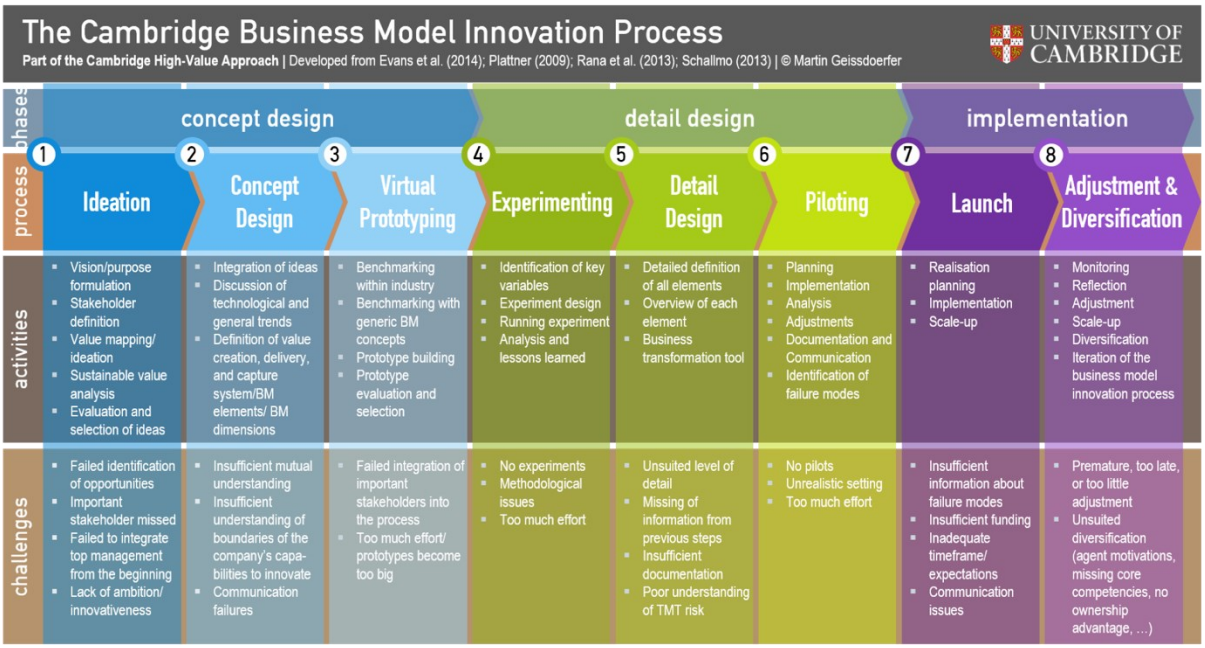

Figure 6 - Cambridge Business Model Innovation Process

More information at: https://www.sciencedirect.com/science/article/pii/S2351978917300392

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CATALYST Innovation Model

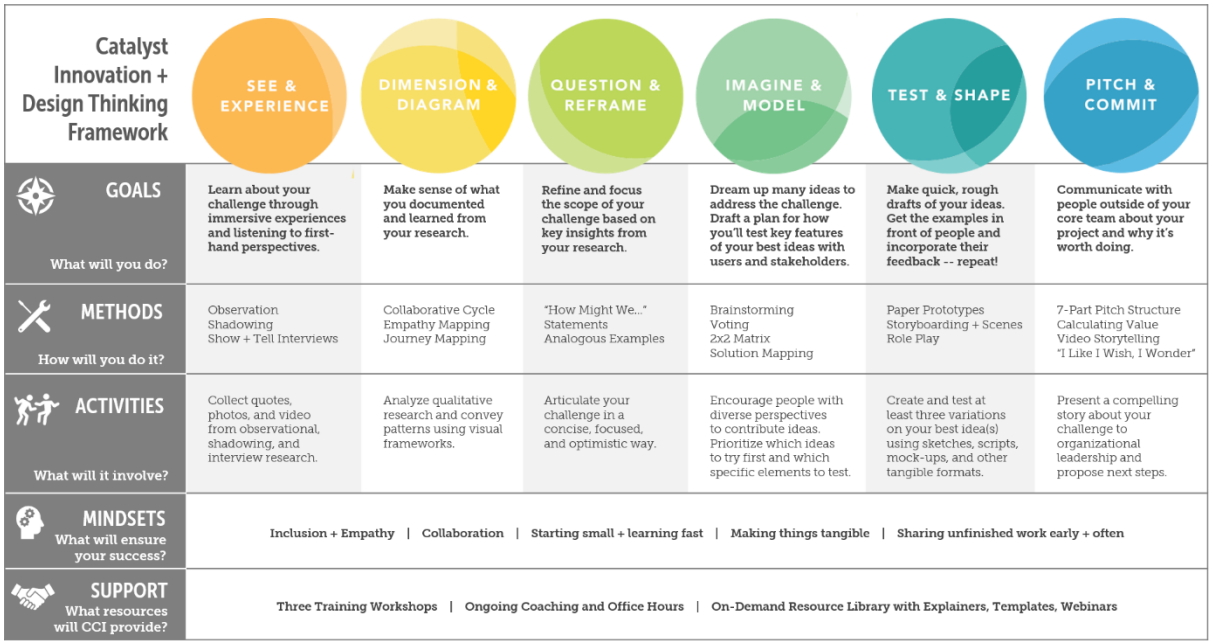

Figure 7 - Catalyst Innovation and Design thinking

More information at: https://www.careinnovations.org/wp-content/uploads/2017/11/Catalyst_2018_RFA.pdf

Low-Tech Innovation Approach

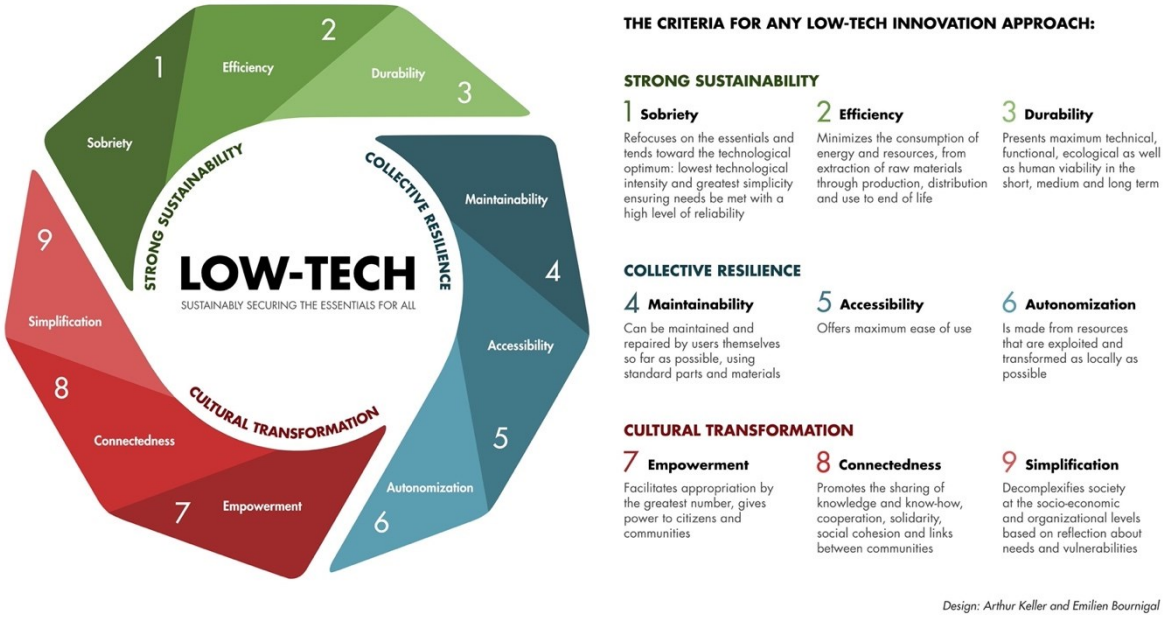

Figure 8 - Low Tech innovation approach

More information at: https://en.wikipedia.org/wiki/Low_technology

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Education Technology Innovation

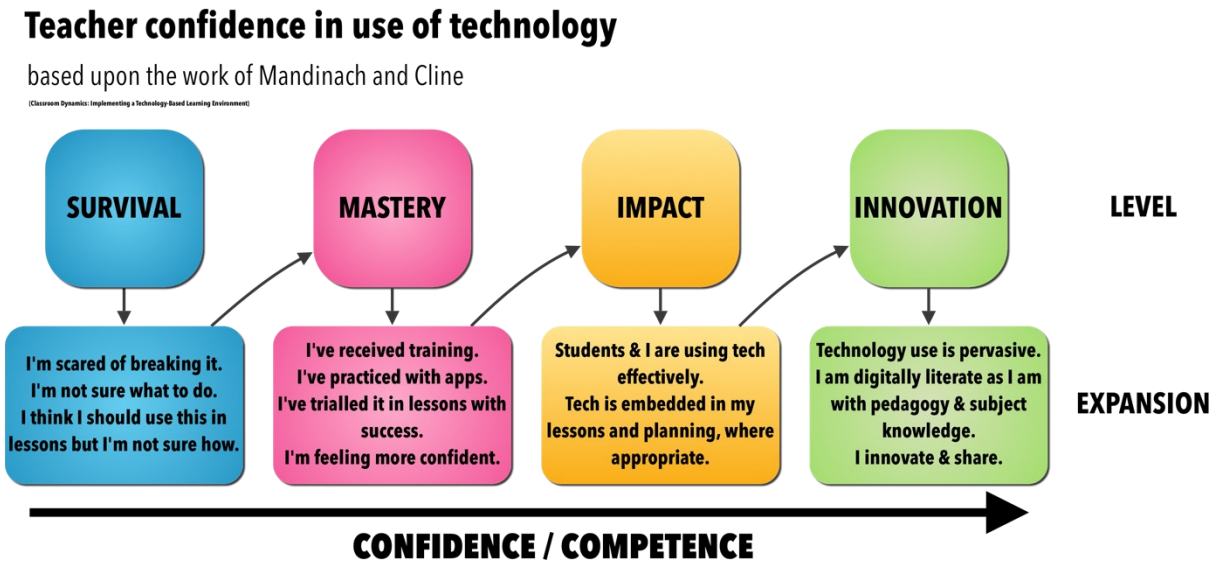

Figure 9 - Teacher confidence in use of technology

More information at: https://ictevangelist.com/teacher-confidence-using-technology/

Bloom Taxonomy

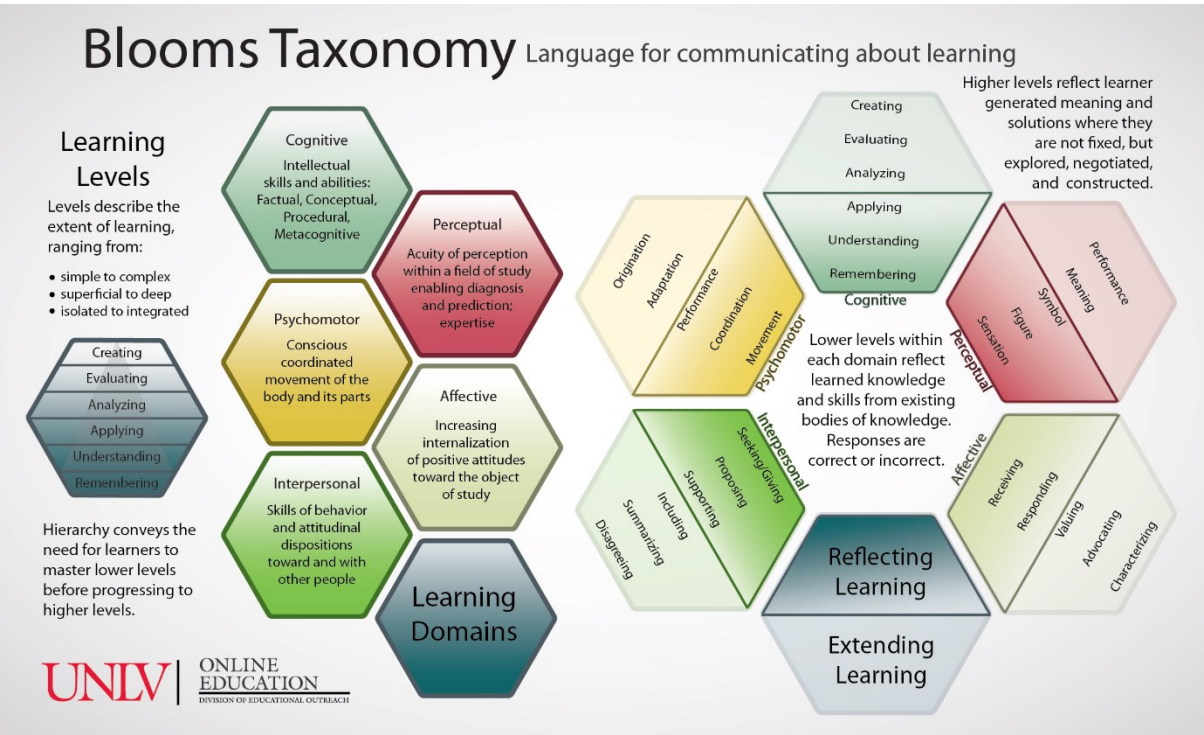

Figure 10 - Bloom Taxonomy

More information at: https://en.wikipedia.org/wiki/Bloom%27s_taxonomy

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Design Innovation by Stanford

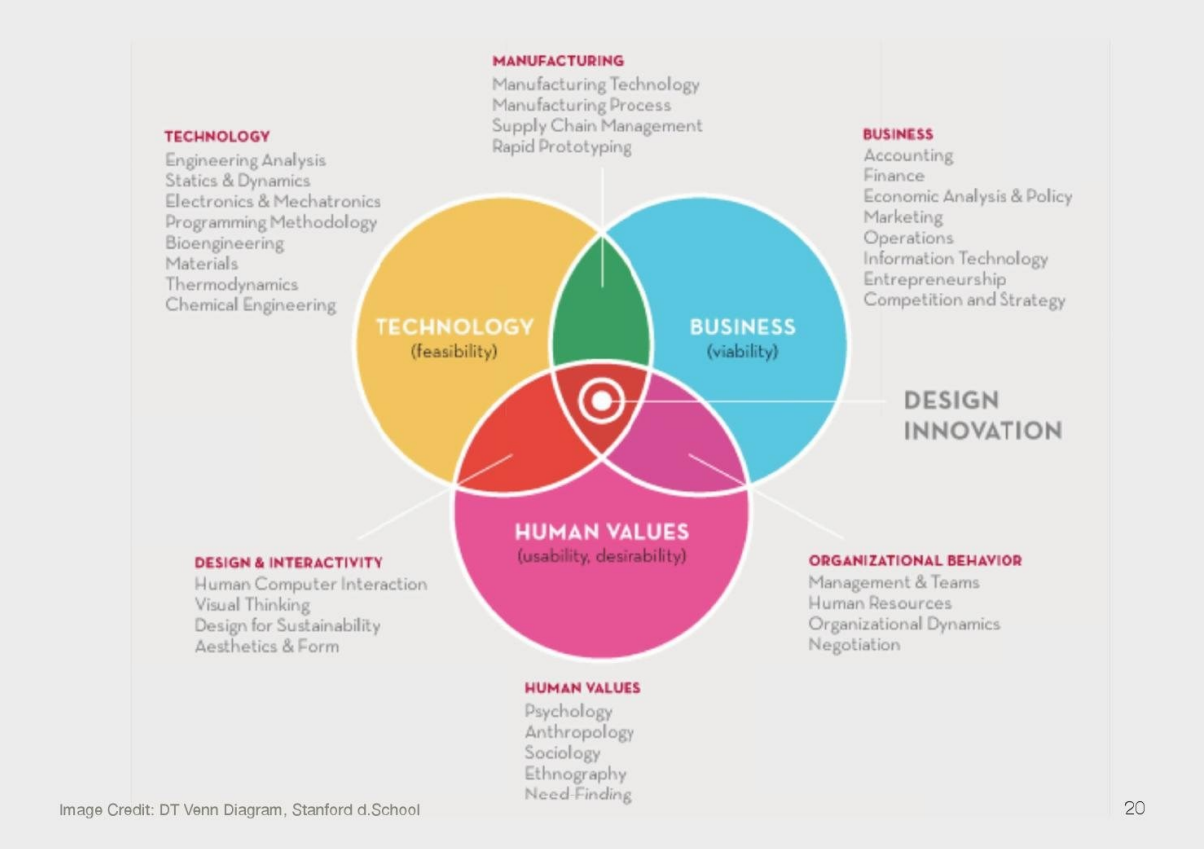

Figure 11 - Design Innovation by Stanford

More information at: https://online.stanford.edu/innovation-design-thinking

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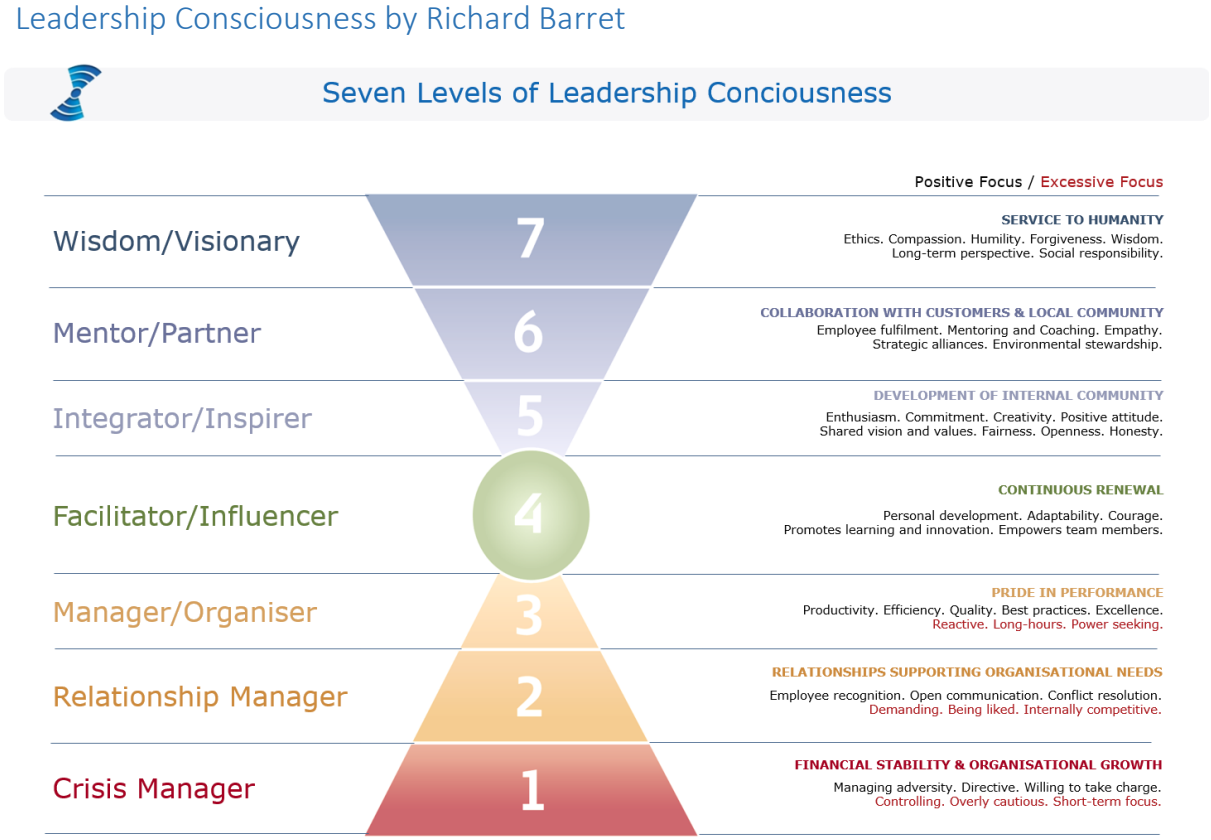

Figure 12 - The seven levels of leadership consciousness by Richard Barret

More information at: https://sagolschool.org.il/wp-content/uploads/2020/06/the_7_levels_of_leadership_consciousness.pdf

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Digital Transformation Framework

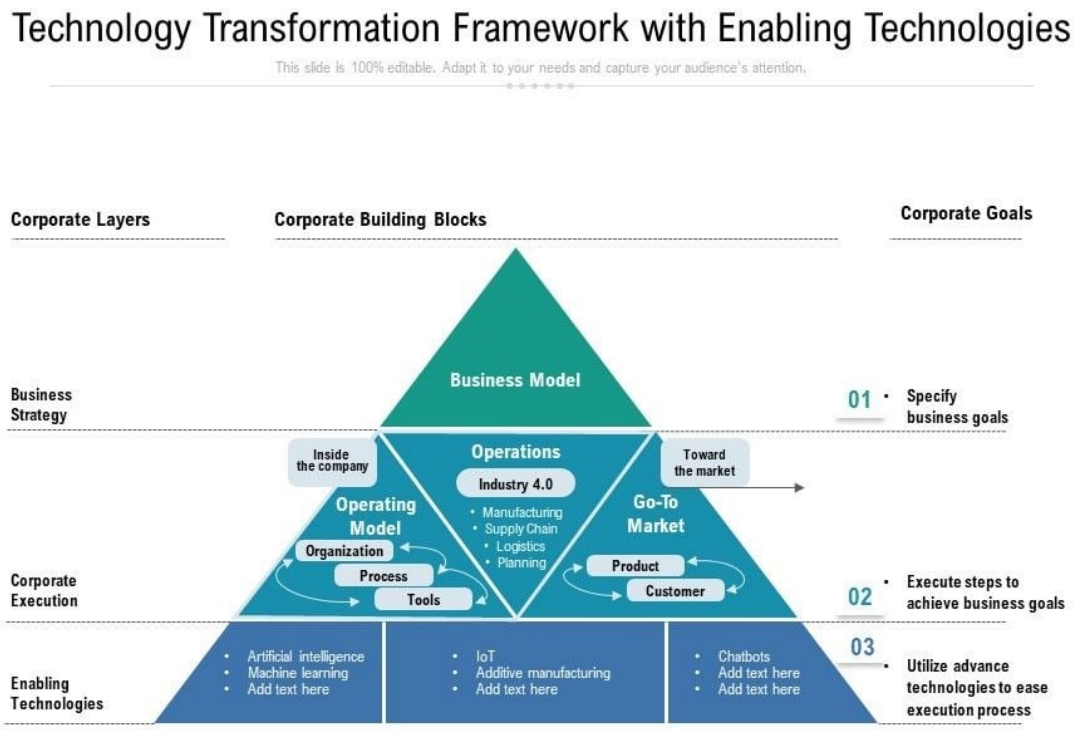

Figure 13 - Technology transformation framework with enabling technologies (source: https://www.slidegeeks.com/business/product/technology-transformation-framework-with-enabling-technologies-ppt-powerpoint-presentation-professional-introduction-pdf)

More information at: https://www.digital-adoption.com/digital-transformation-framework/

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I4CP'S INNOVATION ENGINE

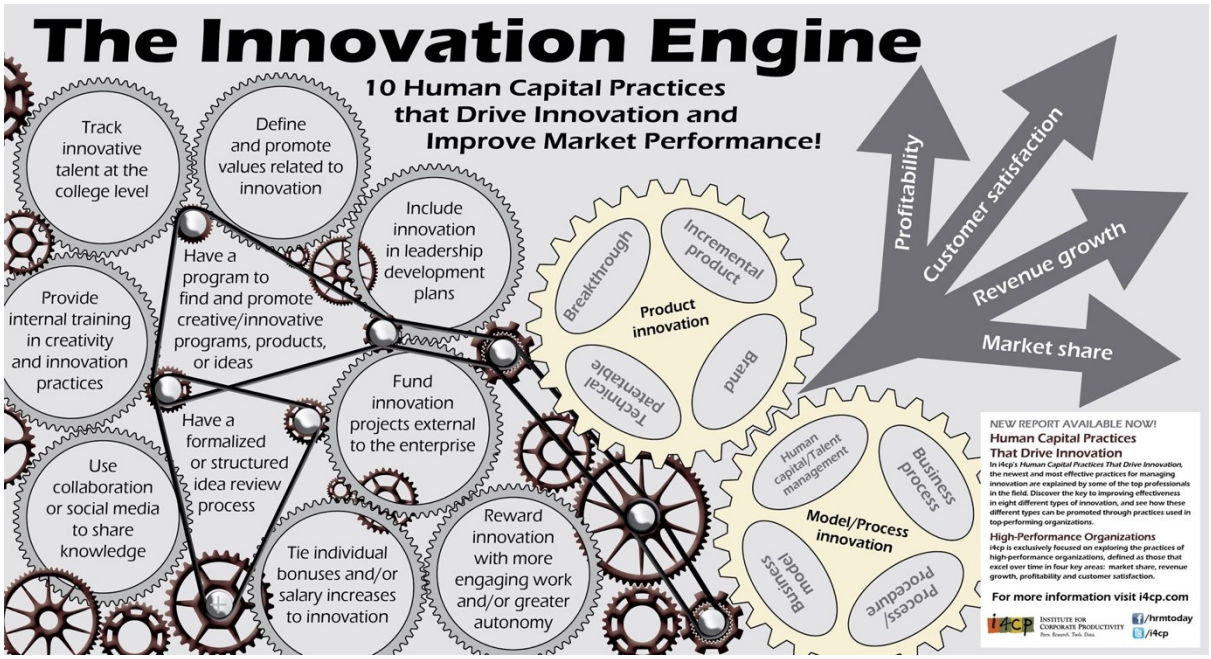

Figure 14 - I4CP's Innovation Engine (source: http://assets.i4cp.com/images/image_uploads/0000/1160/human-capital-practices-drive-innovation-infographic.jpg?1367520767)

More information at: https://www.i4cp.com/

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Innovation. Ambition Matrix

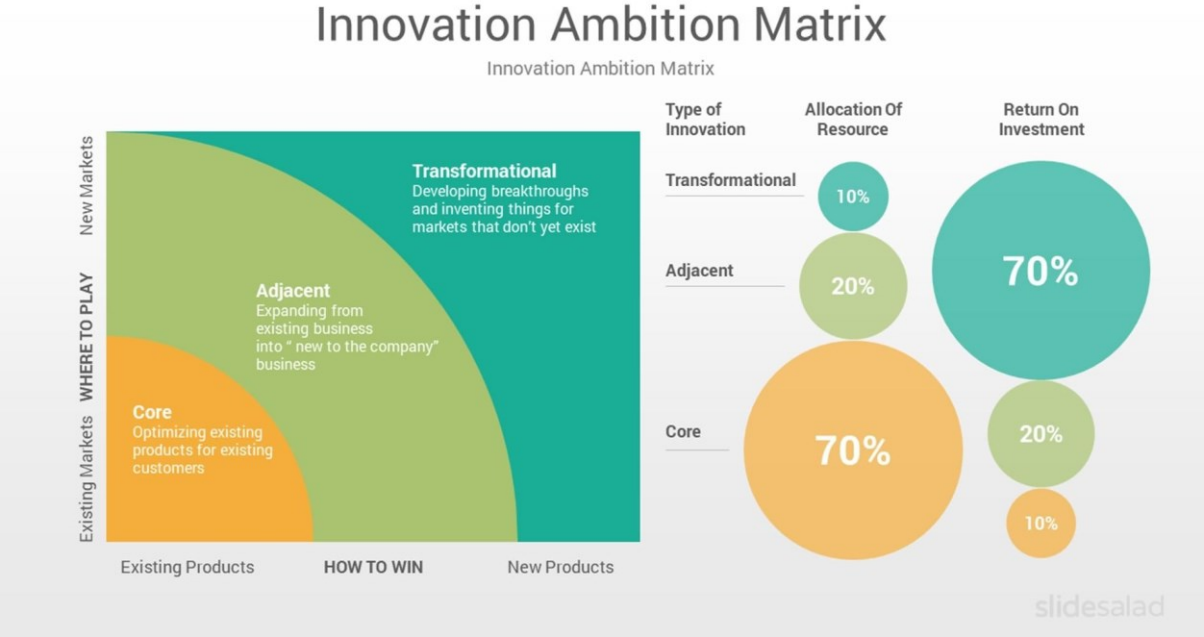

Figure 15 - Innovation Ambition Matrix (source: https://www.pinterest.es/pin/712061391074471368/)

More information at: https://mentorday.es/wikitips/en/innovation-strategies-innovation-matrix-environment-innovation/#:~:text=The%20%22Innovation%20Ambition%20Matrix%22%20is,novelty%20of%20the%20company's%20offer.

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Macro Forces for digital evolution and synergy

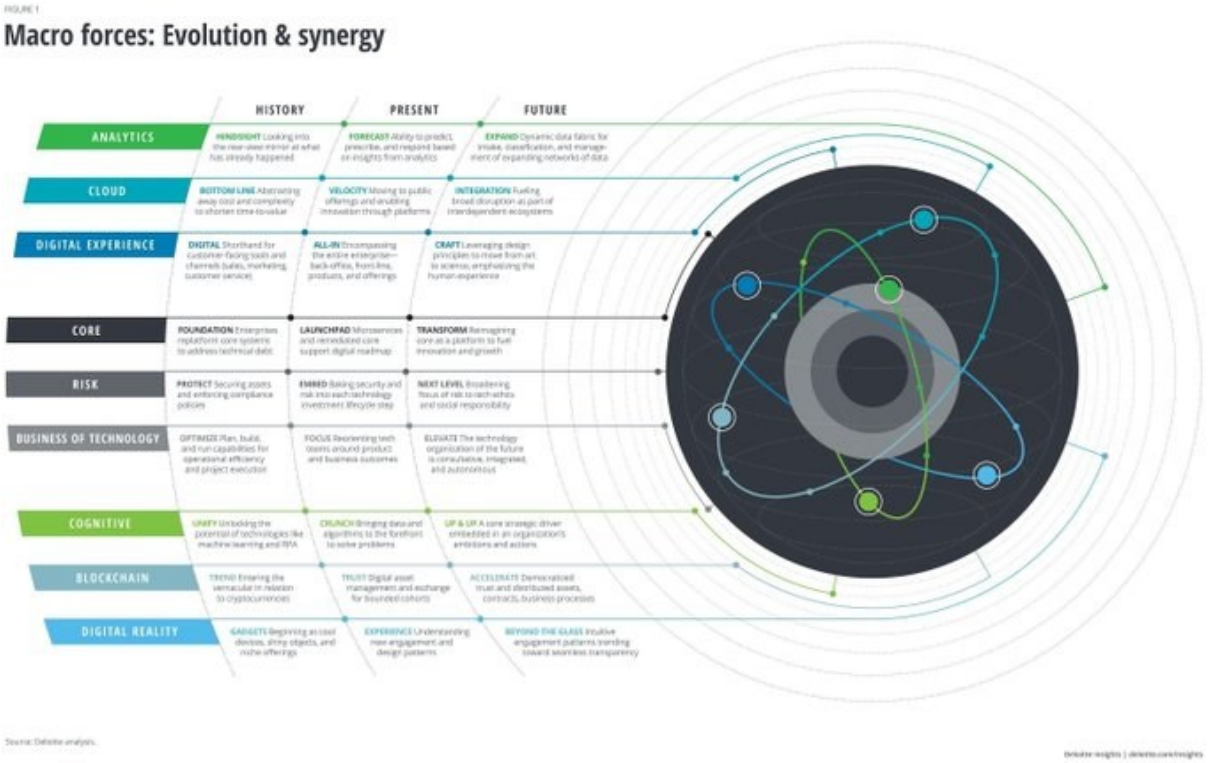

Figure 16 - Macro Forces for digital evolution and synergy

More information at: https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/technology/cz-macro-forces-tech-trends-2019.pdf

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Silicon valley innovation ecosystem

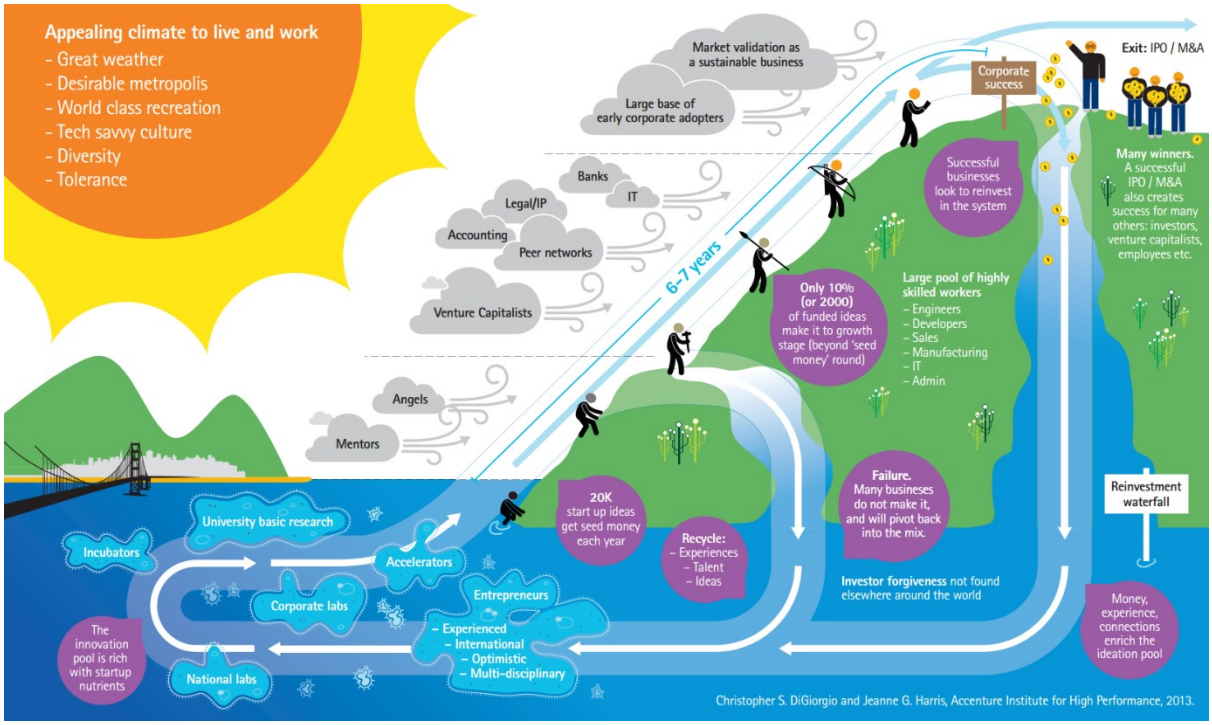

Figure 17 - Silicon valley innovation ecosystem

More information at: https://worldbusinessincubation.wordpress.com/2013/11/05/innovation-ecosystems-why-culture-is-the-key-element/

9 types of innovation

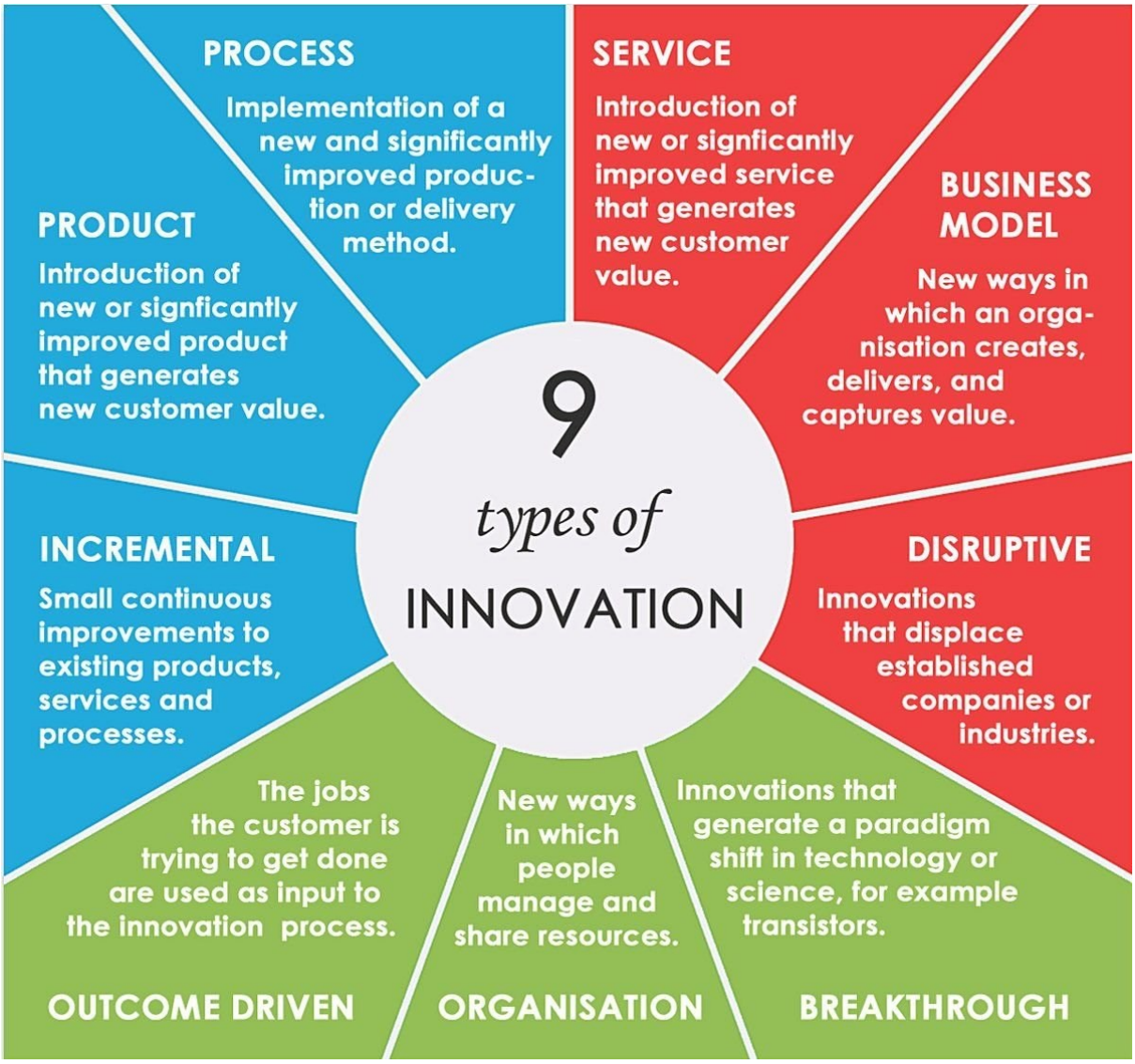

Figure 18 - 9 types of innovation

More information at: https://www.researchgate.net/publication/342833347_Nine_types_of_innovation

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Innovation quadrant

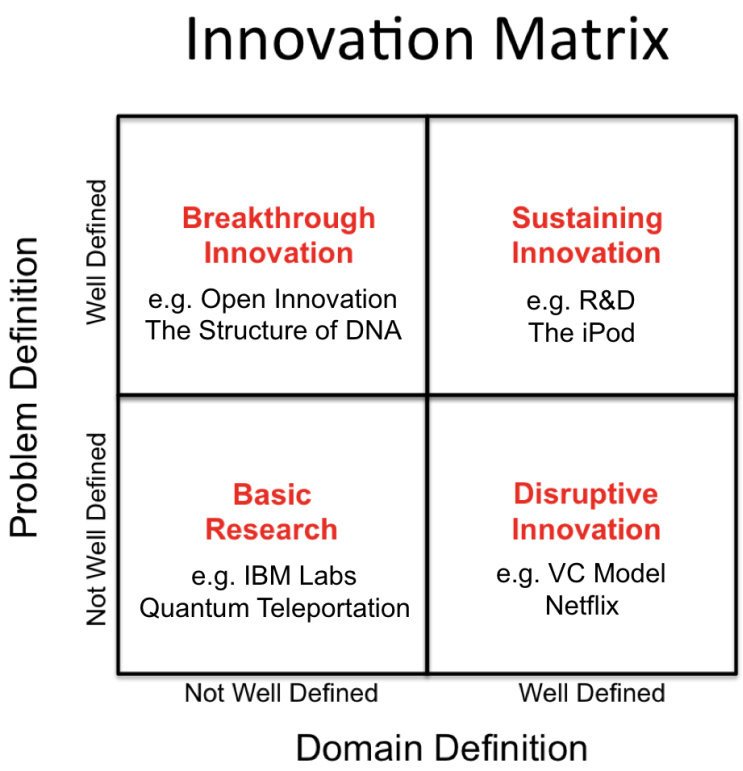

Figure 19 - Innovation Matrix

More information at: https://hbr.org/2017/06/the-4-types-of-innovation-and-the-problems-they-solve

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European innovation academy start-up journey

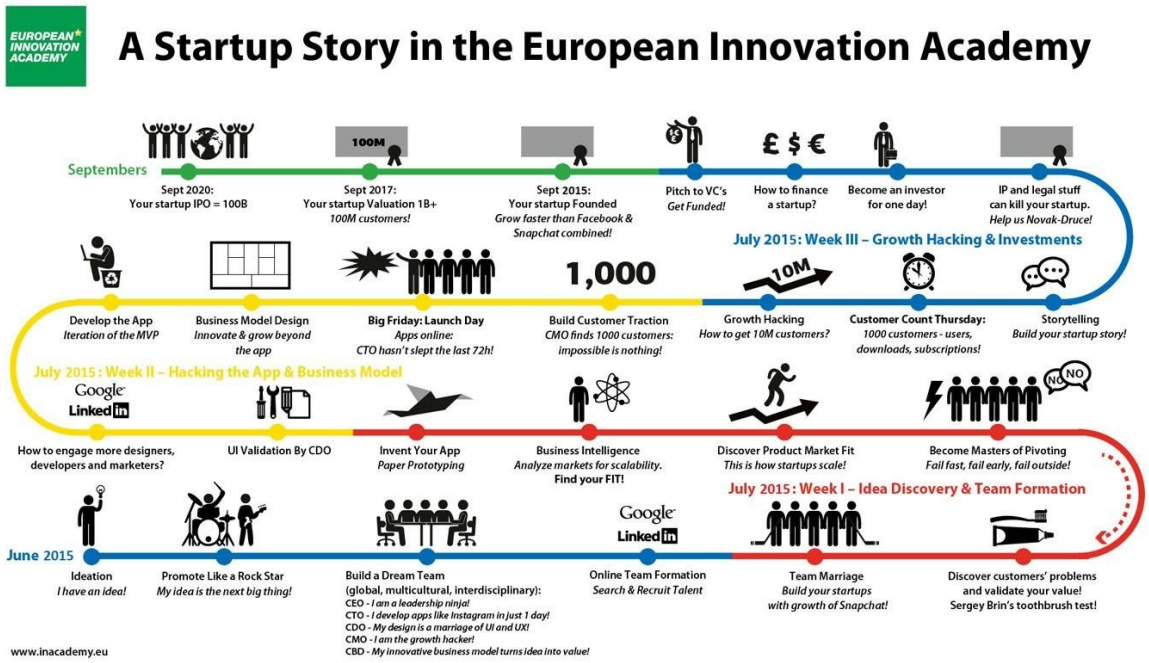

Figure 20 - A startup story in the European Innovation Academy

More information at: https://www.inacademy.eu/

Forrester innovation canvas

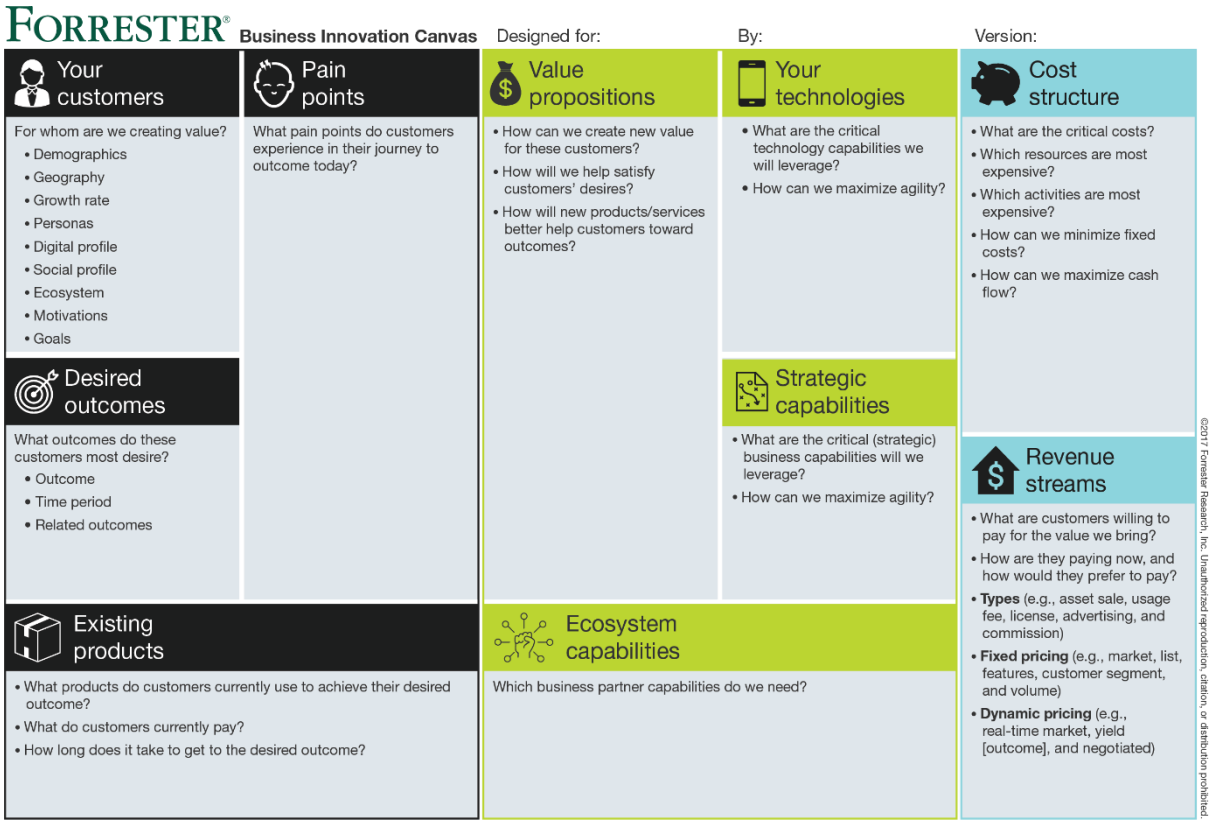

Figure 21 - Forrester Innovation Canvas

More information at: https://www.forrester.com/report/forresters-business-innovation-canvas-framework/RES175937

BASIC framework of change

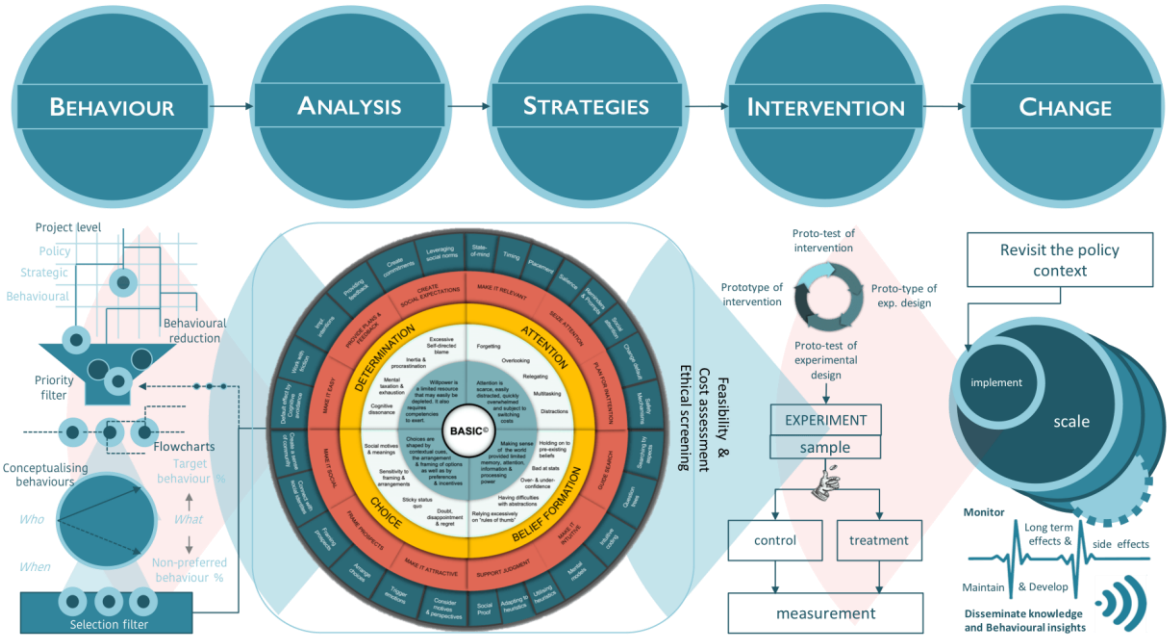

Figure 22 - BASIC framwork of change

More information at: https://www.besci.org/models/behavior-analysis-strategy-intervention-change

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