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The ENGAGE.EU Innopreneurial Mindset

ENGAGE.EU

The European University Engaged in Societal Change

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1. Introduction

ENGAGE.EU aspires to educate a new generation of individuals with skills and capabilities to demonstrate an understanding and commitment to the challenges of our societies.

The goal of Task 4.4 was to develop a theoretical framework as fundament for our actions towards creating a fostering environment for innopreneurs and to provide a definition of an ENGAGE.EU Innopreneurial Mindset. In order to do so we initially started by mapping existing theoretical frameworks and subsequently transformed them into an ENGAGE.EU Innopreneurial Mindset Framework.

"Innopreneurship" is a newly coined term. Hence, we were drawing on literature on "entrepreneurial mindset", "innovativeness" and "sustainability-driven entrepreneurship" as a foundation for the framework at hand. The ENGAGE.EU definition of innopreneurship harmonizes and integrates previous notions of entrepreneurship, intrapreneurship and innovation and combines them with a value-based attitude.

We developed both the ENGAGE.EU Innopreneurship Definition and the Innopreneurial Mindset Framework in close cooperation within the task team group with representatives of all partner universities.

Figure 1 shows the process and the feedback loops involving the task team, the task leader group of WP 4 and the Executive Committee.

As a result of our activities in Task 4.4 we present A) an ENGAGE.EU Innopreneurship Definition, B) Existing Frameworks on Innopreneurial Mindset and C) an ENGAGE.EU Innopreneurial Mindset Framework.

2. ENGAGE.EU Innopreneurship Definition

In ENGAGE.EU, we use the term "innopreneurship" a new concept that is based on previous notions of entrepreneurship, intrapreneurship and innovation. In its core, innopreneurship refers to innovation-based entrepreneurship combined with a value-based attitude since ENGAGE.EU aims at providing European citizens with the necessary set of skills and competences needed to tackle major societal challenges.

The definition was developed in a highly interactive process with several rounds of feedback involving all ENGAGE.EU partner universities. It serves as a basis for the ENGAGE.EU Innopreneurial Mindset Framework and future activities of the consortium.

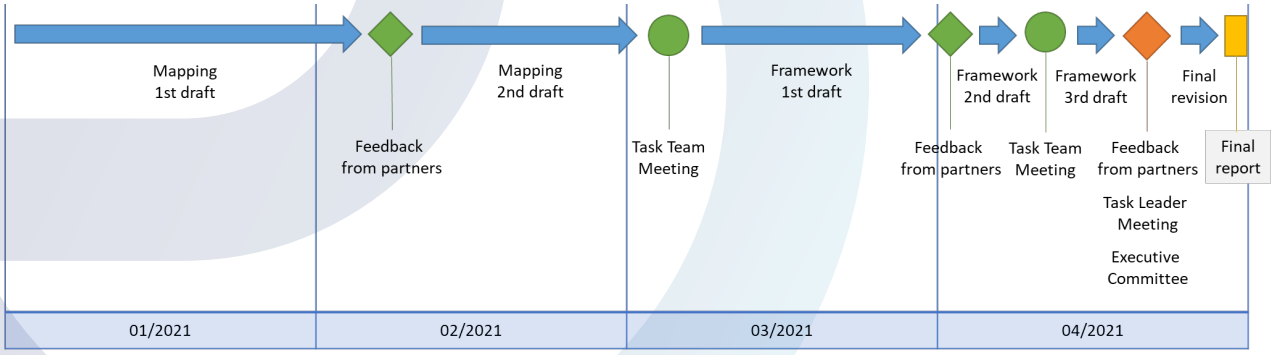

Figure 1: Process Task 4.4

ENGAGE.EU Innopreneurship Definition

Innopreneurship is **innovation-based value creation** for the **society at large**. This value is created by **exploring and exploiting opportunities**. Opportunities emerge **from innovative activities and/or require innovative actions** in order to materialize.

The drivers of innopreneurship are **innopreneurs**. They have the **competences** to transform opportunities into **concrete sustainable activities**, in new organizational forms or within existing organizations.

Following this definition, we would like to clarify the central parts of it in more detail:

- **Innovation-based**: In everyday language, entrepreneurship might refer to starting any kind of new business – regardless of its degree of innovativeness. In ENGAGE.EU we clearly focus on innovation-based entrepreneurship. An innovation is the practical implementation of a new idea that results in the introduction of new or improved products, services, processes, business models etc. We follow a broad understanding of innovation that includes social, technological, institutional, cultural and societal innovation.
- **Value creation for the society at large**: Innopreneurship is about value creation – not only for the innopreneur but for the society at large. The value created can be social, sustainable, cultural and/or financial - at best all of it.
- **Exploring and exploiting opportunities**: Exploring and exploiting opportunities is a core element of entrepreneurship and thus also of innopreneurship. This process includes activities related to the identification of opportunities (e.g. search, discovery, creation, exploring problems) and activities to realize these opportunities (e.g. implementation, commercialization). Innopreneurs might create new opportunities or exploit already discovered or created ones. There are different ways in which opportunities can emerge. On the one hand, innovative activities like research can lead to new opportunities, e.g. if new technologies are developed. On the other hand, innovative actions can be required to create opportunities, e.g. if societal challenges are taken as a starting point and innovation is used to create new solutions.

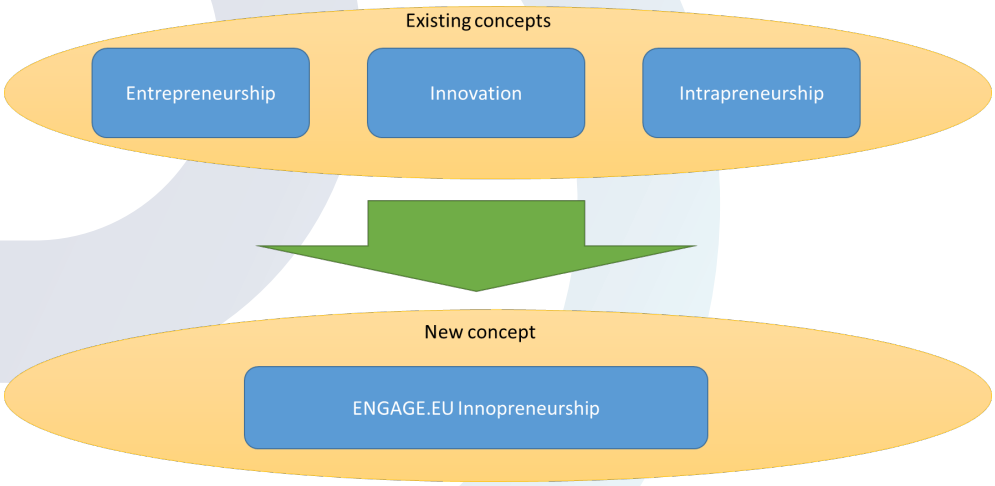

Figure 2: Innopreneurship as new integrated concept

- **Sustainable activities**: Innopreneurs engage in activities that are sustainable in the sense of the 3Ps of sustainability: people, planet and profit. Their ideas are marketable and at the same time beneficial to the society and to the environment.
- In new or within existing organizations: Innopreneurship can lead to the foundation of new organizations (e.g. start-ups) or it can take place within existing ones. With this part of the definition, we explicitly include intrapreneurship in our understanding of innopreneurship.

3. Mapping of Theoretical Frameworks on Innopreneurial Mindset

The "innopreneurial mindset" is a concept newly developed in the context of the ENGAGE.EU project. Since there is no established framework, we initially focused on existing literature and frameworks on the "entrepreneurial mindset" and supplemented them with findings on innovativeness and sustainability-driven entrepreneurship. By doing so, we were able to build on established concepts, which were subsequently refined and combined with a value-based attitude.

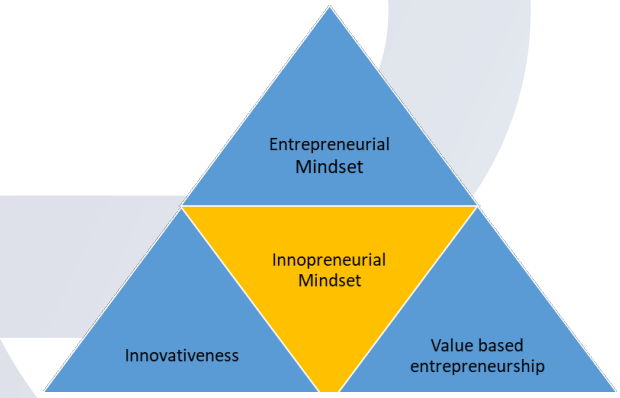

Figure 3: Building blocks of the innopreneurial mindset

In total, we identified 95 relevant literature sources and included 46 in the report. In our mapping, we found:

- 11 entrepreneurial mindset (EM) definitions
- 5 suggestions for potential EM dimensions
- 7 frameworks to describe and measure the EM
- 8 frameworks describing competences for sustainability-driven entrepreneurship

In the following, we are summarizing the respective definitions and frameworks identified in the mapping process.

3.1 Entrepreneurial Mindset

The specific "entrepreneurial mindset" is what makes entrepreneurs different. Mindsets are not given. They evolve over time and in interaction with the environment (Mathisen and Arnulf 2014). According to Bosman and Fernhaber (2018) mindsets are largely driven by our experiences and what we are exposed to. For educators this implies that the mindset of students can be influenced by the experiences they are provided with (Bosman and Fernhaber 2018, p. 8).

Thum (2012) provides the following definition of "the mindset": "Your mindset is the sum of your knowledge, including beliefs and thoughts about the world and yourself in it. It is your filter for information you get in and put out. So it determines how you receive and react to information." (Thum 2012)

Regarding the "entrepreneurial mindset" (EM) there is a number of established definitions. Table 1 provides an overview.

Table 1: Definitions of the entrepreneurial mindset in the literature (adapted from Naumann (2017))

Author	Definition
McGrath and MacMillan (2000, p. 15)	"the ability to sense, act, and mobilize under uncertain conditions"
McGrath and MacMillan (2000, p. 15)	"a growth-oriented perspective through which individuals promote flexibility, creativity, continuous innovation, and renewal. In other words, even under the cloak of uncertainty, the entrepreneurially minded can identify and exploit new opportunities"
Dhliwayo and van Vuuren (2007, p. 124)	"a way of thinking and acting about business and its opportunities that captures the benefits of uncertainty"
Haynie et al. (2010, p. 218)	"the ability to be dynamic, flexible, and self-regulating in one's cognitions given dynamic and uncertain task environment"
Shepherd et al. (2010, p. 62)	"the ability and willingness of individuals to rapidly sense, act, and mobilize in response to a judgmental decision under uncertainty about a possible opportunity for gain"
Baron (2014, p. 55)	"think, reason, make decisions, plan and set goals in relatively unique way"
Valerio et al. (2014, p. 3)	"refers to the socio-emotional skills and overall awareness of entrepreneurship associated with entrepreneurial motivation and future success as an entrepreneur"
European Parliament (2015)	a "mindset characterised by proactiveness, creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives, and even the idea that the individual is aware of the context of his or her work and is able to seize opportunities that arise, with regard to both entrepreneurship and employment activity (in the latter case referred as 'intrapreneurship'); has faith in the creative industry sectors and enterprises relating to culture, which can highlight business opportunities, especially for young people"
Davis et al. (2016, p. 22)	"the constellation of motives, skills, and thought processes that distinguish entrepreneurs from nonentrepreneurs and that contribute to entrepreneurial success"
NFTE (2017, p. 2)	"simply, the way an entrepreneur thinks and acts. At its core, entrepreneurial mindset is a set of characteristics, behaviors and skills that drive action. A person with entrepreneurial mindset recognizes an otherwise overlooked opportunity, develops the confidence to take a risk, communicates their ideas clearly, and is able to adjust to and learn from setbacks."
Bosman and Fernhaber (2018, p. 13)	"the inclination to discover, evaluate, and exploit opportunities"

Based on her literature review, Naumann (2017) concludes that the entrepreneurial mindset definitions in the literature are more or less similar. "EM is seen as a way of adaptable thinking and decision-making in complex, uncertain and dynamic environments." (Naumann 2017, p. 159)

Commarmond (2017) also did a literature review. However, he comes to a somewhat different conclusion. Based on his review he proposes the following common understanding of entrepreneurial mindset: "Entrepreneurial mindset relates to how a person thinks, their state of mind or the lens through which they see the world, and how this influences their propensity to pursue entrepreneurial activities and outcomes. This state of mind or lens is influenced by multiple factors that include what people know or do not know (related to their knowledge), what people have done or have not done (related to their experience), what people can do or believe they can do (related to their level of competency and self-belief),and who they are (related to their personality, values, attitudes and beliefs)." (Commarmond 2017, p. 3)

In the various definitions, entrepreneurial mindset is strongly associated with thinking. It can be concluded that the current entrepreneurial mindset concept is based on a cognitive perspective. Some authors extend it by acting and the uniqueness in which entrepreneurs leverage and link ressources to exploit opportunities. (Naumann 2017)

There is no commonly shared entrepreneurial mindset concept. Scholars describe particular attributes of the entrepreneurial mindset (see below, Dimensions of the Entrepreneurial Mindset). There have also been a few attempts to measure (test) the entrepreneurial mindset (see below, Frameworks to Describe and Measure the Entrepreneurial Mindset).

"A review of both practitioner and academic literatures in entrepreneurship tells us surprisingly little about what comprises the entrepreneurial mindset […]. Some see it as reflected in entrepreneurial behaviour or perhaps entrepreneurial intentions. Others do not define it at all, let alone suggest what its dimensions might be. Too many insist that 'I'll know it when I see it' but if we care about nurturing entrepreneurial potential, we need to keep digging." (Krueger 2015, p. 12)

3.1.1 Dimensions of the Entrepreneurial Mindset

Various authors describe (potential) dimensions or characteristics of the entrepreneurial mindset. In the course of our mapping, we identified five different suggestions for potential dimensions of the entrepreneurial mindset. One author (Naumann 2017) chooses a very theoretical approach which did not contribute to the development of our own ENGAGE.EU Innopreneurial Mindset Framework. Therefore, we did not include it in our mapping. The other four suggestions for potential dimensions of the entrepreneurial mindset are summarized in Table 2.

Table 2: Dimensions of the Entrepreneurial Mindset – Suggestions in the literature

Ireland et al. (2003)	Krueger (2015)	Krueger and Sussan (2017)	Commarmond (2017)
1. Recognizing entrepreneurial opportunities 2. Entrepreneurial alertness[1] 3. Real options logic[2] 4. Entrepreneurial framework[3]	5. Action-orientation/ proactiveness 6. Innovativeness 7. Resilience to adversity/ optimism 8. Persistence at goal-directed behaviors 9. Domain-specific self-efficacy (possibly general self-efficacy) 10. Role identity (mental prototypes) 11. Entrepreneurial intensity 12. Tolerance for ambiguity and uncertainty 13. Risk-aversion (lower) 14. Future orientation 15. Entrepreneurial behaviors 16. Entrepreneurial intentions 17. Value creation (versus opportunism) 18. Market orientation 19. For future analysis: Even deeper cognitive phenomena (e.g., working memory)	1. Innovativeness 2. Proactiveness / Action Orientation 3. Risk Taking 4. Competitiveness 5. Autonomy 6. Future Orientation & External Orientation 7. Resilience 8. Pathologies	1. Lifelong learning and openness to change 2. Engagement in a complex and uncertain world 3. Creative and innovative approaches to problem solving 4. Belief and confidence in one's own capacity and competency to be entrepreneurial 5. Desire, motivation and intention to practice entrepreneurship and behave entrepreneurially 6. Taking initiative and personal responsibility for actions 7. A pursuit of goal-attainment through personal mastery and value-creation 8. Recognizing opportunities 9. Grit and perseverance in the face of challenges 10. Taking risks that lead to learning, growth and value 11. A belief on one's abilities and influence

1 "Those with the ability to identify when new goods or services become feasible or when existing goods or services become unexpectedly valuable to consumers possess entrepreneurial alertness." (Ireland et al. 2003, p. 968)
2 Real options logic helps to make decisions on how to allocate "real assets" (i.e. human, organizational, and physical capital) in order to concentrate on the most valuable entrepreneurial opportunities. The real options logic enhances strategic flexibility. (see Ireland et al. 2003, p. 969)
3 "An entrepreneurial framework includes actions such as setting goals, establishing an opportunity, register, and determining the timing associated with launching the strategy required to exploit an entrepreneurial opportunity." (Ireland et al. 2003, p. 969)

Table 3: Dimensions of the GET2 Test (own representation based on Caird 2013)

Characteristic	Description	Qualities
High need for achievement	The enterprising person is highly motivated, energetic, and has a capacity for hard work. They are busy, driven, dynamic and highly committed to getting things done. Their high motivation levels are characterized by a high need for achievement, manifesting as the desire to lead, shape and complete projects.	• An orientation towards the future; • Reliance on their own ability; • An optimistic rather than a pessimistic outlook; • A strong task orientation; • Effective time management; • Results-oriented with yourself and others; • Restlessness, driven and energetic; • Opinionated in defense of your ideas and views; • Determination to ensure your objectives are met even when difficulties arise; • Responsible and persistent in pursuit of aims; • Oriented towards challenging but realistic goals; • Willingness to work long and hard when necessary to complete tasks. • Independence, preferring to work alone especially if they cannot be 'top dog'; • Self-expressive, feeling a strongly need to do their own thing their way, rather than work on other people's projects; • Individualistic and unresponsive to group pressure; • Leadership, preferring to be in charge and disliking taking orders; • Unconventional, and prepared to stand out as being different to others; • Opinionated, having to say what they think and make up their own mind about issues; • Determination, strong willed and stubborn about their interests.
High need for autonomy	The enterprising person is highly motivated, energetic, likes to lead, shape and do things their way. They are independent, driven, dynamic and may have to be number one or work solo.	• Independence, preferring to work alone especially if they cannot be 'top dog'; • Self-expressive, feeling a strongly need to do their own thing their way, rather than work on other people's projects; • Individualistic and unresponsive to group pressure; • Leadership, preferring to be in charge and disliking taking orders; • Unconventional, and prepared to stand out as being different to others; • Opinionated, having to say what they think and make up their own mind about issues; • Determination, strong willed and stubborn about their interests.

Creative tendency	**The enterprising person is restless with ideas, has an imaginative approach to solving problems, and tends to see life in a different way to others. Their innovative tendency and need for achievement helps them to develop ideas to create new products and processes, for example new technologies, businesses, projects, organizations, comedy and artistic outputs.**	• **Imaginative, inventive or innovative tendency to come up with new ideas;** • **Intuition, being able to synthesize ideas and knowledge, and make good guesses when necessary;** • **Change-orientation, preferring novelty, change and challenges with a dislike of being locked into routines;** • **Versatile and able to draw on personal resources for projects or problem solving;** • **Curious and interested in new ideas.**
Calculated risk-taking	The enterprising person is opportunistic and seeks information and expertise to evaluate if it is worth pursuing the opportunity, which will usually involve some risk.	• Decisive, being able to act on incomplete information and good at judging when incomplete information is sufficient for action; • Self-awareness with the ability to accurately assessing their own capability; • Analytical, being good at evaluating the likely benefits against the likely costs of actions; • Goal-oriented, setting themselves challenging but attainable goals; • Effective information management, using information to calculate the probability of success.
Internal locus of control	The enterprising person has an internal rather than external locus of control which means that they believe you have control over your own destiny and make their own 'luck'. This means that they confidently seek to exert control over life, draw on inner resources and believe that it is down to them if they succeed through their own efforts and hard work.	• Opportunistic, seeking and taking advantage of opportunities; • Self-confidence with the belief that they have control over their destiny and make their own luck, rather than being controlled by fate; • Proactive, taking personal responsibility to navigate the problems that arise to achieve success on their terms; • Determination and express a strong willed control over life; • Self-belief, equating the results achieved with the effort made.

3.1.2 Frameworks to Describe and Measure the Entrepreneurial Mindset

As part of the mapping, we identified existing frameworks that describe and/or measure the entrepreneurial mindset. We were able to identify seven different frameworks (tests, scales, indices, tools and the like). All of them are summarized briefly in this section along six characteristics: developed by, source, website (if available), empirically tested (yes/no), public access and number of dimensions. Furthermore, the dimensions of each framework are described.

1. **GET2 Test - General measure of Enterprising Tendency**

- Developed by: Sally Caird and Cliff Johnson, Durham University Business School
- Source: Mazzarol and Reboud (2020, pp. 47–53), Caird (2013)
- Website: http://www.get2test.net/
- Empirically tested: yes
- Public access: the test is published including all 54 questions (see Caird 2013), it can also be taken on the website
- Dimensions: 5

2. **ASTEE Measurement Tool**

- Developed by: the ASTEE project (Assessment Tools and Indicators for Entrepreneurship Education)
- Source: Moberg (2014)
- Website: -
- Empirically tested: yes
- Public access: the tool including the items and scales has been published (see Moberg 2014)
- Dimensions: 5

The ASTEE is an assessment tool that includes five dimensions on which education initiatives should focus in order to develop enterprising individuals (skills, knowledge, mindset, connectedness to education, and connectedness to future career). The entrepreneurial mindset is only one of various dimensions and understood differently than in this report. However, since the ASTEE is a well-known instrument and provides interesting dimensions and items, it is included in this mapping.

In the ASTEE project it was decided to capture the entrepreneurial mindset by the measure Core Self Evaluation (CSE) developed by Judge, Eres, Bono and Thoresen[4]. The CSE captures the individual's core sense of being able to perform challenging assignments.

3. **Entrepreneurial Mindset Profile (EMP)**

- Developed by: the Leadership Development Institute (LDI) at Eckerd College
- Source: Davis et al. (2016)
- Website: https://www.emindsetprofile.com/
- Empirically tested: yes[5]
- Public access: the scales are not published; the test can be taken on the website for a fee
- Dimensions: 14

The EMP provides scores on 14 discrete scales that fall within two broad domains:

- Personality – The personality characteristics and motivations that have been found to distinguish entrepreneurs from non-entrepreneurs.

4 Judge, T ., Eres, A, Bono, J ., and Thoresen, C . 2003. The Core Self-Evaluations Scale: Development of a Measure, Working paper.
5 For an example see: Hayes and Richmond 2017

- Skills – The cognitive and behavioral skills critical to entrepreneurial success.

Table 4: Dimensions of the ASTEE with relevance in the context of this mapping (own representation based on Moberg 2014)

Category	Dimension	Description	Items
Skills	Creative ability	The ability to think in new and imaginative ways.	• Come up with new ideas • Think outside the box • Identify opportunities for new ways to conduct activities • Come up with new and different solutions • Find new ways of doing things
	Planning ability	The ability to plan and structure tasks.	• Create a project plan • Set project goals • Structure tasks in a project • Actively participate in team work
	Financial literacy	The ability to understand financial statements and budgets.	• Read and interpret financial statements • Estimate a budget for a new project • Control costs for projects
	Marshalling of resources	The ability to assemble and organize resources in order to exploit a business opportunity.	• Put together the right group/team in order to solve a problem • Form partnerships in order to achieve goals • Network (i.e. make contacts with and exchange information with others) • Establish new contacts
	Managing ambiguity	The ability to manage and cope with uncertainty and ambiguity in the process of implementing and exploiting a business idea.	• Deal with sudden changes and surprises • Work under stress and pressure • Continue work despite problems • Manage uncertainty in projects and processes
	Teamwork	The ability to reach goals and achieve assignments through collaboration, as well as building effective relationships with others.	• Work together with other people • Actively participate in team work
Attitudes	General self-efficacy, locus of control and self-esteem	The individual's core sense of being able to perform challenging assignments.	• I am confident I will succeed in life • When I try, I generally succeed • I complete tasks successfully • Overall, I am satisfied with myself • I feel I can determine what happens in my life

Table 5: Dimensions making up the EMP (Davis et al. 2016, 29, adapted)

Domain	Dimension	Description
Personality Traits	Independence	The desire to work with a high degree of independence (e.g. I'm uncomfortable when expected to follow others' rules).
	Preference for Limited Structure	A preference for tasks and situations with little formal structure (e.g. I find it boring to work on clearly structured tasks).
	Nonconformity	A preference for acting in unique ways; an interest in being perceived as unique (e.g. I like to stand out from the crowd).
	Risk Acceptance	A willingness to pursue an idea or a desired goal even when the probability of succeeding is low (e.g. I'm willing to take a certain amount of risk to achieve real success).
	Action Orientation	A tendency to show initiative, make decisions quickly, and feel impatient for results (e.g. I tend to make decisions quickly).
	Passion	A tendency to experience one's work as exciting and enjoyable rather than tedious and draining (e.g. I'm passionate about the work that I do).
	Need to achieve	The desire to achieve a high level (e.g. I want to be the best at what I do).
Skills	Future Focus	The ability to think beyond the immediate situation and plan for the future (e.g. I'm focused on the long term).
	Idea Generation	The ability to generate multiple and novel ideas and to find multiple approaches for achieving goals (e.g. Sometimes the ideas just bubble out of me).
	Execution	The ability to turn ideas into actionable plans; the ability to implement ideas well (e.g. I have a reputation for being able to take an idea and make it work).
	Self-Confidence	A general belief in one's ability to leverage skills and talents to achieve important goals (e.g. I am a self-confident person).
	Optimism	The ability to maintain a generally positive attitude about various aspects of one's life and the world (e.g. Even when things aren't going well, I look on the bright side).
	Persistence	The ability to bounce back quickly from disappointment and to remain persistent in the face of setbacks (e.g. I do not give up easily).
	Interpersonal Sensitivity	A high level of sensitivity to and concern for the well-being of those with whom one works (e.g. I'm sensitive to others' feelings).

4. EntreComp: The Entrepreneurship Competence Framework

- Developed by: the EntreComp project (Entrepreneurship as a Competence)
- Source: Bacigalupo et al. (2016)
- Website: -
- Empirically tested: the EntreComp has been validated through iterative stakeholder consultations and empirically applied
- Public access: the complete tool has been published
- Dimensions: 15

The EntreComp is a framework for entrepreneurial competences (not explicitly the entrepreneurial mindset). We decided to include it in our mapping as it provides a comprehensive overview of the skills, knowledge and attitudes needed to engage in entrepreneurship.

In the EntreComp, entrepreneurship competences are defined as „the ability to transform ideas and opportunities into action by mobilising resources." (Bacigalupo et al. 2016, p. 12) The EntreComp framework consists of three interrelated and interconnected competence areas: "Ideas and opportunities", "Resources", and "Into Action". Each of the areas is made up of five competences – in total 15 competences.

Entrepreneurship as a competence is understood as something that develops through action. Accordingly, the EntreComp framework describes the 15 competences along a progression model with four main levels: Foundation, Intermediate, Advanced and Expert. Each level is split into two sub-levels . [6]

5. Entrepreneurial Mindset Index (EMI)

- Developed by: the Network For Teaching Entrepreneurship (NFTE)
- Source: NFTE (2017), Gold and Rodriguez (2018)
- Website: https://www.nfte.com/
- Empirically tested: yes
- Public access: the scales are not publicly available
- Dimensions: 8

The Entrepreneurial Mindset Index (EMI) is a tool to measure attitudes, behaviors and beliefs associated with being an entrepreneur.

6. MindCette Entrepreneurial Test (mcetTM)

- Developed by: Kelly G. Shaver (College of Charleston), Jan Wegelin (Jan Wegelin Consultancy), Immanuel Commarmond (Mindstate Set for Growth)
- Source: Shaver et al. (2019)
- Website: https://www.mindcette.com/
- Empirically tested: yes
- Public access: the tool / scales are not publicly available; the test can be taken on the website for a fee
- Dimensions: 9

6 For a description of the 8 levels see Bacigalupo et al. 2016, p. 16.

Table 6: EntreComp conceptual model (Bacigalupo et al. 2016, 12 f.)

Areas	Competences	Hints	Descriptors
1. Ideas and opportunities	**1.1 Spotting opportunities**	Use your imagination and abilities to identify opportunities for creating value	• Identify and seize opportunities to create value by exploring the social, cultural and economic land-scape • Identify needs and challenges that need to be met • Establish new connections and bring together scattered elements of the landscape to create opportunities to create value
	1.2 Creativity	Develop creative and purposeful ideas	• Develop several ideas and opportunities to create value, including better solutions to existing and new challenges • Explore and experiment with innovative approaches • Combine knowledge and resources to achieve valuable effects
	1.3. Vision	Work towards your vision of the future	• Imagine the future • Develop a vision to turn ideas into action • Visualize future scenarios to help guide effort and action
	1.4 Valuing ideas	Make the most of ideas and opportunities	• Judge what value is in social, cultural and economic terms • Recognize the potential an idea has for creating value and identify suitable ways of making the most out of it
	1.5 Ethical and sustainable thinking	Assess the consequences and impact of ideas, opportunities and actions	• Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment • Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen • Act responsibly

2. Resources	**2.1 Self-awareness and self-efficacy**	Believe in yourself and keep developing	• Reflect on your needs, aspirations and wants in the short, medium and long term • Identify and assess your individual and group strengths and weaknesses • Believe in your ability to influence the course of events, despite uncertainty, setbacks and temporary failures
	2.2 Motivation and perseverance	Stay focused and don't give up	• Be determined to turn ideas into action and satisfy your need to achieve • Be prepared to be patient and keep trying to achieve your long-term individual or group aims • Be resilient under pressure, adversity, and temporary failure
	2.3 Mobilizing resources	Gather and manage the resources you need	• Get and manage the material, non-material and digital resources needed to turn ideas into action • Make the most of limited resources • Get and manage the competences needed at any stage, including technical, legal, tax and digital competences
	2.4 Financial and economic literacy	Develop financial and economic know how	• Estimate the cost of turning an idea into a value-creating activity • Plan, put in place and evaluate financial decisions over time • Manage financing to make sure my value-creating activity can last over the long term
	2.5. Mobilizing others	Inspire, enthuse and get others on board	• Inspire and enthuse relevant stakeholders • Get the support needed to achieve valuable outcomes • Demonstrate effective communication, persuasion, negotiation and leadership

3. Into Action	**3.1 Taking the initiative**	Go for it	• Initiate processes that create value • Take up challenges • Act and work independently to achieve goals, stick to intentions and carry out planned tasks
	3.2 Planning and management	Prioritize, organize and follow-up	• Set long-, medium- and short-term goals • Define priorities and action plans • Adapt to unforeseen changes
	3.3 Coping with uncertainty, ambiguity and risk	Make decisions dealing with uncertainty, ambiguity and risk	• Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes • Within the value-creating process, include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing • Handle fast-moving situations promptly and flexibly
	3.4 Working with others	Team up, collaborate and network	• Work together and co-operate with others to develop ideas and turn them into action Network • Solve conflicts and face up to competition positively when necessary
	3.5. Learning through experience	Learn by doing	• Use any initiative for value creation as a learning opportunity • Learn with others, including peers and mentors • Reflect and learn from both success and failure (your own and other people's)

Table 7: Entrepreneurial Mindset Domains (EMI) (NFTE 2017; Gold and Rodriguez 2018)

Construct	Definition
Opportunity Recognition	The practice of seeing and experiencing problems as opportunities to create solutions.
Comfort with Risk	The capacity to move forward with a decision despite inevitable uncertainty and challenges.
Future Orientation	An optimistic disposition with a focus on obtaining the skills and knowledge required to transition into a career.
Critical Thinking & Problem Solving	The capacity to apply higher-level process-oriented thinking, consider an issue from a range of possible perspectives, and use that reasoning to make decisions.
Creativity & Innovation	The ability to think of ideas and create solutions to problems without clearly defined structures.
Communication & Collaboration	The ability to clearly express ideas to an intended audience, including persuading others to work towards a common goal.
Initiative & Self-Reliance	The power to take ownership of a project without input or guidance and work through obstacles independently.
Flexibility & Adaptability	The ability and willingness to change actions and plans to overcome present and future challenges.

Table 8: Dimensions of the MindCette Entrepreneurial Test (Shaver et al. 2019)

Dimension	Sample Item
Confidence	I feel confident about my abilities
Diligence	I finish whatever I begin
Entrepreneurial Desire	I have seriously thought about starting my own business
Innovation	I would rather innovate than continue to do the same old thing
Leadership	Most people think I am a strong leader
Motives	I want to build great wealth or a very high income
Permanence	People have a certain amount of intelligence and they can't really do much to change it
Resilience	Life's challenges are opportunities for personal growth
Self-control	I want to control my own destiny

7. CS-EMS College Students' Entrepreneurial Mindset Scale

- Developed by: Eunju Jung (Sejong University) and Yongjin Lee (Hansei University)
- Source: Jung and Lee (2020)
- Website: -
- Empirically tested: yes
- Public access: the scale is published
- Dimensions: 5

Table 9: College Students' Entrepreneurial Mindset Scale (Jung and Lee 2020, 8 f.)

Dimension	Description	Items
Innovativeness	Propensity to seek new opportunities and solutions	• I like to take on a new challenge. • I try to work in a novel way. • I am likely to accept new ideas. • I like imaginative ideas. • I try to look for new opportunities earlier than others. • I persistently try to come up with outstanding ideas.
Need for Achievement	Propensity to achieve something quickly and well	• I act aggressively to achieve a goal. • I am more passionate than others. • I have a strong will to achieve something. • I persist in pushing forward necessary things against all odds.
Risk-taking	Propensity to try something with either unclear expectations or the possibility of failure	• I tend to push forward something with high expected value even with high risk. • I tend to take risks for new opportunities. • I tend to take challenges even when there is a risk of failure.
Autonomy	Propensity to act independently while being reluctant to rely on others	• I am reluctant to receive outside aid. • I prefer solving problems independently. • I prefer acting based on my own decisions.
Proactiveness	Propensity to plan and act in advance	• I proactively plan new things. • I plan and act in advance rather than waiting for something to be given. • I tend to actively overcome hardships rather than attributing to the environment.

3.2 Innovativeness

ENGAGE.EU emphasizes innovation-based entrepreneurship. Consequently, innovativeness is an important part of innopreneurship and of the innopreneurial mindset. In order to be able to highlight this in our mindset framework, we extended the literature research to concepts on innovativeness.

As suggested by Stauffer (2015) personal innovativeness can be understood as a mindset, rather than a skill, an attribute, an attitude or a personality trait "Innovativeness includes being imaginative, curious, self-aware, courageous, open to new ideas, resourceful and many personal attributes that enhance personal effectiveness in any context." (Stauffer n.d.)

Dyer et al. (2011) identify five capabilities demonstrated by innovative entrepreneurs:

- Associating: drawing connections between questions, problems or ideas from unrelated fields;
- Questioning: posing queries that challenge common wisdom;
- Observing: scrutinizing the behavior of customers, suppliers, and competitors to identify new ways of doing things;
- •Experimenting: constructing interactive experiences and provoking unorthodox responses to see what insights emerge; and
- Networking: meeting people with different ideas and perspectives.

3.3 Sustainability-driven Entrepreneurship

ENGAGE.EU combines the action perspective (entrepreneurial mindset) with a value-based attitude. We aim at educating a new generation of individuals with skills and capabilities to demonstrate an understanding and commitment to the challenges of our societies. According to this goal, we looked for a way to integrate the value-based approach and the societal perspective in our mindset definition and framework. After a literature review we concluded, that "sustainability-driven entrepreneurship" as a concept is similar to our understanding of innopreneurship. Therefore, we include a brief introduction to the concept. Furthermore, we map existing frameworks for the mindset or rather the competences needed to engage in sustainability-driven entrepreneurship.

3.3.1 Sustainability-driven Entrepreneurship as a Value-based Approach to Entrepreneurship

Sustainability-driven entrepreneurs try to balance economic, social and environmental goals through their entrepreneurial behavior (Tilley and Young 2006). In the literature this is also described as managing the "triple bottom line" (Patzelt and Shepherd 2011), i.e. considering people, profit and the planet in ones activities. Sustainability-driven entrepreneurs and intrapreneurs are needed as actors who contribute to innovation and create solutions for the multiple challenges of our society (Mindt and Rieckmann 2017).

Sustainability-driven entrepreneurs initiate activities that lead to identifying, evaluating, and exploiting business opportunities to contribute to sustainability and profitability (Dean and McMullen 2007; Schaltegger and Wagner 2011; Patzelt and Shepherd

2011; Ploum et al. 2018). Or in other words: „Sustainability-driven entrepreneurs are actors who initiate and successfully implement sustainable

innovations in pursuit of social and ecological objectives in addition to economic ones as the basis of their organizational strategy." (Biberhofer et al. 2019, p. 21)

As these definitions already indicate, sustainability-driven entrepreneurship is closely linked to innovation. Schaltegger and Wagner (2011) describe sustainable entrepreneurship as the realization of (societal, environmental and institutional) sustainability innovations providing benefits not only to shareholders but to societal stakeholders. This is an understanding of entrepreneurship closely related to our ENGAGE.EU innopreneurship concept.

Sustainability-driven entrepreneurship is distinguished from growth-oriented entrepreneurship through a change of values and the manner in which opportunities are discovered and exploited – moving from focusing on personal to socioecological gain (Biberhofer et al. 2019). It can be described as "The use of entrepreneurial activity in a determined action orientation toward solving a sustainability-related problem" (Abrahamsson 2007, p. 10). Value-driven entrepreneurs engage in sustainable and environmentally friendly business practices which they see as a way to achieve environmental and social benefits (Gast et al. 2017).

The motivation of entrepreneurs to start a sustainability-driven enterprise is closely linked to their individual values (Gast et al. 2017). Apart from seeking general values like independence or autonomy, attitudes and values linked to sustainability (i.e. a sustainability orientation) motivate individual entrepreneurs to engage in sustainability-driven entrepreneurship (Gast et al. 2017). Sustainability-driven entrepreneurs want to "contribute to solving societal and environmental problems through the realization of a successful business." (Schaltegger and Wagner 2011, p. 224)

Various authors refer to the link between values and sustainability-orientation and the intention to start a sustainability-driven venture:

- "A driving force motivating entrepreneurial behavior and activity is the opportunity to apply their personal value system in the way they work." (Tilley and Young 2006, p. 85)
- Patzelt and Shepherd (2011) identify altruism as one of the main drivers of the desire to start a sustainable enterprise.
- Vuorio et al. (2018) show that including values and general sustainability orientation increases the explanatory power of models on entrepreneurial intention formation within sustainable entrepreneurship. "Sustainability-oriented entrepreneurial intentions are driven by attitudes toward sustainability and perceived entrepreneurial desirability." (Vuorio et al. 2018, p. 359)

Biberhofer et al. (2019) argue that competences as well as values and worldviews are key dimensions constituting sustainability-driven entrepreneurship. Accordingly, the impact of sustainability orientation on entrepreneurial intentions as well as the competences needed for sustainability-driven entrepreneurship are discussed in the following section.

3.3.2 Sustainability Orientation and Entrepreneurial Intentions

Various authors show that personal sustainability orientation has a positive influence on entrepreneurial intentions. Kuckertz and Wagner (2010, p. 531) examined the influence of sustainability orientation on entrepreneurial intentions. They found that adding individual sustainability orientation to models of entrepreneurial intention is meaningful. Sung and Park (2018) showed that sustainability orientation has a positive relationship with opportunity recognition and entrepreneurship intention related to sustainability.

Vuorio et al. (2018) found that perceived entrepreneurial desirability has the largest influence on sustainability-oriented entrepreneurial intentions. Therefore, they suggest that providing positive images about entrepreneurship and using positive role models could be a way to enhance sustainability-oriented entrepreneurial intentions. Moreover, they highlight attitudes toward sustainability as important drivers that should also play a key role in entrepreneurship education.

3.3.3 Competences for Sustainability-driven Entrepreneurship

Over the past few years, several scholars made efforts to conceptualize key competences for sustainable development. Ploum et al. (2018) provide an overview of key competences identified by researchers focusing on the work-context (Figure 5).

While entrepreneurial competence in general can be defined as "the ability to identify and pursue entrepreneurial opportunities within a specific position and context" (Lans et al. 2014, p. 39), even more specific competences are necessary for sustainability-driven entrepreneurs. In the following, existing frameworks on competences for sustainability-driven entrepreneurship are outlined.

1) Wiek et al. (2011) & Wiek et al. (2016)

- Sustainability key competences
- Method: based on literature review
- Public access: learning objectives for all competences are published
- Competences: 6

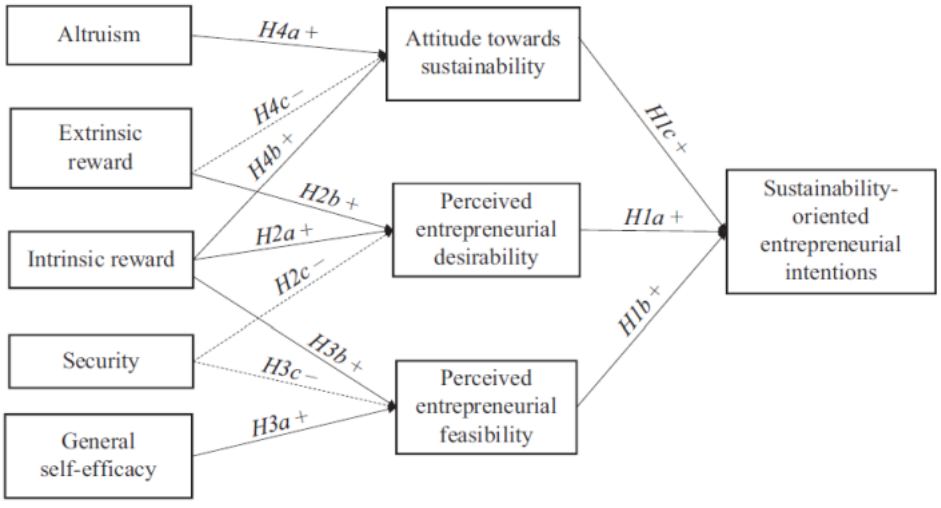

Figure 4: Theoretical model for Sustainability-Oriented Entrepreneurial Intentions (Vuorio et al. 2018, p. 362)

Table 1. Overview of Competencies for Sustainable Development Contextualized in the Work-Context, Identified by Key Researchers.

Study	Key competencies included in research
Hesselbarth and Schaltegger (2014)	1. Strategic competence 2. Systems-thinking competence 3. Anticipatory competence 4. Normative competence 5. Interpersonal competence
Osagie et al. (2016)	1. Anticipating CSR challenges 2. Understanding CSR-relevant systems and subsystems 3. Understanding CSR-relevant standards 4. CSR management competencies 5. Realizing CSR-supportive interpersonal processes 6. Employing CSR-supportive personal characteristics and attitudes 7. Personal value-driven competencies 8. Reflecting on personal CSR views and experiences
Wesselink et al. (2015)	1. Systems thinking competence 2. Embracing diversity and interdisciplinarity competence 3. Interpersonal competence 4. Action competence 5. Strategic management competence
Lans et al. (2014)	1. Systems-thinking competence 2. Embracing diversity and interdisciplinarity competence 3. Foresighted thinking competence 4. Normative competence 5. Action competence 6. Interpersonal competence 7. Strategic management competence

Note. CSR = corporate social responsibility.

Figure 5: Overview of Competences for Sustainable Development (Ploum et al. 2018, p. 117)

Based on their literature review, Wiek et al. (2011) outline five sustainability key competences: anticipatory (or future thinking) competence, normative (or value thinking) competence, strategic (or action-oriented) competence, and interpersonal (or collaboration) competence. More recently, they added a sixth competence, namely "the meta-competence of meaningfully using and integrating the five key competencies for solving sustainability problems and fostering sustainable development". (Wiek et al. 2016, p. 243)

2) Lans et al. (2014)

- Integrated competence framework for sustainable entrepreneurship in higher education
- Method: empirically tested
- Public access: items published
- Competences: 7

Lans et al. (2014) developed an integrated competence framework for sustainable entrepreneurship in higher education. With their competence approach, they aimed at linking the world of education for entrepreneurship and for sustainability. By doing so, they developed a competence framework with 7 key competences. In their empirical study, 27 questions were used to test students' sustainable entrepreneurship competences.

Table 10: Competence framework for sustainable entrepreneurship in higher education (own representation based on Lans et al. 2014)

Competence	Description
Systems thinking competence	• The ability to identify and analyze all relevant (sub)systems across different domains (people, planet, profit) and disciplines, including their boundaries • The ability to understand and reflect upon the interdependency of these (sub)systems
Embracing diversity and interdisciplinary competence	• The ability to structure relations, spot issues and recognize the legitimacy of other viewpoints in business decision-making processes; be it about environmental, social or and/or economic issues • The ability to involve all stakeholders and to maximize the exchange of ideas and learning across different groups and disciplines
Foresight thinking competence	• The ability to collectively analyze, evaluate and craft "pictures" of the future in which the impact of local and/or short term decisions on environmental, social and economic issues is viewed on a global/cosmopolitan scale and on the long term • This capacity includes skills in creativity, opportunity recognition and innovation
Normative competence	• The ability to map, apply and reconcile sustainability values, principles and targets with internal and external stakeholders • The ability to assess and improve the (un-)sustainability of social-ecological systems, based on such values and principles • The ability to assure that managers and other employees are held accountable for the decisions made
Action competence	• The ability to actively involve oneself in responsible actions to improve the sustainability of social-ecological systems
Interpersonal competence	• The ability to motivate, enable, and facilitate collaborative and participatory sustainability activities and research; includes skills in communicating, collaborating, negotiating, empathy and compassion
Strategic management competence	• The ability to collectively design projects, implement interventions, transitions, and strategies for sustainable development practices; involves skills in planning, organizing, leading and controlling

3) Ploum et al. (2018)

- Six Factor Competence Framework for Sustainable Entrepreneurs (based on Lans et al. (2014))
- Method: empirically tested
- Public access: items published
- Competences: 6

The authors tested the existing competence framework for sustainable entrepreneurship from Lans et al. (2014). The "action competence" and the "strategic management competence" are merged into one. The framework therefore includes 6 competences. The research confirmed the validity of the construct.

4) Biberhofer et al. (2019)

- Five areas of key competences for sustainability-driven entrepreneurship
- Developed by: the CASE project
- Website: https://www.case-ka.eu/
- Method: empirically tested
- Public access: all competences are described in the publication
- Competences: 5

In terms of the development of entrepreneurial teaching programs, the authors argue that not only competences but also worldviews and values are important. "Worldviews and values must be understood as initiators of action and crucial dispositions in the context of competencies." (Biberhofer et al. 2019, p. 28)

Worldviews and values characterizing sustainability-driven entrepreneurship:

- Strong belief in the necessity of a transformation towards a sustainable economy

Critical reflection on the growth paradigm

Strong sense of responsibility towards the future of our societies (intra- and intergenerational equity; well-being) and the environment

Trust in entrepreneurial transformation capacities

Passion to be an honorable merchant

New forms of cooperation

These worldviews and values characterizing sustainability-driven entrepreneurship should be developed and reflected upon in the educational process.

5) CASE Sustainability Competencies Tool

- CASE Sustainability Competencies Tool
- Developed by: the CASE project
- Website: https://ctool.case-ka.eu/ and https://www.case-ka.eu/wp/wp-content/uploads/2018/02/Competencies-Tool_EN.pdf
- Method: empirically tested
- Public access: free access on the website
- Competences: 5

The objective of the CASE Competencies Tool is to make individual competences for sustainable development visible and to give support for further development. It assumes a holistic understanding of competences that includes values, knowledge and the ability to implement. The main target group of the tool are students in sustainability-oriented courses at tertiary level.

The tool includes 5 types of competences: systemic competence, anticipatory competence, normative competence, strategic competence and interpersonal competence.

Figure 6: Key competences for sustainability-driven entrepreneurship (Biberhofer et al. 2019, p. 28)

Competence	Description
Systemic competency	• Coping with and understanding complexity of sustainability • Understanding interconnectedness of various scales • Ability to change perspectives
Anticipatory competency	Intergenerational thinking, time horizons Coping with risk and uncertainty Realizing and developing potentials/capabilities
Normative competency	• Dealing with norms and ethics promoting sustainability • Distinguishing between alternatives • Working and dealing with emotions • Dealing with contradictions and dilemmas
Strategic competency	• Openness for possibilities • Innovative thinking, that is, towards monitoring and measuring impact • Establishing a learning culture and transforming failures and successes into learning • Management skills to implement sustainability transitions
Interpersonal competency	• Work in multi-stakeholder networks; sustaining them via culture of cooperation • Participative teamwork • Integrative leadership • Transdisciplinary communication skills

4. Innopreneurial Mindset

After mapping existing frameworks on the entrepreneurial mindset, innovativeness and sustainability-driven entrepreneurship (see Chapter 0) we developed our own ENGAGE.EU Innopreneurial Mindset Definition as well as an ENGAGE.EU Innopreneurial Mindset Framework. Both is presented in this chapter.

4.1 Innopreneurial Mindset – Definition

Based on our literature review (see 3.1), we define the innopreneurial mindset as follows:

- Innopreneurial mindset refers to the way an innopreneur thinks and acts
- It is a set of characteristics, motives, behaviors and skills that drive action
- The way an innopreneur thinks or in other words the lens through which they see the world is influenced by
- what people know or do not know (knowledge)
  - ◊ what people have done and have not done (experience)
  - ◊ what people can do or believe they can do (related to their level of competency and self-belief) and
  - ◊ who they are (personality, values, attitudes, beliefs)
- A person with an innopreneurial mindset has the ability to discover, evaluate and exploit opportunities under uncertain conditions and create value

Figure 7: Innopreneurship and innopreneurial mindset

The innopreneurial mindset comprises several specific competences. Following the recommendation on key competences for lifelong learning, we define competences as "a combination of knowledge, skills and attitudes appropriate to the context." (European Parliament; Council of the European Union 2006)

In our ENGAGE.EU framework, we use the concept of competences to describe what is needed to develop an innopreneurial mindset. We chose this approach as 1) competences are a widely used concept in (entrepreneurship) education and 2) competences can be specified and further developed for different educational levels.

4.2 Innopreneurial Mindset – Framework

In order to transform existing frameworks into the ENGAGE.EU Innopreneurial Mindset Framework, we started with the most commonly used dimensions of the entrepreneurial mindset and evaluated them with regard to the specific ENGAGE.EU context. In a next step, we refined them and added a specific focus on innovation and sustainable value-creation.

In a first step, this resulted in the following suggestion (Figure 8).

The discussions in the task team group resulted in the conclusion, that the differentiation according to existing notions (entrepreneurship, innovation, value creation) was not appropriate for our needs. Hence, the framework was refined further. Existing concepts were transformed into a new, integrated framework, which is presented in the next section.

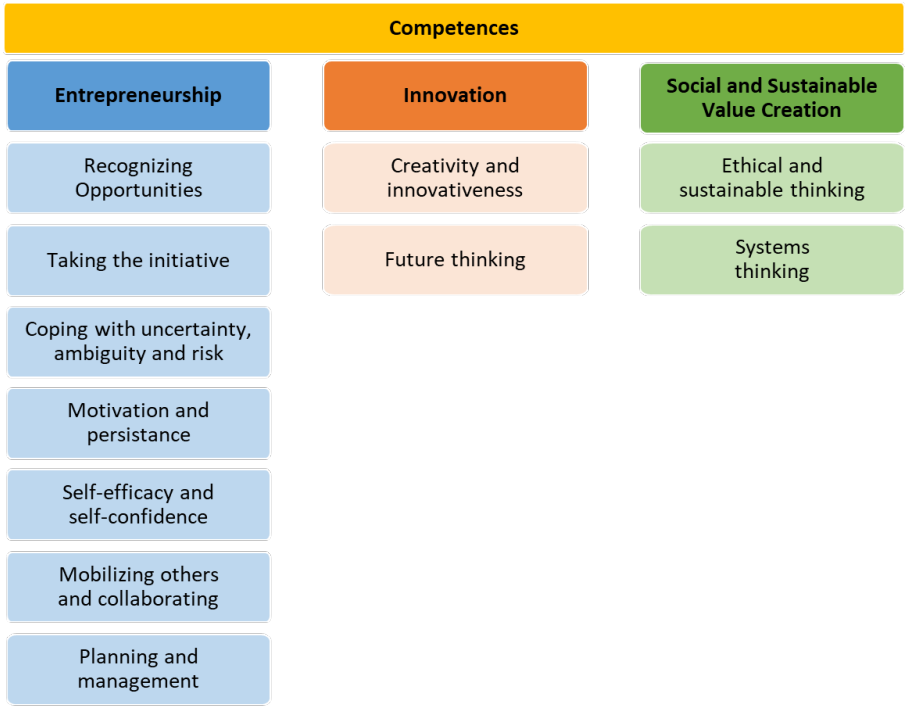

Figure 8: Innopreneurial Mindset Framework – First draft

4.2.1 Innopreneurial Mindset Framework – Overview

We suggest 12 competences clustered in the areas "Self", "Function", "Action" and "Thinking" for the ENGAGE.EU Innopreneurial Mindset. These 12 competences describe the skills, knowledge and attitudes needed to be able to act upon opportunities and transform them into value for others.

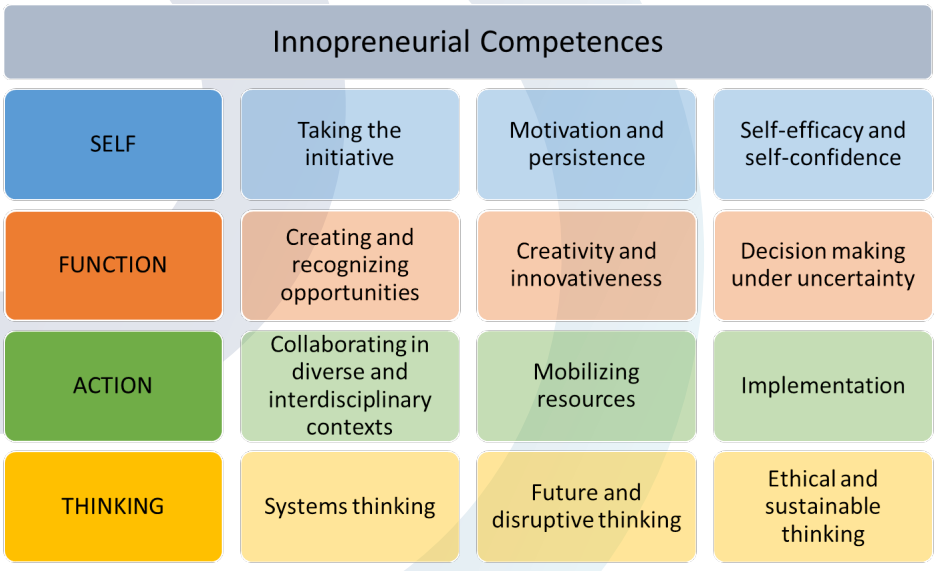

Figure 9: ENGAGE.EU Innopreneurial Mindset Framework

4.2.2 Innopreneurial Mindset Framework – Full framework

Table 11: ENGAGE.EU Innopreneurial Mindset Framework (Full framework)

Category	Competence	Description	Sources
SELF	**Taking the initiative**	• Show initiative • Initiate processes that create value • Take up challenges • Act and work independently to achieve goals, stick to intentions and carry out planned tasks • Take ownership of a project without input or guidance and work through obstacles independently	EMI EMP EntreComp Lans
	Motivation and persistence	• Stay focused and don't give up • Be determined to turn ideas into action and satisfy your need to achieve • Be prepared to be patient and keep trying to achieve your goals • Be resilient under pressure, adversity and temporary failure • Bounce back quickly from disappointment and remain persistent in the face of setbacks	EMP EntreComp
	Self-efficacy and self-confidence	• Believe in yourself • Believe in your ability to influence the course of events • Believe in your ability to leverage skills and talents to achieve important goals	EMP EntreComp
FUNCTION	**Creating and recognizing opportunities**	• Identify and pursue opportunities for creating value • Identify needs and challenges that need to be met • See problems as opportunities to create solutions • Establish new connections and bring together scattered elements of the landscape to create opportunities to create value	EMI EntreComp
	Creativity and innovativeness	• Develop creative and purposeful ideas • Develop ideas and opportunities to create value, including better solutions to existing and new challenges • Find creative and innovative approaches to problem solving • Generate multiple and novel ideas and find multiple approaches for achieving goals • Use associating, questioning, observing, experimenting and networking to come up with innovative ideas	Commarmond Dyer EMI EMP EntreComp
	Decision making under uncertainty	• Cope with uncertainty and ambiguity • Accept the risks inherent in an opportunity • Make decisions and move forward despite uncertainty, ambiguity and risk • Calculate and manage risk • Use structured ways of testing ideas and prototypes within the value-creating process, to reduce the risk of failing	EMI EntreComp Krueger

ACTION	**Collaborating in diverse and interdisciplinary contexts**	• Inspire, enthuse and get others on board • Team up, collaborate and network (in a transdisciplinary environment) • Involve all stakeholders and maximize the exchange of ideas and learnings across different groups and disciplines • Recognize the legitimacy of other viewpoints in business decision-making processes • Embrace diversity	ASTEE Biberhofer EMI EntreComp Lans
	Mobilizing resources	• Identify, attract and combine resources (in an innovative way) • Get and manage the material, non-material and digital resources needed to turn ideas into action • Make the most of limited resources	ASTEE EntreComp
	Implementation	• Design and implement projects • Plan, organize and lead • Acquire financial and economic literacy (estimating costs, making financial decisions and ensuring the financial sustainability of a value-creating activity) • Get and manage the technical, legal, tax and digital competences needed	ASTEE EntreComp Lans
THINKING	**Systems thinking**	• Cope with and understand the complexity of sustainability • Understand the interconnectedness of various scales • Be able to change perspectives • Identify and analyze all relevant (sub-)systems across different domains (people, planet, profit) and disciplines, including their boundaries • Understand and reflect upon the interdependency of these (sub)systems	Biberhofer Lans
	Future and disruptive thinking	• Think beyond the immediate situation and plan for the future • "Craft" pictures of the future • Work towards your vision of the future • Visualize future scenarios to help guide efforts and action • Analyze the impact of decisions on environmental, social and economic issues on the long term	Biberhofer EMP Entrecomp Lans
	Ethical and sustainable thinking	• Have a sense of responsibility towards the future of our societies (intra- and intergenerational equity) and the environment • Belief in the necessity of a transformation towards a sustainable economy • Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen • Assess the consequences and impact of ideas and entrepreneurial actions on the target community, the market, society and the environment • Act responsibly	Biberhofer EntreComp

Outlook

The ENGAGE.EU Innopreneurial Mindset Framework provides a basis for our consortium's actions towards creating a fostering environment for innopreneurs. This framework is open for further development in the course of ENGAGE.EU. For example, different levels (e.g. basic, intermediate, advanced) could be introduced for all competences.

Abbreviations

ASTEE	Moberg, Kare et al (2014): How to assess and evaluate the influence of entrepreneurship education. A report of the ASTEE project with a user guide to the tools.
Biberhofer	Biberhofer, Petra; Lintner, Claudia; Bernhardt, Johanna; Rieckmann, Marco (2019): Facilitating work performance of sustainability-driven entrepreneurs through higher education: The relevance of competencies, values, worldviews and opportunities. In The International Journal of Entrepreneurship and Innovation 20 (1), pp. 21–38.
Commarmond	Commarmond, Immanuel (2017): In Pursuit of a Better Understanding of and Measure for Entrepreneurial Mindset. Allan Gray Orbis Foundation. Available online at https://www.allangrayorbis.org/wp-content/uploads/2017/10/Literature-review-1.pdf.
Dyer	Dyer, Jeff; Gregersen, Hal; Christensen, Clayton M. (2011): The Innovator's DNA. Mastering the Five Skills of Disruptive Innovators. Boston: Harvard Business Review Press. Available online at https://ebookcentral.proquest.com/lib/gbv/detail.action? docID=5181892.
EMI	NFTE (2017): Whitepaper Entrepreneurial Mindset. On Ramp to Opportunity. Available online at https://www.nfte.com/wp-content/uploads/2020/04/NFTE-Whitepaper-Entrepreneurial-Mindset-On-Ramp-to-Opportunity-December-2017.pdf. Gold, Thomas; Rodriguez, Sophia (2018): NFTE-Whitepaper-Measuring-Entrepreneurial-Mindset-in-Youth. Available online at https://www.nfte.com/wpcontent/uploads/2020/ 04/NFTE-Whitepaper-Measuring-Entrepreneurial-Mindset-in-Youth-November-2018.pdf.
EMP	Davis, Mark H.; Hall, Jennifer A.; Mayer, Pamela S. (2016): Developing a New Measure of Entrepreneurial Reliability, Validity, and Implications for Practitioners. In Consulting Psychology Journal: Practice and Research 68 (1), pp. 21–48. Available online at https://psycnet.apa.org/fulltext/2015-47632-001.pdfhttps://psycnet.apa.org/fulltext/ 2015-47632-001.pdf.
EntreComp	Bacigalupo, Margherita; Kampylis, Panagiotis; Punie, Yves; van den Brande, Godelieve (2016): EntreComp: The Entrepreneurship Competence Framework. Edited by Publication Office of the European Union. Luxembourg. Available online at https://publications.jrc.ec.europa.eu/repository/bitstream/JRC101581/lfna27939enn.pdf, checked on 1/27/2021
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