Competencies for Entrepreneurial Skills (C3): @Imperial

Caterina Dastoli[1], Francesca Mattioli[1], Weston Baxter[2]

[1] *Politecnico di Milano*

[2] *Imperial College London*

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Topic & Need

Entrepreneurial skills are traditionally classified and employed to strengthen and implement technical and strategic knowledge in business contexts of entrepreneurship to expand economic activity through the identification and development of new products, processes, or markets.

However, when these skills are to be applied to doing research and managing career possibilities from a Design doctoral student's perspective, the approach to entrepreneurship and the consequent application of entrepreneurial skills need to be interpreted and adapted consistently to the relevant professional figure.

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Indeed, not all doctoral students in Design will create a start-up or develop the result of his or her research into a product and/or service to have an entrepreneurial approach. On the other hand, doctoral students in Design who decide to remain in research in academia also benefit from these skills.

This activity therefore focused on adapting and applying a coherent approach to entrepreneurship based on which doctoral students in Design can be aware of multiple possibilities of research results implementation through the application of entrepreneurial skills within their individual and complex context of interest.

Particularly, this activity wanted to explore more in-depth the relational approach to entrepreneurship, that not directly focus on the development of new products, processes, or markets, but rather on human capital and the configuration of its relational dynamics for collaboration (Spigel, 2017). This supports widening research result implementation possibilities of a PhD student in Design beyond the development of new products, processes, or markets by focusing on the organizational level of entrepreneurship.

The EntreComp framework by the EU has been taken as the primary reference for the selection of entrepreneurial skills to be used in the activity (Bacigalupo et al., 2016).

Fig.1: entrepreneurial areas and competencies defined by the Entrecomp framework.

Although the literature in the field of entrepreneurship reports numerous classifications of entrepreneurial skills, EntreComp seemed relevant in that it does not relate the classified skills to a specific audience or goal. This aspect discriminates against other recognized taxonomies since it allows the application of skills to be tailored to the specific learning context when planning the subject activity.

Participants & Goal

The activity was developed in the form of a workshop at Imperial College intended for PhD students in Design at the DoCS4Design institutions with a strong interest in translating research into applications or implementations. Students with some research results as they already conducted previous research phases (i.e., defined the positioning of their research and methodology, and partially or fully conducted data collection activities) were selected with priority. In some cases, students earlier in their journey made a good argument for attendance.

The workshop goal was to make PhD students in Design adopt an entrepreneurial approach to be aware of entrepreneurial skills, the network of stakeholders in which to participate, and how to organize the network resources for opportunity identification, resource mobilization, and ongoing collaboration from a mutual knowledge exchange perspective.

Particularly, participants were asked to:

1. reflect and identify possible actions and stakeholders that might promote the advancement of the knowledge acquired over the PhD.

2. plan specific stakeholder engagement initiatives that support value creation with societal and personal context.

Due to the number of participants and the limited time available, six alumni, one from each partner, were selected as case studies. Therefore, participants worked in groups by developing entrepreneurial opportunities for the assigned PhD research results.

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The workshop also invited three speakers who could share their perspectives and experiences on different topics of interest: research collaborations beyond the PhD, future perspectives beyond the PhD, and building academic/industry relationships.
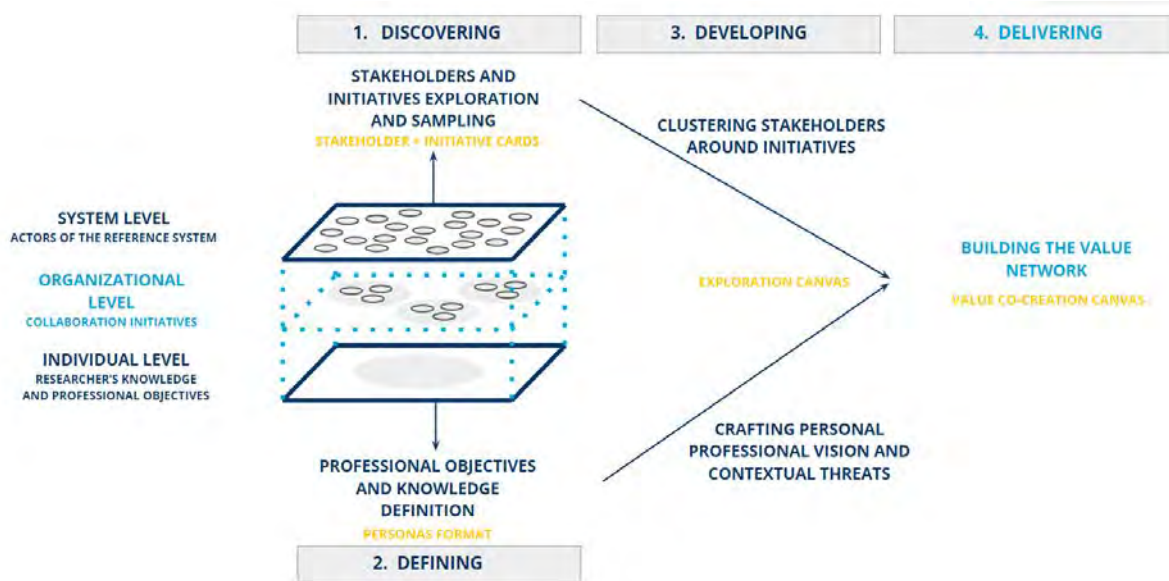

Fig.2: the four-stage model of entrepreneuring actions used in the course.

Method (how we worked)

The workshop lasted five days and worked with 2-6 participants at each partner. Before the workshop started, participants were provided with readings about entrepreneurial skills and Design intervention within complex contexts of entrepreneurship. Moreover, participants were asked to fill out an individual vignette describing their PhD researcher profile.

The workshop was structured as follows:

Day 1. Welcome: Participants are introduced to the topic and aim of the workshop, attend the case studies presentation, and are divided into groups. Each group can set an interview with the reference case study to collect details about his/her research results.

Day 2. Discovering: Groups use initiatives and stakeholder cards as primary tools to start exploring and sampling stakeholders around potential initiatives for PhD results implementation. Initiatives cards guided groups in identifying initiatives in the dimensions of dissemination, further research, and exploitation, while stakeholder cards listed potential stakeholders in the research & education, business, civil society, and public administration sectors.

Day 3. Defining/Developing: Each group is provided with a case study vignette, that describes the sector of interest, professional objectives and design knowledge for each case study. Due to the information provided in the vignette, groups can start populating the exploration canvas. Therefore, depending on the case study vignette, groups select consistent initiatives and potential stakeholders that could enable the initiative realization together with the case study's description.

Day 4. Delivering: Each group has now identified potential initiatives and stakeholders that satisfy the case study's professional figure. As the final effort, groups need to envision why and how stakeholders will start collaborating around the reference initiative. Groups use the value co-creation canvas as a support to visualize and define the value each stakeholder can get from the envisioned collaboration

Day 5. Presentation: Each group presented the developed work to the reference case study and the panel of partners. Sharing of thoughts and a final questionnaire closed the workshop.

At the end of each day, one hour was dedicated to the SELF-REFLECTION. In this context, participants were provided with the entrepreneurial skill cards that they used to indicate which competence was deemed useful, improved, and not applied for the execution of the day's work.

Resource materials developed

Preparatory material for the activity performance

- A collection of literature on Design and Entrepreneurship
- Case studies vignettes
- PhD students vignettes

Tools

- Stakeholder cards
- Initiatives cards
- Entrepreneurial skills cards
- Exploration canvas
- Value co-creation canvas

Tools description and guidelines for use

1. Stakeholder cards (see the tool in the Appendix)

Stakeholder cards list the main categories of actors within four sectors of intervention: research & education, business, civil society, and public administration. Each card is made with a specific color (sector indication for that card) and the actor category is written on the top section of the card. Stakeholder cards are intended as a prompt for exploring and identifying potential stakeholders of interest for the development and/or implementation of the input (in the case of our activity, the input is the Ph.D. research result).

How to use them: by referring to the input as the main exploration driver, use the cards to describe the actors of interest that might become stakeholders for the development and/or implementation of the input. If you think about your input potentials of development/implementation, which are the sectors that could be involved? Which are actors categories within those sectors that could support your scope? Then, you can start defining in detail who they could be (name of the actor, e.g., company name) and write their specifications within the card.

2. Initiative cards (see the tool in the Appendix)

Initiative cards support the definition of the actions (i.e. initiatives) that could be enacted to develop/implement the input. In the case of our activity, three main categories of actions were identified: further research, dissemination, and exploitation. Each card is made with a specific color (indication of the action category for that card) and reports a possible coherent action typology on the top section of the card.

How to use them: by referring to the input as the main exploration driver, use the cards as a tool for defining the initiatives that could support the development/implementation of the input. You can focus on one or more categories of initiatives and start describing each initiative in detail within the corresponding action typology.

3. Exploration canvas (see the tool in the Appendix)

The exploration canvas is made of three main sections: case study description, individual professional vision and threats, and groups of initiative and related stakeholders. This canvas supports design initiatives and related stakeholders for the development/implementation of the input, coherently with individual professional interests and aspirations.

How to use it: fill out the case study description section with the required data. Inserted data support the definition of the vision and related threats within the second section. Then, by considering vision and threats, sample previously defined initiatives and group potential stakeholders around them within the dedicated sections.

4. Value co-creation canvas (see the tool in the Appendix)

The value co-creation canvas can be considered an extension of the Exploration canvas since it deepens into the value relationships between stakeholders grouped around an initiative. The canvas offers the possibility to define mutual value exchange between the engaged stakeholders and the researcher working on the input development/implementation. Through its configuration, the canvas aims to design the basis for value co-creation through the performing of the initiative of interest.

How to use it: the canvas shows an intermediate level between the stakeholders and the initiative for defining and describing the value that the researcher can get by collaborating with the selected stakeholders and vice-versa. The researcher can fill out the dedicated space at that level to make

very clear why the potential collaboration could be beneficial for both and which benefits the two can get.

5.	Entrepreneurial skills cards (see the tool in the Appendix)

The cards report the list of entrepreneurial skills listed in the EntreComp Framework from the EU. Each card is made with a specific colour (indication of the entrepreneurial skill category) and shows the description of that skill. This tool in the form of cards, aims at facilitating the discussion about entrepreneurial skills throughout the activity.

How to use it: assign at least one card for each category to each activity participant. Then create an argument of interest around which to discuss through the use of the cards (e.g. in the activity, cards were used to assess which skills were used most, and which ones were useful).

Outcomes

Participants

-	Partner institutions
-	PhD students from partner institutions
-	3 invited speakers: Anja Lisa Hirscher, Botero Cabrera Andrea, Lettenmeier Michael
-	5 alumni from partner institutions

Each group presented the sequence of activities that were launched day after day which allowed them to fill out the exploration canvas and then the value co-creation canvas.
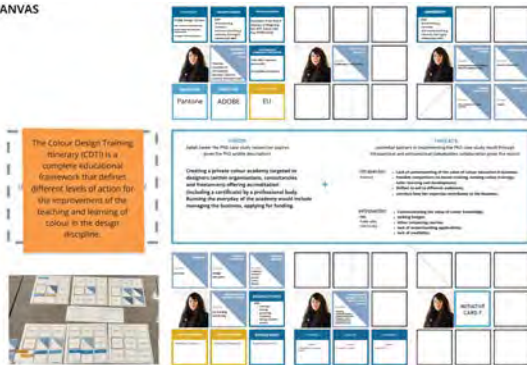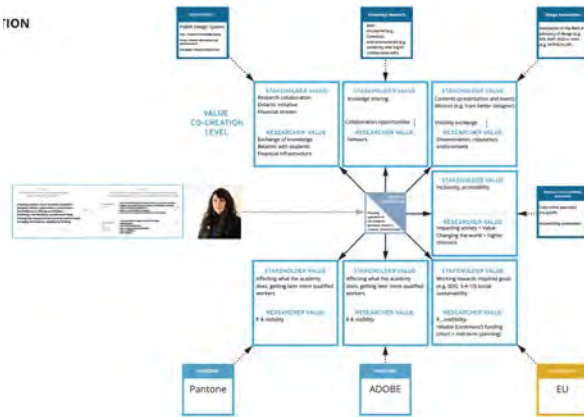
While the contents of the canvas in terms of the effective entrepreneurial development of PhD research results were not the focus of the workshop attention, it was very interesting to assess which entrepreneurial skills were perceived as a point of strength or weakness for the development of the activity over the days.

The graphics below show the entrepreneurial skills assessment over day 2, day 3, and day 4.

Through a final questionnaire, participants were asked to answer four questions about the course take-aways. Below, questions and main assessed impacts are reported.

1. How has your reflection on your strengths and weaknesses changed throughout the week?
   Main assessed impacts:
   a. *more awareness about strengths and weaknesses*
   b. *practical application of entrepreneurial skills supported raising awareness*

2. How, if at all, has the thinking about the value of your PhD changed this week?
   Main assessed impacts:
   a. *more awareness about the value that the PhD in Design can bring to the external context beyond the PhD course*
   b. *numerous stakeholders can potentially benefit from the value of the PhD in Design*

3. What was your biggest takeaway or learning this week?
   Main assessed impacts:
   a. *the PhD is not just a degree but a chance to make a larger impact*
   b. *collaboration through the mobilization of stakeholders is critical for making PhD results tangible*

4. What is something from this week that you want to take forward (and how)?
   Main assessed impacts:
   a. *continuing collaborating/sharing experiences with other participants and the group*
   b. *keeping reflecting with supervisors and advisors about the value of the PhD research beyond discussing results*
   c. *adding stakeholder mapping to the PhD research plan*

Impacts

No direct longer-effects of this training have been seen on a bigger scale. PhD students in Design shown the willingness to apply the course model to their research needs, but it is too early to assess which professional career they will pursue: the case study-based exercise of the course

plus the relatively early stage of students' professional development made it difficult to define specific impacts on this side.

Partner institutions could get the course model as a useful starting resource to improve career development programs within their academic contexts, but no defined follow-up has not yet been defined.

Feedback/Evaluation

We perceived great interest in the activity, especially in the networking opportunity aspect. Participants shared PhD research perspectives and experiences with their international peers. Moreover, participants were positively impressed with the tangible approach we adopted when dealing with skills awareness and application.

This activity has been the first initiative of the partners to start exploring how entrepreneurial competencies can be integrated into the Design process. Beyond a workshop context, this format could be tailored to the specific PhD students' research results to support future career development within and beyond academia.

References

Bacigalupo, M., Kampylis, P., Punie, Y., & Van den Brande, G. (2016). EntreComp: The entrepreneurship competence framework. Luxembourg: Publication Office of the European Union, 10, 593884.
Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. Entrepreneurship theory and practice, 41(1), 49-72.

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Credits

The activity performed at Imperial College was designed and developed by Politecnico di Milano and Imperial College.

Partners who contributed to the output:

Aalto University	Guy Julier, Michel Nader, Sampsa Hyysalo
Carnegie Mellon University	Jonathan Chapman
Illinois Institute of Technology	Carlos Teixeira, Deaa Bataineh
Imperial College London	Rafael Calvo, Weston Baxter
Politecnico di Milano	Caterina Dastoli, Francesca Mattioli, Lucia Rampino, Davide Spallazzo, Paola Bertola
TU Delft	Annemiek van Boeijen, Erika Hajdu, Pieter Jan Stappers, Wilfred van der Vegte

Invited speakers: Anja Lisa Hirscher, Botero Cabrera Andrea, Lettenmeier Michael

Alumni from partner institutions: Bruce Garvey, Sofia Bosch Gomez, Ingrid Calvo Ivanovic, Ricardo Mejia, André Nogueira

The report was edited by: Caterina Dastoli, Francesca Mattioli, Weston Baxter.

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Appendix

Stakeholder Cards

DoCS4Design STAKEHOLDER CARDS / RESEARCH & EDUCATION SECTOR

cut along the dotted line

FACULTY	GRADUATE	STUDENT	RESEARCH LAB
name:	name:	name:	name:
FUNDING BODY	UNIVERSITY	SPIN-OFF	PUBLISHER
name:	name:	name:	name:

DoCS4Design STAKEHOLDER CARDS / BUSINESS SECTOR

cut along the dotted line

CORPORATE	SMALL-MEDIUM ENTERPRISE	CONSULTANCY	DESIGN STUDIO
name:	name:	name:	name:
SUPPLIER	DISTRIBUTOR	RETAILER	START-UP
name:	name:	name:	name:

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DoCS4Design STAKEHOLDER CARDS /
CIVIL SOCIETY

cut along the dotted line

CITIZEN	LOCAL COMMUNITY	NGO	ARTS & MEDIA
name:	name:	name:	name:

DONOR	VOLUNTEER		
name:	name:	name:	name:

DoCS4Design STAKEHOLDER CARDS /
PUBLIC ADMINISTRATION

cut along the dotted line

CENTRAL GOVERNMENT	INTERNATIONAL COMMISSION	GOVERNMENTAL ORGANIZATION	MUNICIPALITY
name:	name:	name:	name:

FUNDING BODY			
name:	name:	name:	name:

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Initiative Cards

DoCS4Design INITIATIVE CARDS /
EXPLOITATION DIMENSION

cut along the dotted line

OFFERING TRAINING	IMPLEMENTING THE FINAL DESIGN	OFFERING CONSULTANCY	ENSURING IP PROTECTION
description:	description:	description:	
description:	description:	description:	description:

DoCS4Design INITIATIVE CARDS /
FURTHER RESEARCH DIMENSION

cut along the dotted line

GETTING A POST-DOC	GETTING TRAINING	PARTICIPATING IN FUNDED PROJECTS	STARTING A NEW EDUCATIONAL PROGRAM
description:	description:	description:	description:
STARTING A NEW RESEARCH LAB	CREATING A MOVEMENT		
description:	description:	description:	description:

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DoCS4Design INITIATIVE CARDS /
DISSEMINATION DIMENSION

cut along the dotted line

ATTENDING CONFERENCES	ENGAGING THE PUBLIC	CREATING A WEBSITE	SELF-ARCHIVING
description:	description:	description:	description:

PUBLISHING	ORGANIZING WORKSHOPS	....	....
description:	description:	description:	description:

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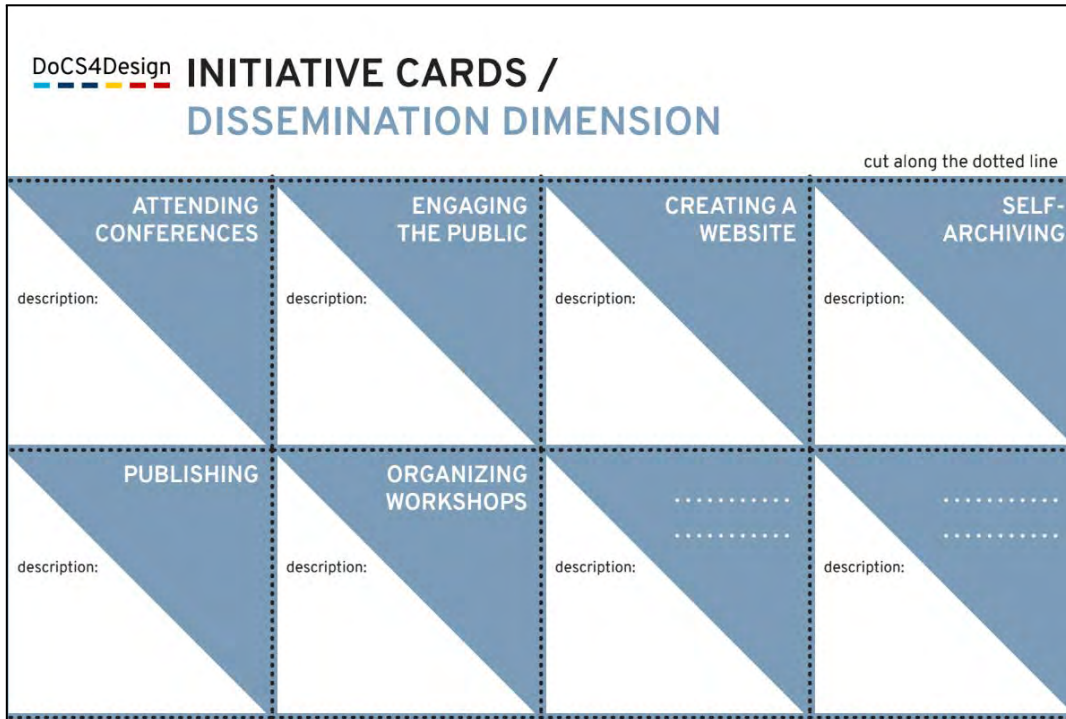
Exploration Canvas

DoCS4Design **EXPLORATION CANVAS**

CASE STUDY

Research result to be implemented:

Relevant information from the case study researcher that support building the Vision:

PhD PROFILE

name:

STAKEHOLDER CARD 1
STAKEHOLDER CARD 2
STAKEHOLDER CARD 3
STAKEHOLDER CARD 4
STAKEHOLDER CARD 5
STAKEHOLDER CARD 6
STAKEHOLDER CARD 7

THE RESEARCHER

INITIATIVE CARD A
INITIATIVE CARD B
INITIATIVE CARD C
INITIATIVE CARD D
INITIATIVE CARD E
INITIATIVE CARD F

VISION
(what career the PhD case study researcher aspires given the PhD profile description)

THREATS
(potential barriers in implementing the PhD case study result through intrasectoral and extrasectoral stakeholders collaboration given the vision)

intrasector:

extrasector:

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Value Co-creation Canvas

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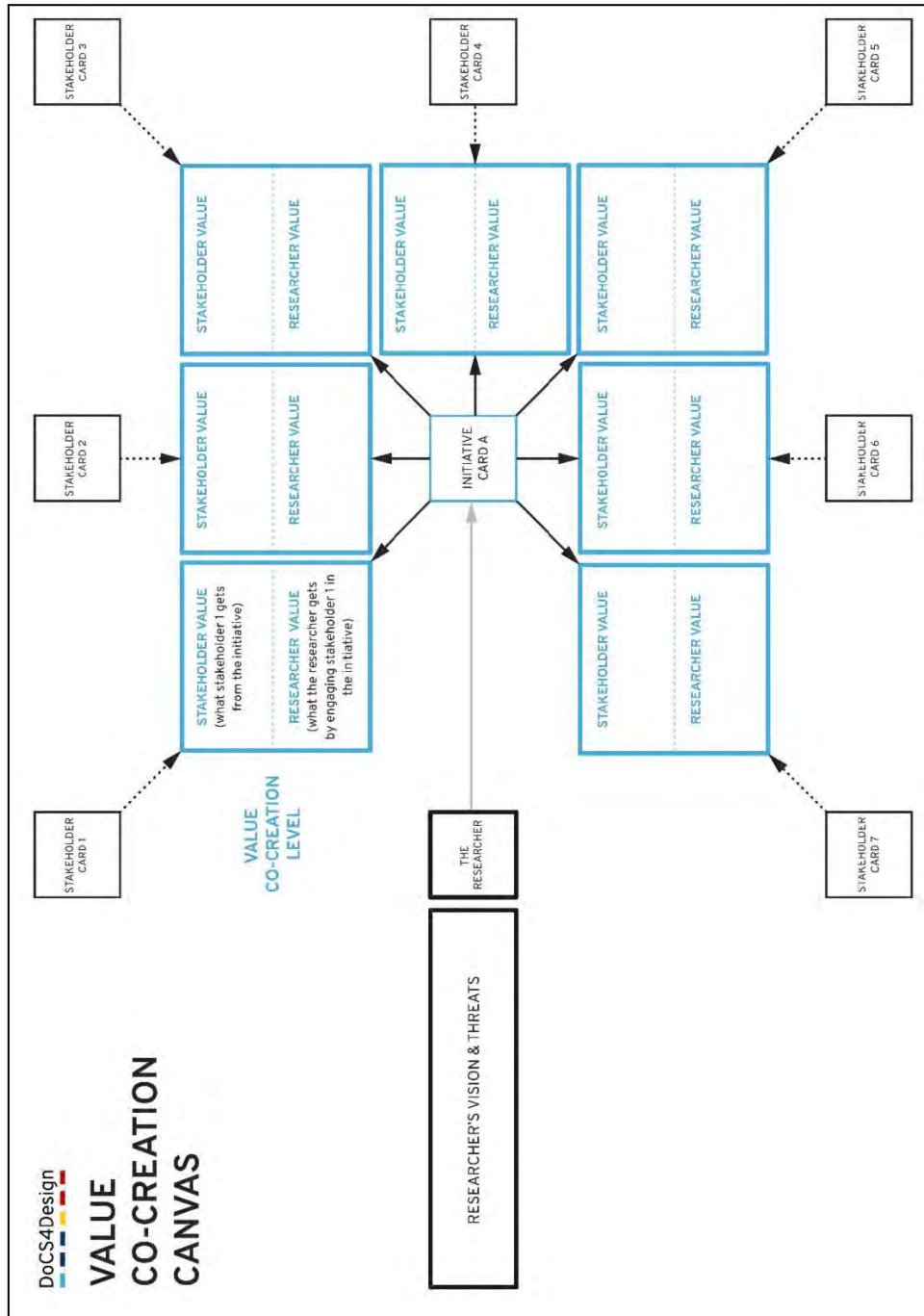
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Entrepreneurial Skills Cards

DoCS4Design ENTRECOMP CARDS / IDEAS&OPPORTUNITIES

SPOTTING OPPORTUNITIES

Use imagination and abilities to
identify opportunities for creating value

- Identify and seize opportunities to create value by exploring the social, cultural and economic landscape
- Identify needs and challenges that need to be met
- Establish new connections and match scattered elements of the landscape to create opportunities

DoCS4Design ENTRECOMP CARDS / IDEAS&OPPORTUNITIES

CREATIVITY

Develop creative and
purposeful ideas

- Develop several ideas and opportunities to create value including better solutions to existing challenges
- Explore and experiment with innovative approaches
- Identify needs and challenges that need to be met

DoCS4Design ENTRECOMP CARDS / IDEAS&OPPORTUNITIES

VISION

Work toward your vision
of the future

- Imagine the future
- Develop a vision to turn ideas into action
- Visualise future scenarios to help guide effort and action

DoCS4Design ENTRECOMP CARDS / IDEAS&OPPORTUNITIES

VALUING IDEAS

Make the most of ideas and opportunities

- Judge what value is in social, cultural and economic terms
- Recognise the potential an idea has for creating value and identify ways of making the most out of it

DoCS4Design ENTRECOMP CARDS / IDEAS&OPPORTUNITIES

ETHICAL AND SUSTAINABLE THINKING

Assess the consequences and impact of
ideas, opportunities and action

- Assess the consequences of ideas that bring value and the effect of entrepreneurial action
- Reflect on how long-term social, cultural and economic goals are, and the course of action chosen
- Act responsibly

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SELF-AWARENESS & SELF-EFFICACY

DoCS4Design ENTRECOMP CARDS / RESOURCES

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 and temporary failures

MOTIVATION & PERSEVERANCE

DoCS4Design ENTRECOMP CARDS / RESOURCES

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

MOBILISING RESOURCES

DoCS4Design ENTRECOMP CARDS / 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 including technical, legal, and digital competences

FINANCIAL & ECONOMIC LITERACY

DoCS4Design ENTRECOMP CARDS / RESOURCES

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 your value-creating activity can last over the long term

MOBILISING OTHERS

DoCS4Design ENTRECOMP CARDS / RESOURCES

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

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DoCS4Design ENTRECOMP CARDS / INTO ACTION

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

DoCS4Design ENTRECOMP CARDS / INTO ACTION

PLANNING &
MANAGEMENT

Prioritise, organise and follow up

- Set long-, medium- and short-term goals
- Define priorities and action plans
- Adapt to unforeseen changes

DoCS4Design ENTRECOMP CARDS / INTO ACTION

COPING WITH UNCERTAINTY,
AMBIGUITY AND RISK

Making decisions dealing with uncertainty,
ambiguity and risk

- Make decisions under uncertainty, with ambiguous information, or when risk unintended outcomes
- Iinclude structured ways of testing ideas from the early stages, to reduce risks of failing
- Handle fast-moving situations promptly and flexibly

DoCS4Design ENTRECOMP CARDS / INTO ACTION

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

DoCS4Design ENTRECOMP CARDS / INTO ACTION

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)