VALUES, NEEDS AND EXPECTATIONS OF SOCIETY AND THE DIGITAL INNOVATION PROCESSES
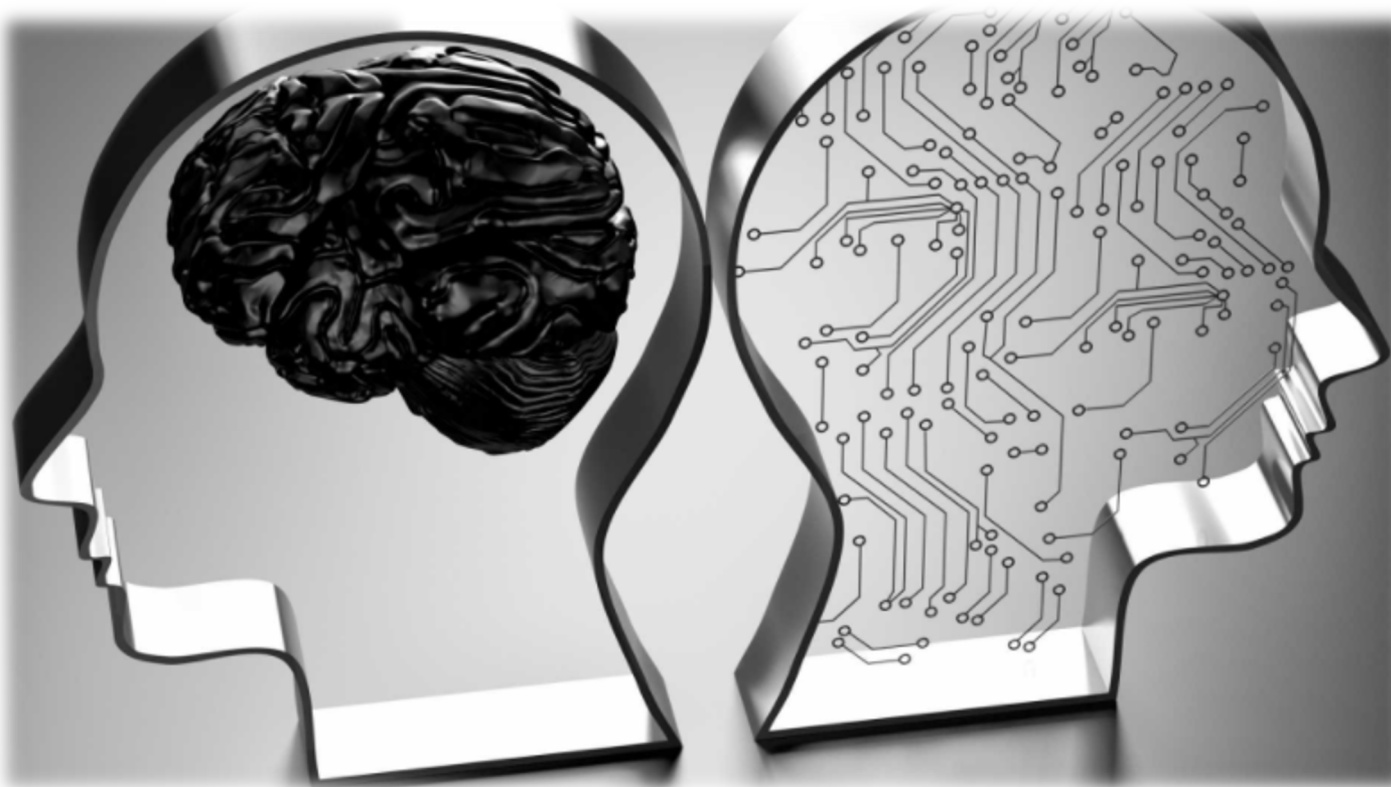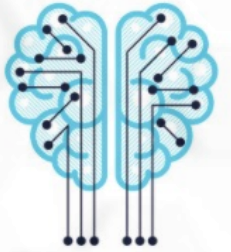
RUI DIAS FERREIRA

WORKING PAPER – PROJETO TESE I

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CICS.NOVA
CENTRO INTERDISCIPLINAR
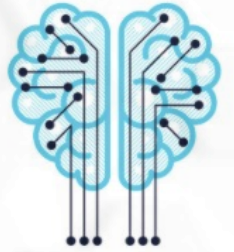DE CIÊNCIAS SOCIAIS

AGENDA

- Challenge
- Research Questions
- Objetives
- Scope
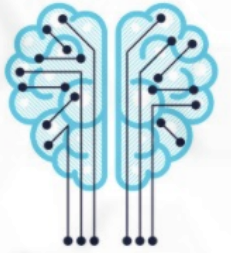- Methodology
- Research Techniques
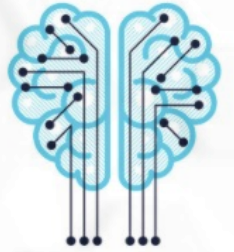- References

CHALLENGE

- Information Technology and Artificial Intelligence, in particular, are changing the world in a dramatic way and those changes are not risk free. Investigators urge the discussion of ethical boundaries to guide research and development of those technologies (Schwab K, 2019).

- Citizens and business communities also demonstrate those concerns as reported by the European Commission (2013):

  - 54% of the applicants agree that the application of science and technology can threaten human rights. In most countries, respondents are more likely to agree than they were in 2010.

  - 61% think that fundamental rights and moral principles should not be violated to make a new scientific or technological discovery.
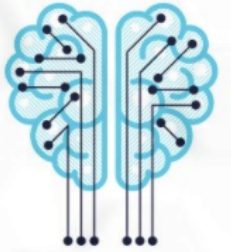
RESEARCH QUESTIONS

- How are values, needs and expectations of society being addressed by the digital innovation processes analysed?

- How did this investigation processes and the methodologies used, with special focus on the involvement of entrepreneurs and key stakeholders, alter the actual shaping of the digital innovation processes?
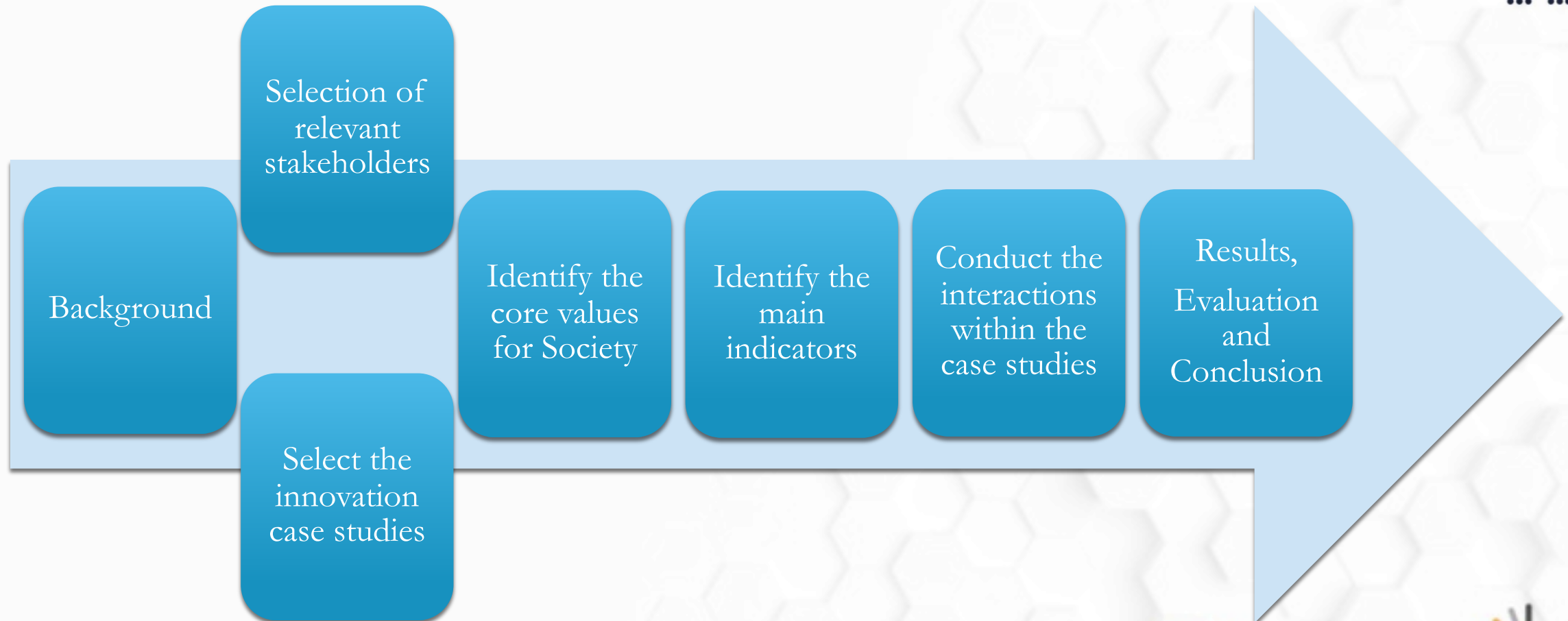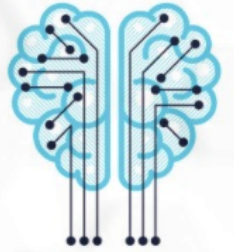
OBJECTIVES

- General

  - To analyse in detail how current innovation processes used in the sample companies addresses the values, needs and expectations of society.

- Specific

  - More that just observe, measure, assess, compare and conclude, the investigation will work with start-up entrepreneurs and all the actors involved in the innovation, to identify and prepare the actions and interactions within the processes to alter the actual shaping.

  - The investigation will measure how practicing this "inevitably interdisciplinary" (Grunwald 2014), along with the concept of "shaping rather than controlling" the sociotechnical phenomena (Fisher E, 2006), which takes into account that what appear to be discrete causes of technological development are subject to multiple interacting influences that continuously feed back on one another, will produce tangible results towards a more democratic governance of R&D.

SCOPE

- Digital software start-ups developing disruptive solutions which places considerable volume of normative questions

- Portugal startup ecosystem (and beyond?)

- It is critical to focus on very specific products and services being developed using emmerging technologies (exemple: developing a decision support system for clinicians based on AI models that can translate clinical unstructured data into clinical recommendations) and work with the relevant stakeholders related with the solution implementation.

METHODOLOGY - INVESTIGATION FRAMEWORK
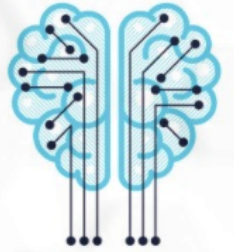
Background

Selection of relevant stakeholders

Select the innovation case studies

Identify the core values for Society

Identify the main indicators

Conduct the interactions within the case studies

Results, Evaluation and Conclusion

BACKGROUND

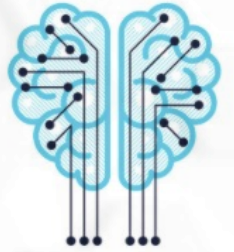| Theory	Major authors
Technology Assessment (TA)	Rip A
Constructive TA	van Merkerk
Responsible Research and Innovation (RRI)	van de Poel I et al
Theory of change (ToC)	Belcher B, Claus R,
Transdisciplinary Research (TDR	Jahn et al
U theory	Scharmer O
Also, ISO26000 – Corporate Social Responsability, ESG, etc…	

BACKGROUND

- Moral and ethics is not easily normalized and can be highly contested; the weighing of different values and belief systems can vary substantially across society (Hahn I, 2014).

- The anticipation and control dilemma (Collingridge dilemma, 1980): at an early stage of technology development, the nature of the technology and the articulation of interests are still malleable, but it is unclear what the effects and impacts will be. By the time these become clear, the technology is entrenched and vested interests make it difficult to change the technology.

- The idea that technological developments can be more or less predicted by extrapolation or other means was increasingly recognized as over-simplistic (van Lente et al, 2017), but efforts at foresight can be productive even when they turn out not to be correct, when they stimulate joint learning (Rip A, 2012).

- Are the actors actually involved in R&D prepared to do the job: "only by changing the actions and interactions of the actors involved in the innovation process the actual shaping can be altered (van Merkerk R et al, 2017) ?
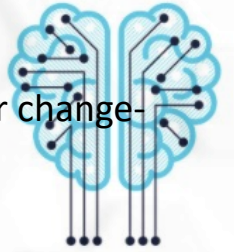
RESEARCH TECHNIQUES (1)

Work Step	Research Tecniques
Broad selection of relevant stakeholders, in such a way that they are enabled to play their role in innovation processes of emerging technologies. <u>This work step will be conduct in parallel with work step 2, in order to have on board the stakeholders able to discuss the specific innovation cases (case-studies)</u>	• Explore foreign best examples(ex. Danish Board of Technology) • Identify the main competences related to the specific innovation cases
Select the innovation cases (case-studies) and the start ups behind them	• Transdisciplinary Research • Focus groups, with key stakeholders • Casual-effect diagrams
Identify the core values that society wants to protect	• Focus group/Delphi method with key stakeholders

RESEARCH TECHNIQUES (2)

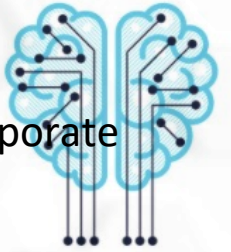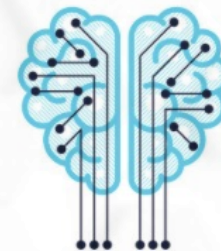| Methodology Step	Research Tecniques
Identify the main indicators to measure the quality of current processes and to measure the results achieved as result of this investigation	Classify and assess existing indicators and data sources with respect to their: • relevance/proximity • robustness/quality • data richness Use the MoRRI project as a start
Conduct the interactions with the stakeholders for each case-study	• Dialogue workshops using the 3-step constructive technology assessment (CTA) (van Merkerk R et al) • Cause-effect diagrams • Sociotechnical scenarios
Results, Evaluation and Conclusion	Individual follow-up interviews Focus group/Delphi Method

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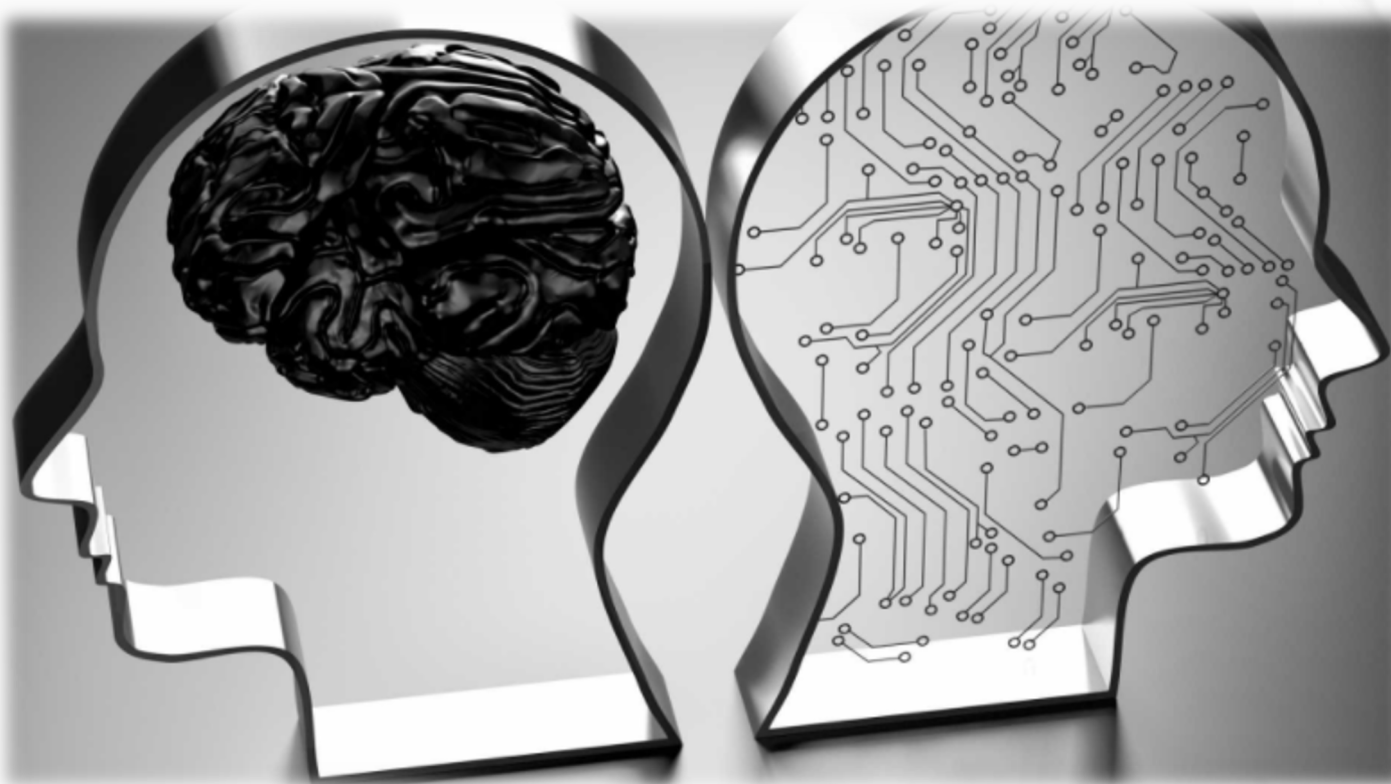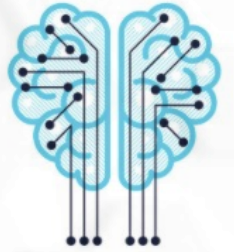
OBRIGADO PELA VOSSA ATENÇÃO

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- **Four main dimensions, from the "Conceptual Model for RRI",** developed by van de Poel I et al, to be asked in the beginning and at the end of the Dialogue Workshops:

  - Anticipation: did the research and innovation process and other relevant business processes in the company, integrated in anticipation all possible risks and benefits and ways of using the technology?

  - Inclusiveness: Does the company engage with relevant stakeholders in debate, and are insights from such debates integrated into the research and innovation process and other relevant business processes in the company?

  - Reflexivity: Does the company reflect on its impacts on society, its purposes, motivations, and values, and are the purposes and values integrated into the research and innovation process and other relevant business processes in the company? Reflexivity represents the earning orientation of a company toward reflecting on a wider set of values and integrating them into the innovation process ?

  - Responsiveness: Is the research and innovation process responsive to social needs and organized in such a way that it can respond to new insights and developments (including surprises)?