Namur Digital Institute (NaDI)

Digital technologies are nowadays ubiquitous. They are central in many sectors and touch companies, administrations as well as citizens. They impact the organizations but also induce new practices and new values. This of course is not without posing problems and challenges. The vision behind NaDI is that these problems and challenges can only be successfully tackled through a transdisciplinary approach. As a result, NaDI federates in a common research place all the UNamur researchers working on various facets of digital technologies.

Created in 2016, the NaDI Research Institute federates five research centers focusing on different aspects of the digital society: the Centre for Research on Consumption and Leisure (CERCLE), the Creativity and Innovation Research Center (CIRCE), the Research Centre in Information, Law and Society (CRIDS), the Research Center on the Foundations of Computer Science (FOCUS), and the Research Center in Information System Engineering (PRECISE).

NaDI currently articulates its research on eight research domains:

1. Big Data & Artificial Intelligence

According to M. Minsky, Artificial Intelligence is the science of making machines do things that would require intelligence if done by men. Although the term was invented in a workshop at Dartmouth College in 1956 and has suffered from several "winters" since then, it has recently regained interest among others thanks to the application of machine learning to image recognition, automatic car driving, games and recommendation systems analyzing big data. NaDI offers a broad expertise in this field. To cite a few of them, key expertise includes bio-inspired robots, human-in-the-loop machine learning, declarative programming, business intelligence and expert systems. Studies are also conducted on legal aspects, including the impact of legal requirements in Artificial Intelligence as well as laws to be developed to control Artificial Intelligence

2. Collaborative Economy

The collaborative society is a new paradigm developing very rapidly where using a good or a service prevails over its ownership. Such an access-based approach is supported by societal, economic and technological facilitators. NaDI investigates a series of issues related to this emerging collaborative economy/society, including the technical functioning of the P2P platforms enabling providers and users to share or exchange goods and services in a secure and privacy-aware way; the psychological processes (motivations, attitudes, emotions etc.) underlying the adoption of collaborative initiatives; the extent to which technical, informational and social competences are mobilized by users; the legal rules applied to users and platforms in the sharing economy (in particular, consumer protection, labour law, and competition law).

3. Co-innovation & Co-creation

Collaborations are more than ever required to confront and associate multiple viewpoints from which original and meaningful innovations can emerge. This has been translated practically by the rise of open innovation since the years 2000, by the support to innovation projects linking universities and companies, through the help of governmental funds, and, more recently, by the inclusion of consumers or citizens in innovation projects of firms or public services. Digital technologies (in particular social networks) are key in this context, as they provide infrastructures and platforms to make co-innovation possible, even when the participants are distant. In addition, the digital industry was a pioneer in collaborative innovation. Open source communities have worked on the principle of knowledge sharing and co-construction since the seventies. The increasingly dematerialized nature of goods and services questions classical business models that are based on the ownership of intellectual property rights. Our research in this axis is interested by the conditions favoring co-innovation and co-creation practices, the methods and tools that facilitate collaboration and participation between various actors.

4. Security & Privacy

Advances in digital technologies have significantly contributed to the development of security and surveillance technologies. They have further been facilitated by advances in a number of scientific domains, most notably in the areas of telecommunications,

information and computing as well as location tracking, biometrics, ... Moreover, European Research & Development projects require to address the ethical, legal and social issues raised by new surveillance and security technologies. In particular, the balance between security and liberty has become a crucial legal and political debate: are the resulting infringements of privacy and other human rights compatible with our democratic societies? The major goals of this research area are to better understand the relationship between surveillance, security and human rights, in particular privacy and data protection rights.

5. Smart Cities & E-government

New developments in Information and Communication Technologies (ICT) have led to the emergence of the "e-government" concept, referring to the use of ICT by governmental entities, in order to deliver their information and services more optimally to their users (citizens, businesses and other governmental organizations). In this context, the "Smart Cities" and "Smart Territories" emerge as a broader paradigm that refers to the design of innovative solutions to tackle issues of public interest by including all major stakeholders of the city and territory (government, private sector, NGOs, citizens). NaDI promotes scientific research in these fields from different perspectives: administrative simplification, security requirements, open data, e-service development, citizen participation, stakeholder ecosystem and human-computer interaction.

6. Software & Systems

Developing and managing software-intensive systems requires a high-level expertise and a fine weave of interactions between complementary disciplines, most importantly Software Engineering, Computer Science and Information Management. NADI promotes scientific research in and across these disciplines, and ambitions to narrow the gap between them. The Institute groups a wide range of internationally-recognized expertise covering the whole software development lifecycle - from requirements engineering and modeling to testing and evolution. It considers various software systems artefacts including human-machine interfaces, requirements specifications, software architectures, variability models, structural and behavioral models, source code, databases, access control models, or forum discussions in natural language.

7. Ethics & Technology

Information technologies are deeply implicated in the shaping of the contemporary human condition and its social ordering. To some extent, these technologies are 'micro-politics' which endorse, in their concepts and designs, moral and political choices affecting our relationships to oneself, to the others and to the world. They are both a social construction and a social constraint. The research inside NaDI is conducted according to 4 goals: (i) to produce social and ethical analysis of information technologies, (ii) to foster collective deliberation around socio-technical systems, (iii) to explore the impacts socio-technical systems have on human beings, organizations, and their relationships to the world, and (iv) to regard the public awareness and capabilities.

8. Digital Education

Faced with digital developments, digital education has become a major challenge for our society. Educational initiatives are emerging today in a variety of directions, affecting all age groups, in both formal and informal educational settings. However, the issues and areas related to digital education go far beyond the computer equipment in schools. What do ``digital'' and ``digital literacy'' mean? What are their aims? What are the issues related to digital technologies? What subjects should be taught at school and how should they be approached? How can education take advantage of a digital media environment to give a digital education? The research conducted in this axis addresses these questions by moving closer the disciplines traditionally dedicated to education and digital technology.

NaDI offers a unique mix of competences matching the complexity of the challenges generated by the digital revolution.

They include technical, juridical, ethical, social, and managerial competences which allow a transdisciplinary and holistic study of these digital challenges.

Further, NaDI is uniquely connected to local actors thanks to INFOPOLE, the eGov chair, TRAKK, the Namur Legal Lab and the Creativity Office.

UNIVERSITÉ DE NAMUR

Co-presidents : Jean-Marie Jacquet & Yves Poullet

Website : https://nadi.unamur.be/ - Contact : nadi@unamur.be