



Our society is undergoing a digital revolution, impacting its organization, but also its practices, and even its values. Most sectors of our society have to integrate this revolution, including eHealth, eGov, eServices, collaborative economy. Solving these challenges requires a transdisciplinary approach including technology, scientific foundations, but also societal, ethical, juridical and economic viewpoints.

NADI aims at federating all the UNamur researchers working on the following challenges.

1. Collaborative economy

The sharing economy or 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. A report by PwC predicts that 5 key sharing sectors (P2P finance, online staffing, P2P accommodation, car sharing and music/video streaming) have the potential to increase global revenues from 15 billion USD in 2014 to 335 billion USD by 2025. 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).

2. Software & Systems

Nowadays, developing software systems and integrating them into global business services are extremely difficult endeavors. Current challenges include unprecedented levels of complexity, increasingly large numbers of stakeholders, and the necessity to master a growing range of skills, techniques, tools and methods. Mastering such a process 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.

3. Innovation & Services

In our emerging digital society, innovation is key to sustain and develop activities – especially services – which take the best of new opportunities fostered by technologies. In this context, we research innovation with a two-fold approach. On the one hand, we study management methods, as well as organizational and spatial designs empowering creativity and innovation in organizations. On the other hand, we question the relevance of the traditional vision of management to face current challenges of our society, using creative techniques to explore innovative managerial modalities. This two-fold approach of innovation aims at supporting the same adaptation requirement that organizations face, would they be public or private: adaptation of their “offer” to satisfy customers or stakeholders with products and services truly meeting their needs; adaptation of their managerial processes to confront society transformation more efficiently and more sustainably. We study those crucial managerial problems at various levels of the organization(s): individual, group, organization, network and ecosystem. Understanding those different levels is important to adopt a systemic view, which is necessary to take into account the internal and external complexity of organizations and, consequently, to develop methods and practices that make sense in their complex reality and to contribute to the emergence of sustainable and innovative eco-systems.

4. Big data & artificial intelligence

Big data is a general term used to describe data sets (coming from an ever growing variety of sources), so large that they require particularly adapted techniques to analyze and extract valuable information from. The ever growing availability of data mandates the development of new techniques in the domain of artificial intelligence, i.e. the study and design of so-called intelligent agents, software capable of maximizing its chances of success given a particular environment.



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5. Security & Privacy

The digital revolution has significantly contributed to the development of new technologies which get more and more intricate with everyone's private life. Pervasive or ubiquitous computing refers to those technologies that raise important issues when it comes to protecting individual privacy. Internet of Things, in particular when it comes to mobile health, or surveillance and monitoring systems collect a lot of information that needs to be protected against improper or unlawful usages.

From a technical perspective, one of the challenges is to allow the data subject to express in a policy the level of to apply to the data in a clear and easy way, and in a form that can then be processed by an automatic system which can dynamically check that the access control policy is fully respected. This requires appropriate access control models, powerful rights languages and efficient processing mechanisms, which are at the core of our research interests.

The digital revolution has significantly contributed to the development of security and surveillance technologies. Such technologies have either been designed specifically for security reasons, or more commonly have been developed for other purposes and laterally found a security and/or surveillance application. The development and proliferation of security and surveillance technologies 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... 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 aims of this research area are to better understand the relationship between surveillance, security and human rights, in particular privacy and data protection rights.

6. Technology & Society

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 first research axis concerns the critical analysis of the moral and political choices embedded into concepts and design of new information systems. These choices are seen as problematic because they are inscrutable, silent, and opaque. To disclose these choices and assess their potential impacts for human condition and its social ordering is a major issue for the democratic governance of technologies. This research is inspired by constructivist theories and the disclosive ethic approaches.

The second axis concerns the democratic deliberation of technological design. Inspired by the 'co-design' and the 'value sensitive design' approaches, oriented towards an enhanced integration of 'social and ethical requirements' from the very starting stage of technological design in order to foster its social acceptability. This needs to set up the conditions for a sound collective process to deliberate the social and ethical requirements to be embedded into a technological design.

The third axis addresses the impacts of a technology on various sociological issues such as social identity, social differentiation or divide, social interactions, work organization, governance... This research aims to better understand the confrontation between technological normativity and social norms.

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, Namur Legal Lab and the Creativity Office.



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