

# Understanding the Mutual Shaping of Regulation, Technology, and Normative Outlooks

*TILT Research Programme 2009-2013 (version 1.01, 26 January 2010)*

This document describes the research programme of the Tilburg Institute for Law, Technology, and Society (TILT) for the period 2009-2013. It is intended for our peers – academic researchers in the field of law & technology and related fields – as well as for academically-oriented people with an interest in technology regulation.

## **1. Background and focus**

The research focus of the Tilburg Institute for Law, Technology, and Society (TILT) is technology regulation. Historically, it focused first on the consequences of informatisation on law and policy (1998-2003). Then, from 2004 to 2008, the research endeavoured to identify building blocks for a framework of technology regulation, based on research in the fields of ICT and, to a lesser extent, biotechnology. What these programmes have clarified is how new technologies raise complex challenges for regulators, both as an object of regulation and as an instrument for regulation. These challenges involve, *inter alia*, achieving normative legitimacy (congruence with some broadly shared moral positions), regulating in a globalising world with many centres of power (polycentric governance), ensuring effectiveness and legal certainty in the face of rapid technological change, and benefiting from the potential of new technologies as a regulatory instrument.

More specifically, what these research efforts have established is that building blocks for a general framework for technology regulation are difficult to identify in the abstract. Not only is each particular regulatory problem context-specific and technology-specific, but also, no generic starting point(s) can be articulated that guide the solution of these problems (Koops *et al.* 2006; Koops 2010). This is because technology, regulation, and normative outlooks interact, i.e., they continuously adapt to new technological, regulatory, and/or normative environments, and in this process, they mutually shape one another. By way of illustration, privacy legislation influences technological developments, but at the same time will be adapted in light of such developments. Moreover, the normative gist of privacy underlying this legislation is itself influenced by developments in technology and regulation, for example, through the way in which society interprets the fluid normative concept of 'reasonable expectation of privacy' in light of technological (e.g., mobile phone cameras) or social (e.g., social-network sites) developments. In other words, privacy regulation, privacy-affecting technologies, and the normative notion of privacy interact, in a process we will indicate with the term 'mutual shaping'.

The present research programme, running from 2009 to 2013, aims to extend and deepen the lessons learnt from the previous research programme by further developing context-specific theories regarding technology regulation. At the same time, the programme extends the scope of TILT's research by placing specific developments in a broader scope. It aspires more systematically to focus on the mutual shaping of regulation, technology, and normative outlooks and notions. Technology regulation cannot simply be extended from existing regulation or based on fixed normative outlooks, because neither regulation or technology nor normative outlooks are set in stone. Regulators who aim to pursue effectiveness, efficiency, and legitimacy of technology regulation will need to factor in the dynamic and interactive character of regulation, technology, and normative outlooks and notions. However, the complex interactions at work in the mutual-shaping process are yet little known, which hampers technology regulation both in theory and in practice.

Against that background, this research programme aims to enhance the understanding of the mechanisms at work in the mutual shaping of regulation, technology, and normative outlooks and notions. In other words, what are the processes underlying the interaction of legislative and other rules, concrete technologies, and notions and elements of normative outlooks? When and why do new rules or technologies arise, when and how does the gist of normative notions change, and which variations of rules, technologies, and normative notions persist? In this respect, the current programme can be said to be more descriptive in nature than the previous programme, which was in some respects more normative or design-oriented.

The overarching research question therefore is:

Which mechanisms are at work in the mutual shaping of regulation, technology, and normative outlooks and notions, and how can insight in these mechanisms be used to provide recommendations for technology regulation?

To clarify this research question, we first explore its core elements. The question comprises five key concepts: regulation, technology, normative outlooks, mutual shaping, and technology regulation.

**Regulation** is a complex concept. There appear to be three broadly accepted understandings of what 'regulation' is (Black 2002). In the first, regulation is the promulgation of rules by government accompanied by mechanisms for monitoring and enforcement, usually assumed to be performed through a specialist public agency. The second assumes regulation to be any form of direct state intervention in the economy, whatever form that intervention might take. The third one takes regulation to be all mechanisms of social control or influence affecting all aspects of behaviour from whatever source, whether they are intentional or not. We adopt Julia Black's decentred conceptualisation of regulation, which moves beyond the state as the sole regulator and which includes other modalities of regulation. Regulation, then, is 'the sustained and focused attempt to alter the behaviour of others according to standards or goals with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering and behaviour-modification' (Black 2002: 26; 2005: 11).

Our primary focus is on regulation in pursuit of public regulatory goals, which will often imply regulation by public regulatory bodies, which may of course involve the mobilisation of private actors, civil society, and public-private partnerships. Three dimensions of regulation are distinguished:

1. the *substantive*, which encompasses regulatory targets and regulatory goals, as well as the substantive values that inform regulation;
2. the *procedural* (procedural values underlying regulation, such as procedural justice and adequate checks and balances) *and institutional* (which we broadly define as any social pattern characterized by standard sequences of interactions (Jepperson 1991));
3. the *instrumental*, in particular the four modalities of regulation – law, social norms, market, and architecture (Lessig 1999) – and the specific forms in which these modalities can be applied.

**Technology** refers to the broad range of tools and crafts that people use to change or adapt to their environment. Our research focuses particularly on new and complex technologies. 'New technologies' are defined as any set of productive techniques which offers a radical improvement (whether measured in terms of increased output, savings in costs, or qualitative difference in potential use) over the established technology for a given process in a specific historical context. New technologies often provide challenges for regulators, and complex technologies are – even more than technology in general – normative rather than neutral, as they are developed in organisational contexts involving various legal, social, and ethical institutions. ICT and biotechnology are the most prominent technologies studied, but also developments in neurosciences and nanotechnologies will be addressed.

A **normative outlook** in the context of this research programme refers to a coherent framework of normative notions, selected from the many and competing normative standards by which individuals and communities determine how best to live their lives. Such standards serve, in theory and in practice, as important touchstones for technology regulation. For example, in research on ICT and biotechnology, the elements most frequently referred to are the public interest, innovation, health, rights to privacy, data protection, non-discrimination, and freedom of expression, as well as the fundamental concepts of security, autonomy, self-development, property, and identity. Some of these, such as autonomy and identity, also show up in neuroscience research, while nanotechnologies often involve other notions, such as risk, safety, and transparency.

A normative outlook that binds together various such notions may take the predominant form of traditional ethical frameworks such as utilitarianism, Kantianism, or communitarianism, but also of modern Western-liberal paradigms of human rights or democracy. However, the conception of normative outlooks used here does not assume that individuals and communities understand or limit their normative perspectives to neat ethical or legal-political frameworks. Instead, this research programme starts from the premise that we are rarely aware of all the different

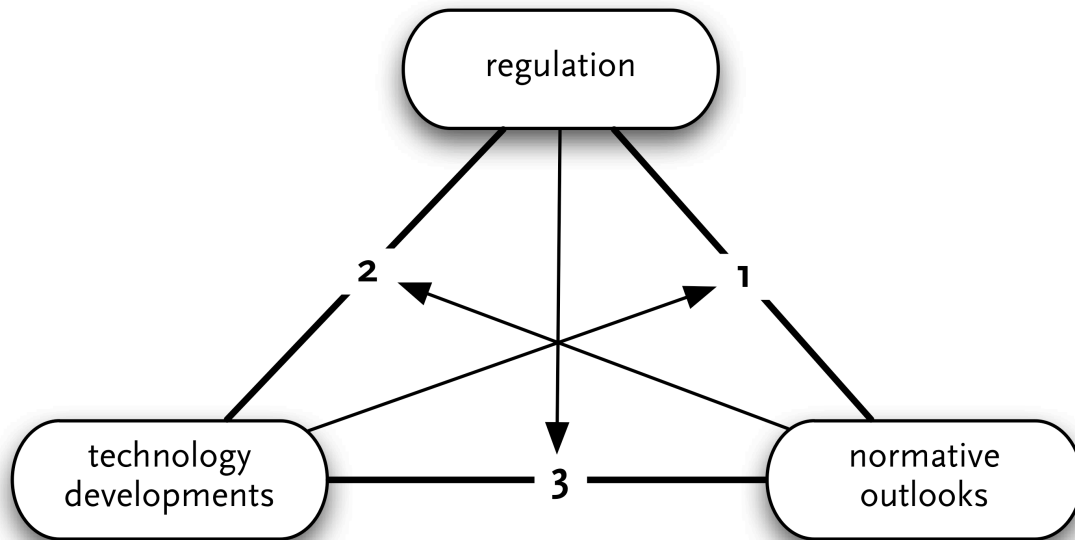
underlying normative notions that we use to orientate and regulate our lives, such as individual autonomy, the public interest, human dignity, distributive justice, or property. The rights, values, principles, and norms that feed and interact with technology regulation may coincide with a clear-cut ethical or legal-political paradigm, but in practice, technology regulation often takes shape in interaction with an irregular mix of normative notions associated with different normative outlooks. To understand the normative aspects of technology regulation, we therefore have to be aware not only of relevant normative notions but also of the various normative outlooks that play a role 'under the skin'.

The concept of normative outlooks taken up within this research programme also allows us to understand the different sub-systems within a given society, such as the law, as being based on assumptions associated with certain types of normative outlooks, which affect how broader normative perspectives and the individuals and groups that subscribe to them interact with a particular sub-system. Principles such as transparency or autonomy may be fundamental elements of European legal systems, but they do not necessarily form part of the normative outlooks of particular European sub-communities or of other communities around the world. Also, while human rights as listed in the various European and international catalogues of rights often function as normative landmarks, we do not assume that human rights are the cornerstone that keep all normative outlooks in place; they frequently act as a mask for more deeply-rooted values and normative perspectives. In sum, the phrase 'normative outlooks' denotes an interest in the many and varied normative perspectives that interact, compete, and conflict within our multicultural societies and in our globalising world.

The **mutual-shaping** perspective argues that both the innovation stage of technological development and the diffusion of technology within society should be viewed as one continuous, dynamic process, in which social, economic, moral, legal, and political factors help shape the technology's trajectory of development. At the same time, however, these factors are also themselves affected by the technology's coming-into-being. The mutual-shaping perspective assumes that there is a fundamental interdependence between social, technological, and normative transformations, in an ongoing process of socio-technological change that is dynamic and open-ended, and that occurs in the context of a specific time and place (Boczkowski, 2004). The mutual-shaping perspective is inherently multidisciplinary, aiming at uncovering a wide array of factors relevant to socio-techno-normative transformations, e.g., legal, ethical, social, political, and technological ones. In light of this complex interdependency, we consider such a multidisciplinary perspective not only justified but also necessary for attempting to understand the mutual shaping of regulation, technology, and normative outlooks and notions.

The adoption of a mutual-shaping perspective allows us to dynamically study the interaction of regulation, technology, and normative outlooks and notions. Modern-day technological inventions borrow from a wide variety of technological and scientific domains, build on earlier technologies, and are often quickly displaced with newer technologies. Dynamism in socio-technological change is a fundamental characteristic of the mutual shaping of regulation, technology, and normative outlooks and notions.

Finally, **technology regulation** is an umbrella term for two types of regulation: regulation *of* technology and regulation *by* technology. Regulation of technology means the attempt to alter the behaviour of people in relation to this technology, for example, prescribing ways in which nano-products can be developed, marketed, or used. Regulation by technology means the attempt to alter the behaviour of people by using technology, for example, mandating the use of car governors to prevent truck drivers from speeding, or website filtering to prevent children from accessing harmful content. Regulation by technology raises questions regarding legitimacy and effectiveness because of the actors involved, the opacity of norms, and the relatively deterministic nature of its enforcement. Of course, both types of regulation can coincide, when a technology is regulated by means of that or another technology.



*Figure 1. The interplay between regulation, technology, and normative outlooks*

The interplay between regulation, technology, and normative outlooks and notions can be broken down into three ‘ideal-type’ bilateral relations, each of which can be studied from the perspective of the third (remaining) factor (see Figure 1). This leads to three types of approaches.

1. The ideal-type relation between regulation and normative outlooks and notions studied through the lens of technology developments. For example, in light of ubiquitous computing, which values can data-protection law safeguard – privacy or non-discrimination, or both, or neither?
3. The ideal-type relation between regulation and technology studied through the lens of normative outlooks and notions. For example, in light of the fairness-based ideal of development, what are key regulatory factors in developing countries that affect the success or failure of technology transfer?
4. The ideal-type relation between technology and normative outlooks studied through the lens of regulation. For example, in light of the goal of truth-finding in criminal-procedure law, can neuro-science-based lie detection systems be devised that are compatible with ethical and legal norms?

Research questions relating to these relations can be addressed effectively only by focusing on particular forms or problems of regulation, specific (types of) technologies, and/or specific normative outlooks and notions. To indicate the range of potential research questions falling within the ambit of this programme, the following table provides a list of instantiations for each of the three factors. This is just an illustrative list, which is neither exhaustive nor a typology (e.g., not all normative notions fit clearly or exclusively within a well-known normative outlook); the table simply groups together frequently-used elements to clarify what kinds of things we are talking about. In principle, our research can focus on any combination of two or three elements from this table. **Bold** indicates that particular emphasis will be given to this element in the research programme; the remaining elements will feature in the research on a more incidental basis.

<b>Regulation</b>	<b>Technologies</b>	<b>Normative outlooks and notions</b>
regulatory goals, e.g., <b>innovation</b> <b>legal protection</b> legal certainty regulatory means <b>law</b> market social norms <b>architecture</b> regulatory content <b>substantive</b> <b>procedural</b> regulatory <b>institutions</b>	<b>ICT</b> <b>biotechnology</b> nanotechnologies neurotechnologies robotics <b>converging technologies</b>	utilitarianism <b>individual/public interests</b> efficiency risk <b>human rights</b> <b>autonomy</b> self-development <b>identity</b> human dignity <b>equality and non-discrimination</b> freedom of expression <b>privacy and data protection</b> communitarianism common good solidarity democracy and rule of law <b>legitimacy</b> transparency and accountability various <b>development</b> sustainability <b>property</b>

## **2. Framework character of the research programme**

Rather than preselecting an exhaustive list of combinations to define particular research questions and research projects – a ‘blueprint’ type of research program – we opt for an organic approach. We develop research questions and projects that fit within the overall framework of the research programme along the way. The current research programme thus represents a ‘framework’ programme. The reasons for adopting such a flexible approach are threefold.

- New technological developments and new knowledge on the opportunities and side-effects of technologies will emerge in the course of the programme.
- TILT is a dynamic institute which will no doubt change its composition to a lesser or larger degree over a five-year period. We value the importance of following individual researchers’ research interests and lines, and hence allow researchers to define their own projects within the boundaries of the overall framework of the research programme.
- Our research partly relies on funding by NWO and other (fundamental) research funding organisations; thematic calls for proposal and allocation decisions may open up unanticipated opportunities to explore new research questions.

A ‘framework’ type of research programme allows for flexible, topical, and organic fleshing out of concrete research. Nevertheless, some research projects and lines can already be defined that are on our agenda at the start of the research programme as important contributions to answering the research question. These are listed below in section 3.

This research programme sets the agenda for research funded from the basic university research funding (the so-called ‘1e geldstroom’). As TILT is a research institute, it substantially depends on other sources of funding (the so-called ‘2e, 3e en 4e geldstroom’) as well. The framework research programme will serve as a guideline to decide which research projects funded from other sources will be undertaken. Contract research is welcomed, if it can add some knowledge or insights that are relevant for the overall research question.

The absence of an exhaustive prescription of research projects is far from non-committal with respect to our research. We supplement the non-exhaustive list of intended research projects with an indication of the standards our research aims to meet. The substantively open ‘framework’ character of the programme is thus balanced by procedural criteria that define what type of research and research output this research programme aims to achieve, in section 4.

### 3. Research lines and projects

Within the framework of the programme, some 15 projects are envisioned to be undertaken from the start. They reflect topical issues and research questions that are relevant for understanding the mutual shaping of regulation, technology, and normative outlooks and notions in today's world. There is some overlap between certain projects, which is intentional because this facilitates the tying together of different research strands as well as co-operation between groups of researchers. The programme leaders will keep an overview of all projects and ensure that researchers co-operate where possible to facilitate synergy between the different projects.

We group the planned research projects along three lines, each of which takes one angle as a starting point from which to study the interaction triangle (Figure 1). This allows us to integrate results from the many projects into three broad research lines, each of which provides a partial answer to the overall research question. For each research line, a 'focus puller'<sup>1</sup> is responsible for integrating the research results into a focused perspective on the interaction triangle. The three resulting perspectives will then be combined in a final integration project.

#### Perspective: Regulation

*Focus puller* Han Somsen

In this research line, we will look at two upcoming targets of regulation in relation to technology (minors, development), deepen our understanding of two well-known tools of regulation (IPR, 'code as law'), and survey unintended side-effects of regulation.

##### 1. Minors, technology, and regulation

Regulation can focus on minors (children and adolescents) and technology in two ways. First, regulation can aim at empowering children and adolescents through technology. How can or should minors use technology to become independent and responsible human beings in view of potential social, psychological, and emotional risks of the digital world, for example, cyberbullying or grooming? Second, regulation can target minors as risk objects, using technology for risk governance, for example, Electronic Child Records to monitor potential victimization of child abuse, or surveillance systems (databases, RFID, CCTV, pattern recognition, profiling, et cetera) to monitor, register, and sort potentially (re)offending or innocent minors. Monitoring of minors can have significant impact on their lives, and raises question on, inter alia, compatibility with fundamental children's rights. This research project studies both regulatory aims, i.e., empowering children and adolescents as principal actors (subject perspective) and governing risks of minors (object perspective).

*Project leader* Simone van der Hof  
*Deliverables* at least five papers<sup>2</sup>, two workshops

##### 2. Law, technology, and development

The aim of this project is to understand the relationship between the three fields of law, technology, and development. While law & technology and law & development are established fields of research, there is little understanding of how they impact upon and influence one another. Both technology transfer and the law are vital instruments in creating economic growth and in establishing an environment in which human development can flourish. The research will explore three aspects: a) how established knowledge about technology regulation can be used in the context of development, and conversely, how our understanding of technology regulation changes when fed with insights from the development context; b) how insights from the field of law & development affect our understanding of technology regulation and technology transfer; and c) the role of the law and legal frameworks in enabling and facilitating the use of technology in development. Through these three strands of research, this project aims at understanding how regulation functions in the context of technology and development.

---

<sup>1</sup> A term from film industry referring to the job of focusing and refocusing the camera lens as actors move.

<sup>2</sup> A 'paper' in this section denotes a journal article, book chapter, published conference paper, or TILT working paper.

*Project leader* Morag Goodwin  
*Deliverables* at least three papers, one dissertation, one monograph, one workshop

### **3. Intellectual property, innovation, and technology**

Intellectual property rights (IPRs) – one of the primary domains of regulation in the field of technology – are the object of continuous discussions about their extent and boundaries. Deeply-rooted differences exist in normative outlooks about what should (not) be appropriable and what level of appropriability is good for innovation. Several aspects will be studied of these differences: to what extent new technologies or their constituent parts (such as living matter) should be patentable; whether differentiation in IP law can help to overcome differences regarding appropriability and innovation, and how such differentiation could be achieved (e.g., through open source communities, patent pools, or collective licensing); whether technologies should be used to assist appropriability, e.g., whether technical protection measures are compatible with normative notions of autonomy, innovation, or resistance; how technical innovation relates to IPRs on content, e.g., in relation to ISP liability for IPR infringement; to what extent ‘open innovation’ puts into question the incentive function of IPRs; whether and to what extent IP law should be adapted in light of these developments; and finally, how economics can be of assistance in addressing the above issues.

*Project leader* Maurice Schellekens  
*Deliverables* at least six papers, one dissertation

### **4. Legitimacy and effectiveness of ‘code as law’**

One of the four modes of regulation is technology or architecture. Research in the previous programme showed that two major concerns in ‘code as law’ are the legitimacy and effectiveness of using technology as a regulatory mode. This project aims at enhancing our understanding of these concerns, by looking at concrete instances of ‘code as law’, for example in the field of online services, road traffic, or robotics. Issues to be looked at are who defines the rules embedded in the technology, through which procedures, the precision and flexibility of these rules, and whether resistance to technology-embedded rules is possible.

*Project leader* Ronald Leenes  
*Deliverables* three papers

### **5. Regulatory vulnerabilities**

An important function of regulation is to protect vulnerable parties, such as citizens, children, and minorities. Much research on technology regulation focuses on this aspect. Another side of the coin, however, is the vulnerabilities that technology regulation or policy itself *creates*, for example, when large-scale monitoring or identification infrastructures are built that involve new risks for privacy, data protection, and security even for the parties they aim to protect. In a similar vein, contracts aim at providing legal certainty, but ICT contracts often turn out to have flaws leading to vulnerabilities for one or both of the parties. This project aims at studying the interrelationship between technology and vulnerabilities as a side-effect of technology regulation.

*Project leader* Corien Prins  
*Deliverables* two papers, one dissertation, one workshop

## **Perspective: Technology**

*Focus puller* Ronald Leenes

In this research line, we will start from various developments in technologies to look at the interaction between technology, regulation, and normative outlooks and notions. Several developments deal with increasing ‘intelligence’ of technologies (smart environments, autonomic technologies), others with innovative new applications of technologies (human enhancement, cybercrime, DNA and neuroscience forensics).

### **6. Electronic services and smart environments**

Interactive multiservice portals, web 3.0 (the semantic web), the Internet of Things (objects such as cars, freezers, or dogs) connected to the Internet, and Ambient Intelligence are four manifestations of current and future smart environments. These technologies highlight one of the

major trends in ICT: the increasing wireless interconnectivity of computers, objects, and people in combination with the automation of recognition, of meaning attribution and of follow-up action. Existing research has identified some regulatory challenges to safeguard autonomy, responsibility, privacy, and non-discrimination, in these ubiquitous smart environments. This project aims at meeting these challenges by studying which modes of regulation can best safeguard fundamental values in smart environments (for instance in the domains of healthcare, security, and education) and what this implies for current legislative frameworks and distribution of responsibilities. In doing so, the project also provides input for project 15.

*Project leader* Anton Vedder  
*Deliverables* four papers, one report

## **7. Cybercrime**

Cybercrime continues to evolve and transform the landscape of crime. Current major threats, such as botnets and identity theft, can only be addressed by a global approach – which is difficult in light of territorial sovereignty that still feeds much of criminal law – as well as a smart mix of legal, technical, and organisational measures. The first part of the project aims at enhancing our understanding of the (im)possibilities of regulating cybercrime in terms of multi-level governance, Internet governance, and public-private partnerships. A second dimension of cybercrime are content-related crimes, such as (virtual) child pornography and hate speech, which have varying scopes in national criminal legislation, despite the approximation efforts of the Cybercrime Convention. The second part of this project will study the implications for cybercrime regulation of national and cultural differences in content-related crime.

*Project leader* Bert-Jaap Koops  
*Deliverables* four papers

## **8. Human enhancement**

A wide range of ICT, biotechnologies, nanotechnologies, and neurotechnologies aim at ‘enhancing’ humans, i.e., improving features of human life beyond their ‘natural’ levels. Although the potential of human enhancement is generally acclaimed, its downsides are also acknowledged. The literature seems divided between a (pre)cautious stance (Fukuyama, Brownsword) and a proactionary stance (Kurzweil, Harris). This project aims to research the role of normative outlooks in the academic and societal debate on human enhancement, and the implications of normative outlooks for regulation, both in terms of substance and procedure and in terms of institutions.

*Project leader* Han Somsen  
*Deliverables* three papers, one edited book

## **9. Forensic applications of DNA and neuroscience**

Forensics thrives on technological innovations that enable better tracing and more valid evidence. Responsible application of new technologies in legal procedure requires attention to technical, organisational, and normative aspects. This project will study forensic implications of advances in genetics and in neuroscience. First, the implications of innovations in DNA forensics, such as genetic research on ethnic origin, will be studied for regulation in a globalising world, for example in light of mutual assistance in criminal matters. Second, progress in neuroscience raises questions whether or not and how we should use, in legal procedure, insights into the neural correlates of human cognition and behaviour. Insights from neuroscience research could be used in the criminal justice system, for example – to more or less realistic degrees – to improve eyewitness memory, for the purpose of risk assessments, to answer questions about legal responsibility, or for detecting deception. Such potential applications raise various legal and ethical issues that need to be dealt with and translated into regulatory conditions for responsible use. Another topic concerns the impact of neuroscience evidence on legal decision-making; does neuroscience evidence have an overly persuasive and therefore biasing effect on judges and juries, and if so, can guidelines be developed that prevent or help overcome this effect? Similar issues of reliability and convincingness can be asked about DNA evidence.

*Project leader* Laura Klaming  
*Deliverables* six papers

### **10. Autonomic technology**

Autonomic technologies are technologies that function automatically, with awareness of their environment, and adaptively. The term autonomic is applied, in analogy to the autonomic nervous system, for technologies that function (relatively) independently from direct human control and show unpredictable behaviour because they adapt according to input from the environment and past experience. Autonomic technologies do not yet exist, but various technologies, like navigation systems, unmanned aerial vehicles, software agents, and robots, are moving in this direction. They can greatly improve efficiency or safety, for example in 'intelligent' cars, but they also have implications for normative notions, such as human autonomy, responsibility, and liability. This research will study opportunities and threats of autonomic technologies from the perspective of regulation and normative outlooks and notions. What are their normative implications and how can or should they be governed? What role can 'code as law' play in regulating autonomic technologies? And, if certain technologies, such as agents or robots, become ever more autonomic to the point of becoming functional equivalents of humans in some respects or societal interaction, can the attribution of legal rights and duties to these new entities help to regulate autonomic technologies?

*Project leader* Bibi van den Berg  
*Deliverables* six papers, one edited book or monograph

## **Perspective: Normative outlooks and notions**

*Focus puller* Bert-Jaap koops

In this research line, we will look from the perspective of normative outlooks and notions at the interplay between regulation and technology. How can technology regulation help to safeguard normative notions within certain normative outlooks (privacy and identity, victim empowerment, European integration), what is the impact of fiction and scenarios on our understanding of technology regulation, and how do normative outlooks and notions themselves evolve in relation to technology regulation?

### **11. Privacy, Identity, and Digital Persons**

This project investigates the normative notions of privacy and identity, particularly from the perspective of – but not restricted to – the rise of digital persons, i.e., the 'data shadows' of real-life persons in digital sets of data. One line of research will focus on identity and identity-management technologies from a privacy perspective, and how data protection rights and Privacy Enhancing Technologies can help and support individuals to manage their online identities throughout life. Another line of research will attempt to map 'privacy disasters': in what ways, and to what extent, do individuals and society suffer from technical, organisational, or legal errors that hamper their right to privacy? Part of both research lines will focus on 'function creep', the gradual expansion of the purposes to which data are processed. How does function creep occur, and is this related to decontextualisation of digital persons, i.e., the lack of context sensitivity of data shadows?

*Project leader* Colette Cuijpers  
*Deliverables* three dissertations, six papers

### **12. Empowering victims: the interaction of regulation and ICT**

Supporting and empowering victims of crime and abuse of power is an important parameter in today's normative outlook of human rights. The role of ICT in victim support and empowerment has to date not been studied in depth. This project aims to fill this gap in research, by studying the relationship between regulation and ICT from the perspective of victim empowerment. There are two sides to this coin. On the one hand, digital tools, most prominently the Internet, offer new opportunities to enhance the position of victims, for example, by facilitating self-organisation and self-help or by courtroom technologies that protect victims when providing testimony in court. On the other hand, the Internet also threatens the position of victims, for example due to concerns

about their privacy online. This project will study the opportunities and threats of the use of digital tools for the position and support of victims, and the implications of these on existing regulatory frameworks established to protect victims' rights.

*Project leader* Corien Prins  
*Deliverables* two papers

### **13. Fictions of technology regulation: the role of stories and literature**

Academic research on technology regulation usually focuses on research from the perspective of social sciences and ethics. Humanities can provide an additional angle that may help to understand the mutual shaping of regulation, technology, and normative outlooks and notions. In this project, the role of fiction in technology regulation will be studied in two ways. First, do stories affect the perception of technological developments, for example in relation to human genetics, and can insight into such a mechanism help us understand the relation between regulation and normative outlooks or notions? Second, stories can be a powerful tool in explaining the world we live in, or possible worlds in which we might or might not want to live in; for example, *1984* and *The Trial* are often-used metaphors for explaining developments in ICT regulation, as *Brave New World* is for biotechnology regulation. Which stories are powerful metaphors of our age, and what do these stories tell us about technology regulation in this age?

*Project leader* Bert-Jaap Koops  
*Deliverables* two papers, one edited volume

### **14. Technology, institutions and risk regulation: the vision of Europe**

The EU regulates technologies to contribute to the respect for a wide range of normative notions, such as human dignity, freedom, democracy, pluralism, non-discrimination, and tolerance, and to contribute to 'an ever closer union among the peoples of Europe' (Art. 1-2 EU Treaty). These ambitions are pursued dynamically through an intricate institutional network that has radically changed over a relatively short period time. EU technology regulation offers prospects of directly and purposively contributing to the vision of Europe as enshrined in the Treaties. This project will study how the normative outlook of the vision of Europe informs European regulation of technologies through its institutions, and how EU technology regulation and its institutional setting impact on the vision of Europe. Possible cases to study are risk regulation, GMO labelling, and biometrics, in relation to notions like risk governance, public participation, European consumerism, and European citizenship. For example, how have different institutions (Commission, Council, Parliament, functional agencies) used their roles in the regulation of new technologies to address democratic, legitimacy, and enforcement concerns?

*Project leader* Han Somsen  
*Deliverables* three papers, one dissertation

### **15. Technology and changes in the ontology and the gist of value notions**

Technological developments have an impact on the ontologies of value notions. Many normative notions do not represent absolute ideals, but rather relative ones. The concept of autonomy, for instance, allows us to refer to persons as autonomous, although they are intrinsically restricted by a wide range of factors that belong to what we may call a given ontology. A moral ontology is a set of standard conditions of normality of circumstances relevant to the value involved. In the example of autonomy, this set includes the typical characteristics of the human condition, but also factors such as upbringing, education, and assumptions about identity, individuality, and conditions under which actions and consequences can be attributed to persons, et cetera. This project will explore and analyse on a conceptual as well as empirical level how technological developments in the fields of Ambient Intelligence, neuroscience, and converging technologies can affect the ontologies of normative notions such as autonomy, identity, individuality, responsibility, and privacy, and, indirectly, (conceptions of) morality and law. Illustrative questions are: can human enhancement through neurological implants (ever) act as a standard condition of normality for autonomy in the same way as, for example, traditional education currently does? Can cognitive support for people with mild dementia adapt the standard conditions of privacy? Finally, attention will be paid to the degree to which changes in the ontologies of value notions might affect the normative gist of those notions. Can technological developments that change the

ontologies in the end even entail shifts in normative outlooks? Can they, for instance, shift the balance from an individualism-centred outlook to a common-good-oriented outlook?

*Project leader* Anton Vedder

*Deliverables* one seminar/conference, one monograph, one dissertation, four papers

#### **16. Visions of 2027: a technoregulated world?**

Scenarios are a helpful tool in envisioning possible futures and studying optional paths of regulatory and technological developments. What kind of world do we want to live in? What normative outlooks are essential for our future, and which flavours do they come in? In this project, we will invite key researchers in the field of technology regulation to envision their future world, and to articulate how normative outlooks, technology, and regulation play out in this future world. Subsequently, the researchers will be challenged to translate these visions of 2027 into challenges and options for regulation in 2012.

*Project leader* Morag Goodwin

*Deliverables* TILT conference 2012, edited volume

## **Integration**

### **42. Integrating project**

At the end of the research programme, to be initiated in 2012, we will bring together the insights from the various research projects – both the 16 included in this section and the 25-odd new projects that may come up along the way – in a finalising project that aims to answer the overall research question. This will be done by writing three extensive essays, each of which draws from the results of one of the three research lines to distil mechanisms at play in the mutual shaping of regulation, technology, and normative outlooks and notions. The essays will be written by the three programme leaders: Han Somsen from the perspective of regulation, Ronald Leenes from the perspective of technology, and Bert-Jaap Koops from the perspective of normative outlooks and notions. The three essays will be published in an edited volume or special edition of a journal, supplemented by a roadmap that guides the reader through the landscape of technology regulation and that helps her to better understand the mutual shaping of regulation, technology, and normative outlooks and notions.

*Project leader* Bert-Jaap Koops

*Deliverables* edited volume or special journal issue with three essays and roadmap

## **4. Approach**

The study of the interplay between technology, regulation, and fundamental concepts requires an approach combining analytical, empirical, and normative research. Several projects have a more normative character, combining legal research with empirical or conceptual understandings of social problems and possible solutions. Other projects have a more analytic focus, aiming to understand some mechanism at work in the mutual-shaping process. Hence, descriptive research using analytical and empirical tools are vital elements of our approach.

Regulation consists of different modalities – law, social norms, market, and architecture – which are grounded in different disciplines: law, social sciences, economics, and science & technology studies. Regulatory issues can often be addressed by using different modalities: a legal scholar might focus on a legal intervention, while an economist might rather use market mechanisms, such as a pricing mechanism. The modalities are sometimes complementary and sometimes substitutable. In this research programme, we primarily focus on law and on architecture ('code as law'). This is partly for historical and institutional reasons, the research group being embedded in the Tilburg University Law School. More importantly, the law is viewed as the key mode of regulation when it comes to safeguarding fundamental values and rights, and hence is indispensable in our research. Architecture is included because of the double role technology often plays here: regulation of technology by technology. Market and social norms are, in this approach, additional modes of regulation that need to be taken into account, since law and architecture are often insufficient, and sometimes unnecessary, for technology regulation.

The research programme requires a thorough understanding of the law and legal institutions in order to provide legal interpretations of technological developments and their effects. Therefore,

traditional legal methods like normative assessment on the basis of human rights, comparative law, and legislative and case-law analysis are important methods of research. However, legal research often also needs to be based on empirical findings, using both qualitative and quantitative data. When these data are unavailable, and/or when it concerns key research questions within the framework of the current research programme, we use empirical research methods, such as questionnaires, case studies, experiments, and focus groups. TILT has in-house experience with these research methods through the composition of the research group, which includes social scientists, such as a sociologist and a psychologist. Nevertheless, TILT's capabilities in conducting empirical social research are limited and TILT therefore actively engages in co-operation with external social scientists in joint projects.

TILT is in a unique position to conduct the ambitious research programme outlined here. The composition and size of the research group (about 30 researchers, about half of whom have a legal background while the other half have a background in disciplines such as ethics, public administration, sociology, psychology, computer science, business and management sciences) and its history with multidisciplinary research differentiate TILT from other research institutes in the domain of technology regulation (such as IViR in the Netherlands, ICRI in Leuven and CRID in Namur, which are primarily legal research institutes, and eLaw in Leiden which is much smaller in size).

## **5. Audience and publication strategy**

Our research is international in nature. Technology development takes place on a global scale and the effects of technology adoption and use easily cross territorial borders. The issues raised by technological developments, as well as the solutions developed to address these issues by regulators, often have international value, or at least provide inspiration for local solutions. Also, regulation increasingly originates from supranational or international regulatory bodies. Therefore, the research projects usually concern topics of international interest. TILT actively seeks interaction and collaboration with international scholars to further our understanding of the technology developments, regulatory theory and normative outlooks and notions. We contribute to international forums in the form of conference presentations, invited lectures, papers, journal articles, and monographs.

The international focus does not imply a disregard for a national audience, however. We will also engage in national debates and contribute to research and policy in the Netherlands, by regularly publishing research results in Dutch academic and professional journals, writing reports commissioned by Dutch stakeholders, and voicing research-based opinions in national and regional media.

Besides publishing in Dutch academic journals as a matter of course, we have an active approach to see research results published in international journals. Researchers are encouraged to submit their work in progress to the TILT Law & Technology Working Papers Series, and their final papers to leading international journals. The focus is on peer-reviewed journals because we consider the scrutiny by peers important to improve the quality of our research. Our researchers regularly publish in peer-reviewed or otherwise high-profile journals, such as *International Review of Law Computers & Technology*; *Michigan Telecommunications & Technology Law Review*; *Columbia Science and Technology Law Review*; *Information Communication & Society*; *Information Polity*; *Telecommunications Policy*; *Journal of Information, Communication and Ethics in Society*; *European Law Review*; *European Journal of Health Law*.

Law & Technology is a mature field with numerous top quality journals. The heart of these journals lies in North America, where many of the top journals in the field are based. In 2009, however, TILT has established a Europe-based peer-reviewed journal together with Roger Brownsword (King's College London), *Law, Innovation, and Technology*, published by Hart Publishing. We will make an effort to make this journal a competitor of the top-ranking US journals, not the least by submitting some of its own best papers to this journal.

Because our research spans widely different areas, ranging from cybercrime to bio-ethics, the array of relevant journals is also very diverse. Within the current research programme, we will promote researchers to also submit papers to other disciplinary journals as well as more general legal top journals, such as the *Modern Law Review* and the *Common Market Law Review*, because the message our research delivers is not only relevant to specialist Law & Technology scholars, but also to other legal scholars. Indeed, 'by working through examples of law interacting

with Cyberspace, we will throw into relief a set of general questions about law's regulation outside of Cyberspace' (Lessig 1990).

## **6. Academic environment**

To foster the quality of its research, TILT cherishes an academic environment. Several initiatives and schemes aim at enhancing this academic environment:

- an academic leave programme, which allows TILT scholars to spend one in eight semesters on leave, typically visiting another research institute, in order to do fundamental reading and writing, broaden their network, or to explore new areas of research;
- regular in-depth working-paper discussions in a small-scale internal setting, sometimes with an external respondent, to provide input for papers to be included in the Working Paper Series (WPS) or to be submitted to peer-reviewed journals;
- organisation of regular international expert workshops as part of research projects;
- a visiting scholar programme which allows top scholars to spend time at TILT and to collaborate with TILT researchers;
- an associated scholar programme, which involves remote collaboration with selected foreign scholars;
- a reading group on theory, law, and technology, in which several TILT senior researchers meet and discuss classic texts from a wide range of disciplines on a bi-weekly basis;
- a bi-annual conference on technology regulation, following the successful 2008 conference 'TILting perspectives on regulating technology'.

To materialise these initiatives and schemes and to keep them up-to-date, a senior researcher is particularly tasked with fostering TILT's academic culture.

## **7. Organisation of the research**

Programme leaders:	prof. Bert-Jaap Koops, prof. Ronald Leenes, prof. Han Somsen
Programme manager:	dr. Maurice Schellekens
Academic culture facilitator:	dr. Morag Goodwin

The research programme is organised along the three perspectives regulation, technology, and normative outlooks and notions. Within these perspectives, the programme starts with the 15 research projects outlined above. Each of the projects is led by a senior researcher and is composed of different TILT researchers. Each project commits itself to produce a number of deliverables along the planning period until the mid-term review (2009-2011) and subsequently along the second planning period (2011-2013). At least one deliverable per project per planning period will be part of the TILT Working Paper Series and be discussed in the WPS sessions.

Individual researchers are engaged in projects at their own research-based initiative or upon invitation by the project leader. Together they will propose and decide upon topics, deliverables, and time schedules. Deliverables can be produced individually or by multiple researchers. Once research projects are sufficiently staffed, the project leader is responsible for achieving the project goals and coherence and collaboration within the project by organising meetings and internal discussions.

New projects, especially during but not restricted to the second half of the research programme, can be proposed to or by the programme leaders throughout the programme's duration.

On top of the individual projects, the three focus pullers are responsible for achieving integrated research results from the three research lines (perspectives). The focus pullers will organise discussion meetings within each of the three perspectives to obtain a deeper and common understanding of the three perspectives. This will lead to three working documents focusing on specifics of the three perspectives and discussing preliminary insights for the mid-term review. The working documents can be used as groundwork, supplemented with additional discussion meetings and new results, for the three essays of project 42.

At the occasion of the mid-term review, TILT will critically scrutinise the programme, in terms of both substance and procedure, and adapt the programme according to its self-assessment and the suggestions of the mid-term review committee. The self-assessment will be initiated in late 2010 at the initiative of the programme manager.

## References

- Black, Julia (2002), 'Critical reflections on regulation', 27 *Australian journal of legal philosophy*, p. 1-35.
- Black, Julia (2005), 'What is Regulatory Innovation?', in: Julia Black, Martin Lodge, and Mark Thatcher (eds), *Regulatory Innovation*, Cheltenham: Edward Elgar.
- Boczkowski, Pablo J. (2004), 'The mutual shaping of technology and society in Videotex newspapers: Beyond the diffusion and social shaping perspectives', 20 *The Information Society*, p. 255-267.
- Koops, Bert-Jaap et al. (eds) (2006), *Starting Points for ICT Regulation. Deconstructing Prevalent Policy One-Liners*, IT & Law Series Vol. 9, The Hague: T.M.C. Asser Press.
- Koops, Bert-Jaap (2010), 'Ten dimensions of technology regulation. Or where to travel in the research space of an emerging discipline', in: Goodwin, M. et al. (2010), *Perspectives on Regulating Technologies* (forthcoming).
- Jepperson, R.L. (1991), 'Institutions, institutional effects and institutionalism', in: W. Powell & P. DiMaggio (eds.), *The new institutionalism in organisational analysis*, Chicago: University of Chicago Press, p. 143-163.
- Lessig, L (1999), 'The Law of the Horse: What Cyberlaw Might Teach', 113 *Harvard Law Review*, p. 501ff.