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**H2020 COVR FSTP LIAISON - D2.2 Lecture on the 'future of law'**  
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# COVER

# LIAISON

## D2.2 Lecture on the 'future of law'

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## 1. SUMMARY

While robots should be safe, robot regulatory frameworks do not always frame technology development accurately. LIAISON investigates to what extent compliance tools, in this case, the COVR toolkit, could be used as data generators for policy and standard makers to unravel an optimal regulatory framing for existing and emerging robot technologies and improve robot technology overall safety and market entrance ease. As such, LIAISON aligns with the overall COVR goal to reduce complexity in safety certifying robots.

New technologies sometimes question and challenge existing norms, breathing into existence the need for legal change. While the pace of technology dramatically accelerates, however, legal responsiveness does not always follow as a consequent step. As no formal communication process between robot developers and regulators from which policies could learn has been established yet, a stepback mechanism for robot governance as novel as that introduced by LIAISON is yet to be introduced to all stakeholders involved, in particular robot developers and policy/standard makers. To prove the feasibility and added value of the creation of this link between robot developers and relevant regulators, for the LIAISON project, we focus on three particular standards: ISO 13482:2014 on personal care robots, IEC 80601-2-78:2019 on rehabilitation robots, and EN ISO 18497:2018 on agricultural machinery and tractors. The policy and standard makers involved for this purpose represent both private standardisation organisations and the European Commission.

This report presents the lecture on the 'future of law' provided as part of D2.2. of the FSTP LIAISON project, and the teaching activities based on this lecture.

## 2. INTRODUCTION

COVR stands for "being safe around collaborative and versatile robots in shared spaces", and is a European H2020 Project which aims to reduce the complexity in safety certifying cobots significantly. In this respect, the project has developed the COVR Toolkit, an online tool that guides developers in their legal compliance process, from helping them find relevant technical standards/directives/protocols to guide them on performing a risk assessment.

Assessing risks through experimentation is essential to ensure robot safety and compliance with existing norms. However, standards do not always frame technology development accurately. LIAISON investigates to what extent compliance tools (tools that help comply with the legislation, such as the COVR toolkit) could be used as data generators for policy and standard makers to unravel an optimal regulatory framing (including change, revise, or reinterpret) for existing and emerging robot technologies. LIAISON is a crucial stepback mechanism to help align robot and regulatory development and improve robot technology's overall safety and market entrance ease. To prove the feasibility and added value of the creation of this link between robot developers and relevant regulators, for the LIAISON project, we focus on three particular standards: ISO 13482:2014 on personal care robots, IEC 80601-2-78:2019 on rehabilitation robots, and EN ISO 18497:2018 on agricultural machinery and tractors. The policy and standard makers involved for this purpose represent both private standardisation organisations and the European Commission. As such, LIAISON aligns with the overall COVR goal to reduce complexity in safety certifying robots by providing policy and standard makers with the necessary knowledge about legal inconsistencies, new categories, or new safety requirements (including psychological) to update existing frameworks where necessary and to ensure that the next generation of robots is 'safe' to the full extent of the word (see figure 1 in the annex). In this way, LIAISON contributes to the COVR mission by adding a link to public and private regulators to complete the cobot value chain.

This report presents the lecture on the 'future of law' provided as part of D2.2. of the FSTP LIAISON project, and the teaching activities based on this lecture.

## 3. LIAISON

### 3.1. BACKGROUND

*“The art of progress is to preserve order amid change, and to preserve change amid order” – Alfred North Whitehead.*

Robot technology is one of the many technologies that challenge the regulatory framework in various ways, including ethics and security for responsible innovation, privacy, and responsibility allocation. As products, robots widely differ in embodiment, capabilities, context of use, intended target users, and many regulations may already apply to them. Having tools such as the COVR Toolkit can be of help. However, new applications may not fit into existing (robot) categories, legislation might be outdated and confusing categories, and technology-neutral regulations may be hard to follow for developers concerned about their particular case. A recent open consultation launched by the European Commission, for instance, acknowledges that current European Harmonized Standards do not cover areas such as automated vehicles, additive manufacturing, collaborative robots/systems, or robots outside the industrial environment, among others (Spiliopoulou-Kaparia, 2017). In light of all the issues this technology arises, part of the literature accentuates the need for an issue manager. Marchant and Wallach (2015) proposed the creation of "Governance Coordinating Committees (GCC)" for the governance of emerging technologies like AI.

Furthermore, the European Parliament proposed creating a European Agency for Robotics and Artificial Intelligence early in 2017, and Schatz put forward the result of an emerging technology policy lab within the US general services administration in 2018. However, what lacks in robot governance is a backstep mechanism that can coordinate and align robot and regulatory development (Fosch-Villaronga & Heldeweg, 2018). Overlooked in the latest review of "the grand challenges of science robotics," this challenge has already been raised in the literature, albeit only more recently (Yang et al. 2018), and relates to the idea of how policies can frame the rapid development of robotics. LIAISON contributes to these approaches by proposing the *modus operandi* of issue managers, if they were ever to exist, and revolves around the following main research question:

*Could the use of compliance tools, such as the COVR Toolkit, as data generators for robot policy purposes reduce emerging robot governance complexity?*

LIAISON envisions an iterative regulatory process for robot governance, a theoretical model that represents a practical step forward in the coordination and alignment of robot and regulatory development, called the Iterative Learning Governance Process (ILGP). This research project conceives an effective way to extract compliance and technical knowledge from compliance tools (tools that help comply with the legislation such as the COVR toolkit) and direct it to policy and standard makers to unravel an optimal regulatory framing (including change, revise, or reinterpret) for existing and emerging robot technologies. This process will bring clarity to what regulatory actions policy and standard makers have to take to provide compliance guidance, explain unclear concepts or uncertain applicability domains to improve legal certainty, and inform future regulatory developments for robot technology use and development at the European, National, Regional, or Municipal level. As such,

LIAISON is a crucial stepback mechanism to help align robot and regulatory development and improve robot technology's overall safety and ease of market entrance.

The primary outcome of the LIAISON Research Project will be the design concept for liaising robot development and policymaking to increase overall robot safety. This design concept will further develop the *Iterative Regulatory Process for Robot Governance*, which was ideated as a theoretical model that links technology impact assessments to legislative ex-post evaluations via shared data repositories intending to create evidence-based policies that can serve as temporary benchmark for future and new uses or robot developments (Fosch-Villaronga & Heldeweg, 2018, 2019). Part of the 'technical challenge' is to put such a theoretical model into practice and in the context of the COVR project. Explained further in figure 2 in the Annex (Fosch-Villaronga & Heldeweg, 2018), such iterative regulatory process for robot governance stresses that in the light of a new robot development or use, and after assessing all the impacts (and incorporating the findings into the robot itself), it is essential to compile all the Regulation-to-Technology uncovered barriers and constraints that do not allow the roboticists to proceed with their creation. Having collected those constraints in a Technology-to-Regulation manner, the regulator can act thereupon supported by the accountability tool's information, in this case, the COVR Toolkit.

The expected project results will complement the existing knowledge on the 'ethical, legal, and societal (ELS)' aspects of robotics by providing clarity on how to address pressing but still uncovered safety challenges raised by robots, and represent a practical, valuable tool to advance social goals in a robotized workplace. Overall, advances in safety robot legal oversight will provide a solid basis for designing safer robots, safeguarding users' rights, and improving the overall safety and quality of efficiency delivered by robots.

## 4. LECTURE ON THE 'FUTURE OF LAW'

### 4.1. LECTURE

PRESENTATION	
TITLE	LINK
Lecture on the 'future of law'	CLICK <a href="#">HERE</a>

Leiden University is a research-driven educational setting. The Lecture 'future of law' was prepared based on the main findings of the FSTP LIAISON from the H2020 COVR Project. The lecture comprises an introduction to different regulatory models for robot technologies (from public policymaking and private setting) and raises the question of whether these existing mechanisms suffice to capture the highly volatile robot environment. Students are confronted with the idea that robot technology pushes the boundaries of science and existing categories and are asked to reason about what to do when there is a new category not previously foreseen in the law. Finally, after some interactive discussion, the lecture presents the LIAISON model as an alternative to existing mechanisms for robot governance.

### 4.4. TEACHING

The lecture on the 'future of law' was provided as part of the educational programs provided at Leiden Law School and at education institutions abroad as part of an invited lecture series as depicted in the table below.

TEACHING		
COURSE	DATES	DESCRIPTION
Law and artificial intelligence, Leiden Law School, The Netherlands.	09/02/2021 - 08/06/2021	<p>In this course, we first map the latest advances in AI, including predictive policy, face recognition, personalized diagnosis, early disease detection drug discovery, algorithmic decision-making used in courts, and government. We then identify what the main regulatory initiatives revolving around AI technologies in the European Union are, including the Ethics Guidelines from the European High-Level Expert Group on Artificial Intelligence.</p> <p>During the course, we will focus on the benefits but also the particular challenges revolving around the deployment of AI, including, transparency and explanation (following the European General Data Protection Regulation); potential discrimination scenarios and exacerbation of existing biases; the construction of responsibility in highly automated environments; and the blurring of well-established concepts such as safety, in the context of</p>

		<p>AI and interconnected products. We will explore solutions and also learn how to assess the risk posed by these technologies via the use of impact assessments. We close the course reflecting on the long-term consequences of AI, the added value this brings to society, and how the law should balance innovation and user rights protection in the context of AI.</p>
<p>Robot Law, Leiden University, The Netherlands</p>	<p>03/02/2021 - 24/03/2021</p>	<p>The integration of artificial intelligence (AI) technologies in society is accelerating. AI-based systems can be software-based, acting in the virtual world mainly with some physical support, such as voice assistants like Alexa or Google Home, image analysis software used for diagnoses, recommendation systems for mortgages, crime, or patient management, search engines, or speech and face recognition systems. AI can also be embedded in more complex hardware devices that operate in the environment, such as advanced robots, self-driving cars, drones, or Internet of Things applications</p> <p>The High-Level Expert Group on Artificial Intelligence appointed by the European Commission defined AI as 'systems that display intelligent behavior by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals.' These technologies process vast amounts of data, can learn from experience and self-improve their performance, which challenges the applicability of existing regulations that were not designed for progressive and adaptive AI. Since the automated processing of data that will evaluate, analyze, and predict outcomes that may affect the privacy, safety, or dignity of individuals, there is a growing interest in understanding what are the legal and regulatory implications of the use of AI in society.</p>
<p>Robotic Governance (Mykolas Romėris Universitetas Vilnius, Lithuania)</p>	<p>April 2021</p>	<p>In this course, we first map the latest advances in AI, including predictive policy, face recognition, personalized diagnosis, early disease detection drug discovery, algorithmic decision-making used in courts, and government. We then identify what the main regulatory initiatives revolving around AI technologies in the European Union are, including the Ethics Guidelines from the European High-Level Expert Group on Artificial Intelligence.</p>

		<p>During the course, we will focus on the benefits but also the particular challenges revolving around the deployment of AI, including, transparency and explanation (following the European General Data Protection Regulation); potential discrimination scenarios and exacerbation of existing biases; the construction of responsibility in highly automated environments; and the blurring of well-established concepts such as safety, in the context of AI and interconnected products. We will explore solutions and also learn how to assess the risk posed by these technologies via the use of impact assessments. We close the course reflecting on the long-term consequences of AI, the added value this brings to society, and how the law should balance innovation and user rights protection in the context of AI.</p>
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## 5. REFERENCES

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## 6. ANNEX

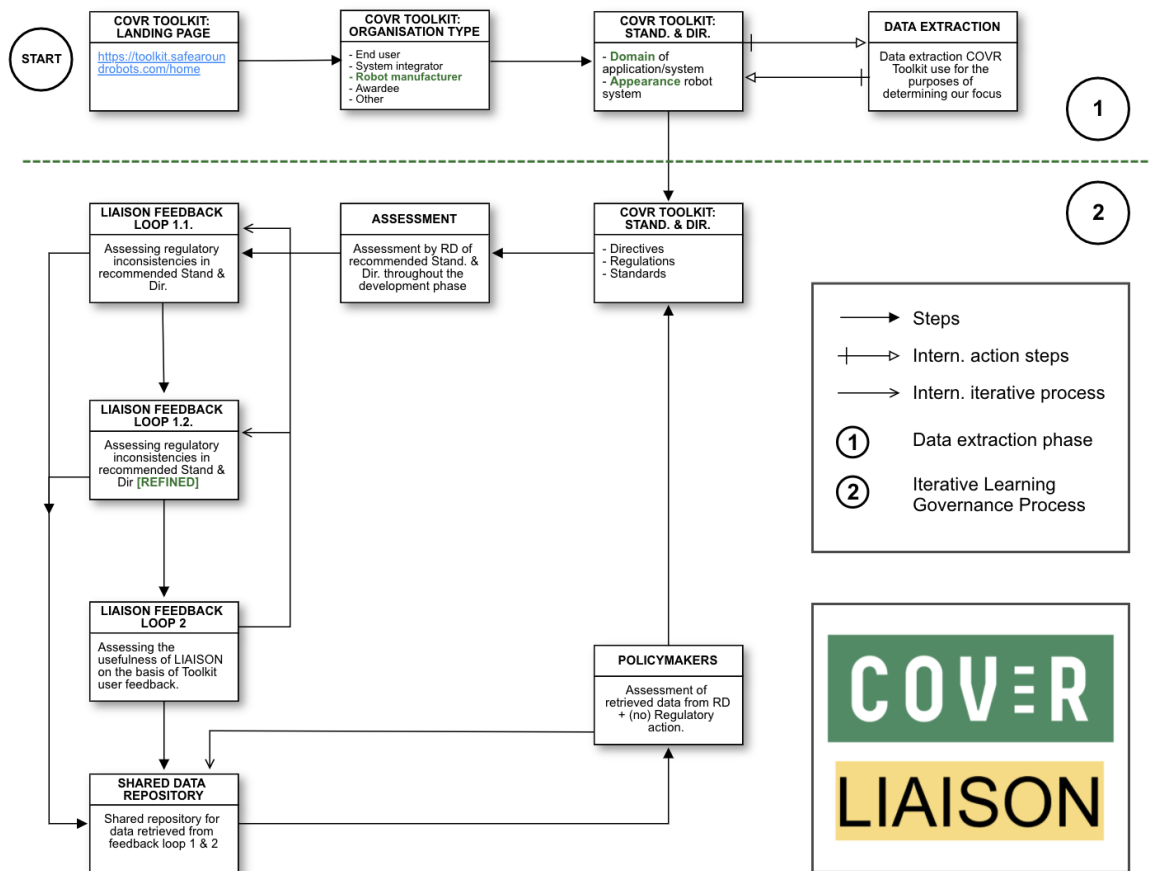
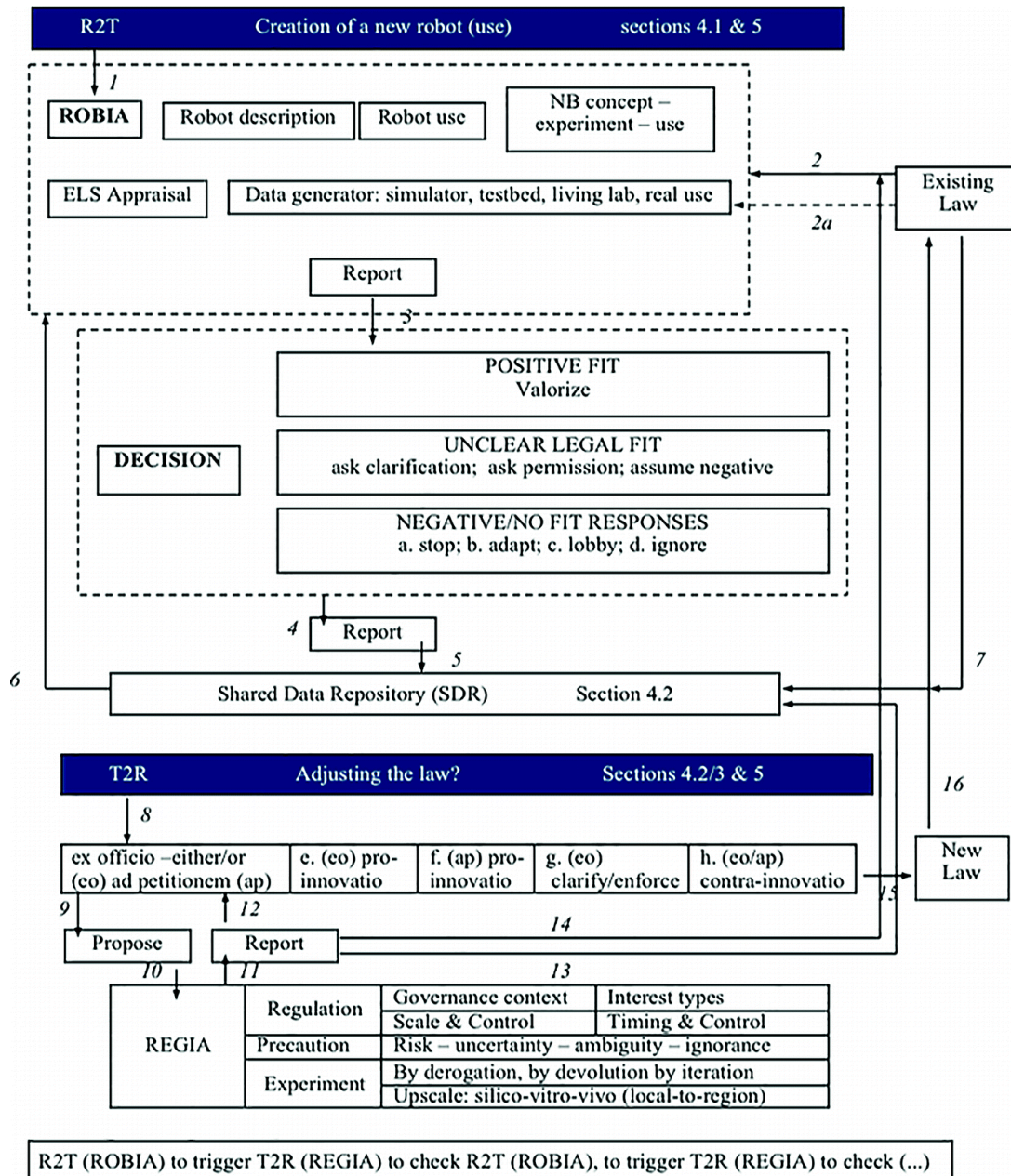


Figure 1: LIAISON Research Project mechanism



**Figure 2:** Preliminary iterative process for robot governance<sup>1</sup> (Fosch-Villaronga & Heldeweg, 2018).

<sup>1</sup> As regards the meaning of arrows: #1. signifies that upon the initiative to develop a new robot (use) the ROBIA process commences; #2 and #2a are about information about existing law/legal space being fed into the ROBIA fit to regulation process; #3 outcomes of ROBIA are reported to initiators to decide if and if so, how the development process can be continued; #4 and #5 concern reporting the decision and making information available to the SDR system; #6 is about how (changes in) information in SDR are a source of information to the ROBIA process – as shared learning; #7 is about information about existing law with relevance to robotics is also part of the shared data in SDR (#2 is about specific legal information to a specific ROBIA procedure; #7 about the general updating of legal info in SDR); #8 expresses that upon R2T events a process about possible legal adjustments is started; #9 and #10 when it is decided (ex officio/ad petitionem) that some legal change may be called for, a (basic) proposal is formulated whereupon the REGIA procedure is initiated; #11 and #12 show that outcomes of the REGIA procedure are reported back and feed into the decision on legal change; #13 Information in the report is also fed into SDR to update regulatory information; #14 REGIA report can feed ROBIA without passing via the Existing law> box, as the REGIA report will say something about pros and cons of possible legal change, but should that change follow, then this will communicate via the <New law> box; #15 signifies adjustments in the law; #16 expresses that new law changes and becomes part of existing law.)