Deliverable 2.2

Finaler Bericht zur Involvierung der Stakeholder

(Final Report on Stakeholder Involvement)

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Revision History

REVISION	DATE	INVOLVED PARTNERS	DESCRIPTION
0.1	30/09/2020	BOC	Upgrade form D2.1 in D2.2
0.2	31/10/2020	BOC, JR, UNIVIE, JKU	Update events from stakeholder list
0.3	30/11/2020	BOC, JR, UNIVIE, JKU	Describe events from stakeholder list
0.4	08/02/2020	BOC, JR, UNIVIE, JKU	Update events and description from stakeholder list
0.5	15/12/2021	BOC, JR, UNIVIE, JKU	Final collection of events from stakeholder list
0.9	31/12/2021	BOC, JR, UNIVIE, JKU	Review and completion of the content by all consortium member
1.0	31/01/2021	BOC	Finalisation and final formatting

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Kurzfassung

Dieser finale Bericht zur Involvierung von Stakeholdern umfasst eine Beschreibung der für compl@i relevanten Events, sowie auch erste Eindrücke, welche im Rahmen von Experteninterviews gesammelt wurden. Die Kurzfassungen mit den interessantesten Punkten werden präsentiert. Weiters werden insbesondere Vorträge, Konferenzbeiträge und Vorlesungen angeführt, sowie Publikationen, die in Bezug zu compl@i stehen.

Darunter befinden sich Veranstaltungen bei denen entweder:

- das compl@i Projekt erwähnt oder vorgestellt worden ist,
- Inhalte die in compl@i entwickelt worden sind veröffentlicht wurden, oder
- Erfahrungen aus dem Projekt mit Auditorium ausgetauscht worden sind.

Jede der angeführten Events wird näher beschrieben, unter anderem mit Bezug zum involvierten Projektpartner, Datum und weiterführenden Erklärungen.

Executive Summary

This final report on stakeholder involvement outlines the stakeholder events in the context of compl@i and includes first impressions that were collected based on expert interviews. The interviews abstracts with the most interesting points are presented. In specific, events such as talks, conferences and lectures related to compl@i are outlined as well as relevant publications.

Those lists include events that either:

- Communicate the compl@i project,
- Disseminate content that has been developed within compl@i, or
- Exchange experience from the project with the audience.

For each event, the involved project partners, the date and some further details are provided.

Table of Contents

1. Introduction

In this final report on stakeholder involvement, expert interviews and stakeholder events are discussed in more detail. In specific, events such as talks, conferences and lectures related to compl@i are outlined as well as relevant publications.

1.1 Relation to Work Package

This deliverable exchanges and updates the first part of stakeholder involvement D2.1. It emerged based on a close collaboration with legal, ethical and robotic experts, so that all major stakeholder groups could be covered.

1.2 Document Structure

Above, executive summaries in German as well as in English are provided in order to get an overview of the deliverable at hand.

This deliverable is composed of an introduction, in which a short overview is provided. Expert interviews are then summarized in Chapter 2. This is followed by summaries of the events, talks and conferences (Chapter 3). Afterwards, Chapter 4 outlines the major lectures and Chapter 5 focuses on the relevant publications. The results are summarized in a short conclusion in Chapter 6.

1.3 List of Interaction with Stakeholders

In the following the different interactions with stakeholders are listed.

ID	Type	Partner	Title/Description	Place	Link	Date	Audience
2 Expert Interviews							
2.1,2,3	Expert Interview	UNIVIE	Dr. Bernhard Dieber, Dr. Karin Bruckmüller, Dr. Robert Woitsch	Virtuell	Virtuell	03-05.2020	0
3 Events, Talks and Conferences							
3.1	Project Collaboration	COMPLAI Consortium	Kickoff Event	Vienna/ Virtual	https://complai.innovation-laboratory.org/	10.02.2020	15 external Web and 1 external physical visitors
3.2	Academic Workshop	BOC	OMILAB Day 2020	Berlin/ Virtual	https://www.omilab.org/activities/events/omilabday2020/	25.09.2020	60 participants
3.3	Conference Keynote	BOC	POEM2020	Riga/ Virtual	https://poem2020.rtu.lv/program	27.11.2020	60 participants
3.4	Project Collaboration	BOC	CALIBRaite	Vienna / Virtual		During the whole duration	3 project partners
3.5	Project Collaboration	BOC	Change2Twin	Virtual	https://www.change2twin.eu/	Since June 2020	18 project partners
3.6	Project Collaboration	JKU, UNIVIE	TechMeetsLegal	Waidhofen a.d. Thaya, Virtual	https://techmeetslegal.at/event/rechtlichethischefragen	1.10.2020	
3.7	Project Collaboration	BOC	DigiFoF Project	Berlin/ Virtual	https://digifof.eu/	25.09.2020 and during whole duration	15 project partners

3.8	Project Collaboration	JR/UNIVIE	Daialog.at	Linz/ Virtual	https://daialog.at/	during the whole duration	5 project partners
3.9	Paedagogic Course	JR	Keynote: agrarPädagogika Lehrerfortbildung, "Ethik der Robotik"	Virtual	https://v.agrarumweltpaedagogik.at/video/Ethik-der-Robotik-DI-Dr-Dieber/f7e9a1f858bfbe333e0b4b01c3473336	29.10.2020	150
3.10	Project Collaboration	JR	Synergie CredRoS Projekt: Roboterethik und Transparenz	Virtual	https://www.joanneum.at/robotics/referenzprojekte/credros		50
3.11	Project Collaboration	JR	Synergie FlexIFF Projekt: Security	Virtual	https://flexiff.at/		5
3.12	Project Collaboration	JR	Cybersecurity for Robotics Conference	Virtual	https://cybersecurityforrobotics.com/conference-csfr2020/	17.-18.12.2020	50
3.13	Conference Paper	JR/UNIVIE	RoboPhilosophy 2020 Conference	Virtual	https://conferences.au.dk/robo-philosophy/	18.-21.09.2020	100
3.14	Conference Panel	UNIVIE (Laura)	TU München Talk: Laura	Muenich	https://www.cvl-a.mcts.tum.de/?id=1706	17.12.2020	
3.15	Conference Panel	JKU	Women in AI	Linz/ Virtual	https://twitter.com/women_in_ai/status/1310861814515871745	5.10.2020	
3.16	Conference Forum	JKU	Zukunftsforum Österreich	Virtual	https://www.biz-up.at/standort-oberoesterreich/ooe-zukunftsforum/speaker/karin-bruckmueller/	23.-24.03.2021	

4 Lectures							
4.1	University Course	BOC	LV Knowledge Management	Vienna/Virtuell	https://ufind.univie.ac.at/de/course.html?lv=040189&semester=2020W	Winter Term 2020	35 students
4.2	University Course	UNIVIE/ Klagenfurt	Philosophische Probleme der KI	Klagenfurt/Virtuell	https://campus.aau.at/studium/course/104272	Winter Term 2020	14 students
4.3	University Lecture	JKU	AI and Law II	Linz / Virtual	https://studienhandbuch.jku.at/118200	Summer Term 2020	90 students
4.4	University Lecture	JKU	Rechtliche Grundlagen, Standards und Ethik	Hagenberg	https://www.fh-ooe.at/campus-hagenberg/studiengaenge/bachelor/automotive-computing/alle-infos-zum-studium/studienplan/	Winter Term 2020	14 students
4.5	University Lecture	JKU	Rechtsethik	Vienna	https://calendar.google.com/calendar/embed?src=9jd1nlic90uhh3sclt543fucqo%40group.calendar.google.com&ctz=Europe%2FVienna	Winter Term 2020	38 students
5 Publication							
5.1	Conference Paper	JR	Benjamin Breiling, Bernhard Dieber, Martin Pinzger and Stefan Rass. A Cryptography-Powered Infrastructure to Ensure the Integrity of Robot Workflows. Security and Privacy, MDPI, 2021.	MDPI	https://www.mdpi.com/2624-800X/1/1/6/htm	12.01.2021	
5.2	Newspaper Comment	UNIVIE (Laura)	Standard Kommentar	Print	https://www.derstandard.at/story/2000122287859/der-gesetzgeber-als-marionette-der-tech-konzerne	07.12.2020	

Table 1: List of Stakeholder Interactions

2. Expert Interviews

This section provides a summary and discussion of the expert interviews. The following subsections provide more details divided by the individual experts for robotics, law and modelling. In order to ensure that the perspectives captured are not too narrow, the interview questions were quite general for the expert interviews.

2.1 Dr. Bernhard Dieber

According to Bernhard Dieber, profit should not be favoured over the human welfare. In the context of technology, this can mean that the quality of a product has a higher priority than its dissemination. For this reason, it is important to better align economic interests, development and marketing, so that the end user is not acting as a guinea pig. Developments should happen in an environment, where progress is made stepwise and secured. The focus should lie on human-centered approaches that minimize the harm on the environment. Values and economic interests must be balanced so those are reasonably justified, and potential risks are considered. Information technology and digitalization foster inequality. However, the welfare of the humans should be considered for instance by applying impact analysis. Commercial inherent constraints highly influence our usage of technology as well as our economic system restrictively frames the technological development by focusing on economic aspects. Unfortunately, the potential of technology falls by the wayside. For this reason, required backwards compatibility seems to be a restriction for today's actions. Technology should support by focusing on the output of developments and realization. However, AI might not be the best term for explaining what goes beyond static programing, as exaggerated expectations are created based on sub symbolic AI. Also, robotics emerged in the technology development environment starting with manipulation machines and currently thinking about autonomy. Robotics as well as AI can be used for problem solving, however freedom of decision should not be limited.

2.2 Dr. Karin Bruckmüller

From a legal perspective, threatened areas must be protected. The question is, which areas must be protected for human robot interaction. A risk evaluation including a common criteria catalogue for presenting methodological and content perspectives from both areas, law and philosophy, seems to be useful for bringing together ethics and law in a way that is understandable for technical experts. Areas of conflict are important to evaluate the results from all perspectives and to frame the corridor or ethics within the fixed borders of law. In general, norms from ethics and law cannot be compared, as law and regulations are set by the legislation, whereas ethical and moral norms might be seen as a rationalization of common sense. In specific, there is quite a huge gap between risk and danger when considering legal and ethical viewpoints. While risk is hard to estimate and danger can be concrete (assessable) or abstract (potentially recognizable) from a law perspective, risk is something uncertain and danger is immediate from an ethical perspective.

2.3 Dr. Robert Woitsch

In the context of case studies and technical functionality, for instance human robot collaborations (eg: robot arm, autonomous car) entail risks and can be dangerous. The question is how a business process model must look like to describe such processes. In order to facilitate transparency, dangerous areas should be considered in detail and based on a variety of attributes. Contingency actions, as well as continuous monitoring of the dangerous are essential for threat analysis. Those aspects are the foundation for building up a secured artificial intelligence. Risks should be evaluated based on a medium expectation, the worst-case scenario and the probability of occurrence. The goal is to optimize risks and integrate experience knowledge. Risk management focuses on minimizing the probability of the occurrence of risks based on available resources and risk evaluations. Thread models facilitate the analysis of entry barriers, probabilities, or dangerous situations. A differentiation between risk and danger seems to be reasonable, as danger cannot be avoided, while risks can be optimized by suitable actions and the usage of resources. Counteractions based on the probability of occurrence or the extent of damage can be used to manage dangers. Artificial intelligence is a decision support system. The question is how humans act when somebody/something recommends a decision. Trust, credulity or missing competences are only some of the potential dangers with such systems. Although intelligence is a part of the phrase

artificial intelligence, this does not imply that artificial intelligence in a form of a software program is really intelligent. Users are mainly focusing on the surface, while aspects such as background information or machine interpretability are neglected. This results in an underestimation of the complexity. Transparency and trustworthiness are buzzwords that tackle the explainability of algorithms. Humans seems to trust technology, although trustworthiness and comprehensibility are missing. Therefore, awareness should be created already in the business processes. While the technology does not seem to be the major issue, the know how transfer between first and third world should be fostered. Information technology is a cross section subject matter and therefore, the value of it is that high in today's society. Process models must have minimal requirements. Furthermore, the home position as well as the revertive learning capabilities should be ensured. Requirements for physical and not physical products are not trivial to define, due to the complexity and development speed. High competition, low financial resources and low value orientation lead to inherent necessities. The speed of development cycles and tunnel visions lead to obsolescence, while the major goal should be the creation of overlying process models in order to integrate ethical and legal perspectives by enabling a comprehensive perspective.

3. Events, Talks and Conferences

The following subsections summarize the relevant event, talks and conferences in the project context.

3.1 Kick-off

Event Name	Kick-off Event
Project Partner	Compl@i Consortium
Date	10. - 11.02.2020
Details	BOC company site

The kick-off meeting was the starting point and should pave the way for a common understanding. Therefore, in specific motivation, innovation and goals were discussed. In particular, the potential and rising trends of digital ecosystems with robotics create the need for the consideration of legal, ethical and safety/security related issues when introducing artificial intelligence in organizations and digital environments. The project partners discussed potential innovations such as model-based assistant systems for decision support, model-based operation of robots, the division in technical and functional processes or the signing of processes in a transparent way by ethical, legal, safety and security specific assessments. Furthermore, the conceptualization and provision of suitable criteria catalogues as well as the interpretation of artificial intelligence and criteria catalogue dependencies were tackled. The kick-off event helped to align the overall project goals. In particular, the project expectations and role for each partner was clarified. Administrational issues could be clarified to establish a great working environment that enables the project partner to do their best. As the kick-off event was conducted at BOC's company site, there was a demonstration of the OMiLAB Innovation Corner, which was used for use case experiments throughout the project.

3.2 OMiLAB Day

Event Name	OMiLAB Day 2020
Project Partner	BOC (Wilfrid Utz, Robert Woitsch)
Date	25.09.2020
Details	https://www.omilab.org/activities/events/omilabday2020/

The OMiLAB Day followed a series of OMiLAB events, such as the NEMO Summerschool, and provided insights on results achieved and planned developments within the context of the OMILAB network for around 60 participants. Innovative results in the context of research initiatives – such as compl@i – and projects are presented and discussed. The OMILAB Day was considered to be a forum of exchange between nodes, interested stakeholders, developers and users to discuss ideas on modelling approaches and how they support novel business models, provide means for evaluation and assessment and enable creativity. A variety of presentations was held in an online setting. In specific, a presentation about the industrial OMiLAB Innovation Corner at BOC Vienna was relevant for this project, as it was outlined how proof-of-concept engineering can be performed in compl@i to analyse different robotic behaviour.

3.3 PoEM Keynote

Event Name	PoEM 2020
Project Partner	BOC (Robert Woitsch)
Date	25. - 27.11.2020
Details	https://poem2020.rtu.lv/program

The 13th working conference on the Practice of Enterprise Modelling (PoEM) was hosted by the Riga Technical University. The major goal of the conference is to improve the understanding of the practice of enterprise modelling. This should be reached by offering a forum enabling the sharing of experiences and knowledge between academics and professionals. Topics such as business innovation, digital transformation or enterprise architecture are addressed. The special focus of PoEM 2020 was the role enterprise modelling in the digital age.

One of the project partners was invited as a keynote speaker to present the industrial digital environment in action – the OMiLAB Innovation Corner. The OMiLAB Innovation Corner served as a major building block for the proof of concept experiments in this project, as it focuses on digital transformation and academic research and teaching within the domains of digital engineering, artificial intelligence, digital transformation mainly in the domain of Industry 4.0.

3.4 CALIBRaiTE Project Collaboration

Event Name	CALIBRaiTE Collaboration
Project Partner	BOC
Date	since February 2020
Details	FFG project

Trust is the key aspect of the related project. The following partial project abstract clearly indicates that there is a tight relationship between CALIBRaiTE and compl@i supported by extensive knowledge exchange.

Trust in an automated system is characterized by the expectation that it will support a person in a situation characterized by uncertainty and vulnerability. If the reliability of the intelligent function is underestimated or overestimated, i.e. if it is not "calibrated" well enough, this leads to distrust or overtrust, frequent issues might have a negative impact on the long-term acceptance of AI-based applications. Therefore, reliability displays have been proposed in recent years. An important contribution of the CALIBRaiTE exploratory project is to focus on reliability displays and to present and reflect their potentials and limitations very visibly. A fundamental challenge in this sense is: how can reliability displays be used in conjunction with AI-based systems to enable an adequate level of trust? Not only security and safety related issues, but also ethical as well as legal aspects seem to be important for ensuring trust. In order to display both the actual condition of the machine and the expected future condition of the machine, data is collected on the basis of various sensor data on the machine and the machine itself; these data are aggregated and thus allow a representation of the condition as well as an estimate of the probability of a failure in the future.

3.5 Change2Twin

Event Name	Change2Twin Horizon 2020
Project Partner	BOC
Date	since June 2020
Details	https://www.change2twin.eu/

Digital Twins can be seen as a game-changer in manufacturing, as they allow companies to significantly increase their global competitiveness. Change2Twin is a European project which focuses on supporting manufacturing SMEs in their digitalization process by providing Digital Twin solutions. In specific, digital twins might serve as a proof of concept in order to evaluate basic compliance with security, safety, ethical and legal aspects tackled within the compl@i project environment. For this reason, the knowledge exchange could highly enhance was highly beneficial for both projects.

3.6 TechMeetsLegal

Event Name	TechMeetsLegal
Project Partner	JKU, UNIVIE (Laura Crompton)
Date	1.10.2020
Details	https://techmeetslegal.at/event/rechtlichethischefragen

The hybrid event in Waidhofen an der Thaya, was about legal and ethical challenges in the context of autonomous driving. Imagine going on holiday with an autonomous Tesla. After crossing the borders, the vehicle automatically receives the new road traffic regulations via a secure interface. The vehicle adapts its driving speed to the new StVO and the current weather conditions. To ensure that the vehicle is able to comply with the StVO, all rules and laws must be converted in machine-interpretable format and then be legally secure. TechMeetsLegal discussed the topic of legal security in the digitization of existing road traffic regulations with lawyers from criminal law and liability law as well as ethic experts. Major discussion questions were: How must the messages transferred to the vehicle be structured so that a vehicle can legally rely on them? How can digitized road traffic regulations look like? What is necessary from an ethical point of view for vehicles to behave according to digital traffic regulations?

3.7 DigiFoF

Event Name	DigiFoF
Project Partner	BOC
Date	since January 2019
Details	https://digifof.eu/

The DIGIFOF project build up a network of training environments where higher education institutes, enterprises and training institutions come together. The major goal is to development of skill profiles, training concepts as well as materials for design aspects of the Factory of the Future. The knowledge transfer between industry and academia is fostered by providing educational and experimental OMiLAB4FoF laboratories. These will be equipped with modelling, simulation and analysis tools to target CPS and embedded intelligence, security and safety management among other aspects. In specific, the OMiLAB connection and the experimentational environment supporting proof of concepts for security or safety management was clearly relevant for compl@i and knowledge exchange in both directions could enhance the projects results.

3.8 dAlalog

Event Name	dAlalog
Project Partner	JR
Date	April 2020 – June 2021
Details	https://daialog.at/

Another project similar to compl@i emerged within the Ideenlab 4.0 FFG program. The major goal of the project is the conceptualization of new methods for participatory technology creation for the application area of artificial intelligence. The goal should be reached by following a workshop approach. The developed methods should enable the integration of users in the technology creation process and foster their reflexive knowledge of technology. The workshops focus in specific on the development of fair and trustworthy artificial intelligence systems in Austria, so that diversity and equal opportunities for users are supported.

3.9 agrarPädagogika Keynote

Event Name	agrarPädagogika Lehrerfortbildung - "Ethik der Robotik"
Project Partner	JR
Date	29.10.2020
Details	https://v.agrarumweltpaedagogik.at/video/Ethik-der-Robotik-DI-Dr-Dieber/f7e9a1f858bfbe333e0b4b01c3473336

One of the project partners was invited for holding a keynote speech on a teachers advanced training for 150 participants. In the focus of the discussion were questions on digital, ethical and robotic issues. This opportunity could be used to quickly present the compl@i project.

3.10 CredRoS

Event Name	Synergie CredRoS Projekt: Roboterethik und Transparenz
Project Partner	JR
Date	since March 2019
Details	https://www.joanneum.at/robotics/referenzprojekte/credros

The CredRoS project with around 50 participants focuses on robots operating nearby humans, which creates a specific need for security and safety. Currently trustworthy robots are here characterized by secure execution of operations in a way that it is understandable for humans. The goal of the project is to find further steps for realizing a trustworthy and secure robot behaviour. The focus lies on dynamic perception of situations and reasonable security assessments, comprehensible execution of tasks, self-monitoring, error detection, collision detection, evaluation of actions within distributed robot systems and the cryptographically secured documentation of the systems behaviour.

3.11 FlexIFF

Event Name	Synergie FlexIFF Projekt: Security
Project Partner	JR
Date	since October 2017
Details	https://flexiff.at/

Synergies between FlexIFF and compl@i could be recognized. The compl@i project idea was shared and discussed with 5 participants. FlexIFF stands for Flexible Intralogistics For Future Factories. According to the project webpage, intralogistics is essential for production. Raw materials and intermediary products must be planned in detail with respect to time and place. Intralogistics tasks are often challenging for human personnel. FlexIFF should therefore increase the competitiveness of Austrian manufacturing companies by optimization and personnel support by using a cyber-physical system of robots and advanced user-interfaces. Smart planning systems should ensure the achievement of maximum efficiency by collaboration between humans and robots. An overall security and safety solution is required.

3.12 Cybersecurity Conference

Event Name	Cybersecurity for Robotics Conference
Project Partner	JR
Date	17.-18.12.2020
Details	https://cybersecurityforrobotics.com/conference-csfr2020/

CSfR CyberSecurity for Robotics brings together stakeholders (around 50 participants) from various fields to raise the level of CyberSecurity in robots and robotics. The focus lies on security challenges among others related to known and unknown vulnerabilities or related to robotics systems. Cybersecurity for robotics seems to be a multidisciplinary research domain. Because of the increased interest in robotic systems and the related cybersecurity and safety risks as well as challenges, the necessity for such conferences is growing in relevance and importance. Therefore, the conference concentrates on multidisciplinary approaches in order to ensure further improvements in the area of cybersecurity for robotic systems required for instance for digital production or industry 4.0.

3.13 Robophilosophy Conference

Event Name	Robophilosophy Conference
Project Partner	JR/UNIVIE
Date	18.-21.09.2020
Details	https://conferences.au.dk/robo-philosophy/

The Robophilosophy aims at culturally sustainable and social robotics with more than 100 participants. The usage of ‘social’ robots in service functions (eg: care-, education-, and entertainment sector) seems to be promising. However, potential infringements of ethical, epistemic, existential or other socio-cultural core values might be a drawback of using robots in our daily life. Although there was a lot of research conduction in the area of social robotics and human robot interaction, a clear understanding and regulative directives are still missing so far. For this reason, the Robophilosophy 2020 focuses on question such as how cultural dynamics including robots do not negatively impact our values. According to the conference webpage, Robophilosophy is foremost “philosophy of, for, and by social robotics”, therefore interdisciplinarity is a major characteristic of the event.

3.14 TU München

Event Name	TU München Talk - Lecture Series: Ethics and Technology (Current Philosophical Research Projects)
Project Partner	UNIVIE (Laura Crompton)
Date	17.12.2020
Details	https://www.cvl-a.mcts.tum.de/?id=1706

One of the project partners was invited to give a talk within the frame of the international lecture series Ethics and Technology at the Munich Center for Technology in Society that focused on the moral dimension of technology and engineering. The lecture series enabled public discussion of questions for the topic of ethics of technology. Questions about increasingly autonomous technological systems, social impacts, morality, values and ethical standards were covered among other aspects. Participants were invited to engage in the interactive online discussion format by presenting ideas in an open dialogue-oriented environment bringing together a variety of stakeholders such as citizens, students, engineers, philosophers, ethical advisors, social scientists, natural scientists, researchers and practitioners, also from further disciplines.

3.15 Women in AI

Event Name	Women in AI - Shaping AI for Good
Project Partner	JKU (Karin Bruckmüller)
Date	5.10.2020
Details	https://twitter.com/women_in_ai/status/1310861814515871745

The hybrid event (Linz and online) Shaping AI for Good was used to present the concept of trustworthy artificial intelligence through ethical and criminal legal frameworks. A short introduction of the project as well as discussion with the audience of around 90 participants resulted in further insights on the criteria catalogue. A criteria catalogue during elaborating and designing artificial intelligence entities can help to avoid criminal legal sanctions.

3.16 Zukunftsforum Österreich

Event Name	Zukunftsforum Österreich
Project Partner	JKU (Karin Bruckmüller)
Date	23.-24.03.2021
Details	https://www.biz-up.at/standort-oberoesterreich/ooe-zukunftsforum/speaker/karin-bruckmueller/

A compl@i follow up presentation will be given in March, with the focus on humans in the center of artificial intelligence. A major presentation topic will be about trust: Do you trust artificial intelligence? – trustworthy autonomous driving. In specific the criteria catalogues will be part of the presentation, in order to show their potential as a helpful instrument for building trust in artificial intelligence environments.

4. Lectures

In the following subsections, lectures that were relevant for the project are presented, by shortly summarizing the content of the courses.

4.1 Knowledge Management

Lecture Name	KU Knowledge Management
Project Partner	BOC (Robert Woitsch, Wilfrid Utz)
Date	October 2020 to February 2021
Details	https://ufind.univie.ac.at/de/course.html?lv=040189&semester=2020W

Around 30 students participated in the University Course Knowledge Management, which consisted of two major parts, a course and a literature seminar. The major contribution of the course part was a group project based on digital services. Textual descriptions, models and realization work were conducted. The focus of the lecture was knowledge management, knowledge representation, knowledge engineering, ontologies as well as modelling and meta modelling. The literature seminar was used to gain further insights by focusing on a topic in the fields of data management, business intelligence, industry 4.0, business process management and knowledge management. A presentation of the supermarket case, used as an application case for compl@i, served for innovative ideas in the domain context and supported knowledge exchange and proof of concept samples.

4.2 Philosophical Problems of AI

Lecture Name	Philosophische Probleme der KI
Project Partner	UNIVIE (Michael Funk), JR (Bernhard Dieber)
Date	October 2020 to February 2021
Details	https://campus.aau.at/studium/course/104272

The seminar for 14 participants focused on technical philosophical problems, in specific artificial intelligence and is therefore highly connected to compl@i. The focus lied on the variety of artificial intelligence technologies. In particular, the replaceability of the human or the consciousness and autonomy of technical systems was discussed with regard to philosophical questions. A critical analysis of potential issues in the context of bots and robots was fostered by considering moral and ethical aspects. Furthermore, it was discussed if such technical entities should get own rights and moral values and how decision-making capabilities are classified. A tight connection to compl@i could be captured, as the major lecture topics overlap with the research interests of the project.

4.3 AI and Law II

Lecture Name	AI and Law II
Project Partner	JKU
Date	March to June 2020
Details	https://studienhandbuch.jku.at/118200

The lecture took place at the Johannes Kepler University and among the 90 participants were students as well as start up owners. A short presentation about the project idea was used to foster further discussions. First research results, in particular in the context of potential criminal law criteria and documentation possibilities, were shown.

According to the lecture description: The course provides basic understanding of principles of criminal law and ethical principles to artificial intelligence, its development and application. Students will be enabled to realize where those principles are affected and need to be taken into account, as well as where there are risks of criminal liability. Human beings and artificial intelligence-based systems both will increasingly form integral parts of our society. And, society expects all participants in everyday life to act in conformity to the rule of law, ethically adequate, and fair. Not only human beings, but also AIs will be expected to act in compliance to the laws. The more important the compliance expectation is, the more likely it is protected by criminal law which addresses human beings and legal entities but is not adjusted to AIs. Concurrently AI might challenge the status quo of regulations as they are, and AI will influence laws' development, and thus will have further impact on the society. Hence, the interaction and translation between AIs and the legal norms and ethical principles constituting the basis of our society is of utmost importance, and will be explored during this lecture. Recent fields of research and discussion, amongst it autonomous driving, will be used as reference fields for the legal preconditions and challenges from the perspective of criminal law, legal philosophy and ethics to, and by digitalization.

4.4 Rechtliche Grundlagen, Standards und Ethik

Lecture Name	Rechtliche Grundlagen, Standards und Ethik
Project Partner	JKU
Date	October 2020 to February 2021
Details	https://www.fh-ooe.at/campus-hagenberg/studiengaenge/bachelor/automotive-computing/alle-infos-zum-studium/studienplan/

The project research results were presented to 14 students at the University of Applied Sciences in Upper Austria Hagenberg. The presentation paved the way for further discussions based on the project interview-questions with the students. This discussion was conducted rather from a technical perspective in order to fit the Automotive Computing Bachelor study program.

4.5 Rechtsethik

Lecture Name	Rechtsethik
Project Partner	JKU
Date	October 2020 to February 2021
Details	https://calendar.google.com/calendar/embed?src=9jd1nlic90uhh3sclt543fucqo%40group.calendar.google.com&ctz=Europe%2FVienna

With 38 students from the Law Bachelor's study program at the Sigmund Freud University the relationship between AI, law and ethics could be discussed from a rather legal point of view. The research results were presented and paved the way for further discussions based on the project interview-questions with the students.

5. Publications

In this section relevant publications in the context of compl@i are presented.

5.1 Integrity of Robot Workflows

Publication Name	A Cryptography-Powered Infrastructure to Ensure the Integrity of Robot Workflows
Authors	Benjamin Breiling, Bernhard Dieber, Martin Pinzger and Stefan Rass
Date	12.1.2021
Details	https://www.mdpi.com/2624-800X/1/1/6/htm

As the following paper abstract reveals, a close contentwise relationship with compl@i can be monitored: With the growing popularity of robots, the development of robot applications is subject to an ever-increasing number of additional requirements from e.g., safety, legal and ethical sides. The certification of an application for compliance to such requirements is an essential step in the development of a robot program. However, at this point in time it must be ensured that the integrity of this program is preserved meaning that no intentional or unintentional modifications happen to the program until the robot executes it. Based on the abstraction of robot programs as workflows we present in this work a cryptography-powered distributed infrastructure for the preservation of robot workflows. A client composes a robot program and once it is accepted a separate entity provides a digital signature for the workflow and its parameters which can be verified by the robot before executing it. We demonstrate a real-world implementation of this infrastructure using a mobile manipulator and its software stack. We also provide an outlook on the integration of this work into our larger undertaking to provide a distributed ledger-based compliant robot application development environment.

5.2 Standard Comment

Publication Name	Der Gesetzgeber als Marionette der Tech-Konzerne
Authors	Laura Crompton
Date	7.12.2020
Details	https://www.derstandard.at/story/2000122287859/der-gesetzgeber-als-marionette-der-tech-konzerne

The focus of the comment lies in the question if the legislator can be seen as a marionette of the tech companies. In specific the consideration of ethics, moral and power distribution creates a relationship with compl@i. Current regulations and the changing working environments were discussed with regard to the pandemic situation (Covid-19). The comment reach a variety of tech interested people and triggered 94 people (till 27.1.2021) to comment on the controversial topic.

6. Conclusion

This deliverable is part of the second work package, which deals with stakeholder involvement. Stakeholder interviews were conducted with experts in the fields of law, robotics and modelling. Furthermore, a variety of events, ranging from lectures over conferences to publications, facilitated knowledge exchange that supported relevant topics in the context of compl@i. By ensuring a close collaboration between legal, ethical and robotic experts all major stakeholder groups could be covered with the described events.