Selja SEPPÄLÄ

Technology centre: Governance, Risk and Compliance Technology Centre (GRCTC), UCC
Academic Mentor: Prof. Thomas Butler
Commercial Partner: Governor Software Ltd
Commercial Mentor: Richard Pike

Selja holds a PhD in Multilingual Information Processing from the University of Geneva, Switzerland. Her training in translation, terminology, and multilingual information processing, her international research experience in computational linguistics laboratories and departments of philosophy and biomedical informatics, as well as her previous postdoctoral research in applied ontology, biomedical informatics, and natural language processing (NLP) for regulatory technologies in the financial industry have given her an interdisciplinary expertise at the crossroads of NLP, terminology, applied ontology, and corpus studies. Selja's work has focused on word meanings across languages and domains and, in particular, on the study of definitions. Her research lays the groundwork for creating computer-assisted natural language definition writing and checking tools leveraging ontological data. Selja has been awarded four competitive peer-reviewed doctoral and postdoctoral fellowships and travel grants and has a significant publication record.

Professor Thomas Butler

Dr. Tom Butler is a Professor in Business Information Systems at University College Cork and PI of the GRC Technology Centre 2013-2018. Prof. Butler had an extensive career as an IT professional before starting his research activities in 1996. Since then, Tom has published 219 research articles, including 73 conference papers, 84 full papers, 22 book chapters, and a range of other papers, including white papers and articles in professional industry-oriented journals. He is responsible for the creation of 11 inventions that address core financial industry concerns in risk and compliance, including SmaRT, a ground-breaking RegTech application. A global thought leader in RegTech, Tom is a member of the European Commission's Expert Group on FinTech regulation and innovation.

Richard Pike

Richard Pike has extensive experience of working with financial institutions and technology companies throughout the world, assisting companies in managing enterprise risk more efficiently while addressing local regulatory guidelines and standards. He has analysed, designed, and managed the development of core treasury and enterprise risk management systems for large financial institutions, including UBS, Citibank, Schroders, and Unicredito. In 2009, Richard was recognised as a "Top 50" Face of Operational Risk by Op Risk & Compliance magazine and was a contributing author to two books on risk management. His expertise in the areas of Strategy, Technology, Innovation & Risk management, with a focus on financial services and IT companies is highly relevant to the proposed project.

Governance, Risk and Compliance Technology Centre (GRCTC)

The GRCTC is unique in an EU context in that it addressed governance, risk and compliance (GRC) challenges using semantic technologies. This technology centre is recognized as a world leader in the application for semantic technologies for GRC in the financial industry as well as the FinTech/RegTech sector. The GRCTC counted among its members, leading financial institutions, such as banks, financial consulting companies, risk consulting institutions. The GRCTC research is also multidisciplinary in that it includes business, finance, law, information systems, computer science and knowledge engineering. This research diversity in conjunction with its industry ecosystem will maximize the opportunities for technology transfer to industry.

Governor Software Ltd

With offices in Dublin, London and New York, Governor Software Ltd supports senior risk and compliance executives at financial institutions maintain governance and oversight through clear visualisation of their regulatory obligations and risk appetite. Founded in 2015 by CEO Richard Pike, the Governor Software team have first-hand experience of the production and oversight of governance information within financial institutions. Empowered with this unique knowledge, Governor Software have taken a fresh approach to addressing these challenges; using visualisation technology to efficiently tackle the issues associated with governance and oversight in their entirety.

Selja's project

"RegDef: A Computer-assisted Definition Authoring and Formalisation System for Legal Experts"

Regulatory technologies (RegTech) for legal compliance are in high demand in all areas subject to the law, particularly in the financial industry, where the 2008 financial crisis spurred an avalanche of new regulations. This context has promoted the development of RegTech systems to facilitate mining the semantic contents of hundreds of thousands of pages of existing and new legislation.

However, an important gap in these systems that hinders their full semantic potential is a lack of functionalities to handle a central element of the meaning of regulations, namely the definitions of terms. For RegTech systems to fully deploy their reasoning power, it is essential that (i) terms appearing in legal documents be well defined from the very start and (ii) the semantics of the definitions be formalised in a machine-understandable format. Yet, definition writing requires uncommon expertise, is time-consuming, costly, and prone to inconsistencies. Similarly, formalising definitions' semantic contents requires technological expertise that cannot be expected from legal experts.

Therefore, there is a need for tools to help legal experts carry out these tasks. To fill this gap, this applied research project proposes to develop a computer-assisted definition authoring and formalisation system, RegDef. The project aims at (i) changing and enhancing definition writing practices of regulators and legal experts and (ii) enhancing the semantic functionalities of RegTech systems. RegDef will allow regulators in public institutions and legal experts in private companies to craft and edit clear and consistent definitions in legal instruments, such as regulatory documents and smart contracts, while at the same time producing machine-understandable semantic representations of the meaning of relevant terms that can be shared using, for example, semantic web standards.

This will ensure that regulatory definitions meet good quality standards and expedite legal experts' vocabulary building and semantic formalisation tasks, thereby greatly reducing costly human effort.