Angelina ESPINOZA LIMON

Technology centre: Governance Risk and Compliance Technology Centre (GRCTC), University College Cork
Academic Mentor: Prof. Tom Butler
Commercial Partner: Fidelity Investments Ireland
Commercial Mentor: Dr. John Mariano

Angelina has a PhD in Languages, Informatics Systems and Software Engineering from the Universidad Politécnica de Madrid, Spain; and a bachelor's degree in Mathematics Applied to Computer Sciences in Universidad Autónoma Metropolitana in Mexico City.

Her research focuses on ontology engineering and semantic solutions design for information systems, as well as, incorporating system architecture patterns from Autonomic Computing for intelligently delivering semantic data in several application domains, such as medicine, energy and future of work. She has led several projects through funding agencies, such as Enterprise Ireland, (England) Royal Society and Royal Academy of Engineering, and (Mexico) Conacyt and PROMEP; also collaborations with Spanish companies for semantic solutions design.

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.

Dr. John Mariano

Dr. John Mariano is Head of Surveillance, Fraud, and Security Technology – Analytics & Software Engineering in Fidelity Investment. He has a strong and consistent track record of success in solving problems, improving efficiencies, and reducing costs across technical and business environments. He has also sought for getting promising and innovative advances in technological research through partnerships with research institutions, specifically with the GRCTC, which have collaborations in research projects with Fidelity Investments Ireland. One of these projects, was for developing a semantic approach for Brokerage Surveillance & Supervision.

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, and risk consulting institutions. 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.

Fidelity Investments Ireland

Fidelity Investments Ireland promotes and develops software for Fidelity Investments, which is a conglomerate and mutual fund firm, located in the US. The secondment is planned to be performed in the Fidelity Enterprise Risk Management (FERM) team, specifically with the technology group, which develops and maintains Risk, Compliance, Security, and Audit technology solutions. The FERM group has a worldwide expertise in technical solutions for data analytics, and referencing knowledge in compliance, brokerage surveillance, customer protection and fraud investigation.

Angelina's project

"A Design Pattern Approach for Risk Data Aggregation and Regulatory Compliance Reporting in Asset Management and Investment Funds"

In 2016, Financial Assets managed in Europe were EUR 22.8 trillion, of this, investment fund assets were EUR 11.8 trillion. Asset managers in the EU play a key role in the financing of companies of all sizes and also governments.

For such companies, the data aggregation is key for governance, risk management, specifically in **fraud, surveillance and anti-money laundering (AML)** and also for compliance reporting, due to the several regulations and amendments frequently coming; however, the regulatory compliance cost for the EU's 4000 asset management companies is considerable and lack the ability to aggregate risk exposures and identify concentrations quickly and accurately.

The reason, it is labour intensive since: (a) data and information systems ((IS; e.g. a typical financial institution can have thousands of IS, related data stores, thousands of spreadsheets) are not fully integrated; and (b) key data is unstructured, non-heterogeneous and non-machine readable; let alone proper data management for risk assessment and regulatory reporting. This has significant consequences (e.g. in terms of risk management) to the banks themselves and to the stability of the financial system as a whole.

The proposed project will conduct R&D on an innovative design pattern for Risk Data Aggregation and Regulatory Reporting in Asset Management and Investment Funds (AMIF), to: 1) use tools and techniques to extract, transform, classify and load corporate, industry and user un/structured data into a data store; 2) create the AMIF Knowledge Base, comprising both, the financial concepts modelling (AMIF Ontology) and the financial actual data (AMIF Graph Data Store); and 3) enhance the data analytics through inferencing, visualisation, and powerful analysis for supporting the financial officers in key tasks such as in fraud detection, AML and after list-management for governmental bodies.

The proposed research has the potential to contribute greatly to the development of Regulatory Technology (RegTech) solutions in financial institutions, such as Fidelity Investments Ireland (the secondment host for testing this approach), since RegTech is an exciting new field which Europe is poised to lead.