**Digital Regulatory Reporting**

The regulatory reporting function within the financial services industry remains on a continual downward slide towards increasing costs and complexity. The financial industry must meet various reporting obligations including KYC, FRTB, IFRS 9, IFRS 17, IRRBB, Basel III reforms, stress testing and GDPR, to name a few. The challenge of regulatory interpretation and the inconsistencies of data processing (defining, categorising, sourcing, storing) across the industry is only increasing. This leads to reporting solutions requiring multiple reconciliations and inhibits standardisation that allows for the application of long-term strategic solutions, such as automation and straight-through processing. Regulators in the UK and Europe are now looking towards RegTech and solutions, such as digital regulatory reporting, to completely transform the way financial institutions report.

In its basic form, digital regulatory reporting embeds a standardised data dictionary and data model – rules dictating how a firm’s reporting data should be structured and formatted. Instructions for regulatory reporting and risk monitoring are then converted into machine executable code, which is passed directly to the industry or specific institutions. An automated system is then used to execute these regulatory instructions using the underlying standardised data to produce automated regulatory reports. The concept of a data pull has also been explored, whereby reporting data is extracted directly from an institution by regulators to produce ad hoc supervisory reports. This ultimately results in a fully automated reporting solution which improves interoperability, transparency and efficiency.

**Fundamentals of End-to-End Reporting Automation**

Financial institutions are responsible for preparing their operational and reporting data in terms of the common standard, while regulators draft regulation in natural language, as well as machine executable language. The automated system to produce executed reporting outputs can either be built and managed by the regulator or developed by independent software vendors. While digital regulatory reporting has many components, the functionality of the solution can be broken down into two main concepts:

·       **Machine-Readable Regulation (MRR)**

·       **Machine-Executable Regulation (MER)**

**MRR** encapsulates the process of converting legal regulatory reporting standards into structured, machine-readable language that accurately replicates the structure and flow of the regulation using a standardised data dictionary. This conversion is a challenge in and of itself as the structured, binary nature of computing does not lend itself well to regulatory interpretation and judgement or principle-based regulation. Furthermore, the regulators who draft these documents are either lawyers or risk managers, who often do not have the technical skills to convert their legal instructions into machine-readable programming languages.

**MER** refers to the process through which machine-readable regulation in a high-level programming language (JSON, SQL, Rosetta) is converted into executable instructions, using a compiler programme to create code processable by a CPU. This code is then combined with standardised datasets to execute and calculate the regulatory reporting output. The **Digital Regulatory Reporting (DRR)** pilot, launched by the Financial Conduct Authority (FCA) and Bank of England (BoE), has been tackling this issue of machine-readable and executable regulation by looking at various methods of conversion. This includes using natural language processing (NPL) technology to automatically convert natural language text into structured information using artificial intelligence. DRR also focuses on drafting regulation in a domain specific language (DSL) and then converting it into the formal model of the solution. DSL, usually stripped-down structured languages with limited functionality to focus on a specific application domain [1], should provide the functionality for both machine and human readability, thereby bridging the gap between the business team that draft regulation and the IT team that manages the structured information.

The International Swaps and Derivatives Association (ISDA) has similarly produced their **Common Domain Model** (CDM) using the Rosetta DSL to formally model derivative data for products, calculations and events across the trade lifecycle in a machine-readable format. ISDA’s CDM was utilised in phase 2 of the DRR pilot to express reporting rules for EMIR and MiFIR and demonstrated the principles of standardisation and reusability that demonstrates the solution’s scalability.

The benefit of digital regulatory reporting lies in using a common data standard, including a data-dictionary and data model, across the financial industry. This ultimately provides **interoperability**, with a standardised model that allows for accurate and efficient exchange of data between all institutions and between internal systems. It also reduces the burden of reconciliations (inter-institutional post-trade reconciliations being a particular concern by ISDA) and integration transformations between systems (straight-through-processing), thereby allowing business teams to focus on value-add activities. A common standard also promotes transparency as the industry and regulators share greater alignment on regulatory judgements and data definitions. Scalability of the solution through the use of reusable machine-executable code and a standard data model also reduces the number of data points required for various types of regulatory reports.

Despite these potential benefits, digital regulatory reporting has yet to gain momentum to move past proof of concept and tackle the real-world complexities of an end-to-end automated solution. The process of designing, building and vetting the various elements of the solution will require intense collaboration and consultation amongst industry stakeholders including regulators, supervisory bodies and risk and compliance functions. The FCA alone regulates over 58 000 firms illustrating the scope of such engagement [2]. Furthermore all financial services industries will have their unique ecosystem of technology, architecture and reporting processes that have accumulated over decades of operations. An industry wide transformation of the reporting landscape will require exceptionally well planned, funded and motivated roll out.

**Enabling Innovation**

Digital regulatory reporting is a major shift for the industry to accommodate but the solution would accelerate the pragmatic use of advanced technological innovation. Application of a distributed ledger technology in phase 1 of the DRR pilot was used for the transfer of regulatory logic to the industry, whereas cloud computing was used to store the dummy data of the firms. The use of artificial intelligence and machine learning is also being explored for result monitoring and analysis by regulators and supervisors. The large number of results available in machine-readable format provides a golden opportunity for AI to provide deep, automated oversight findings.

Scott O’Malia, CEO of ISDA, wrote that this “is a once-in-a-generation opportunity to restructure the foundations of the market, and we need to grasp this opportunity”[3]. While there is no denying that the potential benefit of digital reporting will be immense, an efficient implementation is complex. Without strong leadership and direction from regulators and unified acceptance from the finance industry, reporting may remain as tedious and effort intensive as it has always been.

**About Monocle**

Monocle is an independent, results-focused management consulting firm specialising in banking and insurance with almost two decades of experience working alongside industry leading banks and insurance companies around the world. With offices in London, Amsterdam, Cape Town and Johannesburg, we service our clients across the United Kingdom, Europe, Scandinavia, Asia, South Africa and much of Sub-Saharan Africa.

We design and execute bespoke change projects, from start to finish, bridging the divide between business stakeholders’ needs and the complex systems, processes and data that sit under the hood. We offer several unique capabilities to our clients, which have been forged over time through the combination of a highly specialised skillset and extensive experience working with the systems, processes and people that are at the heart of the financial services industry.

[1] M.Fowler & R.Parsons, ‘Domain Specific Languages’ (Addison Wesley, 2010).

[2] PAConsulting, ‘Digital Regulatory Reporting – A review of phase 1 and 2 of the digital regulatory reporting initiative’ (2020), https://www2.paconsulting.com/rs/526-HZE-833/images/DRR-Report-Sept-2020.pdf.

[3] ISDA, ‘ISDA Common Domain Model (ISDA CDM)... Why now?’ (2018), https://www.isda.org/2019/10/14/isda-common-domain-model/.