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The future of data collection & data management: Agile RegOps for digitalizing the regulatory value chain

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Abstract:

Since the 2007-2008 financial crisis, global regulatory regimes and reporting have improved significantly, and the Basel reforms were broadly deemed sufficient.

Coupled with the high costs for financial institutions (FI), the widespread easing of regulatory requirements and additional ad hoc requests due to the COVID-19 crisis highlight that the current regulatory reporting model is not sustainable enough, especially in times of intense stress.

The paper sets out to identify the root causes of current issues in banking regulation and regulatory reporting, to find best practice use cases, and to give conclusions on how to improve the status quo.

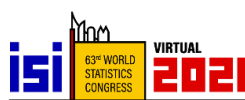
The authors of this paper first identify the main root problems in regulator reporting. Then, case studies on how selected jurisdictions have attempted to improve data collection and reporting are being analysed to identify best practice solutions to overcome these issues. Based on these best practice scenarios, this paper outlines an agile, wholesome concept, called RegOps, which synthesises the best practice lessons from the case studies to overcome the previously identified root issues by addressing processes, technology, and governance.

The paper shows that not the underlying rationale of banking regulation and regulatory reporting is deficient but rather the way how the system is organized and operationalized. With a concept like RegOps a complete digitalization of regulatory reporting is possible and has the potential to strongly increase effectivity and efficiency of banking regulation and regulatory reporting. Furthermore, the concept shows a sensible transformation scenario on how to shift to this novel model.

Keywords:

Regulatory Reporting; Big Data; Granular data; Financial Data Standards; RegTech

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Since the 2007-2008 financial crisis, global regulatory regimes and reporting have improved significantly, and the Basel reforms were broadly deemed sufficient. Coupled with the high costs for financial institutions (FI), the widespread easing of regulatory requirements and additional ad hoc requests due to the COVID-19 crisis highlight that the current regulatory reporting model is not sustainable enough, especially in times of intense stress.

The authors of this paper present case studies on how selected jurisdictions have attempted to improve granular data collection and reporting. Furthermore, this paper outlines an agile concept, called RegOps, for the complete digitalization of regulatory reporting, which maximizes operational efficiency and presents a transformation scenario on how to shift to this novel model.

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1. Introduction:

The decade of the 2010s saw the implementation of Basel III reforms to cope with fallout of the 2007/2008 financial crisis. With the official end of the post-2007 crisis agenda (BIS 2020c) and the Covid-19 pandemic as well as the ensuing economic crisis, we are at a perfect point to evaluate banking regulation and the corresponding banking regulatory reporting system.

When looking at the results of the Basel III reform (BIS 2019) regarding its performance, one can observe a mixed picture. For one, many of the ideas manifested in the Basel reforms and its national and supranational implementations were highly successful.

On the other hand, several major deficiencies of banking regulation became visible or are now prominently in the focus of all involved stakeholders in the financial market. Most remaining shortcomings are interestingly found not in the principal ideas and concepts of the regulatory reforms but their functional, technical, and organizational implementation. To find approaches to overcome these shortcomings, the authors propose the “RegOps” approach, a regulatory reporting framework that combines an integrated data flow, a common processing of standardized, granular datasets based on a big data-enabled platform for computation and analysis. This model was also successfully implemented in a Proof-of-Concept and proved to deliver all requirements conceptually.

Please note that this paper is a short version of our full RegOps paper which was previously published on SUERF and as an individual publication by BearingPoint.

2. Methodology:

This paper is based on a longer paper which used mainly qualitative analysis to identifying current issues of regulatory reporting, and best practice approaches which are used globally by leveraging relevant scientific and official publications by central banks and regulators. The authors also drew from their joint experience in the field of banking regulation and especially regulatory reporting, and comprises many years of exchange with relevant stakeholders from the banking, regulatory and scientific community.

3. Result:

a. Problems

The first major deficiency is the generally low application of innovative technology in the fields of digitization and modern computing in the banking regulatory reporting regime. In most regulatory frameworks in global jurisdictions, regulatory data flow still happens in a quasi-manual, template-based fashion. This means that the mere automatization of manual, printed, or handwritten reporting processes of aggregated data, which was the main activity in the past years, is not enough. The digitalization of regulatory reporting does not only mean changing technology but also requires rethinking the whole process, from the beginning of data generation within banks throughout the entire processing chain to the regulators and analysts. Only a few jurisdictions have started the journey thinking regulation anew and leveraging the possibilities of new technologies such as artificial intelligence (AI), application programming interfaces (API), big data, the cloud, high-performance computing, and blockchain/distributed ledger technologies (DLT).

These technologies could also help to topple the second point, the high cost of regulation and regulatory reporting. Estimations of the cost of regulatory reporting vary wildly, yet all indicate very high costs for financial institutions. McKinsey estimates that the annual cost for regulatory reporting of UK banks is 2bn – 4.5bn GBP (Van Steenis, 2019). A commission staff working document estimated 4bn EUR for the European Union (European Commission, 2020), while a study by Chartis & BearingPoint estimated the cost of compliance in the EU and the USA for the full scope of risk data aggregation and regulatory reporting to be approximately 70bn USD (Chartis and BearingPoint, 2018).

While banking regulation has become more effective over the last decade, the marginal use of an ever-increasing set of template-based regulatory requirements is strongly decreasing; the main impediments being the limited insight and flexibility of the aggregated data reported. Also, it becomes clear that while technology could significantly reduce costs, it currently cannot be deployed efficiently because of a lack of common standards in data models and processing. The financial markets would need a common standard to describe regulatory data requirements and the corresponding regulatory logic processing before leveraging large amounts of data with modern technology. To a large extent, the current high costs in regulatory data generation for institutions are rooted in the necessity to leverage the same information artefacts repeatedly for different non-aligned regulatory reporting regimes with myriads of templates (prudential, national, statistical, granular, resolution reporting) with often very similar, but slightly differing definitions. However, common standards require finding governance models between the stakeholders within the financial markets on the one hand, and the financial market stakeholders and the regulatory authorities, on the other hand.

The third shortcoming of the current regulatory regimes is the lack of operational excellence, which became apparent via several high-profile failures in recent years, such as the hidden derivative losses at Banca Monte dei Paschi di Siena and the Wirecard scandal. For one, offsite supervisory overview is still limited due to the nature of the collected data. Aggregated and template-based reporting is conceptually more prone to data correction or even manipulation. Fully granular, automatically pushed, end-to-end integrated data delivery could strongly improve trust and operational stability for data reporting and could make data manipulation virtually impossible or prohibitively expensive.

b. Stock-taking exercise & case studies

A stock-taking exercise was conducted to find notable solutions to the issues above, identify the key elements of solutions, and to explain why they were successful to introduce them. Based in this exercise, we conclude that the following features are missing in current regulatory reporting regimes:

- *Standardized input data model and processing logic*: standard of data and data processing used for regulatory reporting, which is either defined by the regulator or the market participants
- *Pull mechanism*: the bank does not submit data to the regulator (push of data); instead, the regulator accesses the required data (pull of data)
- *Integrated data transfer*: end-to-end data flow, which is fully integrated and automatable via modern interfacing, e.g., API
- *Granular data delivery*: banks submit contract-granular data instead of aggregated regulatory reporting templates to fulfill the regulatory requirements
- *Big data-enabled platform*: employing a big data-capable regulatory platform which can collect, store, and analyze large amounts of granular data to generate insights for authorities

Please refer to the long version of the paper for insights into currently productive notable case studies of modernized regulatory reporting regimes:

- Switzerland/Liechtenstein (Standardization of source systems)
- Oesterreichische Nationalbank (AuRep: a standardization of regulatory data model)
- Croatian National Bank (CNB BIRD)
- Bangko Sentral Ng Pilipinas (API-based Prudential Reporting System)

c. Proposed approach “RegOps”

In the previous section, it has been shown that there are several innovative concepts to regulatory reporting in production, which partly deliver the necessary features for future-proof regulatory reporting. However, it can be concluded that none of these innovative approaches fully cover all the mentioned features yet. To combine all these features, the authors propose the RegOps model for regulatory reporting.

RegOps is closely connected to the term DevOps (a portmanteau of development and operation), known from software development and seen as the answer to the shortcomings of the waterfall model. The waterfall model, as a traditional plan-driven approach to software development, has been around for decades. To improve software development, individuals have adopted methodologies that focus on customer collaboration, continuous delivery, constant feedback and communication between developers, customers, and users while delivering software incrementally in small releases. These methodologies have led many individuals to become advocates of an agile way of thinking.

RegOps is defined as an approach to systematically change how regulation is developed and deployed and how data is exchanged between regulators and regulated using push and pull

approaches. With standardization and industrialization, RegOps provides a framework and infrastructure to regulators worldwide to collect data efficiently and flexibly from the regulated markets. With the use of modern technology and proven standardization artefacts, RegOps allows regulators to arrive closer to the dream of RegTech from Andy Haldane (Bank of England) in 2014: “I have a dream. It is futuristic, but realistic. It involves a Star Trek chair and a bank of monitors. It would involve tracking the global flow of funds in close to real time (from a Star Trek chair using a bank of monitors), in much the same way as happens with global weather systems and global internet traffic. Its centerpiece would be a global map of financial flows, charting spill-overs and correlations.” (Haldane, 2014). With RegOps, regulation and reporting are not a top-down process based on macroeconomic risk considerations, which are transformed into standardized regulatory approaches, definitions, and later implemented in fixed, low insight-giving regulatory templates. Instead, the proposition is to start regulation as a bottom-up process focusing on regulatory micro definitions of standardized data fields and models on the granular dataset and data information level, which can then be flexibly used for any macro-regulatory requirement.

In the author’s opinion such regulatory reporting model would have to be built on these elements:

- A unified, normalized, universal data model and standardized, common regulatory logic for prudential, statistical, financial, and resolution regulatory reporting purposes
- A fully integrated, bi-directional data delivery stream including a toolset to export, transform, and load data to deliver functionally valid results
- A big data-enabled platform to collect, store, and analyze data to gain insights for regulators

d. The RegOps Model

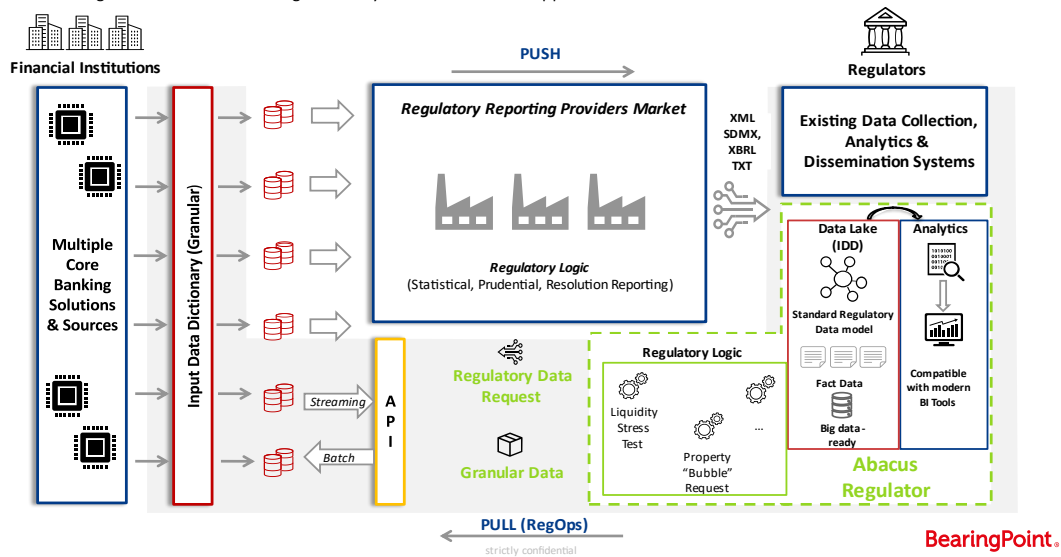
When we combine these elements, we can see a system where regulatory data is directly sourced from a highly detailed, complete, and fully granular standardized data model from every single institution. This data can then be accessed by a standardized logic to be imported, processed, and returned in standardized and ad-hoc formats for the regulator.

An interesting side effect is that this model will virtually end the need for regulatory change on the side of financial institutions after a few iterations, as there is only a finite number of sensible information artefacts and data fields to be added to such a granular data model. The regulator can then flexibly build new regulatory templates without action required by the financial market. This is also confirmed by the authors' experience of operating granular data model-based regulatory reporting approaches.

The pull-based model could be gradually phased in to gain experience with granular data and give time to adopt regulation and legislation towards the new architecture while keeping the existing regulatory reporting infrastructure (push approach) in place to enable a smooth transition for all involved parties. If the model yields the envisaged benefits, the legacy push-based infrastructure could be migrated gradually to the new pull model.

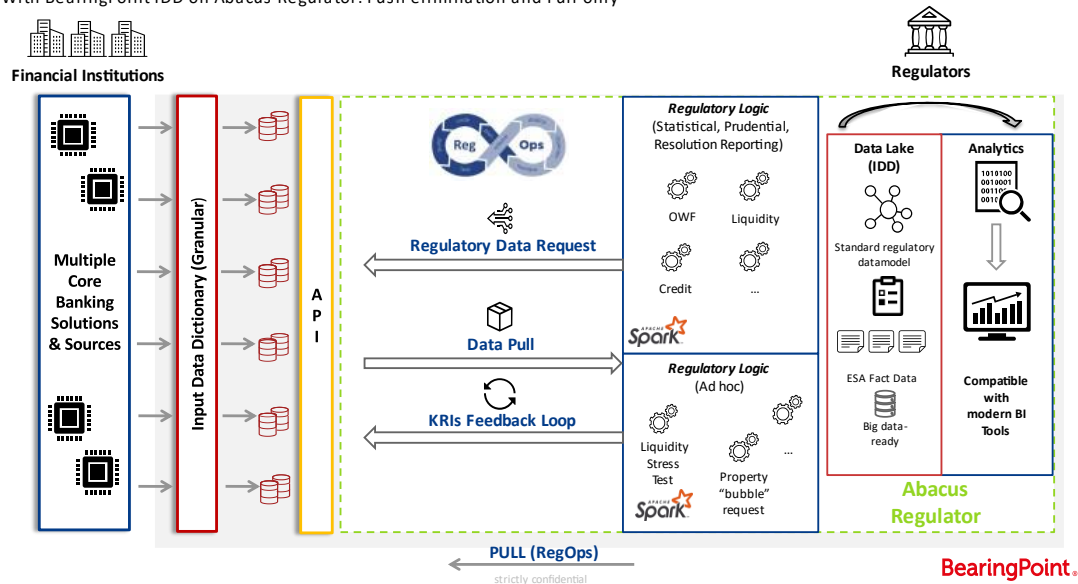
The RegOps concept– A vision for regulatory reporting (1.0)

With BearingPoint IDD on Abacus Regulator. Hybrid of Push & Pull approaches



The RegOps concept– A vision for regulatory reporting (2.0)

With BearingPoint IDD on Abacus Regulator. Push elimination and Pull only



Thus, we would see a natural shift of regulatory development from “waterfall supervision” to “agile supervision.” This model would not only strongly increase the quality, timeliness, completeness, and transparency of regulatory reporting but also concurrently greatly reduce the cost and efforts for regulatory reporting for the affected financial institutions.

BearingPoint RegTech participated in the G20 / BIS Techsprint 2020 with the RegOps model and developed a fully functional prototype. The PoC was deployed by reusing existing software stacks and regulatory contents in a completely new manner. BearingPoint RegTech built a fully working demo version within a five-week time frame. The solution was shortlisted by the G20 / BIS Techsprint 2020 judges panel for the finalist round in September 2020 (BIS 2020c).

4. Discussion and Conclusion:

This paper identified core prerequisite features that a new regulatory reporting system needs to overcome the current issues. These are: Integrated data transfer

- Granular data delivery
- Pull-mechanism
- Standardized data model
- Big data-enabled analysis tool

The paper has demonstrated that many of these problems and features were already partially addressed via various approaches and initiatives by regulators, financial institutions, and solution providers worldwide and have shown that they are able to deliver positive results not only in theory but also in practice.

The authors argue that the first iteration of the proposed model is feasible with today's technology, available data standards, and current governance setups. For financial jurisdictions with common data standards, implementation could start instantly for a relatively low cost. It is realistic for other jurisdictions to envision an implementation effort of about 1-2 years for initial results if a common data model based on existing standards can be quickly agreed upon which could be extended via the transformation scenarios as outlined above (RegOps V1.0 → RegOps V2.0).

The shift from a regulation-driven to data-driven regulatory reporting is also a perfect base layer for the application of emerging technologies like blockchain (Münch and Bellon, 2020) (Regulation execution, data collection, and transmission), artificial intelligence (data validation, processing, and analysis), cloud computing (storing, processing) or quantum computing (calculations). The authors urge regulatory authorities and supervisors to test new approaches to regulatory reporting and recommend conducting trials and proof-of-concept studies to validate approaches such as RegOps further.

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