



Future-ready regulatory reporting

The case for cloud-based
domain-driven microservices in
the banking industry



- Increase in regulatory focus in the financial services sector
- Regulatory reporting challenges
- The need for a transformative approach to regulatory reporting
- Relevance of cloud-based domain-driven microservices architecture for optimized and agile regulatory reporting

Reporting requirements in the banking, financial services and insurance (BFSI) sector are continuously evolving and creating unprecedented demands on the technical and functional infrastructure of organizations.

Regulators are demanding more granular data and additional data elements on an ongoing

basis, driving computations from massive amounts of structured and unstructured data with inbuilt controls, accuracy and lineage challenges on a continuous basis. Typically, about 20% of data elements change and are redefined every year. To support the systemic risk computation at the economy level, we believe regulators have plans to increase regulatory reporting requirement 5-10 times by 2025. To enable this, regulators plan to introduce machine-readable regulatory reporting instructions; and globally, regulators are likely to adopt the existing semantic definition standards. Figure 1 lists the upcoming regulatory expectations.

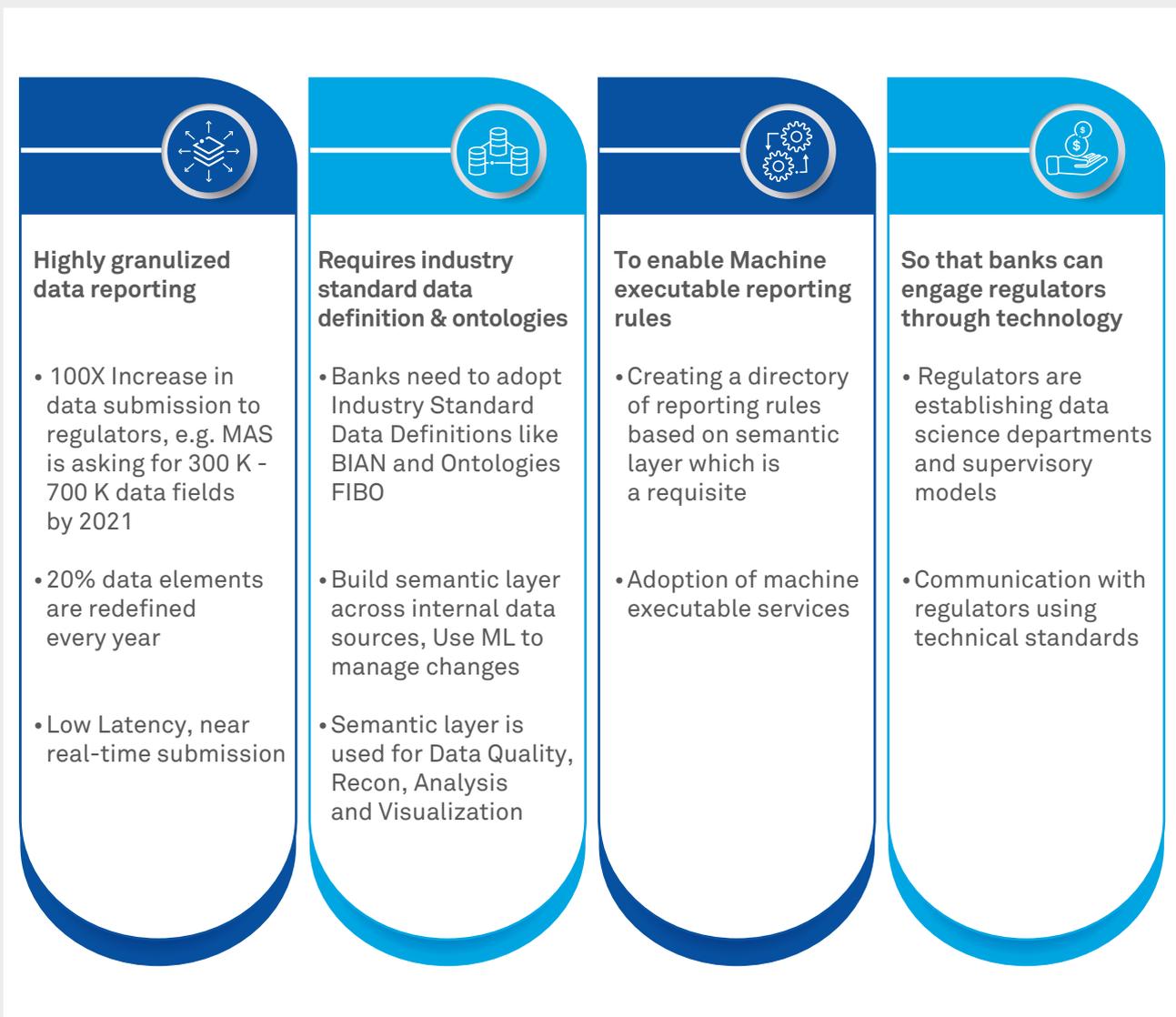


Fig 1: Regulatory reporting requirements are poised for a paradigm shift with increase in scope and volume



Cloud based domain-driven architecture brings the business functionality to the forefront and provides an opportunity to re-architect and rebuild applications with a domain expertise approach while distancing from the technical architecture driven solutions adopted till now

The need for a new approach to regulatory reporting

The changing regulatory reporting environment will compel a change to the technology infrastructure requirements for regulatory reporting in terms of volumes to handle, low latency to complete the reporting cycle, intelligence to ensure lineage, accuracy, completeness, audit trail and semantics to

support the quantum of changes in the definitions. Currently, the BFSI organizations are weighed down by data-related challenges and manual processes in regulatory reporting. Figure 2 lists the multiple challenges financial institutions face in regulatory reporting technology.

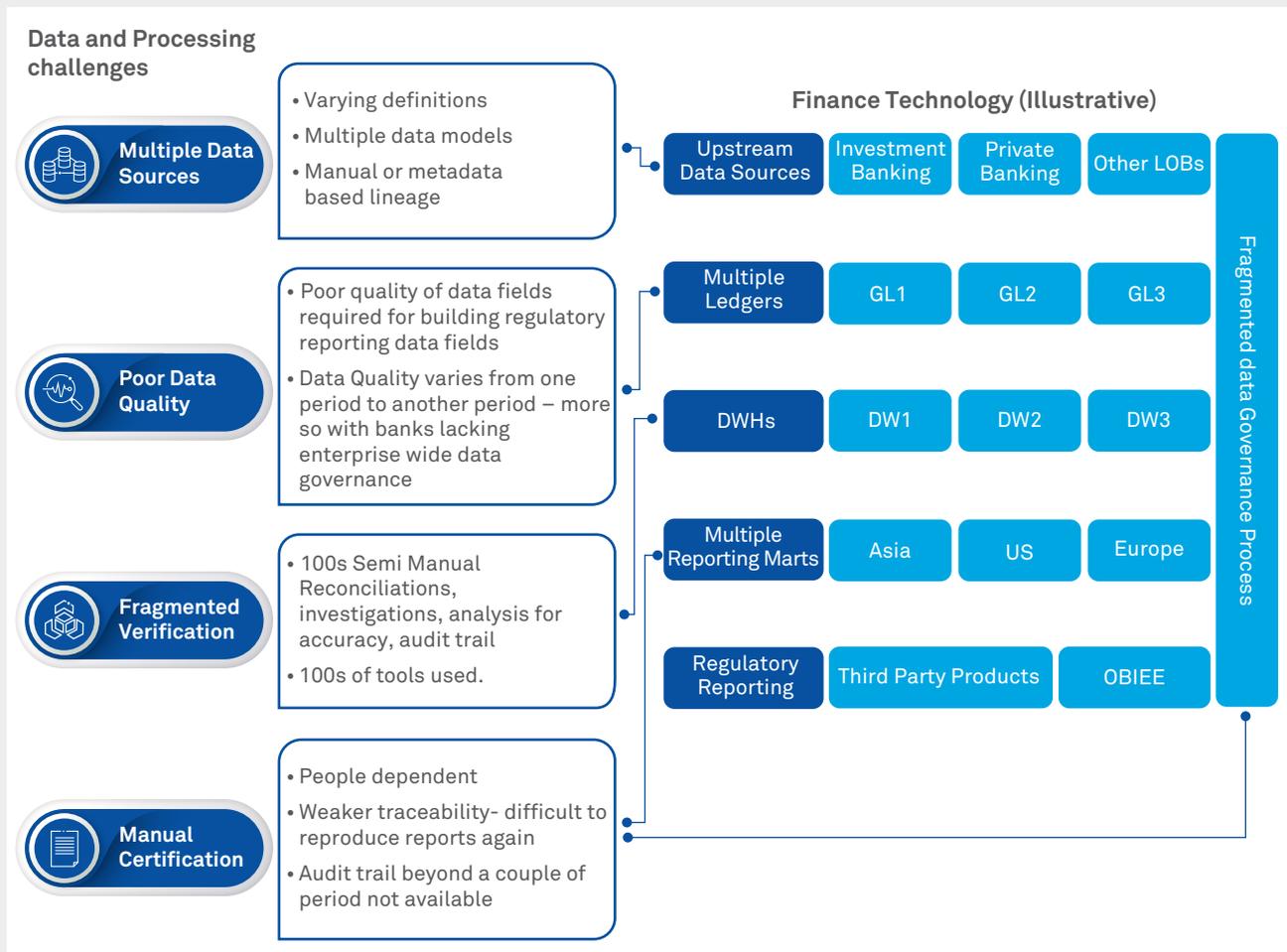


Fig 2: Data quality and related challenges in regulatory reporting technology

Organizations realize that the new regulatory reporting requirements cannot be supported by recreating new customer journeys and user personas at the front end or containerization of monolith applications without re-architecting the back end infrastructure and applications supporting such experiences.

Reimagining regulatory reporting with cloud and microservices

Most BFSI organizations realize that the approach of moving to the cloud and adopting cloud-native domain-driven architecture supported through containerization is the appropriate solution to meet regulatory demands as well as achieve better customer experience. Domain-driven architecture brings the business domain, with all its demands like frequent changes, granular data and enterprise-wide scenario-based computations, to the forefront of the solution. It also provides an opportunity to re-architect and rebuild solutions considering the customer as the center of all requirements. This is true for all major business domains like customer engagement, experience and onboarding, customer administration and operations, management reporting, regulatory requirements, risk management, and finance and enterprise performance management.

The approach supports the digital wave consonant with the major initiatives at enterprise level for most organizations. This garners senior management approval, as now the customer needs are directly architected to provide the results without considerations for other technology support services.

A common mistake that should be avoided is containerizing the monolith application for cloud deployment as this would not only create operational challenges but also increase the cloud infrastructure cost as compared to the earlier on-premises model.

Agile and domain-driven regulatory reporting

An overall transformation is achievable by creating a domain-driven microservices architecture for various business requirements

independently as specific instances. This architecture can be based on the business requirements' dependence on various functional domains from the front end, mid office, back end and databases wherever feasible, and containerize the same. It is also important to create a set of common services to support the domain-based microservices. This will help avoid duplicating major enabling-functionalities like data input, extraction, validation and calculations and at the same time, keep it nimble to associate appropriate computing resources. These instances can be leveraged to increase and decrease the computing capacity as demanded by the domain, based on the period end / monthly / daily peaks and troughs, which can be dynamically adjusted to make the optimal use of cloud resources.

Major domains are then categorized into functional areas supported by a microservice to achieve the business objective (See Figure 3). For example, in regulatory reporting, in the past few years CCAR (Comprehensive Capital Analysis and Review) has taken a prime stage for major BFSI organizations. Clearing the regulatory stress tests was not only a financial issue addressed by appropriate balance sheet management but also



a technical demand laying tremendous strain on the infrastructure to provide the computations through various risk, liquidity and stress scenarios. Optimizing the operating costs is the next challenge. Investing in additional infrastructure to support these models is never ending with additional scenarios, data sets and granular requirements becoming the norm from the regulators.

Financial organizations are re-architecting their solutions with cloud as the underlying support infrastructure and microservices-based domain architecture to innovatively support these demands associated with data management and running the stress test models simulating capital requirement under various stress scenarios. This would mean utilizing the resources of the cloud

for increased processing power dynamically as needed when these models run and not investing in data centers, hardware and licenses permanently for the same.

In addition, the cloud provides an opportunity to use open source technologies and is designed for big data, which allows organizations to move out of license-based products for software and data management at a fraction of the costs. All this is possible as applications move towards domain-based microservices, which need to be well-defined right from the data sources, aggregations and computations to provide the right outputs as demanded by businesses and regulators.

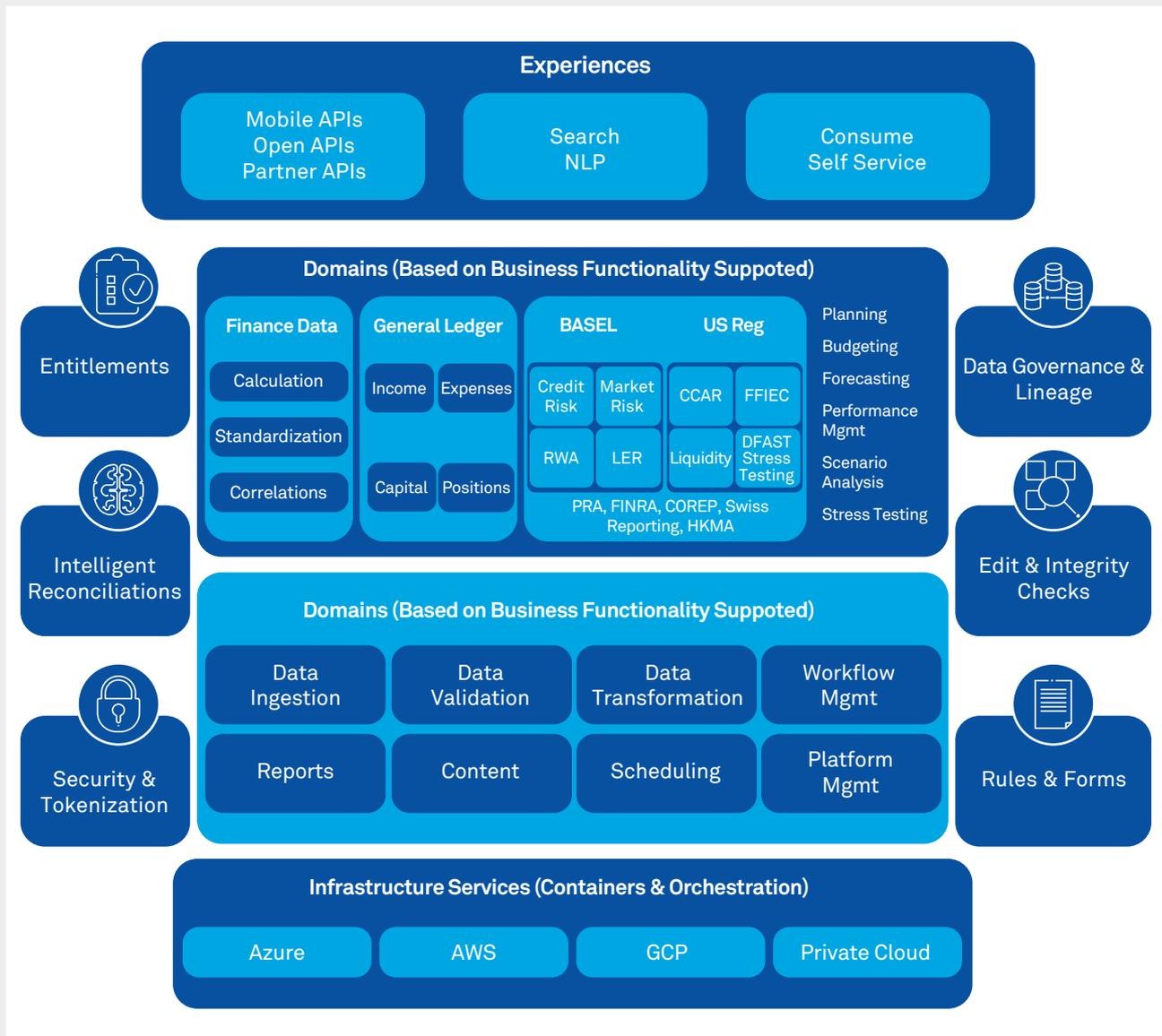


Fig 3: Typical functional domain-driven microservices architecture

The domain-driven approach on a microservices architecture also enables organizations to harness the benefits of the cloud like

- Slashing technology infrastructure costs
- Utilizing infrastructure and platform as a service applications and thus reducing the need for hosting and maintaining operations
- Easy adoption of emerging technology and utilizing the best technology for the requirement
- Access to on-demand processing power for achieving expected response times
- High availability and fault tolerance on demand

Conclusion:

The ever-changing business and regulatory environment with demands for additional data and reporting requirements can be supported by a domain-based microservices architecture on the cloud leveraging its flexible infrastructure support, open source technology and design for big data.



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