



Data Management

It's time for the big jump

July 2017



Executive summary

As **Risk & Compliance** topics are becoming a central matter for Financial Institutions, the proper management of data is growing as a **crucial stake** that can no longer be avoided. Whatever the goal to be achieved, data must be mastered. Achieving **a good quality of data** is supported by the **implementation of a dedicated policy of quality, governance & roles** across all the organization.

The **Chief Data Officers** are the **conductors and guarantors** of the proper implementation of this policy. Their appointment rationale, whether from a Central or a Business initiative, will most often be driven by their organizational attachment

This reflection must come along with the **set-up of a proper Data Office** in order to promote and to ensure the **'Know your Data Culture'** diffusion, **to support the Data Management** with the appropriate organization, and to identify and **foster Data quality improvement initiatives**

There is no standard methodology to **establish the Data Office** within the organization but we believe that **three main steps** are to be addressed:

- **Document** each new data to start building the KYD culture, thus enabling to better identify quality issues
- Implement a **Data governance** with the appropriate Data roles and responsibilities among the organization (CDO, Business Owner, Data Owner, System / Referential Owner...) to ensure quality durability
- Put in place a **Data monitoring** through the whole data lifecycle allowing to trigger the right actions with the right stakeholders for the right perimeter

Once settled and at its cruising speed, the **Data Office is to be apprehended as part of a global ecosystem articulated around the Data** with separated approaches and activities. Indeed, Data Management goes way beyond regulatory requirements and brings value to the Business and its operational efficiency. This ecosystem is built around traditional stakeholders (CFO, CRO, Business, IT) but also **'newer' roles such as the Chief Information Officer or the Chief Digital Officer to interact with**. To leverage on this new positions and rationalize the interactions, guidelines are to be followed to **work collaboratively and to provide mutual benefits for the Business**.

1. The emergence of Data Management initiatives to address growing challenges

2. Empower your data over time!

- Building a Data Office
- Building a Data Community – Roles & Responsibilities

3. Times have changed...Times will change – CDOs of the future

- Participating to a global and articulated governance
- Demonstrating value to the Business

The digital shift is well under way, dragging behind it immeasurable volumes of data and raising up new types of challenges. Hence, data is becoming the nerve center of a Financial Institution's operations and, more generally, a strategic topic in the global and digital era the Financial Institutions are getting into.

In such an international and dynamic business environment, Financial Institutions need to absorb, operate and interpret huge flows of information coming from a significant number of sources.

If not mastered and monitored, data delivers no value. Just like an engine, data could either boost the Financial Institutions or become a major treat. A mastered data could definitely be an asset for

decision making and compliancy; on the opposite, unstructured and misunderstood data could increase all types of risk exposure (e.g. operational, legal, financial or reputational).

Data lives a long journey to its final destination: from one hand to many others, from one channel or system to many others, from one country or branch to another and so on... such a cobweb on a digitalizing – yet strongly manual – landscape, testifying for the tremendous complexity of a consolidation and reporting exercise, for instance.

Regulatory is only one component of the challenges pushing the Companies and Financial Institutions to refocus their strategy on data initiatives. Operational efficiency, security and business opportunities

are significant challenges as well.

In this context, Financial Institutions must react and overcome the weaknesses pointing ahead such as the lack of a shared vision on Data Management topics; an urgent need to improve data quality – recommended by external regulators and voiced by internal collaborators – and a little awareness of the 'Know Your Data' culture.

In this point of view, Capgemini Consulting is sharing insights on Data Management best practices and returns on experience from Data Management initiatives conducted for international Financial Institutions.

Understanding the origins of Data challenges

The more stakeholders and systems are involved in the data life cycle, the more room for data deterioration is created.

Last year, an Experian Data quality report revealed that, on a sample of customer / prospect / citizen data, the most common data errors incur to (approx.):

35% 'Fat fingers' & permissive systems (e.g. missing or duplicated data, typos & spelling mistakes)

35% Misunderstanding of the data (e.g. incorrect values, unclear nomenclature)

45% Set ups not adapted to business needs (e.g. outdated information, unclear golden source, lack of interfaces)



The more technologies and corporate requirements evolve, the more Data Management becomes a central and strategic topic. Data Management is often a good answer to the numerous business and technological challenges faced by Financial Institutions.

One of those main challenges today is to better follow and drive operational activities among departments, geographical sites and businesses. There used to be a time when the only data analyzed were sales and costs. With the development of Data Management, there is now a huge potential of data use at every step of the value chain. In fine, a good handle of data encourages a wiser and more efficient decision making process by the top management.

Capgemini Consulting has formed two convictions on the urgency to launch Data Management initiatives

Foster compliance with Regulatory requirements

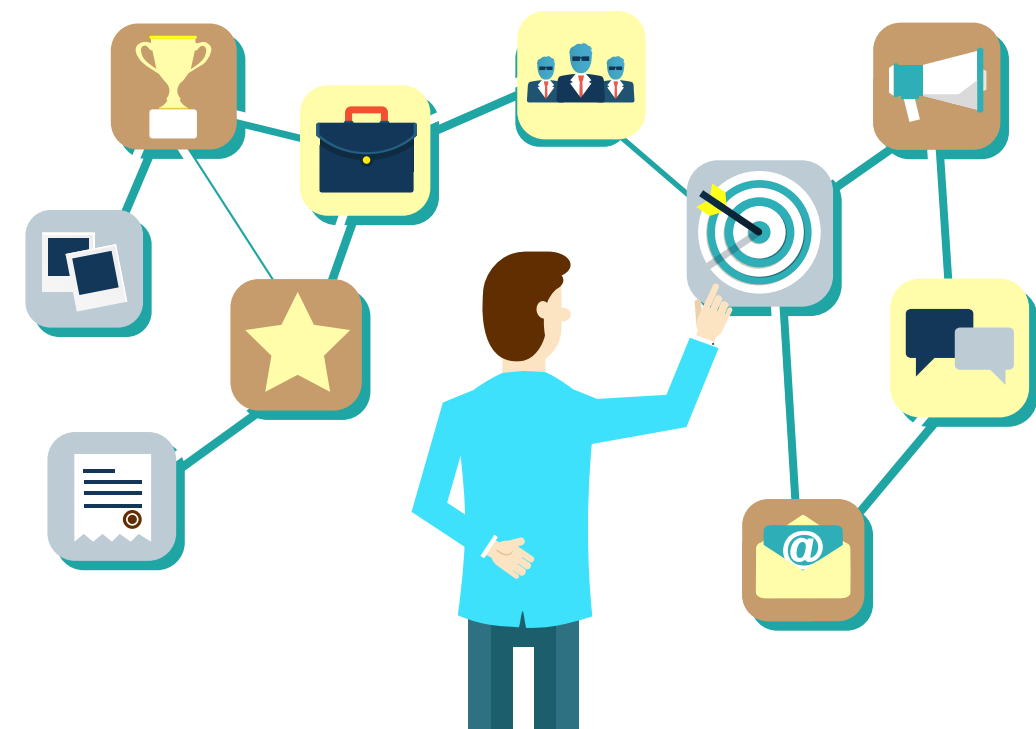
With the strong financial crisis of 2007, which has considerably affected the whole global economy ever since, prudential regulators have set up a corpus of regulations to secure the market and prevent future crisis. These regulations target all Financial Institutions (Basel Committee on Banking Supervision...), and Insurance Companies (Solvency II...). Current

regulation being implemented within these regulations express strong requirements about the quality of data to achieve.

A deep knowledge and control of data is a key principle to fight against prudential and misuse avoidance, money laundering and terrorism financing.

Data Management is naturally a strategic answer to Regulator's expectations. However, nowadays, 47% of the top 100 global banks do not measure data quality.

Source: Bain Big Data Diagnostic Survey, 2013



Another objective of Regulators is related to **Banking Confidentiality**, with the expansion of **uses and exploitation of personal data**. Several regulatory requirements (i.e. GDPR for Europe) are imposing the necessity to provide information on the end usage, storage conditions, security and transparency by 2018. Once again, Data Management can address data protection issues such as **client Data**. Financial Institutions are directly concerned by what we can call **'Data Robbery'**. Several Financial Institutions have been hacked recently and information on their clients (including personal and strategic information) has been stolen.

The role of Data Management is, among others, to ensure that **data is duly stored in a safe environment** such as highly protected data clouds or systems with restricted access. This would prevent strategic and economic sensitive information – on both clients and employees – to be stolen and resold in the market.

Foster innovation and business development

Big Data has become a key element for competition, productivity growth and innovation. The growing amount of data (internal and external), the expansion of multimedia, the Internet of Things and social media in the banking sector is an extraordinary opportunity to find **new ways of growth**, new markets and new challenges. Big data is often said to have an enormous impact on financials; retail banking could follow the same pace as the global retail sector where the operating margin is **expected to grow by 60% in the next few years**.

However, without a proper quality data to exploit information, Big Data's impact remains limited. The combination of a **deep data knowledge**, enabled by Data Management, together with **sophisticated analytics** can substantially enhance and promote the development of new types of products and services for the Financial Institutions. Examples are numerous such as customer oriented websites, personalized credit authorizations based on clients' usage.

Another main revolution behind Data Management is **the access**

to client data. Client information is a key element for Marketing teams which are now more inclined to better **forecast future potential sales**, to understand in details client behaviors and to **create value**. For instance, Retail Banks use client data in order to seize the global amount of credit that will be required shortly or to personalize its products based on client expectations.

“
Companies with best analytic capabilities are 5 times much faster in decision making and 3 times much effective at implementing them.”

Source: Bain Big Data Diagnostic Survey, 2013



Building a Data Office

Data Office : Before we begin...

A clear insight from our experience at Capgemini Consulting is that, while more and more stakeholders become aware of the importance of a good data quality, **firms often lack a coordinated and structured approach** to address it.

Whether it is a Business Analyst wanting to refine its client segmentation or to find out cross-selling opportunities, or someone from finance trying to reconcile different data sources for reporting purposes, **most departments are acutely aware of the time they waste and the limitation they face due to poor data quality**: incomplete sets, differences in granularity, complex mapping and other short cut data.

One common mistake has been to consider that it was only IT people's responsibility to ensure a proper data quality. Thus, the Business would blame poor user-friendliness and instability of the interfaces used to input data, while the operations would complain about the incomplete information provided by the Business. Finally, IT would be left facing often difficult to reconcile Business needs and disparate legacy systems architecture.

One key conviction to have on Data Management is that **if Data is a shared asset for the organization, it implies to set-up a dedicated quality Policy and shared responsibilities across all data lifecycles**. It means that Data Management most importantly demands to align people on a concerted and focused approach for rationalizing information, processes, applications, and systems.

It implies that **one prominent task for the Chief Data Officer is to lead and coordinate all the stakeholders and the Data Community to ensure proper data governance**.

With that purpose in mind, we will focus on how the Data Office must streamline other data roles across the organization, before describing the central role of the CDO.



CC publication « Stewarding Data: Why Financial Services Firms Need a Chief Data Officer »

Building a network of CDOs

An other Capgemini Consulting study well describes the need for a new CDO with the opportunities and challenges it encompasses. As a reminder, a **Chief Data Officer is a top manager**, usually reporting to a member of the board, having business, operations and systems knowledge to **define the strategic vision for Data Management and promote a culture of data quality**. New findings confirm the relevance of those drivers but also shows that more concrete questions must be addressed when contemplating the appointment of one or several CDOs inside an organization.

The **main driver for the appointment of the CDO will most often directly impact its organizational attachment**. Regulatory oriented CDOs would appear under a Risk or Finance initiative and irrigate the organization from there, while Business oriented CDOs would most probably be

created inside the Business. Once the driver scenario settled, our opinion is that the most efficient way to increase Data awareness is to **appoint several CDOs** across the organization (geographically, by activities, etc. – depending on the organizational structure) to **install a network of CDOs**.

Building a Data Office

Key CDO roles must be defined at **different levels of the organization** such as Business, Operations, Risk, Finance and IT. This positioning will **structure the interactions of the CDOs** with other **key actors** such as the **Chief Operating Officers** and **heads of Group Functions** (Risk, Finance, Compliance, IT..).

Of course, the positioning and the number of CDOs will also depend on the Business and the organizational specificities. For instance, in the Corporate and Institutional Banking, the difference between the industrialized data flows of Global Market and tailor-made activities of Corporate Banking could advocate for dedicated CDOs with regard to their different readability for Data Management. However, it is preferable for them to be working **under the leadership of one central CDO** with functional or hierarchical authority to secure an alignment on the common and important topics. Having said that, and with the objective of achieving a proper Data Management set up, all these CDOs need to **build their Data Office** and **to animate the Data Community**.

Setting-up the Data Offices

The CDOs define the **strategic vision** for Data Management:

- Set up of the **organization** to support Data Management
- Steering of the **data framework** and promotion of a **'Know your Data' Culture**
- Supporting **data quality improvement initiatives**, further promotion of big data and analytics initiatives

To address all the missions assigned to him, the CDO must allocate its resources based on three main group of activities:

Documentation of each new data as a fertile ground to build the Know Your Data Culture. It represents the 'opening' task assigned to a newly created Data Office. It indeed often becomes its key focus in the first months as it allows to identify the main types of data to govern (see focus – How to identify critical data), the related processes and the stakeholders to involve. Depending on the ambition of the Data Office in terms of Data scope, it will influence the resources and time to produce, in project mode, a complete view on the data set (see focus – Prepare the KYD culture as a first step).

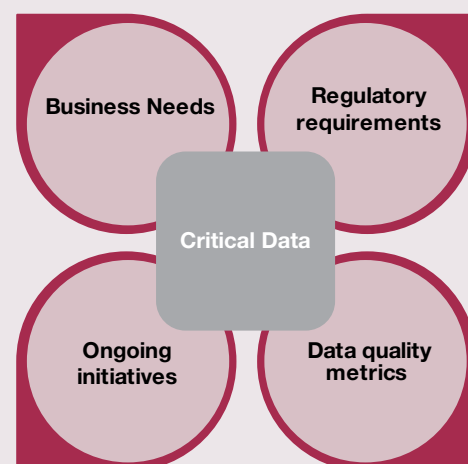
How to identify the critical data

Owing to the numerous and various groups of data a Financial Institution is processing (e.g. commercial, transactional, risk data), it seems obvious that **data prioritization** is an **important prerequisite** for a Data Management project to be successful and to ensure efficient and **impactful remediation actions**.

Experience learned, critical data identification and prioritization should follow an **exhaustive approach**.

Critical data is to be found in the **intersection of:**

- Data supporting **business needs**
- Data targeted by **regulatory requirements**
- Data **recording poor quality metrics**
- And data impacted by **ongoing initiatives** within the organization



Building a Data Office

Still, the Data Office must **as soon as possible** start **improving data quality** by a regular monitoring and concrete remediation actions that show **added value**. Monitoring properly Data quality also involves to define concrete rules and **quality indicators** covering the whole data lifecycle (see focus – Data monitoring, a question of tools).

After first data documentation and monitoring rules are produced, we advise to **conduct data roles and responsibilities**. The granularity of roles assigned and the related data quality reporting framework will influence on the workload for deploying these new roles. These stakeholders will be represented in **dedicated Committees**, to steer data quality initiatives and improvements.

Prepare the Know Your Data culture as a first step

More and more organizations are looking toward data governance as a strategic competence as they adopt a data driven culture. **However, no data initiative can start without building the foundations for information governance and analytics**. Operational norms related to common concepts (definition and nomenclature) must be shared, fully understood and implemented in a compliant way.

The unique definition and list of values (Group nomenclature) of each data must be documented (dictionary), validated by appropriate instances, periodically updated, and shared by all actors through the value chain. Indeed, key business terms and critical data elements have a different meaning depending on their context. For example: is 'customer' the same for Finance as it is for Sales? A business glossary is a key component to tackle the questions above. **The collaborative and iterative creation of such an inventory is a mandatory first task**.

The business vision is not standalone. **It has to be completed by a central repository of information** about data to understand its attributes including names, characteristics, rules and indicators. A true data dictionary also includes technical metadata: which fields, columns and records are out there, and what do they mean? What is the type of the data element, and is there a limit on the length? In which system or application is the field contained? What data structures is it part of?

Finally, this vision can be completed with **Data lineages** which provide the lifecycle pathway for each data and serves in tracking data from its origination to its consumption, including processes, systems, and controls involved. In the Data Management Tool, Business Data Lineage will be represented as a dynamic dataflow displaying: systems, controls, transformations local nomenclatures...

The growing need for organizations to treat information as an asset is **making metaData Management strategic**, driving significant growth for metaData Management solutions. Metadata describes various facets of an information asset in order to improve its usability throughout its lifecycle. It is important to note that this understanding of metadata goes far beyond just technical facets; it is used as a reference for business-oriented and technical projects and builds the foundations for information governance and analytics.

Introducing the « Know Your Data » Culture

“ If, a good architecture and efficient big data tools are accompanied by poor Data Management, the result will be the same: failure for your big data project..

77% of Financial Institutions consider that the major scope of a CDO responsibilities in Data governance, prior to Analytics and IT



Source: PwC study , 2014

Building the best Data Management framework as a first step

Recent regulatory landscape evolutions, such as BCBS 239, set high standards to make risk aggregation and reporting more timely, accurate, comprehensive and granular. All Financial Institutions need to significantly improve their reports and monitoring processes which, at the end of the day, all rely on data quality.

Our client has decided to turn this constraint into an ambition: data integrity and quality are now global objectives to be included in the Group culture, values and behaviors.

A Data governance board and several Data quality committees

have been established to ensure an efficient implementation and steer the framework towards reaching data quality objectives. They will allow a constant coordination with Regions / Métiers / Functions to ensure Data strategy and Data governance alignments.

Initiatives and areas of improvement are identified in a Program leading to promote the following actions:

- Effective use of common concepts consistent with Group definitions, enhancing accountability and discipline;
- Enforce reference datasets ('referentials', static data) alignment

contributing to Group reporting

- Integrate information at source level (accounting, liquidity and solvency) to secure quality and avoid reconciliations;
- Organize easy access to granular data on a timely-manner;
- Enhance the capacity to compare granular data over time;
- Reinforce alignment of the risk management reporting between the Group and Divisions (and Business Lines) / Operational Entities, by developing the sharing of the information at all levels.

The deployment of **new roles** and responsibilities across the existing organization must **leverage on existing positions** to build a framework that interacts according to a **clear governance structure**. The number of new roles is limited on purpose, to ensure focused responsibilities and a consistent overarching framework structure.

Existing and new roles

In organizations such as Financial Institutions, there are **existing roles already performing data quality**. For instance, the **Operations** role is to translate Business operations and related legal structuration in a language that is understandable by IT teams for input in operational systems. As part of this task, Operations will **control the consistency and completeness** of information transmitted by the Business. They also often check that the information transmitted is well reflected in operation and reporting systems. Similarly, IT teams count some controlling roles which ensure 1) no mistakes are made by manual inputs, 2) integrity of data is

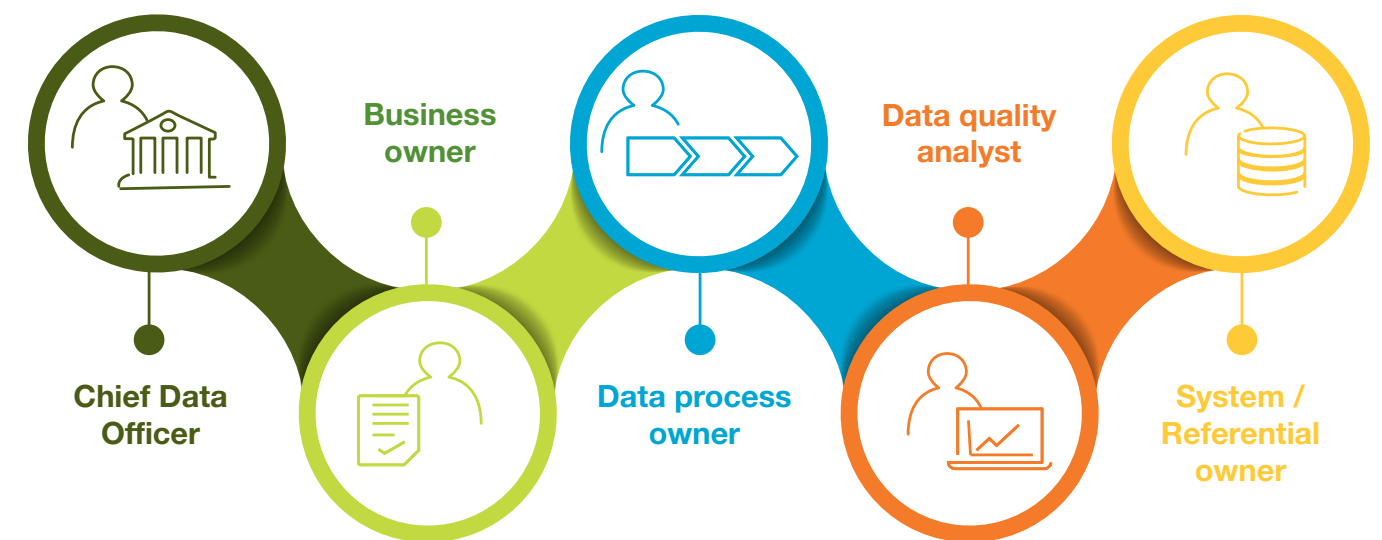
preserved in the systems. These **IT 'controllers'** can even be gathered in dedicated teams for industrialization of controls purposes. Regardless of whether or not ensuring the quality of information is within their job descriptions, those existing roles are often **not fully aware of all the implications of data quality**.

Our recommended approach would thus be for the Chief Data Officer to leverage on this present skills and resources to create and rollout key new roles: **Business Data Owner, Data Process Owner, Data Quality Analyst, and System / Referential Owner**. While Business Data Owner, Data Process Owner, Data Analyst

are to be found along the Data lifecycle, System / Referential Owner has more centralized and IT related roles depending on Data type and systems involved.

“ **25% of large companies had already appointed a Chief Data Officer in 2015** ”

Source: Gartner, 2014



Business Data Owner



Firstly, there is the **Business Data Owner**, a manager owning the Business understanding of the data. He is the manager of a team who either is in direct relationship with the client or participates in the negotiation and structuring of an operation's conditions. In other words, the Business Data Owner is deemed to **determine the value of the data at origination**. In practice, he can be a Head of Coverage for Client Data or a Head of Business Line for Facility Data. Due to his knowledge of both the general intrinsic properties of data (what makes 'business sense') and the deal or client specific values, the Business Data Owner is accountable for Data transmitted to Data Process

In implementing these new roles, the **Chief Data Officer** should not appoint heads of entities with a scope covering several distinct businesses. He should rather **involve actors knowledgeable for the mechanics of the operations processed under their scope of responsibilities**. Indeed, concrete and strong sponsorship is key to 1) promote Data quality awareness in the organization, 2) support concrete data quality improvement actions. In practice, the positioning of **Data Owners** and **Data Process Owners** will vary depending on several criteria that define the scope of 'hands-on' responsibility. It will be mostly based on business lines or asset / product type if necessary, geographies and coverage.

Data Process Owner



The **Data Process Owner** is a manager handling in the subsequent stages of the Data lifecycle. He manages a team who **transforms, updates, re-input or enrich data**. There are several Data Process Owners in a Data lifecycle, each one being responsible for a different step of the process. For instance, for Facility Data, an Operations Manager and an IT Operations Manager could be involved in a subsequent step.

Data Quality Analyst



One or several **Data quality Analysts** take in charge the **daily tasks of data quality** (e.g. analyses, investigation, reporting)

System / Referential Owner



A **System / Referential Owner** is a manager having expertise on technical and IT aspects of data and systems. The System / Referential Owner **embodies the partnership between Business and IT**. For the system he is accountable for, he contributes to the definition of remediation plans and their implementation.

When the System / Referential Owner is in charge of a golden source system, his role takes a broader scope. He might be involved in any remediation action impacting the data lifecycle – both upstream to ensure that the reference system is correctly fed, and downstream to secure that finance and risk reporting correctly reflect what is in the reference system.

Data Monitoring, a question of tools

The quality of information must be ensured and maintained throughout the several steps of the lifecycle. Information must be understood, controlled and shared by actors who are fully aware and accountable for their contribution.

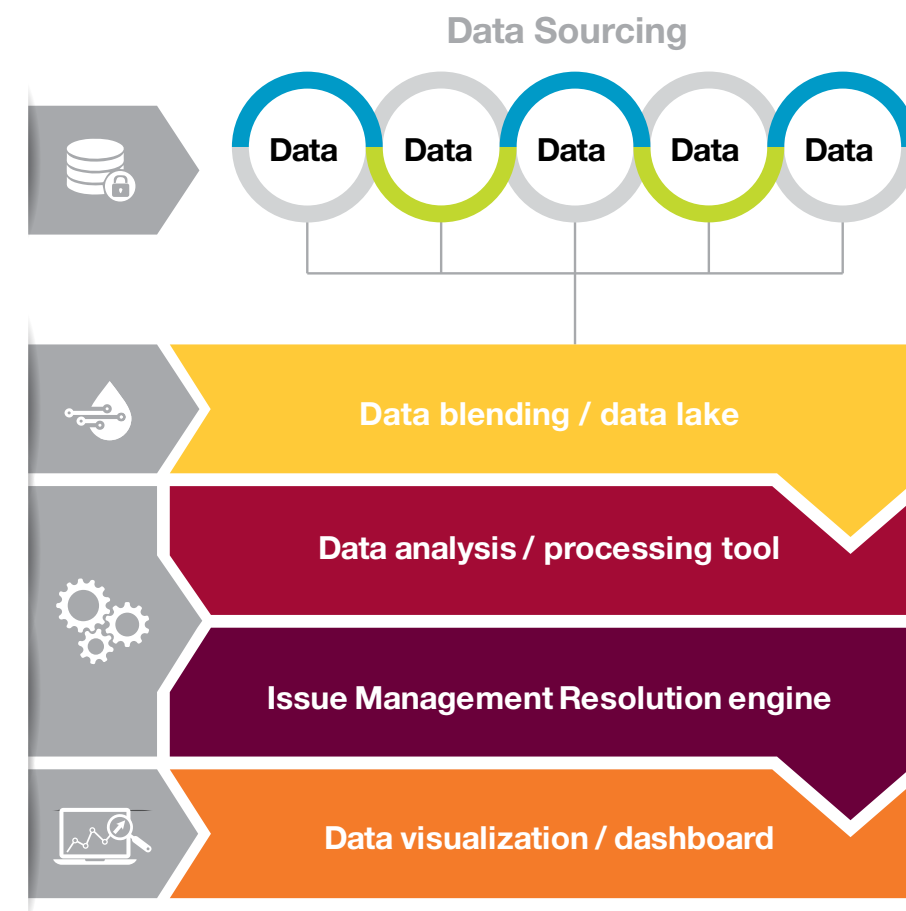
For each information on data, a **minimum set of controls is designed across the value chain**, from the origination to the reporting. This set of controls is documented and shared by all actors through the chain; it covers accuracy, completeness, and timeliness aspects (not exclusively)

These controls are allocated to the relevant actors (anticipated at the earliest steps of the value chain).

This set of controls includes **reconciliation with sources** (e.g. accounting data when appropriate); the Financial Institutions must be able to explain all material differences as per defined tolerance levels.

The question of implementing a tool is necessarily raised when a certain level of Data Management maturity is reached. It is necessary to have a good evaluation of the scope, the perimeter and the ambition before starting the target conception.

Data stakeholders' tooling needs



Building a Data Community – Roles & Responsibilities

A governance framework

To ensure **Front-to-end Data quality**, we recommend to build a **dedicated reference framework**, in which a **data sender formally commits to the next data receiver** on an agreed level of quality. The reference framework template should thus include key elements such as:

- **Data characteristics**
- **Processes** for transmission
- **Documentation** available
- **Frequency of controls** / Operational **Control Plan**

In this logic and under the supervision of the Data Office, **each actor** involved in the Data lifecycle – Business Data Owner, Data Process Owners – should be

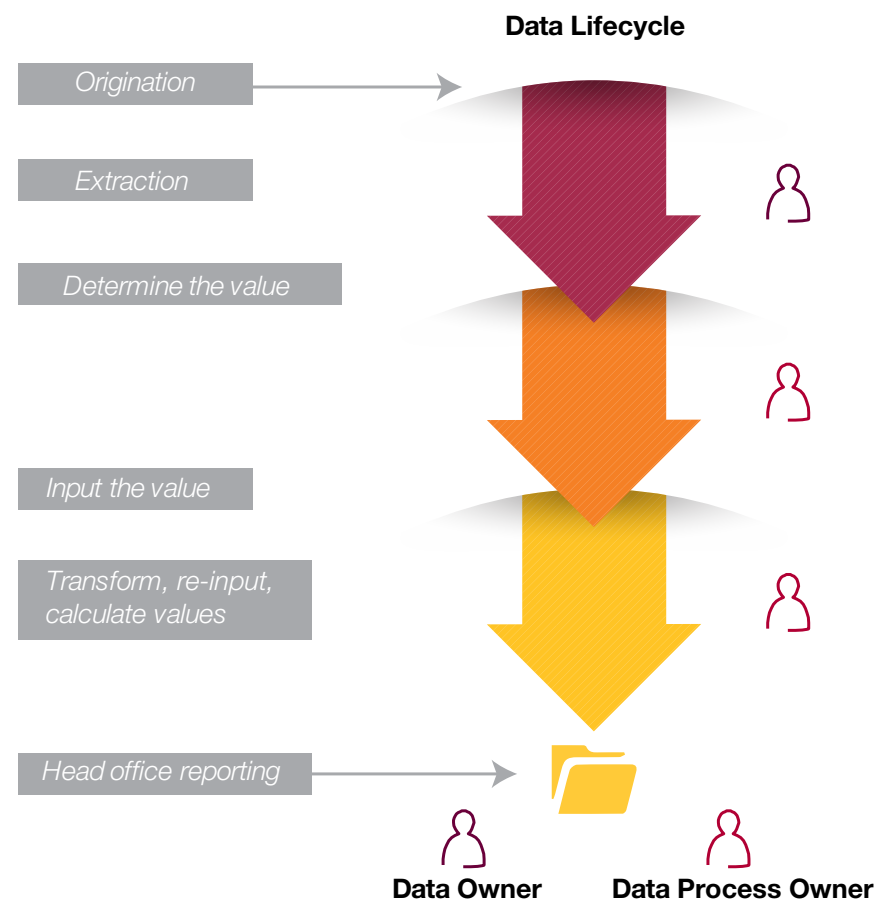


asked to regularly **sign-off on** the data quality for his respective step of the process, based on a Russian doll principle.

The granularity of Reference Frameworks could vary based on the granularity of data roles described in the previous sub-section. It should be kept in mind that in most cases, it is possible to use the same framework agreement.

As such, the Business Data Owner and Data Process Owners must ensure that adequate data quality policies, norms and procedures are implemented in their perimeter. **Data indicators** should be used to check that the expected **data quality** is effectively met.

In **case of a breach** of the agreed data quality threshold / target levels, the Chief Data Officer proposes the **relevant remediation actions** to a dedicated **Committee**. The committee would help in the **prioritization** of these remediation actions, as well as in the **implementation guidelines**.



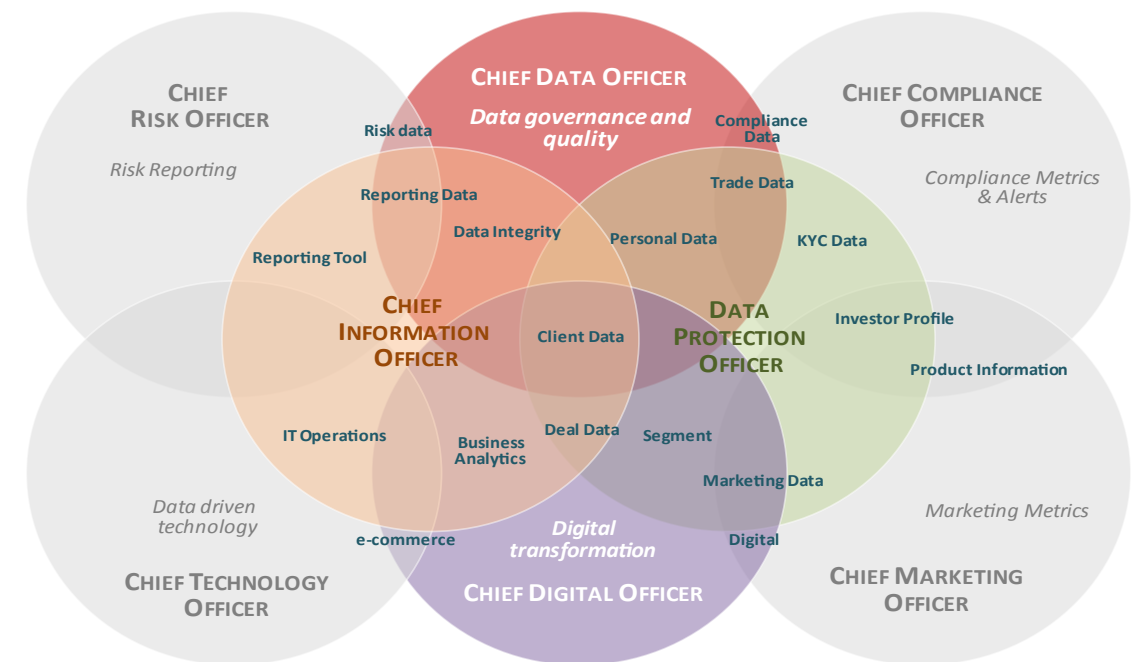
Participating to a global and articulated governance for all data topics

An articulated governance

Although governing the Data to ensure its quality is a structuring prerequisite for Financial Institutions to efficiently leverage their Data, it would be an understatement to say that **Data hot topics** are not limited to it. Indeed, issues around what is most commonly called **Big Data encompasses various stakes** revolving around the production of analytics and leveraging key insights based on Data. The mere **manipulation of a vast amount of data** involves various, such as **Data mining, Data blending, Data analysis** or **Data visualization**. The scope and approach to Data activities are also influenced by the nature of the Data that is being manipulated: Commercial Data, Compliance Data, Risk Data, Personal Data.

Depending on the activity to conduct, the nature of the data and the purpose of their use, it will involve **different types of actors** such as the **Chief Information Officer**, the **Chief Digital Officer**, the **Data Protection Officer** and the **Chief Data Officer**. These actors interact and create synergies with many other top management roles within the organization.

Synergies in Data activities of key roles

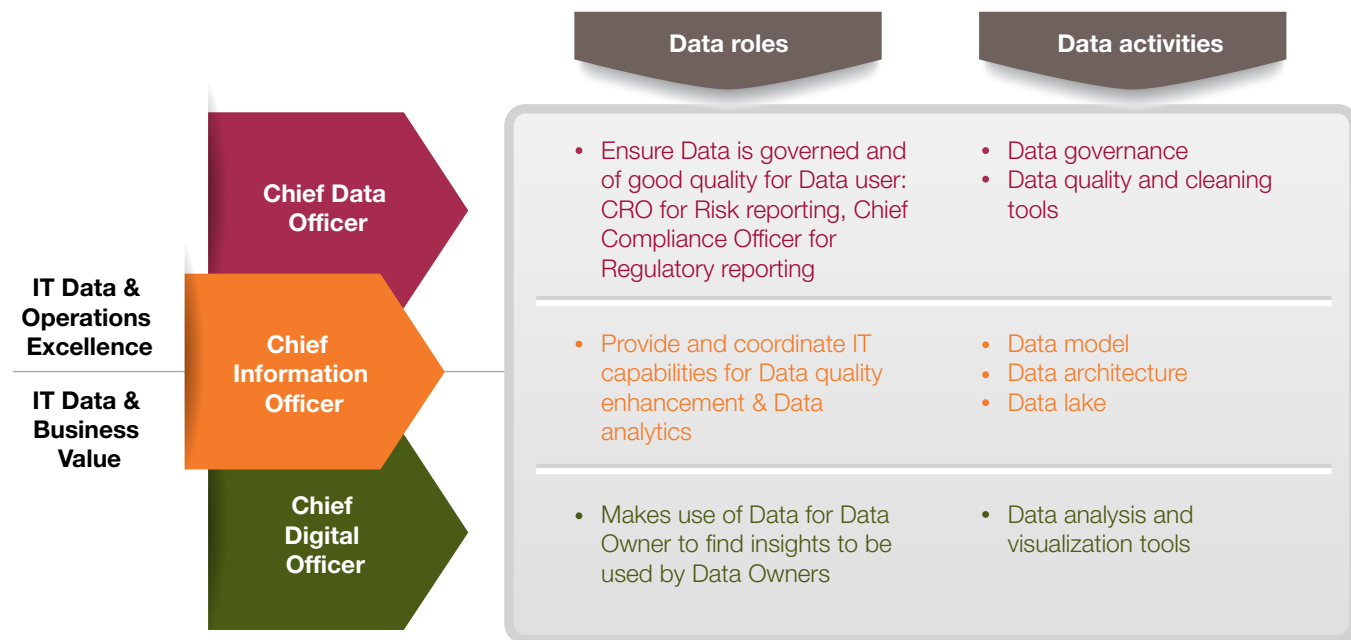


Key Role involved on Data Topics Main Data activity of the function Cross-function data related activity

Demonstrating value to the Business

To prevent any waste of time and resources on competing initiatives, we thus recommend to establish as clear as possible separation of activities between the CIO, the Chief Digital Officer and the Chief Data Officer.

Separated roles for a shared asset providing mutual benefits



The key frontier is between the two following domains:

- **Data & Operations Excellence:** Ensuring that the Data is properly originated and disseminated to all their receiver through Data governance and Data quality
- **Data & Business Value:** Ensuring that the Data provide insights to other stakeholders, and firstly the Business through Data analysis and Data visualization

In practice, it must be acknowledged that the **frontier can be thin**. For instance, Chief Digital Officer's team are often in charge of 'cleaning-up' their data. Similarly, Chief Data Officer's team can be a source of insights for other actors. For instance, their data quality analysis can provide information on the robustness of back testing models used by Risk and Business to factor in the Credit Risk that is taken on a client. In other words, there are **clear opportunities of cross-fertilization between the two roles**.

That is why, keeping in mind the frontier of responsibilities, we would recommend the two CDOs to **work in synergies...** which **could be facilitated by the CIO**. Indeed, in a Financial Institution where the heart of its technology revolves about information management i.e. processing payments or deals and monitoring the related exposures, the CIO is de facto the CTO. He provides the means, the infrastructure to conduct business. His role makes him a **key enabler for both CDOs** and he could sometime even have functional or hierarchical oversight on the two. He indeed expects:

- **From the Chief Data Officer** to assist him in **ensuring the Data** in the systems are of **good quality** (i.e. not only to monitor system integrity issues but also that the values are accurate).
- **From the Chief Digital Officer** that he **helps the Business** in making the most of the technology (i.e. to justify investments).

Demonstrating value to the Business

The proposed separation of roles identifies the **Chief Digital Officer** as the one primarily in **charge of extracting Business Value from the Data**. Still, it does not mean the **Chief Data Officer** cannot bring value to the Business through enhanced Data quality. He can indeed illustrate its **value to the Business** in several ways by:

- Assisting Business in **meeting their regulatory requirements**
- Accelerating and improving the **Business monitoring**
- **Reducing operational risks**

Poor Data quality does not only increase the burden of regulatory requirement, it also **contributes in a significant way to the complexity of the reporting Business for monitoring its own activity** such as revenue generation and fee tracking. With often hard to reconcile levels of granularity, improper short cuts made in different systems to accommodate imperfect data quality, the **Business will lose time, if not erode margins** by forgetting to report immediately the reimbursement of a deal or to request all the fees he is entitled to based on deal documentation. **Improving data quality** will ensure fees entitled are collected and that refinancing is reflected in systems on time thus reducing effective cost of capital. In a sense, the Chief Data Officer might not help the Business in finding new sources of profits, he **will help protect Business margins**.

The Chief Data Officer is thus beneficial to the business by reducing operational inefficiencies, operational and regulatory risks. In other words, the Chief Data Officer action **does not increase revenues, it increases net profitability**.

“
While trying to identify how data can be used to support the company's most important priorities and Ensuring the company is wired to make data-driven decisions, the most valuable thing enterprises can do now to realize the promise of big data is to appoint a CDO”

Source: Harvard Business Review, 2012



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