



EBA REPORT

ON A FEASIBILITY STUDY OF AN INTEGRATED
REPORTING SYSTEM UNDER ARTICLE 430C
CRR

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EBA

EUROPEAN
BANKING
AUTHORITY

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Abbreviations

| | |
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| BCBS | Basel Committee on Banking Supervision |
| BIRD | Banks' Integrated Reporting Dictionary |
| CDCP | Central Data Collection Point |
| CoC | The EBA study of the Cost of Compliance of supervisory reporting requirements |
| CRD | Capital Requirements Directive |
| CRR | Capital Requirements Regulation |
| CSV | Comma separated values |
| DPM | Data Point Model |
| EBA | European Banking Authority |
| ECB | European Central Bank |
| EIOPA | European Insurance and Occupational Pensions Authority |
| ESAs | European Supervisory Authorities |
| ESCB | European System of Central Banks |
| EUCLID | European Centralised Infrastructure for Supervisory Data |
| FTEs | Full time employees |
| GDPR | The General Data Protection Regulation |
| IReF | The ESCB Integrated Reporting Framework |
| JRC | Joint Reporting Committee |
| MoU | Memorandum of Understanding |
| NCA s | National competent authorities |
| NCB s | National central banks |
| NRA s | National resolution authorities |
| RegTech | Regulatory technology |
| SDMX | Statistical Data and Metadata eXchange |
| SRB | Single Resolution Board |
| SSM | Single Supervisory Mechanism |
| XBRL | eXtensible Business Reporting Language |
| XML | Extensible Markup Language |

Glossary

- **Report-once principle:** when the same data is reported once by the reporting entity, thus avoiding data duplications. The reporting of data at different levels of granularity is not seen as a report duplication.
- **Define-once principle:** when the same concept is identified and defined only once leading to unequivocally and consistently referencing the same concept, avoiding duplications.
- **Reporting process chain:** is a sequence of concatenated processes which start with the definition of the data requirements, continue with the data collection, then the data transformation and end at the point where the data is made available for consumption by users. The reporting process consists of data definition, data collection, data transformation and data exploration.
- **Metadata:** any information about data. The objective of the metadata is to help the user of the data to better understand the meaning of it (example: in the sentence 'nominal interest rate = 5% compounded annually', while the data is represented by the number '5', the metadata can be represented by the terms 'nominal interest rate', '%', 'compounded annually').
- **Metadata (of regulatory data):** The information considered relevant and sufficient about the data to be reported or created in the context of regulatory frameworks. It includes the complete, consistent and coherent description of all the required data, with reference to a common glossary, and highlights the interlinkages within and across data domains (statistical, prudential, resolution). Regulatory metadata may additionally include the definition of templates structure, and of validation and transformation rules that apply to the required data.
- **Data dictionary:** represents a way to store and manage the metadata. It can cover the business terms and other definitions (semantics) which are structured in a formal and standardised manner to enable automation and digital processing (syntactic) and are supported by IT systems and infrastructures (tools).
- **Regulatory data dictionary (RDD):** the data dictionary describes all the data concepts required in their regulatory frameworks and, in addition, all the transformations and derivative concepts regulators produce internally or receive from external parties. The RDD can be used by institutions to describe and store data and transformations under the same syntactic model and integrate semantically with the other stored definitions.

- **Semantic level in the reporting process** refers to the specification of requirements in natural language in the context of the reporting processes. For example, the legal definitions of the EU regulations (e.g., CRR) are represented in a data dictionary by means of concepts and definitions using the language defined in the dictionary.
 - *Other terms used interchangeably to refer to the semantic level: semantic layer: business layer, glossary of terms, business concepts, business rules.*
 - Example: the legal text: ‘the institution should report own issuances representing secured debt instruments, issued by the institution that are central bank eligible and retained on the institution balance sheet’ in the data dictionary, this information could be depicted by the following concepts belonging to the data dictionary: ‘assets’, ‘own debt issued’, ‘unencumbered’, ‘central bank eligible’. The collection of such business terms would represent the semantic layer.

- **Syntactic level in the reporting process:** the structure or model used to represent the semantic layer. *Other terms used interchangeably: Information model, metamodel, model for the metadata.*

- **Infrastructure:** any technology and information systems that would support the development, visualisation and maintenance of meta-data and underlying data.

- **Exchange formats:** the technology used to exchange data between two or among many entities. *Other terms used interchangeably: reporting formats.*

- **RegTech¹:** Regulatory Technology (RegTech) means any range of applications of technology-enabled innovation for regulatory, compliance and reporting requirements implemented by a regulated institution (with or without the assistance of RegTech providers).

1

https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2021/1015484/EBA%20analysis%20of%20RegTech%20in%20the%20EU%20financial%20sector.pdf

Executive Summary

- 1 This feasibility study on integrated reporting continues the EBA's efforts to increase efficiency of reporting and related processes. The study that has been developed based on the specific mandate of Article 430c of Regulation (EU) No 575/2013², colloquially referred to as the Capital Requirements Regulation (CRR) mandates focuses on the assessment of feasibility of the development of a consistent and integrated system for collecting statistical, resolution and prudential data, as well as to involve the relevant authorities in the preparation of the study. This report is the outcome of over 2 years of effort and active engagement of both national and European authorities, as well as interaction with financial institutions, professional associations and specialised service providers.
- 2 The EBA analysed the feasibility of developing an integrated reporting system. For this, the study explored existing reporting practices and ways to increase their efficiency going forward, with the objective to:
 - reduce the reporting costs for reporting institutions and competent authorities;
 - streamline and increase the efficiency of reporting processes;
 - facilitate data comparability, remove overlaps (following the 'define-once' principle);
 - facilitate data sharing and access to data and increase coordination among authorities (following the 'report-once principle').
- 3 The EBA's view is that **a more integrated reporting system could be feasible to achieve**, considering that the level of integration depends on the fulfilment of necessary conditions, including a positive balance of costs and benefits, as well as an adequate allocation of resources, adequate level of integration of data definitions in the common data dictionary, the implementation of necessary changes to the legal framework (relating to substantive reporting requirements, i.e. other than competent authorities' powers) and stakeholder buy-in.
- 4 Considering the analysis performed in this final report, the EBA concludes that:
 - **There is wide agreement that a common data dictionary for prudential, statistical and resolution data collection is a key building block of an integrated reporting system.** The common data dictionary should be understood as a set of common and standard definitions of reporting requirements that would enable institutions to benefit from the authorities' define-once effort. Achieving integration at the level of the data dictionary is deemed a high priority by the stakeholders engaged (both public and private) and a

² Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 amending Regulation (EU) No 575/2013 as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements, and Regulation (EU) No 648/2012 (Text with EEA relevance.)

central piece of the reporting process **to be used in all exchanges of data among all authorities and institutions**. The feasibility study covers potential approaches and challenges that need to be overcome to reach the desired integration.

- **There is support to further explore the possibility to increase the level of granularity for the reporting requirements, where feasible**, in the context of an integrated reporting system³, as a way to further increase the efficiency of the reporting process, but not as a pre-condition to having such a system. Further investigations on the scope and possible design of such a solution and a thorough cost/ benefit assessment should be conducted before any change can be proposed. Preliminary evidence shows that, due to the constraints defined in this report, in many cases it may not be cost efficient or feasible to report with a level of granularity which ensures that data is reported at one single (highest) granularity level and more aggregated views could be derived, especially in the area of prudential and resolution reporting.
 - **Support to further assess the possibility to create a Central Data Collection Point (CDCP)**. The creation of a CDCP is considered potentially useful by both authorities and institutions. While a common data dictionary can significantly foster integration, the CDCP will potentiate the sharing of processes that will leverage the benefits of the common data dictionary. Thus, the CDCP would be implemented in stages, and it should be mindful of existing investments and how these investments meet local reporting needs. The report presents a series of potential challenges highlighted by stakeholders, such as the financing model, national needs and legal or security constraints, necessitating a careful consideration to determine which CDCP target scenario would be desirable. If a target CDCP scenario is chosen, the high-level system requirements and constraints can then be assessed and defined including a full overview of the risks and costs of moving from the current network of independent systems to a more integrated scenario.
 - **Need for strong governance arrangements**. Both authorities and industry agree that any integration and centralisation efforts require coordination among the different parties involved to achieve a common vision. The report outlines a proposal for the governance structure (**Joint Reporting Committee -JRC**) and its membership. This structure is envisaged to ensure participation of all authorities and to also have an efficient operational model. Before the legal creation of the JRC, an informal structure involving all relevant authorities should help to achieve strong cooperation among authorities to achieve a common foundation on the way forward of ongoing projects towards a full, integrated reporting system.
- 5 Development of an integrated reporting system will require significant investments and increased resources by authorities, but also major investments by institutions. In the long term, increased efficiency in the reporting process may result in benefits for both authorities and institutions, outweighing these investment costs, considering a carefully planned and

³ In the area of statistical reporting, this aspect has already been investigated under the IReF

executed implementation and development of an integrated reporting system. Moving towards a more integrated reporting system should be done in a way to support all, European and national, authorities in their tasks, including having access to all necessary information and the ability to react in a timely manner to emerging risks. In addition, costs and potential risks should be weighed against benefits to assess the desirability of further integration of reporting and related systems.

- 6 The EBA is committing to further investigate and cooperate with relevant stakeholders to leverage the work already done and the lessons learned from the different initiatives as an endeavour towards a common vision of integrated reporting across prudential, resolution and statistical reporting. This work will contribute to the EU supervisory data strategy⁴ published on 15th December 2021, and which aims to improve efficiency of reporting across financial sectors.
- 7 This report contains the EBA view on what a feasible integrated reporting system could look like and provides further details the feasible immediate next steps to move towards integration and what areas require further investigation and deep analysis.
- 8 This final report builds on the analysis and feedback received by the EBA on its comprehensive [Discussion paper](#)⁵ published in March 2021.

⁴ [Strategy on supervisory data in EU financial services](#), European Commission, COM (2021)798

⁵ <https://www.eba.europa.eu/eba-launches-discussion-paper-integrated-reporting>

1. Introduction

1.1. Background

- 9 The current EU reporting ecosystem consists of many different actors (reporting entities, authorities and service providers) and reporting frameworks (prudential, statistics, resolution, etc.), including the different national, European and international requirements. These serve the many different legitimate needs and purposes of the current reporting requirements.
- 10 Reporting requirements have been recognised as key for prudential, resolution and statistical purposes. Since the financial crisis, these reporting requirements were extended due to additional information needs. Reporting requirements provide authorities at EU, euro area, SSM and national level with the information they need to fulfil their mandates, contributing to the wider objectives of financial stability, market integrity and consumer/investor protection in the EU single market for financial services, conducting of monetary policy and allowing a macro-prudential oversight of the financial system, as well as ensuring the resolvability of institutions when needed.
- 11 While the existing supervisory reporting framework is effective in delivering relevant necessary data and provides added value at the EU, the results of the fitness check of supervisory reporting requirements in EU financial services legislation⁶ carried out by the European Commission also shows a number of issues in its development process, adoption, set-up and implementation, which limit their efficiency and coherence, and impair the quality and usability of the reported data.
- 12 Building on the findings of the fitness check of supervisory reporting, the European Commission adopted the EU supervisory data strategy, which aims to improve and modernise the EU supervisory reporting and put in place a system that delivers accurate, consistent and timely data to supervisory authorities at the EU and national level, while minimising the aggregate reporting burden for all parties. The Commission supervisory data strategy sets out the long-term objective and outlines an approach to deliver it and focuses on four building blocks:
- i) increased consistency and standardisation of data;
 - ii) better data sharing and re-use among authorities;
 - iii) improved design of reporting requirements; and

⁶ [Results of the fitness check of supervisory reporting requirements in EU financial services legislation](#)

iv) joint governance arrangements.

- 13 While harmonised reporting requirements have been welcomed by credit institutions, the industry has also argued that institutions are required to fill in multiple templates in which data points partly overlap and definitions differ although they could be harmonised. Furthermore, these requirements have been reported at different frequencies, with a different scope of consolidation and to different authorities. The industry has therefore called for more coordination and data sharing among authorities to avoid overlapping requests.
- 14 The EBA acknowledges these challenges and is working on improving efficiency of reporting and enhancing proportionality of reporting requirements. In November 2019, the EBA published a roadmap on risk reduction measures package⁷ which includes an action plan on prudential and resolution reporting.
- 15 The EU co-legislators have considered the concerns about the reporting costs for reporting institutions and the need to improve the efficiency of the reporting process and introduced amendments to Regulation 575/2013. In particular, the EBA has been mandated in Article 430c of the CRR to prepare a feasibility study for the development of a consistent and integrated reporting system for statistical, resolution and prudential data. The focus in this feasibility study is on credit institutions' reporting.
- 16 In the related area of statistical reporting, the ECB is working on developing common definitions and data models, through the IReF⁸ project, which aims to integrate existing statistical data definitions and requirements for institutions into a unique and standardised statistical reporting framework that would be applicable across the euro area. It focuses in particular on the requirements of the ECB's regulations on monetary financial institutions' balance sheet items and interest rate statistics, securities holdings statistics and bank loan reporting (AnaCredit). Currently the aim is to implement the IReF by 2024-27.

1.1.1. Stakeholders' involvement

- 17 This feasibility study has benefitted from discussions with the ECB, the SRB, competent and resolution authorities, the industry and service providers, helping to identify the main aspects that should be analysed by the feasibility study (fact-finding workshops and seminars).
- 18 This final report builds on the analysis and feedback received by the EBA on its comprehensive [Discussion paper](#) published in March 2021 (additional information on the feedback received can be found in Annex 1).

⁷ [EBA Risk Reduction Package Roadmaps](#)

⁸ https://www.ecb.europa.eu/stats/ecb_statistics/co-operation_and_standards/reporting/html/index.en.html

- 19 The scope of the feasibility study covers many reporting frameworks, actors and processes that could be impacted. The experience and views of the stakeholders have been key to understanding the different implications across the different steps of the reporting system and to finding feasible and efficient ways forward.
- 20 The EBA has been involved and has discussed with authorities, as well as the ECB and the National Central Banks members of the ESCB, in the development of the feasibility study. The cooperation with the ECB has been key to understanding other frameworks under development such as the statistical reporting framework IReF and other initiatives on data dictionaries such as BIRD⁹.
- 21 The EBA has been working together with the ECB and the National Central Banks' members of the ESCB to analyse more in depth the topic of data dictionary, granularity and ad hoc requests. The ESCB input into the EBA feasibility study¹⁰ published in September 2020 have been considered in the analysis.
- 22 When preparing the EU supervisory data strategy, the Commission performed follow-up work based on the findings of the fitness check, in order to set out a long-term vision for moving from the current system of supervisory reporting of financial institutions to a modern, efficient and effective reporting process. The EBA has been in close interaction with the Commission to ensure consistent objectives across initiatives and that the feasibility study contributes to the wider European vision to modernise supervisory reporting.
- 23 For the preparation of this final report, the EBA completed a fact-finding and research phase, and also relied on the feedback provided after the consultation period. The analysis has also been built based on the evidence gathered during the Cost of Compliance study on prudential reporting and its recommendations¹¹.

1.2. Feasibility study objectives and core areas identified

1.2.1. Main objectives

- 24 Following the mandate in Article 430c CRR, the EBA aims to identify and assess shortcomings with a view to reducing the administrative and financial costs, both for the authorities and for the institutions, and to improving the overall efficiency of the statistical, resolution and prudential reporting process.

⁹ https://www.ecb.europa.eu/stats/ecb_statistics/co-operation_and_standards/reporting/html/index.en.html#BIRD

¹⁰

https://www.ecb.europa.eu/pub/pdf/other/ecb_escbinputintoebafeasibilityreport092020~eac9cf6102.en.pdf

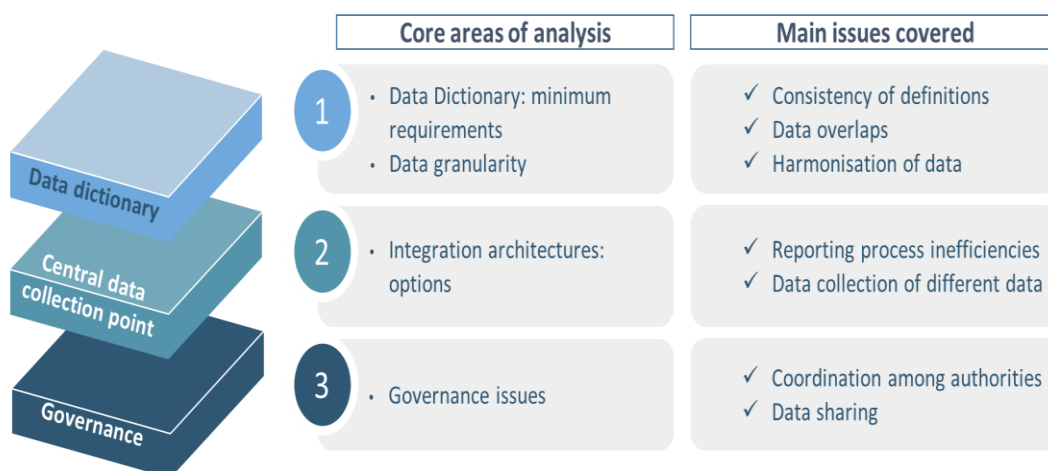
¹¹ [Study of the cost of compliance with supervisory reporting requirement \(europa.eu\)](#)

- 25 The EBA has gathered information on current reporting frameworks in the areas of prudential, statistical and resolution data. The analysis has focused on harmonised reporting requirements from the EBA, the ESCB and the SRB, as well as additional national and ad hoc data collection. Evidence shows that banks often face several additional data requests on top of harmonised reporting, albeit very wide dispersion is observed across different jurisdictions. In light of this evidence, integration of data requests within the existing definitions and frameworks could be a desirable outcome and a source of efficiency gains.
- 26 For the preparation of this feasibility study, the EBA has built on the following objectives:
- increasing the efficiency of reporting for institutions and authorities by standardising reporting, reducing redundancies and using common definitions;
 - facilitating the exchange of data and its usability; and
 - improving data quality.
- 27 To achieve these objectives, understanding the cost drivers of institutions’ reporting processes and how to improve the usability of data for the public sector are key.

1.2.2. Core areas analysed

28 The reporting ecosystem has been analysed in order to understand the impacts of different types of data in the reporting process. This feasibility study focuses on three core areas of analysis (data dictionary, central data collection point and governance), which are considered key in the feasibility assessment of an integrated reporting system and along which the report aims to tackle some of the issues on reporting and the inefficiencies identified by reporting entities.

Figure 1: Overview of core areas analysed in the feasibility study



29 Article 430c CRR stipulates that the feasibility study to be developed by the EBA shall be based on an overall cost/benefit analysis. Impacts on the different stakeholders and the

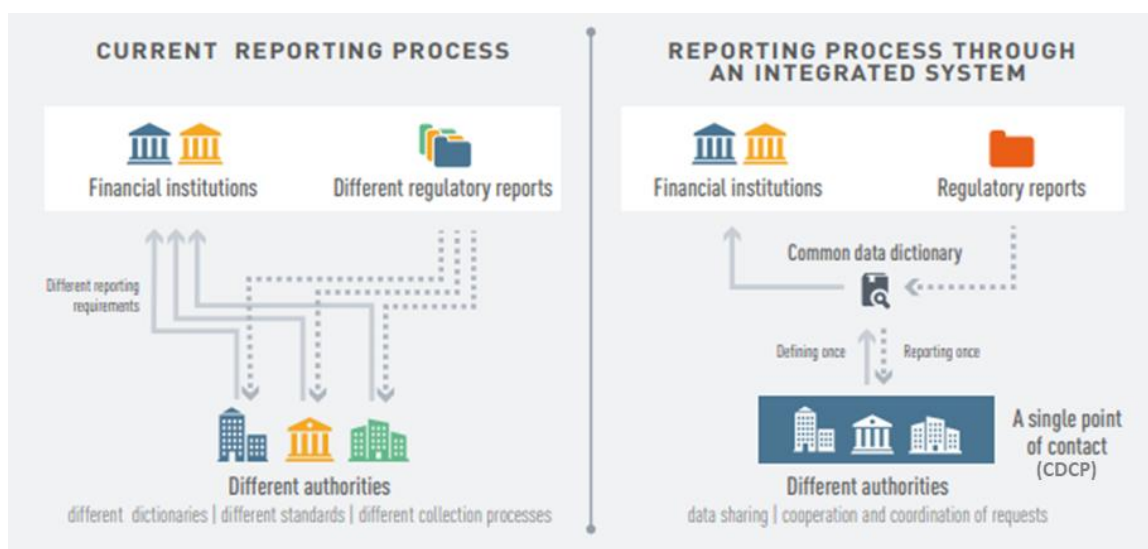
changes to the processes along the regulatory process are discussed as part of the individual sections in this final report. Cost estimates in monetary terms are not feasible at this stage and may affect the assessment of the feasibility of possible ways of the integrated reporting system once a quantitative cost/benefit analysis is conducted. Costs and benefits are hence described in a qualitative way and at a high level.

2. Overview of an integrated reporting system

2.1. What an integrated reporting system could look like?

- 30 An integrated reporting system represents a way of organising the reporting process with the aim of streamlining and improving reporting for both institutions and authorities and enhancing cooperation among the latter. A key building block of an integrated reporting system is the adoption of a common data dictionary as the common set of formal and standard definitions of reporting requirements to define data once and enable digital processing and efficient data sharing. In addition, some form of a common collection system may facilitate the reporting and coordination process, while being mindful of the data needs of the authorities. The integrated reporting system should be supported by appropriate governance that ensures the quality, harmonisation, efficiency and effectiveness of the reporting process, and the necessary collaboration and responsibility allocation among all the stakeholders involved.

Figure 2: Overview of an integrated reporting system



2.2. What is feasible to achieve?

- 31 The different building blocks or core areas of the integrated reporting system have been analysed in detail in the different sections of this report. From each core area some objectives have been identified as feasible to achieve with further integration of reporting and are provided in the figure below.

Figure 3: Feasible objectives per core area



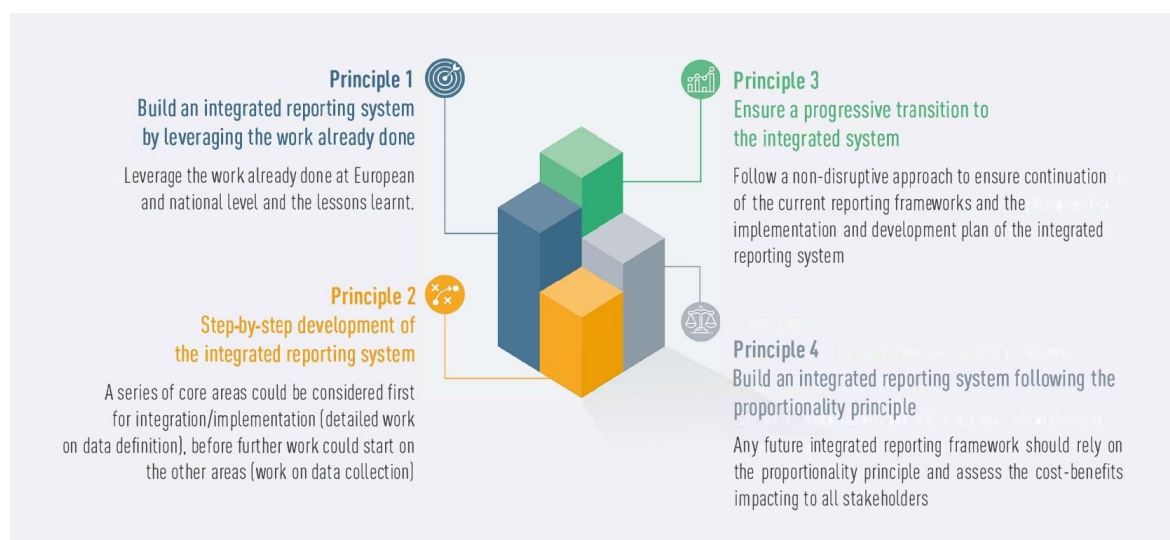
- 32 Section 3 of this report proposes a way forward in achieving the objectives of each core area by proposing possible actions and next steps to achieve the integrated reporting system.

2.3. Principles for building an integrated reporting system

- 33 **Principle 1 – Build an integrating reporting system by leveraging the work already done where appropriate.** Building integrated reporting requirements is not a new topic. Various projects have been set up in the past to explore and propose solutions for more efficient reporting processes. The future European integrated reporting system should be built by leveraging the work already done at both European and national level, taking into account the experience gained and the lessons learned. It is therefore important to consult various stakeholders when deciding on a specific solution for a system and solutions already in place should be considered. However, the future integrated reporting system should not be constrained by any of those projects and should seek to find the right implementation solution at European level (Annex 2 contains a list of ongoing projects that could be aligned when considering the solution and its implementation).
- 34 **Principle 2 – Step-by-step development of the integrated reporting system.** An integrated reporting system is highly complex, made up of various components with different degrees of dependencies. Development of such a system should be done in a step-by-step manner. By bearing this in mind, one can identify a series of components that could be considered first for integration/implementation (harmonisation and standardisation of data definitions, glossary of terms, models used and underlying infrastructure supporting the process of data definition validations and possible transformation rules), before further work could start on the other components (data collection harmonisation and standardisation, reporting rules and exchange formats). However, one should keep the broad picture in mind such that individual components should not limit the future implementation of the whole system.

- 35 **Principle 3 – A progressive transition to the integrated system.** The approach should be non-disruptive as it would be necessary not only to assure continuation of the current reporting frameworks already applicable to institutions, but also to respond to the highly intense and tight calendar of planned new and amended statistical, prudential and resolution frameworks for the upcoming years. Any change should be applied in a gradual manner to increase integration on the chosen frameworks and priority areas, thereby increasing the scope of integration and maintaining the existing reporting always operational. Every step taken in the transition to the integrated reporting system should add value in its own right and imply benefits that outweigh the costs and risks. Supervisory authorities should continue to have uninterrupted capacity to monitor risks and prudential developments and to supervise financial activities.
- 36 **Principle 4 – Build an integrated reporting system following the proportionality principle:** proportionality will continue to be a matter of utmost importance, not only in the development of the reporting requirements, but also in the development and implementation of processes and solutions within the integrated reporting system. Any future integrated reporting framework should rely on the proportionality principle and assess the costs and benefits impacting all stakeholders.

Figure 4: Main principles for building an integrated reporting system



3. Path towards integration

- 37 In order to achieve an integrated reporting system as envisaged and according to the principles outlined in section 2 above, this section includes details on a possible way forward together with the necessary main aspects that should be considered along the way (i.e., how the integration can be achieved).
- 38 One of the first initial steps to be taken after the feasibility study is delivered is the setting up of an Informal Joint Reporting Committee (iJRC) in order to **continue discussions within the authorities involved to prepare a roadmap until the formal** set-up of the JRC. The iJRC would be a discussion forum for all relevant authorities.
- 39 These actions will serve as a basis for building a more detailed roadmap for the JRC to develop an integrated reporting system.

3.1. Way forward and possible actions

3.1.1. Defining a common data dictionary for prudential, statistical and resolution data

- 40 There is wide agreement that a common data dictionary for prudential, statistical and resolution data collection is the central piece of the reporting process chain. The dictionary should be understood as a metadata repository covering business concepts represented in a standard format and supported by the appropriate infrastructure. Achieving integration at the level of the data dictionary is deemed a high priority by the stakeholders engaged (both public and private). The common data dictionary will provide support to all reporting processes.
- 41 The path towards the common data dictionary should take into account the important set of already integrated frameworks and their data dictionary concepts.
- 42 In addition, the proposed data dictionary should address not only the harmonisation at the level of business concepts (semantic requirements) but also should aim to standardise the way this information is structured (syntactic requirements or data models). In this sense the proposal for the integrated reporting system should be built by analysing the current existing available models and their capabilities in respect of the data requirements covered by the dictionary and envisaged enhancements. The choice of the adequate model should be made on the basis of a methodological and technological assessment and on its capacity to serve the specific needs of frameworks and support the digital processing in an efficient and effective way.

- 43 An appropriate infrastructure to support the definition and management of the reporting requirements should be considered by leveraging the systems already in place.
- 44 Actions to be considered in the common data dictionary roadmap include:
- i. **Identifying semantic integration needs.** To prepare an action plan for the semantic integration by setting up the working groups, resources and calendar, it would be necessary to identify the areas (high-level analysis) where there are overlapping concepts and potential benefits of integration and define the criteria for prioritising the areas analysed.
 - ii. **Achieving a common business glossary and concepts.** To achieve a common data dictionary in order to integrate the reporting requirements it will be necessary to do the analysis area by area and propose convergence solutions in order to integrate the reporting requirements. The semantic integration of requirements includes the common definition of data concepts and the convergence of other aspects of the reporting, like the frequency, scope of reporting institutions and their characterisation, the applicable waivers and the proportionality principles, and the set quality criteria for reported data.
 - iii. **Selecting/defining a common data (meta)model.** A comprehensive and fit-for-purpose analysis of the model's characteristics of the current regulatory data dictionaries will give better insights on how possible it would be to leverage the existing experiences to implement the future syntactic data dictionary in a smooth and non-disruptive way. It will be necessary to develop a cost-benefit evaluation of models and propose a way forward for the common data dictionary (meta)model taking into account the existing experiences. Additionally, it will be necessary to align possible differences on the data-definition processes of the different authorities, at European and national level, by enabling the implementation of the common regulatory data dictionary (RDD) model across different regulators.
- 45 The common data dictionary roadmap should anticipate the broader integration scope with other financial sectors rather than only the banking sector. Cooperation with other ESAs and other statistical authorities should be included in the scope of the overall transition for a more complete data dictionary.
- 46 The common data dictionary roadmap should also anticipate the different processes in the regulatory reporting process chain and especially its contribution to the European initiatives on data strategy¹², facilitating the preparation and assuring the quality of data to be accessed by European firms and citizens.

¹² <https://digital-strategy.ec.europa.eu/en/policies/strategy-data>

3.1.2. Further exploring the possibility of increasing the granularity of reporting requirements

- 47 On **granularity**, the feedback received on the EBA discussion paper (see Annex 11) shows that there is interest from both institutions and authorities to explore the option of going more granular and promoting integration in the areas where such a solution could be feasible. A higher granularity of reporting requirements has the potential to reduce future data requests, increase data usage, and ensure data lineage and the transparency of the aggregation process.
- 48 Despite the expressed interest, moving to a higher granularity of the reporting requirements might not be feasible in many cases. On the one hand, feedback on the EBA discussion paper showed that collecting granular data and defining standardised and harmonised transformations would not be possible in many cases, especially in the areas of prudential and resolution reporting, as highlighted in the report (paragraph 135). In addition, the cost-effectiveness of becoming more granular is dependent on the details of the whole process set-up (technical, operational, legal and the underlying governance).
- 49 As a way forward the EBA is proposing further investigation on the topic of the granularity in the context of an integrated reporting system (with a focus on prudential and resolution needs¹³) that would aim to identify where such a solution could be feasible and make concrete proposals on a possible cost-efficient design. A two-phased approach could be taken: i) further investigating the challenges to a potential increase on the granularity as well as the design, legal aspects, proportionality and governance; and ii) then, assessing the possibility of further granularity on a case-by-case basis based on the decisions from the first phase, for areas where it might be considered feasible to do so.
- 50 Actions that can be developed as part of the first phase within the data definition processes:
- Analyse the granularity¹⁴ of reporting frameworks in the context of the integrated reporting objectives. This investigation could consider on the one hand, the transformations, and on the other, the granular data.
 - Transformations: investigate at a high level the possible data lineage from more granular collection to more aggregated collection that could potentially be defined in a standardised and harmonised way.
 - Data: preliminary investigation on possible data gaps, i.e., what additional data would be needed as granular collection to facilitate the data lineage

¹³ While in the area of statistical reporting the outcome of the IReF project should be considered.

¹⁴ As highlighted in the report and further detailed in the annex – the definition of what represents a granular data set should be further clarified.

- Investigate possible governance set-ups for transformations as well as legal implications¹⁵ and possible changes to this part of the legal framework.
- Investigate the constraints and possible solutions to defining and collecting more granular data (e.g., what data can be requested at a more granular level, the latter on a need-to-know-basis¹⁶), costs and benefits.
- Investigate a possible decoupling between defining the data and reporting the data in the context of a regulatory data dictionary, in terms of granularity (see Chapter 5). Defining the data at different granularity levels but only requiring reporting at the current level could be considered a possible area to be further investigated.

51 Decide on the cases that should be further investigated in detail in phase 2. Actions to consider as part of the second phase, based on the outcome of phase 1:

- Investigate further the granular data concepts, ways to close data gaps, transformations, feasibility of the design.
- For each case consider the costs and benefits.

3.1.3. Investigate the need for a common solution for institutions' compliance process (input approach)

52 Institutions already have their own solutions and some have their external compliance obligations systems integrated with their internal data management processes. However, some associations believe that institutions would benefit from a common approach for the processes of compliance (common input approach), which although assumed to be highly costly, will bring enough benefits to the institutions.

53 This is a reason to investigate the institutions' appetite for a common approach and confirm the feasibility conditions of such a solution.

3.1.4. Further investigate the desired target scenario based on a cost-benefit assessment of the CDCP

54 The mandate of Article 430c CRR includes a provision to analyse the feasibility of a CDCP for a successful implementation of an integrated reporting system. A few possible scenarios, with different relative costs and benefits, each reaching a greater or lesser level of integration, are provided in Section 6.

¹⁵ Who can be responsible for running what kind of transformations and how to ensure that institutions remain responsible for all their data (granular and aggregated) as prudential and resolution actions are taken based on it.

¹⁶ It is necessary that the required data have a particular legitimate purpose given the proportionality requirements. The amount of reported data should not be extended only because it is possible.

- 55 Further investigation of the CDCP considering careful mapping of potential costs and risks versus benefits will be needed to demonstrate the desirability of achieving integrated reporting through a CDCP.

Once the vision for the integrated reporting system is set and the target and desirable CDCP scenario is defined by the JRC, some further actions could be developed in order to focus on defining the high-level system requirements and constraints which should then be the foundation for any subsequent efforts.

3.1.5. Need for strong governance arrangements

- 56 From the governance perspective, there is broad agreement that strong governance arrangements – in the sense of strong cooperation and coordination from all authorities involved – are necessary.

- 57 Some actions to further increase coordination among authorities may include:

- i. **Setting up a Joint Reporting Committee (JRC).** The JRC will strengthen cooperation and coordination among authorities in order to define a common vision. The JRC will layout a work programme for the development and implementation of the integrated reporting system based on a shared vision and will establish the priorities to be addressed in the short and medium term, including the areas and frameworks that should be developed under joint efforts. The JRC shall establish working groups which will prepare the foundational work needed for developing key integration work and gradually transitioning to the new system where feasible. The working groups will ensure the JRC actively engages all potentially impacted parties and relies on existing work, national initiatives and conclusions of the feasibility study. A proposal for the JRC structure and possible tasks is presented in this paper in Section 7.
- ii. **Start developing the Cost of Compliance (CoC) recommendations which aim to facilitate preparations for data integration:** The EBA CoC report provides some recommendations which can facilitate preparing the integration of data and could also optimise the reporting process (e.g. recommendations regarding better internal risk data aggregation, digitalisation of underlying data and contracts, and wider use of technology). Furthermore, the recommendations that are linked with the objectives of the feasibility study analysis, like providing further best practices for data requests are needed in order to avoid duplications when requesting data and to enhance data sharing. As part of the best practices, this study recommended having a repository of data requests for better coordination of ad hoc data requests both at European and national level. The repository could be built on existing initiatives.

3.1.6. Provide an estimate of costs and resources needed

- 58 With the purpose of achieving further integration, it is necessary to allocate the resources needed to develop the investigation and actions proposed to develop the first steps towards integration – mainly on the data dictionary side, but also on the CDCP. Estimated costs for first areas selected for semantic integration; estimated costs of developing or evolving the RDD syntactic model; estimated costs of developing infrastructure for the regulatory data dictionary; estimated costs of investigating institutions’ appetite (and authorities’ roles) of a common solution for compliance (input approach); and estimated costs of investigating the best scenario(s) for the CDCP.
- 59 Integration of the data dictionary will require a number of additional resources with different business and technical profiles. Further estimation on costs and resources will be needed before starting any further action, but it is expected that several expert full-time employees (FTEs) would be needed.
- 60 The table below provides a summary of the recommended actions described above to move towards reporting integration. The actions proposed are the basis for continuing the discussions (in the short term) with a view to building a more detailed roadmap of actions to be developed by the Joint Reporting Committee. Feasibility of these planned actions depends on available resources and completion of them will require additional resources by the authorities.

Table 1: Short-term actions to be further discussed by the JRC

| Actions | Issue addressed |
|--|--|
| Action 1: Identify and implement semantic integration | Overlapping data requests |
| Action 2: Achieve a common business glossary and common data concepts definition | Missing common understanding and data definition to compare data and identify overlaps |
| Action 3: Define a common data (meta)model | Data integration issues due to narrow, dedicated and incomplete data models |
| Action 4: Further explore the feasibility to go more granular | Reduce overall costs and facilitate data reporting |
| Action 5: Set up a JRC | Misalignment in the coordination of different initiatives |
| Action 6: Develop and implement best practices for data integration | Redundant processes and systems to support the same functions in different regulators |
| Action 7: Develop and maintain a repository of ad hoc requests | Lack of an overall perspective of ad hoc requests across countries in Europe |
| Action 8: Further investigate the desired target scenario based on a cost/benefit assessment of the CDCP | Further identify the desirability of the CDCP |

| | |
|--|--|
| Action 9: Investigate the need for a common solution for the institution's compliance processes (input approach) | Burden on mapping reporting requirements to institutions' systems |
| Action 10: Estimate the costs and number of resources needed | Lack of an estimation on number of resources needed for developing the first actions |

3.2. Key considerations moving forward

- 61 Economic cost: further analysis of economic costs and benefits of an integrated reporting system is needed to see the economic impact for all stakeholders involved. The economic costs should be further evaluated on each of the different areas proposed as actions in the table above. The feedback provided during the discussion period only referred to qualitative costs/benefits. Hence this report has only analysed the cost/benefit aspects from a qualitative perspective. Costs and benefits will need to be assessed before taking any further action.
- 62 Resources: the future integrated reporting system could not be achieved with the current resources. Its development will require a substantial investment, expert resources and commitment from all stakeholders that need to be further assessed once a future implementation phase is set to start. It has to be taken into consideration that human resources and IT resources have to be planned at least for a medium term in order to be prepared for any further developments. Planned developments should take into account and leverage investments already in place.
- 63 Supporting authorities' mission and tasks: integration of reporting should support authorities to perform their tasks in an efficient and uninterrupted way.
- 64 Industry collaboration: the industry participation on the integrated reporting system will be beneficial from early stages of the reporting process. Based on the experience from previous initiatives on data integration, the industry should be informed about possible changes in reporting requirements, consulted on the draft version of the requirements and possibly be invited to technical groups to discuss technical issues of implementation. As part of the feedback received on the discussion paper, the industry expressed their availability to cooperate with the creation of the integrated reporting system by providing some resources (staff) to be involved in the project, however, they are not willing to make additional economic investments until further information is provided on the final setup of the integrated reporting system.
- 65 Legal powers of authorities involved: the legal powers of all authorities to request data would still reside with the authorities, with no change foreseen, as supervisors, resolution authorities and the ESCB should remain in a position to collect all necessary information.

- 66 Data responsibility: reporting institutions will remain responsible for all the data reported by them, independently of the format and the level of granularity in which the data will be collected in the future integrated reporting system.
- 67 Coordination among authorities: this is a strictly necessary precondition for the efficient development of the integrated reporting system. The cooperation could be further enhanced with the creation of the JRC, but it will also imply some cultural and organisational implications for all stakeholders involved in order to adapt to the best practices and enhance further transparency and data discipline.
- 68 Legal framework: the current legal framework relating to the reporting requirements and exchange of information among authorities will need to be further assessed in order to facilitate the further integration of the different reporting frameworks and to promote the effective and harmonised use of the common regulatory data dictionary.

4. Integration assessment

4.1. Scope of data and stocktaking

- 69 Following the mandate, the scope of the feasibility study covers the entities reporting under the prudential, statistical and resolution reporting frameworks.
- 70 A stocktaking exercise on current data requests across the authorities in the EU, carried out in close cooperation with all stakeholders¹⁷, provided an overview of the current reporting landscape. Emphasis was given to requests falling outside the scope of the harmonised EU-wide reporting and targeting data gaps related to specific areas, reporting frequency or a bank's specific situation.
- 71 When looking at harmonised reporting frameworks, the highest number of data points is collected for supervisory data (notably for the credit and counterparty risk and liquidity risk areas), which counts 96,180 defined data points. The resolution framework defined by the EBA and SRB consist of 3,500 data points.
- 72 The evidence collected shows that on top of harmonised statistical, resolution and prudential data, the number of additional prudential data requests and national extensions to statistical reporting largely varies across different jurisdictions. Banks in some jurisdictions are only subject to harmonised supervisory reporting, while in others, they may face as many as 80 additional requests. Further, the minimum harmonisation principle applied to resolution reporting results in potential national discretions, exacerbating the differences in reporting among jurisdictions. Similarly, to supervisory data, banks may face more than 20 additional requests. More detailed findings and analyses are available in Annex 3.

4.2. Criteria used for the integration assessment: the reporting process chain

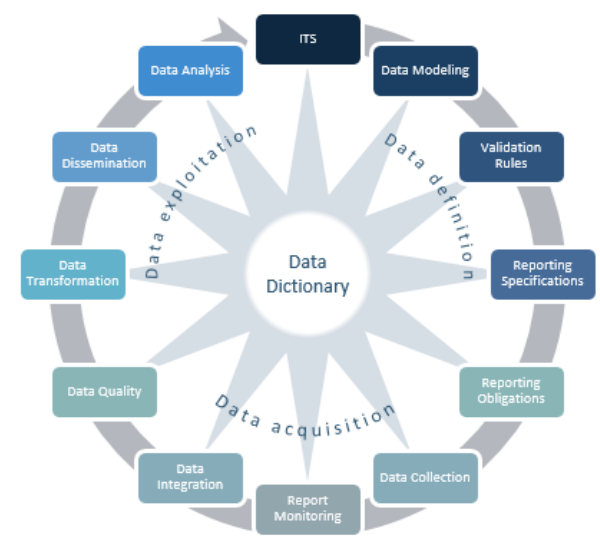
- 73 The mandate requests the EBA to investigate 'the feasibility regarding the development of a consistent and integrated system for collecting statistical data, resolution and prudential data', which could include a common data dictionary and a central data collection point.
- 74 The EBA is taking a holistic approach and considering the impact of integration at each step of the reporting process chain (data definition, data collection, data transformation and data exploration) along the different levels of abstraction (from the high-level business concepts, through the formal and standardised formats, to the more tangible components of the

¹⁷ (ECB for statistical data, SSM and CAs for supervisory data, RAs and the SRB for resolution data).

technological architecture – infrastructure level), which enables the use of data by final users.

75 The reporting process is a sequence of concatenated processes which start with the definition of the data needs and end at the point where the data is made available for consumption (by a user or a different process). Figure 2 depicts the regulatory lifecycle where the data dictionary is at the core of every step of the process.

Figure 5: Regulatory data lifecycle



76 The regulatory data lifecycle can be summarised in the following reporting process chain:

- **data definition:** process in which the data requirements are defined;
- **data collection:** process used for exchanging data;
- **data transformation:** process in which the received data is transformed, for instance to create new data for analysis/disclosure or to calculate aggregates from more granular data;
- **data exploration:** process that makes it possible to use, share and cross-check with other data, by final users or systems.

77 The different parts of the reporting process chain can be represented at different levels from the business concepts (semantic level), to the formal and standardised formats (syntactic level), to the technological architecture (infrastructure level):

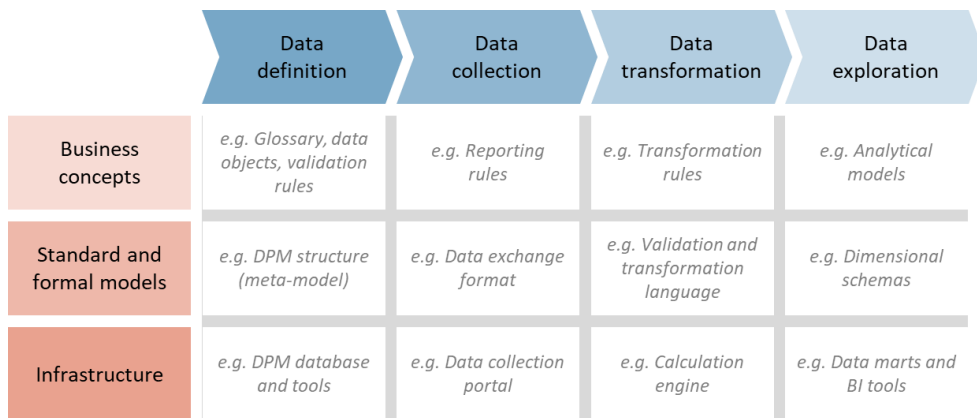
Table 2: Different levels of the reporting process chain

| Level | Context | Focus |
|-------------------|---------------------|---|
| Business concepts | Business Management | Meaning of business concepts and business rules |

| | | |
|----------------------------|------------------------|---|
| Standard and formal models | Information Management | Rules and principles used to exchange and process data (exchange formats, protocols and interfaces) |
| Infrastructure | System Management | Information systems and technologies needed to support the full data lifecycle |

78 Figure 6 below provides a representation of the reporting chain considering the different levels of abstraction. A high-level analysis of the integration at each process step and abstraction level is carried out for the purpose of the feasibility study:

Figure 6: Process chain and the three levels of abstraction



5. Data dictionary

79 The data dictionary is considered a fundamental piece of a solution of regulatory integrated reporting. All those who were providing feedback on the discussion paper to the questions on the data dictionary referred to the importance of the data dictionary as the essential element to describe the data used to identify and produce the regulatory data to be reported by institutions.

5.1. Background

5.1.1. Common regulatory data dictionary

80 The different stakeholders involved in regulatory reporting have different experiences with data dictionaries and depending on their role in the reporting chain, they use different data dictionaries for different purposes.

81 All stakeholders recognise the need for a **common regulatory data dictionary** integrating under a unique semantic and syntactic model all the definitions of the reporting requirements of different authorities. The purpose of this data dictionary is to describe all existing reporting requirements and transformations, aiming to avoid data and process redundancies to the highest possible extent, providing data clarity and comparability and enabling data sharing.

82 The common regulatory data dictionary would support the integrated reporting system by including all definitions of all kinds of data requested by regulators in an articulated and consistent way, providing the description of the necessary interlinkages between data elements, whereby the data and transformations of this data dictionary are defined and maintained by the authorities within a formal and standard data dictionary prepared to facilitate the digital processing of the regulatory data.

83 From the perspective of institutions, the common regulatory data dictionary should contain the definitions of all the regulatory output data they have to report to authorities.

84 The common regulatory data dictionary is particularly relevant in order to foster the interoperability of processes along the regulatory data chain – the collection, validation, storage, transformation and exploration.

5.1.2. The institution's common compliance solution (input approach)

85 The feedback on the EBA discussion paper revealed that institutions are using different regulatory data dictionaries to understand the data they have to submit in order to be

compliant with the law. Institutions are also using internal data dictionaries to prepare and provide data under their compliance obligations. The data dictionaries usage is determined by the institution's integration strategy and data management architectures, reflecting how they compete with the other institutions and how they achieve efficiency and effectiveness.

- 86 Their compliance systems are developed internally or implemented with their service provider tools. Some institutions have specific systems to support their compliance processes while others use more integrated solutions where the compliance systems are part of wider internal systems and not detached from their overall solutions.
- 87 Against this individual approach on compliance, some banking associations consider that a common solution for compliance (input approach) could be developed at European level with relevant benefits for institutions. The solution would imply the definition and evolution of a common input database and a common set of transformations that institutions could agree and use voluntarily to support their compliance preparation processes. Further information on these aspects is detailed in Annex 4.

5.2. The common regulatory data dictionary (RDD)

5.2.1. Overview

- 88 The characteristics and requirements of the common regulatory data dictionary that could support the envisaged European integrated reporting system were confirmed by the responses received in the comprehensive [Discussion Paper](#).
- 89 The proposal is to have one unique regulatory data dictionary at European level using a shared vocabulary and one single standard syntactic model to support all the frameworks of different authorities. By providing all concepts integrated under the same RDD, regulators will improve clarity on regulatory requirements and enable reductions on compliance costs of institutions. Different data dictionaries covering the same data sphere with redundant vocabularies or data models are neither feasible nor desirable as it would imply maintaining two or more dictionaries and mapping efforts that are costly and would delay the benefits and the effectiveness of an integrated reporting system. The common, unique data dictionary should cover the characteristics and demands of the different regulatory frameworks, taking into account not only the easiest, but in particular, the most exigent in terms of diversity of data types, frequency of changes and frequency of new reporting releases, the calculations complexity and data quality requirements.
- 90 The common and unique regulatory data dictionary would cover the prudential, resolution and statistical reporting frameworks: the European-wide and the national frameworks, the regular and the ad hoc reporting.

- 91 Regarding national and ad hoc requirements, the common regulatory data dictionary should enable the transparency on the requested definition in order to reduce additional demands, but leeway must be guaranteed to allow any collection that would respond to specific or urgent needs.
- 92 In addition to the perspective of the authorities, the analysis focused on how the data dictionary can contribute to reducing the problems identified by reporting institutions in the fitness check on supervisory reporting at the EU, published by the European Commission.
- 93 The discussions on the data dictionary requirements took and must take into account the previous work regarding data dictionaries for integrated data collection in the ECB and the EBA, and some national integration efforts – Austria, Italy and Spain – whose experience and lessons learned were very useful for checking and confirming the design of the future common data dictionary. The existing experiences on data dictionaries and integrated reporting bring to the discussion important references that help to shape the future data dictionary and at the same time, enable the identification of the costs and benefits of the future solution.
- 94 The characteristics of the proposed data dictionary are aimed at achieving an effective end-to-end digital regulatory reporting chain that ensures the regulatory-specific objectives are achieved in a more efficient way, minimising the overall costs of the stakeholders involved, and in particular, reducing the burden on reporting institutions.
- 95 Requirements for a common regulatory data dictionary are considering the complete lifecycle of the regulatory reporting, starting with the stage of data definition, and following the support of the processes of collection, validation, analysis, regulatory disclosures and dissemination of data.
- 96 The envisaged data dictionary should address three different layers: the semantic requirements, the syntactic formal capabilities and the infrastructure means.
- 97 The semantic integration of data from different frameworks depends very much on their regulatory constraints, their underlying data concepts and convergence possibilities. The common regulatory data dictionary should be able to include all the different semantic definitions of the frameworks it supports, as well as the interlinkages between different frameworks integrating incrementally each new data area assuring the overall consistency and progressively achieving a wider and higher level of integration.
- 98 The syntactic common regulatory data dictionary is the model structure prepared to support the formal, standardised and consistent translation of all the data concepts of the different regulatory frameworks. A syntactic common regulatory data dictionary for integration should enable the data comparability across different frameworks and should support automation and digital processing of regulatory data.

99 The common regulatory data dictionary should be a basis of the common platform of understanding for the data of different frameworks. It should be agnostic to any technology but available for sharing to all the stakeholders involved in regulatory reporting. The data dictionary infrastructure should use the syntactic data dictionary (formal structure) and the semantic definitions (meaningful content) to facilitate the system interoperability along the different processes of the digital regulatory reporting.

5.2.2. Common regulatory data dictionary – requirements

100 The data dictionary should address different types of data: different levels of granularity, harmonised or non- harmonised data, regular or ad hoc data, quantitative and qualitative data originating in different regulatory frameworks and regulators.

101 The common regulatory data dictionary should include as essential components:

- a dictionary of vocabulary and data concepts;
- a dictionary of data validations and transformations.

102 The data dictionary for data integration should be a formal and standardised data dictionary (syntactic data dictionary) with all the elements to enable automation and digital processing of regulatory data. The syntactic data dictionary facilitates any effort of semantic integration. The setup of this syntactic data dictionary is feasible and should be in place as the central piece of the integrated reporting system.

103 Integrated reporting requires the setting up of a central common and unique data dictionary, with the following characteristics:

- **comprehensive: containing** all different data scopes and granularities. Data out of the dictionary is data impossible to integrate;
- **incrementally implemented:** it should be updated with each new extension of the contents of the data reporting regulations, reusing the existing elements or adding new ones, if necessary;
- **complete:** it should contain all the formal and standardisation elements that are needed to define the data and enable the digital processing of reported data along the different phases of the data chain;
- **centrally managed:** to ensure the technical standardisation and create the necessary data definition consistency and quality; each new semantic integration should be included consistently in the existing common regulatory data dictionary. In case national requirements are integrated in common regulatory data dictionary, it should be ensured

that authorities can perform their data definition tasks, integrated with other data definitions, but accordingly with their respective fields of competence;

- **centred on a common and unique vocabulary:** unique single vocabulary covering all data to support data collection, transformation, analysis and disclosure;
- **focus on data comparability:** the principal objective of a data dictionary for integration is to define data consistently to facilitate regulatory understanding and achieve comparable data. This way it can become a **common platform of understanding** for all stakeholders involved in the different processes of the regulatory data chain – the collection, validation, transformation, analysis and disclosure of regulatory data;
- **ready for digital processing:** the data dictionary is the central piece of metadata-driven system integration. The data dictionary should be technology-agnostic and compatible with any data exchange standards;
- **ready for human interface:** easy to use and understandable by people during their analysis and collaborative work;
- **servicing all regulatory data chain processes:** data collection, validation and transformation, analysis and dissemination for all stakeholders involved, in order to support system interoperability of the different processes and stakeholders.

104 Annex 5 describes the necessary characteristics in more detail, separately indicating the requirements that are relevant for authorities' and institutions' perspectives.

5.2.3. The common regulatory data dictionary – the standard reference

105 The data dictionary should be the reference for all stakeholders involved in the regulatory data chain at all levels – semantic, syntactic and infrastructure. As the fundamental idea of the dictionary is to be implemented as a common platform of understanding, it should be adopted by all authorities in their relationship with reporting institutions, and also in processes of transformation, exploration and data disclosure.

106 Authorities should have some freedom to decide on how to adapt their systems to use the common data dictionary. However, it is expected that authorities would change their own systems and the way they receive data from institutions in order to benefit from the common regulatory data dictionary and to enable the institutions access to a common platform of integrated regulatory requirements.

107 The data dictionary and the potential need of authorities to adapt their systems has an impact on the discussion of the cost-benefit evaluation of the different options for the future architecture of the CDCP.

5.2.4. The common regulatory data dictionary – a unique dictionary

108 Currently, reporting requirements are defined using different dictionaries with diverse levels of harmonisation.

109 Going further, the integrated reporting system should have only ONE data dictionary at European level whatever the characteristics and the purposes of the distinct frameworks. This implies that any further data dictionary initiatives should not propose divergent data dictionaries defining the same concepts differently. The idea that the integrated data dictionary can be obtained later by additional efforts of mapping among overlapping data dictionaries seem neither feasible nor desirable. In this respect, it is relevant to point out that any planned initiatives, like ESCB's work on IReF which is currently focused on statistical data as a starting point, should be aligned with the proposals of this feasibility study on achieving the unique data dictionary at semantic and syntactic level.

110 More details can be found in the Annexes: on the framework differences and information on the current status of reporting integration in Europe can be found in (Annex 6 and Annex 7). Annex 8 present details on the experience on European-wide data dictionaries. In addition, Annex 9 explains in more detail the impact on the data dictionary of any decisions to go more granular in the reporting requirements.

5.2.5. Common regulatory data dictionary: cost-benefit assessment

Common regulatory data dictionary

111 Although the introduction of the common data dictionary entails costs, most stakeholders expect high-cost reductions by integrating the national regulatory reporting with the harmonised reporting, with only a third of them considering the cost reduction as moderate or low. Similarly, more than half of the respondents expect high-cost reductions from the integration of ad hoc regulatory reporting, with only three of them expecting small cost reductions.

112 The regulatory data dictionary will be effective as a common platform of understanding for institutions only if it is used by all authorities in the first level of reporting (from institutions to authorities). This will enable authorities to adapt their systems to better benefit from incorporating the common data dictionary and aligning their current data collection and validation systems. The table below represents the summary of the cost-benefit assessment of the common regulatory data dictionary. Annex 10 includes general aspects of the cost-benefit assessment of the authorities with respect to the common regulatory data dictionary, as well as additional costs and benefits reported by stakeholders in the feedback on the EBA Discussion paper.

Table 3: Costs and benefits of the common regulatory data dictionary

| | Costs | Benefits |
|----------------------------------|---|---|
| Competent authorities/regulators | <ul style="list-style-type: none"> • Significant costs related to the semantic integration of frameworks, from the definition of data requirements and from the coordination efforts with different authorities. • Costs involved in the implementation of the syntactic data dictionary (model structure to support the formal and standardised data dictionary). • Costs related to the infrastructure level because of adapting the systems to a new common data dictionary (more costs and less visible benefits in the initial phases), are very much dependant on how authorities have been developing their systems and how much they have already used integrated data dictionaries. | <ul style="list-style-type: none"> • Creation of comprehensive information of all regulatory frameworks, their value and scope of application (permanent stocktaking availability). • Level playing field for analysis by implementing data processes for types of analysis (i.e., comparative analysis, time series, ad hoc analysis, predictive analysis, etc.). • More data sharing among authorities. • Common reporting processes instead of developing one or more in each country. • Reduction of process redundancies across countries and the amount of ad hoc data collection. |
| Institutions | <ul style="list-style-type: none"> • Costs associated with human resources and internal systems to adopt a new common data dictionary. • In the initial phases, there are more costs and less visible benefits, but the adaptation can be facilitated by starting from the existing regulatory data dictionaries they already use (i.e., for statistics, prudential and resolution). • Other costs identified by institutions in the feedback on the EBA discussion paper: adjustments to the regulatory reporting process, costs to adapt existing operating models, organisational changes to set up a data-driven organisation and to review the organisation of the teams in charge of prudential, resolution and statistical reports, cost of reviewing governance. | <ul style="list-style-type: none"> • Clearer and more structured reporting rules easier to understand by a wide range of people with different roles, backgrounds and skills involved in the reporting process. • Standardisation and integration with other national and international standards and ad hoc requests that could reduce the burden on the processes of regulatory reporting for institutions. • Level playing field in the application of the requirements that ensures a common understanding of the data requested and transformations performed. |

5.3. Institutions’ common approach for compliance (input approach)

113 The benefits for institutions of implementing a common approach for compliance need to be confirmed. This approach is usually called the ‘input approach’ as it starts with the definition of a common input database that institutions agree are easy to populate and ends with the definition of a common set of transformations that institutions agree to use on the ‘input’ data to produce the data regulators require.

114 In the feedback on the EBA discussion paper, institutions explained their use of data dictionaries and it was evident that they are performing their compliance obligations

according to their competitive capabilities and individually they were not suggesting the need for a common approach for compliance. In fact, some could have restrictions on moving to a common approach as they already have a comprehensive integration between their compliance and their internal risk management systems.

115 Further assessment of the institutions' appetite for a common approach to compliance is needed. The following important aspects should be addressed in the assessment:

- The institutions' commitment to develop a common compliance solution.
- The institutions' commitment to apply the outcomes of the common compliance solution.
- The role and contribution of authorities in a solution that is in the sphere of the institutions' compliance obligations, in particular on the i) the design of the input database institutions will easily feed; and ii) the design of the transformations they will apply to produce the data requested by regulators.
- The expected cost of the common input approach for compliance. The cost of institutional compliance is substantial and any transfer from the private to the public sphere is difficult to accept. It would be important to evaluate how much institutions are willing to pay to move from the current situation to the common approach for compliance. In their feedback, institutions were only available to contribute with human resources, which is not compatible with their expectation that this European-wide compliance initiative would involve high expertise and IT costs.
- The ways to assure a fair playing-field for the small Fintech, Regtech and SupTech improving the market competitiveness on compliance solutions.
- The possible decrease on the value of a common compliance solution due to: i) the benefits of having a common regulatory data dictionary with all reporting requirements defined under the same DD; ii) the impact of potentially more granular regulatory frameworks in reducing the amount and costs of transformations needed.

5.4. The granularity level of the reporting requirements, as depicted in the common regulatory data dictionary

Background

116 The analysis of the granularity level of the reporting requirements in the context of an integrated reporting system is not an area that was requested to be investigated by the CRR mandate and not a precondition for having an integrated reporting system. However, it was considered as a possible way to improve the reporting requirements.

117 Reporting requirements in statistical, prudential and resolution are defined using a mix of different levels of granularity, ranging from very granular (e.g., item-level data) to highly aggregated. Having in mind that there could exist some similarities in the concepts requested across frameworks, further efficiency gains could potentially be obtained if some concepts defined at a more aggregate level could potentially be derived from more granularly reported ones by means of transformations.

118 In statistical reporting, the IReF project already envisages a higher degree of granularity for integrating the reporting frameworks under its scope. The potential to further increase the granularity of data requirements, accounting also for resolution and prudential purposes was investigated as part of the objective to: i) facilitate institution's compliance with reporting requirements; ii) better meet regulators' objectives; and iii) facilitate the work on integrating the prudential, statistical and resolution data. An overview of the costs and benefits of increasing granularity, accounting also for the feedback received on the EBA discussion paper can be found further below in this section and is further detailed in Annex 11.

Feedback received on the granularity of reporting requirements

119 Feedback received on the EBA discussion paper showed that requiring the data to be reported at one single (highest) granularity level and obtaining more aggregated or derived views by applying transformations is not possible in many cases, particularly in the area of resolution and prudential reporting (see further paragraph 135 highlighting some of these constraints). Therefore, in the context of the regulatory data dictionary, due to the constraints defined in this report, it may not be cost efficient to report with a level of granularity which ensures data is reported at on single (highest) granularity level.

120 Feedback received on the EBA Discussion paper however showed that there is interest (both on the side of the institutions and authorities) to explore a higher granularity of the current reporting requirements (accounting also from the prudential and resolution data needs¹⁸), where it might be possible, while the cost-benefit balance for any change should be further considered in the context of the technical, operational and legal design. Any decisions to further increase granularity in integrated reporting to also cover the needs of prudential and resolution reporting (answering the question on which data can be requested granular and how much granular, together with the possibility to define standardised and harmonised transformations), should be taken on a case-by-case basis driven by the a priori identified need that the new granularity of data would satisfy. This might also imply that a staggered approach would be preferred to a direct move to granular reporting, also in view of the legal set-up that requires time to be implemented.

121 The main interest for institutions and authorities is in having a regulatory common data dictionary. This highlights the importance of having harmonised and complete definitions (semantics of the data dictionary), supported by models (syntactic level of the data dictionary) and infrastructure that would facilitate the development of potentially more granular data requirements. For this reason, discussions on increasing the granularity assume that a common data dictionary is in place that is capable of dealing with different granularity levels of the regulatory data.

¹⁸ In statistical reporting, the IReF project already envisages a higher degree of granularity for integrating the reporting frameworks under its scope.

122 The **cost/benefit assessment** should be considered in the context of the legal, technical and operational **setup of the integrated reporting framework overall** as different implementations might have different costs and weight on the feasibility of implementing any change.

123 The movement towards granularity is a moving target, changing along time with the possible evolution of needs. The level of granularity in the reporting requirements is not a permanent situation as its current level can always be later substituted by a new framework demanding new data collection with a higher level of granularity.

5.4.1. Legal considerations

124 One of the important aspects to account for when considering increased granularity is the underlying legal framework defining the limits of granular collection and the definition and application of transformation rules.

125 The current legal framework might be seen as **limiting the move towards more granularity for prudential and resolution purposes** (under the current rules the process set-up would require material costs to ensure compliance). While the current framework **could in principle be amenable to change, as changing it falls within the remit of the legislators, a thorough analysis of such aspects (including the assessment of the possibility to alter some current set-ups), needs to be considered especially with respect to the strict responsibility on the data needed for prudential and resolution actions.**

- **Strict responsibility concerning the data:** for prudential and resolution purposes institutions have to remain responsible for all the reported data (granular and more aggregated) as prudential and resolution actions¹⁹ are taken based on it. That means that institutions would be responsible for any reported granular data, transformation rules and aggregate derivations from these data. This might limit any possible efficiency gain of becoming more granular for institutions as they would then have to report not just the more granular data but, in addition, potentially all requested aggregated data.
- **An alternative to reporting all data (granular and aggregated)** would be a carefully designed system of feedback loops and anchor²⁰ values whereby institutions would only be responsible for reporting a limited set of aggregated values in addition to the more

¹⁹ For a single institution: supervisory measures, ad hoc requests; for the whole industry: supervisory analyses at system level, e.g. EBA stress test, transparency exercise, QIS, ad hoc request or analysis at national level which sometimes are also requested by national parliaments.

²⁰ A mechanism that ensures institutions' compliance with the data. Future work should consider, in addition to the granular collection and transformation, a clear description of what constitutes feedback loops and which level of aggregates would be defined as anchor values. This feedback system and the anchor values are an extra cost to institutions and authorities as they need to be prepared and managed. A cost-benefit analysis should investigate on a case-by-case basis each integration situation, avoiding any implementation where such a system would not be cost efficient.

granular collection (in those cases where aggregated values could be obtained from more granularly defined ones). The legal implications of such a system or a similar process would need to be further investigated in addition to the costs and benefits of introducing such a process.

126 While for statistical purposes the aggregation of data can be delegated entirely to authorities, further investigation should be conducted from a legal perspective in relation to prudential and resolution purposes on how to deal with aggregation of concepts that have not been established in the legislation (such as calculations of certain non-regulatory data based on granular or semi-aggregated data prepared by institutions).

127 **Legal certainty** – a move to granularity might imply new processes and changes to regulatory products or other documentation such as rulebooks and manuals. Institutions should know the data they are responsible for reporting (compliance), the transformation rules, as well as the possible additional data they would be required to send as part of feedback loops and anchor values together with the underlying processes.

128 **Other aspects, such as data privacy, data ownership, data sharing** should be considered, and proper measures should be set in place to ensure that both institutions and authorities are and remain compliant under all other legislation (e.g., GDPR).

5.4.2. **Deciding on the level of granularity in the context of a regulatory data dictionary (a more granular collection and defined transformations) and limits to granularity**

129 The decision on granularity should consider a holistic approach, with a view to integration across the three reporting areas (prudential, resolution and statistical). The extent to which increased granularity can and should be applied to certain data areas within this holistic approach will, however, remain subject to a case-by-case assessment.

130 Going forward, integration of the different reporting frameworks, facilitated by increasing granularity in cases where this might be possible, could be achieved by means of **reconciliation among the current regulations** (the currently more granular data collection could be used to derive more aggregated data collection. In order for this derivation to be possible however, the currently more granular data collection might need to be enriched with additional attributes, adjusted, or even extended to be able to obtain the needed aggregated figures). Building an integrated reporting system in this sense would require gradually developing the statistical regulations hand in hand with prudential and resolution needs and vice versa. The integration and reconciliation of data definitions across the legal frameworks of each area of regulation (statistics, prudential, resolution), requires, in particular, considering the collaboration of the different authorities.

131 Deciding on the optimum level of granularity would require a common understanding of what defines the granular characteristics of a data set, what is the proper

design/methodology of granular data definition and collection, account for proportionality aspects and the need to consider a transitional period. (Additional details can be found in Annex 11.)

132 With a possible move towards granularity driven by the integration of different data sets one could define a set of transformations that would link the more granularly defined data requirements to data needed for different purposes by competent authorities. These transformations would be an integral part of the regulatory data dictionary. The feedback on the EBA discussion paper showed that institutions and authorities alike would prefer to have **fixed definitions for the transformations that would leave no – or where not feasible, as little as possible – room for interpretation outside the one allowed in the legislation.** Based on the feedback received, different preferences were expressed related to the processes involved in transforming the data and their governance with implications on the cost effectiveness of moving to a more granular setting and the legal possibility of doing so (further details in Annex 11). Depending on the design and governance of the transformations, the costs might be too high to make a change possible.

133 Overall, exploring the possibility of increasing the granularity of reporting requirements to also account for specific resolution and prudential data needs is in general preferred; moving to more granularity is very dependent on the overall process set-up that would determine the cost-effectiveness of doing so for both authorities and institutions. To this end, it is to be highlighted that this option might not be feasible for a significant number of cases due to various limitations as explained below.

134 **Limitations on how much granularity in the regulatory data dictionary is possible** – feedback received has however highlighted that an increase in granularity of the data collected with the intention to collect the data at one single (highest) granularity level has some limitations and many of the current reporting requirements cannot be substituted by granular ones. There is a strong interdependency between the granular data and transformations as the limitation to define standard transformations will reveal the limitations to how granular one can go and vice versa; the limitation to accessing granular data will limit the number of transformations that can be defined²¹. Various technical, operational and legal limitations are prohibitive in certain areas. Some of these limitations are:

- Requiring greater granularity at the consolidated level for third countries might be unfeasible (referring to the feasibility/capacity of moving/managing all such information from third countries and the legal constraints regarding the exchange of granular data with EU competent authorities from third countries).

²¹ Highlighting that these limitations are considered in the context of the regulatory data dictionary (e.g., transformations that would be linked to an input layer might have different (less) constraints as they would not be linked with the limitations coming from collecting the data.

- Some of the balance sheet items cannot be explained in an item-by-item way (e.g., accounting figures that include many granular items for which it is not feasible to drill-down).
- Data that require expert judgement in the calculation cannot be requested in a more granular format:
 - Granular reporting is seen to be more feasible at the individual level, but less on the consolidated level as it requires expert judgement in the application of relevant accounting and prudential standards. Moreover, the accounting consolidation process involves the distribution of capital, profits/losses across legal entities and jurisdiction for which the institution bears responsibility vis-à-vis its shareholders and regulatory stakeholders; hence it cannot be delegated to third parties.
 - Manual adjustments: while they could be reduced; they cannot be eliminated entirely.
 - Although the application of different valuation methods might be further harmonised, this would still require detailed data to apply the correct valuation for a specific item which might be inefficient to collect.
 - Principle-based rules and internal models where different approaches could be followed such that it is not possible to define a standard transformation rule for calculating the data (e.g., data that results from institutions' internal models).
- Institutions need to have in place and implement strong risk data aggregation and risk-reporting capabilities which are further assessed as part of their internal governance within the SREP (which might also include institutions' compliance with the BCBS 239 principles) with implications on who can apply and run certain transformations (e.g. certain transformations cannot be done by entities other than the institutions).

Granularity: Cost-benefit assessment

135 The following table summarises the cost-benefit assessment of increasing granularity²².

²² The costs and benefits are mainly seen from a prudential and resolution perspective, although many of them are also valid for statistical collection. For statistical data this topic was covered by the IRef.

Table 4: Costs and benefits of granularity

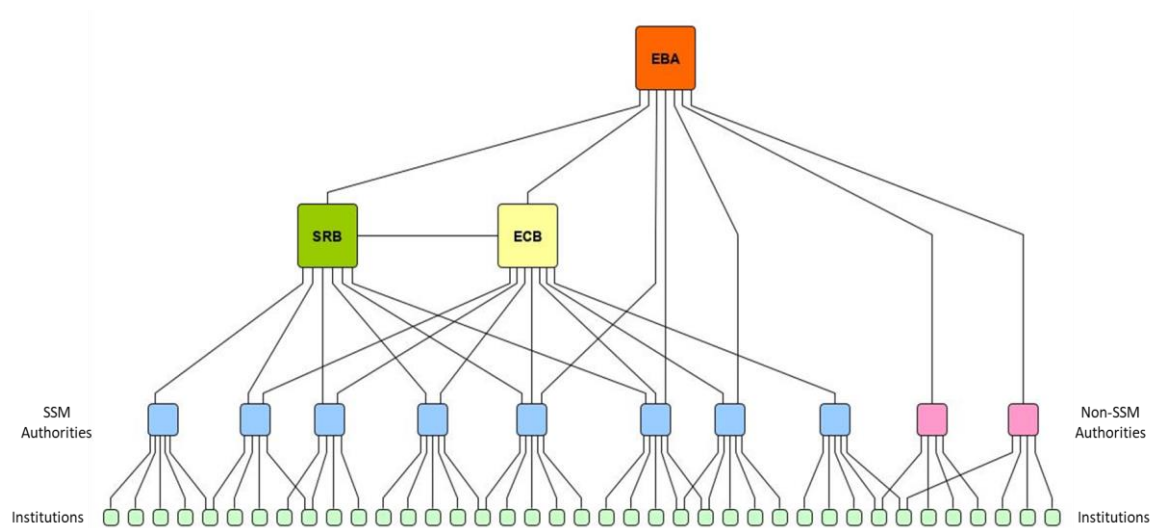
| | Costs | Benefits |
|----------------------------------|---|---|
| Competent authorities/regulators | <ul style="list-style-type: none"> • Definition of transformations (jointly with institutions) and possible deviations at individual bank level. • The quality assurance process that may be more costly. • Collaboration with other authorities to integrate and reconcile data definitions across the legal frameworks of each area of regulation. • Maintenance costs are expected to be high due to the evolving nature of the common regular reporting and the design of the set of calculations as new reporting requirements are added. • Costs from the coordinated action among different standard-setters at both European and national level to analyse the commonalities and differences in the data, the purpose for which it is collected under each regulation and the current process for collecting it. | <ul style="list-style-type: none"> • Enhanced flexibility in the usage of data through the possibility to transform it to respond to new policy needs. • Increased possibilities to process and analyse data to support additional analysis, reduction of ad hoc data requests. • Higher comparability of the current data collection, better understanding of the data reported for all stakeholders. • Enhanced transparency in the aggregation process through the definition of transformations that will link the data across different aggregation levels. • Less Q&A as these definitions are likely to reduce the Q&A about the data that should be reported, at least at the more aggregated levels. |
| Institutions | <ul style="list-style-type: none"> • Collection of the data at a more granular level from various systems internally in a timely manner. • Costs related to the definition of transformations and reconciliation of data definitions (jointly with competent authorities and regulators), responsibility of the data input, responsibility for calculating transformations and responsibility for the maintenance and enhancement of a common set of transformation rules. • Additional human and IT resources for setting up, testing and maintaining the transformation, with the involvement of business experts from different areas. | <ul style="list-style-type: none"> • Reduced new reporting requirements over time as ad hoc requests may become less frequent. • Further cross-country harmonisation and standardisation of national reports. • Reduction of national reporting requirements to the extent that they overlap with other harmonised reporting requirements. • Creation of a level playing field in the application of the requirements. • Simplification in the process of reporting preparation. • Improvement of the quality of institutional data at a more granular and at an aggregated level. • Clear and transparent transformations will ensure a level playing field for the application of regulatory requirements. |

6. Central data collection point

6.1. The current EEA reporting network

136 The current banking regulatory reporting system is organised in different reporting levels, so that regulatory data flows first from the reporting institutions to national authorities (NCAs, NCBs, NRAs), and from those to the European authorities (EBA, ECB, SRB), additionally with a *sequential approach* in place for the SSM, where data is first collected by the ECB and the SRB, and then forwarded to the EBA.

Figure 7: The current EEA reporting network



137 There are several problems with the current reporting situation that can be directly or indirectly related to how this reporting network is organised.

138 First-level reporting is not harmonised, but implemented according to the particular specifications of each national authority, which include i) different ways of defining data requirements, using data dictionaries with different vocabulary and data models; ii) different report formats, such as XBRL, XML, SDMX, CSV, Excel and even within the same technology (e.g. XBRL), the technical specifications vary from one authority to another, which makes the different formats not compatible in practice; iii) different data-collection systems, with their own protocols, specifications and filing rules; iv) different reporting calendars and quality-checking rules (timeliness, completeness, accuracy, plausibility); v) different structures, formats and channels also for the feedback messages from authorities to reporting institutions. All this adds to the reporting burden of institutions which may have

to report to different authorities in the same country (NCA, NCB, NRA), or, in the case of cross-border groups, to multiple authorities in different countries.

139 The second level of reporting, from national authorities to European authorities, or the exchange of data among the latter, must comply with the specifications imposed by the authority receiving the data (i.e., the ECB, the SRB or the EBA).

140 The overall system is seen as inefficient, considering the many different point-to-point data flows, and the repetition of processes by different authorities along the reporting chain, with the successive acquisition, monitoring, validation and integration of the same data carried out in a differentiated manner by each of the intervening parties. The regulatory data themselves end up being stored redundantly, but also segmented, in several databases, which were not designed with data sharing in mind, therefore becoming data silos when viewed from a global perspective.

6.2. Definition of a central data collection point

141 To fulfil the mandate of Article 430c of CRR, this report discusses the feasibility and possible design of a central data collection point for the integrated reporting system, which contains a **central data register** with all statistical data, resolution data and prudential data, and that takes into account the proceedings and processes of competent authorities and transfers them into a **standardised system**.

142 Taking the regulatory reporting chain previously discussed as a reference, it seems clear that the 'central data register' should be related to the final phase focused on the exploration and sharing of the collected data, while the 'standardised system' will concern all the necessary data processing that takes place upstream, related to the data collection and transformation phases.

143 There may be different ways of interpreting what a central data register should consist of and the degree of centralisation of a standardised system. The combination of various possibilities of these two components of the integrated reporting system leads to the identification of different alternative scenarios, for which costs and benefits should be discussed.

6.3. Alternative scenarios of a CDCP

144 The next sections present and discuss a sequence of possible scenarios where the integrated system could be implemented with different levels of achievement, from a first scenario where there is no CDCP, to a highly centralised system that offers full integration. All scenarios assume the establishment of a common data dictionary, and each scenario is defined by the status of development of the two main components of the CDCP required in

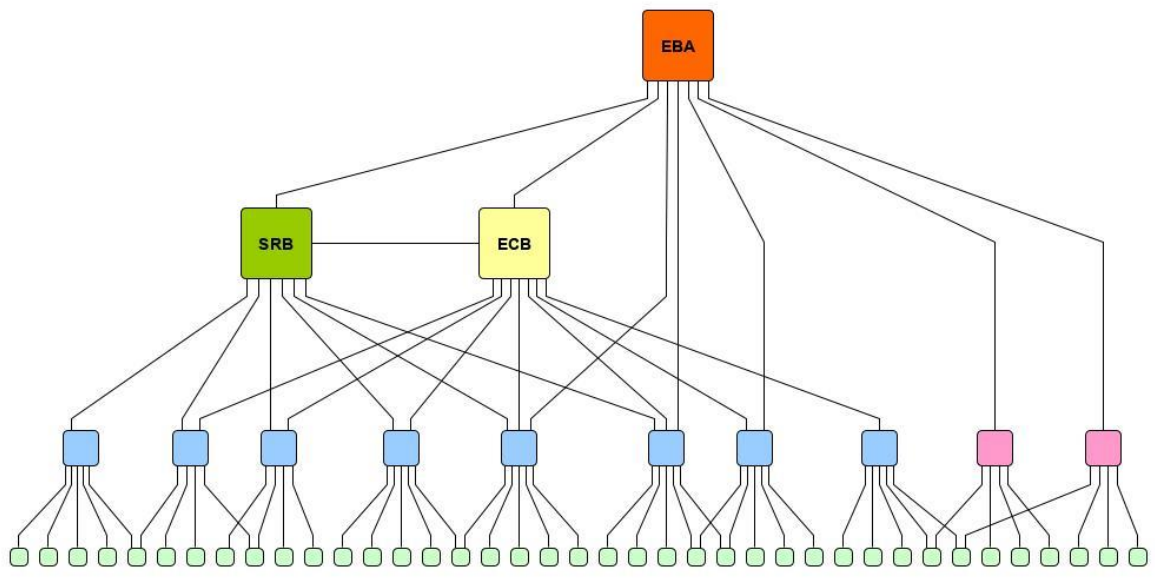
Article 430c CRR: a central data register (data hub), and a standardised (data collection) system.

145 When interpreting these scenarios, it should be taken into account that they depict the topology of a reporting network, where nodes represent the participating information systems, and edges represent the data flows between the systems. **No assumptions are made with regard to the implementation of each system, nor about the technical architecture of the CDCP which, although a single system, may become physically centralised or distributed depending on future design decisions.**

146 **There is also no recommendation, at this time, on what the final integration target should be and how to get there.** However, different scenarios are presented by increasing level of integration, where the transition from one to the next does not seem to imply big risks, or losses of previous investment, which might suggest an evolutionary approach, also taking into account that a scenario of complete integration seems too difficult to achieve in a big bang mode.

6.3.1. Scenario 1: Distributed data collection | No central data hub

Figure 8: Distributed data collection | No central data hub



147 This first scenario results simply from introducing a common data dictionary for statistical, resolution and prudential reporting into the existing system, with no change in the current situation in relation to how data is flowing through the reporting network. The authorities' different reporting systems would therefore remain unchanged in most cases, except where

regulators’ data dictionaries are being used as a technical component of the authority’s reporting system, and not just as documentation of reporting requirements.

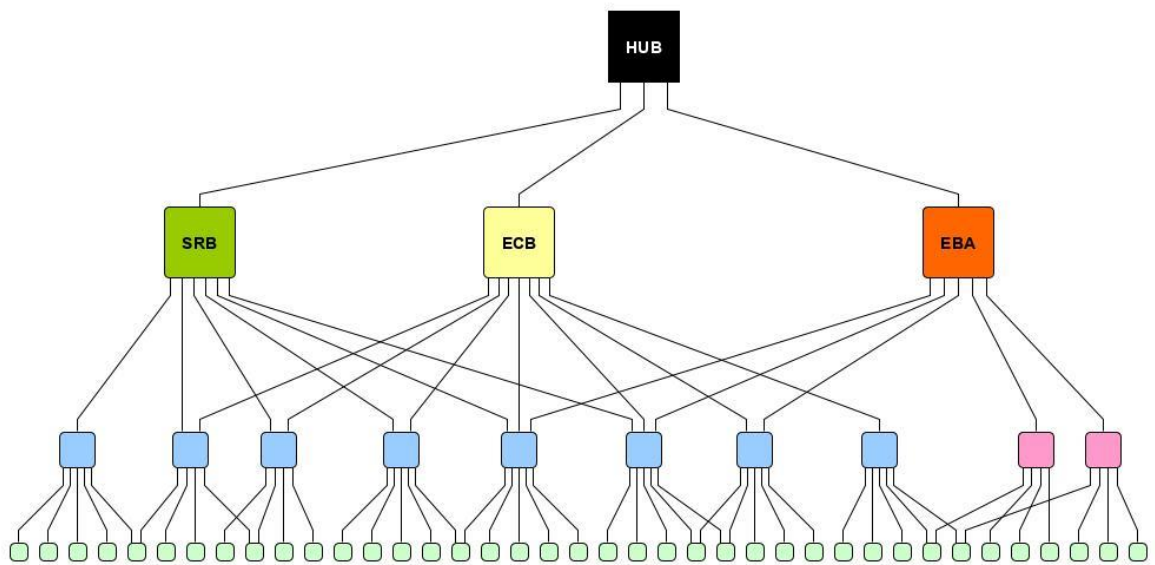
148 The possible benefits of this scenario are those arising only from the common data dictionary, namely: i) better understanding of the reporting requirements, based on a common data dictionary that uses a standardised business vocabulary to define data, and a single metamodel to store data definitions; ii) some possible convergence of reporting requirements, and reduction of data requests, leveraging easy access to a comprehensive data dictionary containing all reporting frameworks, and joint governance by regulators.

149 No significant improvements are to be expected with respect to other problems of the current system, e.g., different data collection points per authority giving rise to diverse data exchange formats and protocols, different data processing rules and redundant processes, complicated sequence of data flows, multiple siloed data stores.

150 This scenario would on the other hand imply the fewest risks and disruptions of the supervisory needs.

6.3.2. Scenario 2: Distributed data collection | Level 3 data hub

Figure 9: Distributed data collection | Level 3 data hub



151 The simplest evolution from the current sequential approach is to establish a central data register (data hub) fed by European authorities, which no longer need to exchange data

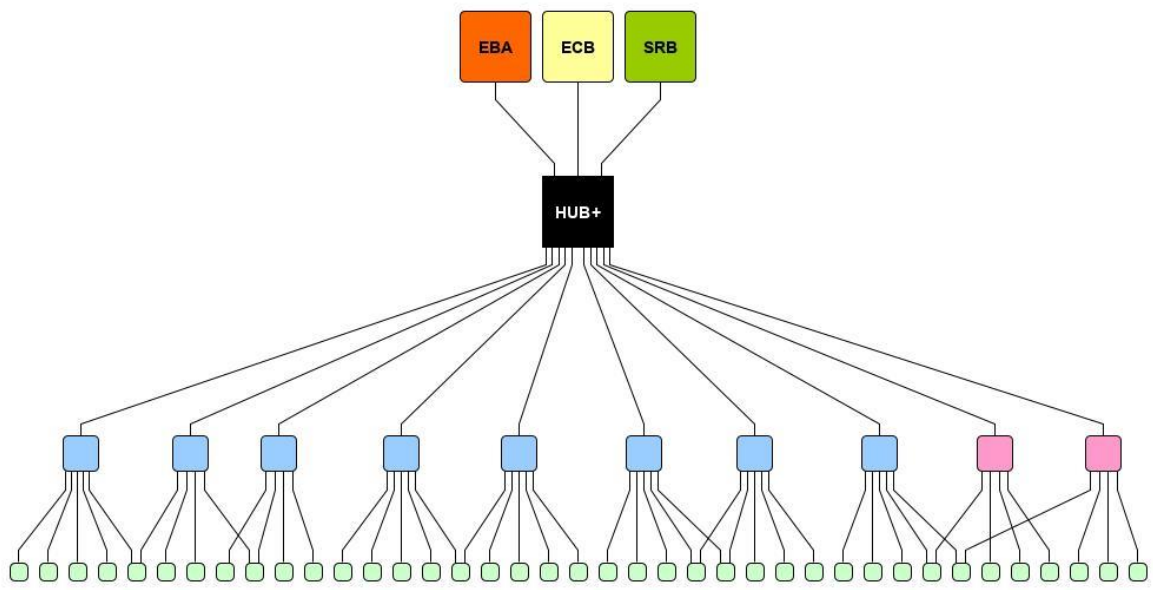
directly with each other. The main objective of this data hub is to concentrate all banking data collected by European authorities in a central data access point, promoting data sharing and making it more accessible to all interested parties, thus potentially contributing to the reduction of additional data requests by national authorities.

152 The central data hub, in addition to benefitting from a single data dictionary that defines all the data hub content in a consistent way, using the same business glossary and the same data model, must contain all additional metadata related to, for instance, data quality status and access restrictions, and must include a common register of reporting institutions, with all the properties and master data relationships required for data exploration.

153 In comparison to the previous scenario, which already assumes the existence of a common data dictionary, the additional implementation costs are relatively low considering the limited scope of changes and the possible leveraging on existing solutions. On the other hand, it does not greatly contribute to the simplification of the reporting network which continues to be fundamentally based on the sequential approach, with no visible impacts at the first and second levels of reporting, hence, apart from the possible benefits, related to greater data sharing, there should be no significant effect in terms of reporting burden reduction.

6.3.3. Scenario 3: Distributed data collection | Level 2 data hub

Figure 10: Distributed data collection | Level 2 data hub



154 An alternative to, or evolution from, the previous scenario, is to move the data hub closer to the national authorities, which could then feed it directly instead of sending data to the European authorities. This design eliminates the current complication of second-level reporting through harmonisation of the different types of reporting and streamlining of data flows.

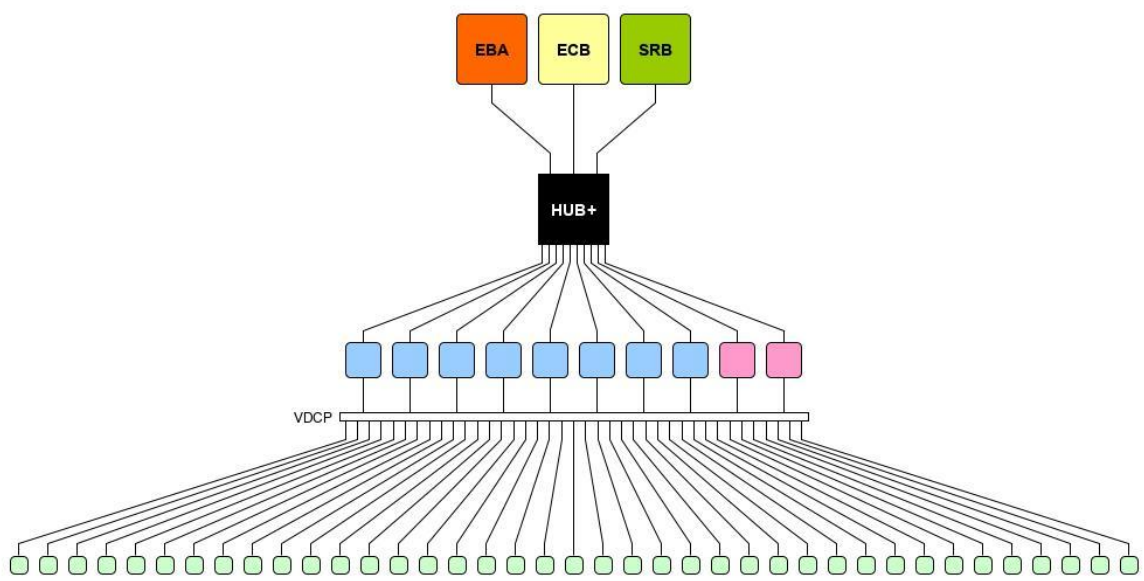
155 This scenario should bring appreciable benefits to national authorities without requiring radical changes to their existing systems, but it still does not introduce changes to first-level reporting.

156 It is implicit in this architecture that the data hub can no longer be just a passive repository of data but must now already include some level of standardised data integration and validation, as it is receiving data from many different systems. Being closer to the data hub makes it easier for the national authorities to access and share data, and possibly reduce some national/ad hoc data requests, which would translate into indirect benefits to reporting institutions. Additionally, it should ease the transition to a higher level of integration.

157 Under this scenario, European authorities would benefit from the elimination of data flows between them and from national authorities and would have access to more data which could reduce ad hoc requests to institutions. Similarly, national authorities would benefit from accessing additional data from the common data hub, thereby also reducing ad hoc requests to institutions. Since no changes are introduced at first-level reporting, institutions should not expect other benefits apart from the potential decrease of ad hoc requests.

6.3.4. Scenario 4: Virtualised data collection | Level 2 data hub

Figure 11: Virtualised data collection | Level 2 data hub



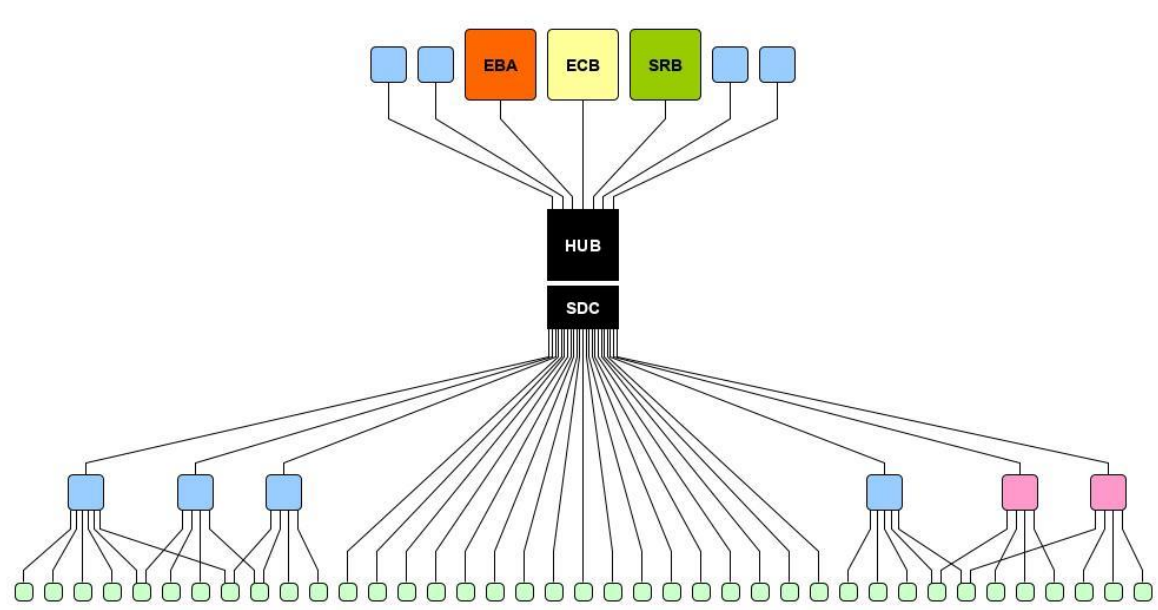
158 Some respondents advocate the possibility of implementing a data submission interface that would provide reporting institutions with the view of a single point of entry, while reported data would still be routed to national authorities and would continue to be processed in a distributed manner by different local systems. This alternative intends to offer institutions the benefits of a central data collection point, while protecting national authorities from the disruption caused by replacing their current local systems with a central standardised system.

159 A condition for this scenario to be viable is that the first-level reporting becomes completely harmonised in terms of data exchange formats and validation feedback. It might also be necessary to maintain a global register of reporting entities to support their communication with the respective authorities. In addition, authorities that use formats for first-level reporting other than the standards defined by the regulators would have to adapt or change their current systems to be compliant with the common formats.

160 In practical terms, there may not be a big difference, for reporting entities, between this scenario and a simpler distributed one in which all national systems would be using the same standardised formats for first-level reporting, which again would imply in some cases a replacement or major changes to national systems that use proprietary reporting specifications.

6.3.5. Scenario 5: Semi-centralised data collection | Level 1.5 data hub

Figure 12: Semi-centralised data collection | Level 1.5 data hub

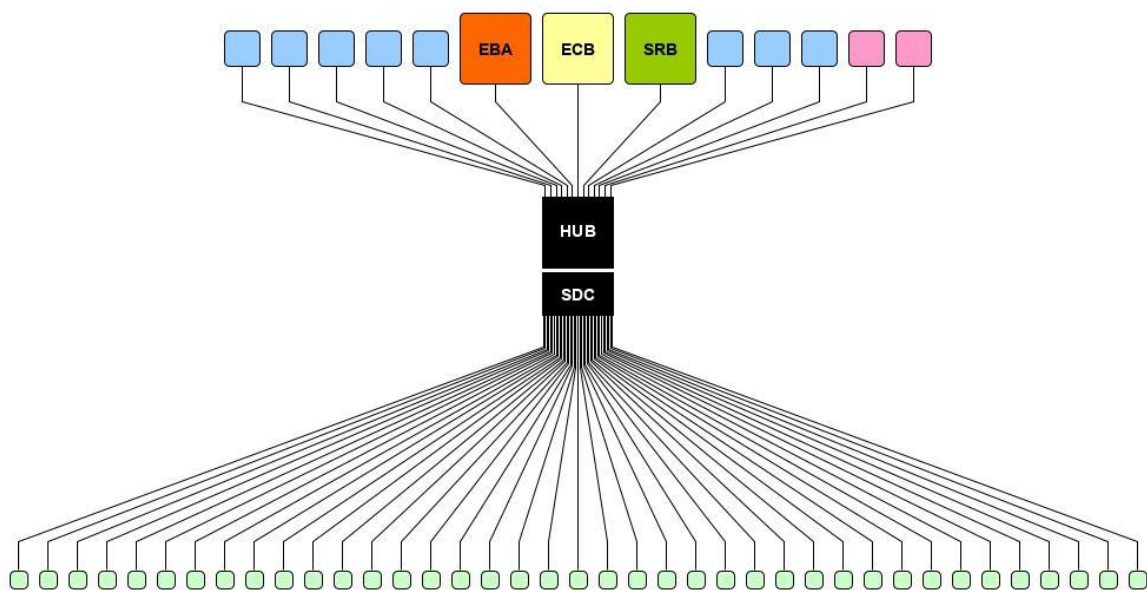


161 This is an evolution from Scenario 3, by introducing a fully-fledged standardised data collection system (SDC) and is intended to represent an intermediate situation in which some national authorities have joined the new central data collection system, while others continue to rely on their own current reporting systems. Therefore, from the institutions' point of view, some will interact directly with a central data-collection point, while still others will send their reports to one or more national authorities. As other authorities join the new system, this scenario might evolve into the full central data-collection point described in the next scenario.

162 Since a standardised system requires its participants to adhere to the same set of rules and specifications, its introduction should therefore enhance harmonisation of reporting requirements, limit national and ad hoc reporting and restrict the use of various reporting formats and protocols. For the institutions concerned, this should lead to a reduction in the reporting burden. On the authorities' side, it can be expected that the efficiency of data processing will benefit from standardisation, and from the elimination of sequential data flows and duplicate data collection processes that take place in authorities at national and European level. This scenario thus potentially achieves reduction of reporting burdens at the expense of limiting the leeway of supervisory authorities.

6.3.6. Scenario 6: Centralised data collection | Level 1 data hub

Figure 13: Centralised data collection | Level 1 data hub



163 This last scenario represents the highest possible stage of integration, where all national authorities have onboarded the central data collection point, thereby maximising the expected benefits of a fully standardised system, and where all institutions submit regulatory reporting directly to the central data collection point.

164 It should be noted that when considering that maximum harmonisation of reporting requirements will be reinforced by the central data collection point, it is also somewhat implied that the functioning of this type of system will be all the easier as the level of harmonisation achieved, or, in other words, a legislative framework in which maximum harmonisation is not always imposed may constitute an additional challenge for the full implementation of this scenario.

165 This aspect, mentioned by both institutions and authorities, is considered by the former as an argument in favour of the central data-collection point, as it limits the space of supervisors to request additional information outside the common regulatory reporting framework (a major source of reporting burden), while the latter emphasises the negative consequences of compromising their supervision capabilities.

6.4. Authorities' concerns about centralised reporting

166 While the feedback received from institutions and authorities about the importance of a CDCP is very positive, concerns from authorities regarding a possible centralisation of reporting have often been reported. These concerns stem mainly from the notion that national systems will have to continue to exist anyway, and that centralised reporting may not be compatible with all the functional and quality requirements that the integrated system must satisfy.

167 Regarding the need to keep national systems, the main reasons pointed out by some authorities are the following:

- They are used to support other data collection that are not in the scope of Article 430c CRR.
- They are shared with other national organisations, which enables more flexible and deeper analysis possibilities than a bank-specific centralised hub presents.
- They are better fit to cope with national requirements, data quality, direct contact with reporting agents and fast support.
- Data quality is only efficient if done by the national authorities in a decentralised model.
- Reporting based on national regulations is an inevitable complement to EU reporting requirements.

168 As regards a centralised system, the main concerns raised are:

- Risk of single point of failure.

- Lower quality of reporting (less interaction with reporting institutions, absence of data quality controls on national level that consider the specifics of the national banking system).
- Complex and extensive reporting requirement built into NCAs systems need to be transposed or abandoned, which would force a continuous operation of the current systems (and NCAs need to continue to launch national requests).
- Inefficient handling of national reporting.
- Inefficiency of a very large hub (including granular information); possible difficulties on accessing data.
- Complexity of the governance (access rights, response times, data quality, availability, confidentiality, etc.).
- Costs of the transition while keeping the local systems.
- Possible legal obstacles.
- Potential difficulties in inclusion of all ad hoc requirements.
- Insecurity on how a centralised hub will feed into already established automated risk surveillance tools, which in the present framework is entirely based on the national database infrastructure.

169 In follow-up discussions on CDCP scenarios, special attention should be given to these concerns of the authorities, to better understand the underlying assumptions and reasoning, and clarify the potential problems, which may then determine specific functional and quality requirements for the CDCP system.

6.5. Feedback on the EBA Discussion Paper on the CDCP

170 Feedback on the EBA Discussion Paper mentioned additional costs and benefits of a CDCP, and the need for a transition period to achieve full implementation. This transition period would be necessary to enhance the framework for sharing data among authorities, implementing a shared single register of entities, and designing the framework for data accessibility, data concentration and processing of national reports.

171 In their feedback on the discussion paper, institutions referred the possible additional **costs** of designing a platform to handle a large amount of data, maintaining the data model, and managing additions and requests, the implementation of an easily adaptable data model for institutions that meet the needs of European authorities, clear governance rules for the management of the CDCP, standardised transformation rules, encryption functionalities, consistent interfaces for data collection, uniform protocols and formats, access control rules, quality controls and control framework, clearly defined data dictionary and complex IT architecture, among others. Banks also stressed the need for a roadmap to achieve full CDCP implementation.

172 The additional **costs** reported by competent authorities in the feedback on the discussion paper are related to the replacement of legacy systems, data accessibility, data concentration and processing of the national reports and difficulties related to the monitoring of the system.

173 Institutions also identified potential **benefits** in their feedback, such as significant cost reductions in setting up and maintaining our internal data flows, the existence of clearly defined data, minimisation of data transformation, etc. Institutions also highlighted that the CDCP will enable the collection of the information provided by institutions on a single point for all supervisors and will avoid duplicate requests coming from supervisors. Although they think that there will be high initial one-off costs, after the first phase of implementation the benefits will be greater than the costs.

174 Competent authorities also consider as **benefits** the fact that the CDCP would represent a major improvement for reporting institutions (single point of contact, unique technical format) and a real value added for all stakeholders together with the harmonisation and integration of the reporting frameworks across countries and domains.

6.6. CDCP system requirements

175 Establishing the vision and ambition for the integrated reporting system, and defining a target CDCP scenario, in case a careful assessment of costs, risks and benefits support the feasibility of a CDCP, may provide the initial context and scope needed to move towards a more detailed study of the new system, and to then start with the development of high-level requirements.

176 However, some key requirements can already be anticipated when taking into account the main concerns and comments expressed by stakeholders during this feasibility study:

- The CDCP should support the separation of responsibilities, through roles and logical workflows, so that authorities can continue to exercise their specific competences in the regulatory reporting process, only in a more efficient and optimised way.
- The CDCP should support the seamless collection of any data defined in the common data dictionary and compliant to the standard data exchange formats, regardless of their status and origin, so that it does not become a technical barrier to reporting based on national regulations.
- The CDCP must support the simple reception and routing of non-standardised reports to the requesting authority, so that ad hoc data requests can also be serviced through the single data exchange channel.
- The CDCP should support additional data quality checks, as long as they are defined in accordance with the common data dictionary model, in order to allow national

authorities to fully exercise their role as responsible for the verification of data quality of institutions in their jurisdiction.

- The CDCP should offer multilingual support, in order to facilitate institutions' interaction with the system and their direct contact with the respective national authorities.
- The CDCP must be designed with scalability in mind, so that it can efficiently handle growing volumes of data and increasing granularity.
- The CDCP must be designed for high availability and reliability, with the necessary backup and failover mechanisms, so that it cannot become a single point of failure.
- The CDCP must fully satisfy all information security considerations expressed in section 7.4.2.

7. Governance for the development and implementation of the integrated system

177 The objective of this section is to highlight the relevant governance aspects to be taken into consideration to achieve the integrated reporting system and the necessary principles or pre-conditions that need to be defined and agreed to ensure that the future integrated reporting system could be developed, implemented and managed in an efficient manner.

178 The governance arrangements of the future integrated reporting system should allow strong cooperation among the different authorities involved – **joint governance** – to avoid a silo approach and improve data sharing among authorities and all other stakeholders.

7.1. Joint governance

179 Following the mandate of Article 430c CRR, this section covers the analysis of the concept of the Joint Reporting Committee as a forum of authorities who cooperate, coordinate and exchange information towards the development and implementation of the integrated system.

180 As it is expected that many stakeholders are involved in the integrated reporting process, this section provides further clarifications on what could be the possible roles of the different stakeholders. The report provides information on the roles of the JRC mainly at the data definition level. However, following the desirability and target scenario analysis of the CDCP, the JRC could be involved in its development and governance.

7.1.1. Joint Reporting Committee role

181 The mandate of Article 430c CRR refers to the creation of a JRC for the development and implementation of the integrated reporting system.

182 The JRC would act as a forum for authorities involved in the efficient implementation and development of the integrated reporting system by taking an **advisory** and **coordination** role along the reporting process. Its main objective would be to plan and prepare the set-up for the implementation and development of the integrated reporting system by:

- i. strengthening the cooperation and coordination among authorities in the entire reporting process chain;
- ii. actively contributing to the harmonisation of the different reporting approaches at European level;

- iii. proposing agile common procedures for the different authorities involved, thereby promoting the alignment of processes;
- iv. setting up the priorities, promoting the joint implementation plan and specifying the joint efforts and the tasks and functions of the stakeholders involved.

183 The JRC would need a clear mandate to coordinate the process coupled with rules that set out the corresponding obligation of authorities to consult the JRC in relation to the development of any new reporting, and rules that set out the rest of its functioning as further suggested in this section, including providing for the adoption of internal rules of procedure to ensure further smooth cooperation. The JRC operational model should be mindful of administrative burden to ensure all authorities can continue delivering their missions and tasks without undue additional burden.

184 Although the JRC would not be able to issue legislation itself, its role could be established in an EU legislative act. An example of bringing together national authorities across financial sectors is the ESAs Joint Committee²³. Another example of a committee serving as a forum of interinstitutional cooperation between the European Commission and the ECB is represented by the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB)²⁴.

185 The JRC would cooperate on integrated reporting matters with the European Commission, the EBA, the SRB, the ESCB and the ECB-SSM, maintaining close links with each other and in close liaison with the national authorities (competent authorities, central banks, resolution authorities).

186 The establishment of the JRC should be done once the feasibility study is delivered and should take as a basis the feasibility study's recommendations. Until a legal act is prepared for the formal JRC (a process that might require significant time), an iJRC could be set up among the authorities involved as a short/medium-term solution in order to ensure an effective implementation of a broad integrated reporting system in the long run.

187 Considering the JRC's main objectives, it could have different tasks along the reporting process dimensions that constitute the integrated system. The list of possible tasks allocated to the JRC along the reporting process is provided in Annex 14.

188 In addition, the description of the process to define reporting requirements is provided in Annex 13. This process description shows how the current governance solutions for regulatory definition can be reused and complemented and what should be adapted to support the future integrated regulatory definition. Similar analyses can be conducted on other phases of the reporting process chain.

²³ See <https://www.eba.europa.eu/about-us/organisation/joint-committee>

²⁴ See www.cmfb.org/about

7.1.2. Structure of the Joint Reporting Committee

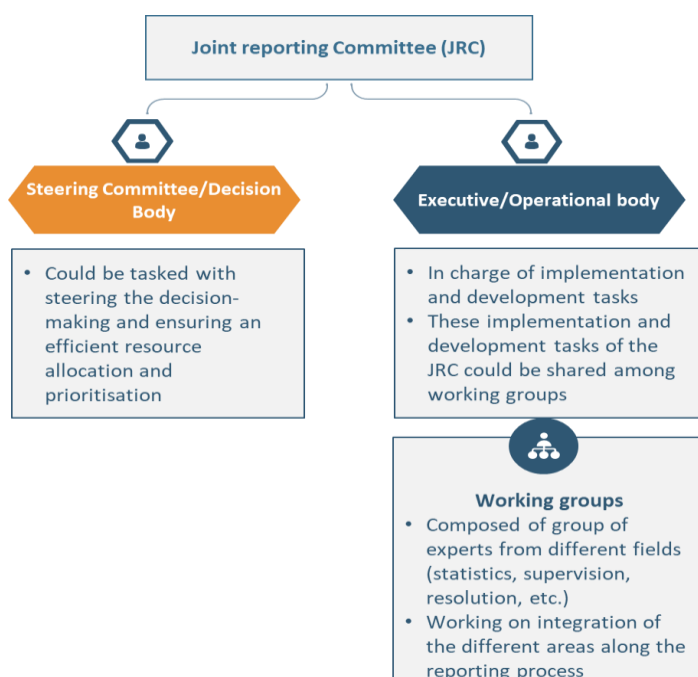
189 Integrated reporting will impact all authorities. The JRC membership and structure should ensure the participation of all authorities involved in the reporting process but also ensure an efficient operational model.

190 The following European authorities, which legislate and/or receive statistical, resolution and prudential data reported by institutions, should be members of the Joint Reporting Committee: the EBA, the SRB, the ECB-SSM, the NCBs in the ESCB and the European Commission.

191 Each EEA Member State should be represented with the appropriate involvement of all the authorities concerned (competent authorities, central banks, resolution authorities etc.). In addition, ways of cooperation and interaction of the JRC with international organisations such as the Financial Stability Board (FSB), Basel Committee on Banking Supervision (BCBS), Bank for International Settlements (BIS) or International Organization of Securities Commissions (IOSCO) could be explored.

192 The JRC could be divided into a steering committee/decision body focused on strategic aspects that could be tasked with steering the decision-making and ensuring an efficient resource allocation and prioritisation is taken into account in the development and implementation of the integrated reporting system and an executive/operational body focusing on operational aspects (related to the implementation, development and approval of the tasks of the working groups set up under its initiative and the data dictionary developments).

Figure 14: Joint reporting committee structure



193 The implementation and development tasks of the JRC could be allocated to working groups or technical work streams composed of groups of experts from different fields that would satisfy the knowledge requirements for statistics, prudential, resolution reporting needs etc. For further details, please see Annex 13 to Annex 15.

7.1.3. Industry involvement

Industry role

194 Considering the complexity of the project and the need to interact closely with the different stakeholders involved, it is necessary to provide further specifications regarding the role of the industry in the development and preparation of the integrated reporting system.

195 According to the feedback provided on the discussion paper, respondents generally agree that the industry should be involved at earlier stages of the reporting process.

196 The table below provides an overview of the envisaged collaboration with the industry.

Table 5: Industry involvement in the reporting process

| Steps along the reporting process definition | Envisaged role of the industry |
|---|--|
| a) Planning regulatory work | Informed about the possible new requirements. |
| b) Drafting regulatory reporting | Consulted in the usual consultation exercises, proposing, or advising on the reporting data as usual. |
| c) Data standardisation of regulatory reporting | Consulted , if necessary, via an extended working group of data standardisation. |
| d) Approval, publication and endorsement | Not involved |

Proportional representation of the industry in the integrated reporting system

197 The integrated reporting system should ensure a proportional representation of the small, medium and larger reporting entities when being called as part of the extended working group of the JRC. A small number of representations from the members of a specific group may make the outcome too customised and unable to scale across the industry.

198 The involvement of smaller and medium-sized institutions will be key to the system, in order to have a fair representation of the industry's concerns along the integrated system implementation and development.

Cost-sharing and resources

199 According to the feedback received on the Discussion paper, the industry acknowledges that the implementation of the integrated reporting system will require substantial human and financial resources. Notwithstanding, the industry is keen to work with authorities offering valuable experts and expertise in view of reporting, aiming to jointly design the future of this matter. It has also been noted that the industry participation on any kind of cost-sharing set up will need to be further investigated once a clear target on data integration is identified, as for the moment, the industry considers it has already made many financial investments for reporting purposes.

7.2. Governance arrangements for data standardisation (define once)

200 In order to increase the efficiency of reporting requirements as regards regular reporting obligations and avoid unnecessary queries, the process of defining the reporting requirements will need to be harmonised in the integrated reporting system. It is necessary then to identify where coordination, collaboration and/or joint work is necessary and where the Joint Reporting Committee (JRC) could have a role in ensuring reporting requirements would be integrated going forward.

201 Once new data requirements occur either from new or amended legislation, authorities should join and plan the next steps together to avoid duplication of reporting requests. To ensure integration, a joint effort would be needed. It will be necessary to share and coordinate plans of statistical, prudential, resolution areas, identifying reporting integration opportunities, assessing integration feasibility. The JRC will be informed beforehand of the new legislative initiatives/requirements and the beginning of integration works.

202 One aspect to consider could be the identification and designation of a leading data authority/authorities (i.e., the authorities that originate new data requirements) in order to implement the new requirements in the most efficient way.

203 The development of the draft integrated reporting requirements would also be a joint effort between the leading data authority and the rest of authorities involved, in order to define the common definition of data, the validation and transformation, the harmonised frequencies, waivers and the other compliance definitions on the scope and characteristics of the reporting institutions. The JRC should be consulted on the draft and final versions of the integrated reporting requirements resulting from the joint efforts of authorities.

204 The table below provides an overview of the cooperation among the authorities, which should also be reflected in the legal mandate of the JRC.

Table 6: Overview of joint-effort tasks among authorities

| Stakeholders involved | Planning regulatory work | Drafting regulatory reporting |
|---|---|---|
| Leading data authority/authorities | | Define a first draft of the regulatory reporting with a proposal with the key elements for the integrated approach: <ul style="list-style-type: none"> - data concepts; - validation and transformation; - well-defined frequencies, waivers; - other compliance definitions |
| Joint effort of authorities | Sharing and coordinating plans of statistical, prudential, resolution areas: <ul style="list-style-type: none"> - identifying reporting integration opportunities; - assessing integration feasibility. | Define the integrated reporting draft* , in JRC working groups including a proposal for common data definitions, including: <ul style="list-style-type: none"> - the data concepts; - the validation and transformation; - the well-defined frequencies, waivers; - other compliance definitions *together with the leading data authority |
| Joint Reporting Committee (JRC) | Coordination role: promote planning and coordination. JRC should be informed of the new requirements before integration works start. | Advisory role: JRC to be consulted on the integrated reporting draft resulting from the joint efforts |

Common regulatory data dictionary governance

205 Given the increasing complexity and size of the different reporting frameworks, governance arrangements should be in place to enable data standardisation through the establishment of a common regulatory data dictionary, in order to increase the convergence of reporting requirements and to avoid unnecessary queries.

206 The management of a common data dictionary should enable the maintenance and consistency of all the data definitions across all the different frameworks and among the different authorities ensuring the permanent support of the existing digital processes. From a technical perspective, this is a complex process that requires a permanent and consistent approach. Such a task should be done centrally and allocated to a dedicated full-time working team, composed of reporting experts with both technical and business knowledge and with relevant legal support. Authorities should provide adequate resources to be able to carry out these centralised tasks.

207 The *data dictionary team* should work in close collaboration with specific working groups created by the JRC that provide the data requirement definitions and the transformations agreed within their individual or joint regulatory work, and should have a role to ensure the overall consistency and quality of the common data dictionary.

Table 7: Regulatory data dictionary team overview

Data dictionary team overview

| | |
|-----------------------------|--|
| Functions | <ul style="list-style-type: none"> • Ensuring the readiness of the common data dictionary • Ensuring the consistency and quality of the data dictionary • In charge of the formal technical modelling • In charge of the formal definition of validation rules at syntactic level • In charge of the formal definition and correctness of transformation rules at syntactic level |
| Governance | <ul style="list-style-type: none"> • Centralised • Permanent team |
| Composition | <ul style="list-style-type: none"> • Business experts to promote convergence on data dictionary definitions • Legal experts to reflect changes on definitions on amended legal acts • Technical experts on reporting and data modelling |
| Links with JRC and industry | The data dictionary team would work in close collaboration with specific working groups created by the JRC including, where applicable, consultation with the industry via an extended working group of the JRC. |

7.3. Governance arrangements for data collection (report once)

208 A precise governance model will need to be defined following the architectural design, but a hybrid model of centralised and coordinated decentralised model could be achieved.

209 A more centralised approach could fit more centralised architectures. A centralised approach would need to be considered in further detail due to the implications it will have on competent authorities. A more decentralised approach could be an option in order to benefit from the investments already made, but it would only be feasible if there were enough interoperability between frameworks to reduce the reconciliation efforts. In addition, it will also rely on a higher level of cooperation between authorities that receive

the data, in order to receive data once for multiple reporting purposes and share it amongst authorities in an efficient manner.

210 Data quality is an important part of the reporting process and directly affects the accuracy of the data reported and could also be managed via a hybrid approach. A coordinated and decentralised approach for data quality offers benefits such as the prompt reaction from authorities at national level and better knowledge of each reporting entity in order to assess its data quality. National authorities could have priority access to the data and quality of the data reported would be checked upon receipt in the integrated system. However, the process would also benefit from an automated and centralised approach, where similar and harmonised systems and formats of validations could improve the data quality process and streamline parallel and manual processes.

7.3.1. Coordination of ad hoc and national data requests

211 The EBA Cost of Compliance Study on supervisory reporting²⁵ and the fitness check on prudential reporting carried out by the European Commission provided evidence on ad hoc requests being particularly challenging and resource intensive and hence hampering efficiency of EU prudential reporting. Authorities deem ad hoc requests crucial, especially during crisis times, but also agree that there is room for improvement on how they are managed and used.

212 The introduction of a coordination mechanism through a possible CDCP (long-term view) would aim to further support initiatives on data requests by facilitating the reusing and sharing of data between authorities and enhancing transparency by including data definitions into the common regulatory data dictionary. The need for further coordination has also been one of the conclusions of the comprehensive study on Cost of Compliance.

213 There are also some pre-conditions for this coordination mechanism to work in an appropriate manner and be efficient:

- *Agile approach:* authorities should receive the data requested in a sufficiently timely manner to meet the needs of authorities' mandates. This may include the need for rapid responses, for instance during periods of market stress or in crisis situations. Any administrative burden should be streamlined.
- *Provide assistance to authorities:* some guidelines and standards should be provided to authorities in order to follow harmonised standards for the modelling of definitions and formats along the process.

²⁵ <https://www.eba.europa.eu/regulation-and-policy/supervisory-reporting/cost-compliance-supervisory-reporting>

- *Legal powers to request information:* the introduction of such an agile coordination mechanism will not impact the authorities' legal powers to request information.
- *Exclusions or ex-post inclusion:* there may be situations where it merits excluding a request or including it only ex-post into the system, for example in a crisis situation where data is very urgent and also very much institution specific, the request may not merit standardisation.

214 In the short/medium term, best practices among authorities should be developed in order to coordinate better the ad hoc and national data request. In the long term and depending on how the CDCP may be set up, some more automated governance processes could be implemented, and further investigation by the JRC will be needed once the CDCP is in the implementation phase. Further details on best practices and the coordination mechanism are provided in Annex 15.

7.4. Governance arrangements for the data exploration (data sharing)

7.4.1. Data access and data sharing

215 Improved data-access and data-sharing arrangements across the relevant authorities at national and EU level would further increase the value of reported data and streamline the reporting processes by reducing the duplication of data collected by multiple authorities to achieve the objective of 'report once'. In some cases, it has been noted that there are some difficulties in sharing data among authorities due to legal barriers, and in other cases, to avoid data duplication, some MoUs have been agreed for data sharing, which are themselves a 'cost' as they cannot always solve the legal issues and can create further delays and inefficiencies in the process. Different IT systems also make data sharing burdensome and technology could help to streamline and automate processes. There is still room for improvement with regard to data sharing and cooperation among authorities. Hence, the Article 430c CRR mandate calls the EBA to investigate a CDCP which should serve as a point of contact for the competent authorities, where they could receive, process, and pool all data and, in addition, hold the coordination role for the exchange of information and data between authorities.

216 From a governance perspective some principles for data access and a flexible approach to avoid data silos would need to be defined. These principles should specify:

- The data ownership of the different types of datasets.
- Confidentiality settings and data protection.
- The list of participating authorities and the possible reciprocal access through data agreements by specifying:

- Scope of data access: the central platform would provide authorities with a level of access in line with their data needs, providing further detail and specificity as to what data each competent authority is entitled to receive.
- Permitted use of data: the permitted uses and other relevant mandates would need to be defined, as would protection of confidential information that is accessed and consequences of any breach.
- Data responsible in case of any breach.

Legal obstacles and challenges

217 Any potential boundaries of the applicable legal frameworks regarding the interactions and derived governance structures among participants of the integration process (legislators, participating authorities, industry) will need to be further assessed.

218 In addition, there might also be some other legal barriers with regard to data sharing among authorities and the reuse of data for different purposes.

219 Some authorities could be reliant on the CDCP to do some checks on their behalf. This outsourcing of some tasks might not be allowed in some jurisdictions without a change in law or regulation. This particular issue would have to be addressed in later stages of the analysis once a clearer picture of the integrated system functioning is set up.

220 The legal boundaries regarding the level of granularity in data collection from existing law (e.g., with regard to confidentiality and data privacy) should be closely investigated. In this context, the possibility to amend the relevant law, where appropriate and possible, or to find alternatives (e.g., anonymisation) should also be considered.

221 Legal constraints in national or European Union law as well as in third-country law, aiming to protect the public interest might impose further restrictions on the collection of granular data.

222 The collection and use of personal data should comply with The GDPR in the EU. According to the GDPR, collecting personal data for statistical purposes does not represent an insurmountable constraint for the data collection, provided that aggregated data no longer permit the identification of data subjects²⁶.

223 If personal data were collected, it might require anonymisation or pseudonymisation. Anonymisation requires that all information which would allow an inference to the actual natural person to whom the data belongs, be removed. When using pseudonymisation, data

1. ²⁶ Recital 162 and Art. 89 GDPR.

is processed in a way that an inference to the actual person to whom the data belongs is not possible anymore.

224 Furthermore, while reporting institutions remain responsible for the content of the data, data receiving authorities become responsible for compliance with data protection requirements as soon as they receive the data. Considering this, any integrated reporting approach should be based on the assessment of European law in this area, as well as any national implementations of it and their potential ‘gold-plating’, i.e. stricter national implementation. Especially with regard to the need-to-know principle, it is important to be able to assess in any case who is able to access what kind of collected data, at which level of granularity and for which purpose.

7.4.2. Information security considerations

225 The financial sector is a highly regulated environment; thus, information security and compliance will be important drivers during the choice of the integration model to be used. This will require that any solution should follow ‘security by design’ principles. Further, as recent events have shown, data protection and privacy concerns should be addressed early on (‘privacy by design’), so that any risks related to unlawful processing of sensitive data are mitigated. This privacy by design is indeed underpinning GDPR requirements.

226 Any integrated model should consider and define, at minimum, the following:

- A RACI model, specifying the responsible, accountable, consulted and informed people in the process and which governs all security efforts.
- The integrated reporting system should have a unified information security policy that establishes the protection goals for the confidentiality, integrity and availability of the system and data.
- A clear access management policy, coherent security markings for data assets (classification) and protection requirements for each marking category.
- An overarching risk management framework that constantly assesses the system and keeps track of the risks identified in a centralised risk register, which should hold at the minimum, the risk description, likelihood and impact, risk owner and the mitigation actions foreseen to lower the risk.
- The system design should follow well-established design and architecture patterns and use standard cryptographic primitives and protocols.
- The system should assign resources for maintenance activities (operating, patching, updating, upgrading, etc.).
- The system should be constantly tested and audited.