



Ad Hoc Joint AMI Session

Results of the External Review of TARGET Services

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Scope of the review

By order dated 21 December 2020, the executive management of the ECB engaged us to review the backgrounds and causes of the incidents on 16 March 2020, 25 May 2020, 11 August 2020, 23 October 2020, and 13 November 2020 in relation to the TARGET Services with regard to the following topics:

- Phase I** - Planning, preparation and initial analysis of root causes of the incidents relevant for the review
- Phase II** - Deep dives root cause analysis of the incidents and initial analysis of the related as-is processes
- Phase III** - Deep Dives as-is processes, design and implementation as well as operating effectiveness testing, derivation of findings and recommendations

Phase III included drawing more general lessons and proposing recommendations for improvements in the following areas, reflecting the functional and technical interdependencies as well between the TARGET Services:

- Change & release management** - Work stream I
- Business Continuity Management** - Work stream II
- Fail-over and recovery tests** - Work stream III
- Communication protocols** - Work stream IV
- Governance** - Work stream V

After the conclusion of the second phase, it was decided to expand the external review on 19 February 2021 to include the following review area:

- Data Centre & IT Operations** - Work stream VI

Review procedures and applicable review criteria

In selecting and carrying out our review, we have chosen a risk-oriented approach in order to be able to assess the processes and measures introduced with sufficient certainty.

We have aligned our review procedures, in particular our enquiries, evaluations and analyses, with the auditing standard "International Standard on Assurance Engagements (ISAE) No. 3000 (Revised).

In addition, we used different industry standards and guidelines for our further review procedures, our assessment of the regular processes and measures and as a benchmark for the assessment of the review results (for more information see page 3 of the full-length report).

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Structure of the report

- 1 Scope of the review  **Section 1** contains a description of the scope and the different phases of the review based on the request for the supplementary offer.
- 2 Executive summary  **Section 2** provides an overall summary of the results of the external review.
- 3 Description of the incidents  **Section 3** briefly introduces the TARGET Services and describes the incidents on 16 March 2020, 25 May 2020, 11 August 2020, 23 October 2020, and 13 November 2020.
- 4 Review procedures performed and findings  **Section 4** provides comprehensive summary of performed review procedures, applicable review criteria, process descriptions, findings, and recommendations for findings with high/medium severity rating.
- 5 Practitioner's conclusion  **Section 5** contains the signatures of the report.

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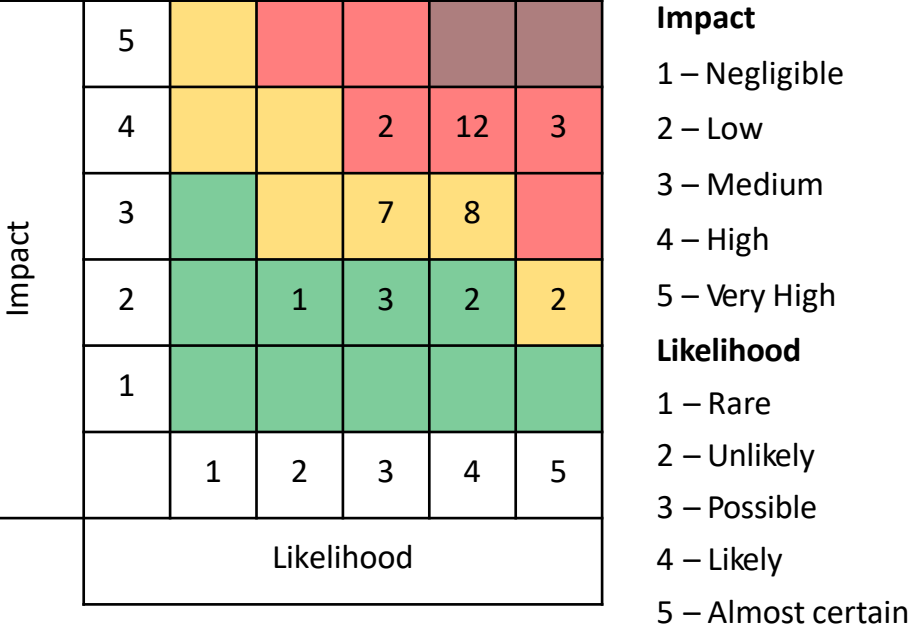
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Allocation of the findings

We have identified a number of individual findings that led us to the conclusion that these findings solely or in total are likely symptoms of larger critical overarching organisational, process, control and/or governance issues.

Heat map (based on ECB’s risk tolerance policy matrix)



Number of findings per Work stream (WS)

	High	Medium	Low	Total per WS
Work stream I.	3	5	2	10
Work stream II.	2	1	0	3
Work stream III.	2	2	1	5
Work stream IV.	2	4	2	8
Work stream V.	4	4	0	8
Work stream VI.	4	1	1	6
Total	17	17	6	<u>40</u>

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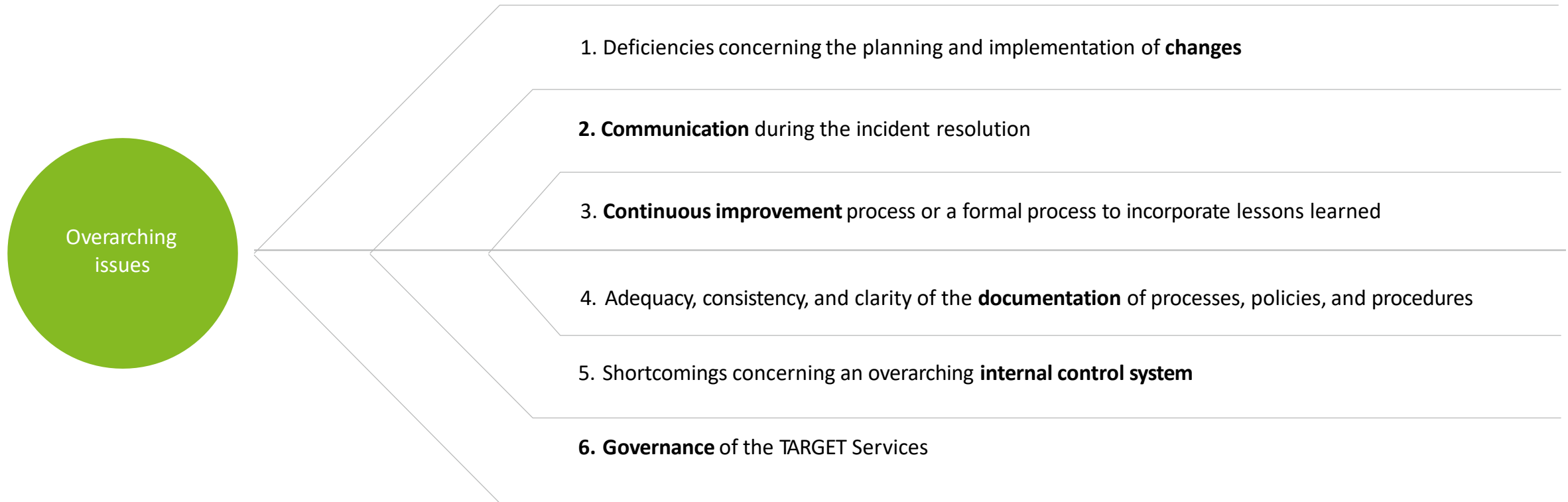
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Presentation of the overarching issues

Based on the detailed findings, we identified six major overarching issues. We come to the conclusion that these overarching issues either directly or indirectly contributed to the occurrence of the incidents, or had an impact on the incidents' severity during their resolution.



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Presentation of the overarching issues

The following two overarching issues have had a more direct and closer relationship to the incidents and their resolution:



The first overarching issue concerns deficiencies with regard to the **planning, testing, and implementation of changes** in particular to the following aspects:

- The change planning process does not include a comprehensive risk-based assessment and planning approach with defined minimum information requirements as well as objective criteria for decision-making
- The test management approach does not adequately reflect the scope, complexity, potential service interruptions, timely recoverability and underlying risk of a change to derive an adequate extent of testing

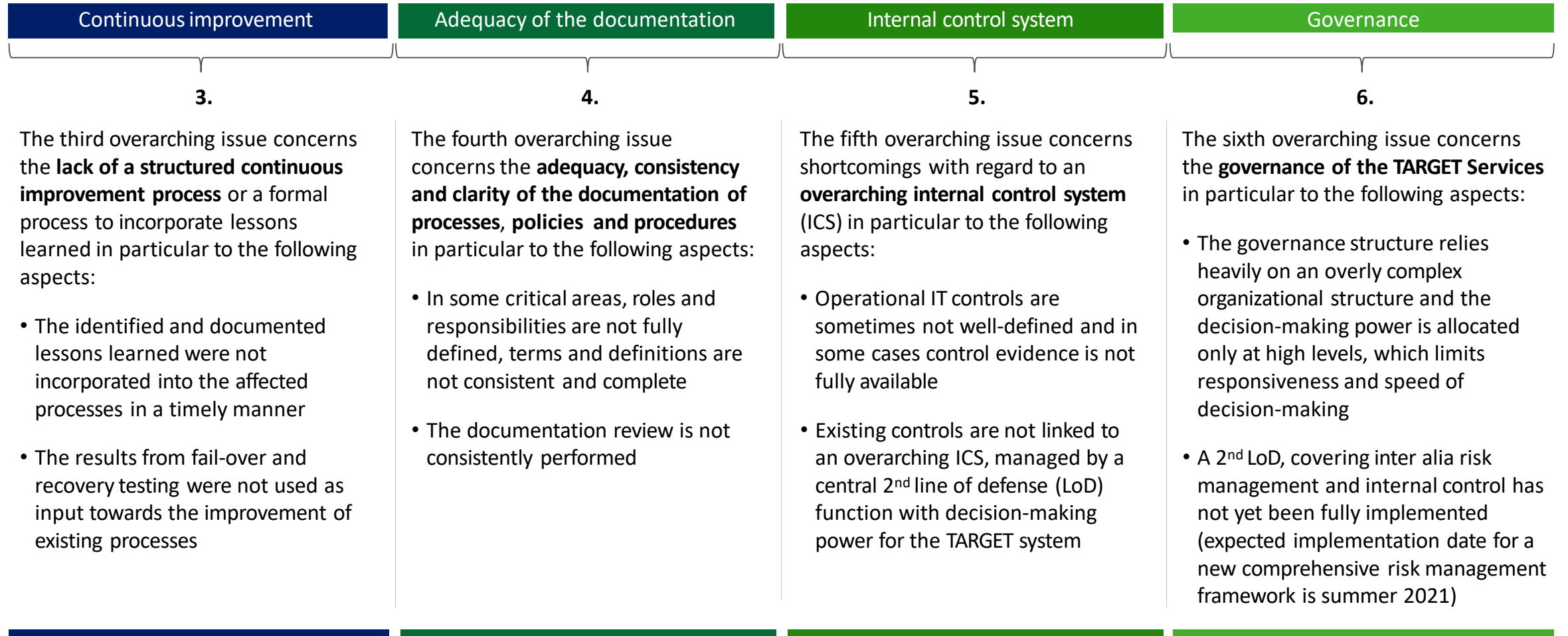
The second overarching issue concerns **communication during the incident resolution** in particular to the following aspects:

- The market participants perceived the information availability as inadequate, due to the limited usability of the ECB website, as well as unclear roles and responsibilities during the incident resolution
- The Central Banks provide information regarding incident resolution via their respective websites, which differ from the information provided by ECB

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Presentation of the overarching issues

The following four additional overarching issues have had – due to their nature – an indirect, contributory effect on the incidents :



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Recommendations

Based on the presented overarching issues we recommend – on a high level – significantly improving certain aspects of TARGET Services:

Implement risk assessments within relevant processes, especially in change management and deciding criticality of processes and IT elements, in particular **business impact analyses** (overarching issues 1 and 5).

Improve documentation by inter alia introducing **umbrella documents** for complex processes, implementing a CMDB spanning all TARGET Services' IT elements and requiring more stringent documentation of roles and responsibilities (overarching issue 4).



Improve relevant processes, inter alia **communications with external stakeholders** and **continuous improvement** / lessons learned (overarching issues 2 and 3).

Enhance organisational and governance structures, including **implementing a common 2nd LoD**, responsible for implementing and running a comprehensive risk management and overarching internal control system spanning all platforms and services with **appropriate staff, in terms of both quality and quantity** (overarching issues 5 and 6).

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Conclusion

TARGET Services today have evolved considerably from the time their structures and governance was set up. New products, new groups of users, added processes and technologies result in additional requirements and challenges that need to be adequately addressed. Improvements based on our recommendations are necessary and should be addressed urgently. TARGET Services should be proactive about these developments and aim for meaningful improvements.

Full review of governance structure

- Perform a full organizational review covering relevant good governance principles
- Include all involved parties and levels to formulate an updated target operating model
- Address current and future organizational, resource, and governance needs

Prioritization of measures to mitigate review findings

- Analyse the timing of activities to implement the measures proposed for TARGET Services
- Review to what extent specific measures for the TARGET Services can be implemented with increased priority to immediately reduce risk exposure

Establishment of a framework of internal control, quality and risk management within a strong 2nd LoD to safeguard improvements made

- Implement an independent, superordinate internal control, quality and risk management (2nd LoD function) and reporting line to an independent governance body
- Evolve this framework into a future target operating model, taking into account TARGET consolidation
- Guarantee the TARGET Services' continued improvements to safeguard a high level of internal control, quality and risk management

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