

Deutsche Bank
Group Audit



Automated Testing: A Strategic Ally for Modern Audit

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21/22 May 2026, Lisbon, Luca Boaretto & Tiziana Casaula

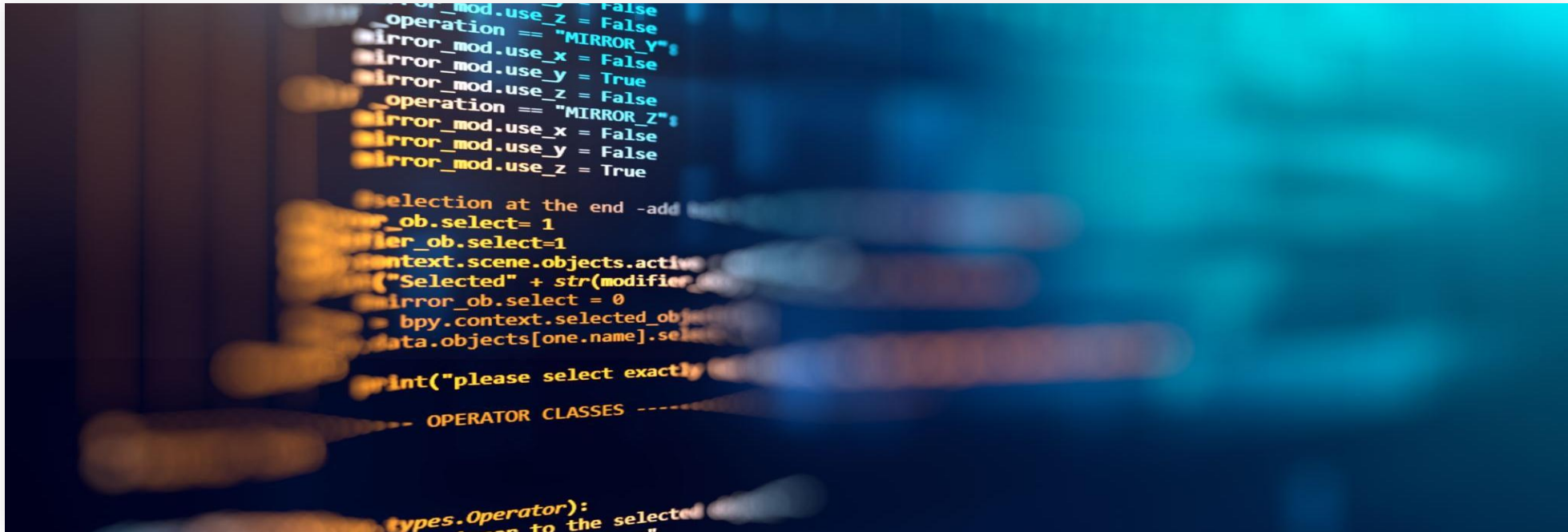
Agenda



- 1 A New Innovative Audit Approach
- 2 Our Approach: How DB Implements Automated Testing
- 3 Selected Use Cases developed
- 4 Benefits and Challenges of Automation
- 5 Conclusion: That's why a Strategic Ally

A New Innovative Audit Approach

Definition of Automated Testing



Automated testing enables the Internal Audit function to evaluate the effectiveness of controls using scripts, algorithms, or **Data Analytics techniques** including GenAI – rather than relying solely on testing controls manually and sampling.

This approach is particularly useful for **high-volume, rules-based or highly standardised processes** such as user access reviews, transaction monitoring, and application controls.

A New Innovative Audit Approach

Why Automated Testing differs from Data Analytics



Dimension	Data Analytics	Automated Testing
Primary objective	Risk insight & exploration	Control effectiveness assurance
Audit lifecycle	Risk assessment & scoping	Substantive control testing
Nature	Exploratory / diagnostic	Rule-based / deterministic
Governance	Flexible, analyst-driven	Methodology- & QA-governed
Output	Indicators, anomalies, trends	Pass/fail results & audit evidence
Example: Name List screening	- Extraction of NLS alerts and processing timestamps - One-off analysis to identify delays or operational bottlenecks - Results used to support audit judgement in a specific audit - Focus: insight, exploration, understanding patterns - Outcome: explains <i>what happened</i> and <i>where to look</i> Analytics helps auditors ask better questions	- NLS control requirement translated into a formal test rule (e.g., SLA respected, alerts consistently processed) - Script executed on 100% of NLS population - Clear pass/fail outcome against predefined criteria - Test reusable across audits and over time - Outcome: <i>consistent, scalable assurance on control effectiveness</i> Automated testing provides objective and repeatable assurance

Automated testing is not a synonym for Data Analytics.

Instead:

Data analytics techniques are used to design and execute automated tests,

*But only **Automated Testing** delivers formal audit assurance*

Takeaway → **Data Analytics** helps auditors **understand risk**; **Automated Testing** allows auditors to **formally test controls** at scale and provide assurance.

A New Innovative Audit Approach

Benefits for Internal Audit



1. Enhanced Audit Coverage

- Automation enables full-population testing through the analysis of entire datasets,
- Increased audit coverage beyond small sample reviews,
- Improved risk understanding and mitigation.

2. Consistency and Reliability

- Automated scripts ensure repeatability and reduce human error for high-risk audit controls,
- Identical logic is applied uniformly across audits, reducing variability from manual interpretation.

3. Faster Audit Timeliness

- Automation accelerates data processing, enabling earlier audit insights and quicker remediation,
- Automation supports 'Agile' Audit cycles and re-execution of use cases.

4. Resource Optimization

- Automation reduces manual work, allowing auditors to focus on complex analyses and reviews,
- Documentation and audit trails is improved.

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Our Approach: How DB implements Automated Testing

Methodology and Collaboration



1. Collaborative Development Process

- Automated testing development involves teamwork between Subject Matter Experts (SMEs), Auditors, and Data Analysts ensuring precise test criteria,
- Audit objectives and Test Attributes must be clearly agreed and set.

2. Data Preparation and Validation

- Data Analysts assess dataset availability and quality, validating field mappings and onboarding new data sources,
- Dialogue with Data Owners is key to understand database structure.

3. Test Script Development and Review

- Scripts are developed with business rules and logic, followed by iterative SMEs/Auditors validation and peer review for accuracy,
- This step can be time-consuming due to the need to tweak the script logics and re-run the queries.

4. Result Analysis and Maintenance

- Post-execution analysis identifies anomalies and supports audit conclusions/findings,
- Scripts are maintained for updates and changes. Automated Testing ideally gets adapted by the 1 LoD.

Our Approach: How DB implements Automated Testing

End to End Automated Testing Process



Defining Objectives and Data Assessment 1

Process starts with setting control objectives and assessing reliable data availability and onboarding needs. Teams collaborate closely and leverage on the DA use cases created and utilized in previous audits.



Script Development and Documentation 2

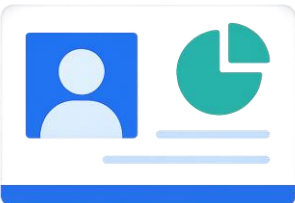
Scripts are developed with logic reflecting control requirements, including rules, thresholds, and exceptions, fully documented. Data Analysts:

- use technology to create test scripts and produce the automated testing results,
- Explores opportunities to use AI/LLM based tools for further testing enhancements.



Testing, Execution, and Exception Review 3

Scripts undergo unit testing, peer review, full data execution, and detailed exception analysis with audit evidence. Results of the automated testing are reported either in Audits or as stand-alone testing. and raises findings where applicable



Insights Synthesis and Maintenance 4

Findings are synthesized for audit conclusions and management, with scripts stored and versioned for future use.

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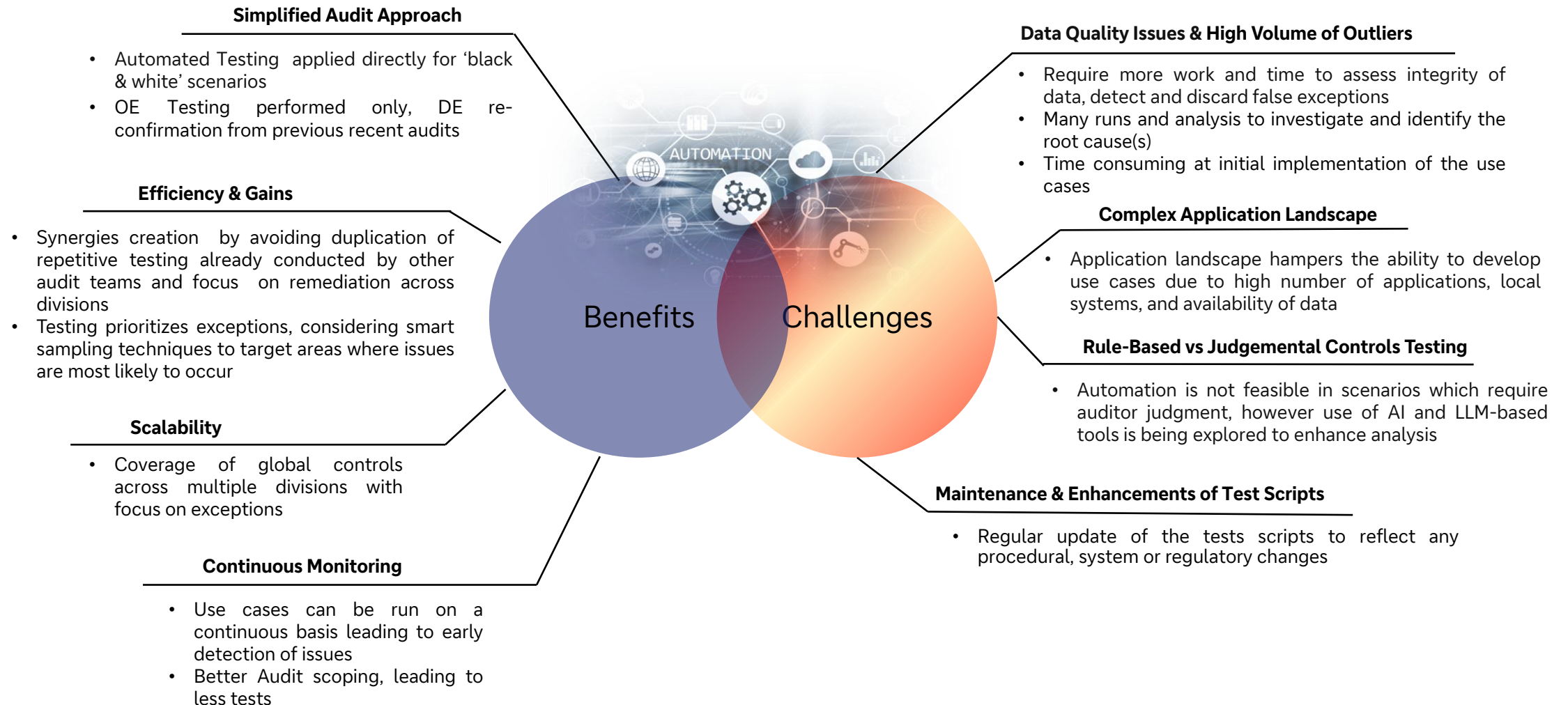
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Benefits and Challenges of Automation

What we have learnt so far



Benefits and Challenges of Automation

Backward looking evaluation and Development Priorities



So far

Recurrent patterns

- Automated testing mainly applied to specific, high-volume and rules-based areas
- Strong focus on use-case driven execution, linked to individual audits
- Limited standardisation and reuse of automated tests across audits
- Automation often supporting efficiency and coverage, rather than strategic assurance
- High dependency on specialised Data Analytics skills

What auditor should consider

- Automated testing complements, but does not replace, professional judgement
- Focus efforts on controls that truly matter for risk mitigation
- Balance innovation with robust governance and audit scepticism
- Avoid tailoring tests too narrowly to individual audit contexts
- Ensure alignment between automated testing logic and control design intent

To be

Audit testing approach

- Automated testing embedded in the audit methodology, not used ad-hoc
- Increased focus on full-population, repeatable and scalable testing
- Shift from point-in-time testing to forward-looking risk insights
- Stronger integration with audit planning and risk assessment

Coverage and scalability

- Expanded coverage across key risk domains, supported by advanced analytics and AI
- Increased reuse of standardised automated tests across audits and regions
- Foundation for continuous auditing and monitoring capabilities

Audit capabilities

- Strengthened auditor skills through targeted training and upskilling
- Closer collaboration between auditors, data specialists and SMEs
- Progressive evolution towards a data-driven and technology-enabled audit function

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Conclusion: That's why a Strategic Ally



A transformative evolution for Group

- Automated Testing enhances coverage, consistency, and timeliness, enabling full-population testing and deeper risk insights.
- It allows auditors to shift effort from manual steps to value-adding analysis, strengthening audit quality.

Clear benefits, manageable challenges

- While automation brings efficiency and exception-focused testing, it requires continuous script refinement, stable data quality, and coordinated stakeholder engagement.

A methodology built on collaboration

- Success relies on strong alignment between Audit Teams, SMEs, and Data Analytics, supported by robust data governance and shared understanding of controls.

Scalable infrastructure enabling continuous assurance

- BigQuery, AI/ML tools, and centralized data platforms provide the backbone for large-scale, repeatable, and high-quality automated testing.

A roadmap toward continuous, intelligent auditing

- With use cases across KYC, AFC, Access Management, and more emerging areas, Automated Testing is becoming a central component of the modern audit approach.





Thank you for your attention

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