

A Practical Three-Tier Framework for Data Privacy

Central Bank of the Republic of Trkiye

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Lisbon



Agenda

■ The Challenge

■ The Solution

- Layer 1: Controlled Environment & Data Access
- Layer 2: Data Integrity & Privacy-Enhancing Techniques
- Layer 3: Continuous Monitoring & Auditing

The Challenge

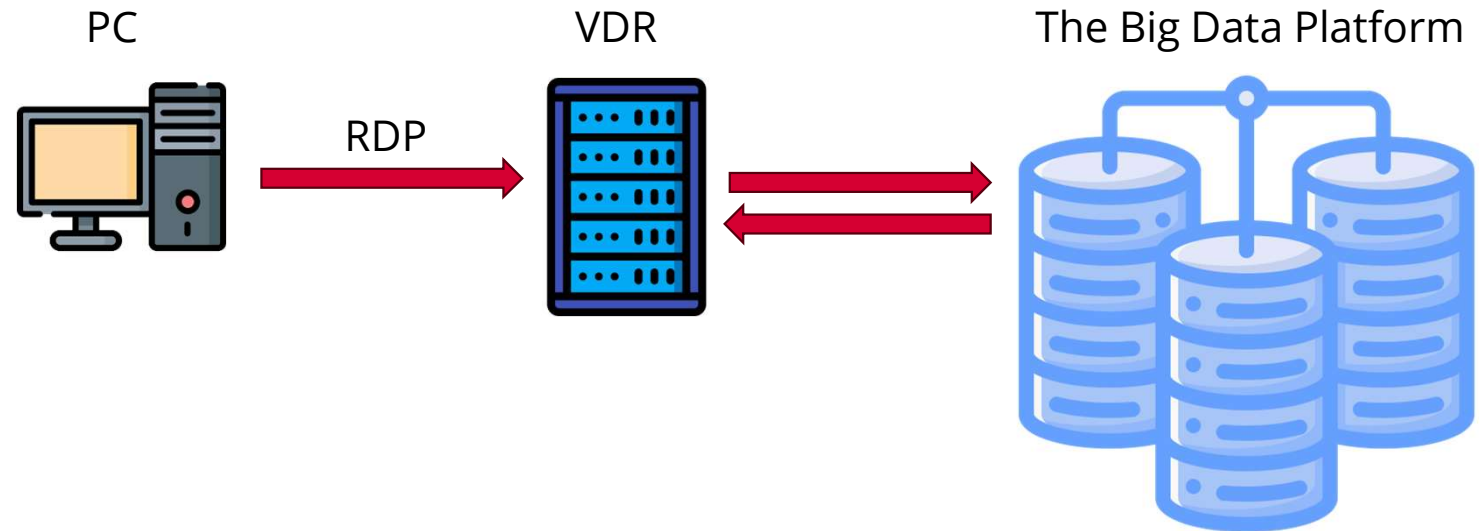
- Massive, increasingly complex datasets
- Legal and regulatory obligations leave no room for compromise
- A single leak carries a reputational cost



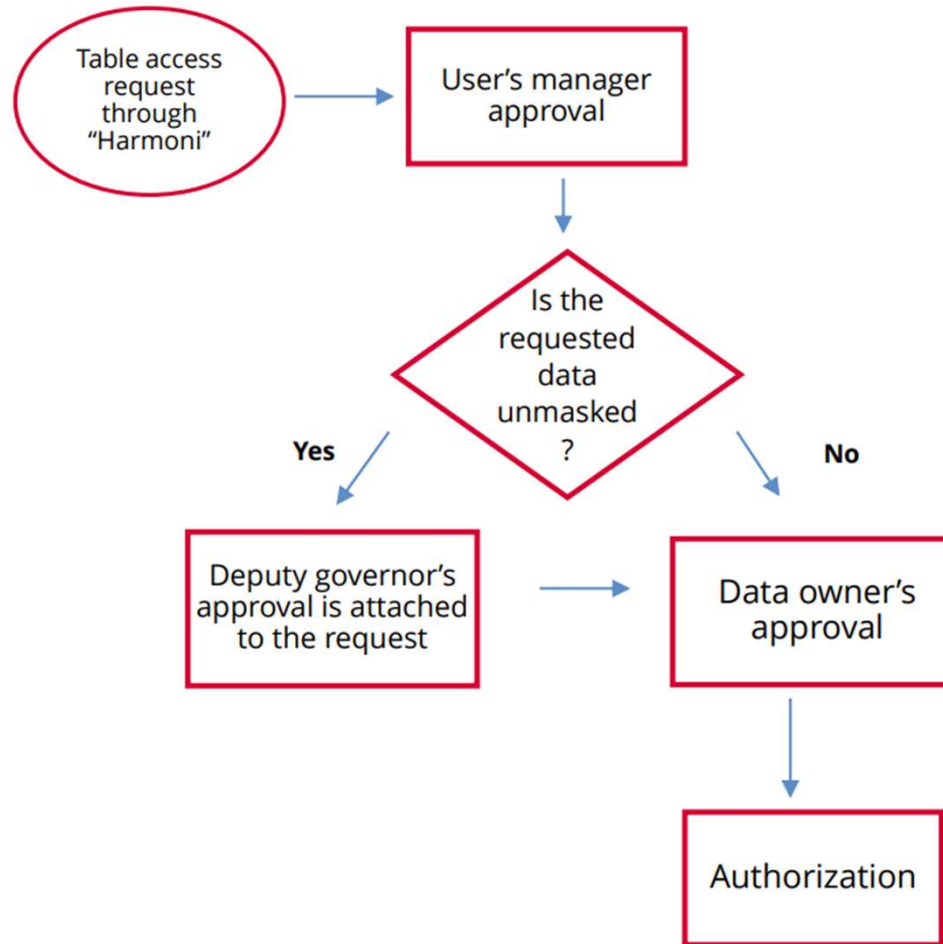
The Solution

Layer 1: Controlled Environment

- **No cloud:** All data is stored and processed on-premises.
- **No local analysis:** Work cannot be done on personal computers.
- Access the big data environment only through isolated Virtual Data Rooms (VDRs).



Layer 1: Access Approval Flow



Layer 2: Data Masking

Personal and commercially sensitive data is masked.

- Tax ID
- National ID
- Bank Code
- Legal Name

- Data is masked at the source and the masks are embedded in the table.
- When determining the masking algorithm, we pay attention to:
 - Irreversible transformation via salted hashing,
 - Avoiding collisions,
 - Preserving table foreign key relationships,
 - Maintaining system performance.

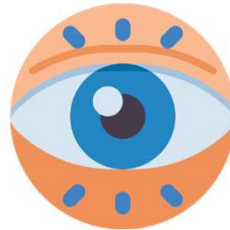
Layer 2: Data Inventory System

- Comprehensive Research Portal (Operational Transparency)
 - Track remaining disk quota on servers
 - Monitor data extraction authorizations and table access durations
 - Share important announcements and research documents
- Log-Driven Quality Prioritization
 - Analyze usage logs to identify most accessed datasets
 - Focus resources on popular data that drives value
- AI-Powered Metadata Enrichment
 - Leverage AI to automatically generate table and column descriptions
 - Send drafts to table owners for validation

Layer 3 : Continuous Monitoring & Auditing

- Daily automated log reviews to verify security rule compliance (Open/Closed status).
- Instant detection of unauthorized file transfer attempts via all vectors (e.g., printers, email).
- Audit logs periodically reviewed by internal auditors.

All access, operations and extractions continuously monitored by



Humans



Automated Software



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