From Reference Architecture to Implementation

Experiences from Dutch e-government

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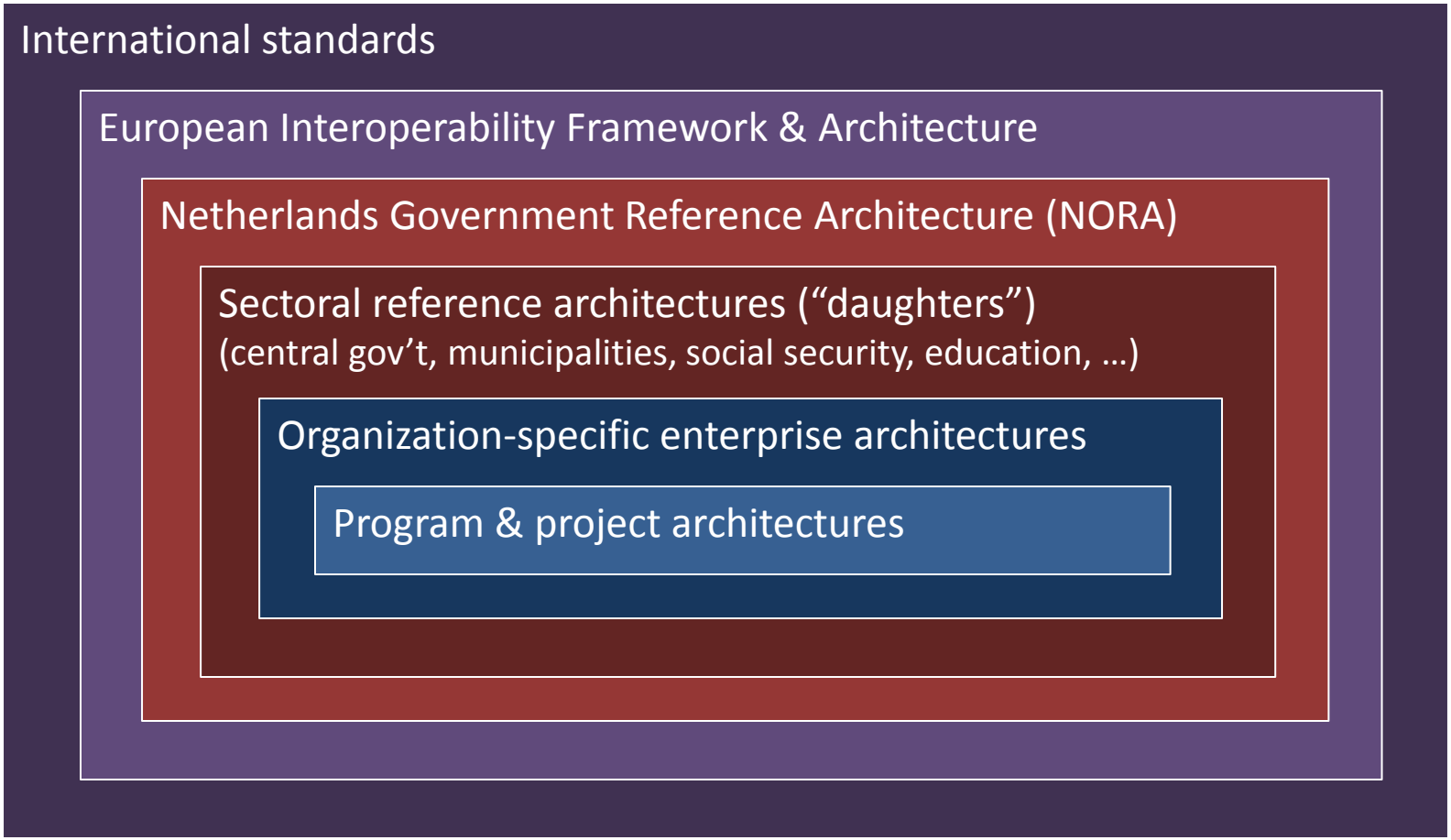
e-Government in The Netherlands

- Three-level structure of Dutch government
  - National
  - Provincial
  - Municipal
- Budgets largely distributed by the central government
  - only small local tax base
- But quite some local autonomy on spending
  - may lead to heterogeneous solutions
- How to manage e-government architecture in this context?

Reference Architectures

- Reference architecture: provides a **frame of reference**
- Focused on **generic, reusable, interoperable structures**
- Not directly implemented, no solution architecture
- But used as a constraint for more concrete architectures
- Typically contains:
  - architecture principles
  - generic building blocks
  - patterns
  - standards

Hierarchy of Reference Architectures



NORA: the National Reference Architecture

- NORA = “Nederlandse Overheid Referentie Architectuur”: Dutch government reference architecture
- First version in 2006: **architecture principles** for e-government
- In later versions, specific topics and **building blocks** have been addressed in more detail
  - e.g. basic registries, standards, security, collaboration
- Focus on collaboration
  - Wiki (www.noraonline.nl), co-creation approach

Basic Architecture Principles of NORA

Every government service must be:

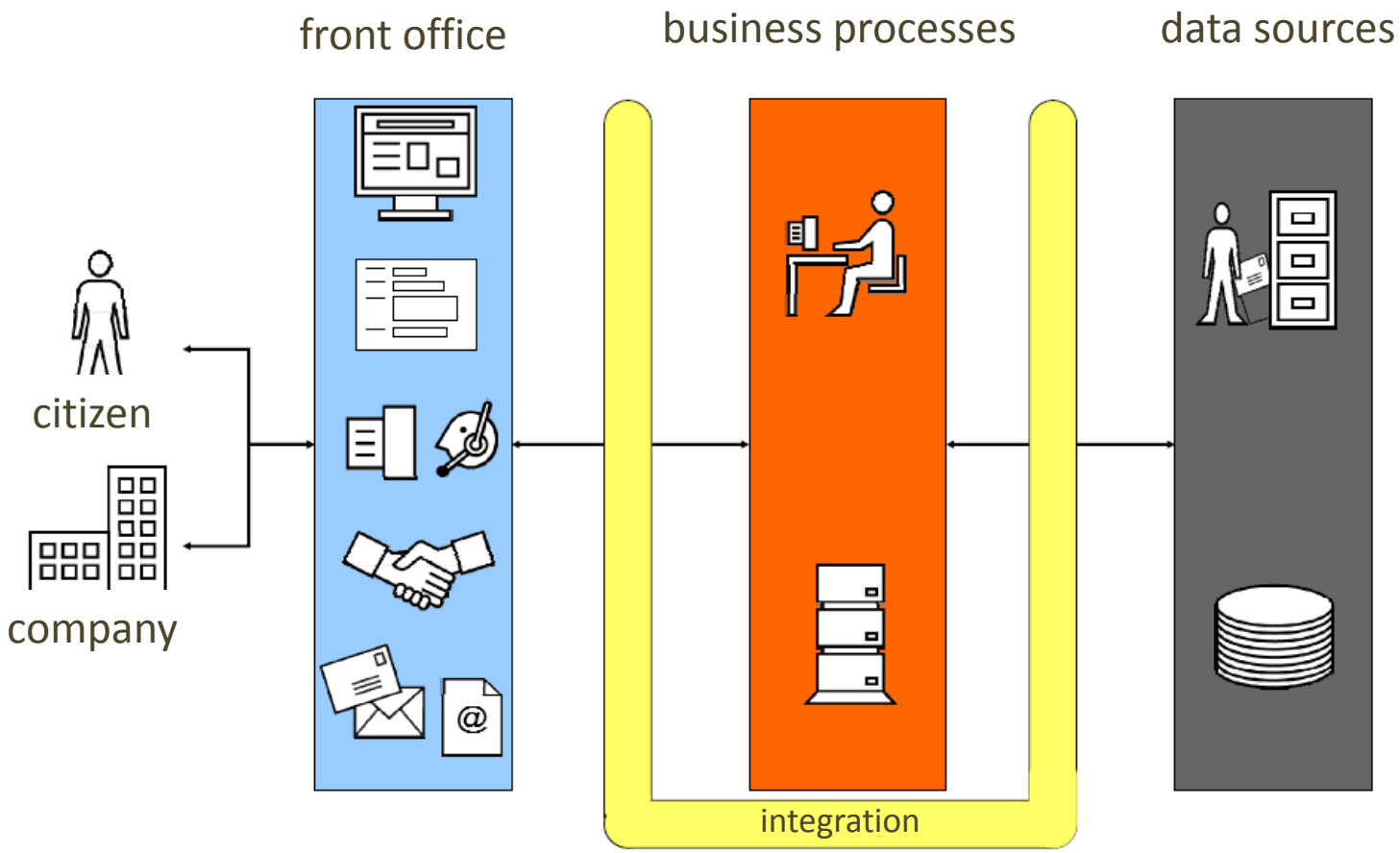
1. Reliable
2. Bundled
3. Necessary
4. Receptive
5. Proactive
6. Standardized
7. Accessible
8. Transparent
9. Confidential
10. Findable

Derived Principles (examples)

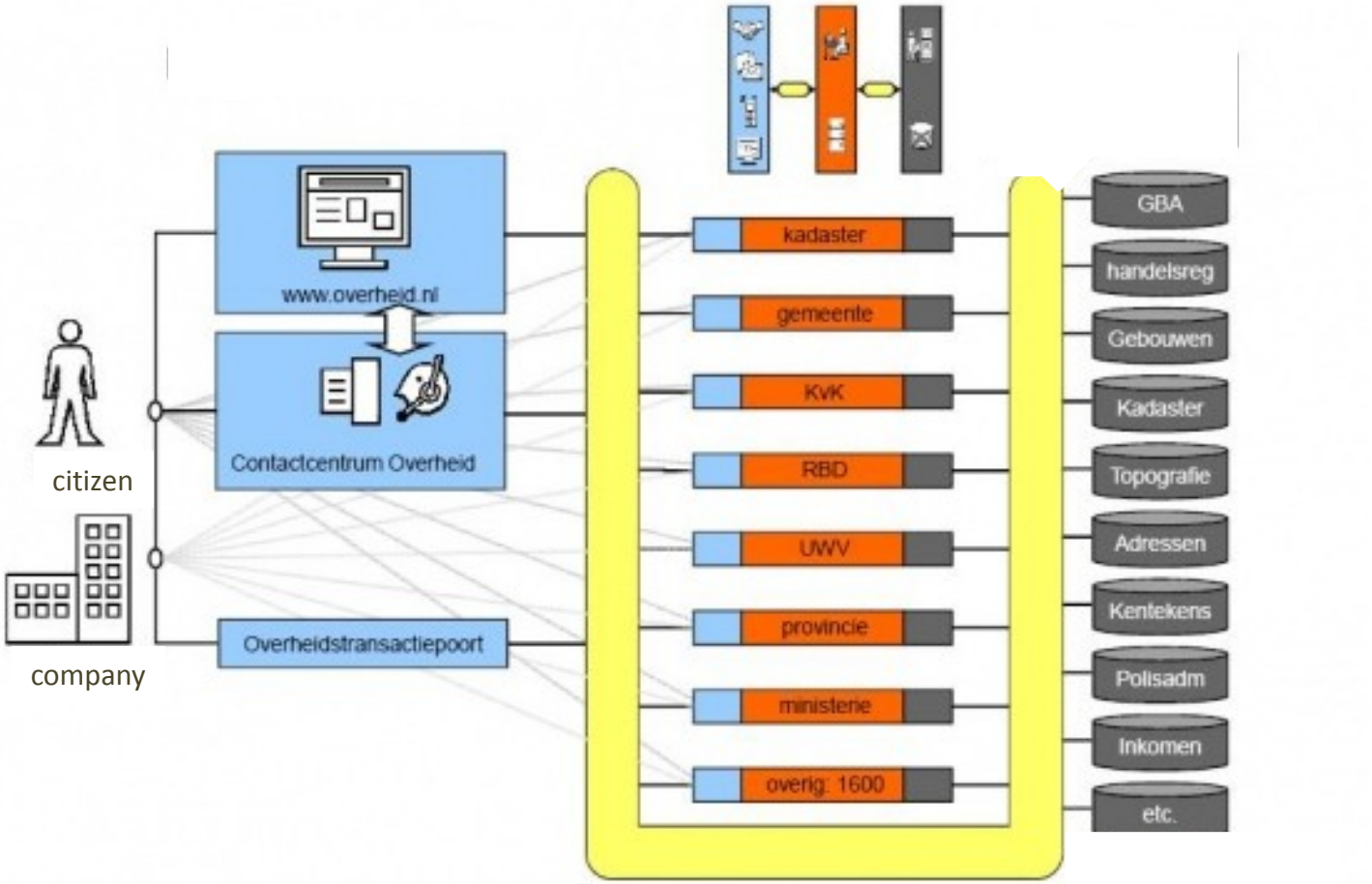
Basic principles are detailed into 40 derived principles, such as:

- Services are reusable
- Services are complementary (no overlap)
- Use of open standards
- Use of national building blocks
- Core registers are leading
- No wrong door
- Channel independence
- …

Generic Structure of Government Agencies



Structure of Government



Building Blocks (examples)

Centrally developed building blocks for e-government:

- Basic registries
  - Citizen records, income, social security, companies, buildings & addresses, topographic map, etc.
- Government web portal
- Digital identity provider (DigiD)
- Message boxes for citizens and companies
- Catalogue of services
- Communication standards
- etc.

Governance

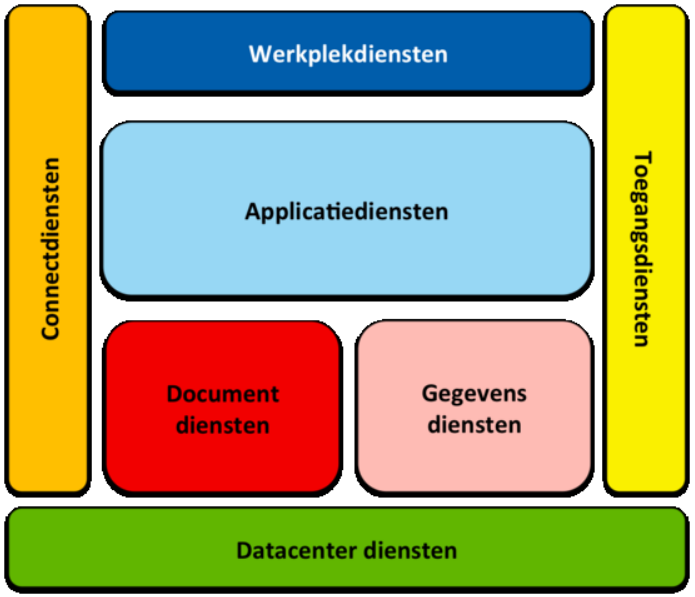
- Use of NORA has been mandated by the government
- Architecture board with representatives from different domains and sectors
- Government agencies self-assess their compliance
  - Main difficulty: many principles are rather abstract. When are you compliant?
- And most of NORA's impact is through its sector-specific 'daughter' architectures

NORA Daughters

- MARIJ & EAR: Departments
- GEMMA: Municipalities
- PETRA: Provinces
- WILMA: Water boards
- MARTHE: Security & Justice
- ROSA: Education
- AIDA: Long-term care
- CORA & VERA: Social housing
- TARA: Archives
- KARWIJ: Social security
- …

EAR: Central Government

- Divided in generic, organization-specific and business process-specific information domains
- Architecture principles, standards and services for 7 domains:
  - workplace services
  - application services
  - document services
  - data services
  - communication services
  - access services
  - data center services



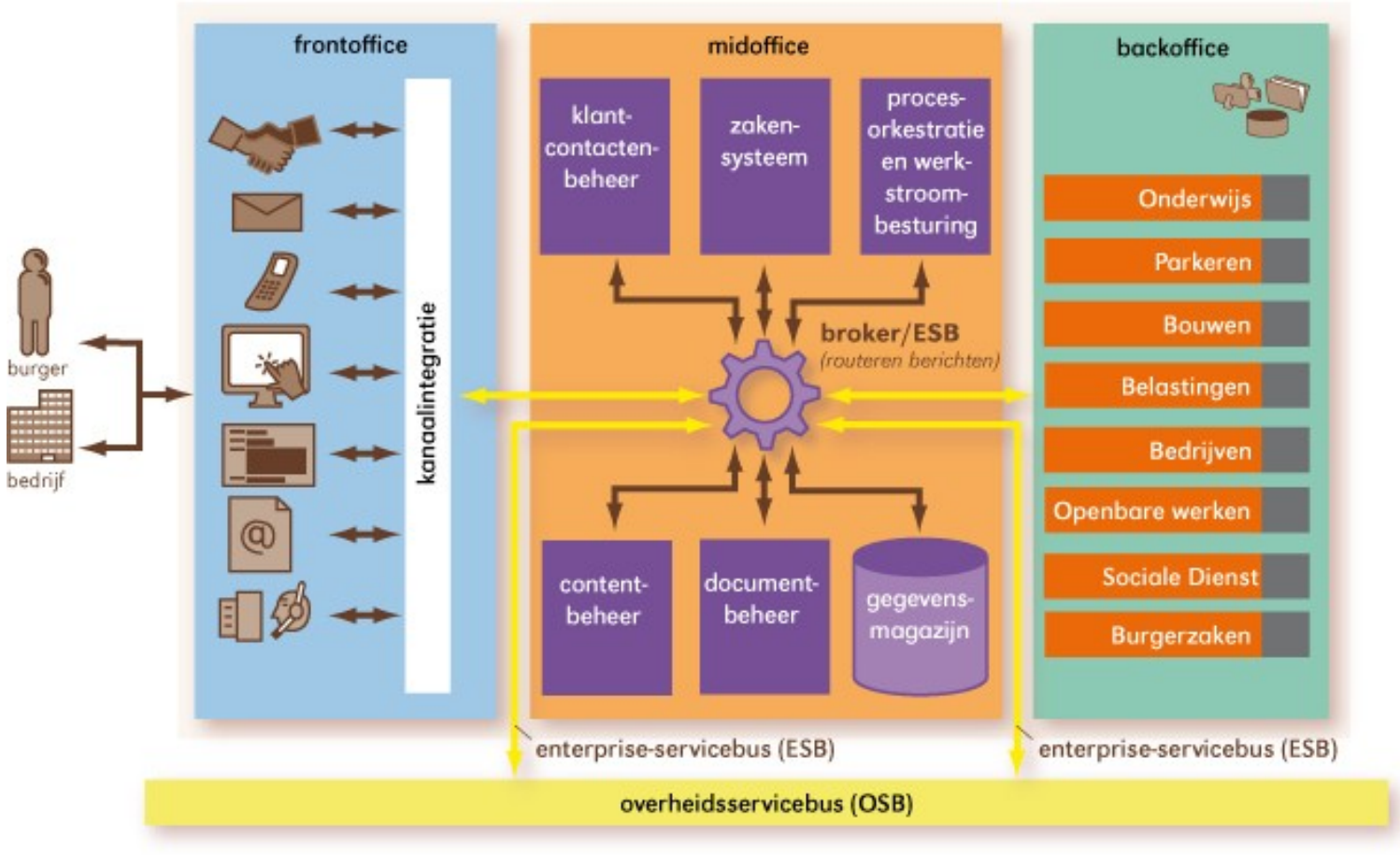
EAR Example: Data Center Services

- Consolidation from 60 to 4 data centers:
  - Housing & hosting
  - Basis for government cloud (together with gov't network)
  - Government "app store" to provide services
  - PaaS & IaaS (under development)
- Principles on e.g.
  - governance
  - continuity, scalability, security
  - reuse of building blocks
  - separation of volatile processes and stable data

GEMMA: Municipalities

- “GEMeentelijke Model Architectuur” = Municipal model architecture:
  - Core architecture principles
  - Business process architecture
  - Information architecture
  - Electronic forms specifications
  - Standard case type catalogue
  - Data and message standards

Structure of Municipal Architectures



Some Challenges

- Government ICT projects have a **high failure rate**
  - Recent parliamentary inquiry uncovered many issues: complex laws, unrealistic ambitions, lack of business cases/ROI, bad project management, big-bang approach, not enough expertise (and interest) at management and political levels, opportunistic vendors, etc.
  - Main proposed solution: **central ICT authority** with expertise & power to approve and kill ICT projects
- **Complex tasks** are being delegated to municipalities, e.g. in social security and care, while their funding is reduced
  - IT expertise and resources are often lacking
  - Many parties involved, collaboration and coherence needed
- A **sound architecture approach** is essential!

Questions?

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