From Reference Architecture to Implementation

Experiences from Dutch e-government

Marc Lankhorst

ITAPA 2013, Bratislava

November 13, 2013

Marc Lankhorst

Service Line Manager Enterprise Architecture

Manager of BiZZdesign's proposition on enterprise architecture

Board member Netherlands Architecture Forum

Project manager of major R&D projects

Responsible for development of the ArchiMate standard

Enterprise architect

Advisor on architecture for the Dutch government

Networked enterprises

Business agility

MSc University of Twente
PhD University of Groningen

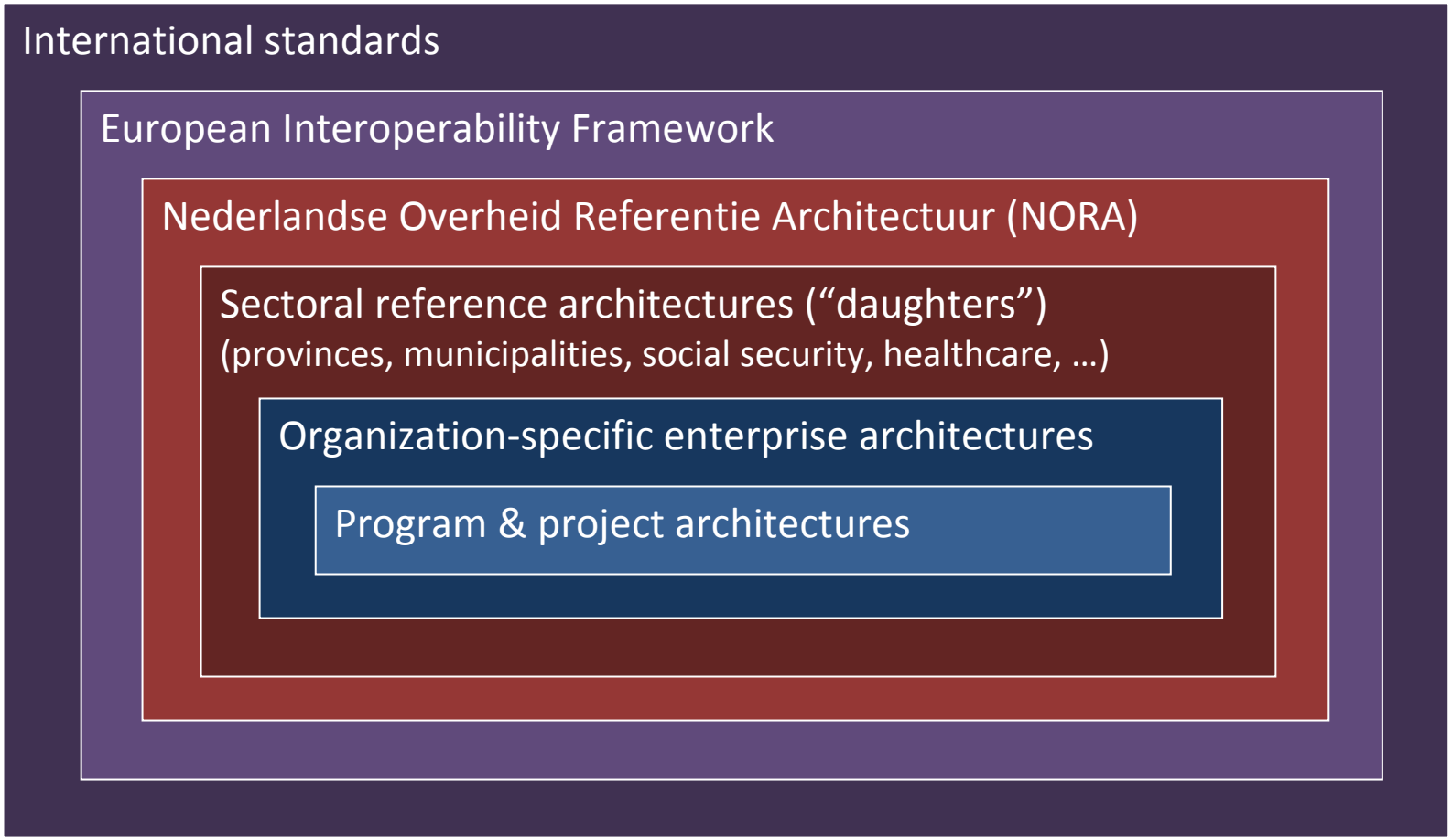
e-Government in The Netherlands

- 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 and provincial autonomy on spending
- 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 for more concrete architectures
- Typically contains architecture principles, patterns, generic building blocks, standards

Hierarchy of Reference Architectures



NORA: the National Reference Architecture

- NORA = “Nederlandse Overheid Referentie Architectuur”: Dutch government reference architecture
- NORA 1.0 (2006)
  - architecture principles for e-government
  - generic, applicable to all layers of government
  - architects in government as main audience
- NORA 2.0 (2007)
  - more focus on application in practice and on building blocks for e-government
  - more attention to other stakeholders: managers, planners, developers
  - first ‘daughters’ appear
  - nearly 300 pages, 20 basic & ca. 170 derived principles…

NORA (cont.)

- NORA 3.0 (2010)
  - No longer a single document, but independent sections and dossiers on specific topics
  - Core is reduced to 10 basic principles and 40 derived principles
- NORA 4.0 (work in progress)
  - Focus on collaboration between government organizations
  - New sections/dossiers on:
    - managing networks and chains within government
    - providing joined-up services
    - security
  - Wiki-based, co-creation model
  - Metamodel based on the ArchiMate standard

Basic Architecture Principles of NORA

Every government service must be:

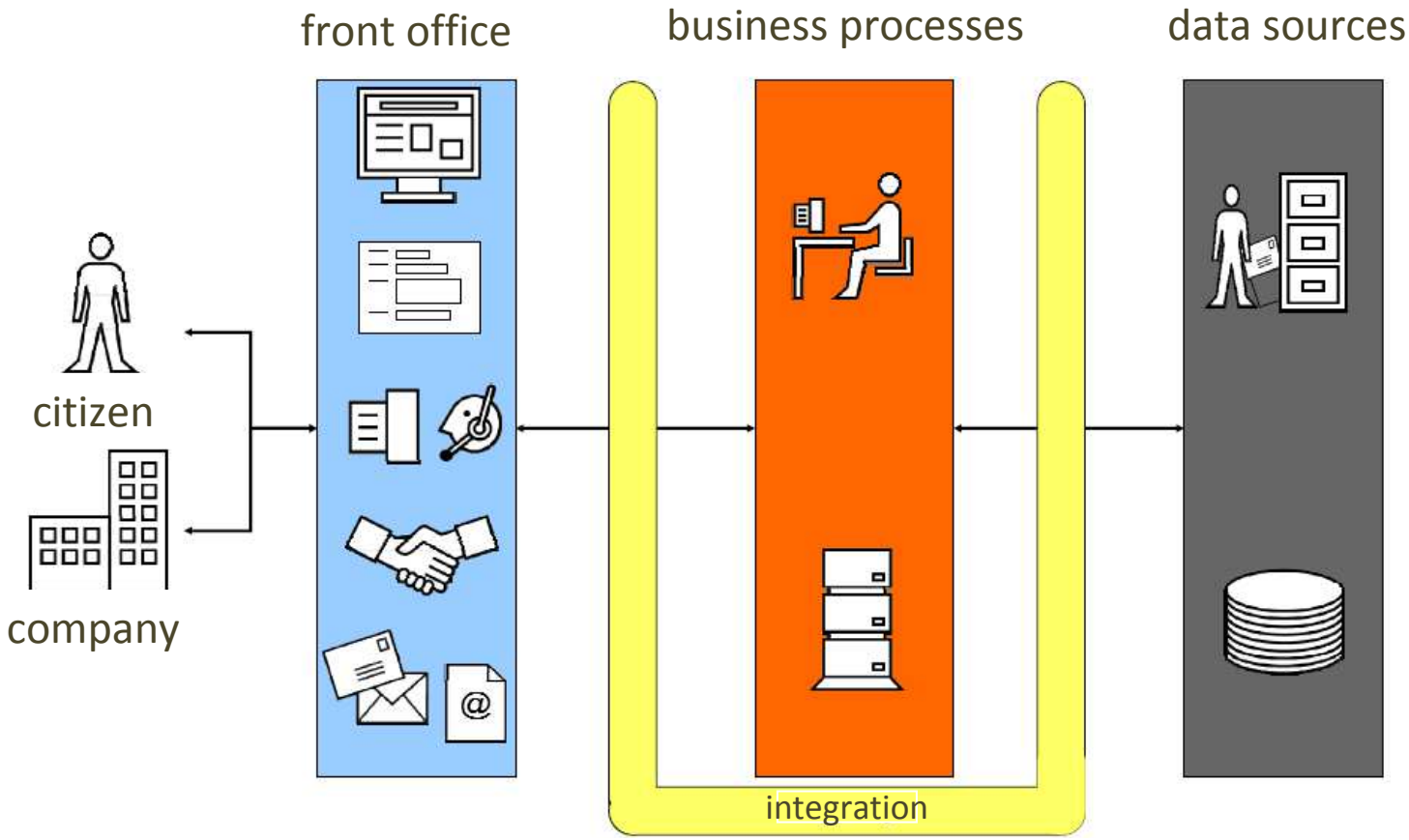
- Reliable
- Bundled
- Necessary
- Receptive
- Proactive
- Standardized
- Accessible
- Transparent
- Confidential
- Findable

Derived Principles (examples)

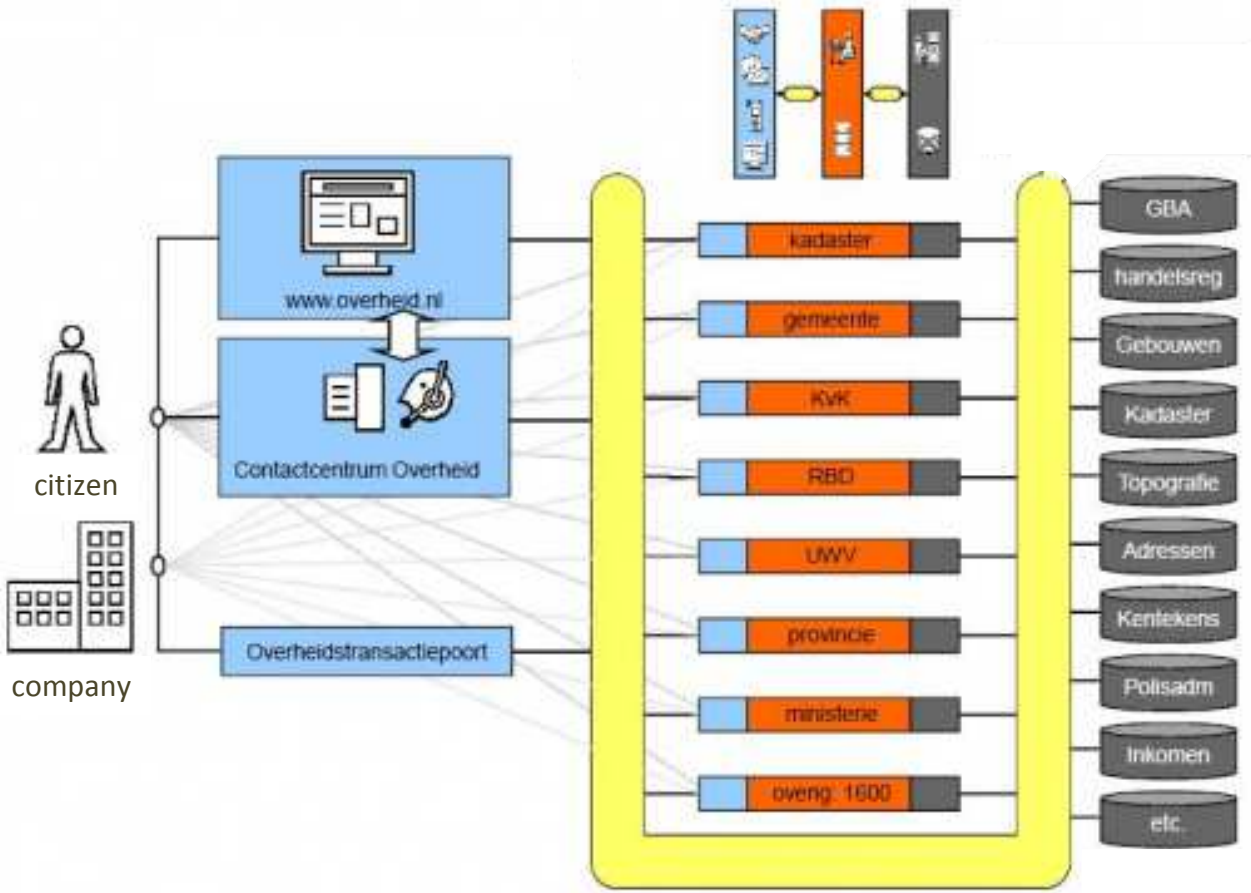
Basic principles are detailed into 40 derived principles, such as:

- 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
- …

Structure of Government Agencies



Structure of Government



Building Blocks (examples)

Centrally developed building blocks for e-government:

- Basic registers
  - Personal records, income, social security, companies, buildings & addresses, topographic map, etc.
- Catalogue of services
- Digital identity provider (DigiD)
- Message boxes for citizens and companies
- Websites
- 14 + area code
- Data exchange standards
- etc.

Governance

- Use of NORA has been mandated by the Dutch 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

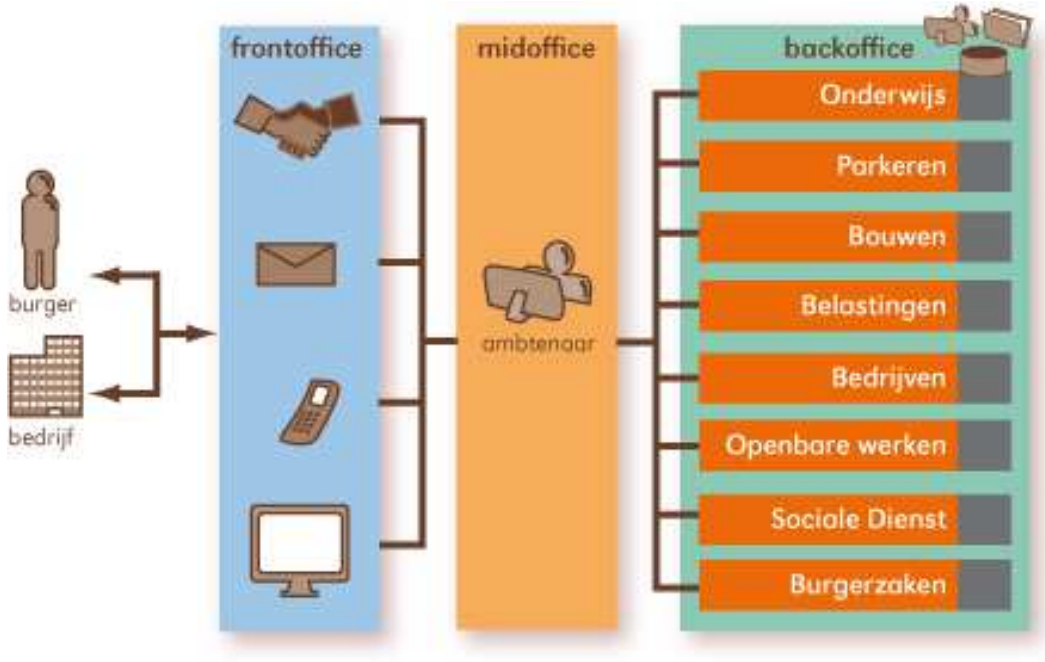
- GEMMA: Municipalities
- PETRA: Provinces
- WILMA: Water boards
- MARIJ & EAR: Departments
- MARTHE: Security & Justice
- ROSA: Education
- ZORA & AIDA: Healthcare
- CORA & VERA: Social housing
- TARA: Archives
- KARWIJ: Social security
- …

GEMMA

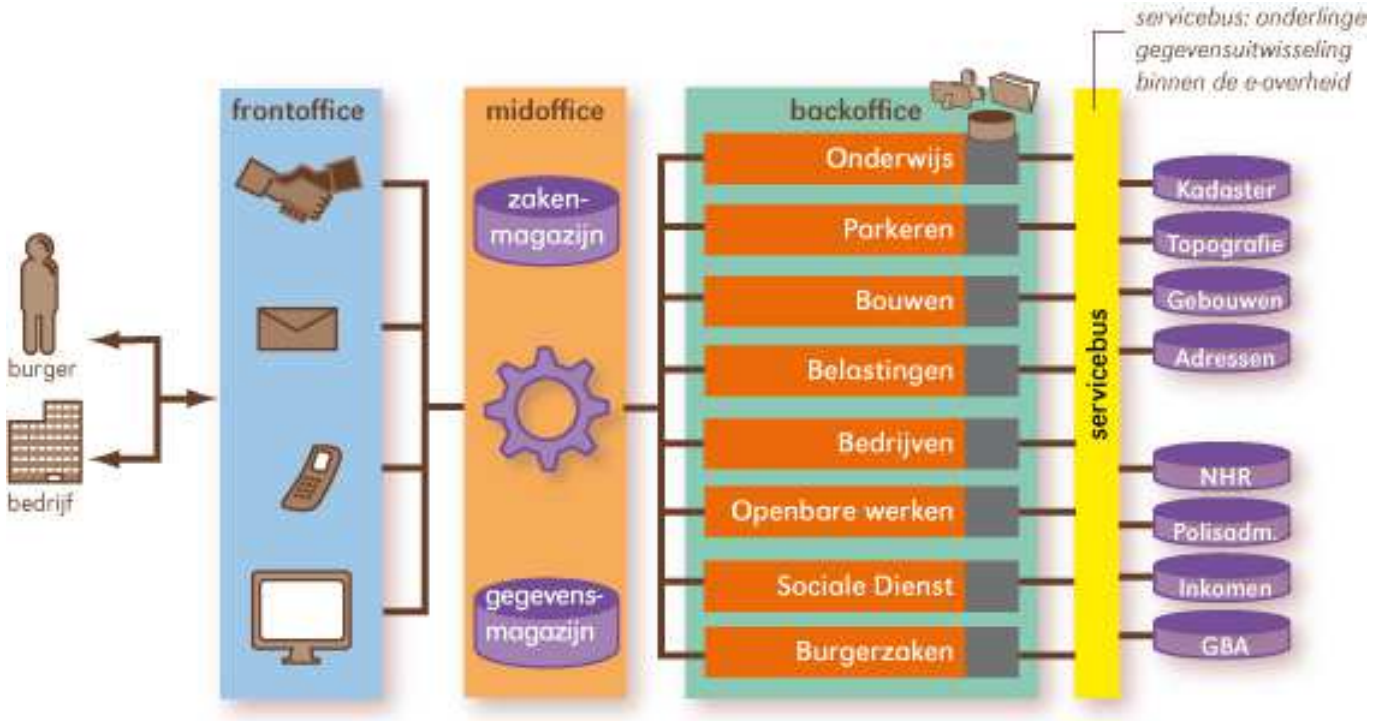
"GEMeentelijke Model Architectuur" =
Municipal model architecture:

- Core architecture principles
- Business process architecture
- Information architecture
- Electronic forms specifications
- Standard case type catalogue
- Data and message standards

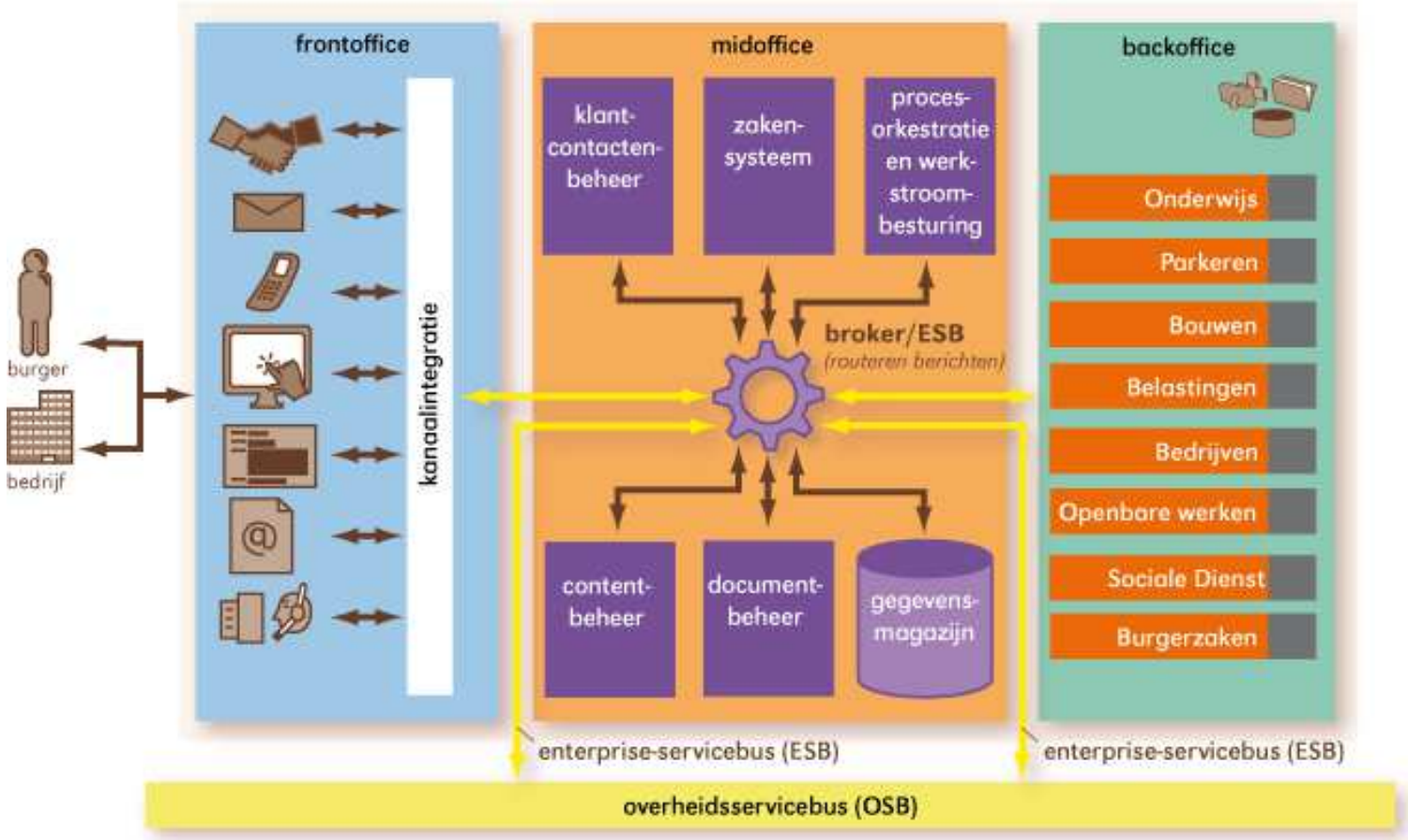
Evolution of Municipal Architectures



Evolution of Municipal Architectures

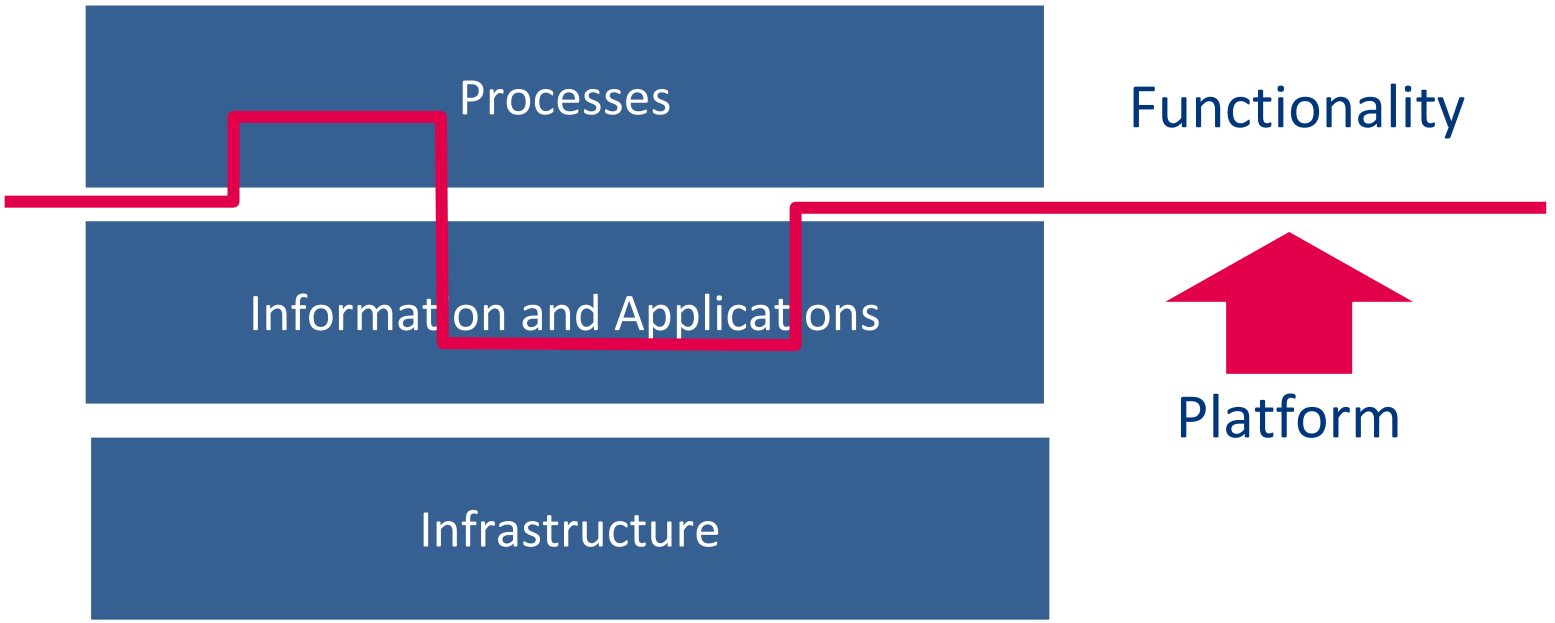


Evolution of Municipal Architectures

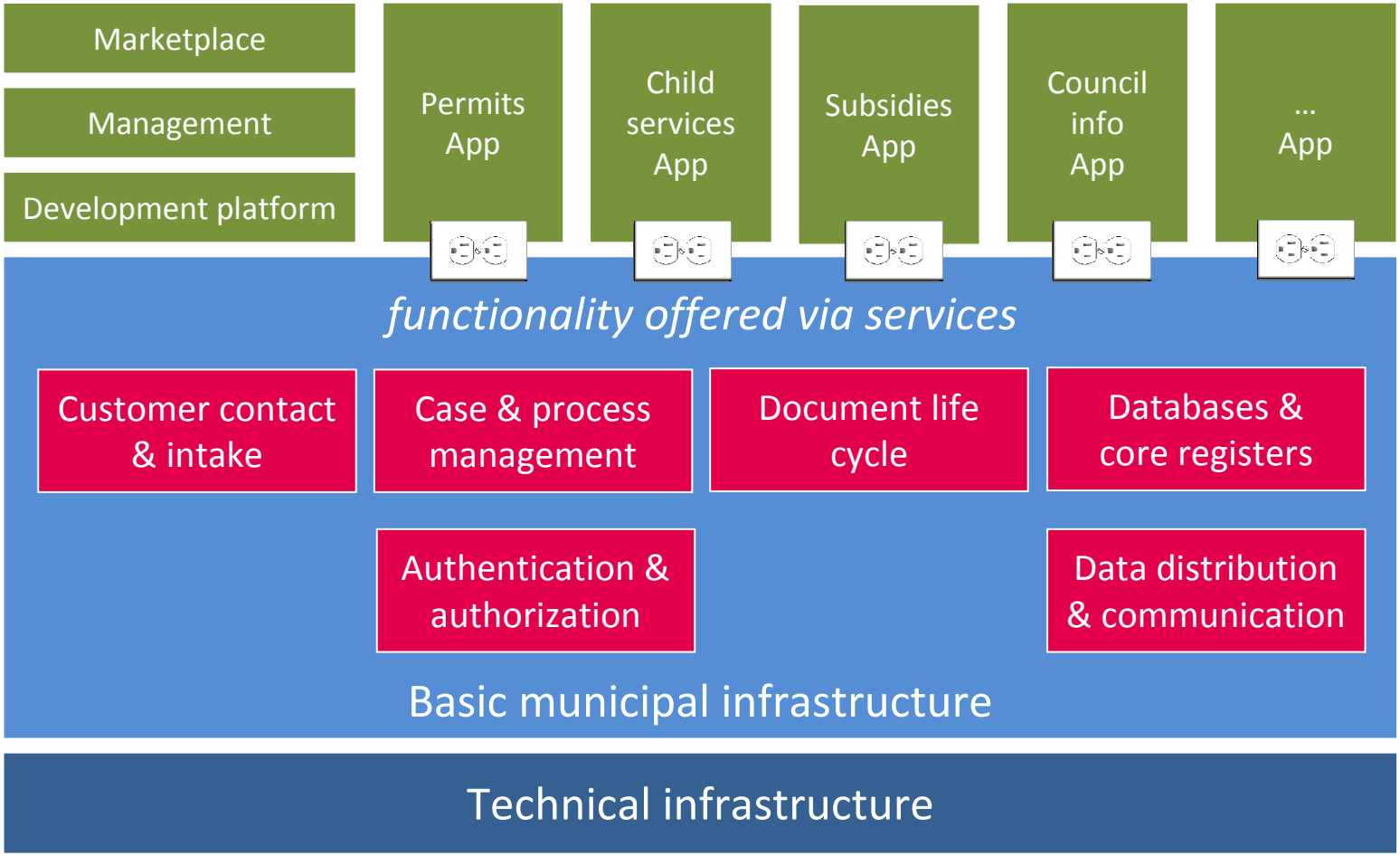


“Basic Municipality”

- GEMMA is developing towards an architecture of a “basic municipality”
- A platform on which you can run your own specific processes



Ecosystem Vision: New Paradigm



GEMMA Service Catalogue

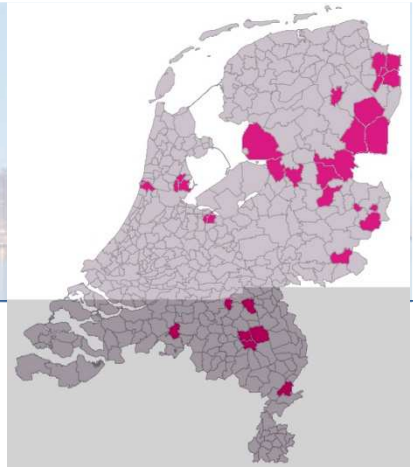
- Standardized set of platform services
  - name
  - description
  - protocols
  - message formats
  - input and output parameters
  - preconditions for use
  - quality attributes, e.g. response time, availability
  - owner, manager
  - etc.
- Provides vendors with clear specification of interfaces with platform
- Currently under development

Implementation

Two models for implementation of municipal information systems:

- Software vendors offer back-office and integration suites
  - two large vendors dominate the market, with smaller ones providing specialized solutions
- Associations of municipalities
  - joint ownership of software
  - common public tender for development by vendors
- Software vendors have not been very happy with this model…

Example: Dimpact



- Cooperative association of > 30 municipalities
- Provides multi-channel front- and mid-office suite
  - Modules for customer contact, citizen portal, collaboration, case management, document management, CMS, e-forms, GIS/Geo, …
  - Configurable with local business processes
  - Fully integrated, but with open interfaces to connect with other components
- Architecture based on NORA & GEMMA, Basic Municipality, SOA paradigm
- Central hosting, low maintenance
- Cost divided on a per-citizen basis

Challenges

- Many tasks are being delegated to municipalities
  - Municipalities play a role in many government services: many networks of parties, difficult to manage, lack of funding
  - IT expertise and resources are often lacking, especially in smaller municipalities: collaboration needed
  - Focus on online services as a means for cost saving
- Sometimes difficult development process
  - Many stakeholders: > 400 municipalities, central government, software vendors
  - New personal records database has been under development for several years and is still not finished
  - But this is a core building block of most government services to citizens
- A sound architecture approach is essential in this environment!

Thank you for your attention!

QUESTIONS?

Who is BiZZdesign?

- 150 highly educated professionals. Global presence. Also office in Bratislava (see www.bizzdesign.sk).
- BiZZdesign offers complete and integrated solutions (methods, tools, consultancy and training) to design and improve organizations
  - Strategy Alignment, Business Model Innovation, Enterprise Architecture, Business Requirements Management, Business Process Analysis and Lean Management are important ingredients in the solutions
- BiZZdesign offers **consultancy, tooling and certified training courses for Open Group standards TOGAF and ArchiMate**
- Contributed to and edited the ArchiMate 2.0 specification
- Involved in the work group working towards the next version of TOGAF® and its alignment with ArchiMate®

BiZZdesign Building Strong Organizations

dr.ir. Marc M. Lankhorst
Service Line Manager Enterprise Architecture
m.lankhorst@bizzdesign.nl
+31 6 4409 2359