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# CREATING SYNERGY BETWEEN BPM AND EA IN AN E-GOVERNMENT ENVIRONMENT

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## About me

- An enterprise solutions architect
  - From a programmer to a systems architect
  - Experience in scientific, international, governmental and industry environments
  - Have created systems which work without me
  - Practical adviser for design and implementation of enterprise solutions
- Current specialisation is improving business process management systems
- Book in preparation [www.improving-BPM-systems.com](http://www.improving-BPM-systems.com)

## **E-government is a very complex system**

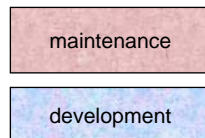
- Unlimited life-cycle
  - unpredictable and incremental evolution
- Socio-technical system
  - how you do something is sometimes more important than what you do
- Collaborative system
- Industrialised system
- Ability for rapid innovation is important
- Variety of services (up to 1000 in some catalogues)
- High level of security for personal data

## **The goal – easy evolution of an e-government**

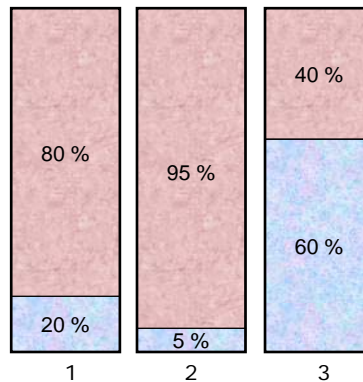
- The architecture must provide a high level of adaptability to
  - policies and priorities of the Government
  - structure of ministries and departments
  - IT applications, systems, data and hardware
  - constantly changing business processes
  - size and complexity of problems to be addressed
  - available budget
  - level of computerisation
  - all stakeholders

## Need for adaptive architecture

- Different estimations of the development/maintenance life-cycle cost ratio

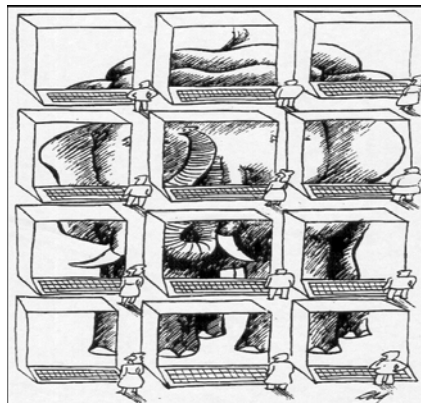


- 1 – Estimated average in the IT industry
- 2 – A real scenario (governmental client)
- 3 – Estimated by an IT staff member

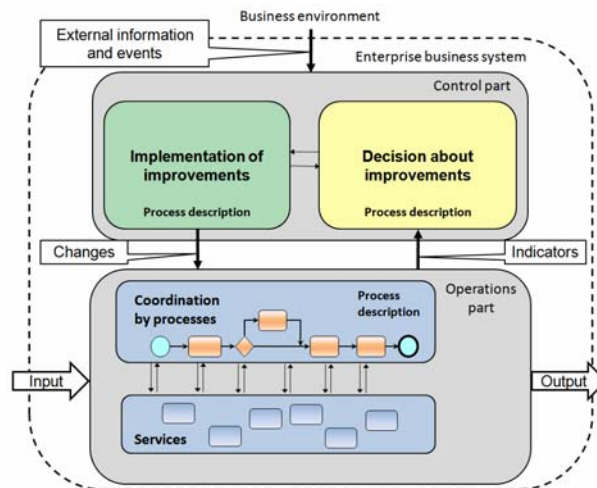


## Too many internal stakeholders

- top managers
- enterprise architects
- business line managers
- process owners
- super-users
- normal users
- project managers
- business analysts
- IT managers
- IT architects
- IT developers



## Process-oriented view of an enterprise



## System architecture view of an enterprise

- Dynamic set of artefacts
- Artefacts are interconnected and interdependent
- We have to anticipate potential changes:
  - policies, compliance, technology, etc.
- Implementation of such changes necessitates the evolution of some artefacts and the relationships between them
- It must be easy to modify all artefacts and relationships without causing any negative effects



## Different enterprise artefacts

- Business artefacts
  - Events
  - Processes
  - Activities
  - Roles
  - Rules
  - Data & documents
  - Audit trails
  - Performance indicators
  - Services
- Technical artefacts ...



## Main principles of adaptive architecture

- All artefacts must be **versionable** throughout their life-cycle
- All artefacts must be evolved to become
  - **digital**
  - **externalised**
  - **virtual**
  - **components of clouds**
- All relationships between these artefacts are modelled **explicitly**
- All models are made to be **executable**

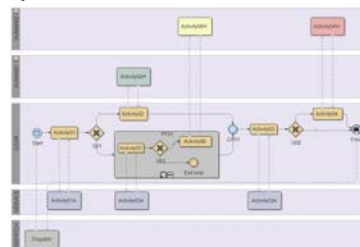
## Advantages of executable models

- More knowledge about functioning of the enterprise
- More predictable results
- More rational decisions
- More comprehensive optimisation
  
- Also executable models are:
  - testable
  - platform-independent

## Business processes are complex relationships between artefacts

- Who (*roles*) is doing What (*business objects*), When (*coordination of activities*), Why (*business rules*), How (*business activities*) and with which Results (*performance indicators*).
- Make these relationships explicit and executable

**What you model is  
what you execute**



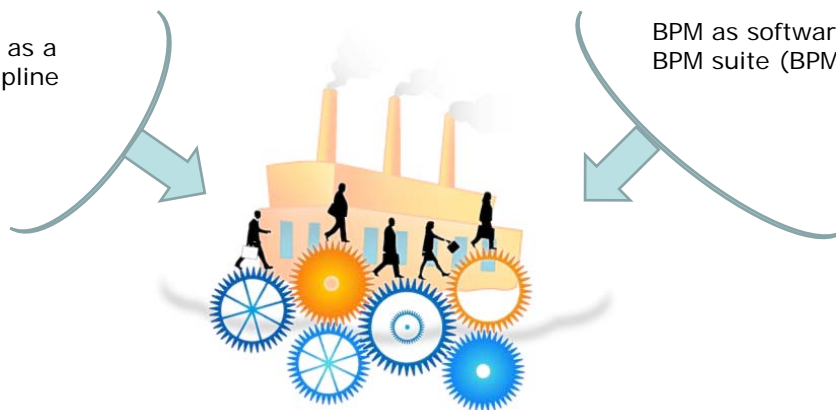
## Adaptive architecture – a coherent set of existing technologies

- Main technologies
  - Business Process Management (BPM)
  - Service-Oriented Architecture (SOA)
- Other technologies
  - ECM, BEM, BI, BRM, MDM, ESB, BAM, ITIL, ...
- Profound integration with
  - Enterprise architecture (EA)
  - Project management practices
- Principles for design of flexible systems

## BPM is a tool for improving enterprise business performance

BPM as a discipline

BPM as software:  
BPM suite (BPMS)



Any process-centric enterprise has some BPM,  
but how can we **industrialise** this BPM?

## Business Process Management (BPM)

- Natural evolution of methodologies for improving enterprise business performance
  - Process reengineering, Lean, ISO 9000, 6 Sigma
- One description of business processes
  - model in design
  - input for project planning and execution
  - executable program for coordination of work
  - documentation for all staff members
- Basis for use and selection of modern technologies



From Gartner

## Service-Oriented Architecture (SOA)

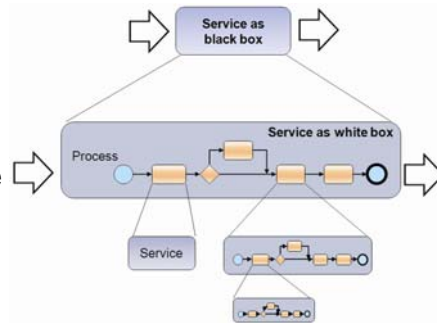
- Definition
  - architectural approach for constructing software-intensive systems from a set of universally interconnected and interdependent services (operationally independent functional units)
- Advantages
  - use of standard and pre-fabricated building blocks
  - high level of system flexibility





## Synergy between BPM and SOA

- BPM, by revealing the artefacts and the relationships between them, provides the necessary context (e.g. granularity) for the definition of services
- SOA provides recommendations for the implementation, execution and governance of services

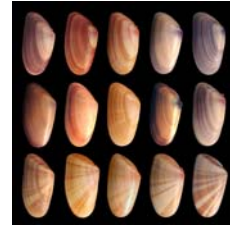
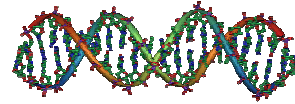


## Enterprise architecture (EA) is a tool for the design of future states

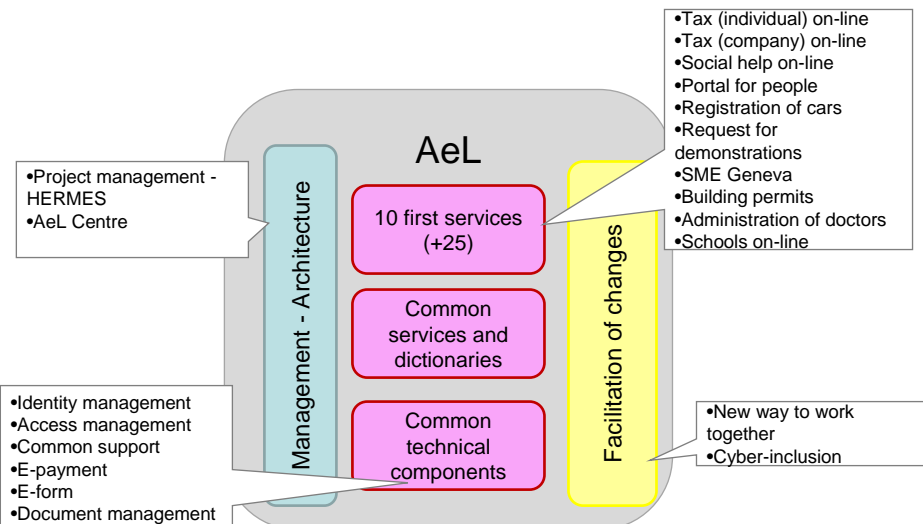
- Definition
  - coherent and proven set of principles, recommendations, rules, practices, and tools which provides guidance and practical help for the design and evolution of IT and business to achieve enterprise vision and strategy
- Advantages
  - Validation of architectures
  - Guarantee of coherence
  - Optimisation of architectures
  - Help and coaching

## Enterprise executable model

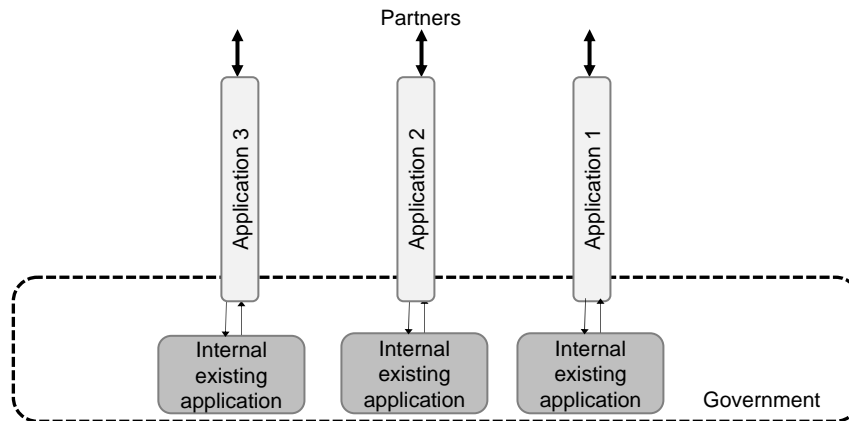
- “enterprise genotype” (a full nomenclature of enterprise artefacts) – classic EA
- “enterprise phenotype” (a set of observable characteristics such as performance)
- Formal link between them via “enterprise executable model” – EA enhanced by BPM and SOA



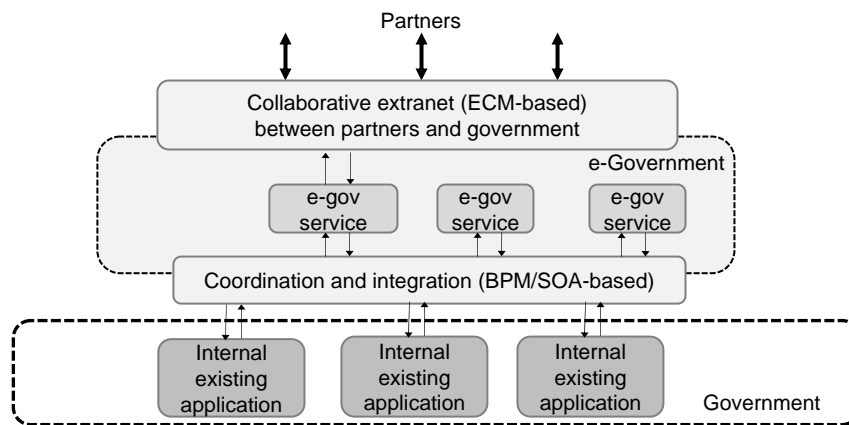
## “Administration en Ligne” (AeL)



## Existing applications for e-government

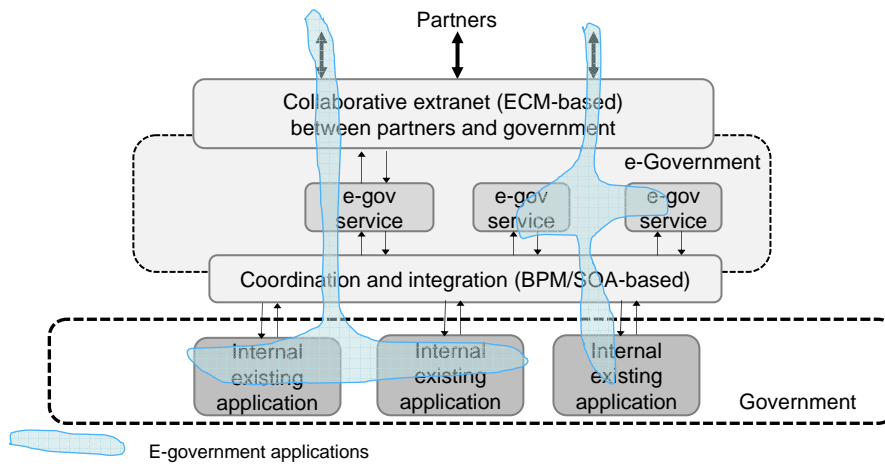


## Draft architecture for e-government (initial state)

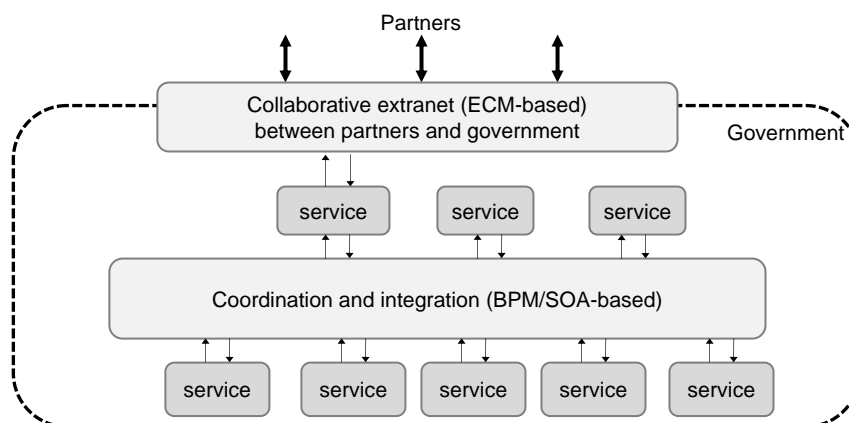


ECM – Enterprise content management

## Draft architecture for e-government (initial state)



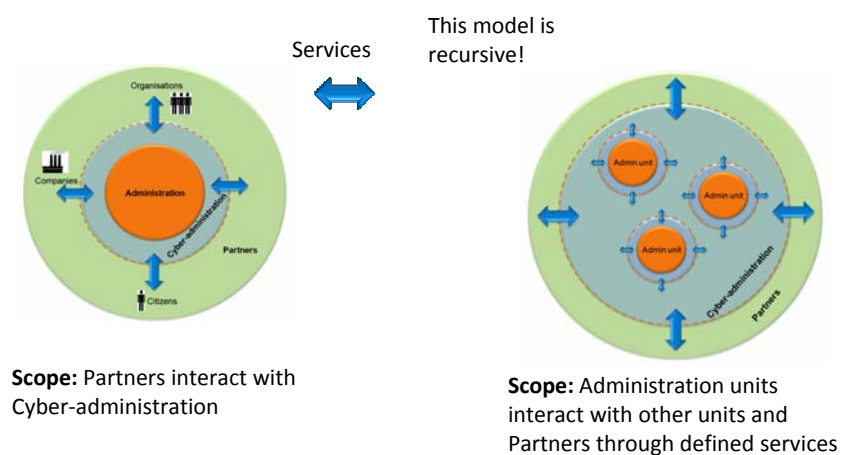
## Draft architecture for e-government (future state)



## Swiss E-government Architecture Committee (SEAC)

- Formed at the federal level in Autumn 2008
- Open to 26 cantons (highly autonomous) and more than 1000 communities
- Current agenda
  - Rework of eGovCH (Big Picture)
  - Design rules for IT Architecture
  - Design rules for Identity and Access Management
  - Handling of unstructured information

## Functional Scope Level 0 and Level 1

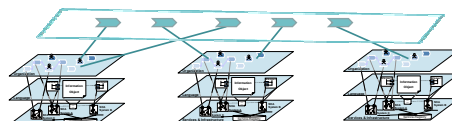
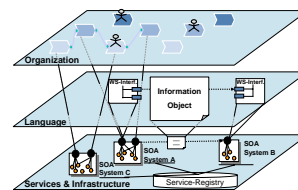


## Basic architectural principles

- Be legal
- Be an enabler
- Be effective
- Be flexible
- Be secure
- Be social and democratic
- Be methodological
- Be explicit

## Inter-unit communication

- Three layers:
  - services/infrastructure
  - language
  - organisation
- Exchange between each layer:
  - Event Bus Swiss
  - common dictionaries (see [www.ech.ch](http://www.ech.ch))
  - explicit coordination of units



## Main points of adaptive architecture

- Use of architecture to reduce the complexity
- BPM reference model
- Attention to the most difficult aspect – people
- Use of explicit and executable models
- Business process modelling in BPMN
- Quick prototyping
- Guidelines for usage of different technologies
- Link with enterprise architecture

## Thank you!

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www.improving-BPM-systems.com