LISTEN UP!

Webinar 23 April 2020

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST

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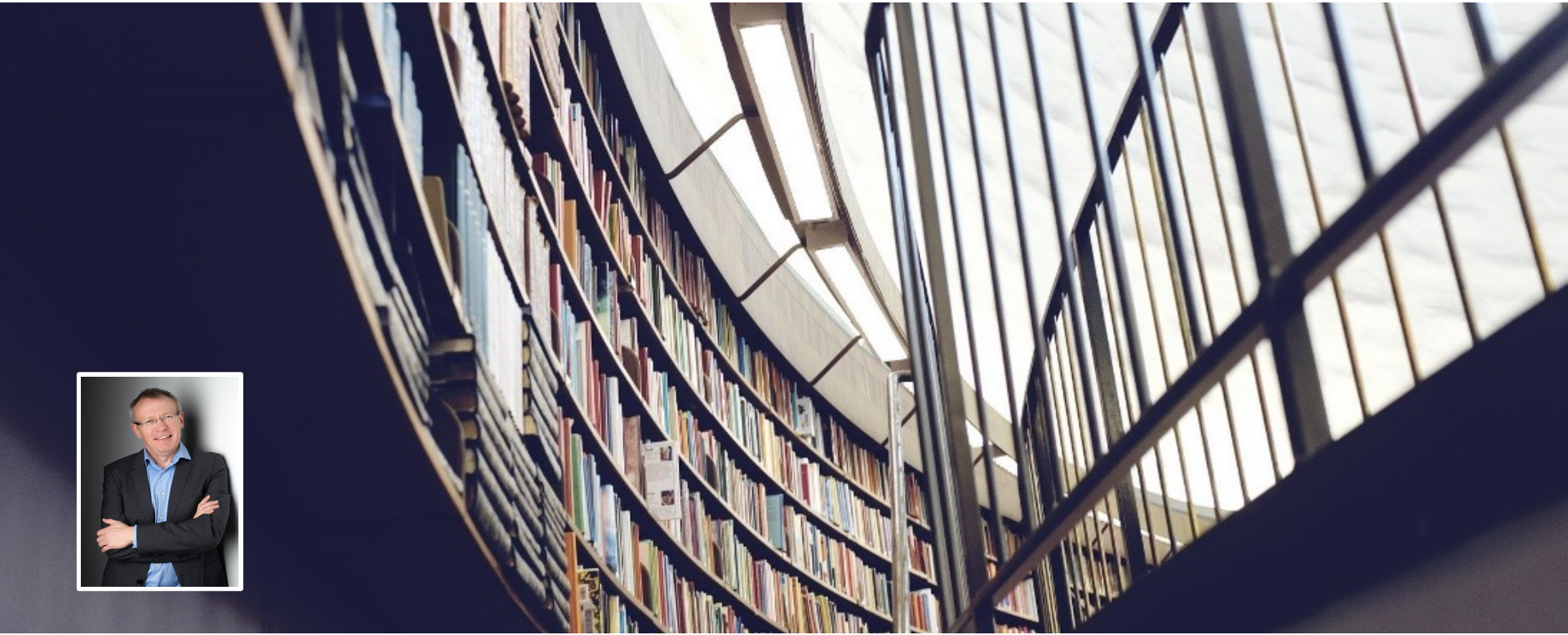
LISTEN UP!: Enterprise Systems Architecture - Essentials



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Enterprise Systems Architectures

Erik Proper, iSee, TSS, ITIS

Essentials

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LIST

Agenda

Systems engineering & architecting

Enterprise architecture

Research challenges

Agenda

Systems engineering & architecting

Enterprise architecture

Research challenges

Systems …









Systems …

Complex webs of actors and resources, with a need to function as a whole

Increasingly data intensive …

Increasingly data intensive …

Complex webs of socio-cyber-physical actors and resources, with a need to function as a whole

Challenges …


Security
Compliance
Anti-fragility
Resillience
Privacy
Complex webs of socio-cyber-physical actors and resources, with a need to function as a whole
. . . . .
Performance
Sustainability
Risks

Challenges …


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Complex webs of socio-cyber-physical actors and resources, with a need to function as a whole
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Performance
Sustainability
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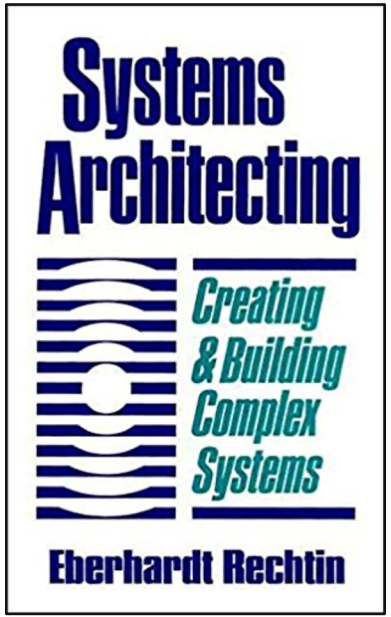
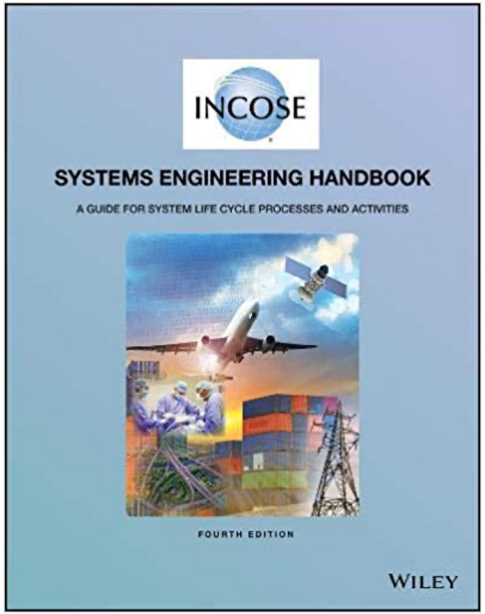
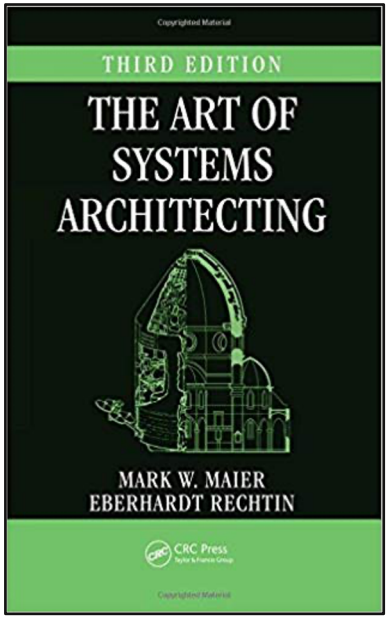
Coherence

Systems engineering & architecting







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Complex webs of socio-cyber-physical actors and resources, with a need to function as a whole

System architecture:
Those properties of a system that are necessary and sufficient to meet its essential requirements

System:
Complex webs of socio-cyber-physical actors and resources, with a need to function as a whole

Anti-fragility

Privacy

Compliance

Security

Risks

Performance

Robustness

…

Sustainability

System architecture:
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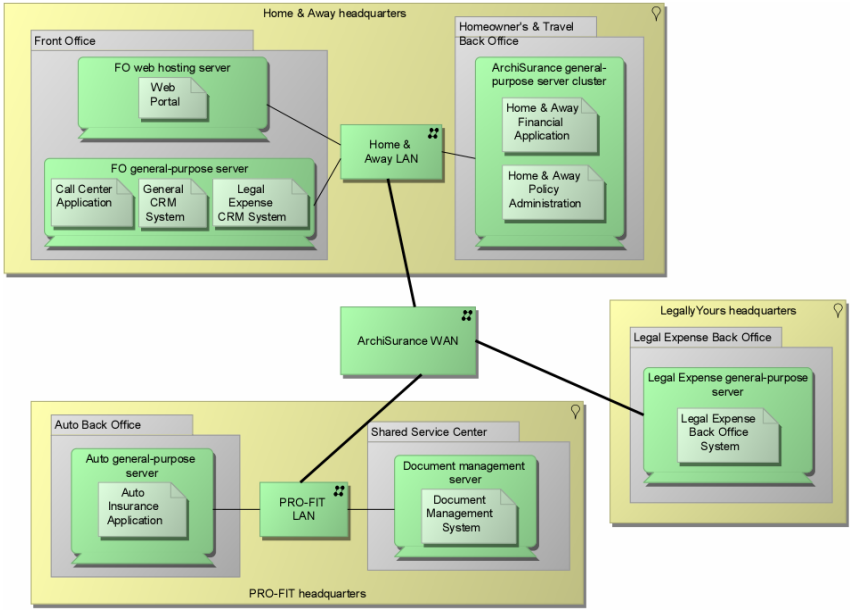
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Front Office
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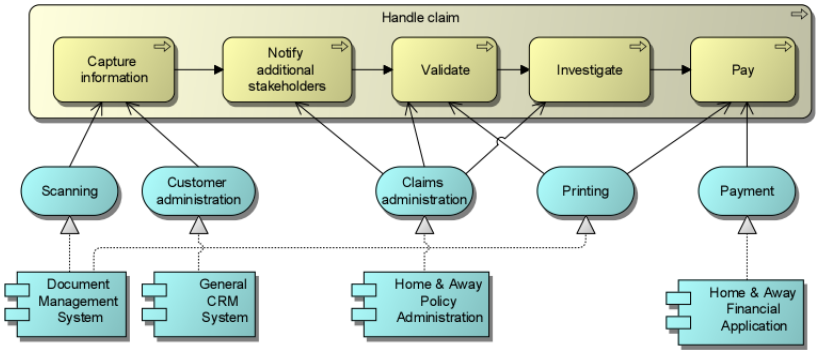
Web Portal
FO general-purpose server
Call Center Application
General CRM System
Legal Expense CRM System
Home & Away LAN
Homeowner's & Travel Back Office
ArchiSurance general-purpose server cluster
Home & Away Financial Application
Home & Away Policy Administration
ArchiSurance WAN
LegallyYours headquarters
Legal Expense Back Office
Legal Expense general-purpose server
Legal Expense Back Office System
Auto Back Office
Auto general-purpose server
Auto Insurance Application
PRO-FIT LAN
Shared Service Center
Document management server
Document Management System
PRO-FIT headquarters


Handle claim
Capture information
Notify additional stakeholders
Validate
Investigate
Pay
Scanning
Customer administration
Claims administration
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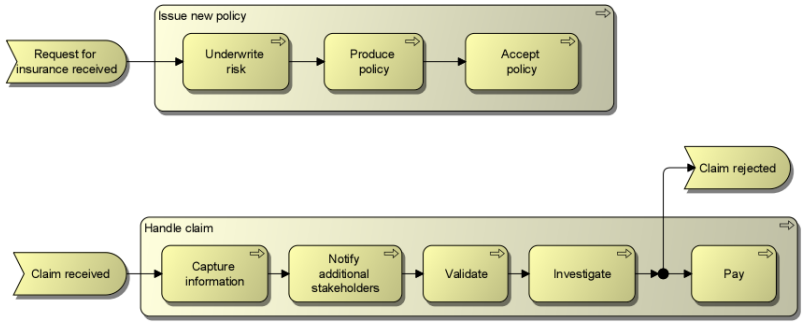
Payment
Document Management System
General CRM System
Home & Away Policy Administration
Home & Away Financial Application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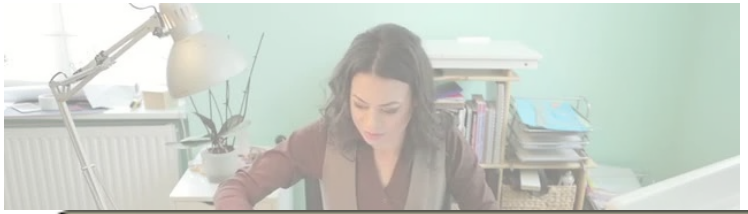

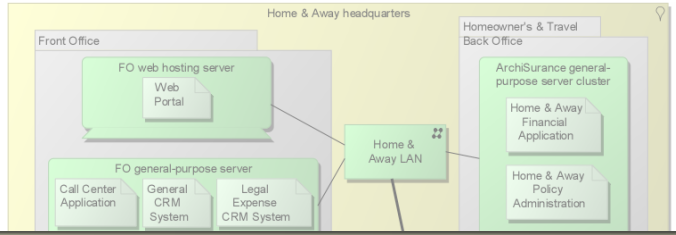

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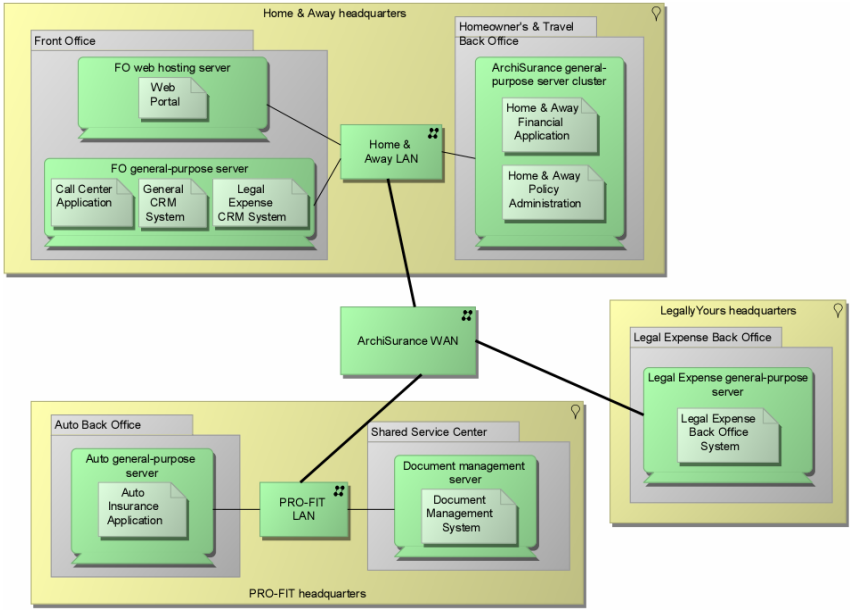
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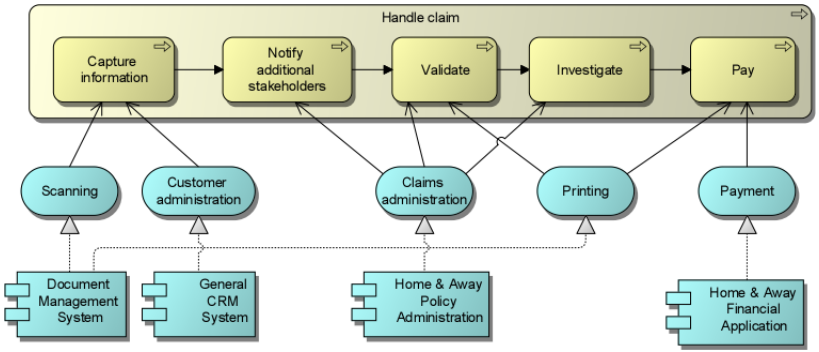
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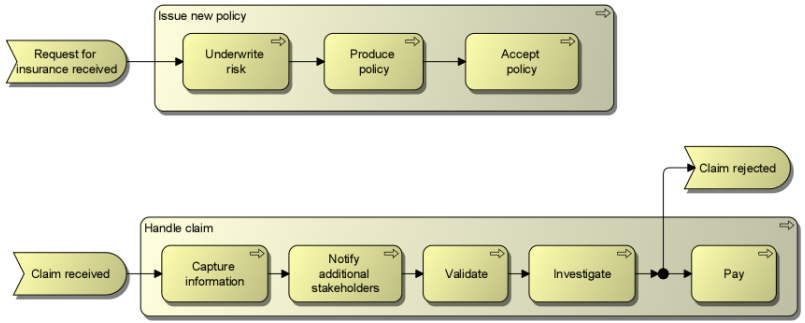
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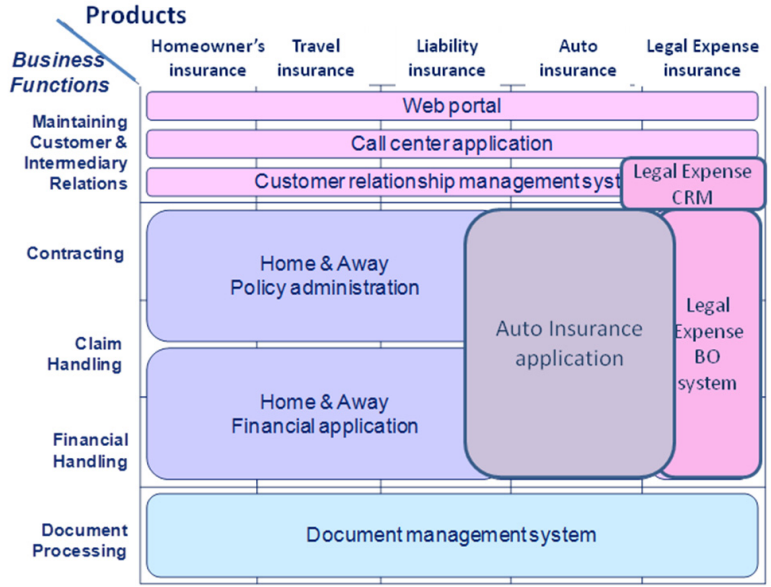
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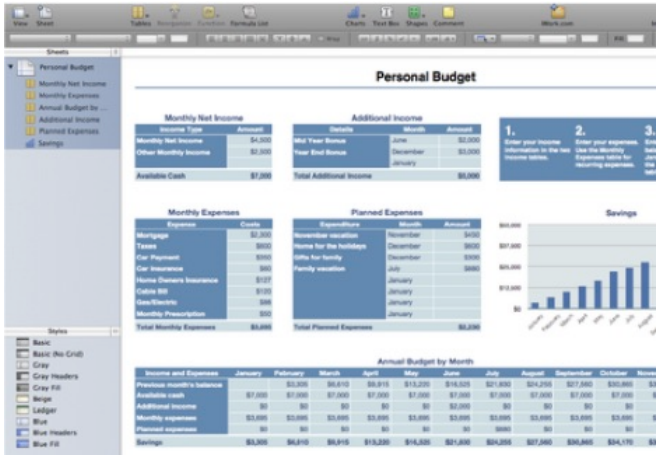
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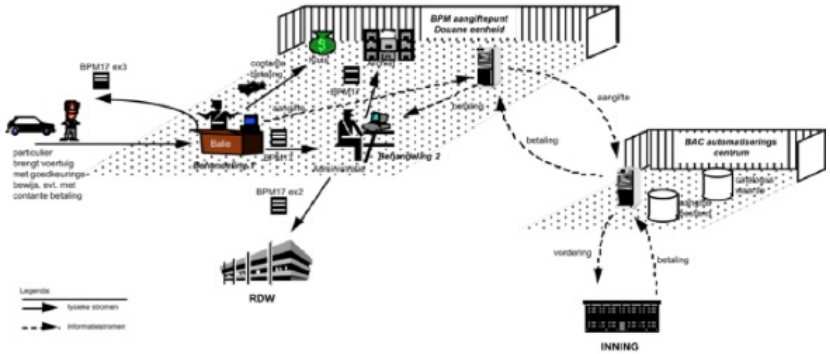

BPM aangiftepunt Douane eenheid
BPM17 ex3
particulier brengt voertuig met goedkeurings-bewijs, evt. met contante betaling
Balie
Behandeling 1
Behandeling 2
aangifte
betaling
BAC automatiserings centrum
BPM17 ex2
RDW
vordering
betaling
INNING
Legenda
fysieke stromen
informatiestromen

A.16 Data is captured once

Type of information: data, application

Quality attributes: usability, efficiency

Rationale:

- It is inefficient and user-unfriendly to ask for the same data twice or more.

Implications:

- Before acquiring data it is first determined whether the data is already available.
- Data that is already available is pre-filled in forms.
- Applications expose shared data for reuse by other applications.

A.40 IT systems are sustainable

Type of information: technology

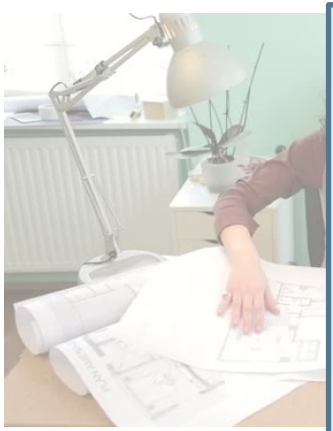
Quality attributes: efficiency

Rationale:

- IT contributes significantly to to the polution of the Earth due to energy consumption and the generation of waste.
- There is a general awareness that measures need to be taken to protect our natural resources and prevent global warming as much as we can.

Implications:

- Energy consumption and the usage of environment-friendly materials are criteria in the acquisition of new IT systems.
- Energy consumption is explicitly taken into account in the design of IT environments such as data centers.



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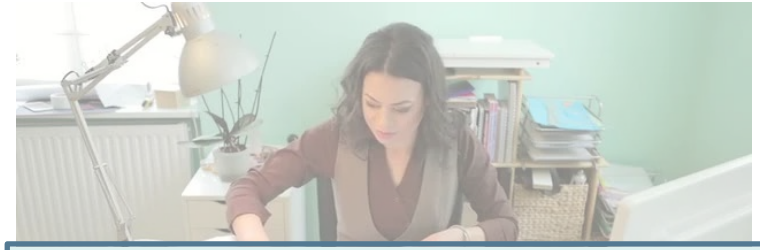

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Supporting systems architecting & engineering

Need for *system design* technologies

Supporting systems architecting & engineering

Need for *system design* technologies

ENCYCLOPÆDIA BRITANNICA

Technology

Technology, the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment. The subject of technology is treated in a number of articles. For general treatment, see technology, history of; hand...

Supporting systems architecting & engineering

Need for *system design* technologies

- Process frameworks — *How to do it?*
- Engagement frameworks — *Who / how to involve?*
- Design frameworks — *What to consider?*
- Modelling frameworks — *How to capture it?*
- Reference models — *What is wise / proven?*

Supporting systems architecting & engineering

Need for *system design* technologies

- Process frameworks
- Engagement frameworks
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- Reference models

Opportunities for IT support

Agenda

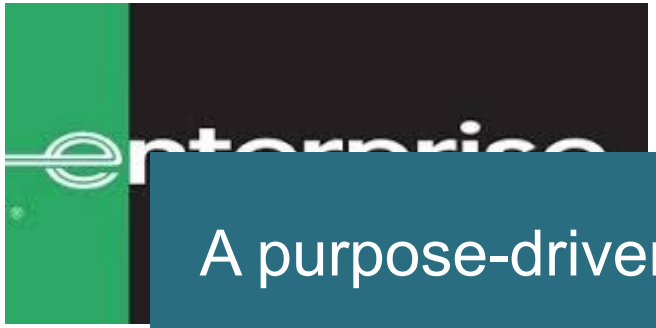
Systems engineering & architecting

Enterprise architecture

Research challenges

Enterprises

Enterprises



A purpose-driven system

The purpose being its enterprise

Enterprises

Companies

Agencies

Universities

Hospitals

Factories

A purpose-driven system

The purpose being its enterprise

Systems …

Digital platforms

Supply chains

Mobility networks

Smart cities

The increasing role of IT in enterprises

ING

'We want to be a tech company with a banking license' – Ralph Hamers

ocessing

siness enabler

to being an

integral part of the business model

Emergence of enterprise architecture

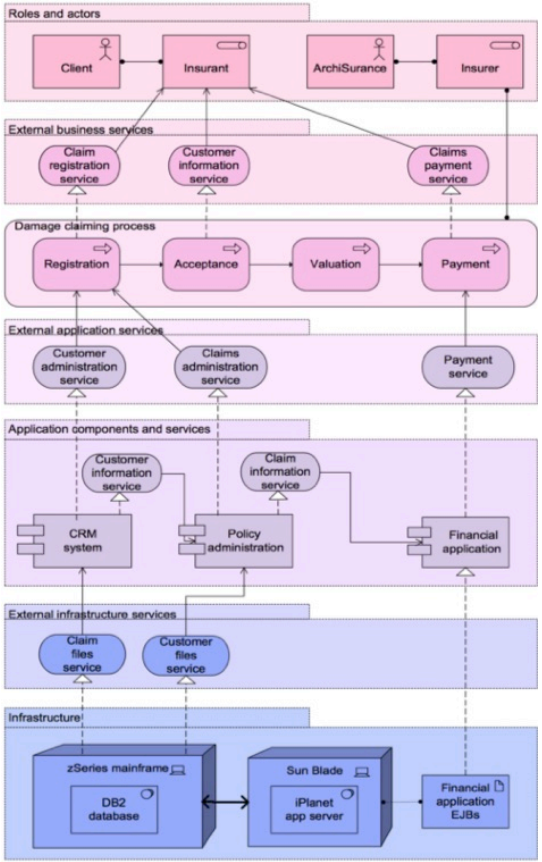
Business

Information

IT Applications

IT Infrastructure

Business-to-IT stack



Body of research

Luxembourg National Research Fund

Radboud Universiteit

Telematica Instituut

University of St.Gallen

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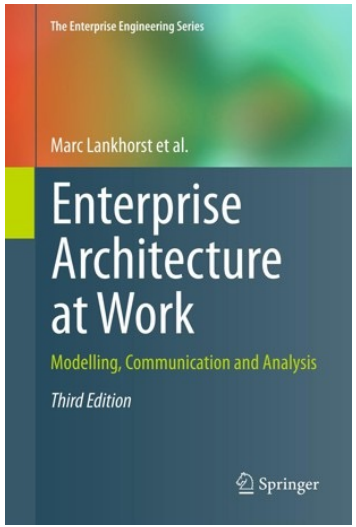
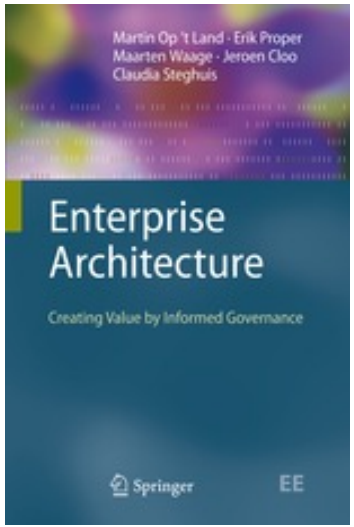
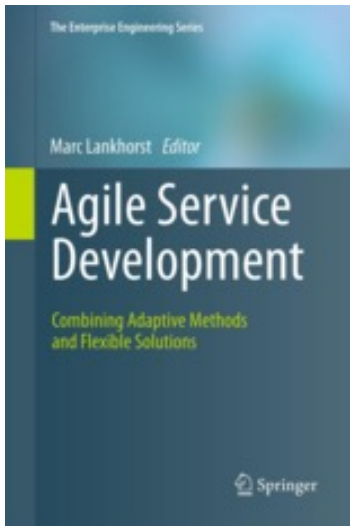
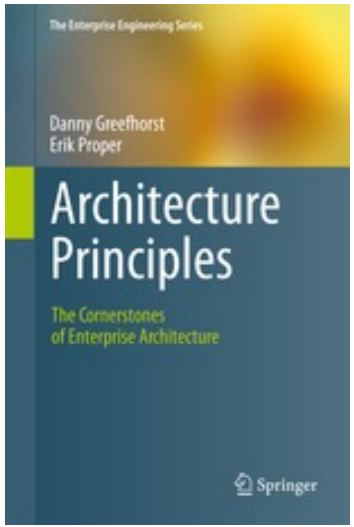
uni.lu









ORDINA

Capgemini

Naf

THE Open GROUP

EA design technologies

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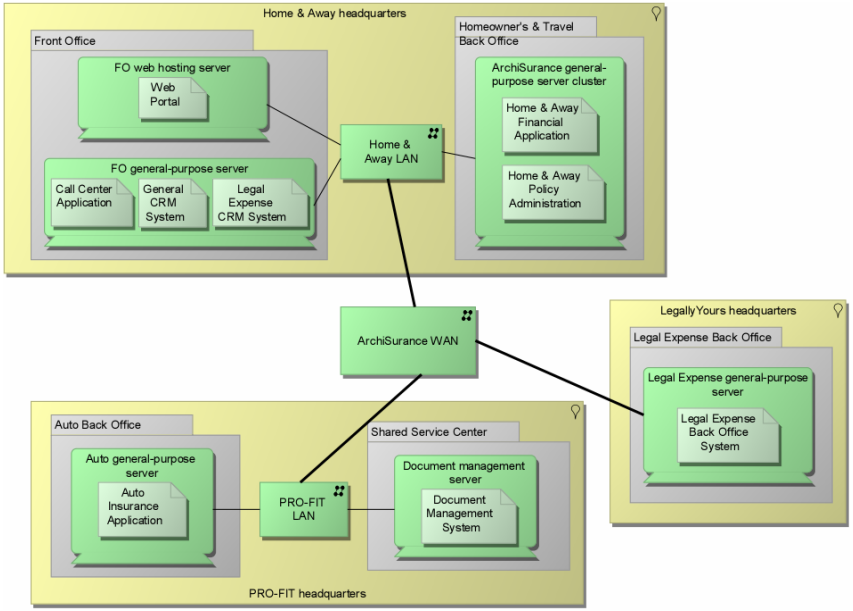
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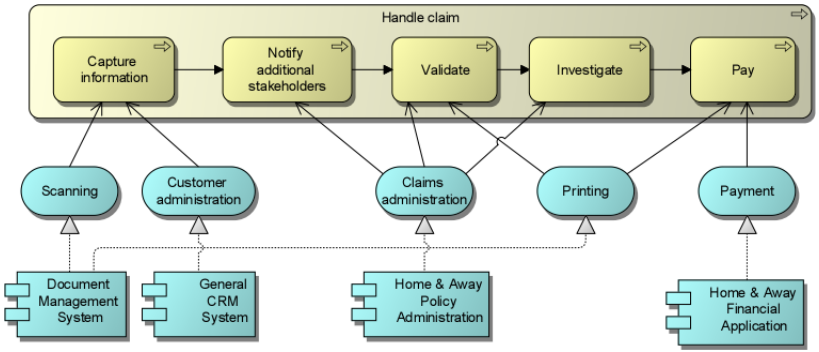
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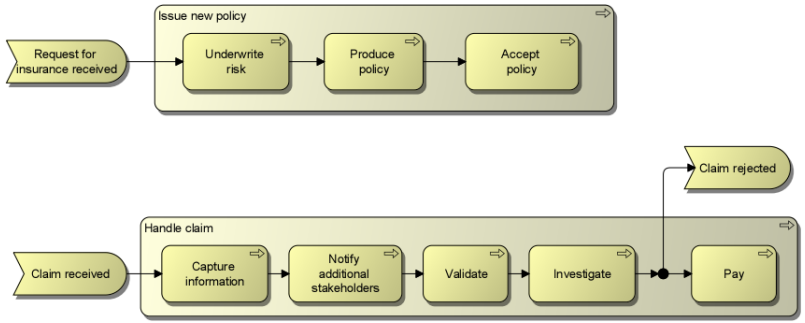
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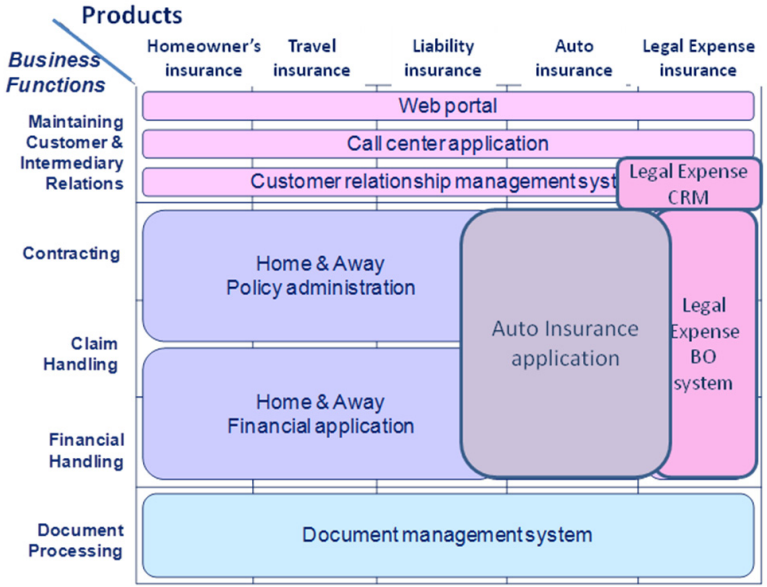
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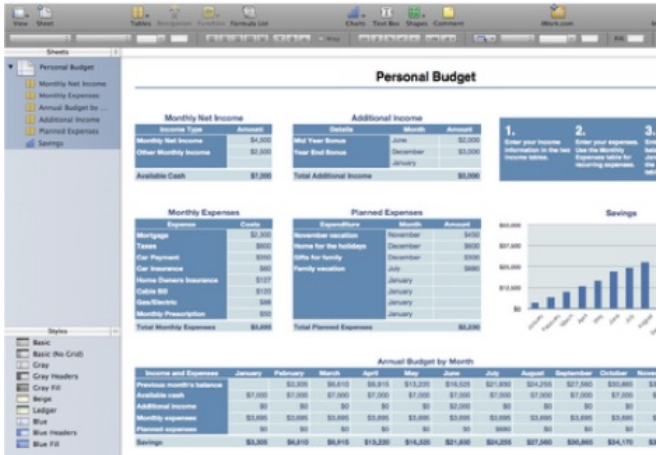
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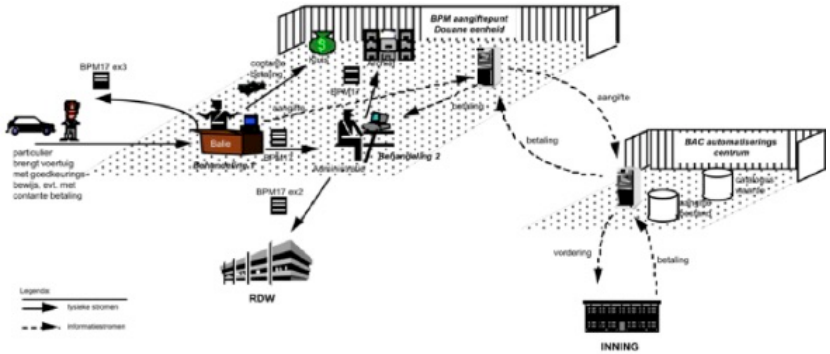
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Enterprise architecture

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Research challenges

Overall interest:

- IT-powered model-driven design technologies to support enterprise / systems architecting and engineering

More specifically …

1. Infrastructures for systems modelling
2. Concern / domain-specific extensions / refinements

Infrastructures for systems modelling

IT-powered:

- Model management
- Model mining & validation
- Human-model interaction & boundary models
- Modelling language management

Concern / domain specificity

1. Regulation management
2. Process management
3. Circular economy
4. Cyber-risk management
5. Data as a key resource
6. …

Coherence!

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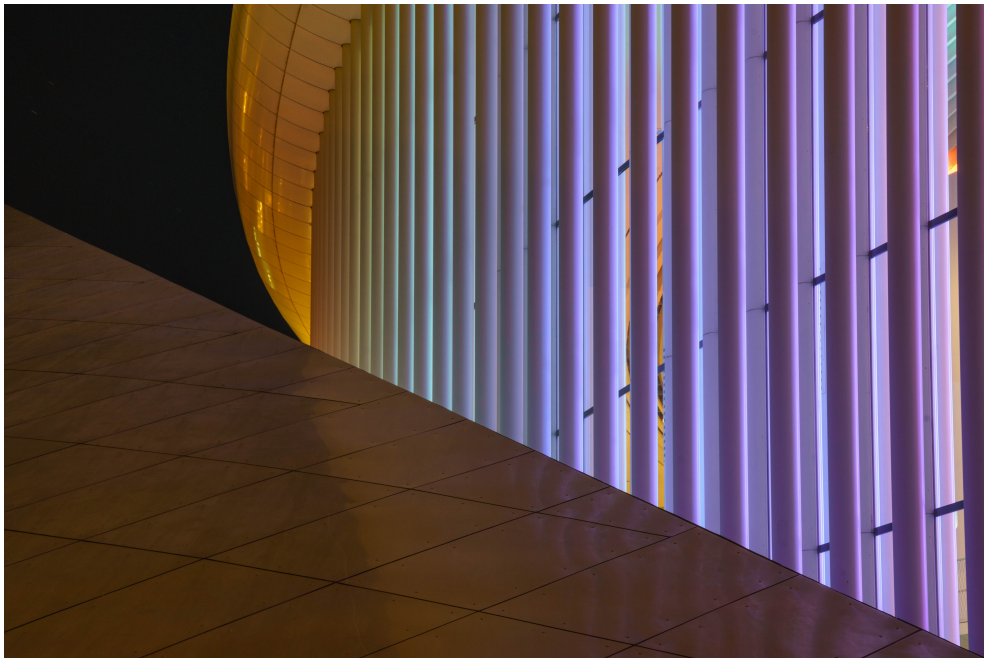


QUESTION
ANSWER
QUESTION
QUESTION
ANSWER
QUESTION
ANSWER

Have your say!
Send your proposals to
internal.communication@list.lu
(we promise a nice reward
when we are back in the office!)

- Communicate & Interact
- Keep-up the LIST-spirit
- Informative
- Scientific

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