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# Service Oriented Architecture

*... with the IBM SOA stack*

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Dimitar Petkov & Petyo Dimitrov

# Agenda

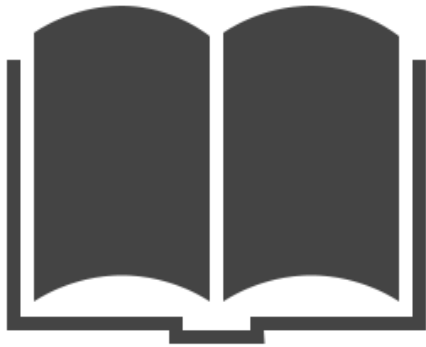
Service Oriented Architecture

Business Process Management

Enterprise Service Bus

Related technologies

# Structure



**theory**



**demo**

About us...

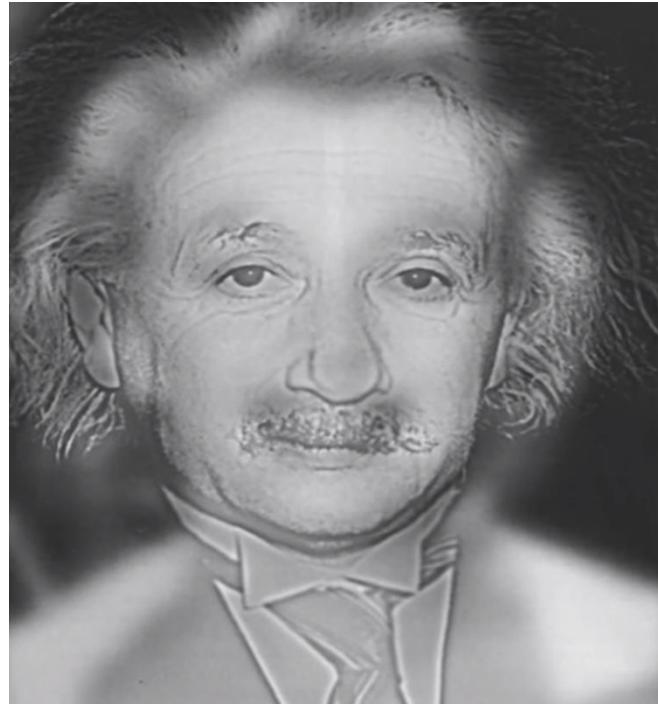


# Service Oriented Architecture

# SOA – definition



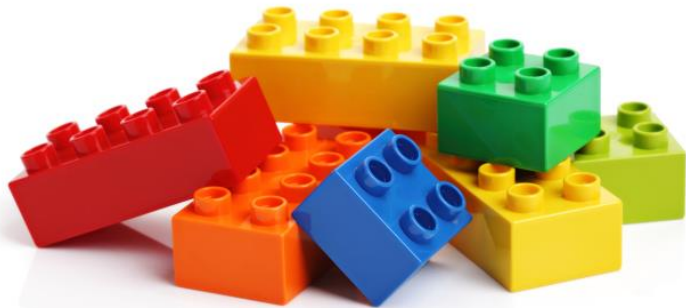
kind of  
vague



# SOA – definition (continued)



# SOA – definition (continued)



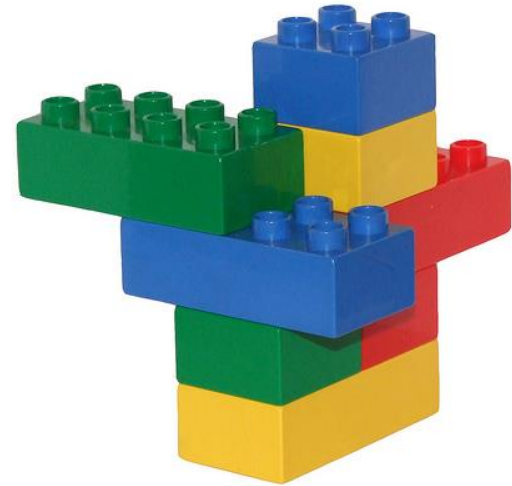
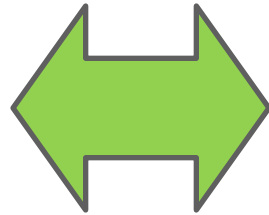
decompose to services



combine services



# SOA – definition (continued)



simplify change

# SOA – definition (continued)

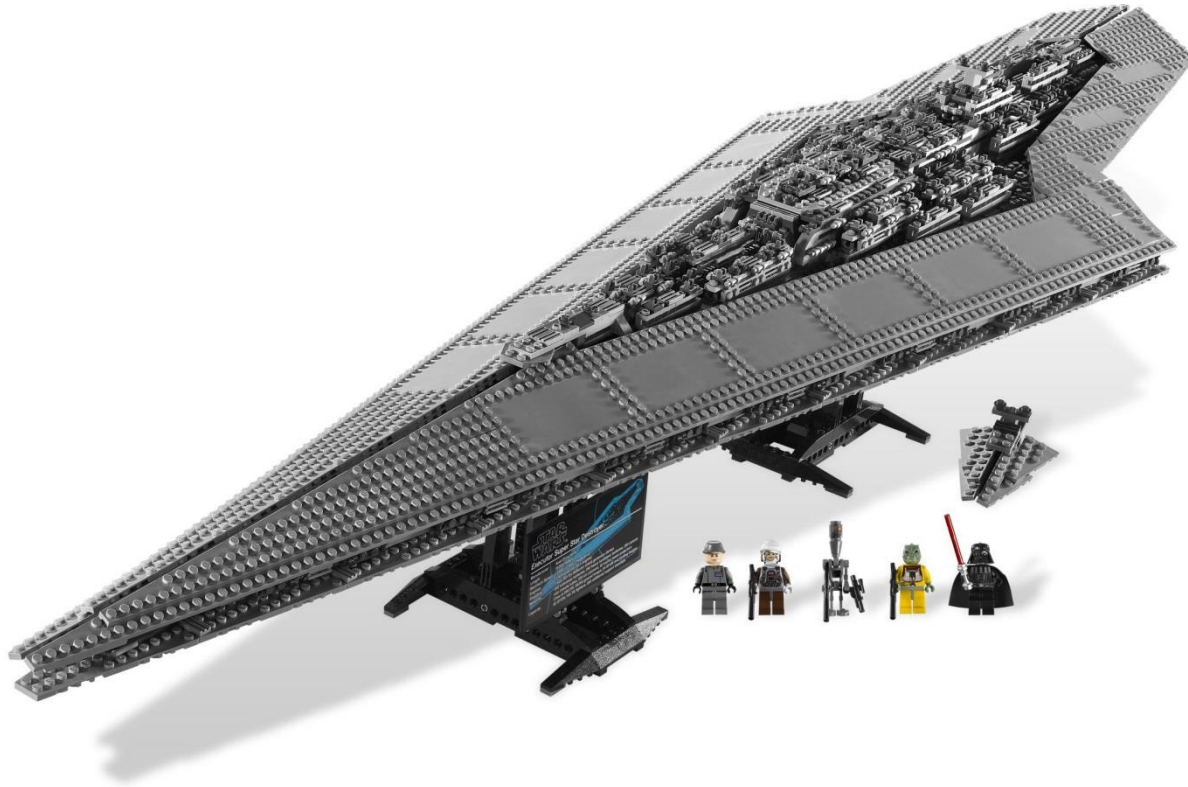


**EMbrace** *heterogeneity*

# SOA – drivers



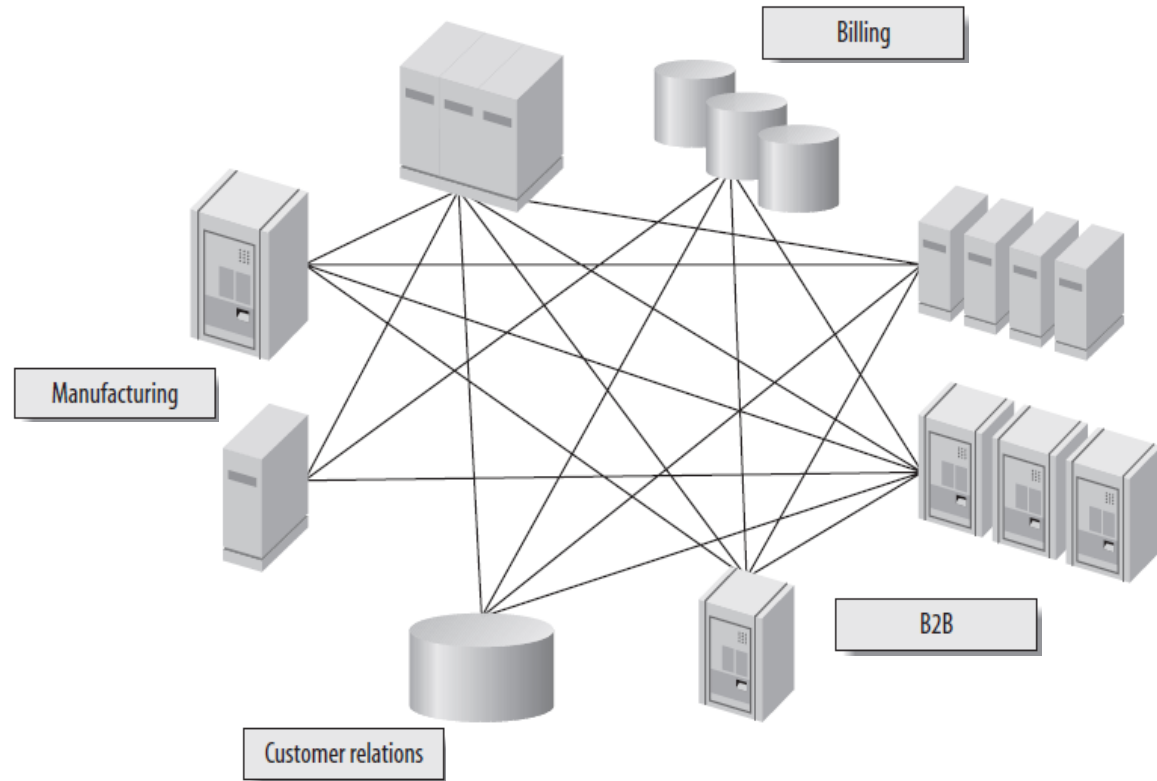
# SOA – drivers (complex systems)



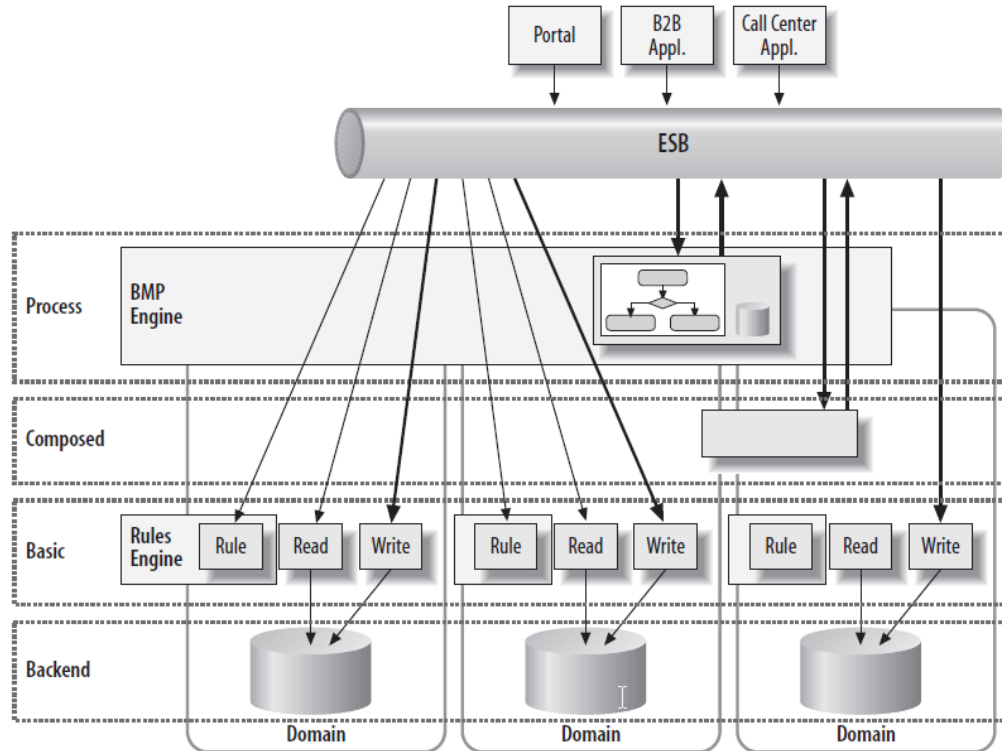
# SOA – drivers (multi-ownership)



# Common enterprise "landscape"



# Sample SOA reorganization



# SOA concepts – services

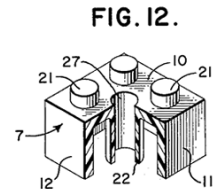
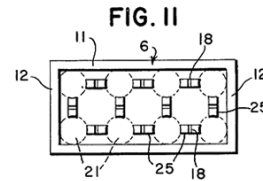
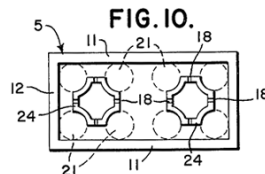
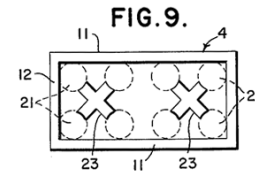
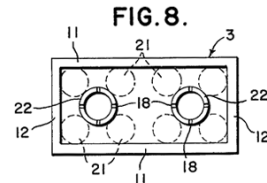
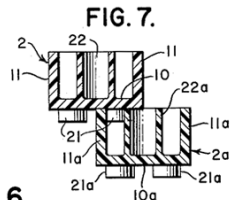
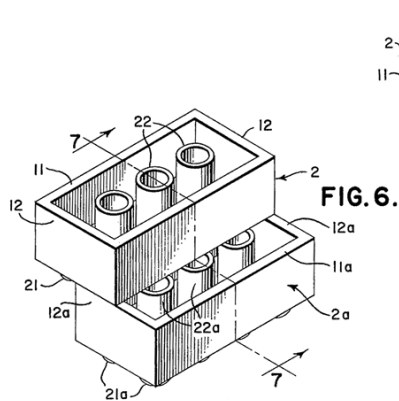
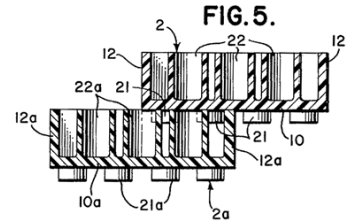
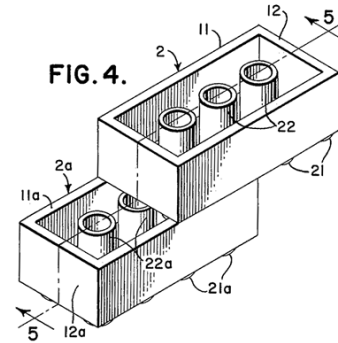
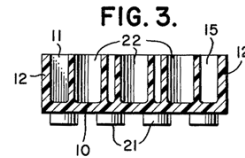
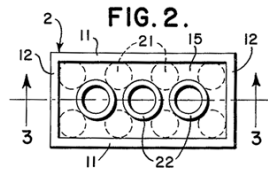
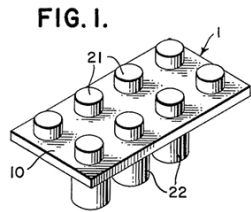




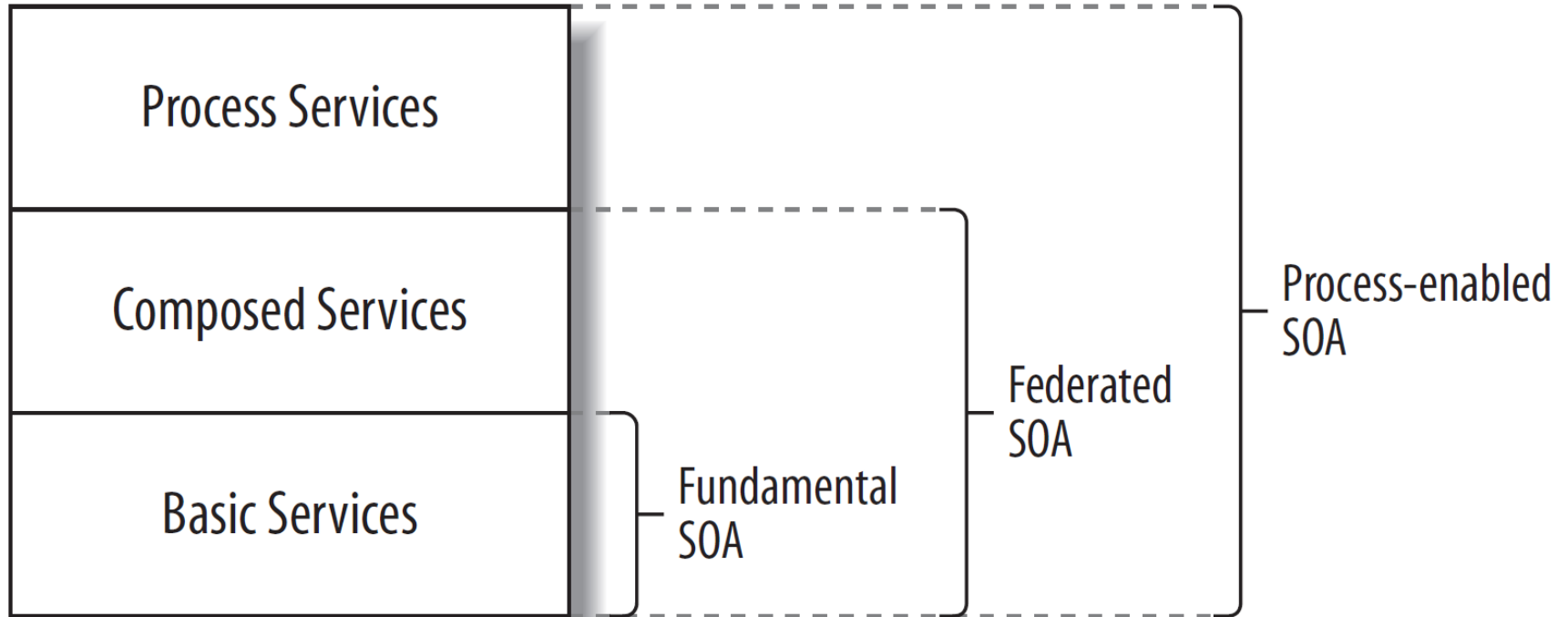
# SOA concepts – interoperability



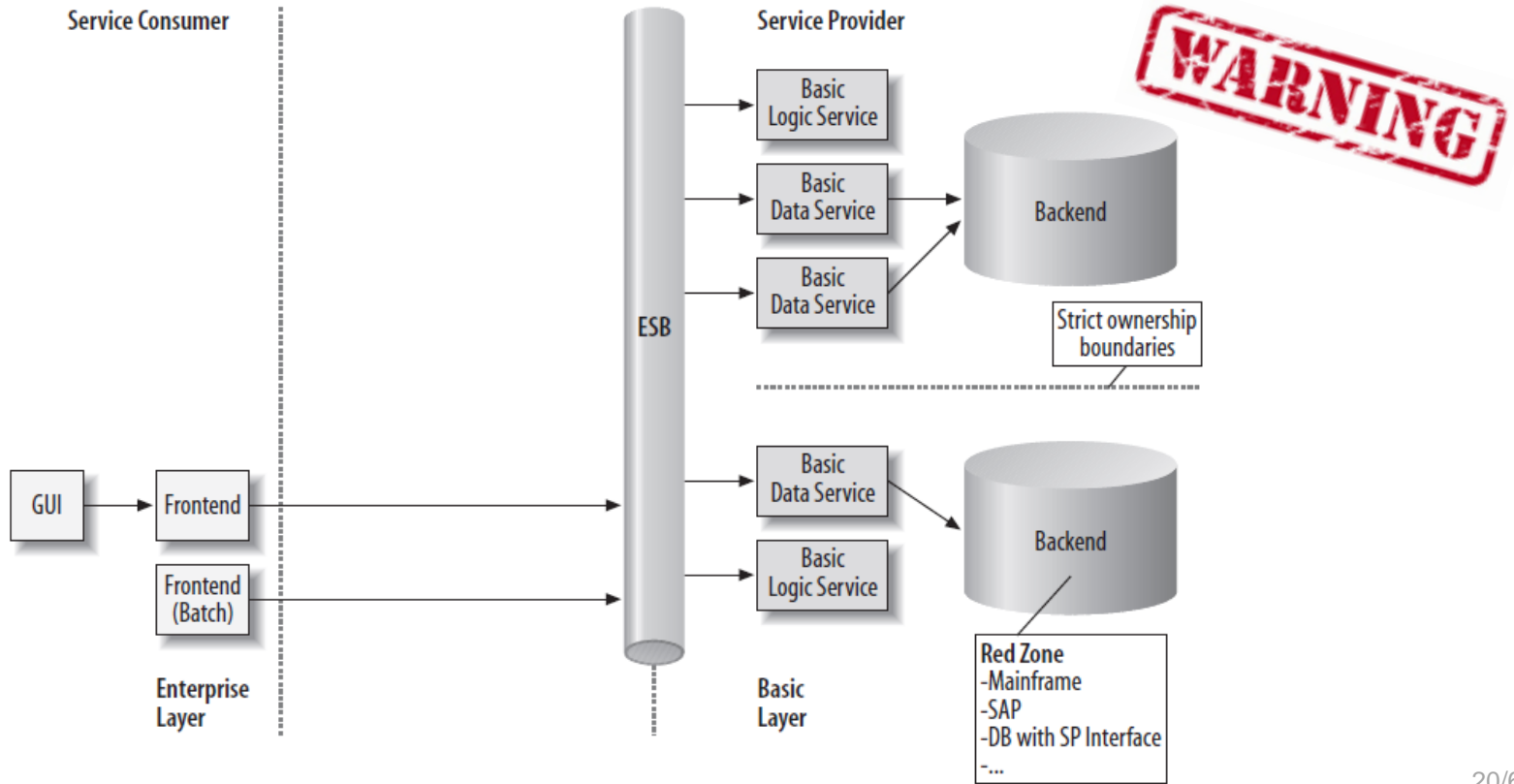
# SOA concepts – loose coupling



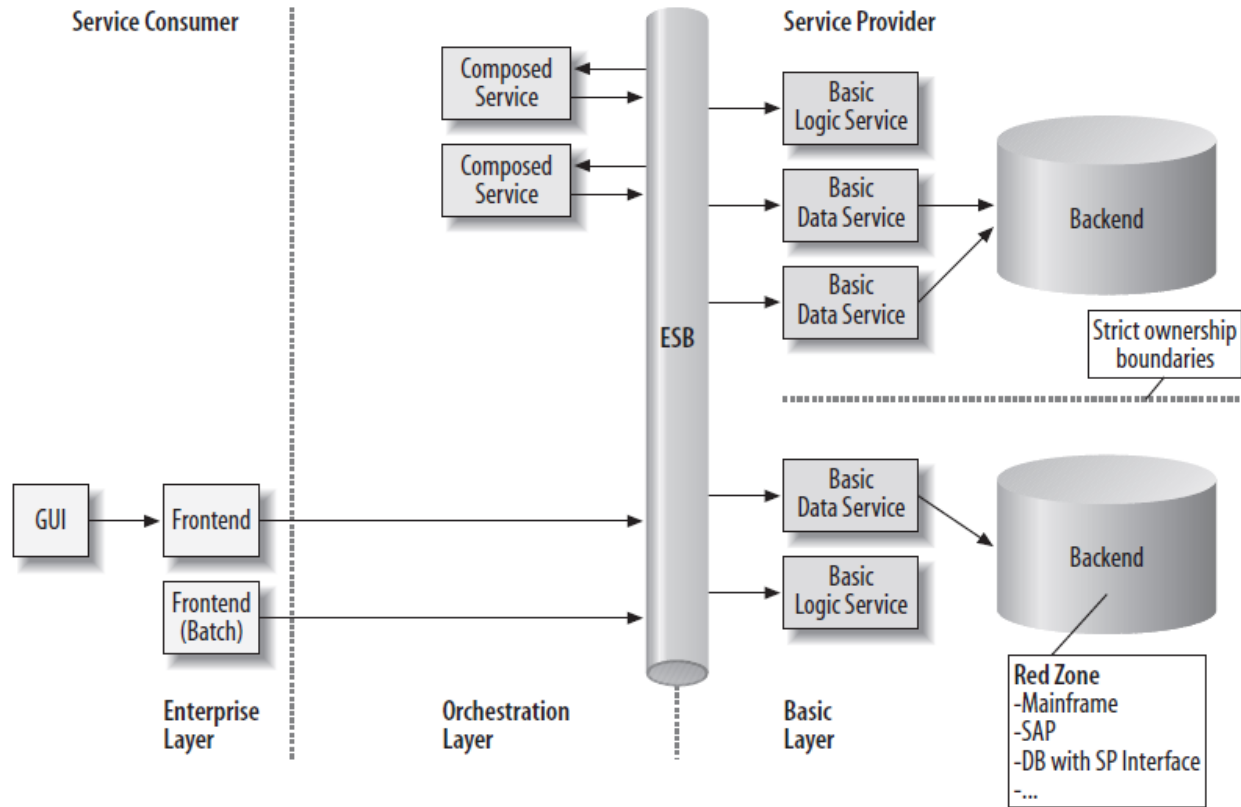
# SOA – service types



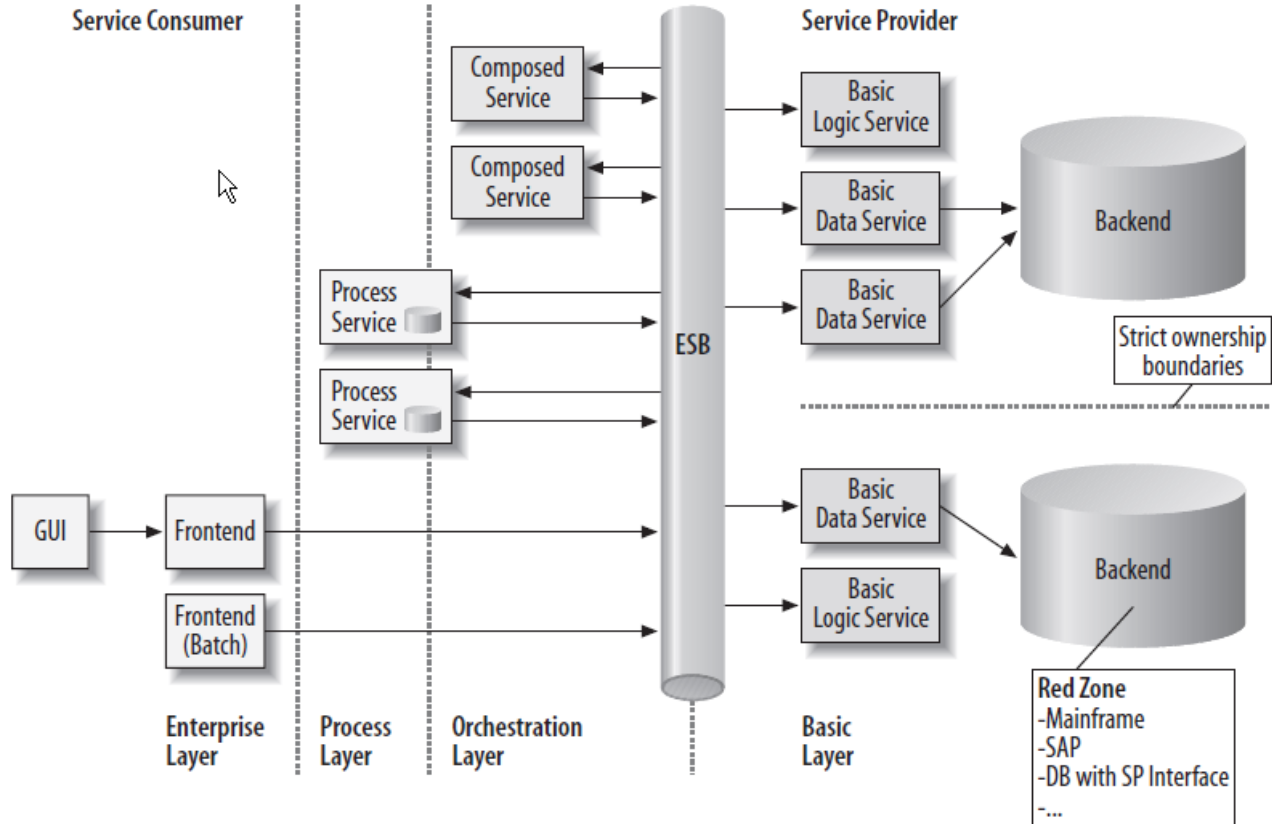
# SOA – fundamental maturity level



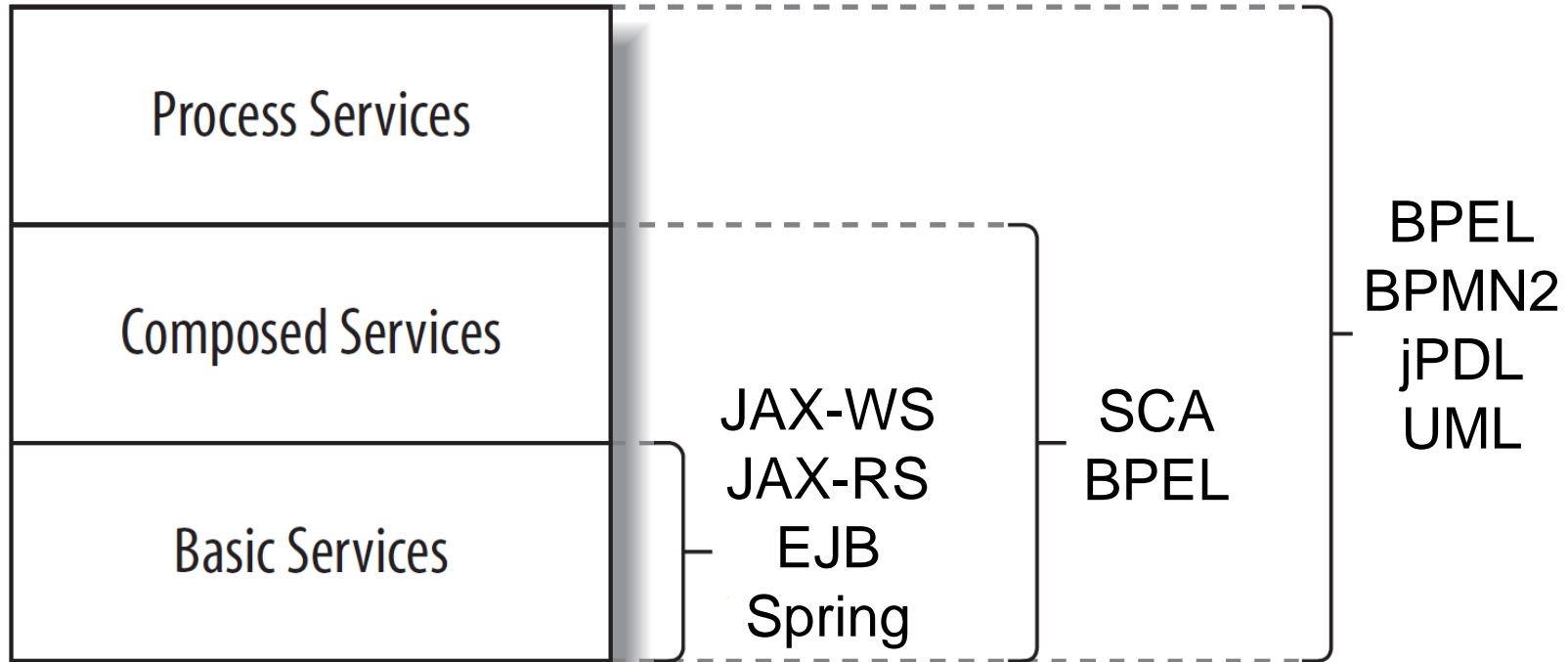
# SOA – federated maturity level



# SOA – process maturity level



# SOA – service implementation

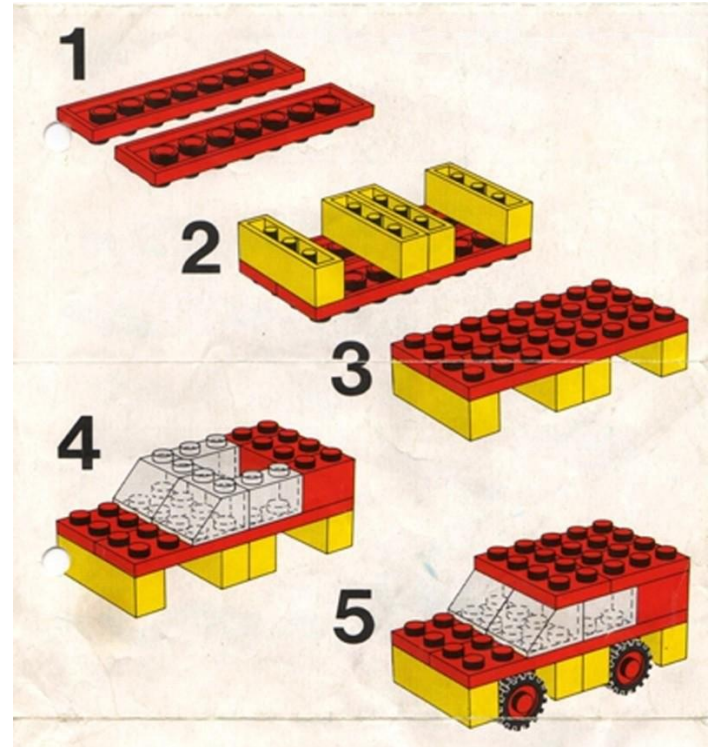


# SOA – IBM stack for assembly

Rational Application  
Developer

IBM Process Designer  
IBM Integration Designer

IBM Integration Toolkit





# SOA – IBM stack for deploy



WebSphere Application Server

IBM Business Process  
Manager

IBM Integration Bus

WebSphere MQ

# SOA – demonstration



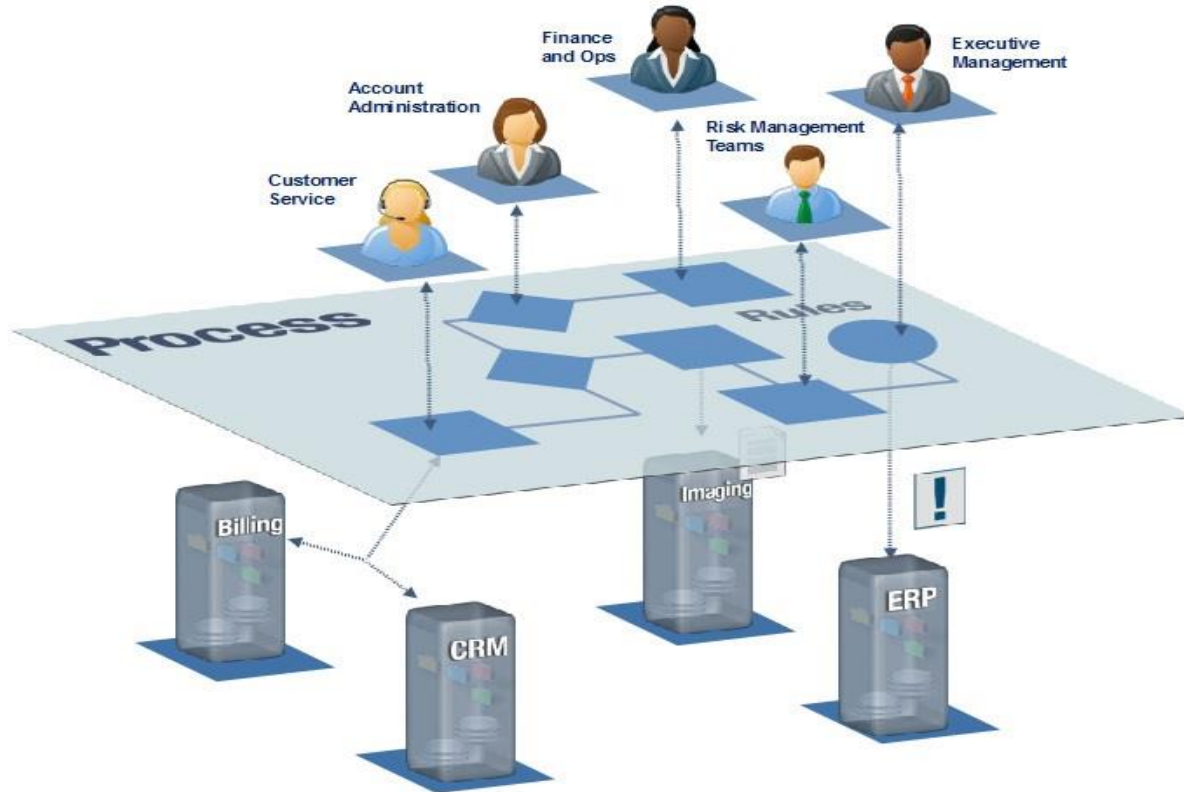
KEEP  
CALM  
AND  
FINGERS  
CROSSED

# Business Process Management

# BPM – business process



# BPM – orchestration



# BPM – definition



# BPM – purpose

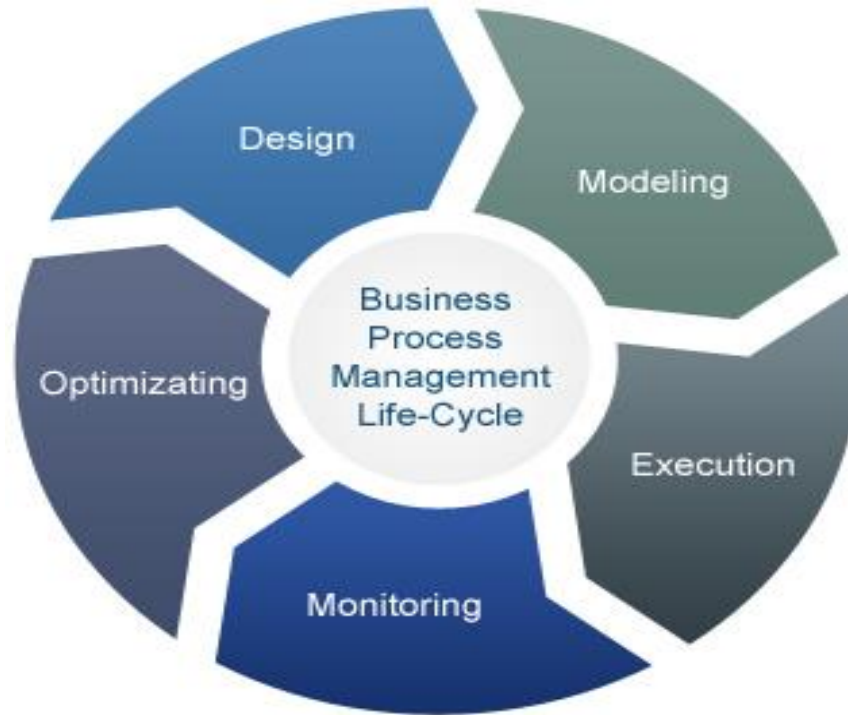


# BPM – the perception





# BPM – process lifecycle



# BPM – building the process model



# BPM – the playbacks



1. BPD



2. UI

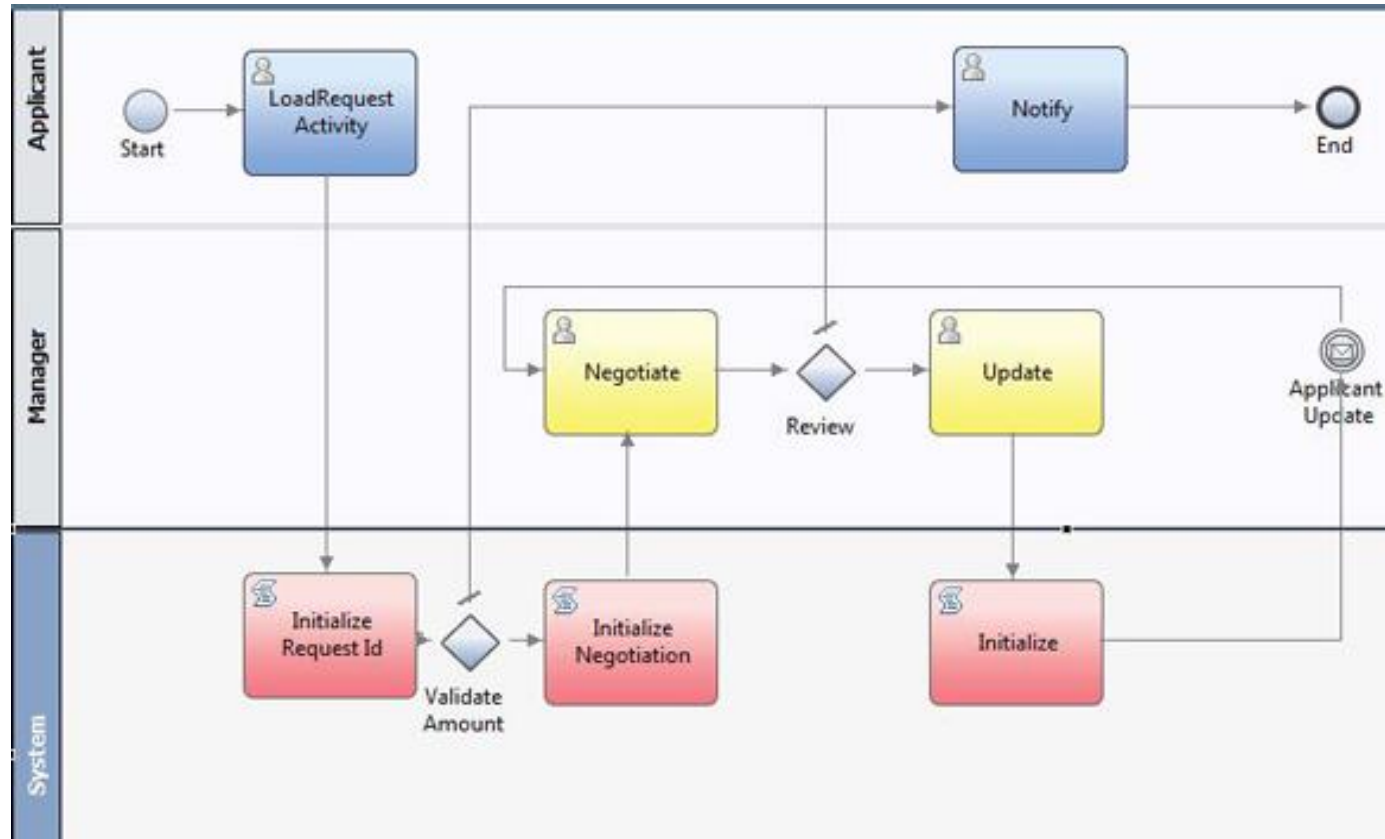


3. Integrate



4. Finalize

# BPM – BPMN2 building blocks



# BPM – demonstration



KEEP  
CALM  
AND  
FINGERS  
CROSSED

# Enterprise Service Bus

# ESB – definition

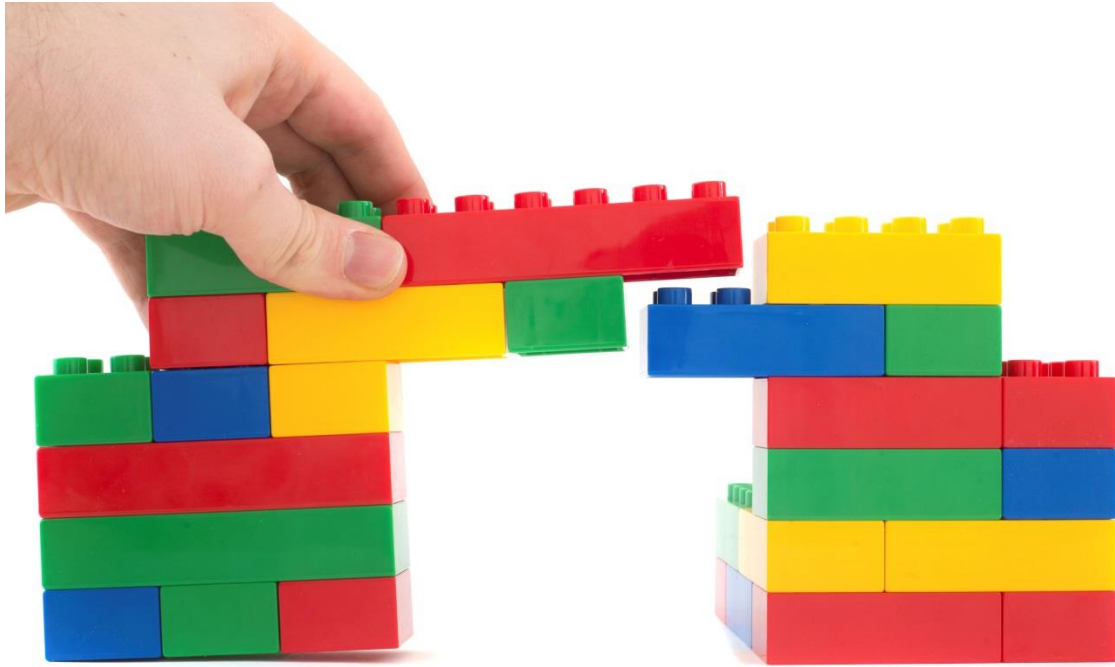


"buzz"-word

enterprise  
integration tools  
rebranded?

needed for SOA?

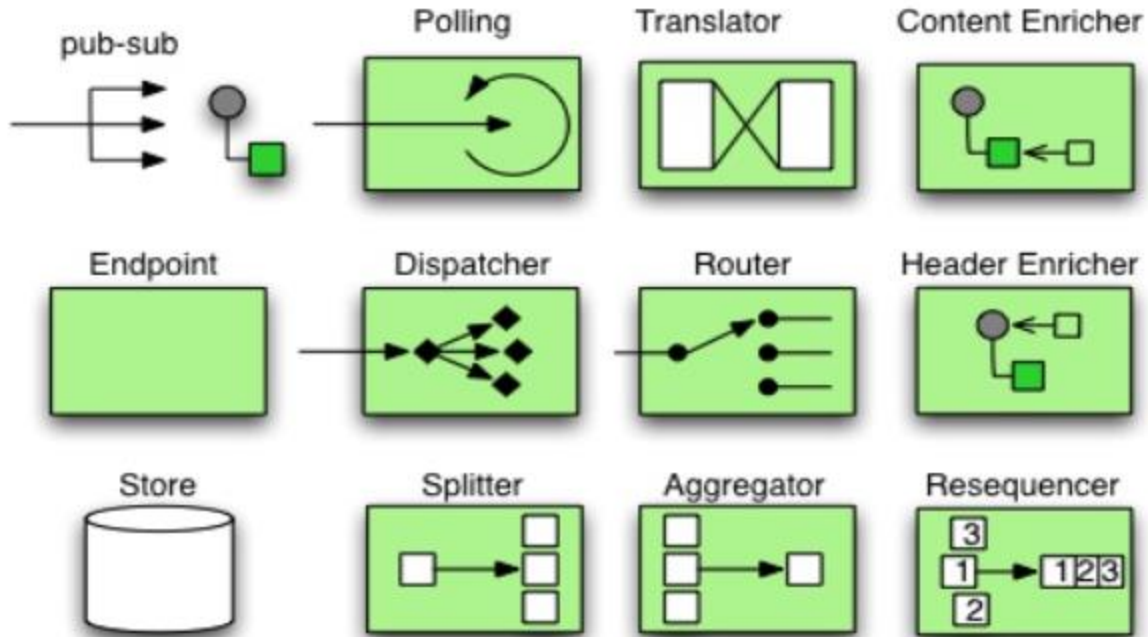
# ESB – integration tool



integration  
between  
enterprise  
systems



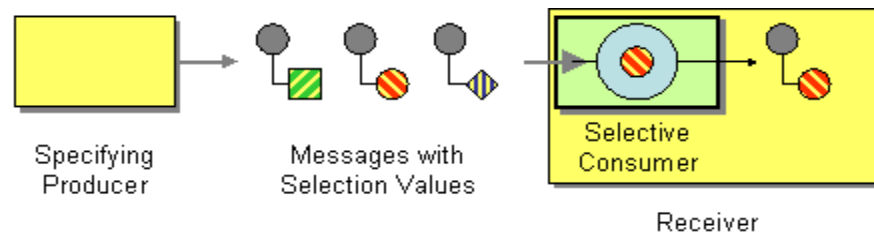
# ESB – set of EAI patterns



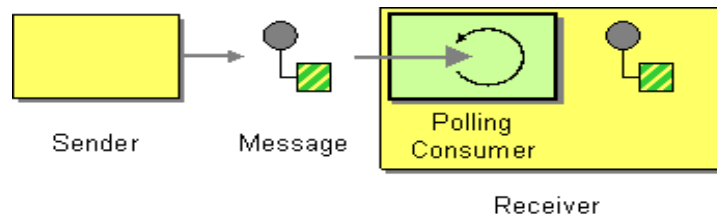
and more...

# ESB – example patterns

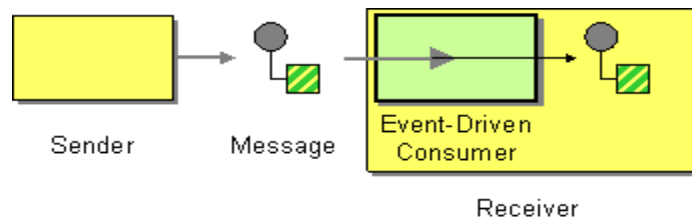
## Selective Consumer



## Polling Consumer



## Event-Driven Consumer



# ESB – SOA backbone



IBM WebSphere Message Broker

IBM WebSphere ESB

IBM Integration Bus

Oracle Service Bus

JBoss ESB

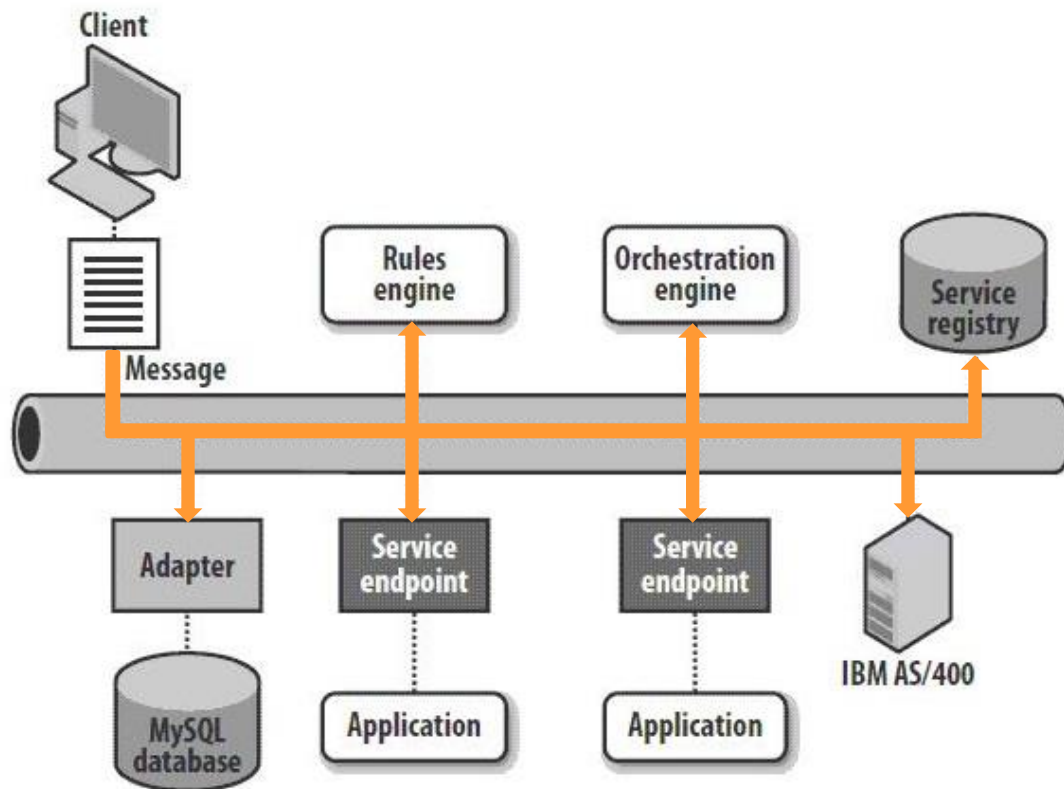
Mule ESB

Apache ServiceMix

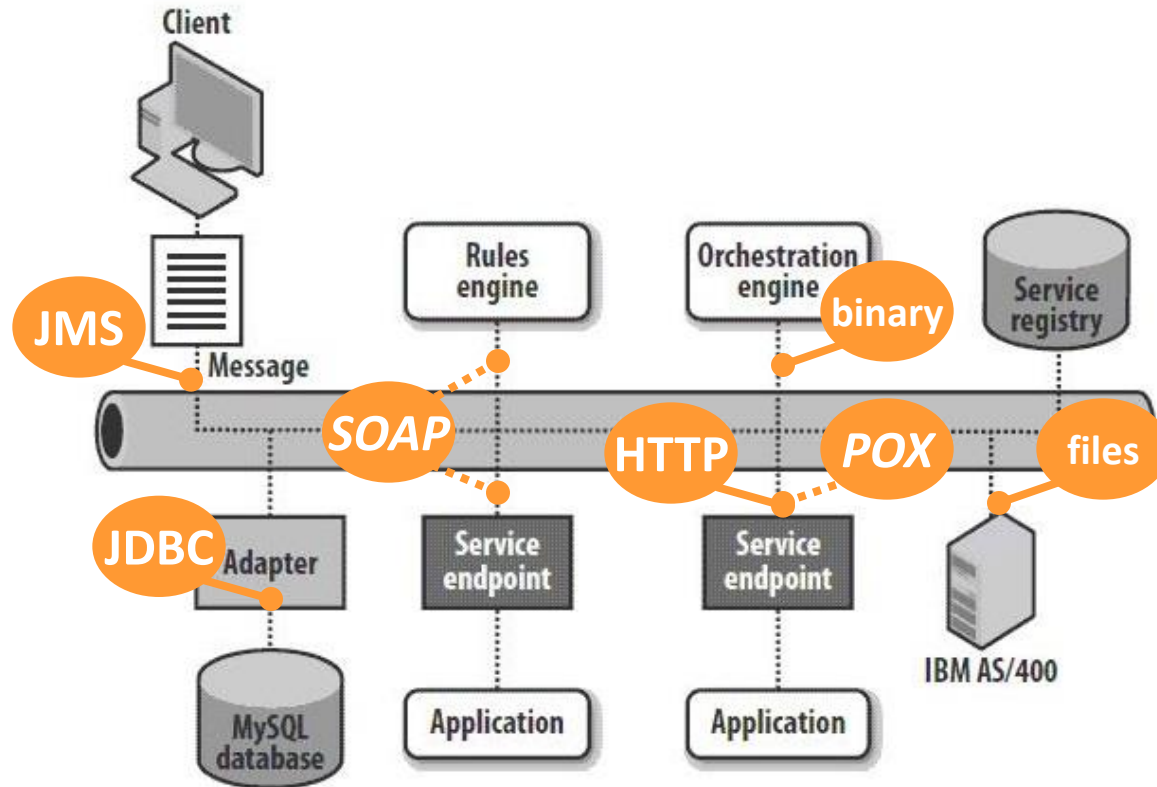
TIBCO ActiveMatrix ESB



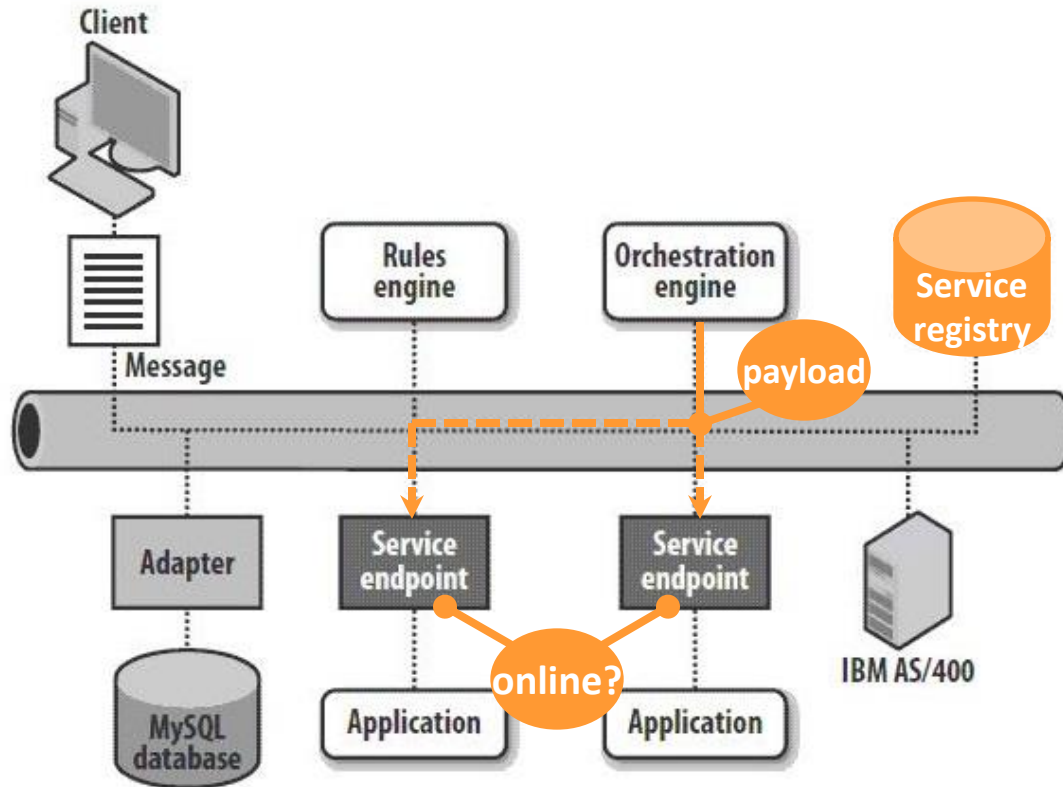
# ESB details – data mediation



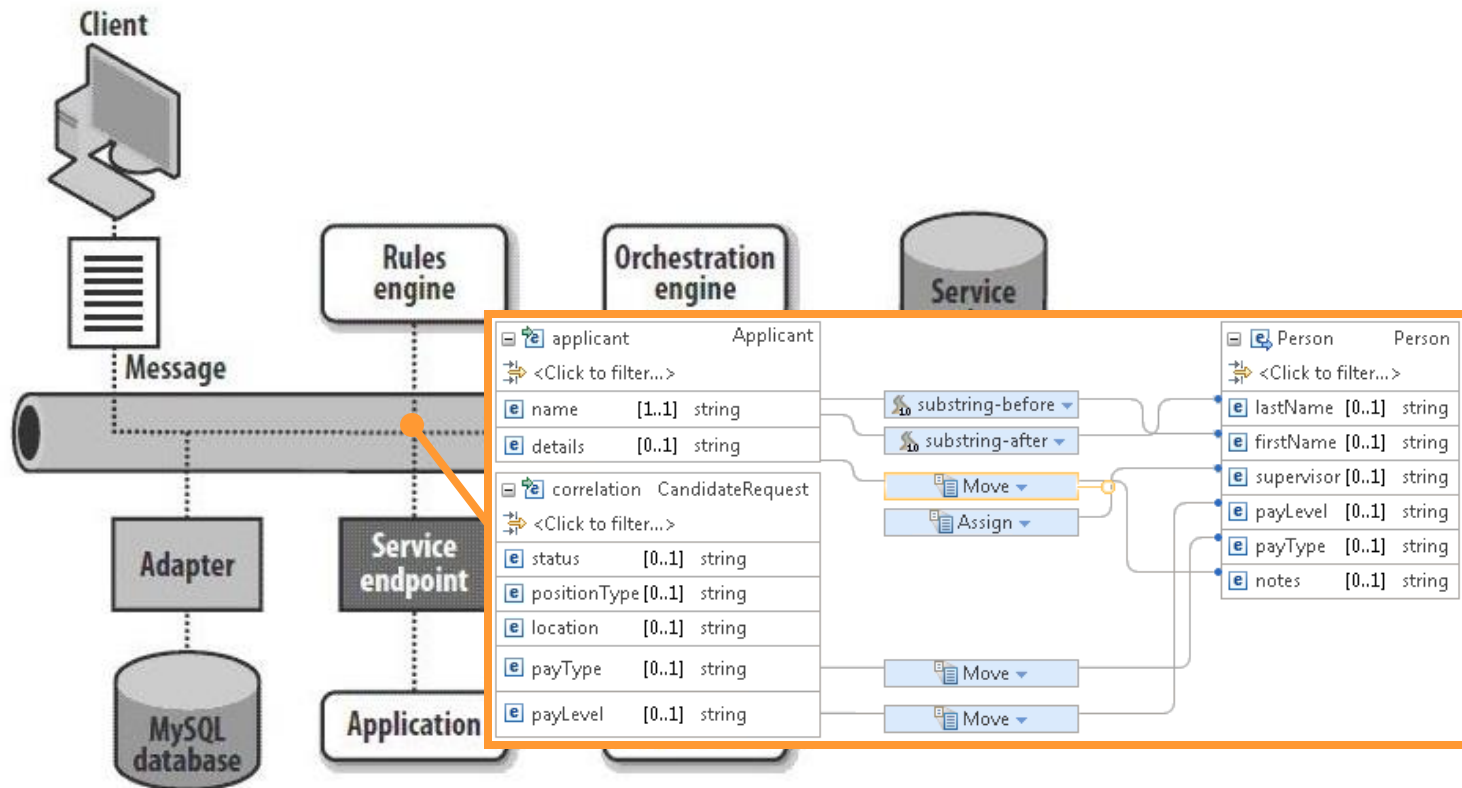
# ESB details – multiple protocols



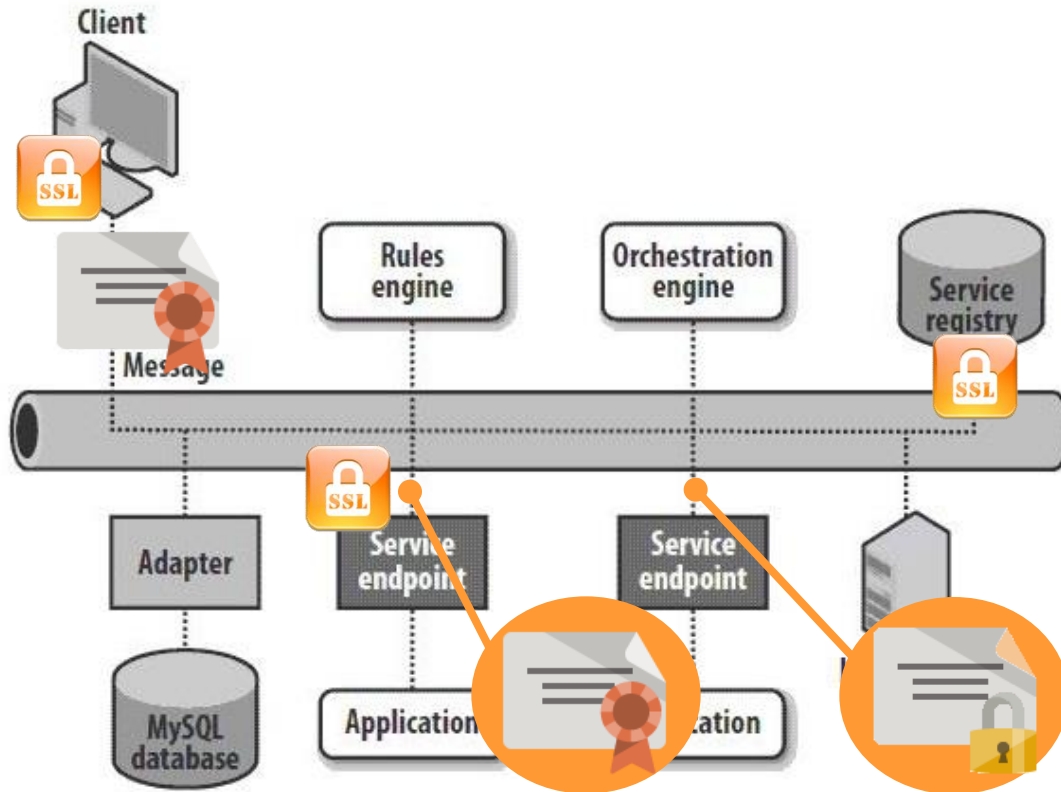
# ESB details – message routing



# ESB details – data transformation

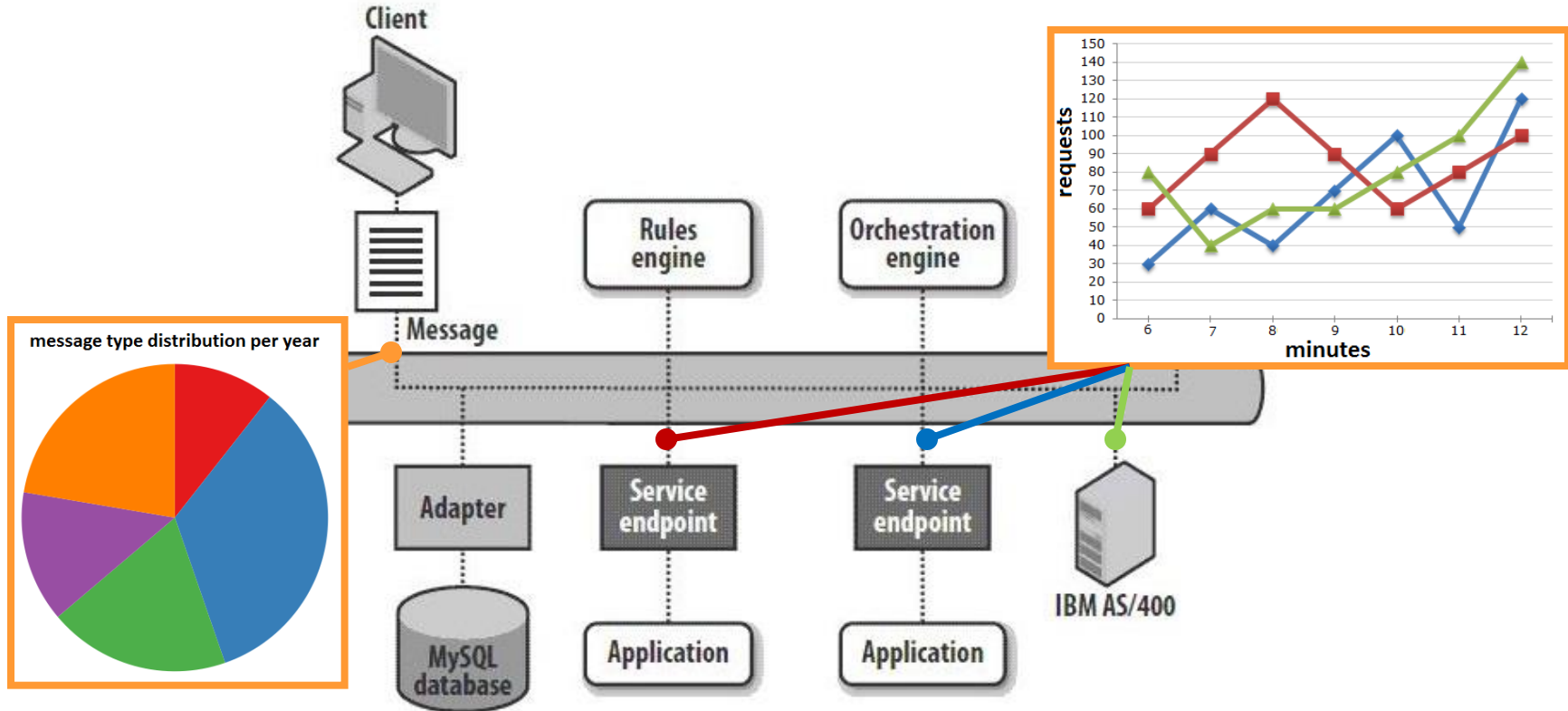


# ESB details – security





# ESB details – monitoring



# ESB – types



# ESB – demonstration



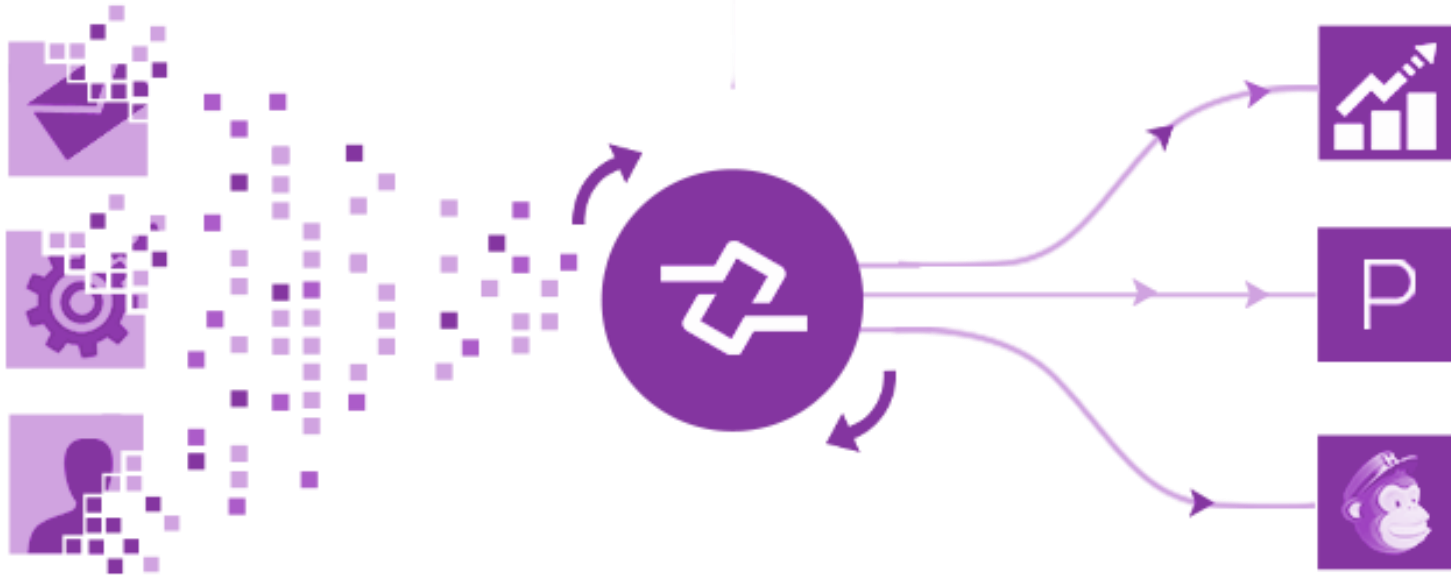
KEEP  
CALM  
AND  
FINGERS  
CROSSED

# Related Technologies

# CEP – definition



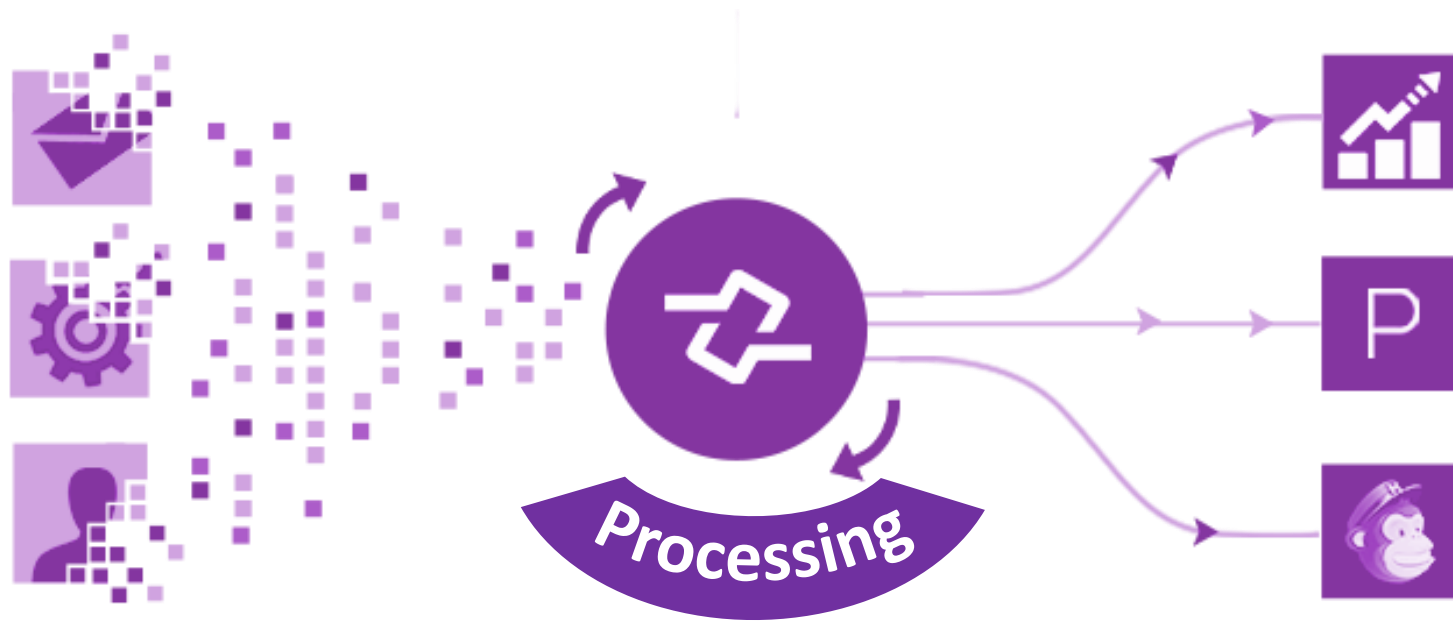
C  
O  
M  
P  
L  
E  
X



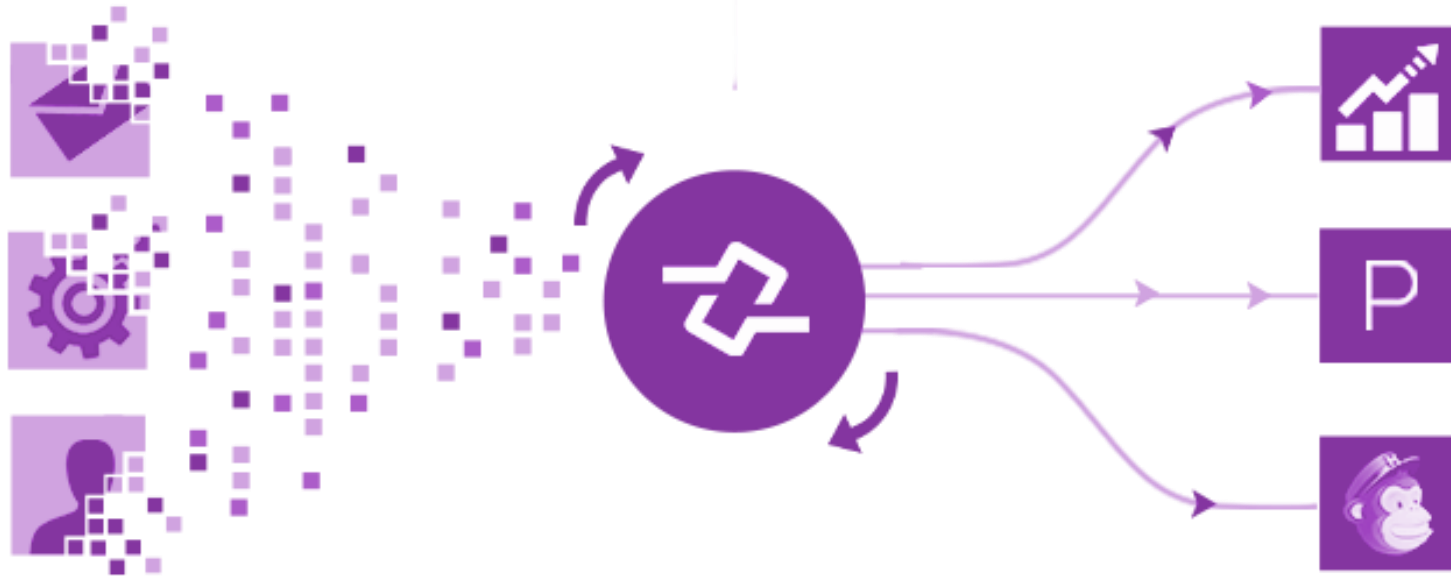
# CEP – definition (continued)



# CEP – definition (continued)



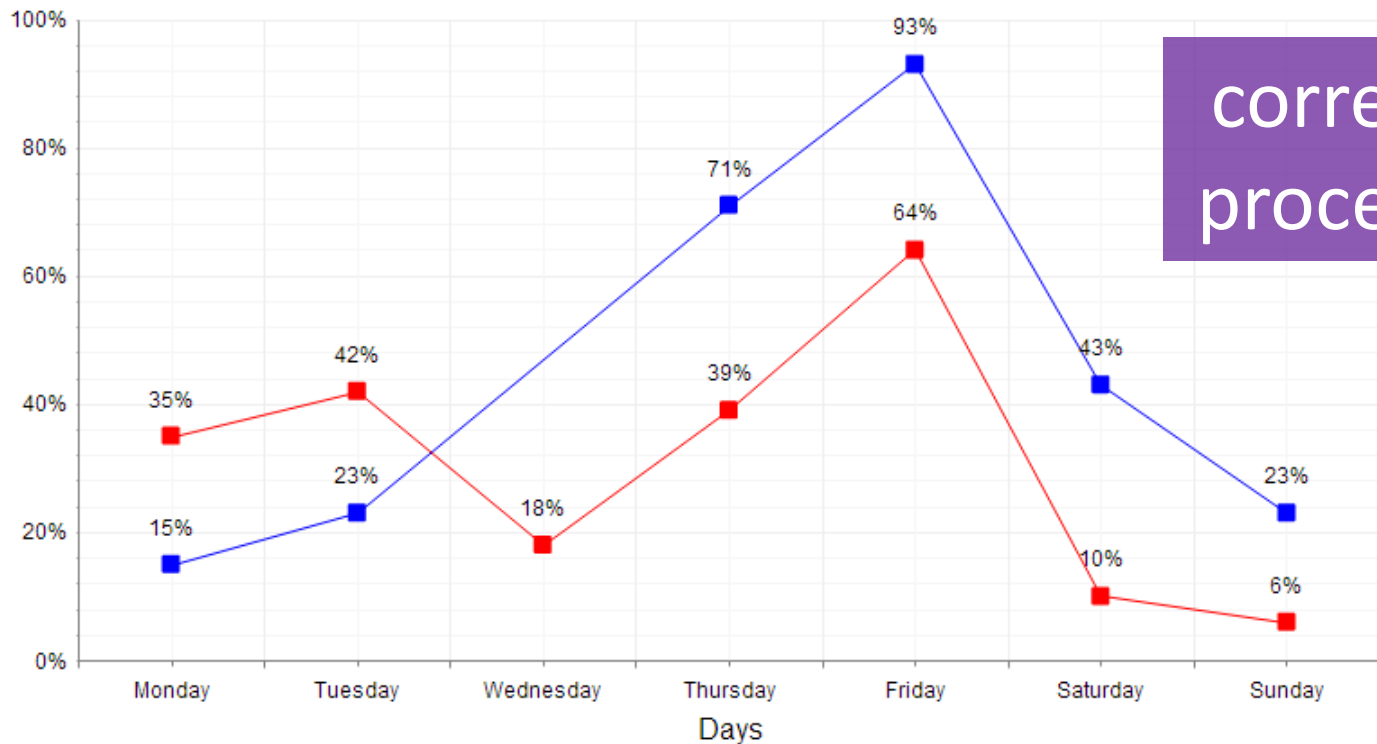
# CEP – definition (continued)



D  
E  
C  
I  
S  
I  
O  
N

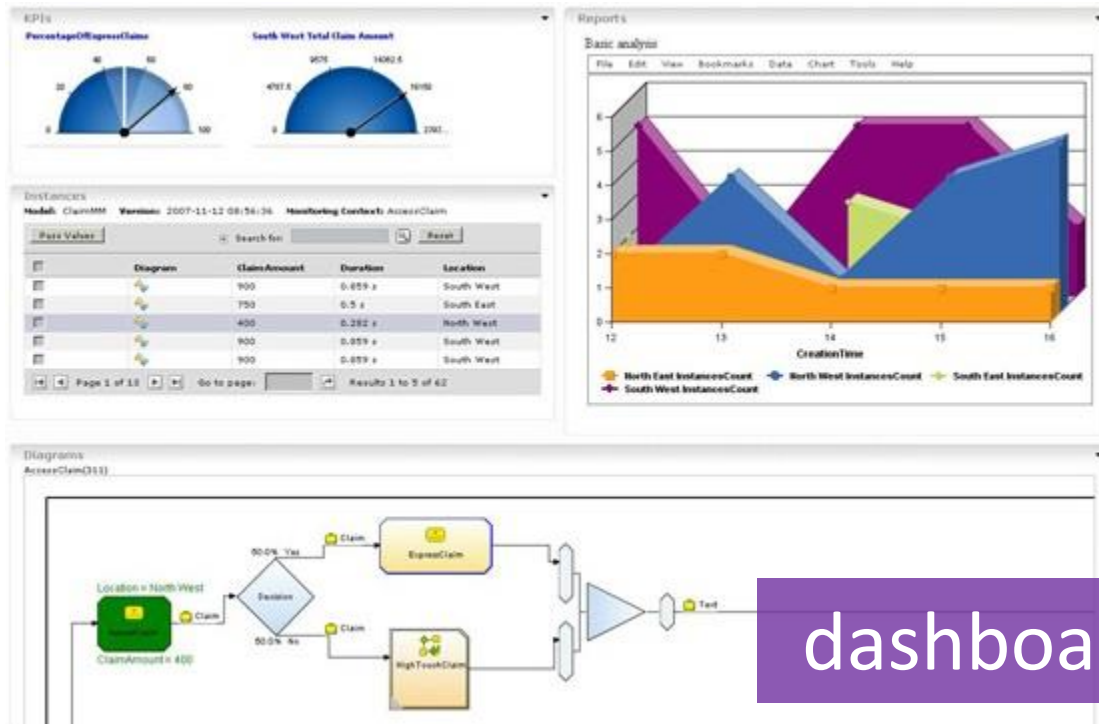


# CEP and BPM: *process* → *events*

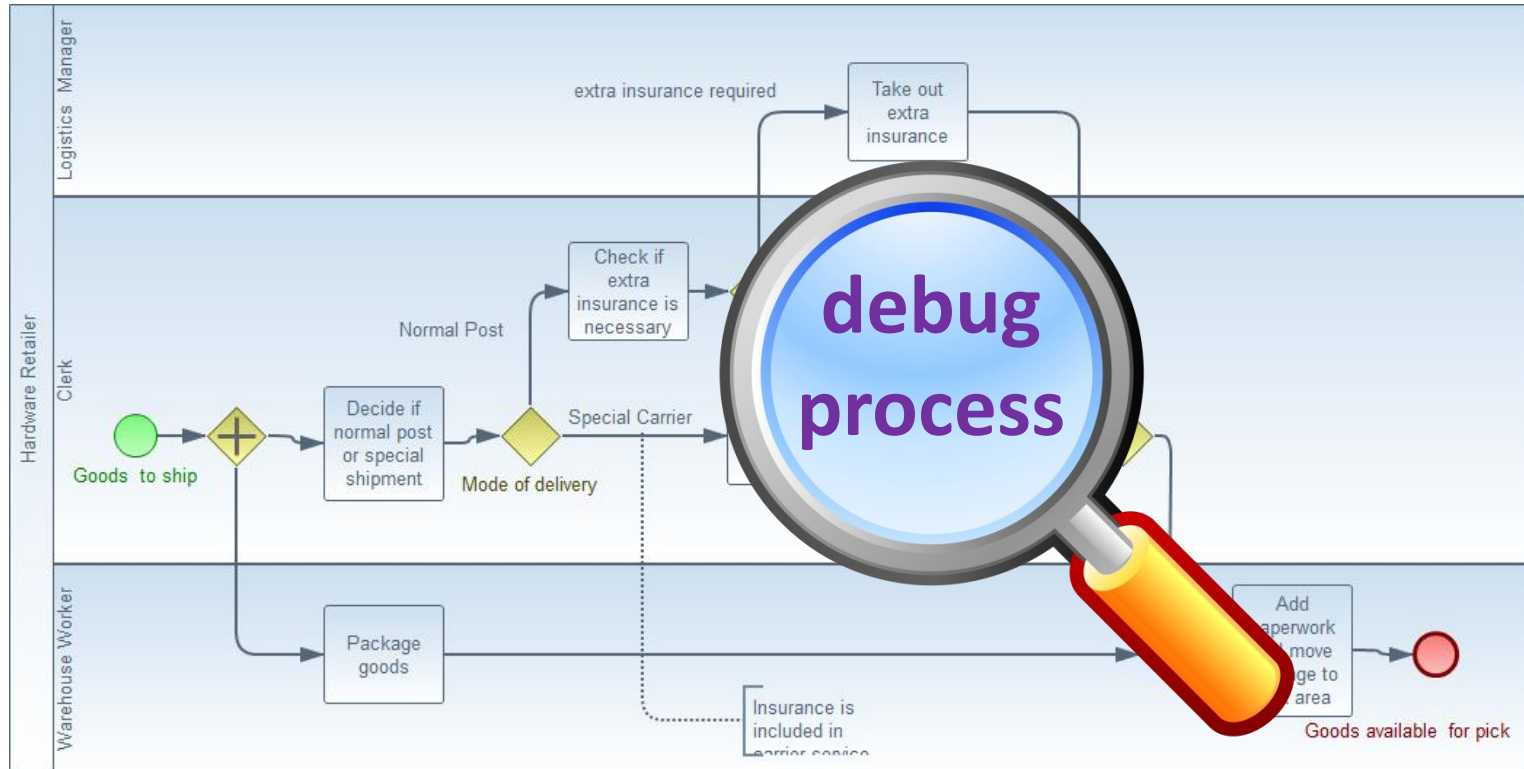


correlate  
processes

# CEP and BPM: *process* → *events*



# CEP and BPM: *process* → *events*



# CEP and BPM: *events* → *process*



# EDM – definition



ENTERPRISE DECISION  
MANAGEMENT  
*AKA*  
BUSINESS RULE  
MANAGEMENT (BRMS)



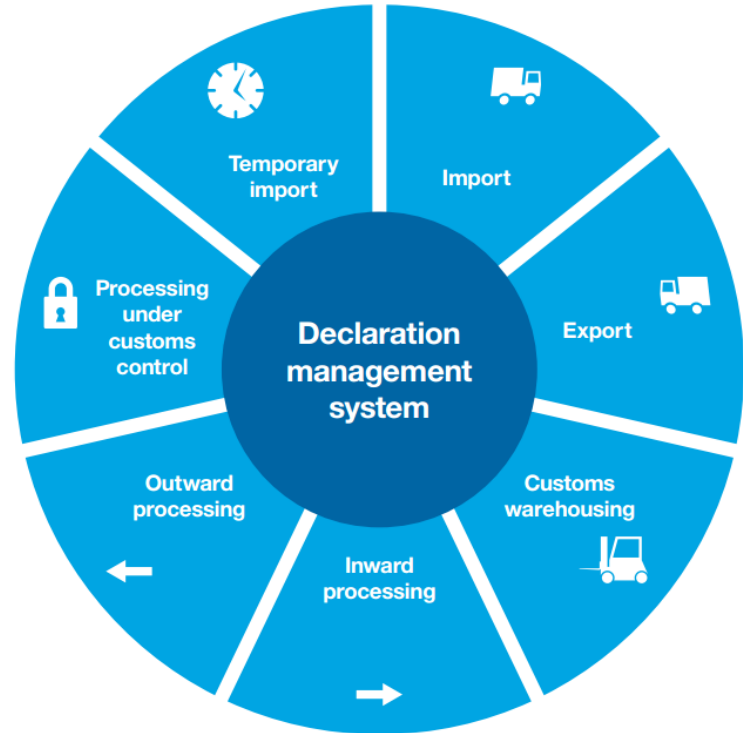
# EDM – decision table

	Yearly repayment		Corporate score		Grade	Message
	Min	Max	Min	Max		
1	0	10,000	$\geq 900$		A	Very low risk loan
2			600	900	A	Very low risk loan
3			300	600	B	Low risk loan
4	10,000	30,000	$\geq 900$		A	Very low risk loan
5			600	900	B	Low risk loan
6			300	600	C	Average risk loan
7	30,000	60,000	$\geq 900$		B	Low risk loan
8			600	900	C	Average risk loan
9			300	600	D	Risky loan

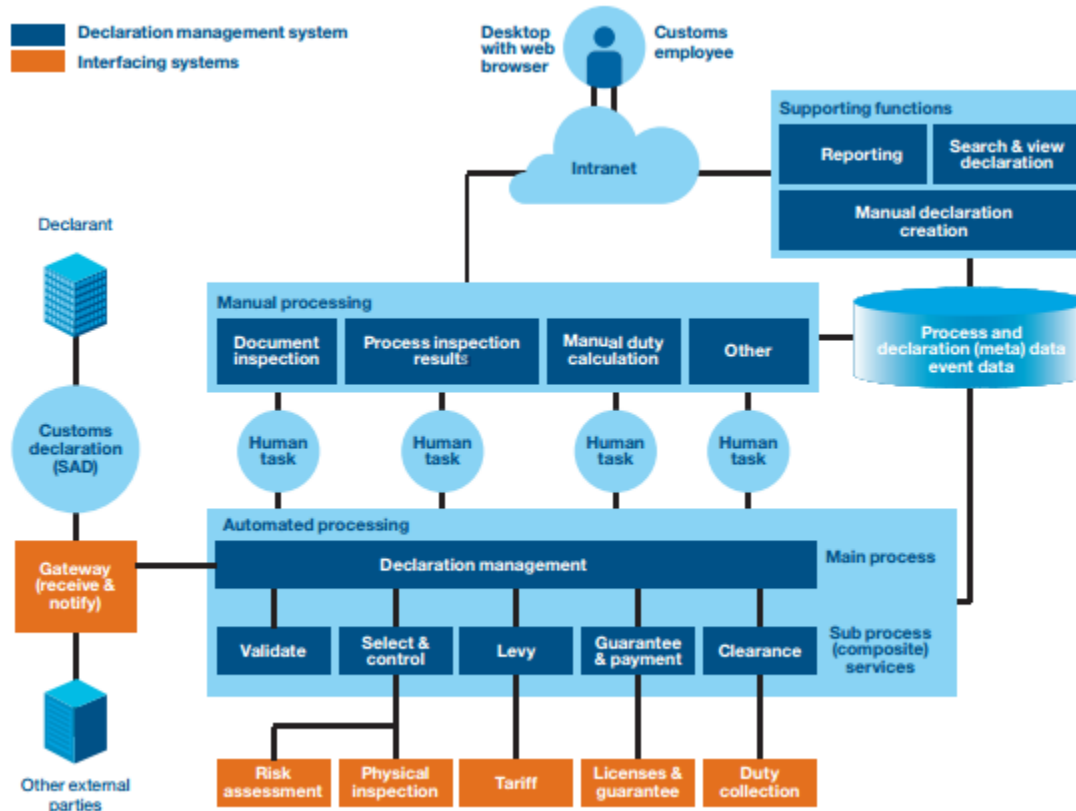
# SOA – real-life example



## Declaration Management System *Netherlands*

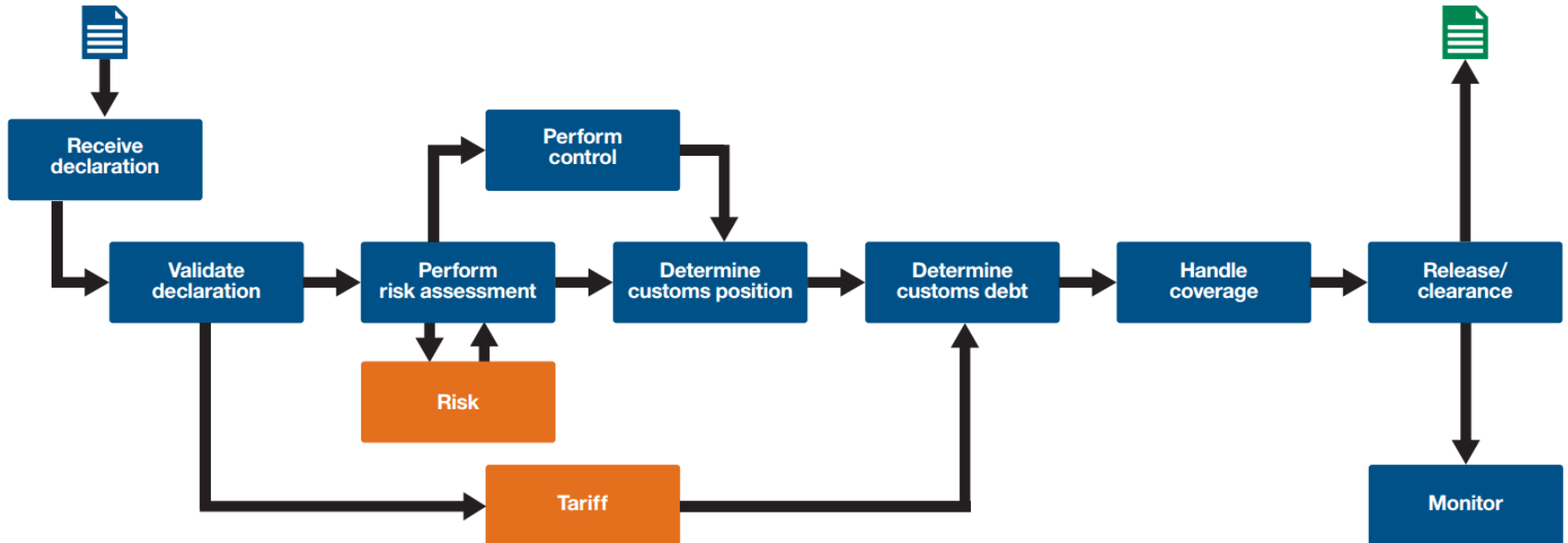
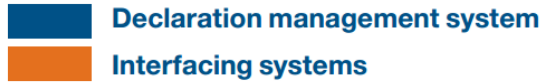


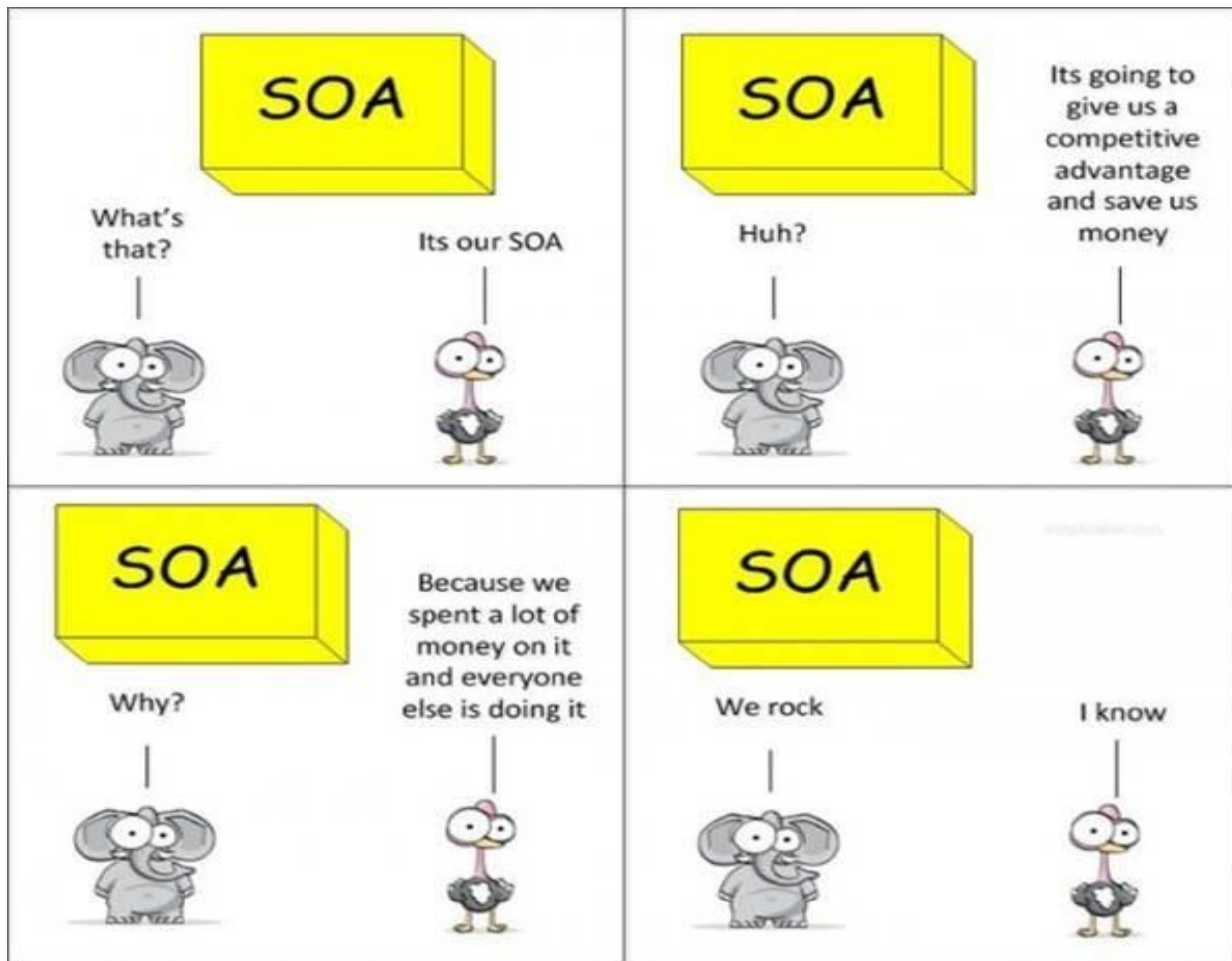
# SOA – DMS systems





# SOA – DMS main process





# Q&A

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petyo.dimitrov@musala.com



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