Using the C4 model as the glue between enterprise, business, solutions and software architectures

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Enterprise Architecture Specialist Group

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Bank of England

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Principal Architect

Outline

- C4 model – a quick introduction
- Using C4 model at the Bank
  - EA Challenges and how C4 model can help
  - How we built C4 model into our EA metamodel
- Questions

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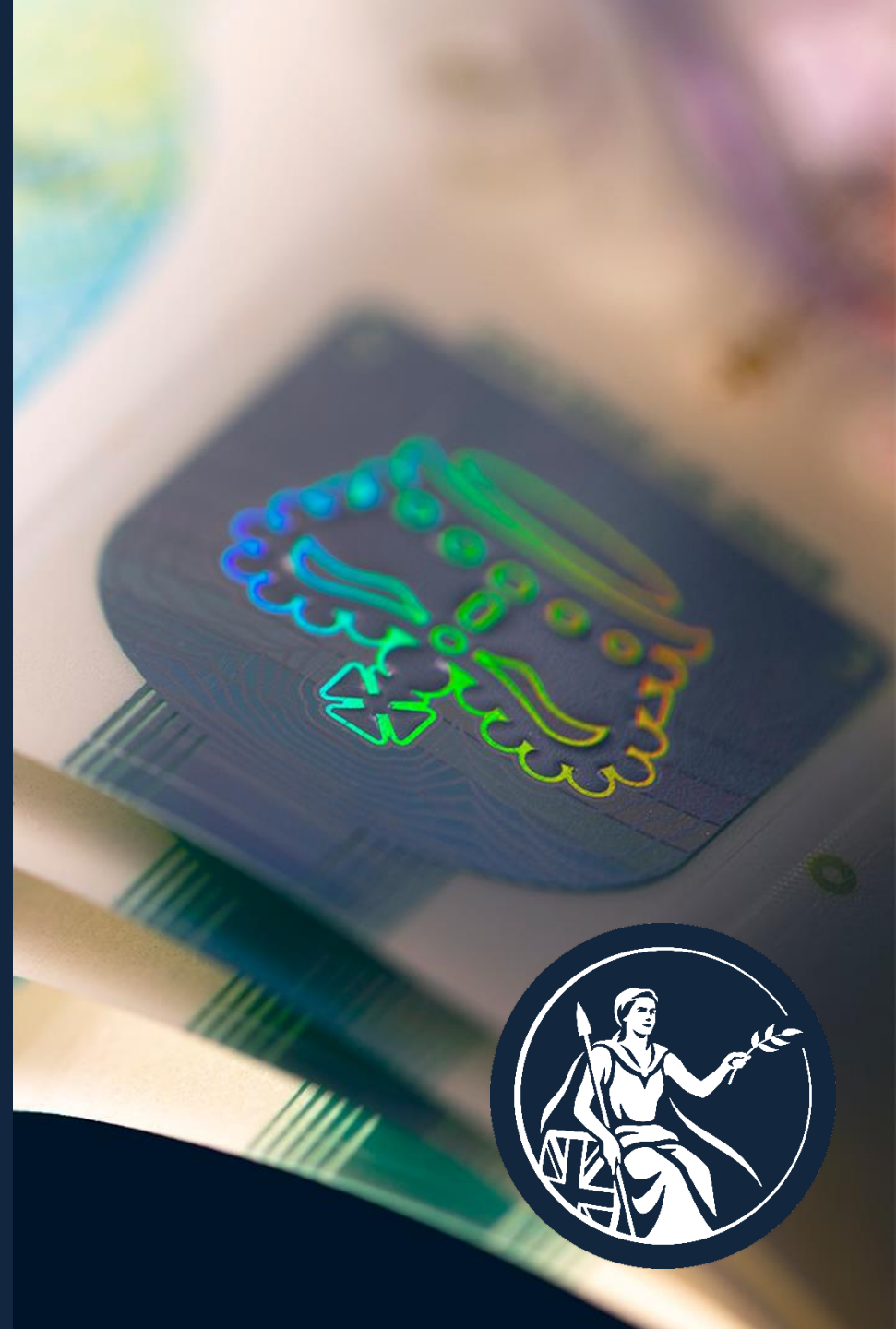
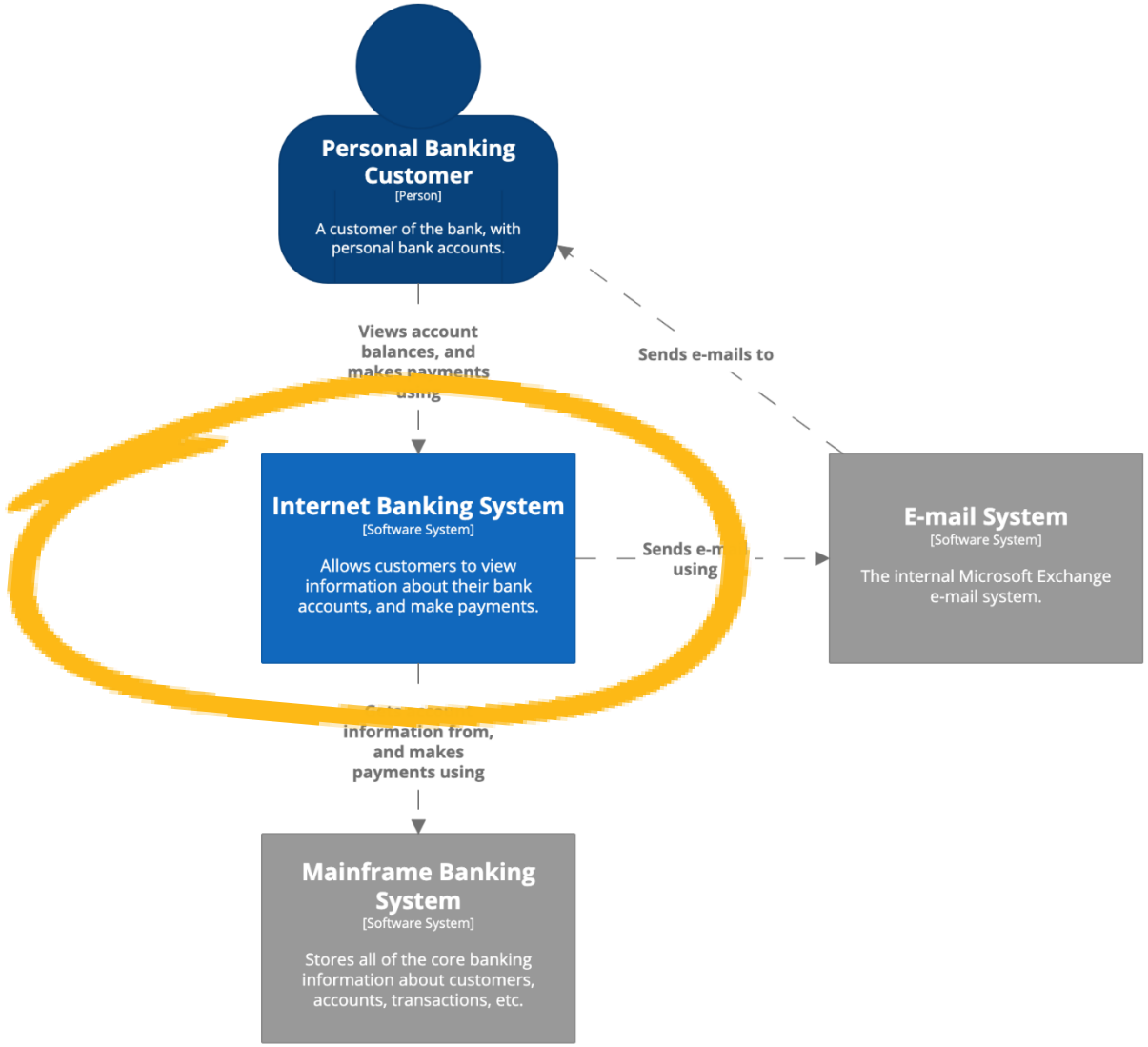
C4 model

A quick introduction



What is the C4 model?

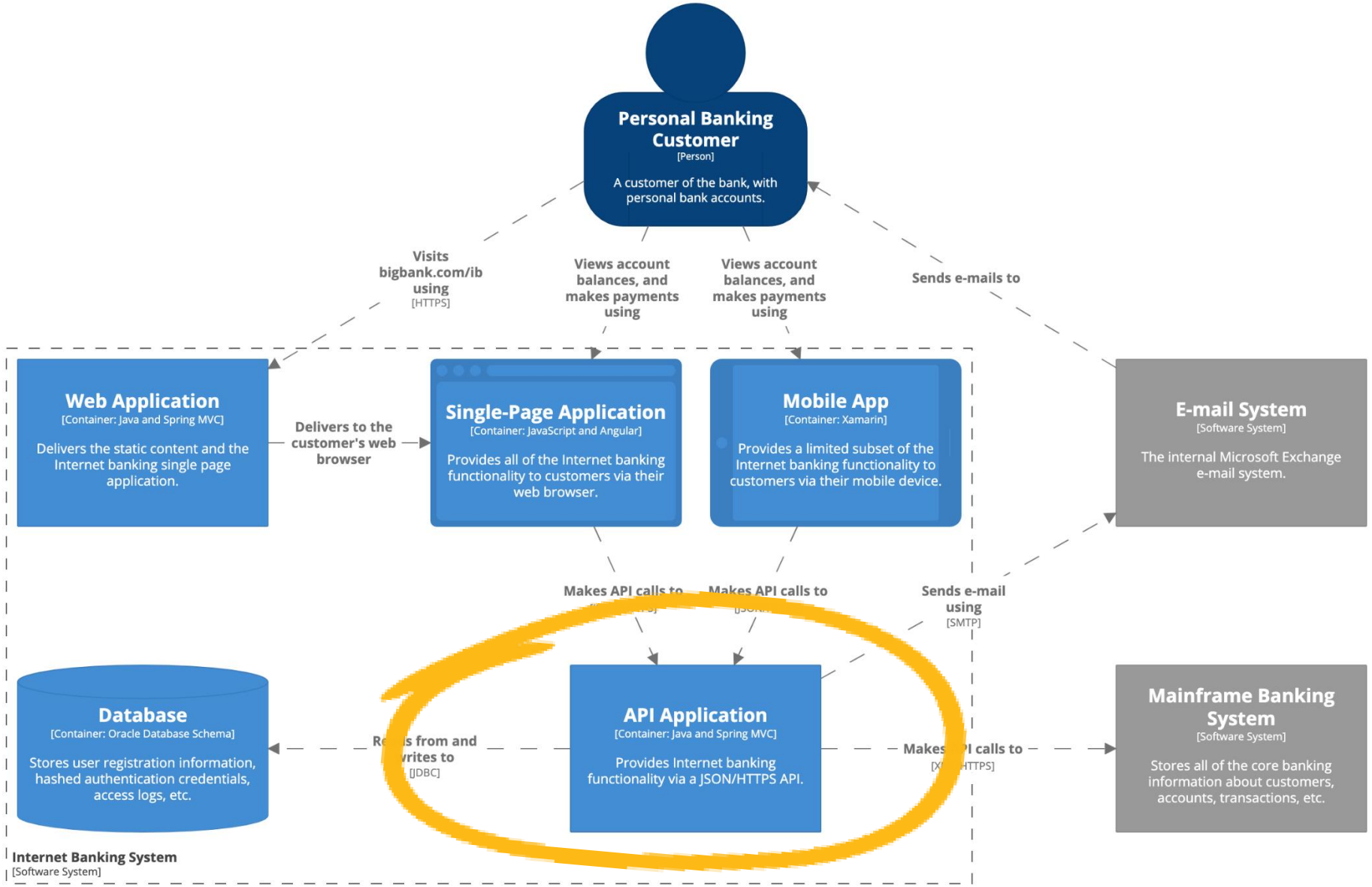
- An approach to diagramming software architecture developed by Simon Brown
- It brings:
  - Organisation to 4 layers of abstraction facilitating easy transition between them
  - Clarity to the meaning of diagrams, which should be self-explanatory
- It is:
  - Model and diagramming language agnostic
  - Supported by the Bank's modelling metamodel being developed in Sparx EA
- It is not:
  - An architecture modelling solution
  - A comprehensive architecture artefact collection to address all architecture needs
  - For example, it doesn't address data, customer journeys, process flow…



System Context diagram for Internet Banking System

The system context diagram for the Internet Banking System.
Workspace last modified: Wed Feb 05 2020 09:33:36 GMT+0100 (Central European Standard Time)

Source: C4model.com



Container diagram for Internet Banking System

The container diagram for the Internet Banking System.
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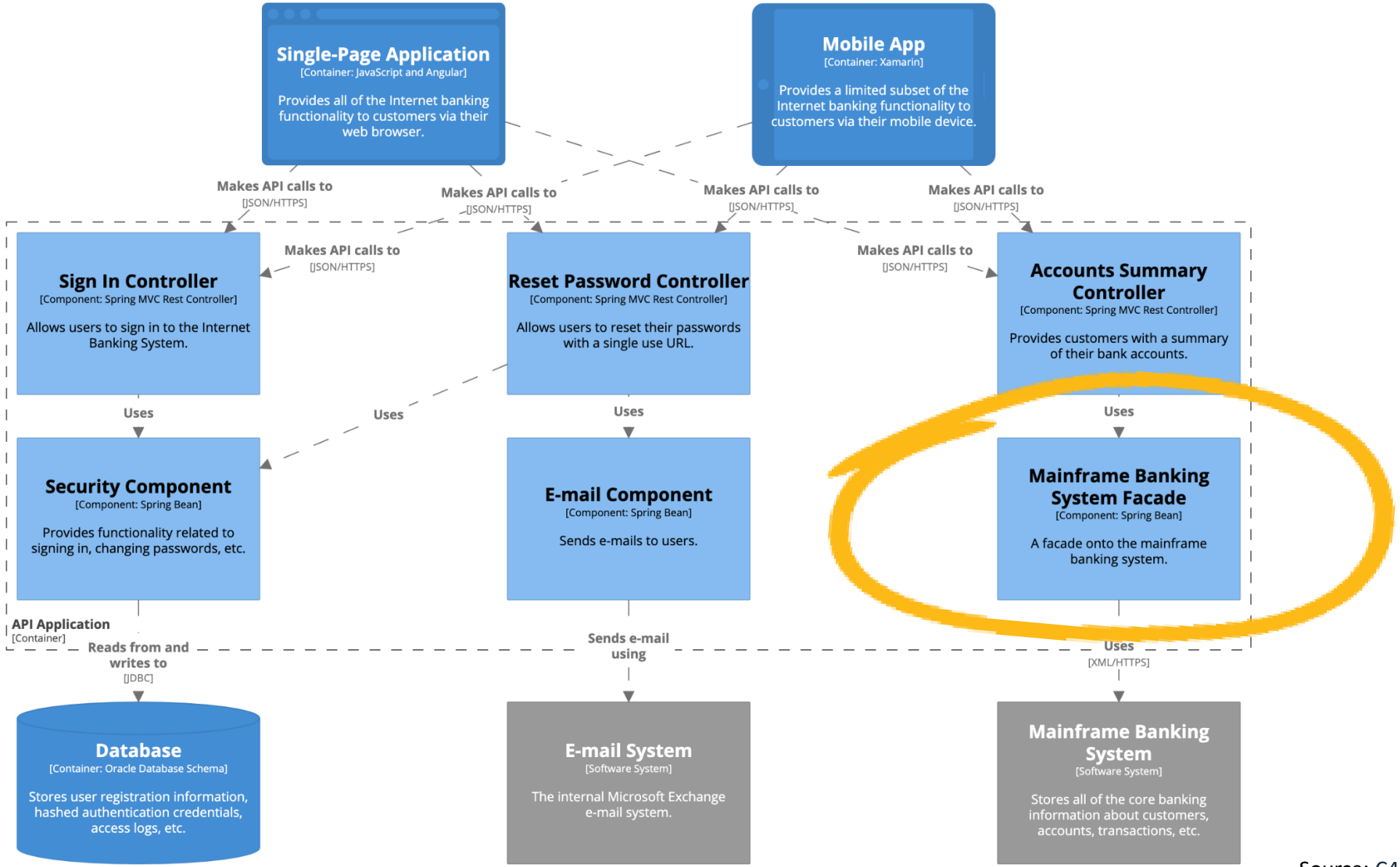
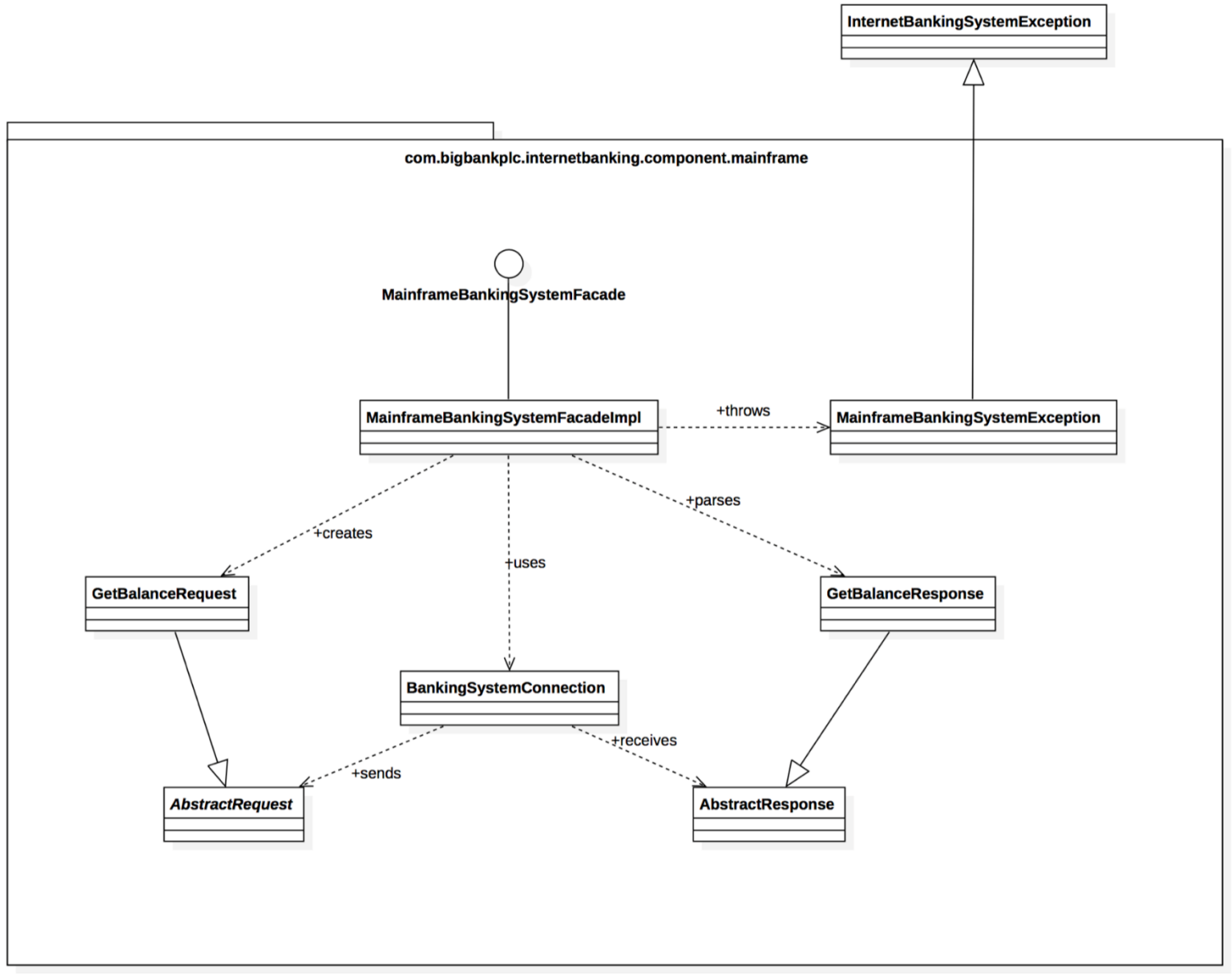
Source: C4model.com



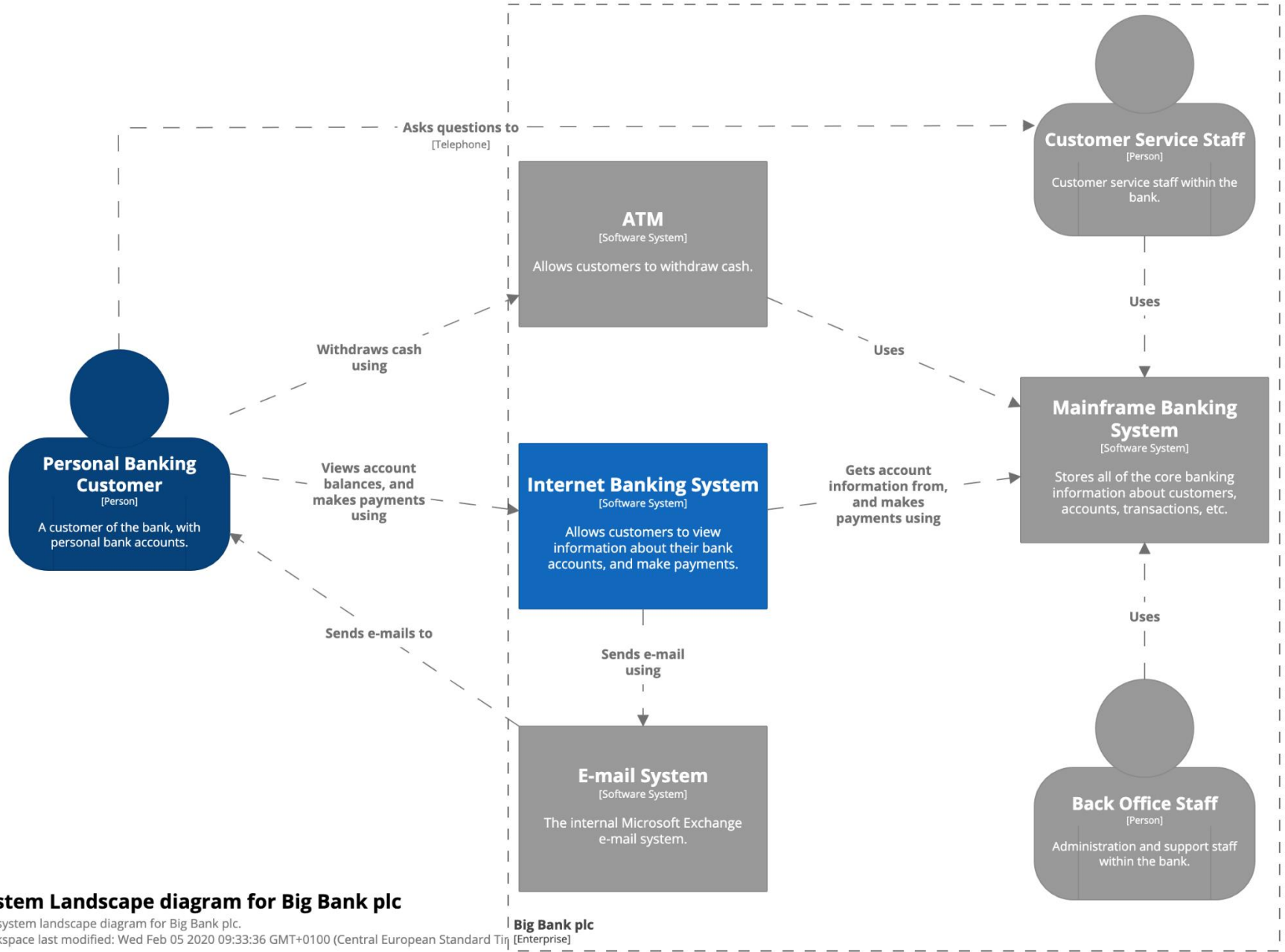
Component diagram for Internet Banking System - API Application

The component diagram for the API Application.
Workspace last modified: Wed Feb 05 2020 09:33:36 GMT+0100 (Central European Standard Time)

Source: C4model.com



Source: C4model.com



Source: C4model.com

Deployment diagram for Internet Banking System - Live

An example live deployment scenario for the Internet Banking System.
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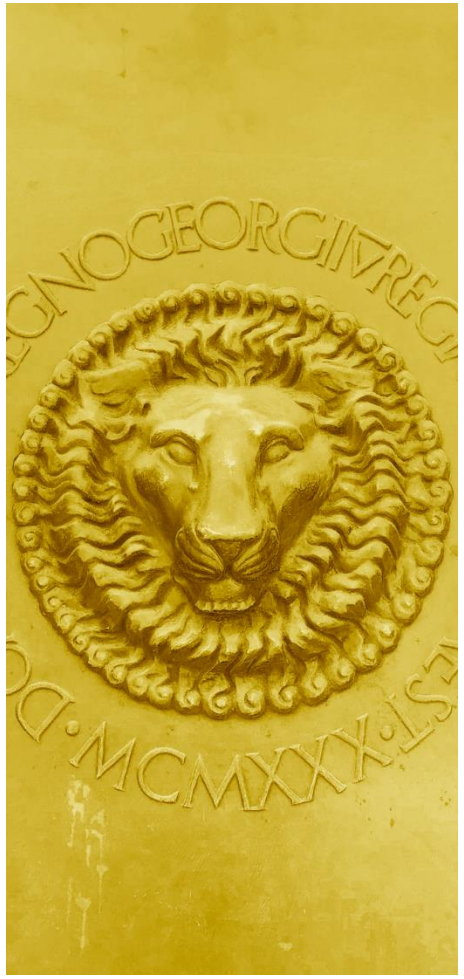
Source: C4model.com

Self-explanatory diagrams



Notation, notation, notation

A software architecture diagram review checklist

General

Does the diagram have a title?	Yes	No
Do you understand what the diagram type is?	Yes	No
Do you understand what the diagram scope is?	Yes	No
Does the diagram have a key/legend?	Yes	No

Elements

Does every element have a name?	Yes	No
Do you understand the type of every element? (i.e. the level of abstraction; e.g. software system, container, etc)	Yes	No
Do you understand what every element does?	Yes	No
Where applicable, do you understand the technology choices associated with every element?	Yes	No
Do you understand the meaning of all acronyms and abbreviations used?	Yes	No
Do you understand the meaning of all colours used?	Yes	No
Do you understand the meaning of all shapes used?	Yes	No
Do you understand the meaning of all icons used?	Yes	No
Do you understand the meaning of all border styles used? (e.g. solid, dashed, etc)	Yes	No
Do you understand the meaning of all element sizes used? (e.g. small vs large boxes)	Yes	No

Relationships

Does every line have a label describing the intent of that relationship?	Yes	No
Where applicable, do you understand the technology choices associated with every relationship? (e.g. protocols for inter-process communication)	Yes	No
Do you understand the meaning of all acronyms and abbreviations used?	Yes	No
Do you understand the meaning of all colours used?	Yes	No
Do you understand the meaning of all arrow heads used?	Yes	No
Do you understand the meaning of all line styles used? (e.g. solid, dashed, etc)	Yes	No

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Source: C4model.com

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Using C4 model at the Bank

EA Challenges

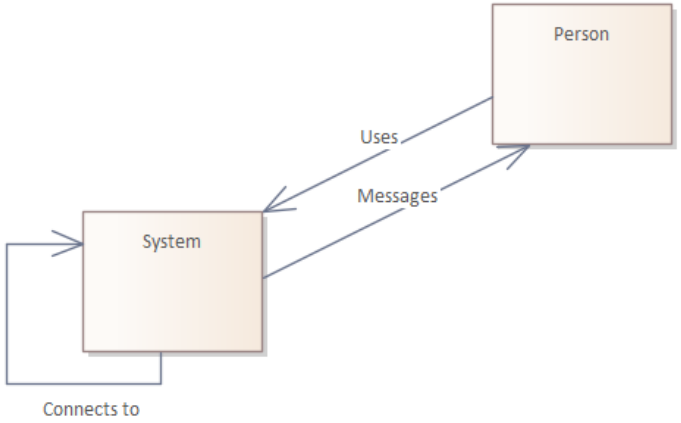
- Insufficient engagement prior to creation of project
- Low Level Design & Implementation diverge from High Level Design
- Failure to maintain architectural assets

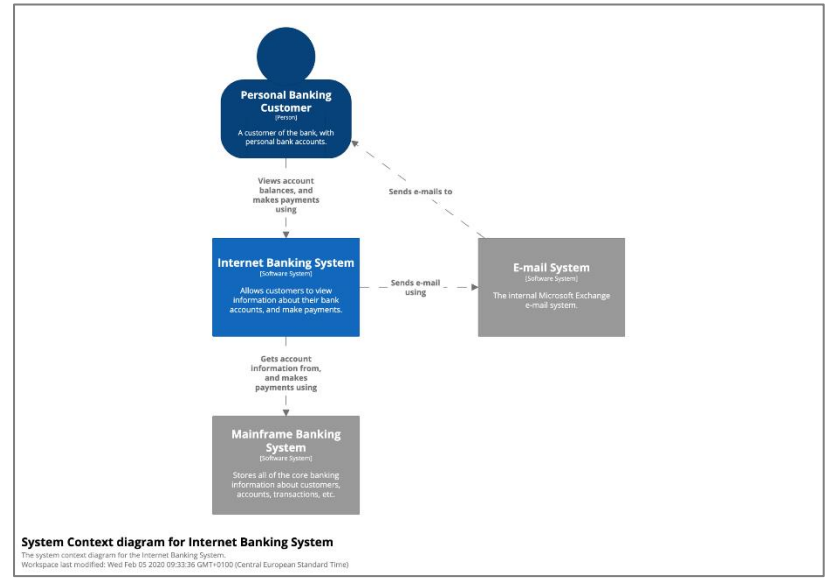
C4 Opportunities

- Level 1 diagrams focus on the business architecture (*what & who*, not *how*)
- All Levels can be checked for consistency and maintained
- Change to LLD may force a change to HLD (or be recognised as a deviation)

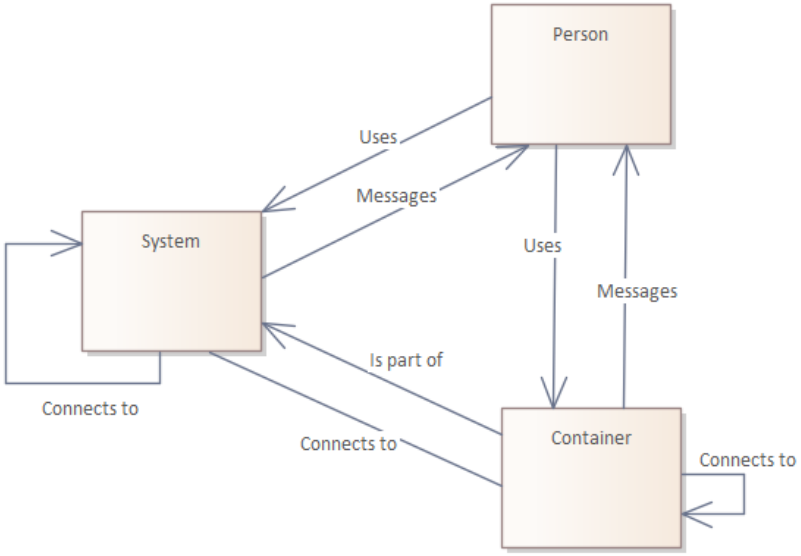
C4 model needs to be embedded in our Enterprise Architecture metamodel

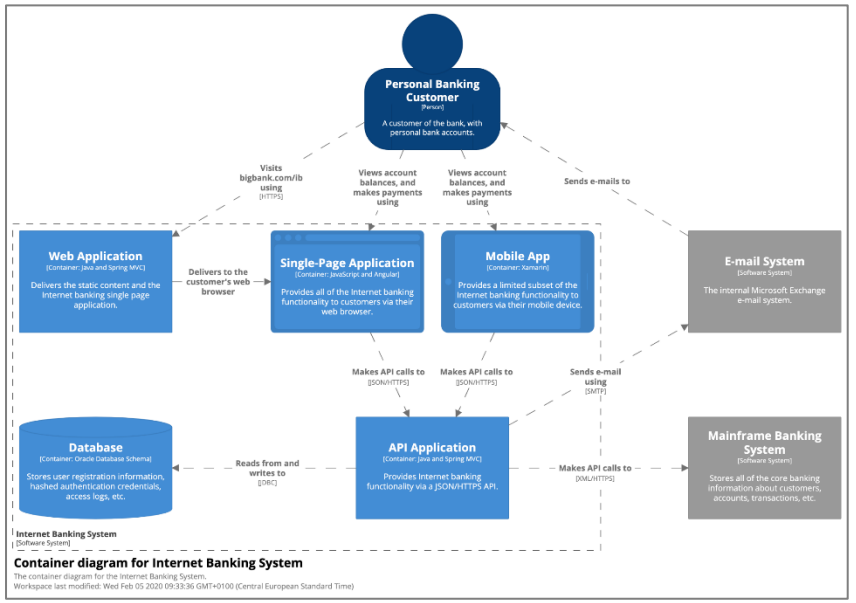
Level 1 Context diagram - metamodel

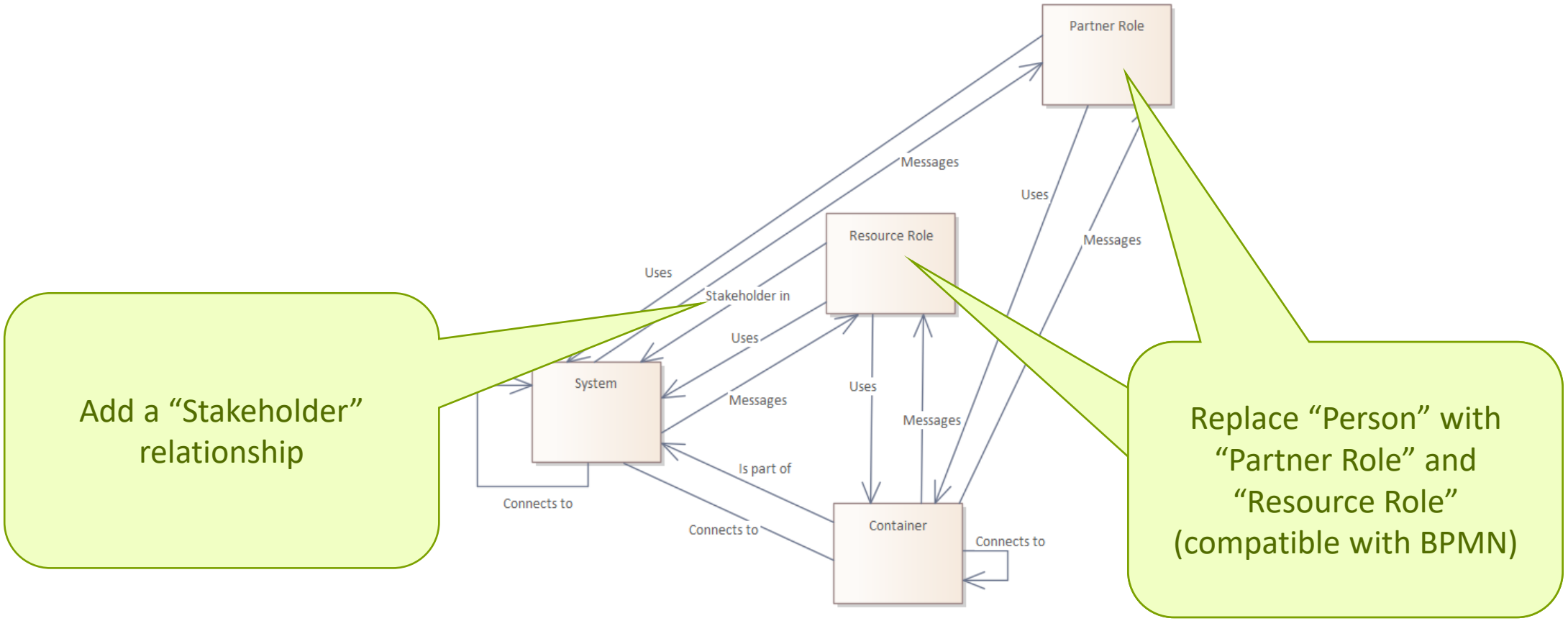


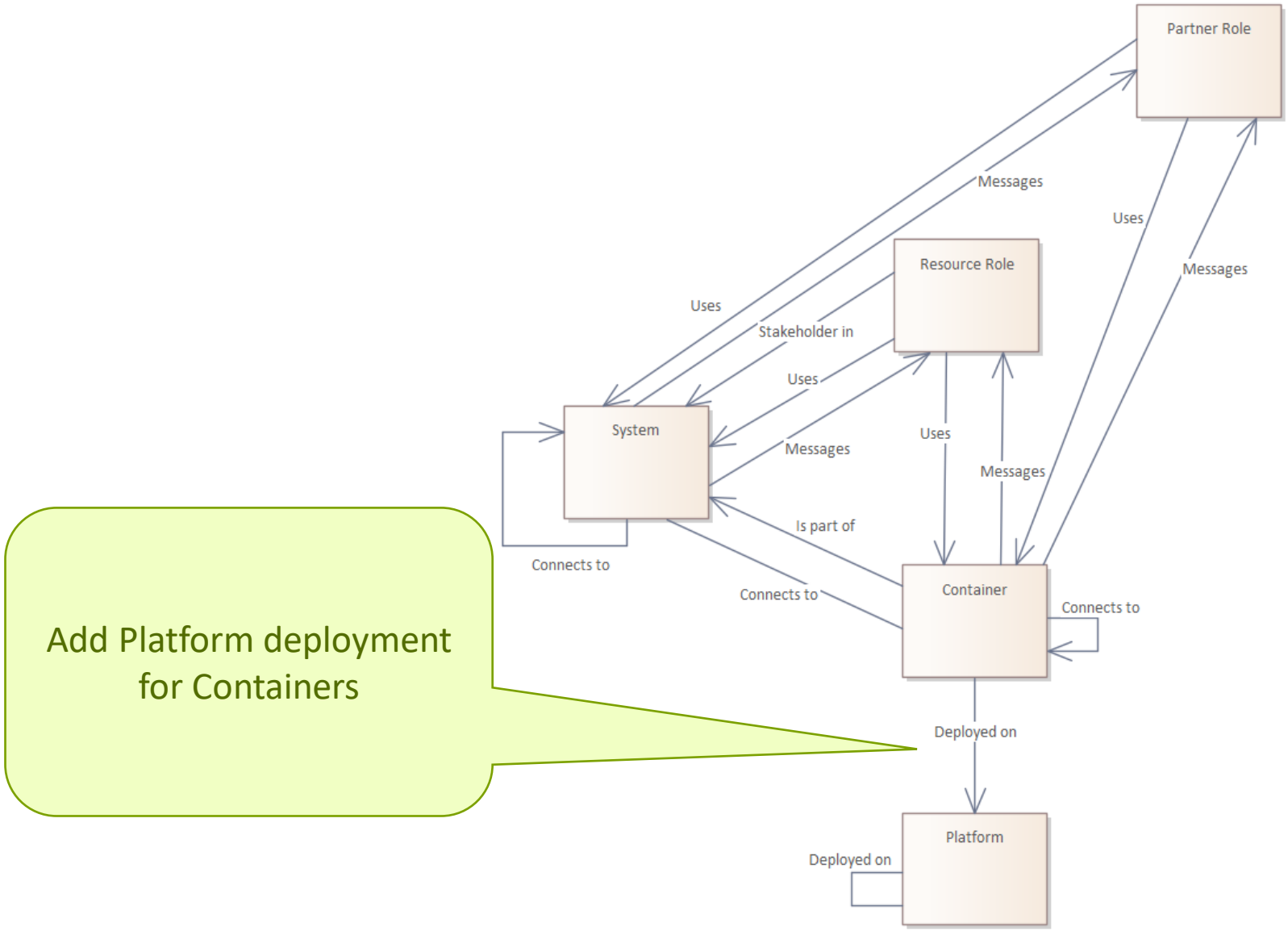


Level 2 Container diagram - metamodel






Partner Role
Messages
Uses
Resource Role
Messages
Uses
Stakeholder in
Uses
System
Messages
Uses
Messages
Is part of
Connects to
Connects to
Container
Connects to
Add a “Stakeholder” relationship
Replace “Person” with “Partner Role” and “Resource Role” (compatible with BPMN)


Partner Role
Messages
Uses
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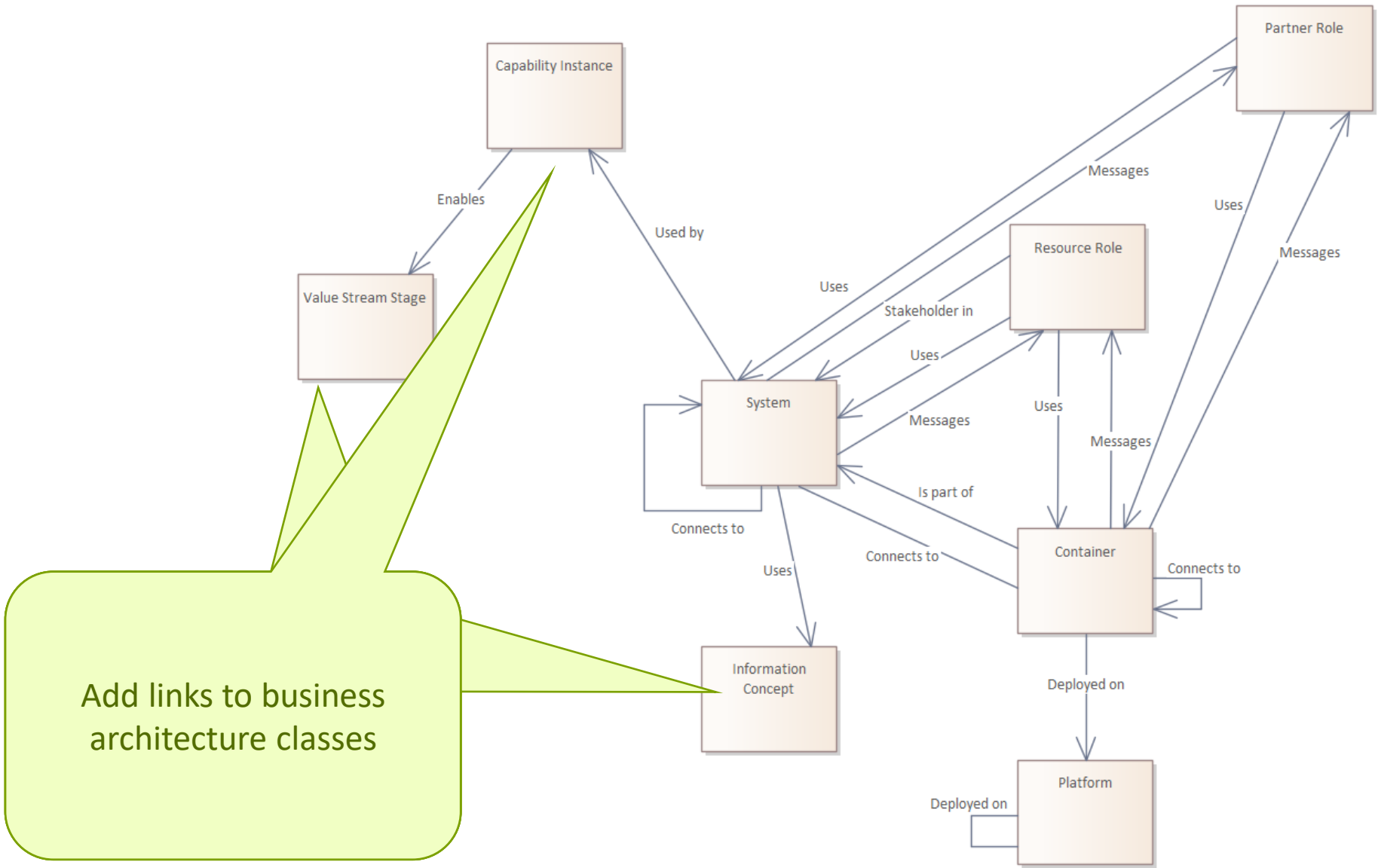
Resource Role
Uses
Stakeholder in
Uses
System
Messages
Uses
Messages
Is part of
Connects to
Connects to
Container
Connects to
Deployed on
Platform
Deployed on
Add Platform deployment for Containers


Capability Instance
Partner Role
Enables
Used by
Messages
Uses
Value Stream Stage
Resource Role
Uses
Stakeholder in
Uses
Messages
Uses
Messages
System
Messages
Is part of
Connects to
Connects to
Container
Connects to
Uses
Information Concept
Deployed on
Platform
Deployed on
Add links to business architecture classes

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Questions?

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