

Modelo C4

PARA DOCUMENTAÇÃO DE ARQUITETURAS

Cássio Botaro

@cassiobotaro

Software Developer Engineer
PicPay



"Peça a um desenvolvedor de software para comunicar a arquitetura de um software usando diagramas e você provavelmente obterá uma confusão de caixas e linhas ...notação inconsistente (codificação por cores, formas, estilos de linha etc), nomenclatura ambígua, relações não rotuladas, terminologia genérica, opções de tecnologia ausentes, abstrações mistas etc."

– C4model.com

CMS

Sistema de Gerenciamento de
Conteúdo



Website de notícias

Deve possuir um site de notícias, que estarão armazenadas em um banco de dados.



Área de administração

Deve possuir uma área para gerenciamento de notícias por administradores.



Imagens

Deve processar imagens das notícias em plano de fundo (thumbnail, otimização).

CMS

Sistema de Gerenciamento de
Conteúdo



Arquivos

As imagens serão
armazenadas em um
repositório de arquivos.



Aplicativo móvel

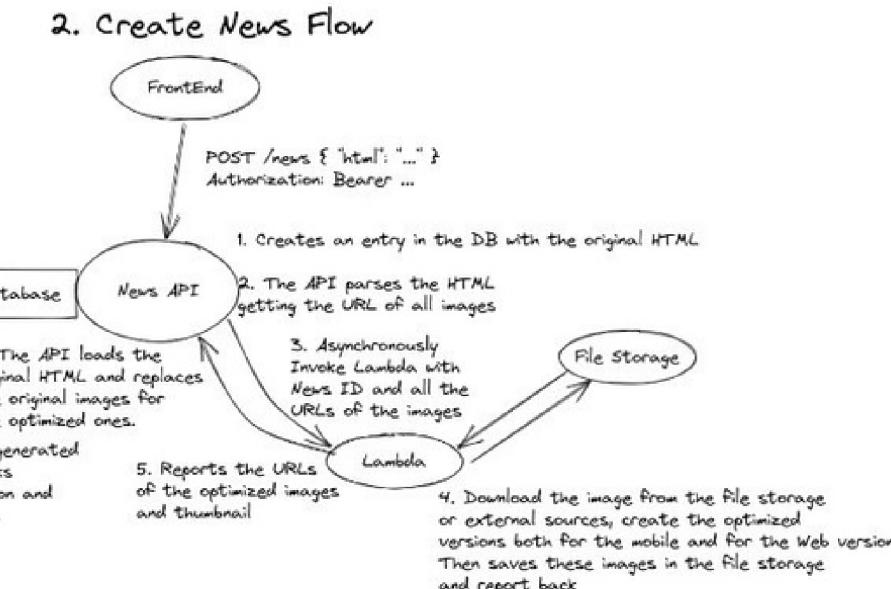
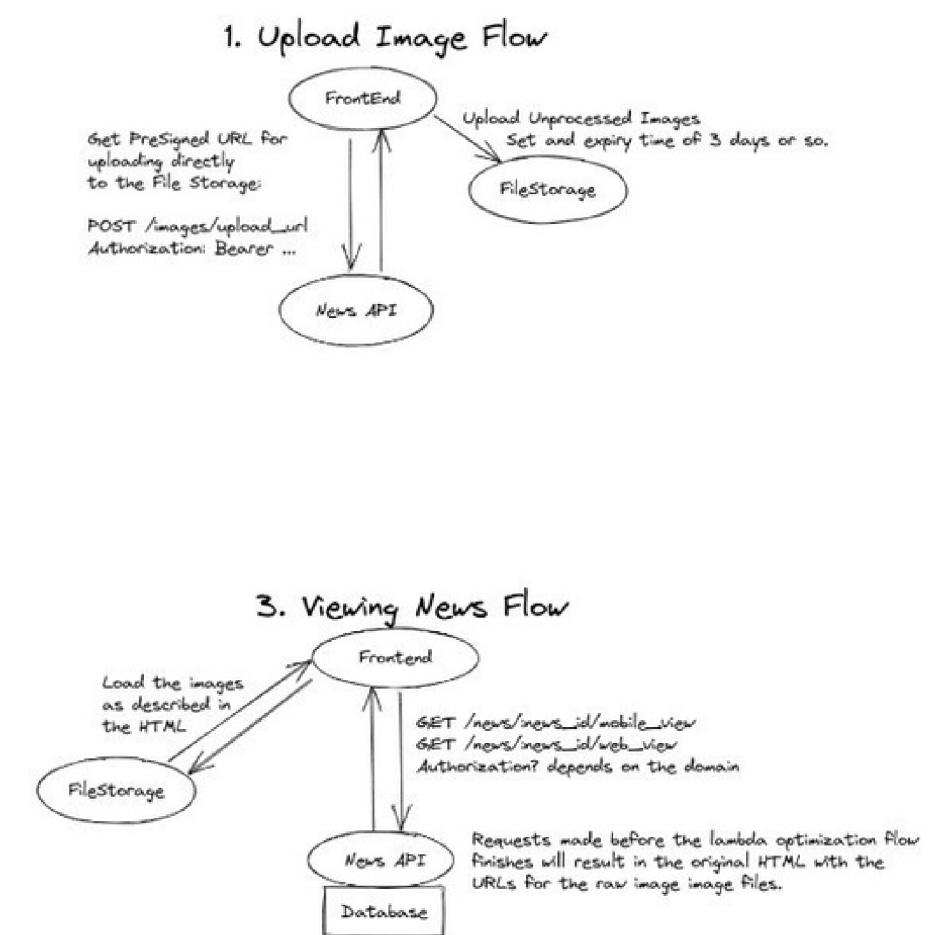
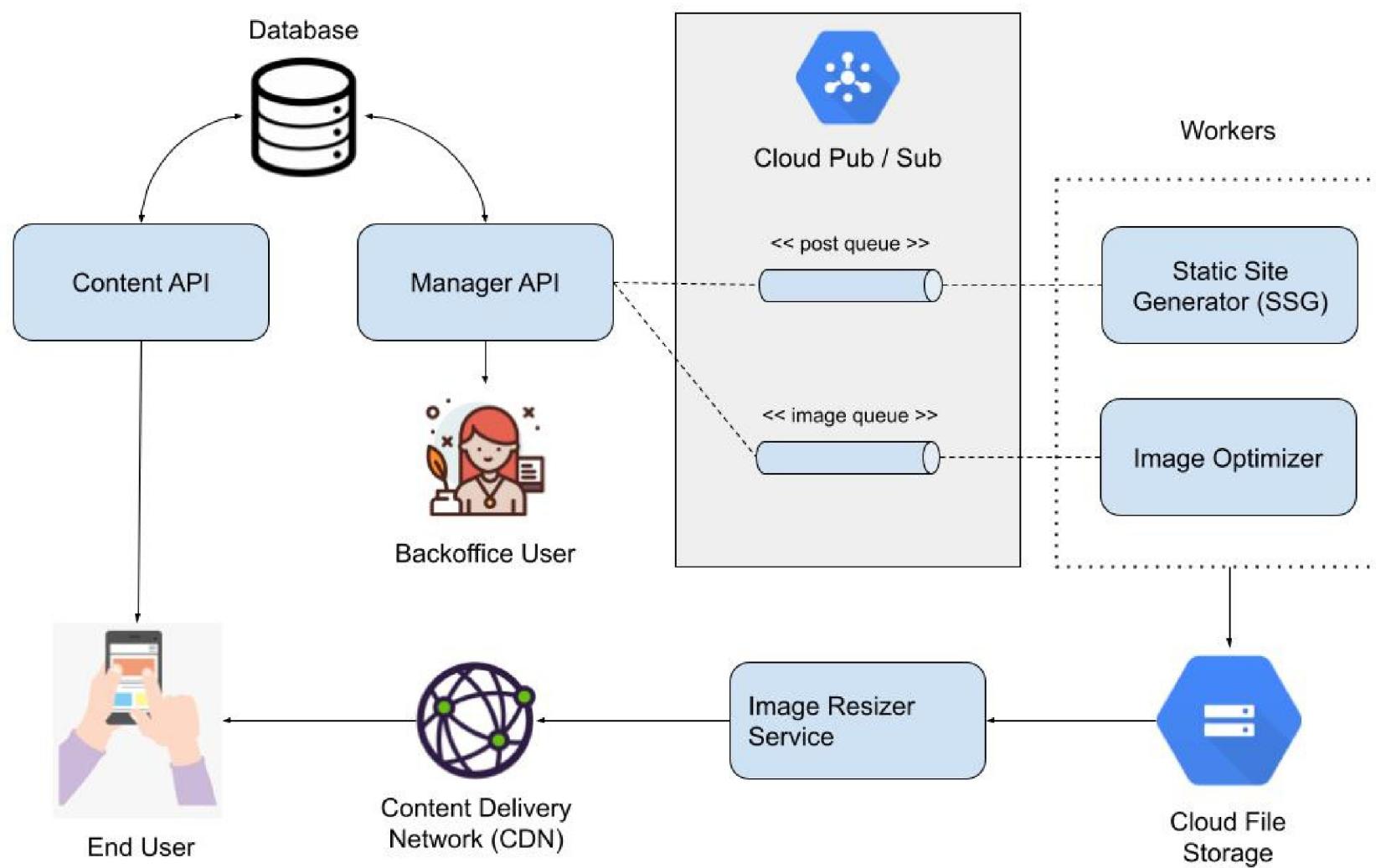
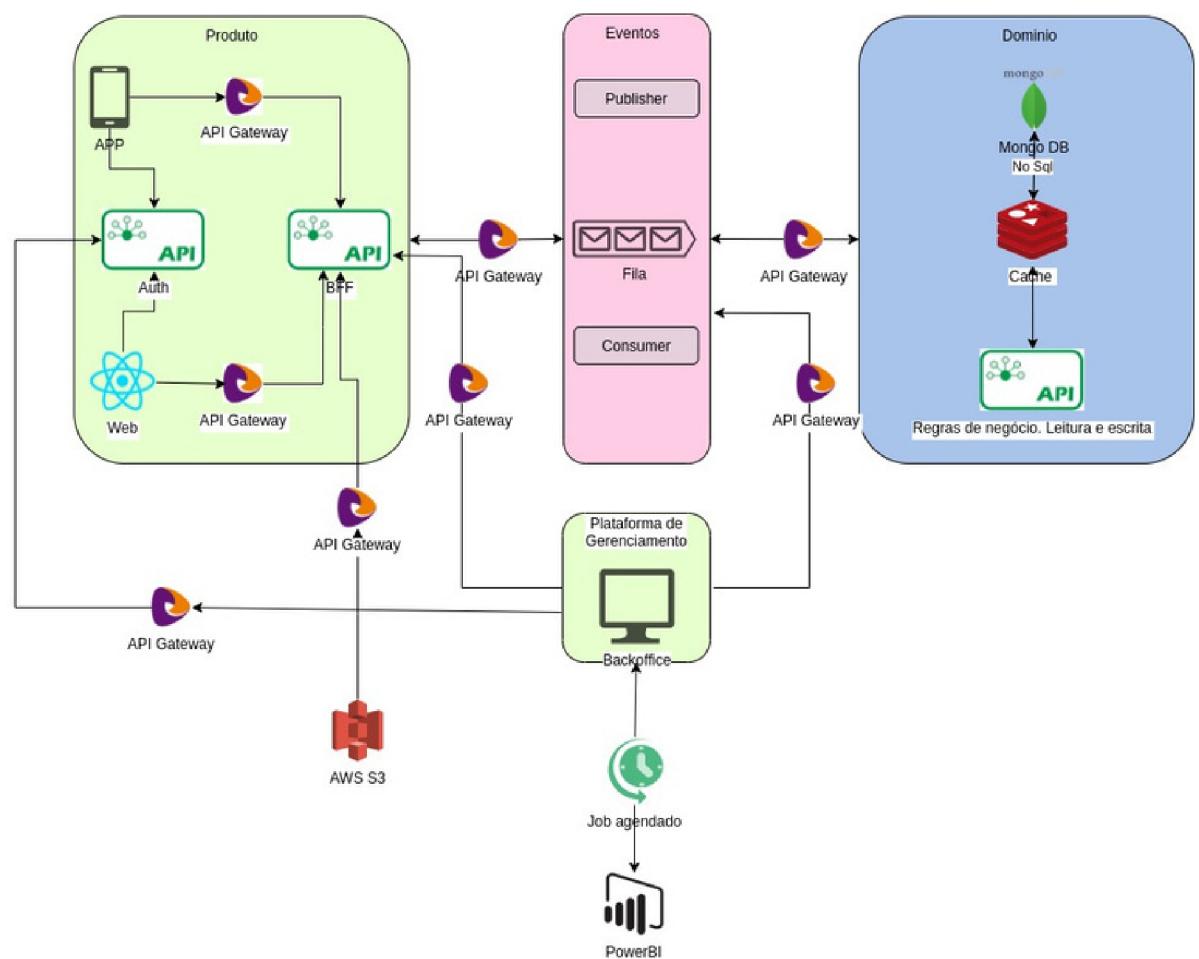
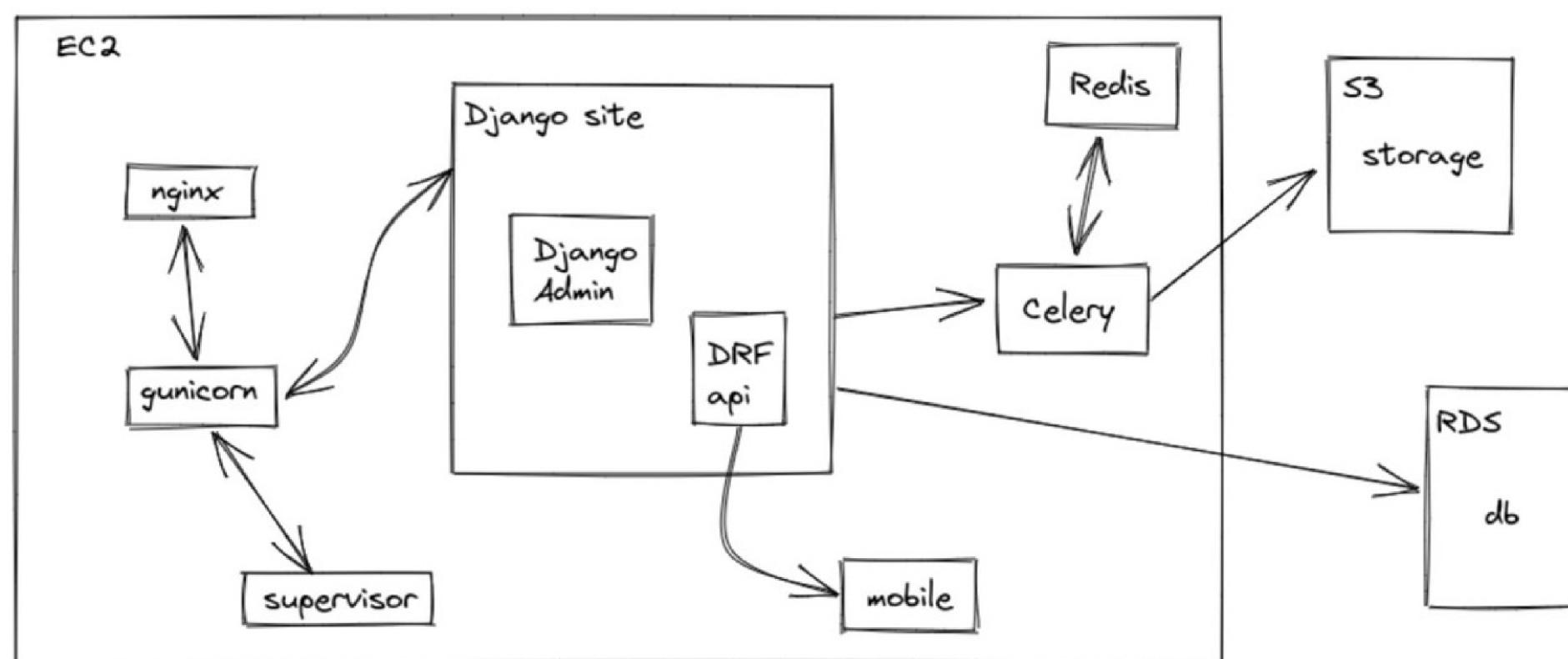
Existirá uma versão mobile
do sistema.

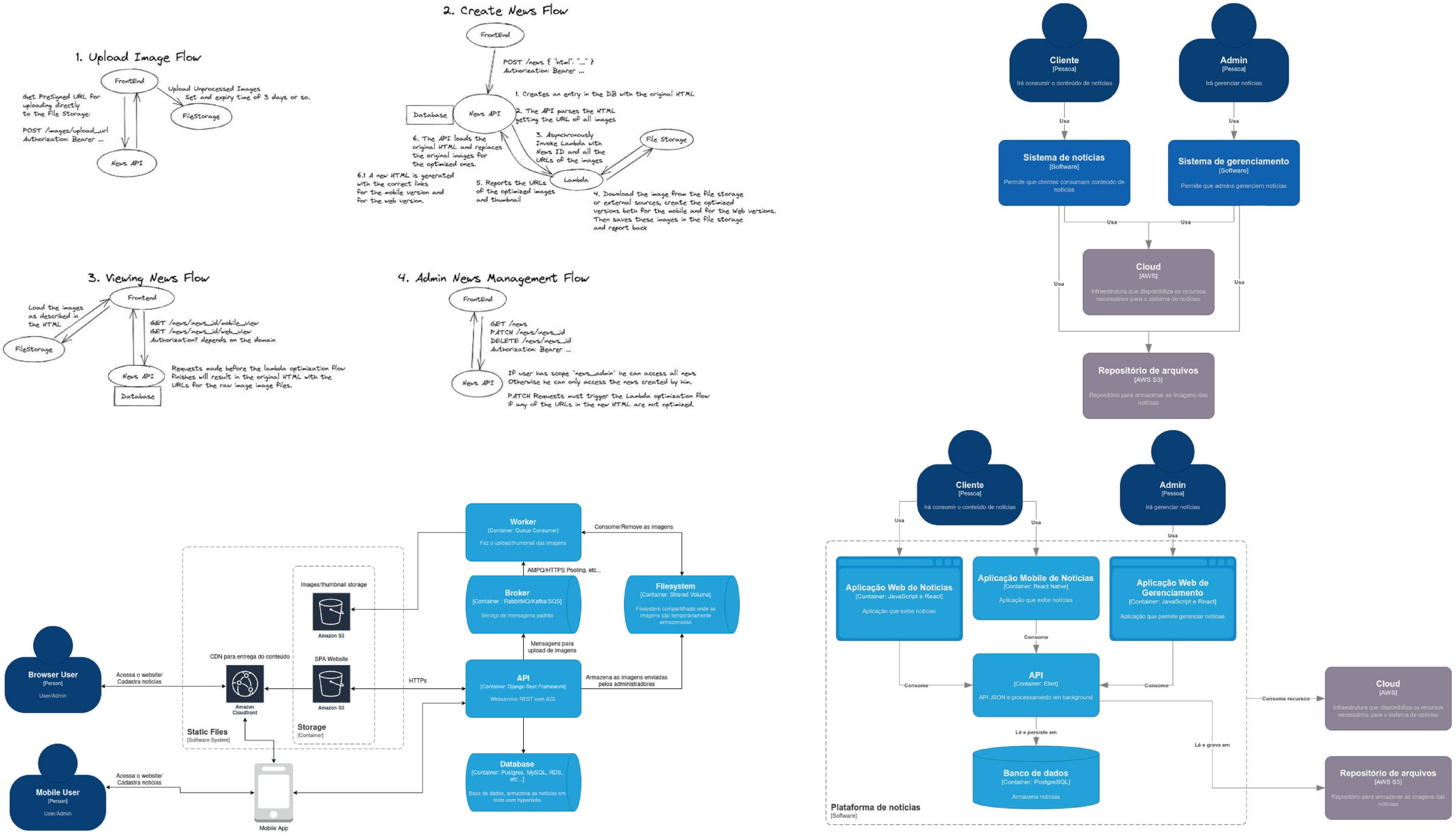


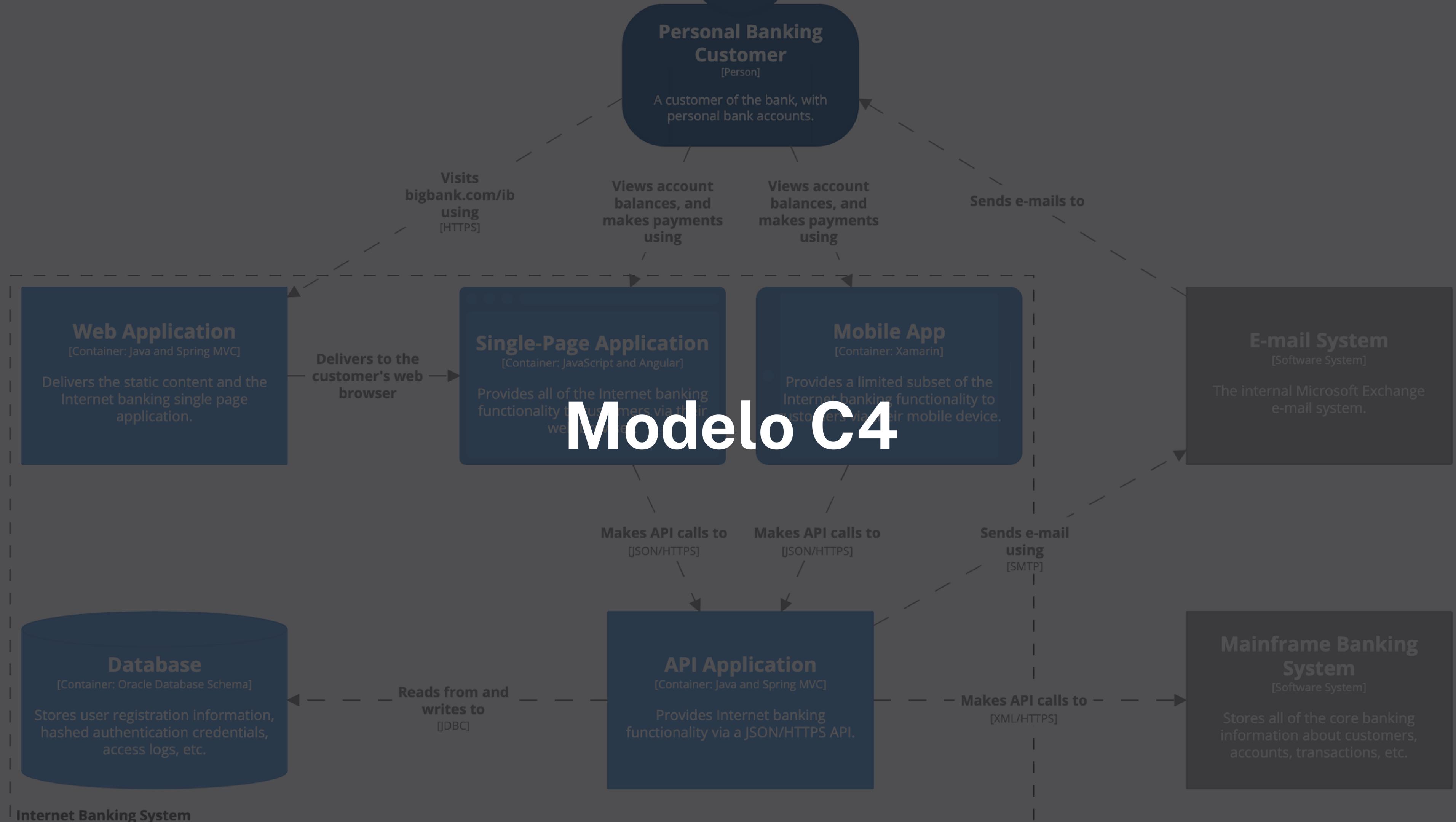
Restrições

Não existem restrições de
tecnologias.

AWS

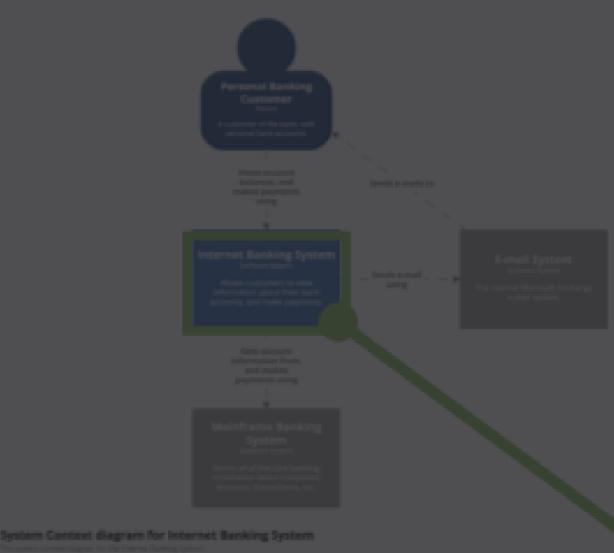




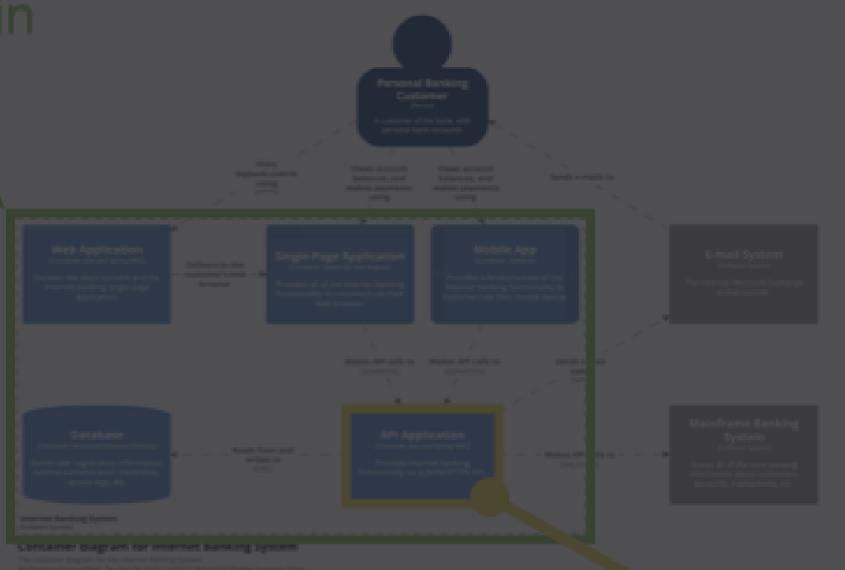


The C4 model for visualising software architecture

c4model.com



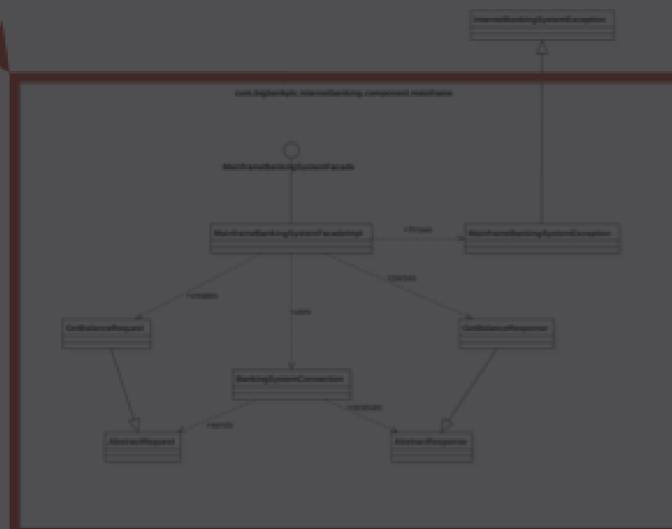
Zoom in



Diferentes níveis de visão



Zoom in



Level 1

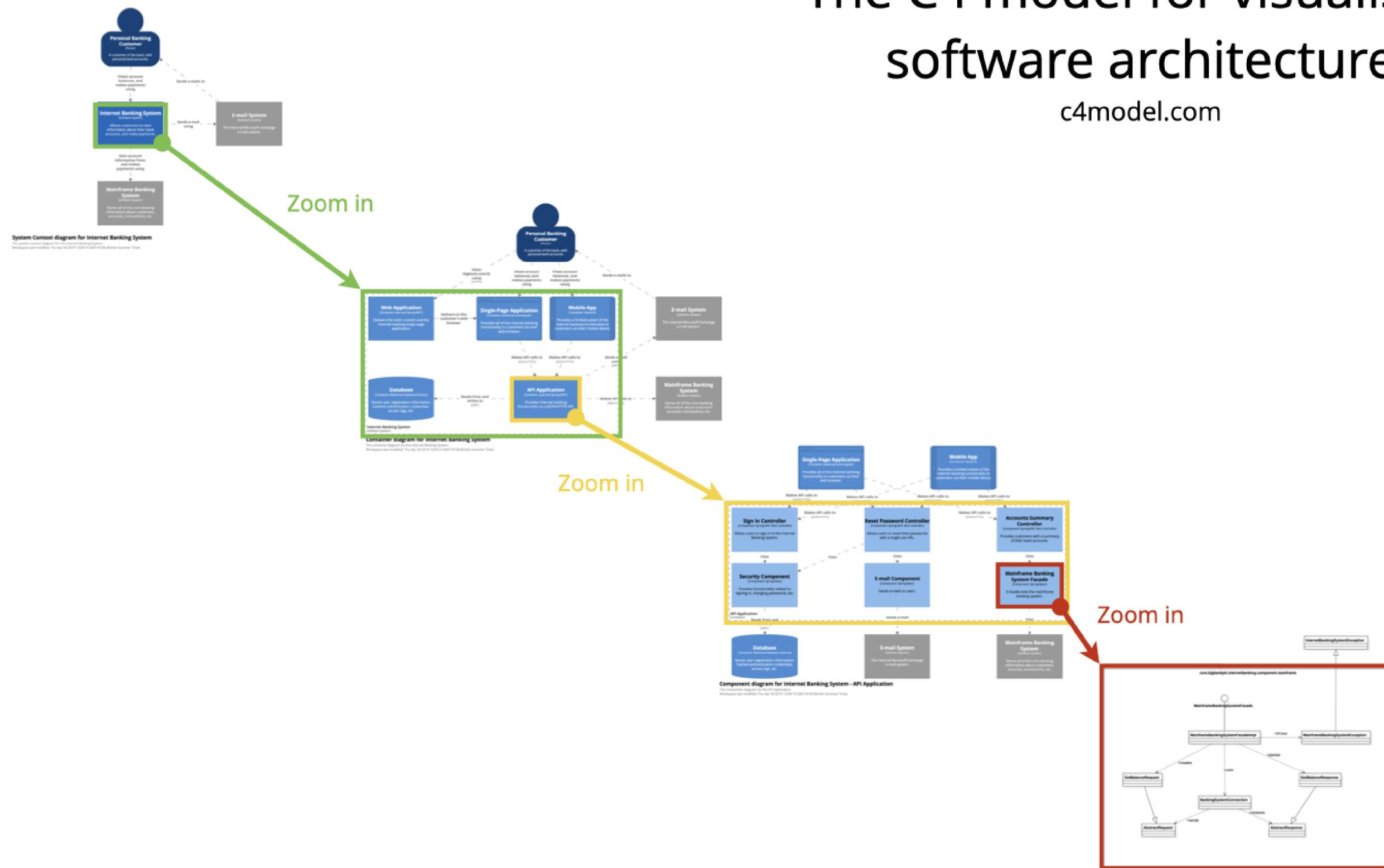
Level 2

Level 3

Level 4

The C4 model for visualising software architecture

c4model.com



Level 1
Context

Level 2
Containers

Level 3
Components

Level 4
Code

Software System

Container

(e.g. client-side web app, server-side web app, console application, database schema, file system, etc)

Container

(e.g. client-side web app, server-side web app, console application, mobile app, microservice, database schema, file system, etc)

Container

(e.g. client-side web app, server-side web app, console application, mobile app, microservice, database schema, file system, etc)

Abstrações

Component

Component

Component

Component

Component

Code

Code

Code

Code

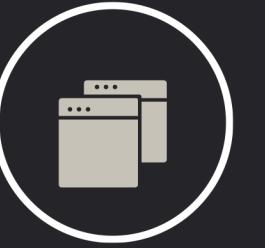
Code

Abstrações



Pessoa

Representa um papel,
uma persona, atores
etc.



Sistema

Descreve algo que
agrega valor aos
usuários, sejam eles
humanos ou não.



Contêineres

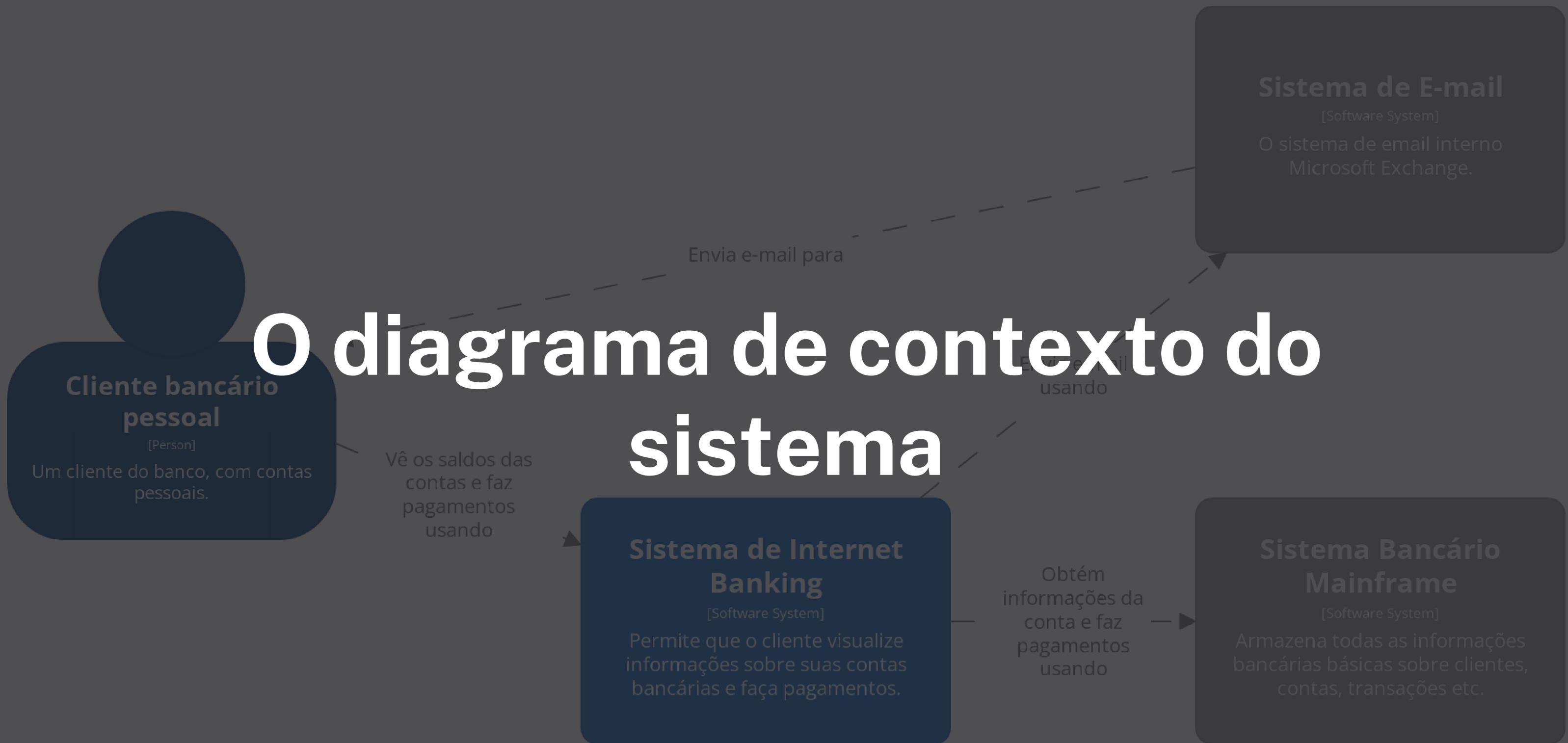
Contêineres são
artefatos do sistema
que hospedam dados ou
código executável.

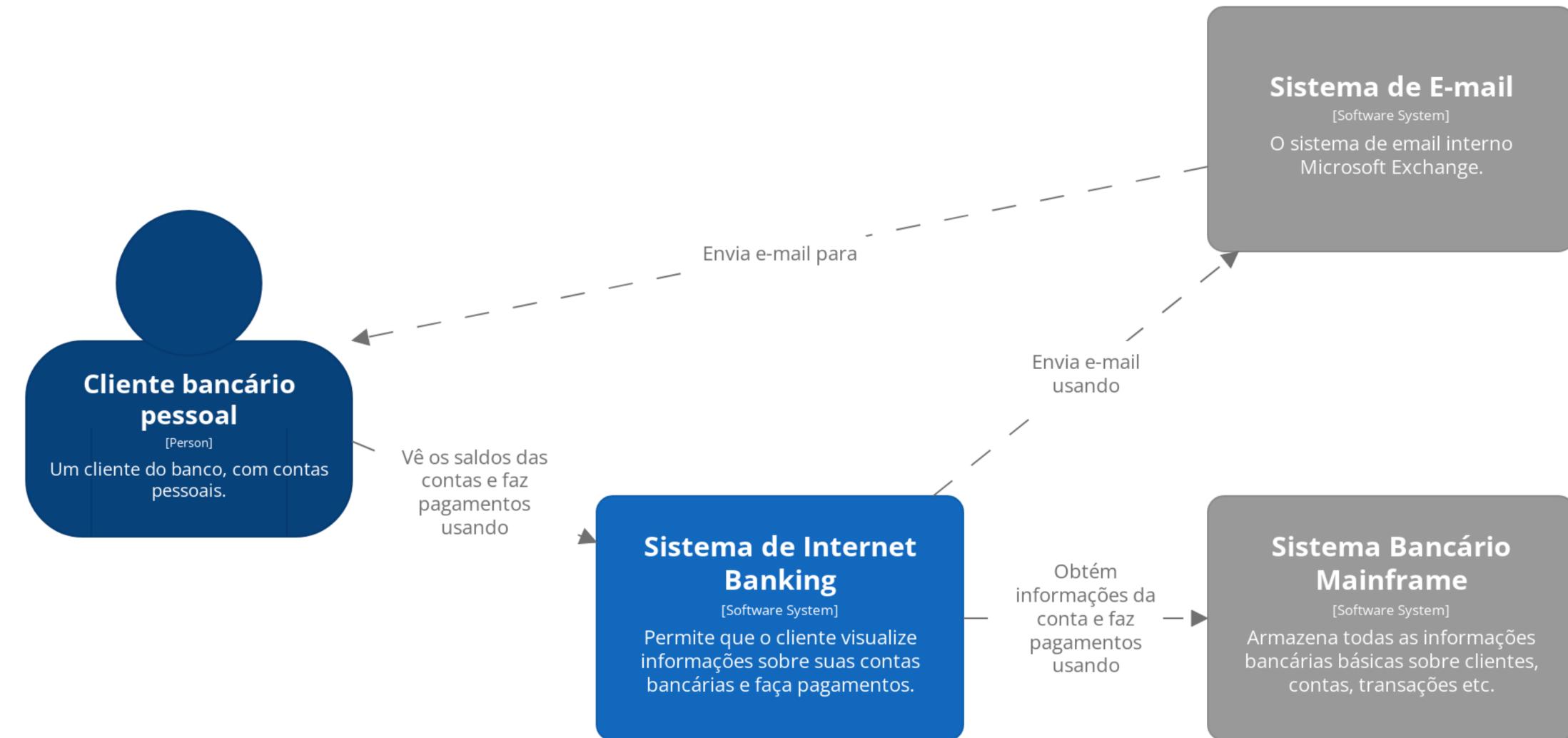


Componente

É um agrupamento de
funcionalidades
relacionadas
encapsuladas por trás de
uma interface bem
definida.

O diagrama de contexto do sistema



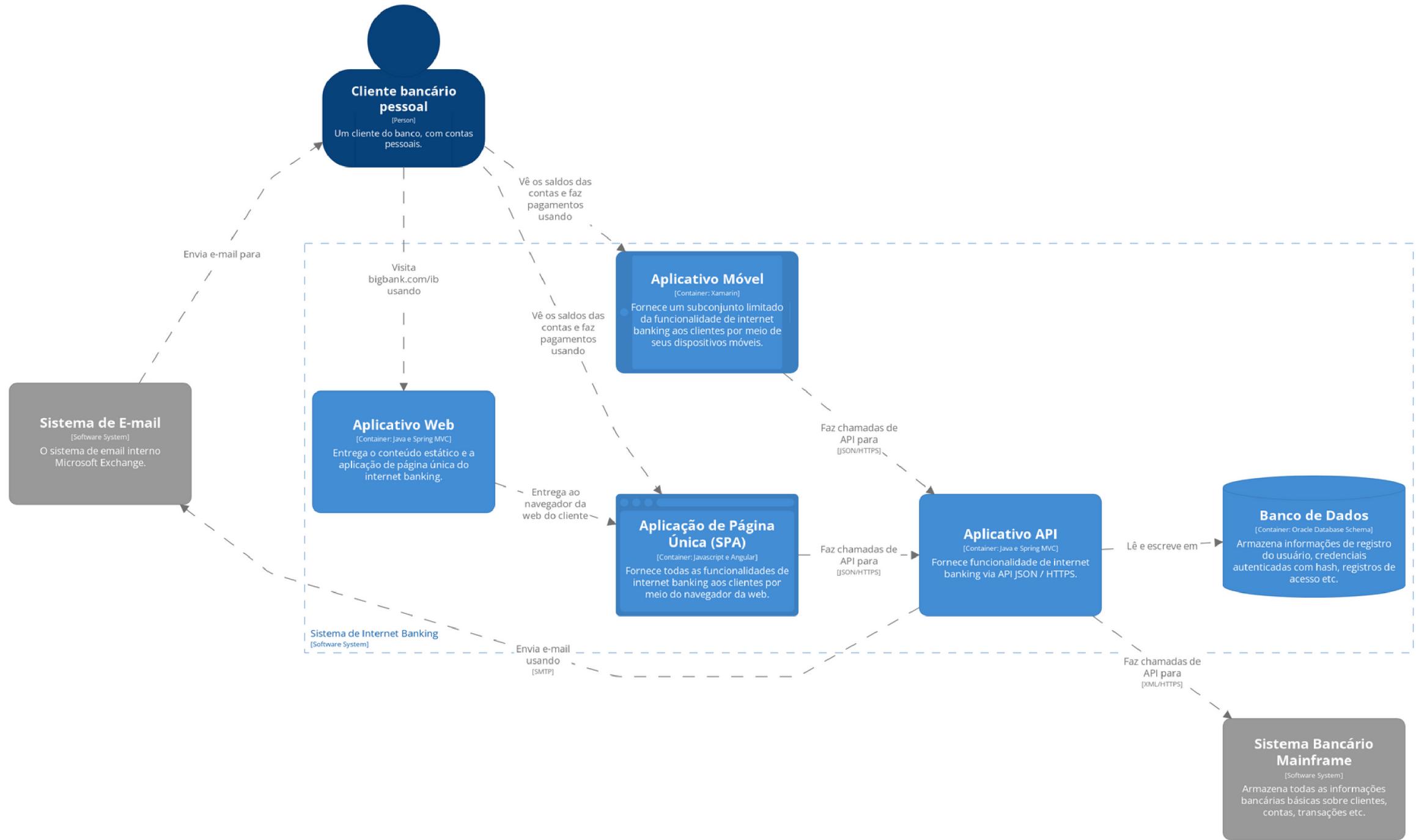


[System Context] Sistema de Internet Banking

Monday, April 24, 2023 at 11:50 PM Coordinated Universal Time

O diagrama de contêineres



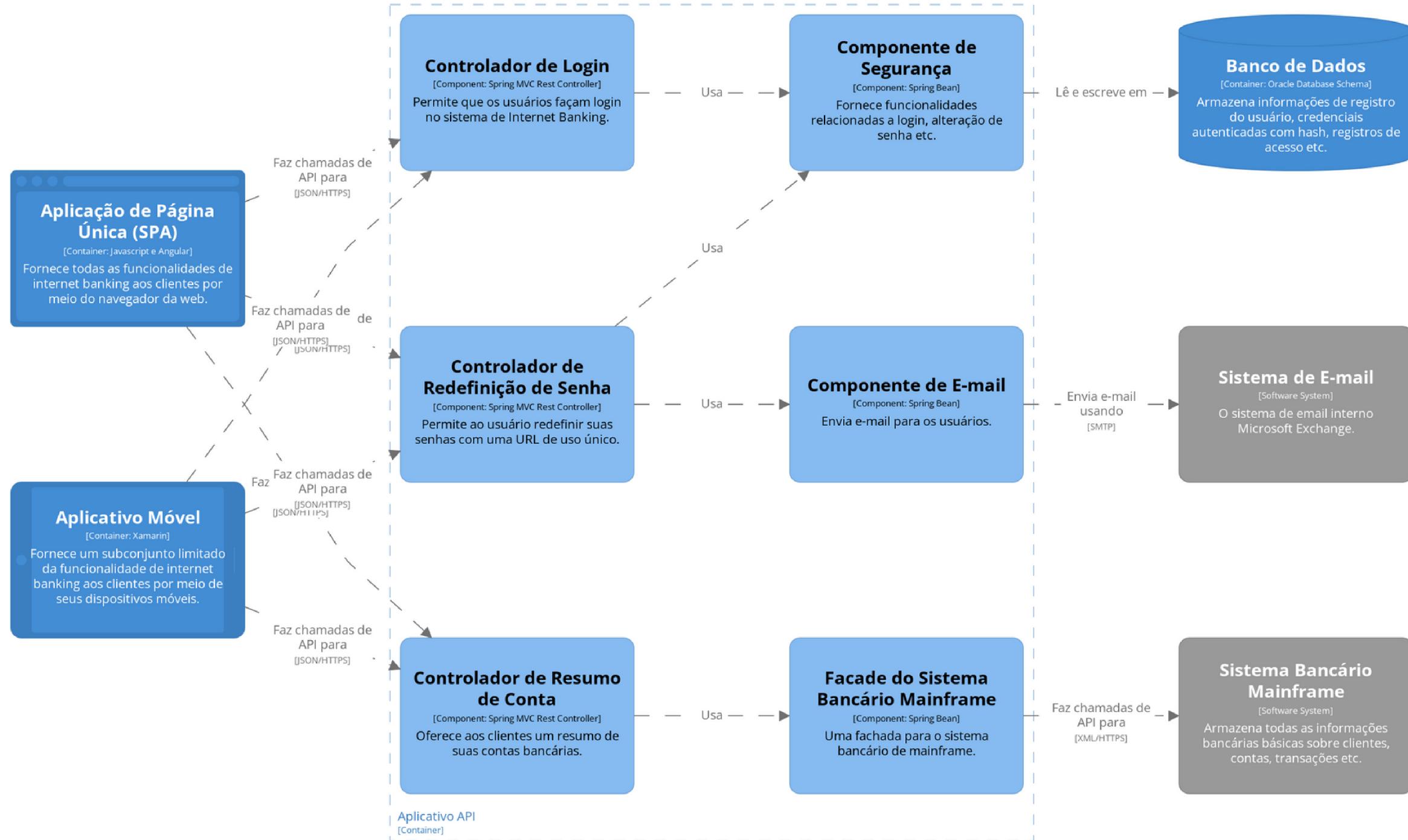


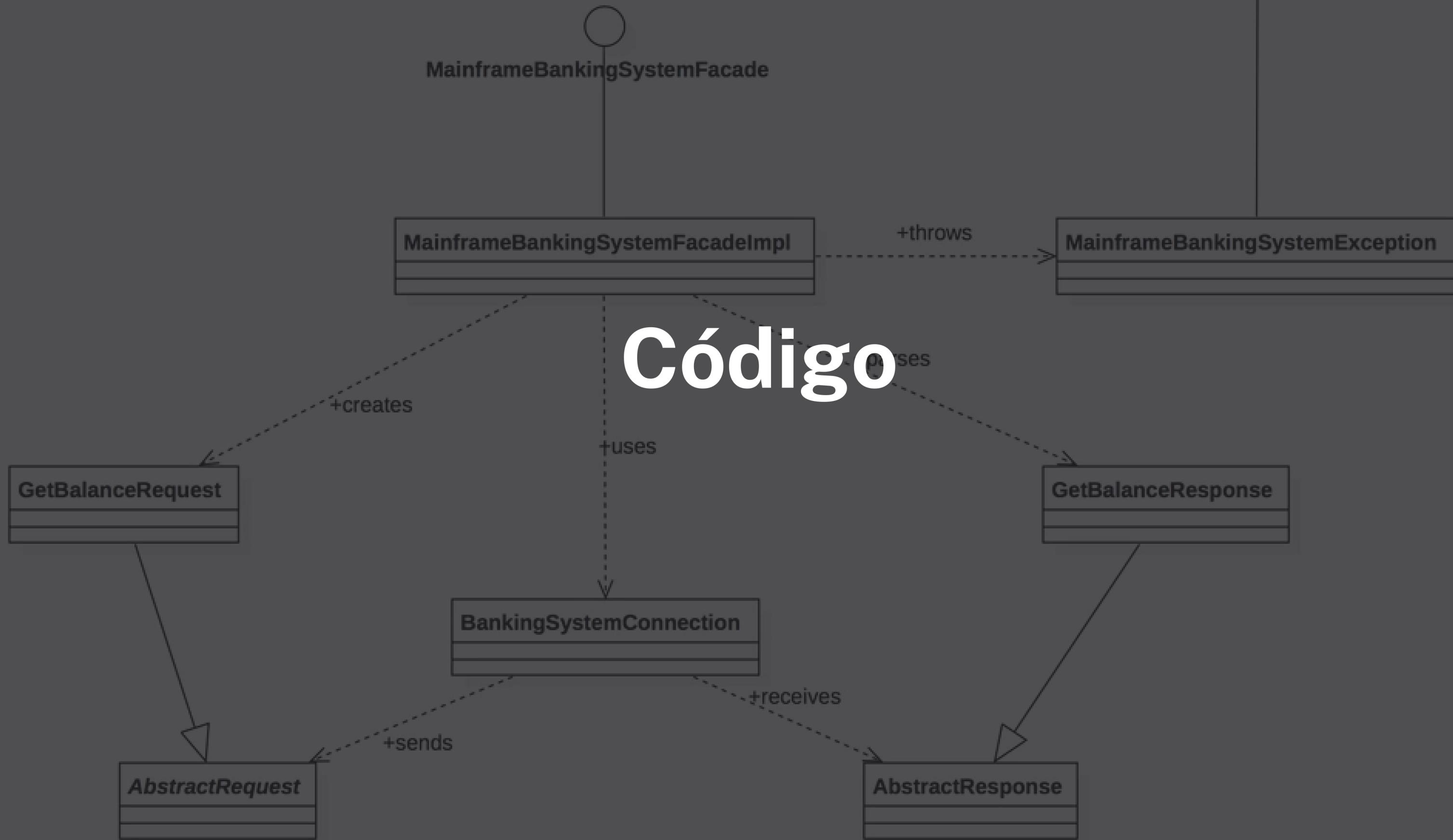
[Container] Sistema de Internet Banking

Monday, April 24, 2023 at 11:50 PM Coordinated Universal Time

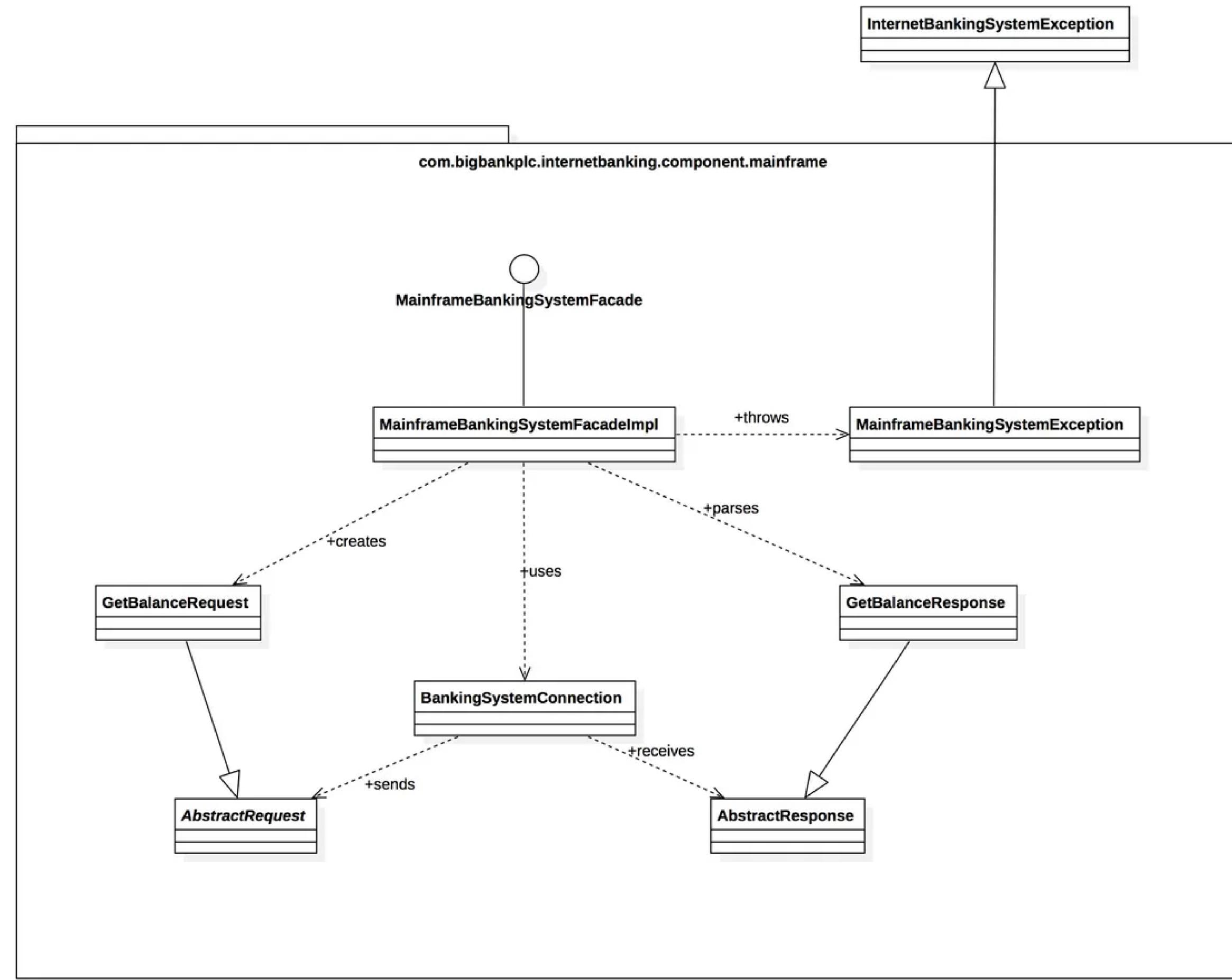
O diagrama de componentes

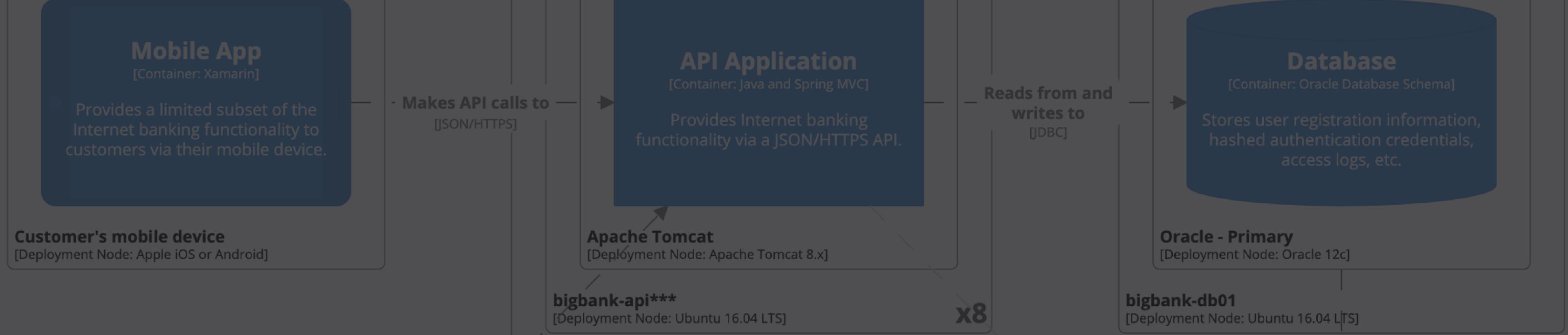




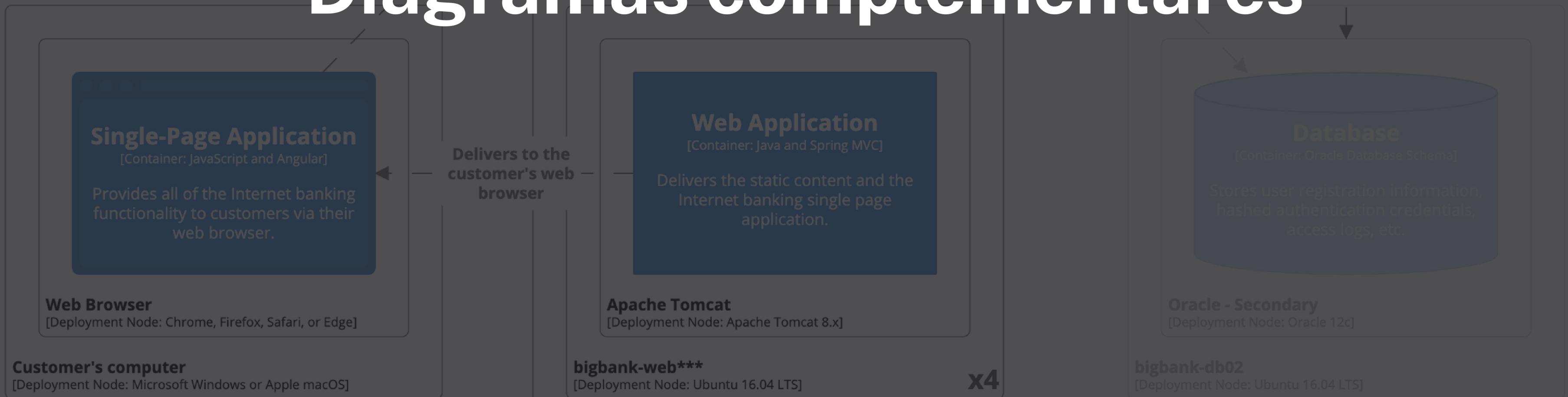


Código





Diagrams complementares



Abstrações



Nó de implantação

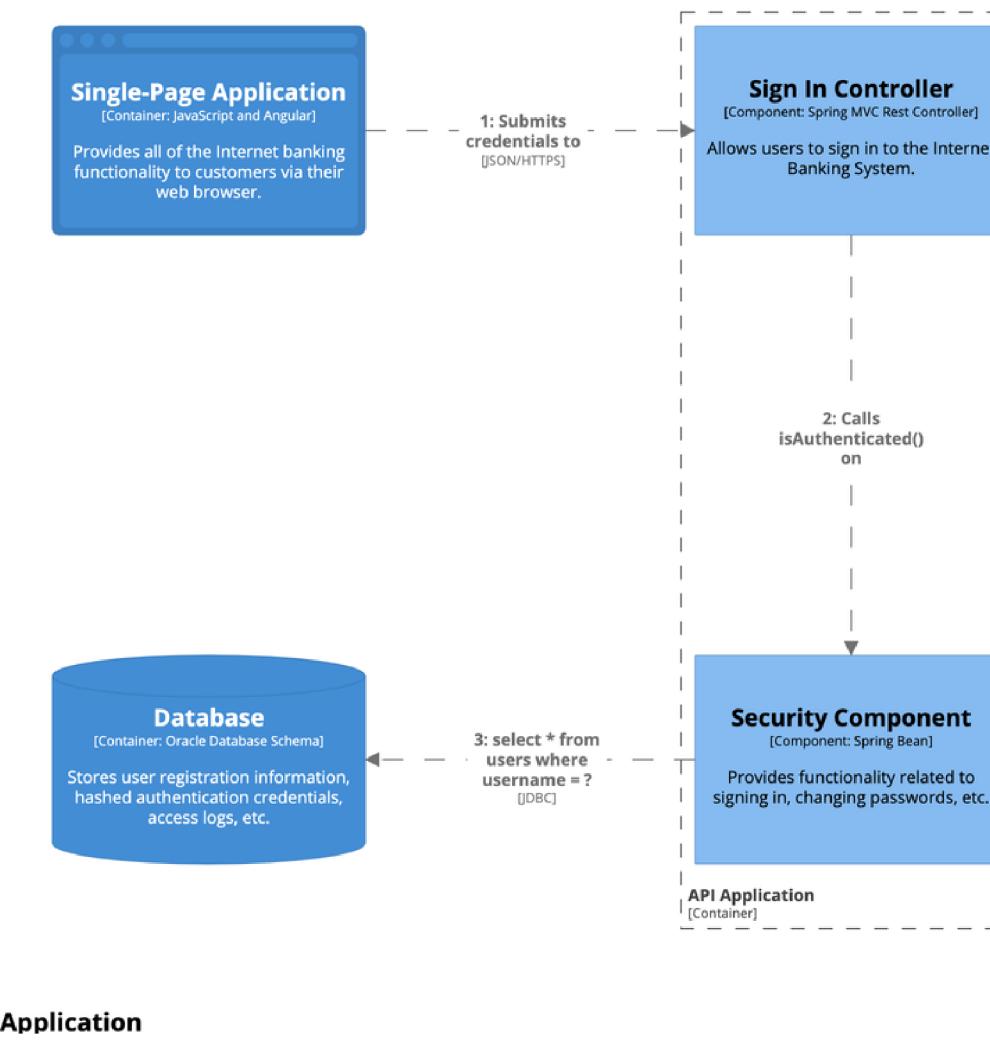
Representa onde uma instância de um sistema/ contêiner está rodando. Podem ser aninhados.



Nó de infraestrutura

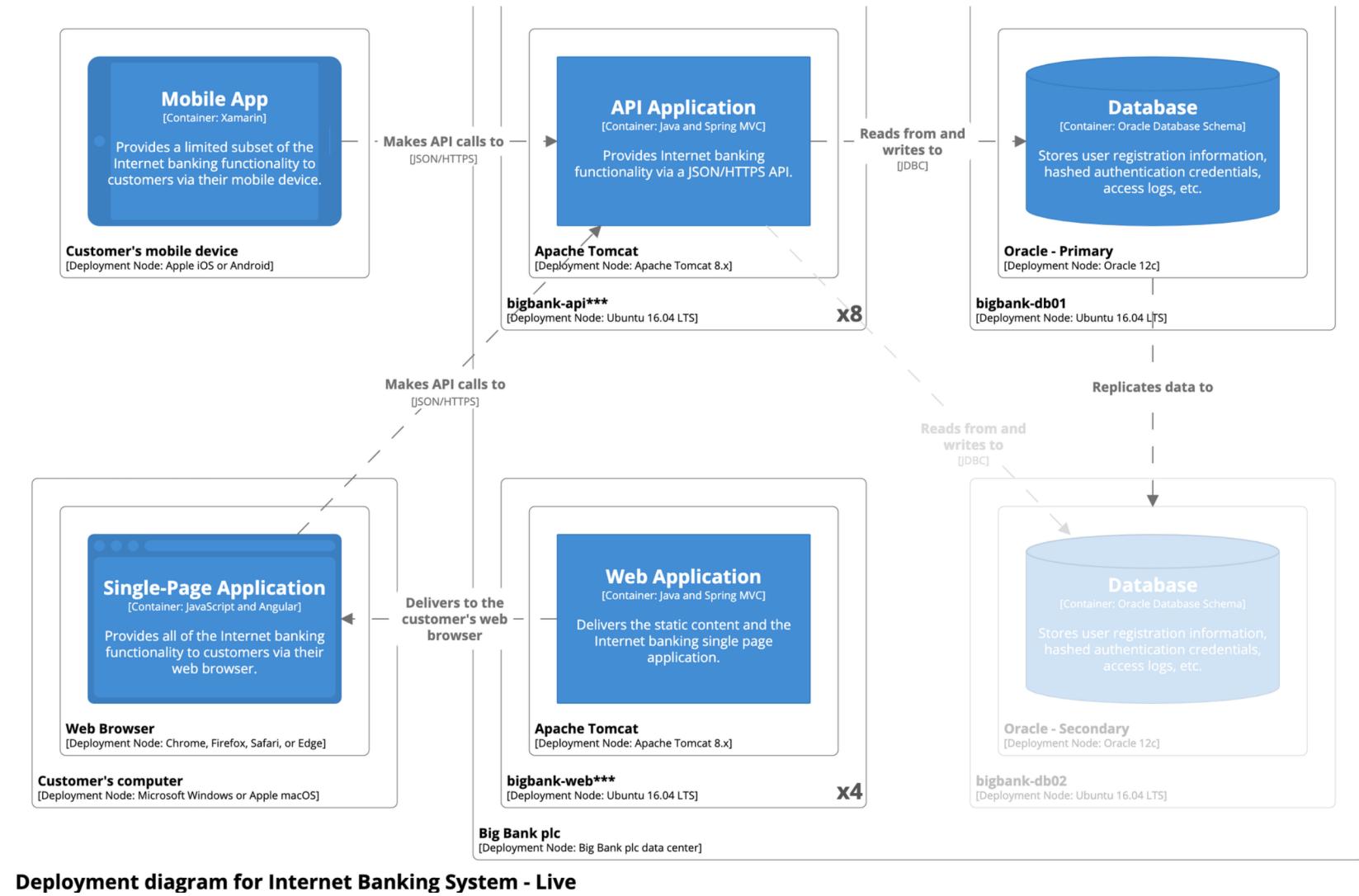
Representa elementos como serviços DNS, load balancers, firewall, etc.

Diagrama dinâmico



Mostra como os elementos em um modelo estático colaboram em tempo de execução para implementar uma história de usuário, caso de uso, recurso etc.

Diagrama de implantação



Permite ilustrar como os sistemas de software e / ou contêineres no modelo estático são mapeados para a infraestrutura.

Financial Risk System

1 Context

1.1 Trade Data System

1.2 Reference Data System

2 Functional Overview

3 Quality Attributes

3.1 Performance

3.2 Scalability

3.3 Availability

3.4 Failover

3.5 Security

3.6 Audit

3.7 Fault Tolerance and Resilience

3.8 Internationalization and Localization

3.9 Monitoring and Management

3.10 Data Retention and Archiving

3.11 Interoperability

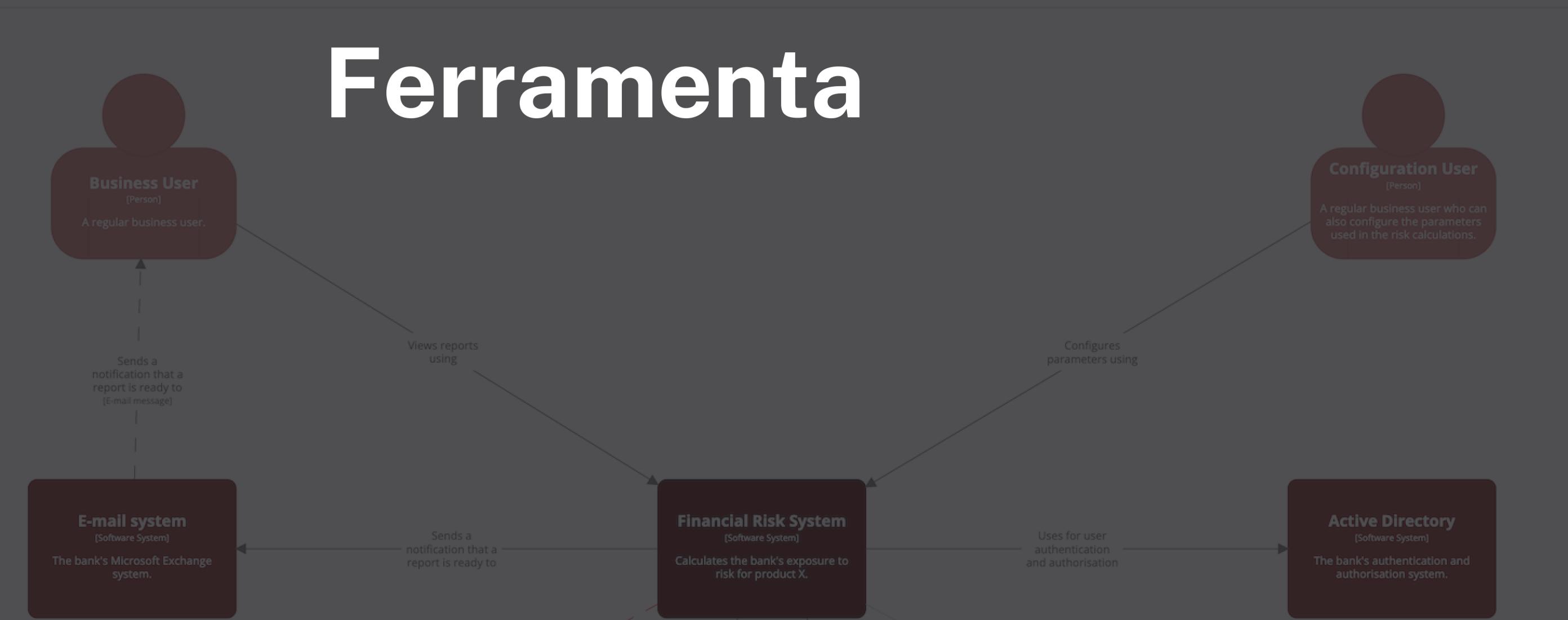
 Export to offline HTML page

Wednesday, 23 March 2022 at 17:05 Greenwich Mean Time

Financial Risk System

1 Context

A global investment bank based in London, New York and Singapore trades (buys and sells) financial products with other banks (counterparties). When share prices on the stock markets move up or down, the bank either makes money or loses it. At the end of the working day, the bank needs to gain a view of how much risk they are exposed to (e.g. of losing money) by running some calculations on the data held about their trades. The bank has an existing Trade Data System (TDS) and Reference Data System (RDS) but need a new Risk System.

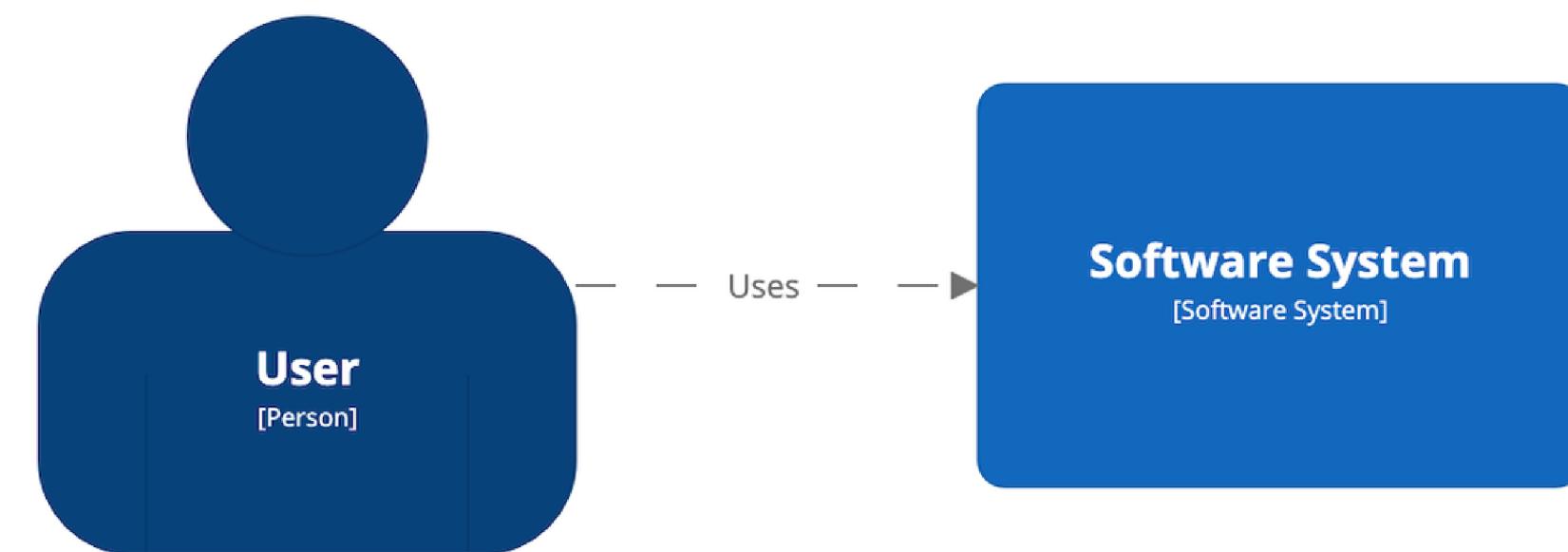


Structurizr

Linguagem simples,
desenhos de forma
automática e fácil
versionamento.

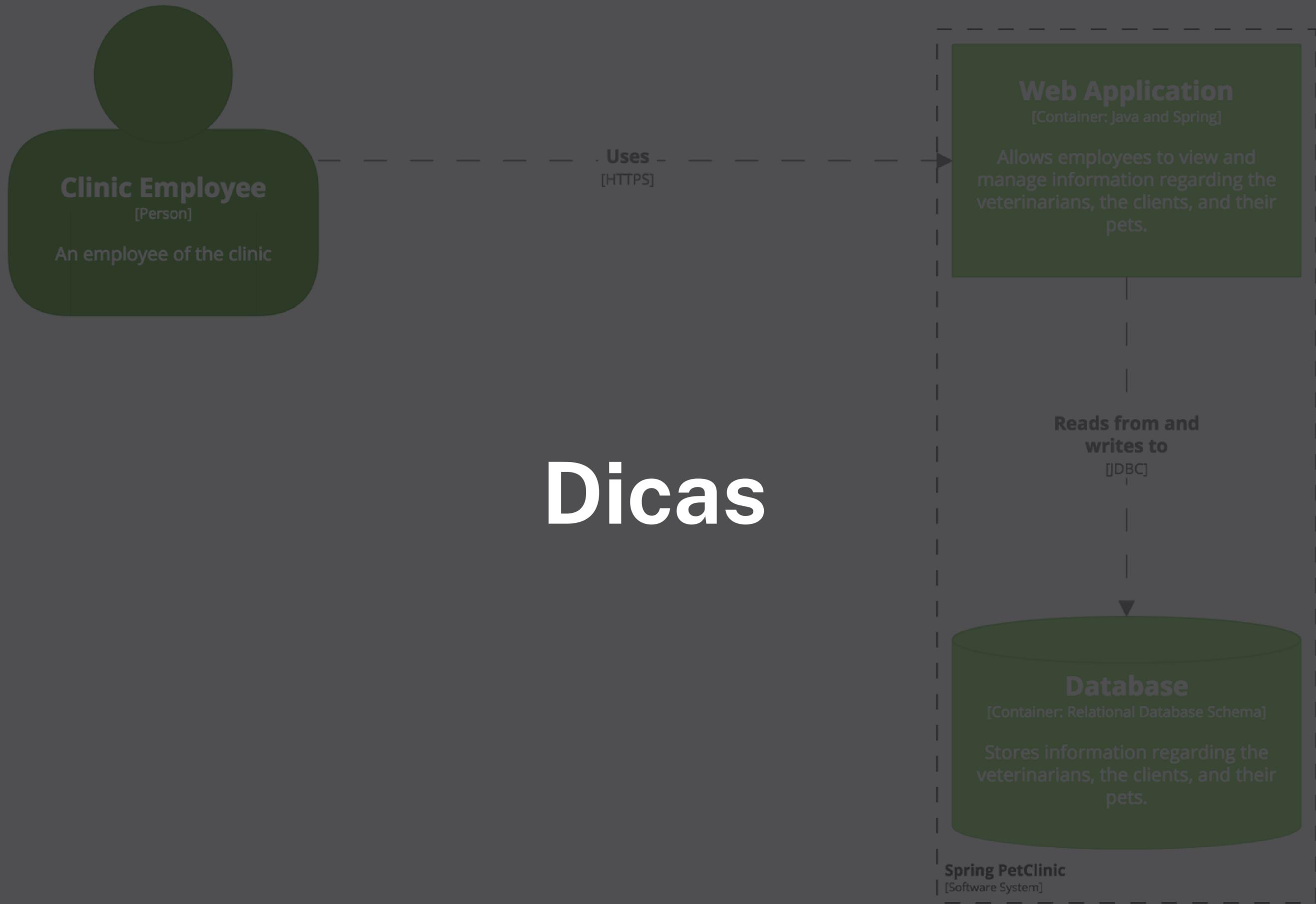
<https://structurizr.com/dsl>

```
workspace {  
  
    model {  
        user = person "User"  
        softwareSystem = softwareSystem "Software System" {  
            webapp = container "Web Application" {  
                user -> this "Uses"  
            }  
            container "Database" {  
                webapp -> this "Reads from and writes to"  
            }  
        }  
    }  
}
```

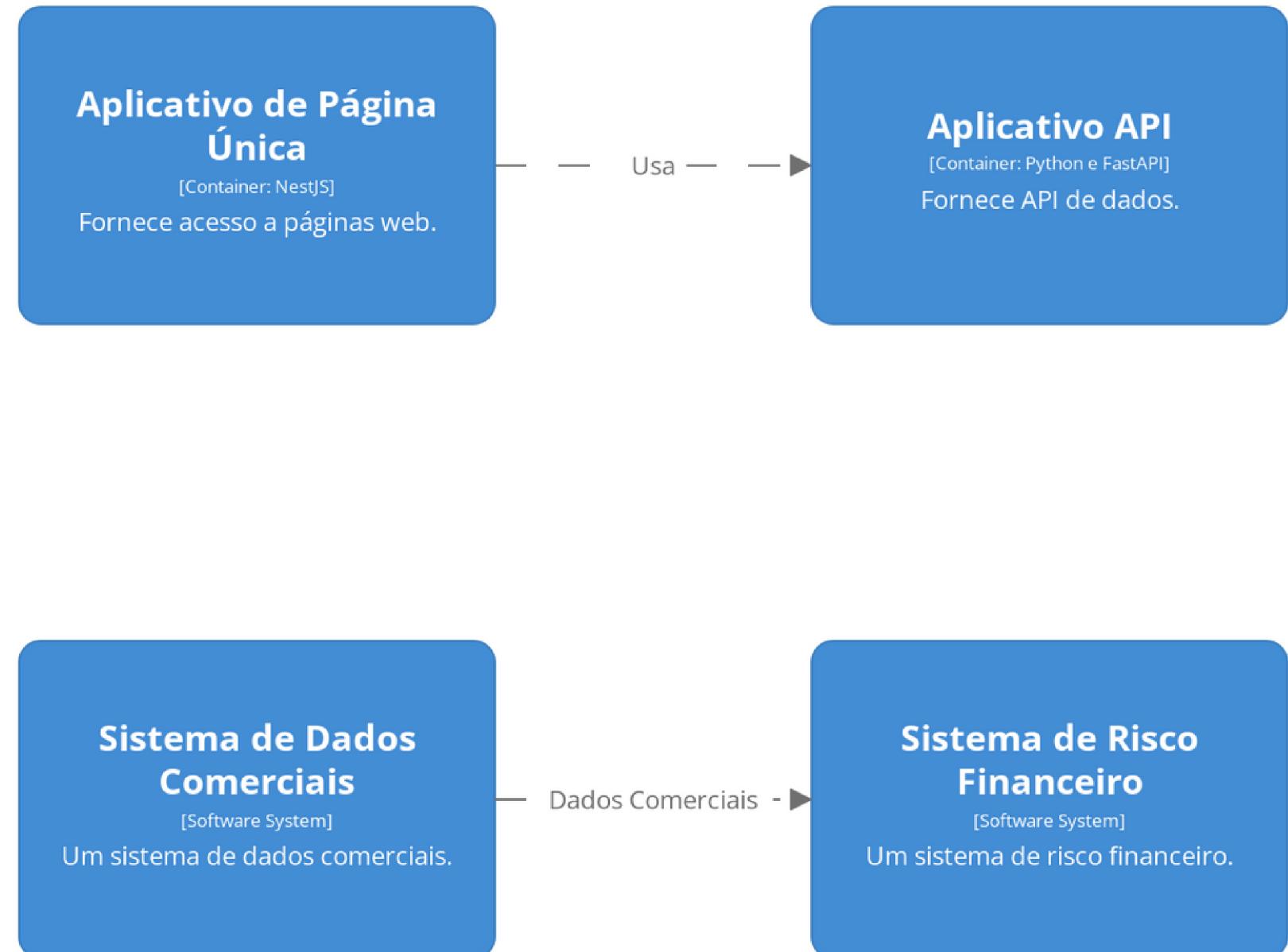


System Context diagram for Software System

Dicas

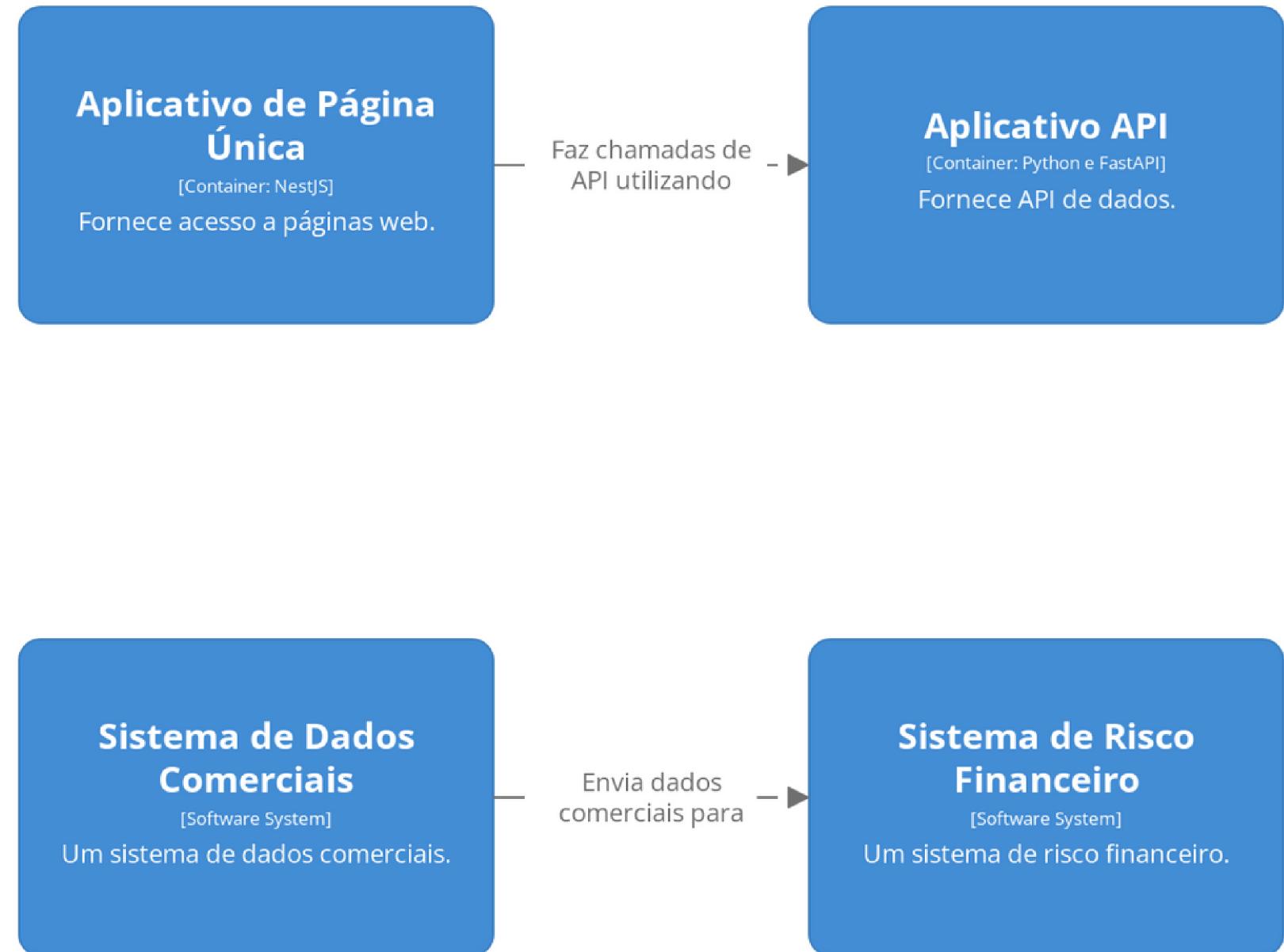


**Seja sucinto, porém explícito com a
intenção de um relacionamento**



Relacionamentos Antes

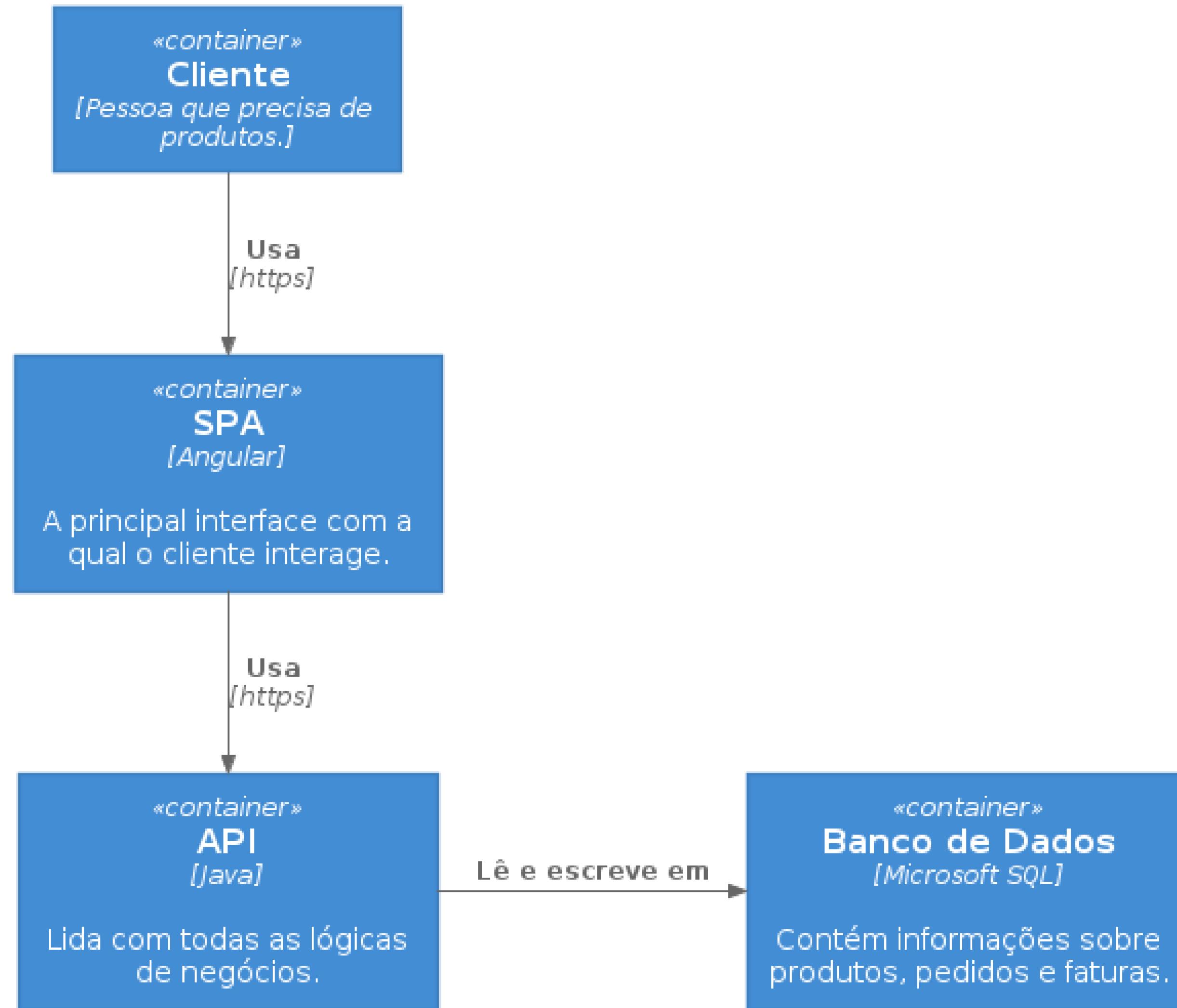
Tuesday, April 18, 2023 at 12:30 AM Coordinated Universal Time



Relacionamentos Depois

Tuesday, April 18, 2023 at 12:30 AM Coordinated Universal Time

Use cores, formas e tamanho para complementar um diagrama



«person»



Cliente

Pessoa que precisa de
produtos.

Usa
[https]

«container»

SPA

[Angular]

A principal interface com a
qual o cliente interage.

Usa
[https]

«container»

API

[Java]

Lida com todas as lógicas
de negócios.

Lê e escreve em

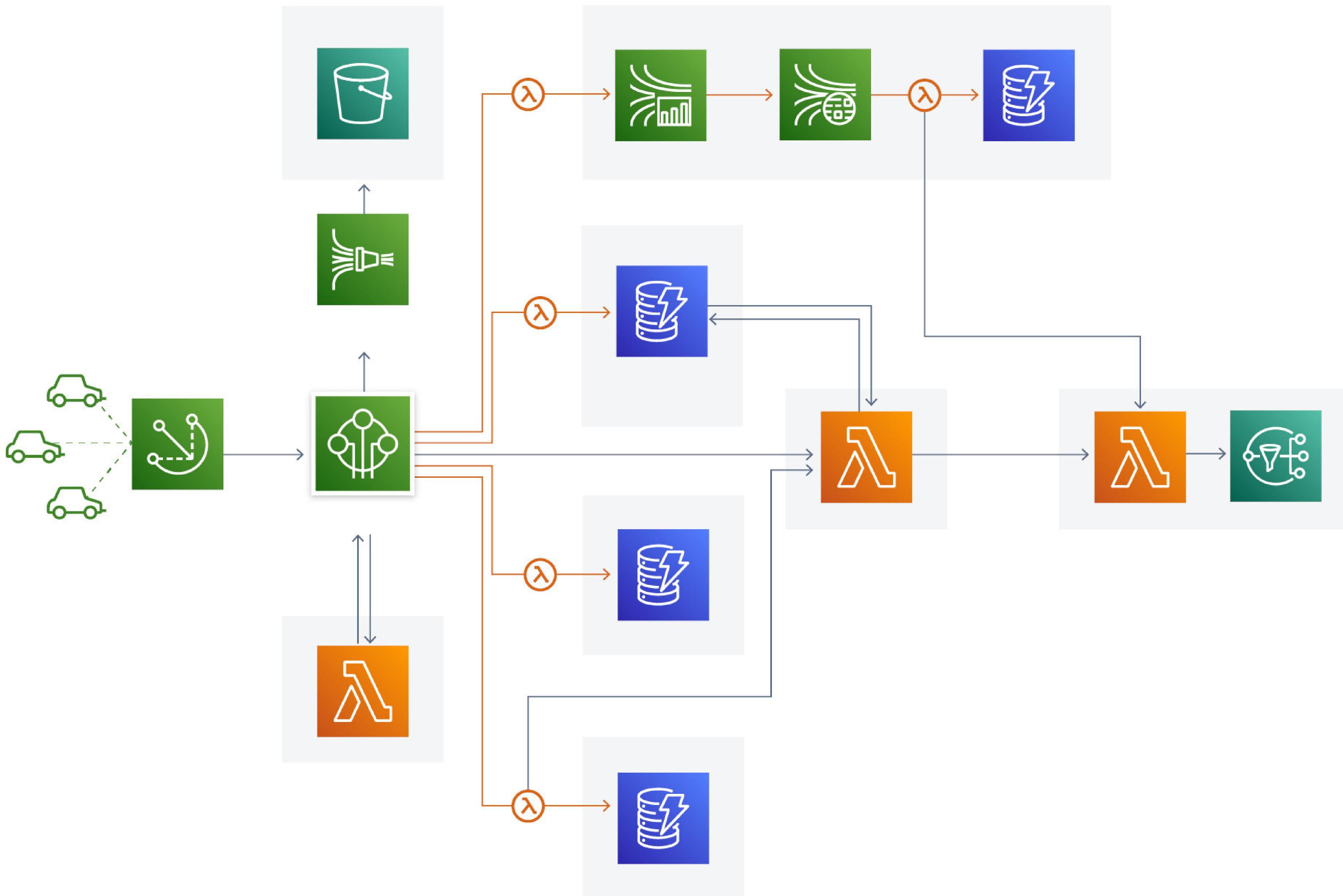
«container»

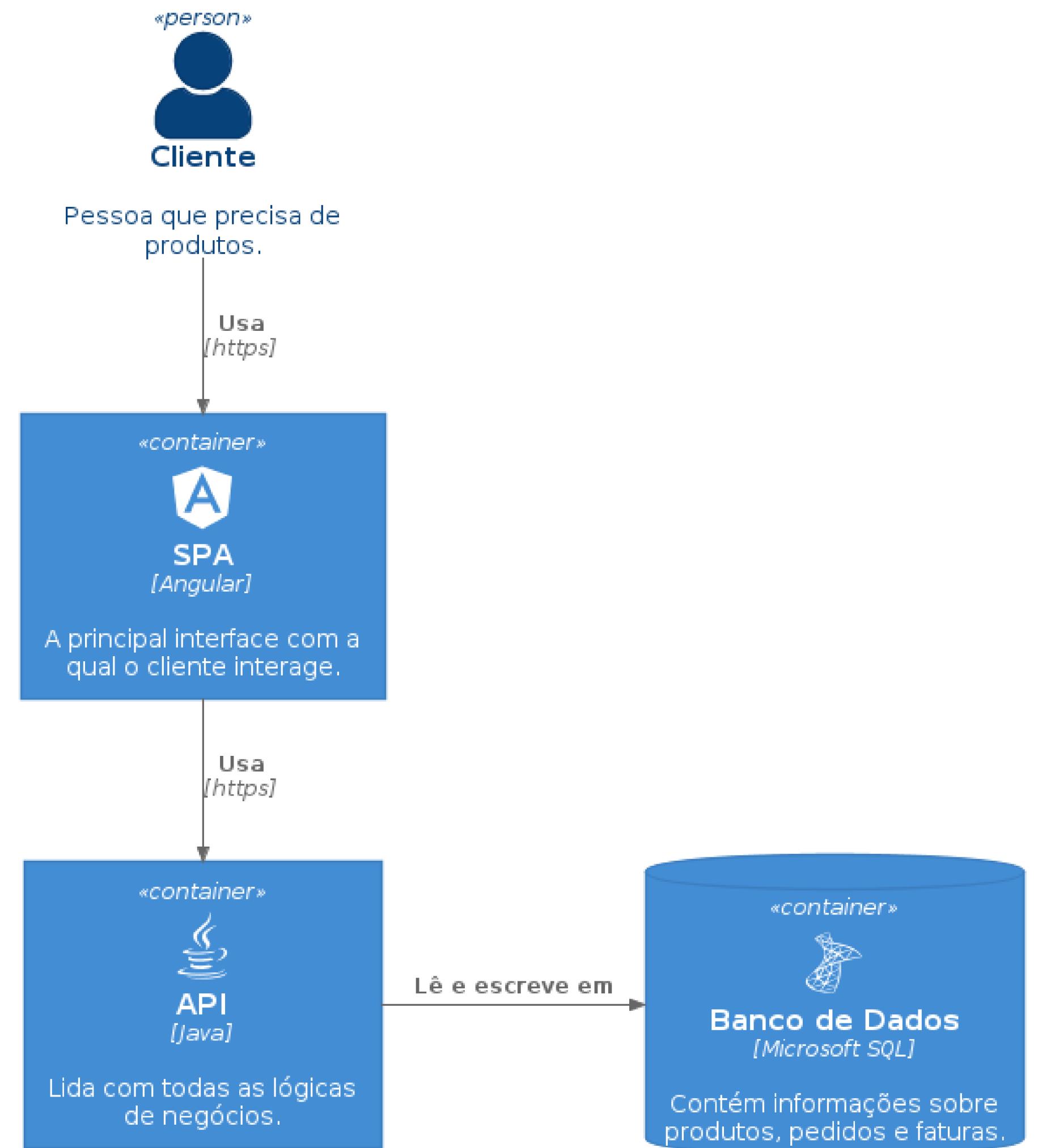
Banco de Dados

[Microsoft SQL]

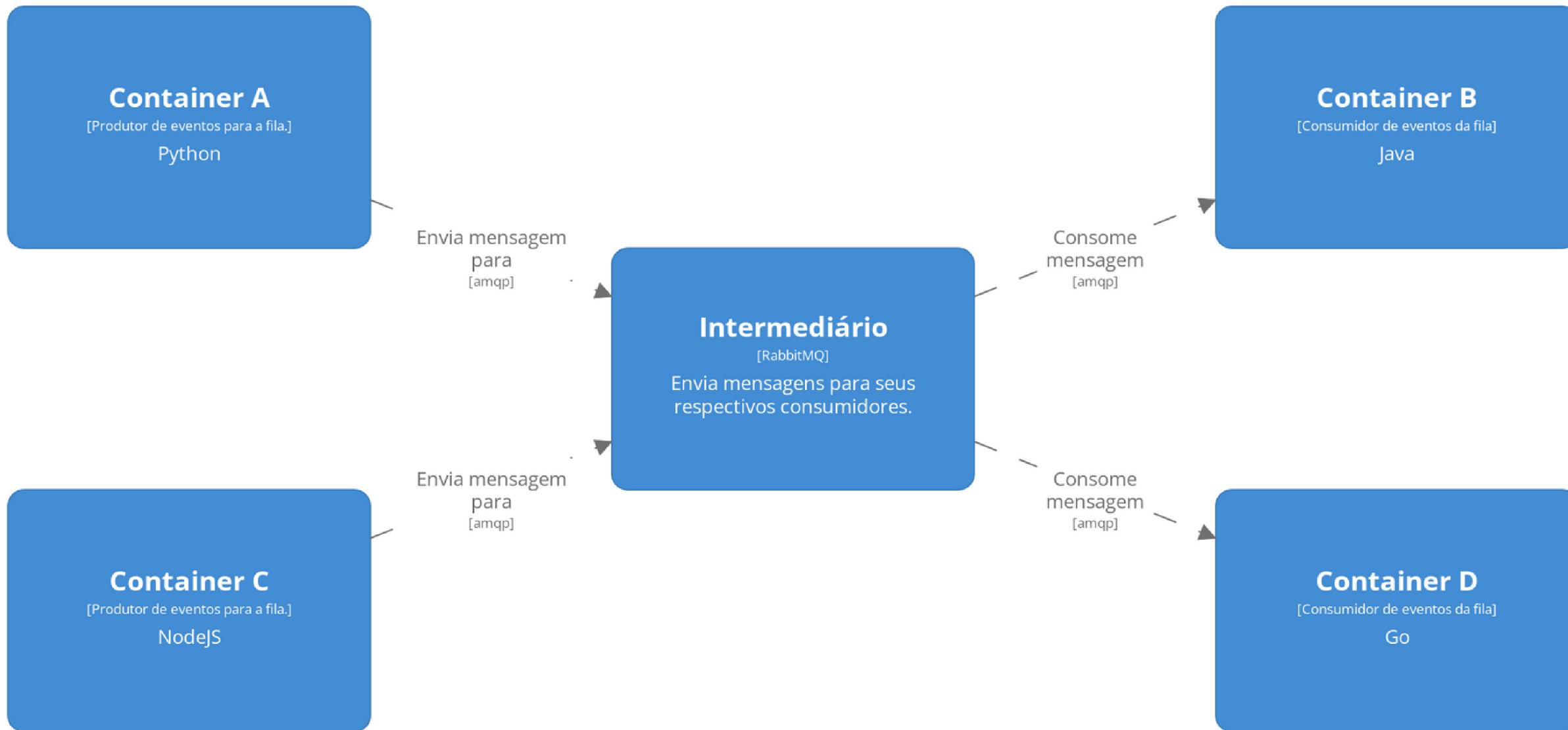
Contém informações sobre
produtos, pedidos e faturas.

**Use ícones para complementar o texto,
não substituí-lo**



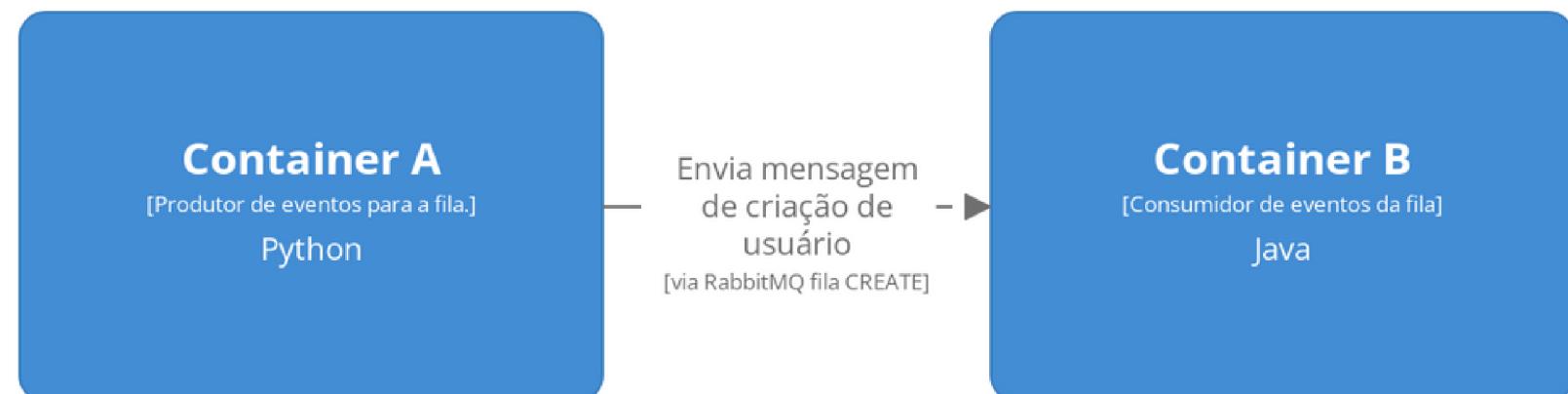
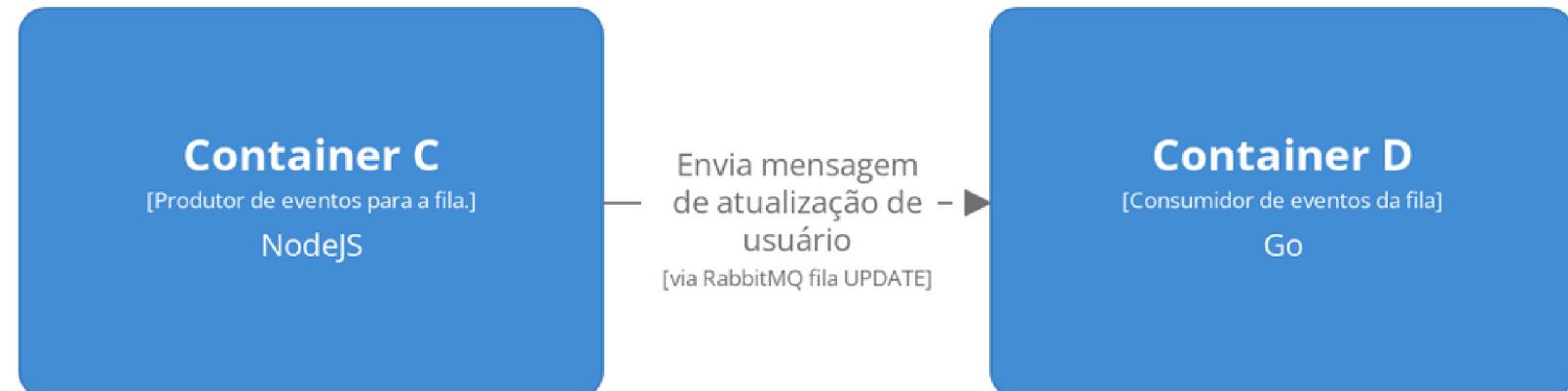


**Cuidado para não esconder as verdadeiras
intenções**



Intenções Antes

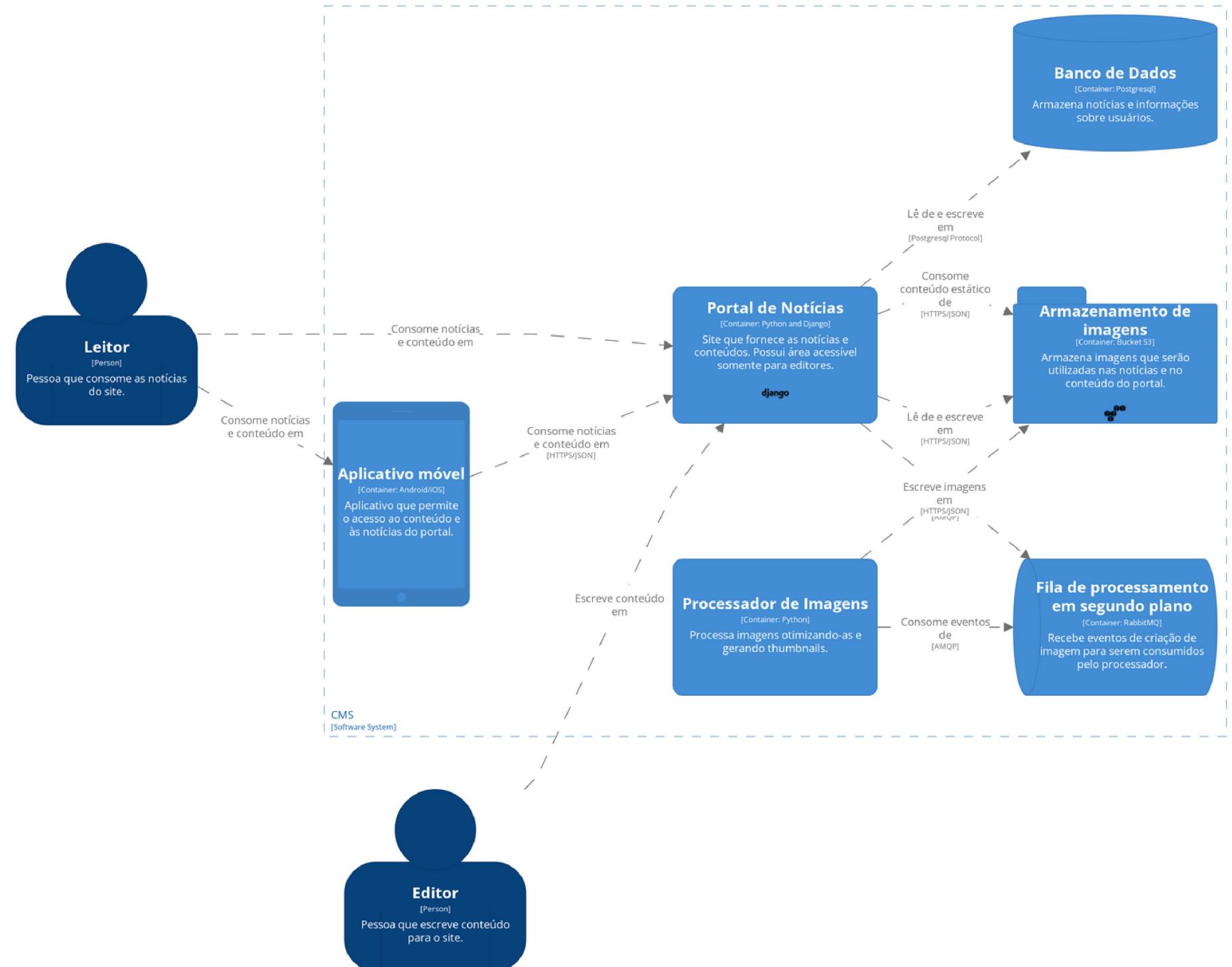
Tuesday, April 18, 2023 at 12:21 AM Coordinated Universal Time



Intenções Depois

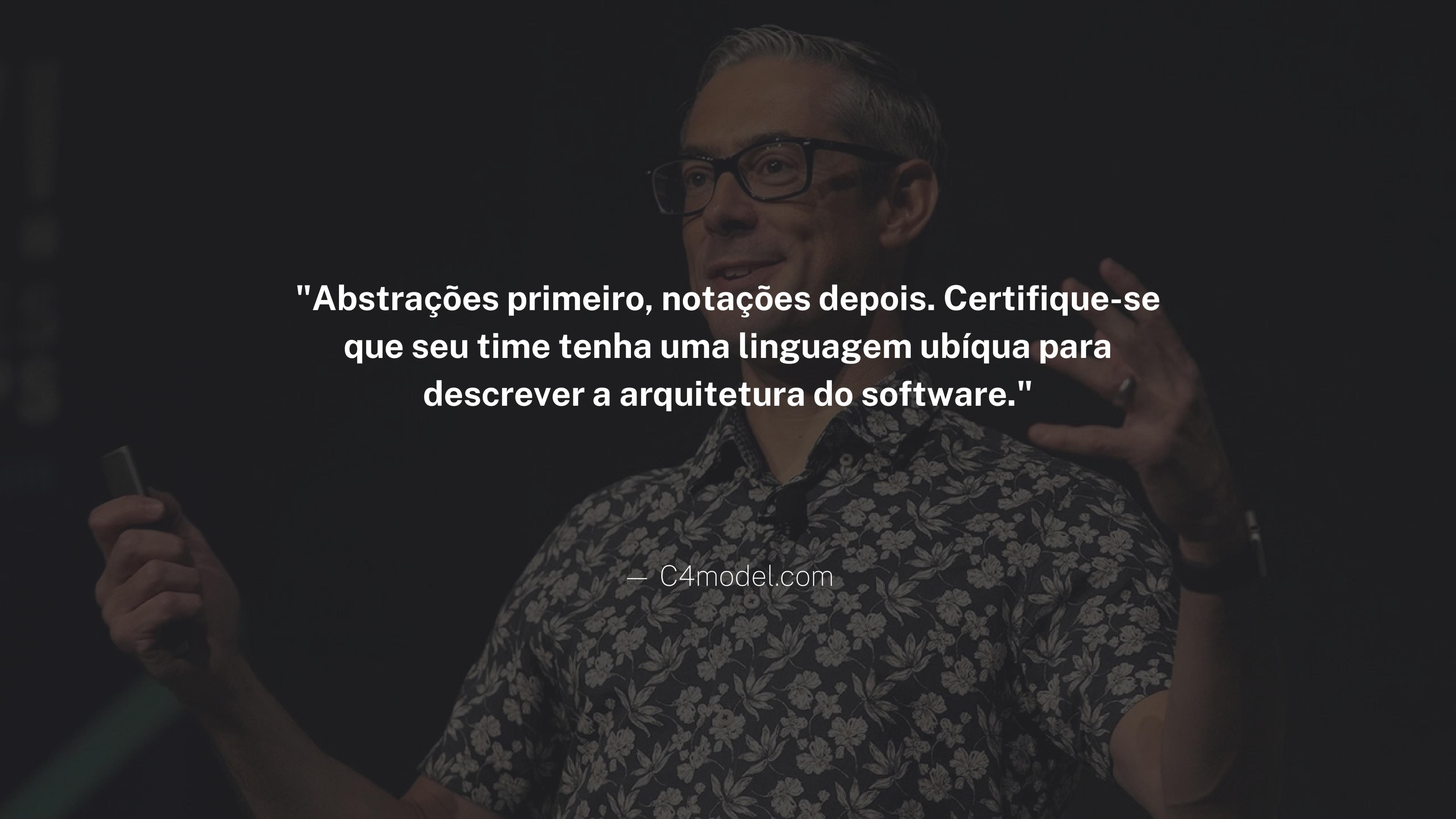
Tuesday, April 18, 2023 at 12:21 AM Coordinated Universal Time





[Container] CMS

Tuesday, April 18, 2023 at 12:32 AM Coordinated Universal Time

A medium shot of a man with short, light-colored hair and glasses, wearing a dark blue short-sleeved shirt with a white floral pattern. He is looking slightly to his left with a thoughtful expression. His right hand holds a black smartphone, and his left hand is partially visible, also holding a device.

**"Abstrações primeiro, notações depois. Certifique-se
que seu time tenha uma linguagem ubíqua para
descrever a arquitetura do software."**

— C4model.com

Obrigado!

\$ Cássio Botaro_

 @cassiobotaro

 @cassiobotaro

 in/cassiobotaro

 CássioBotaro

