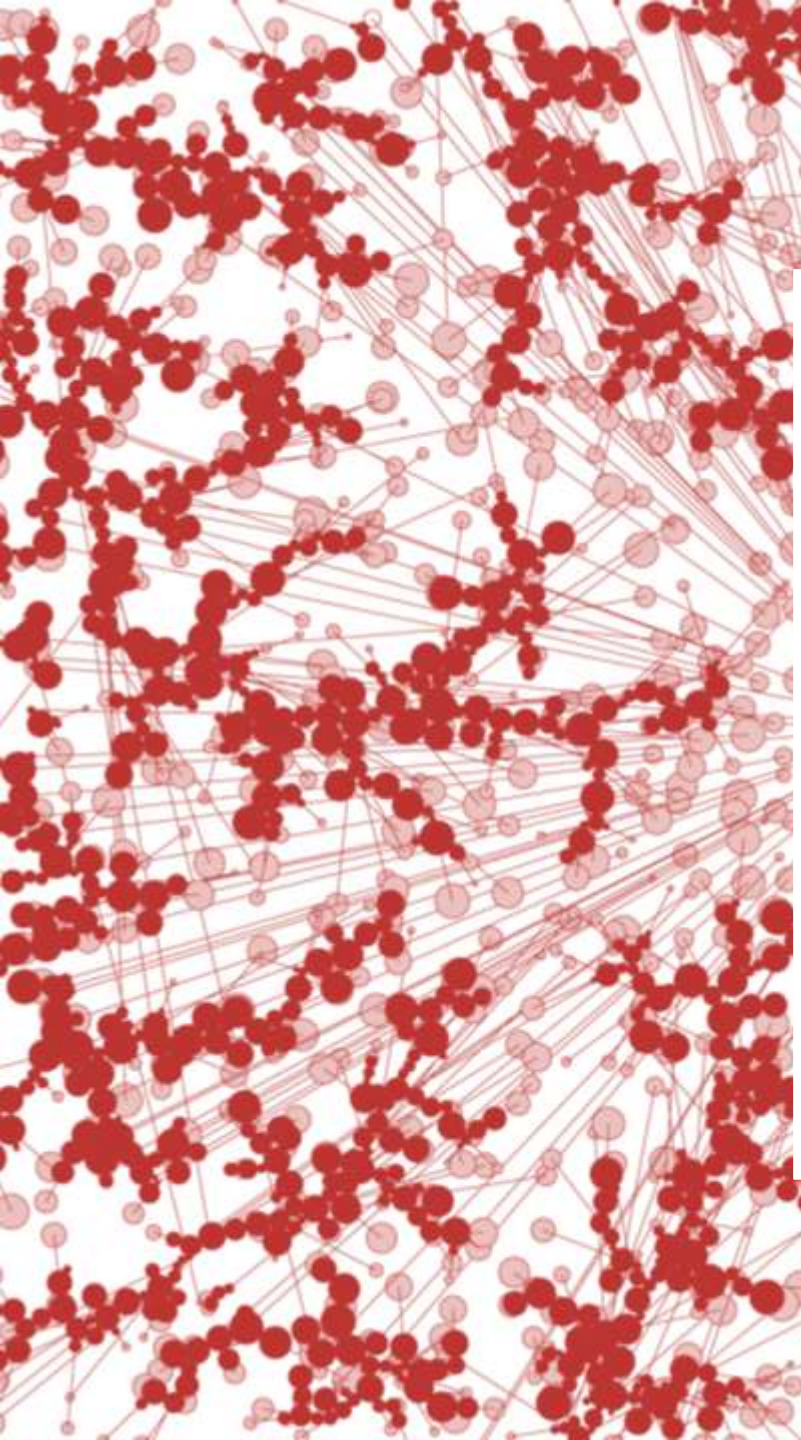


PROFINIT
new frontier group

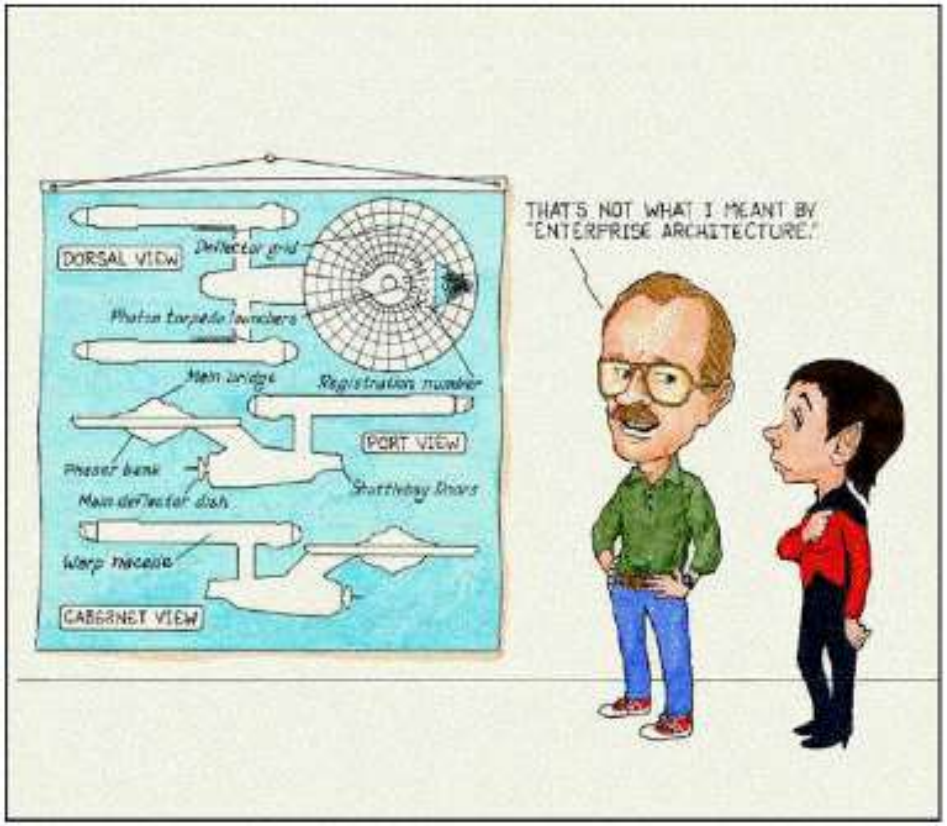
Enterprise architektura

Richard Michalský
Richard.Michalsky@profinit.eu
http://www.profinit.eu/cz/podpora-univerzit/univerzitni-vyuka

Program

PROFINIT
new frontier group

- Co vše se skrývá pod pojmem enterprise architektura
- Proč se jí zabývat?
- Příklady ze života / návrhové vzory
  - Aplikační architektura
  - Integrační architektura
  - Buzzwords
- Co si z toho odnést?



Definice pojmu Enterprise architektura

PROFINIT
new frontier group

MIT Center for Information Systems Research

- Enterprise architecture is the organizing logic for business processes and IT infrastructure reflecting the integration and standardization requirements of the firm's operating model.

IFEAD (Institute for Enterprise Architecture Developments)

- Enterprise architecture is a complete expression of the enterprise; a master plan which "acts as a collaboration force" between aspects of business planning such as goals, visions, strategies and governance principles; aspects of business operations such as business terms, organization structures, processes and data; aspects of automation such as information systems and databases; and the enabling technological infrastructure of the business such as computers, operating systems and networks.

Definice pojmu Enterprise architektura

PROFINIT
new frontier group

Architektura je …

- Struktura (dekompozice)
- Dokumentace této struktury

Enterprise architektura je …

- Struktura „**podniku**“
- Dokumentace této struktury

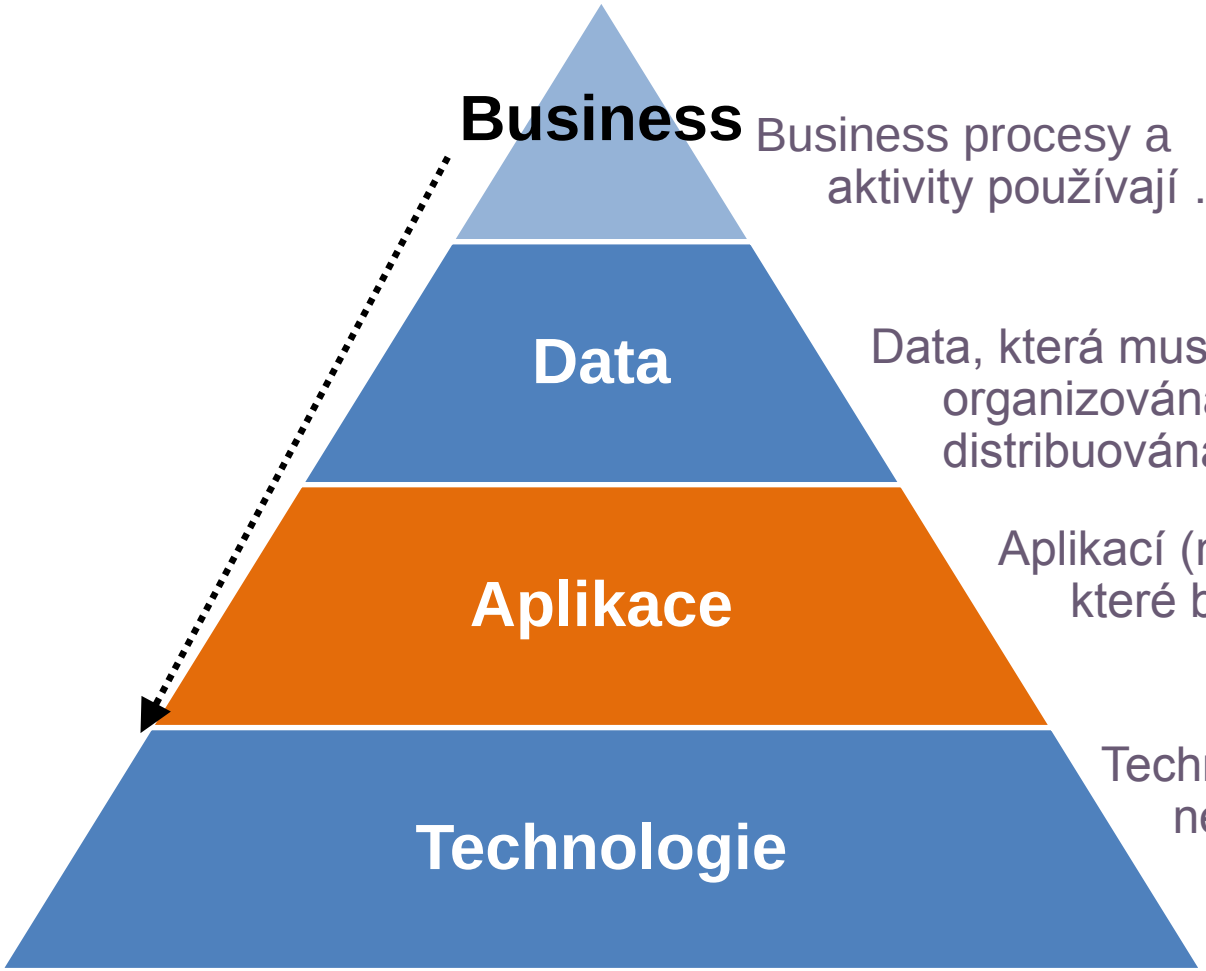
„Architecture is about the **important** stuff. Whatever that is …“

Martin Fowler, Who needs an Architect ?

PROFINIT
new frontier group

Základní koncepty Enterprise architektury

Úrovně pohledu na Enterprise …



Business procesy a aktivity používají …

Data, která musí být shromážděna, organizována, chráněna a distribuována použitím …

Aplikací (na zakázku, krabicové), které běží na …

Technologii, jako např. počítač nebo telefonní síť.

Dokumentace architektury

PROFINIT
new frontier group

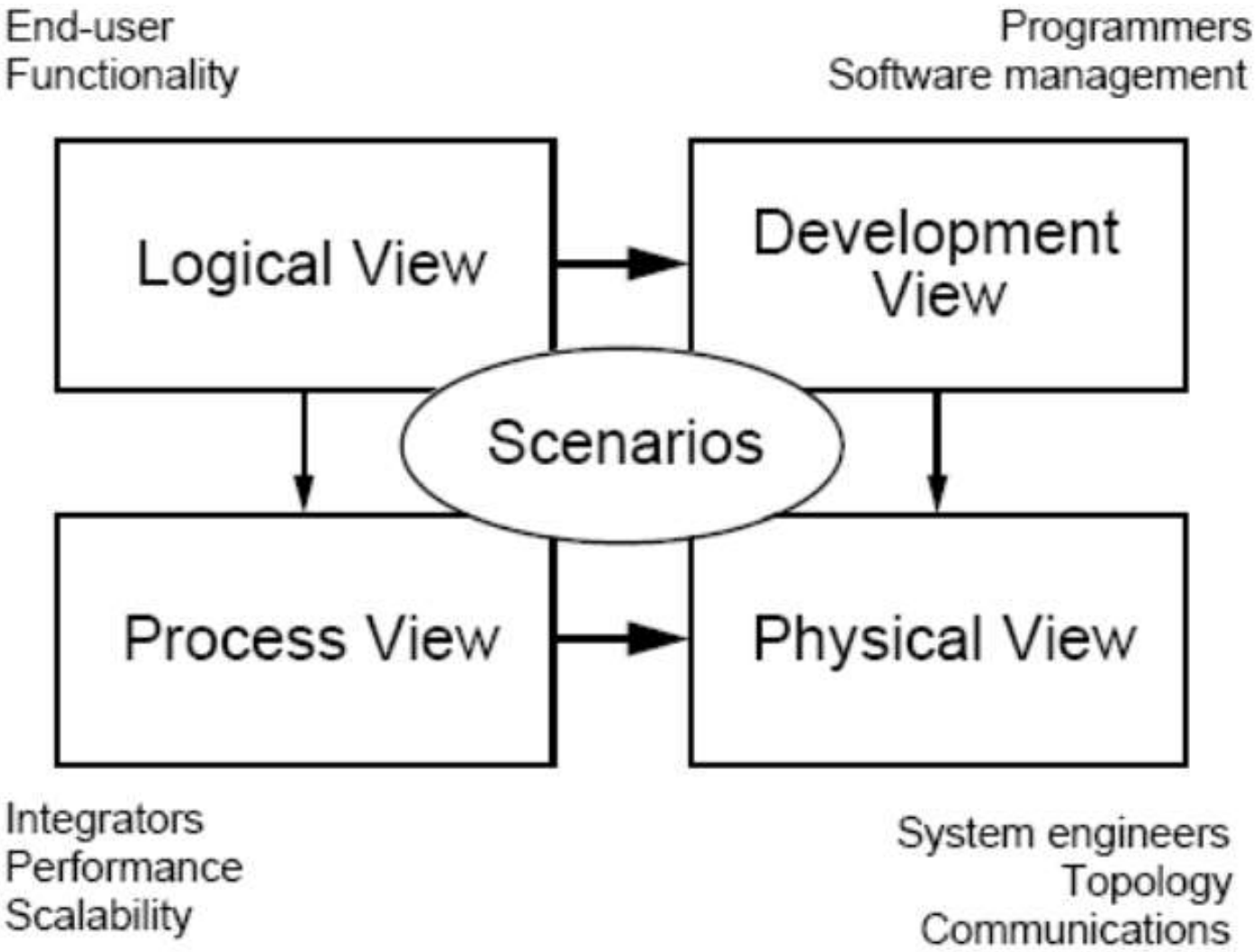
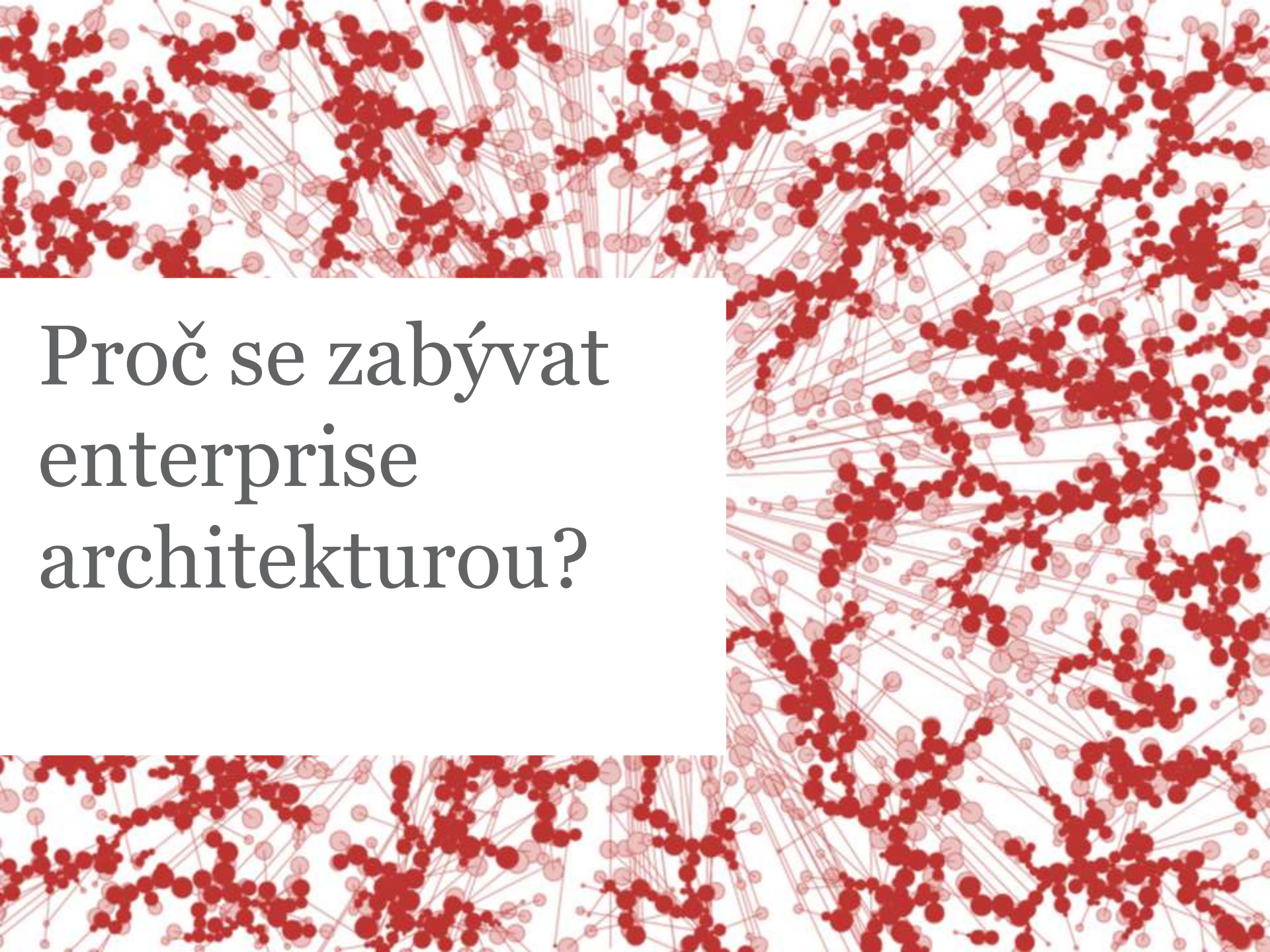


Figure 1 — The "4+1" view model



Proč se zabývat enterprise architekturou?

Základní znaky Enterprise

PROFINIT
new frontier group

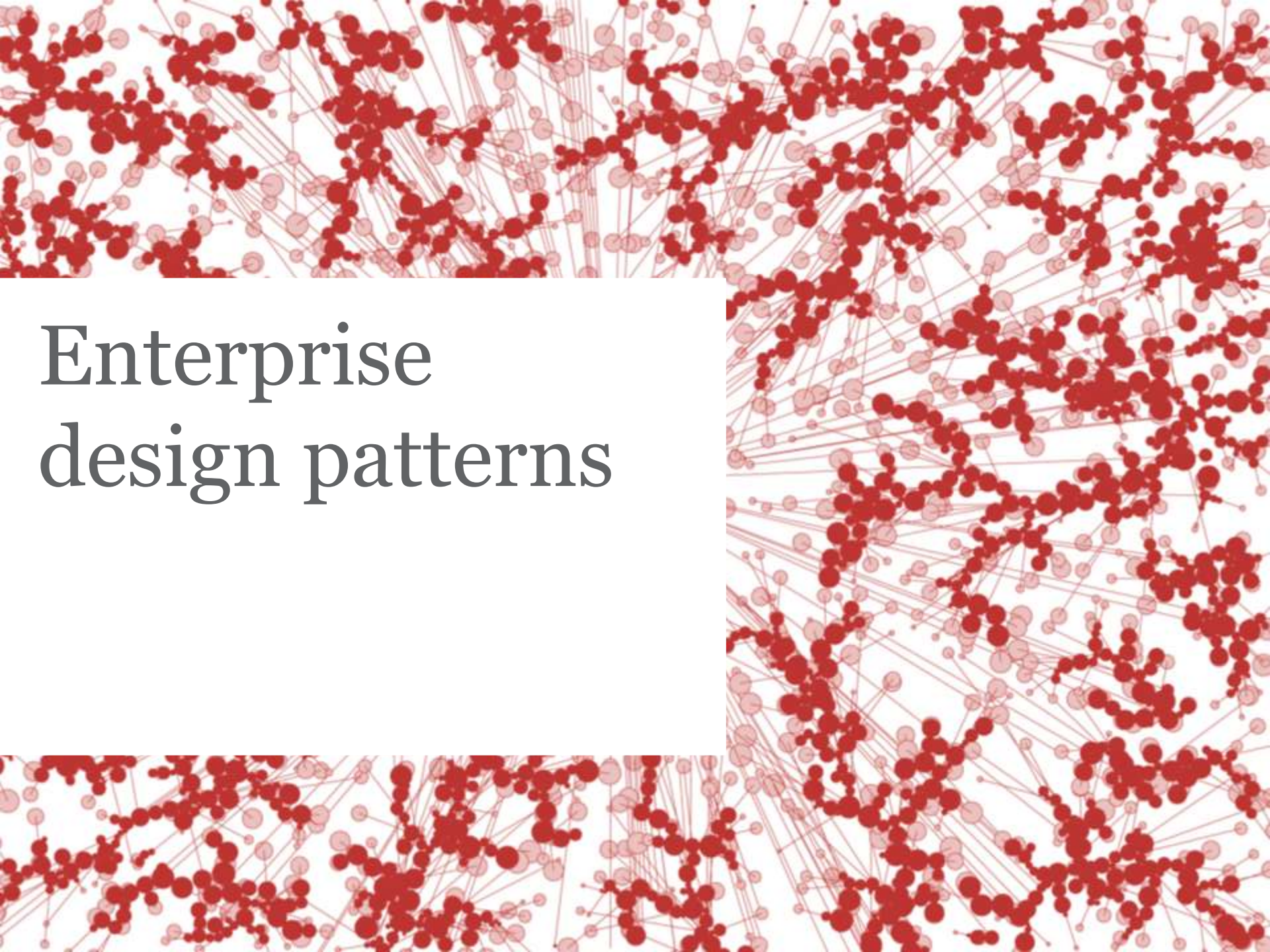
- Veliké
- Složité
- Komplexní
- V čase se rychle měnící

Co architektura velkých systémů řeší?

PROFINIT
new frontier group

- Odolnost k chybám
- Výkonnost
- Neustálé změny

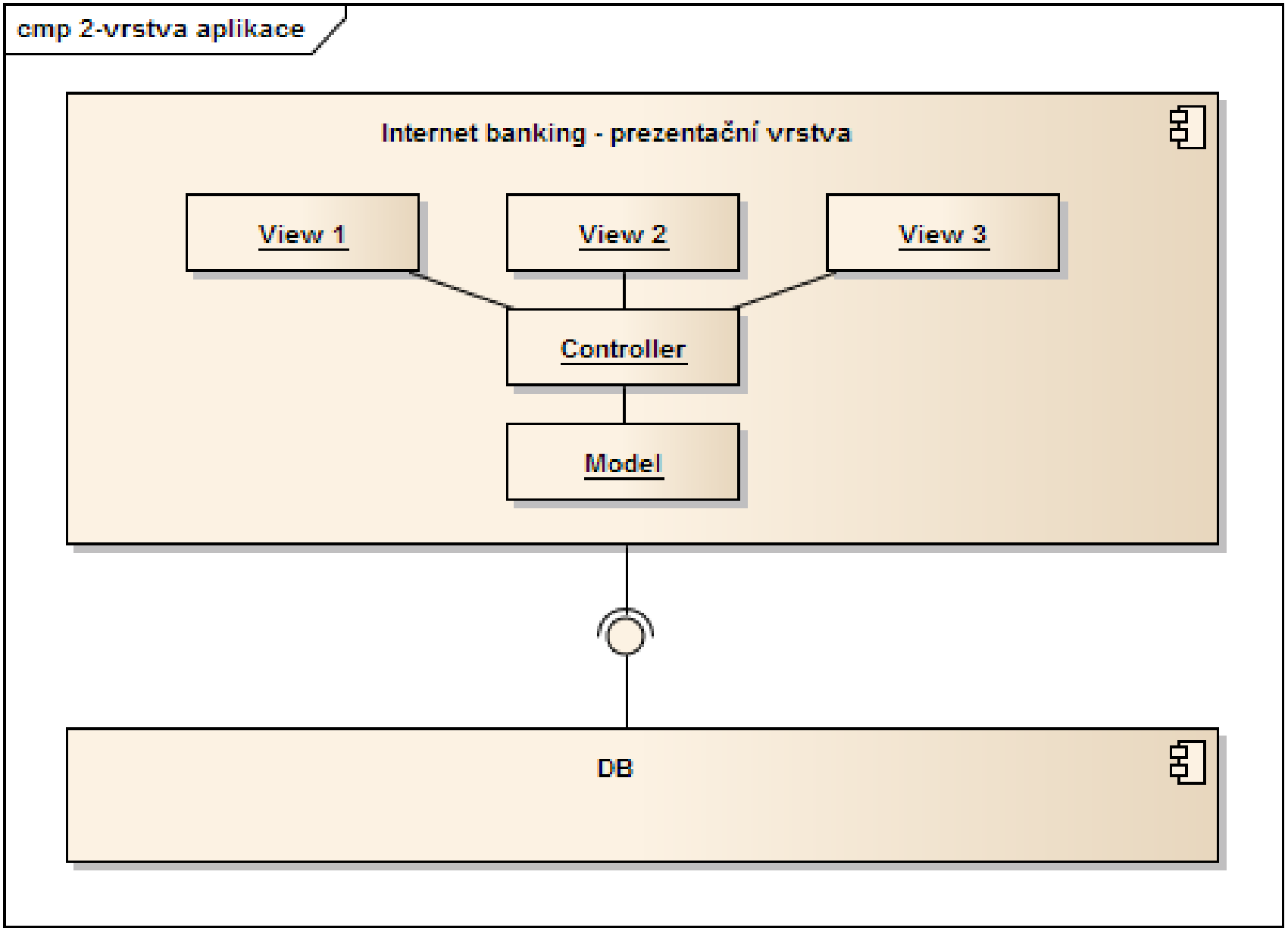
Věčný boj se složitostí!



Enterprise design patterns

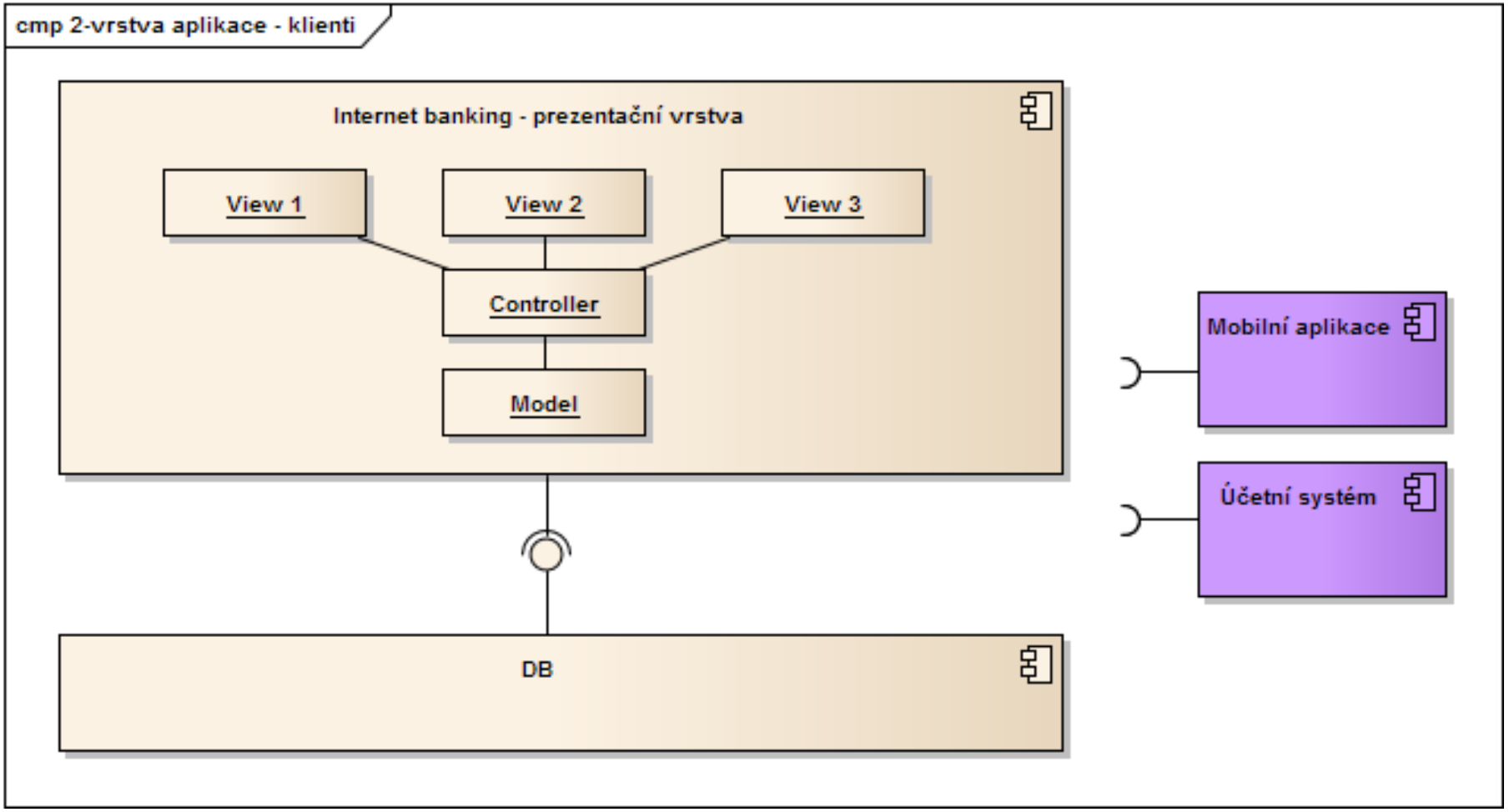
Jednoduchá aplikace

PROFINIT
new frontier group



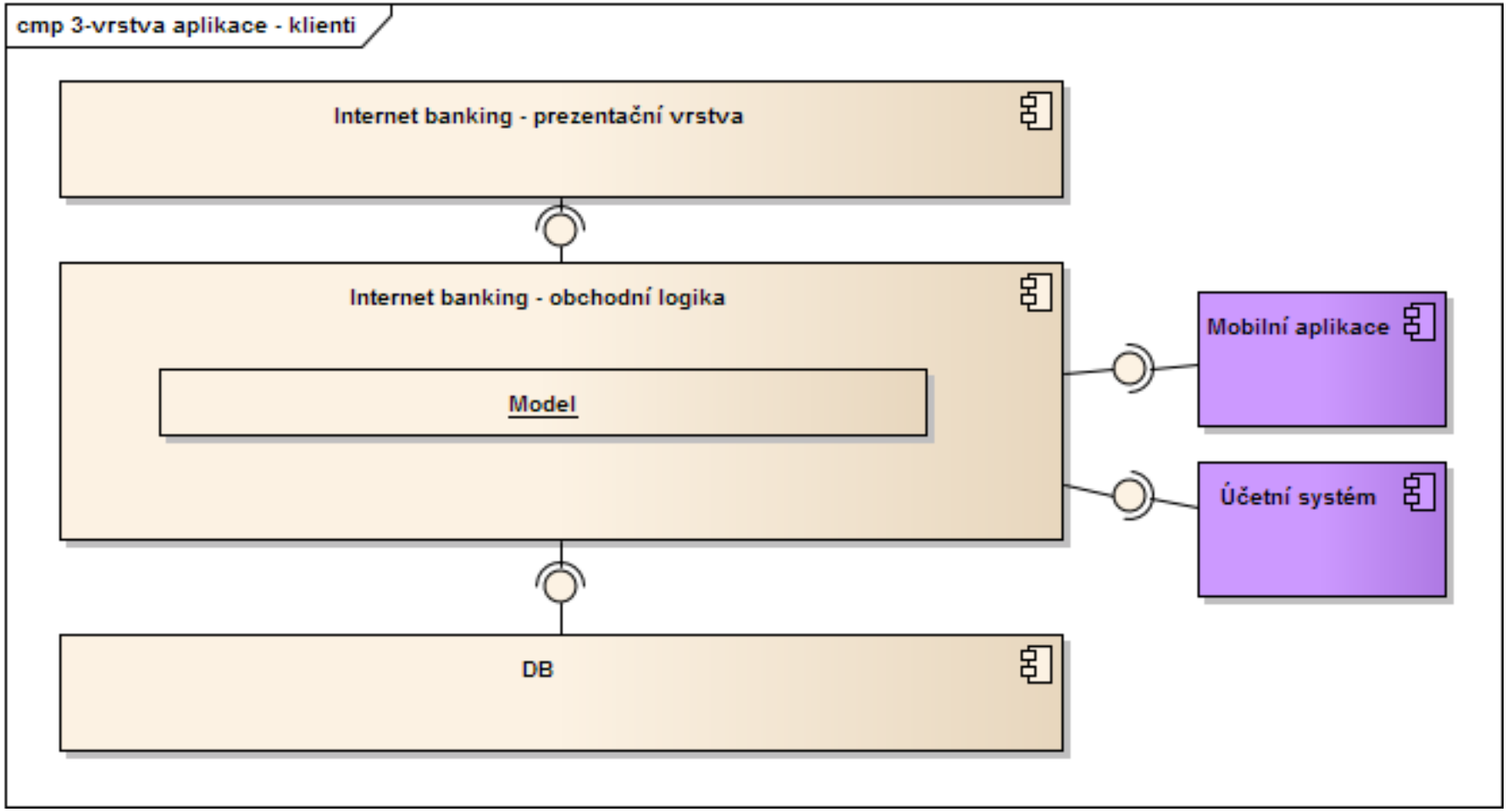
Další klientské aplikace

PROFINIT
new frontier group



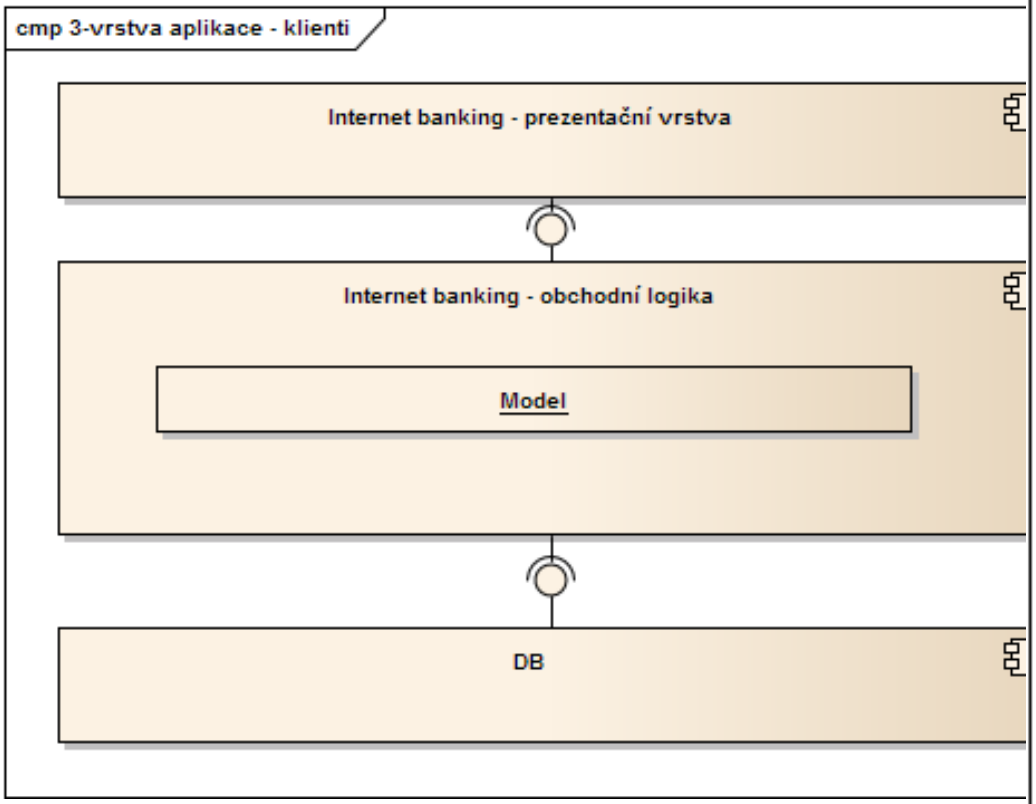
Třívrstvá aplikace

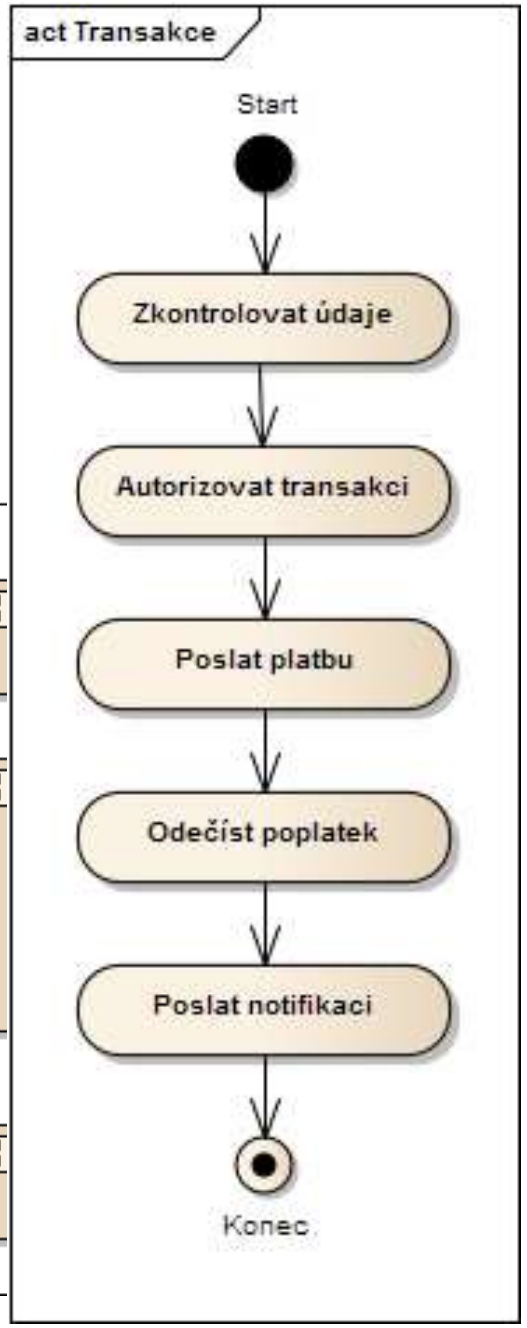
PROFINIT
new frontier group



Transakce

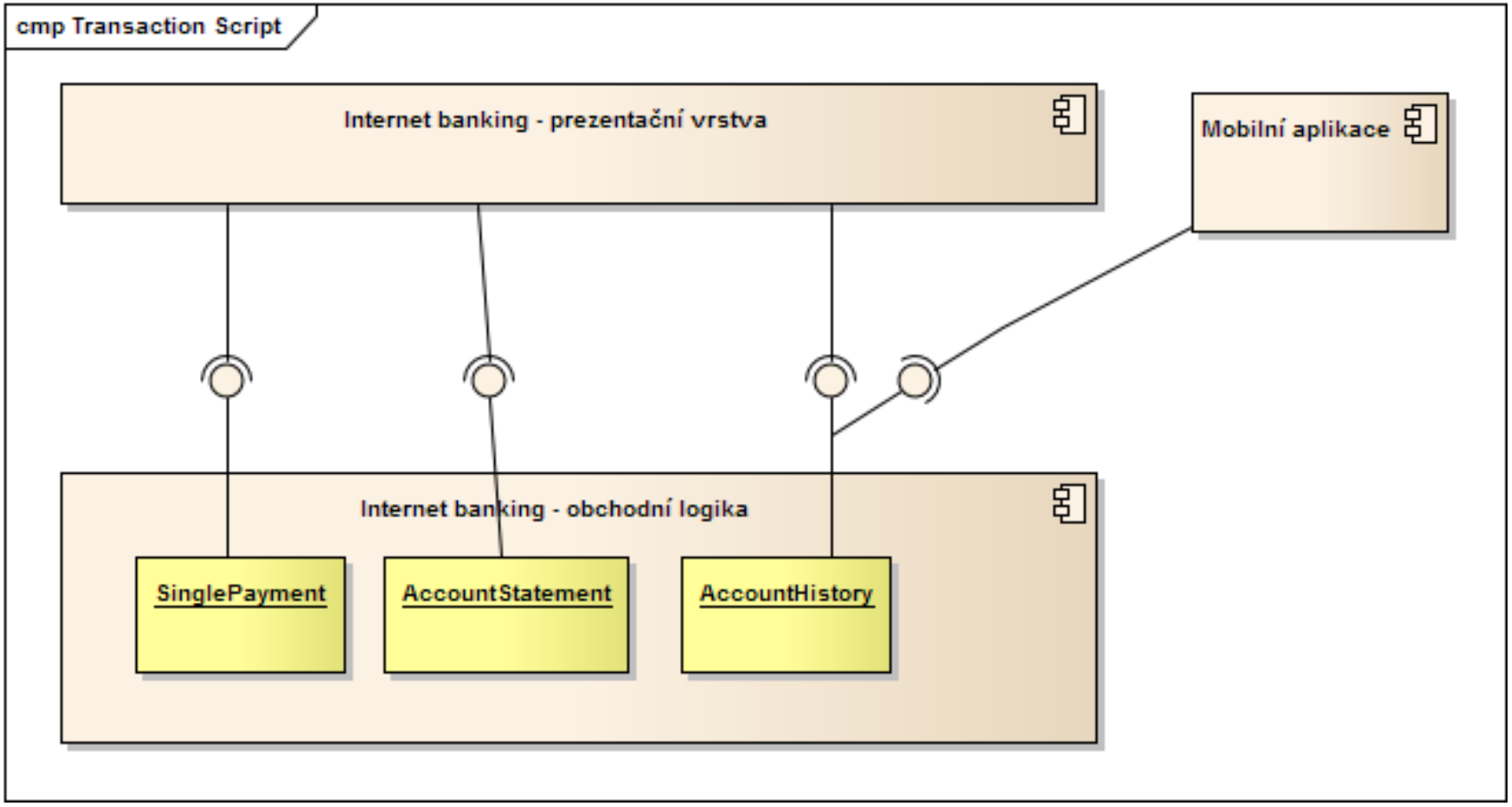
PROFINIT
new frontier group





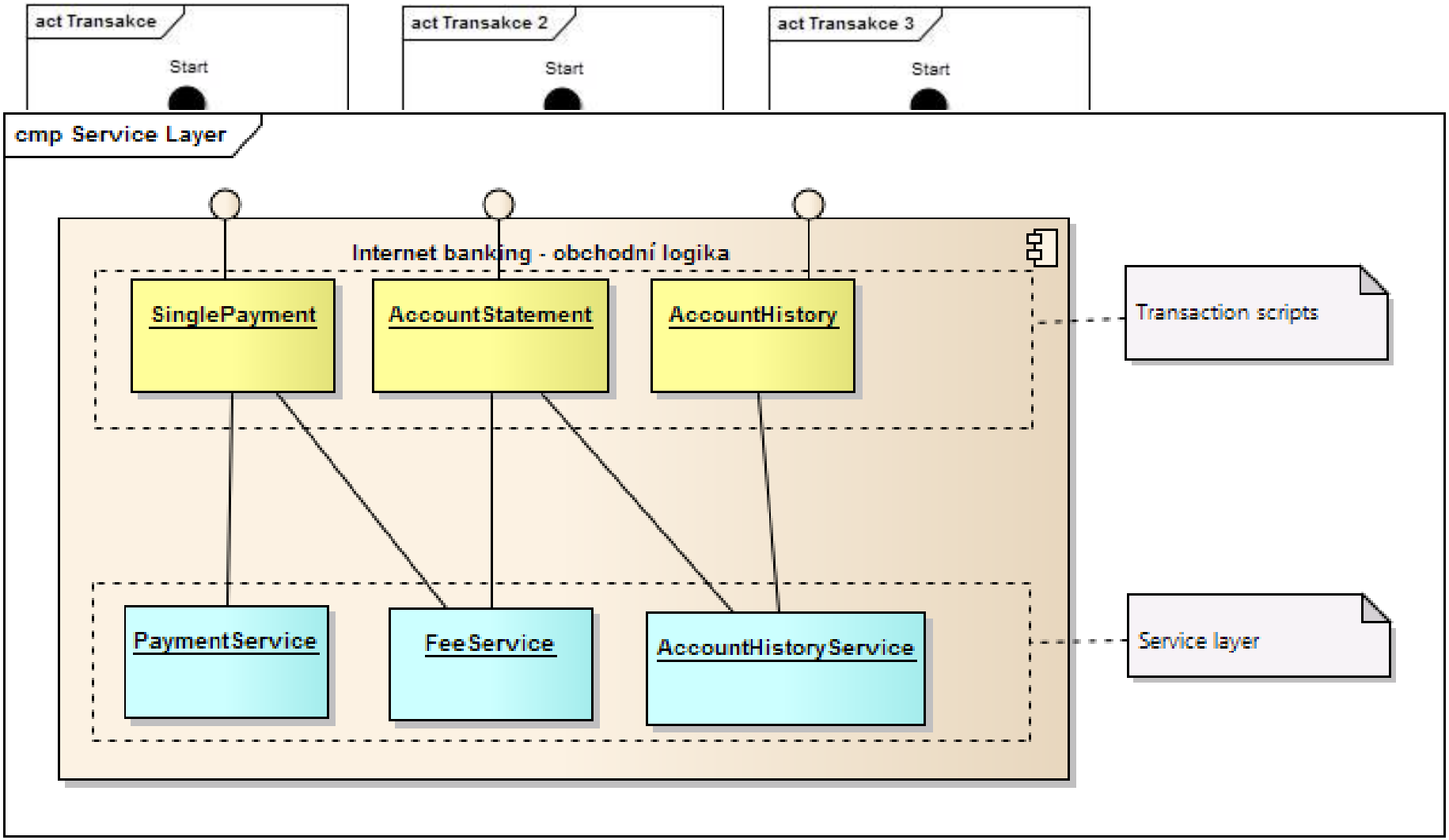
Transaction Script

PROFINIT
new frontier group



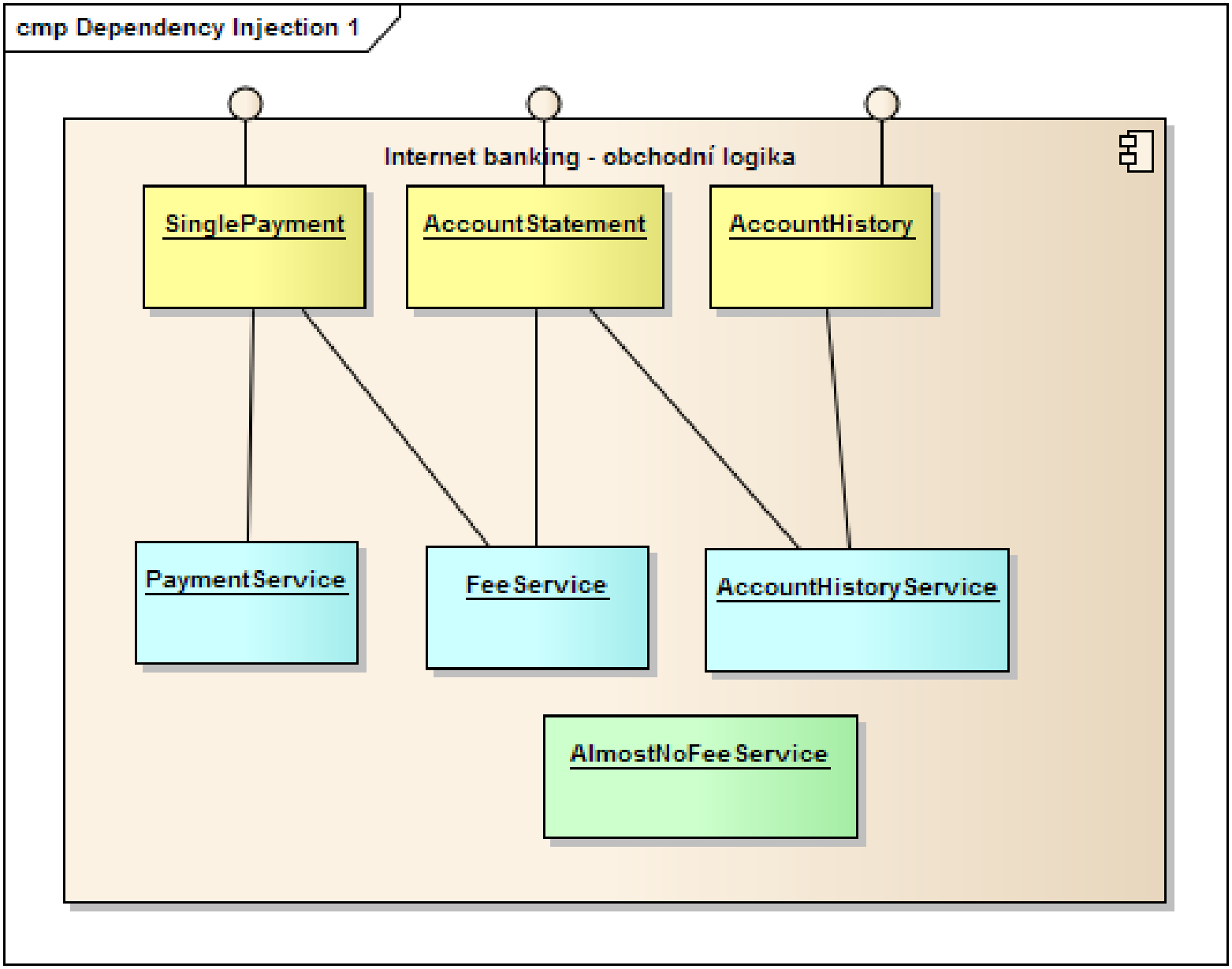
Service Layer

PROFINIT
new frontier group



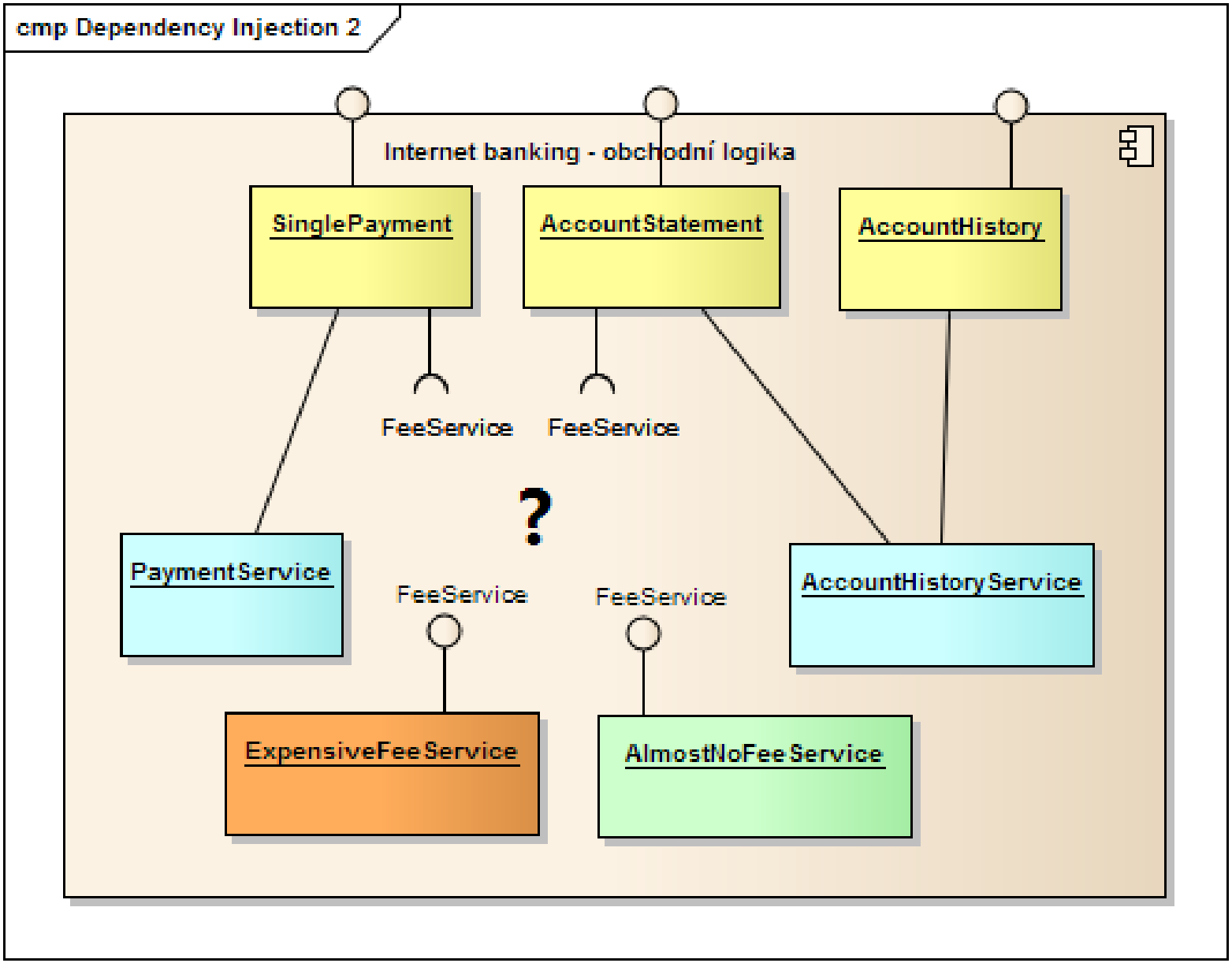
Dependency Injection 1

PROFINIT
new frontier group



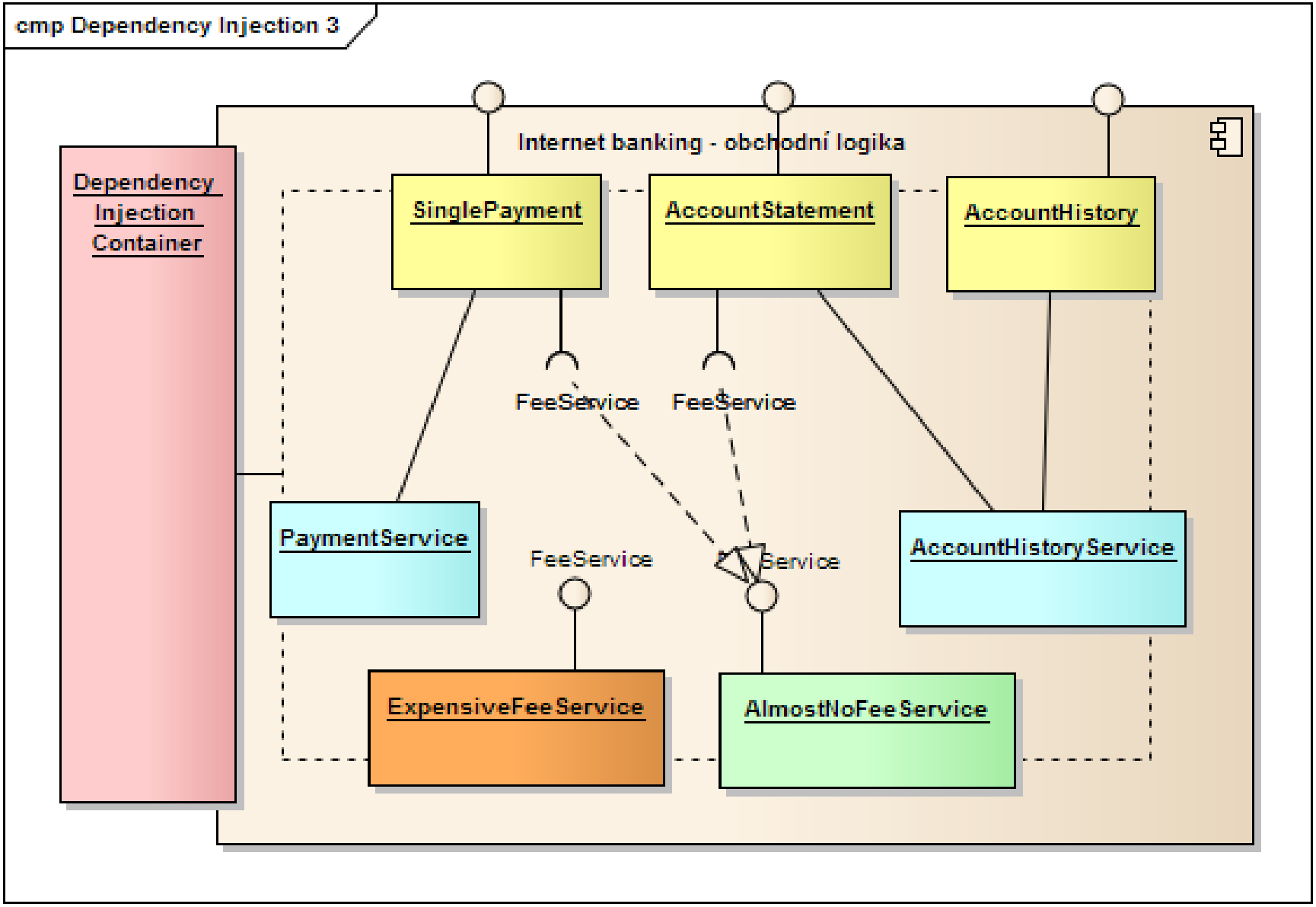
Dependency Injection 2

PROFINIT
new frontier group



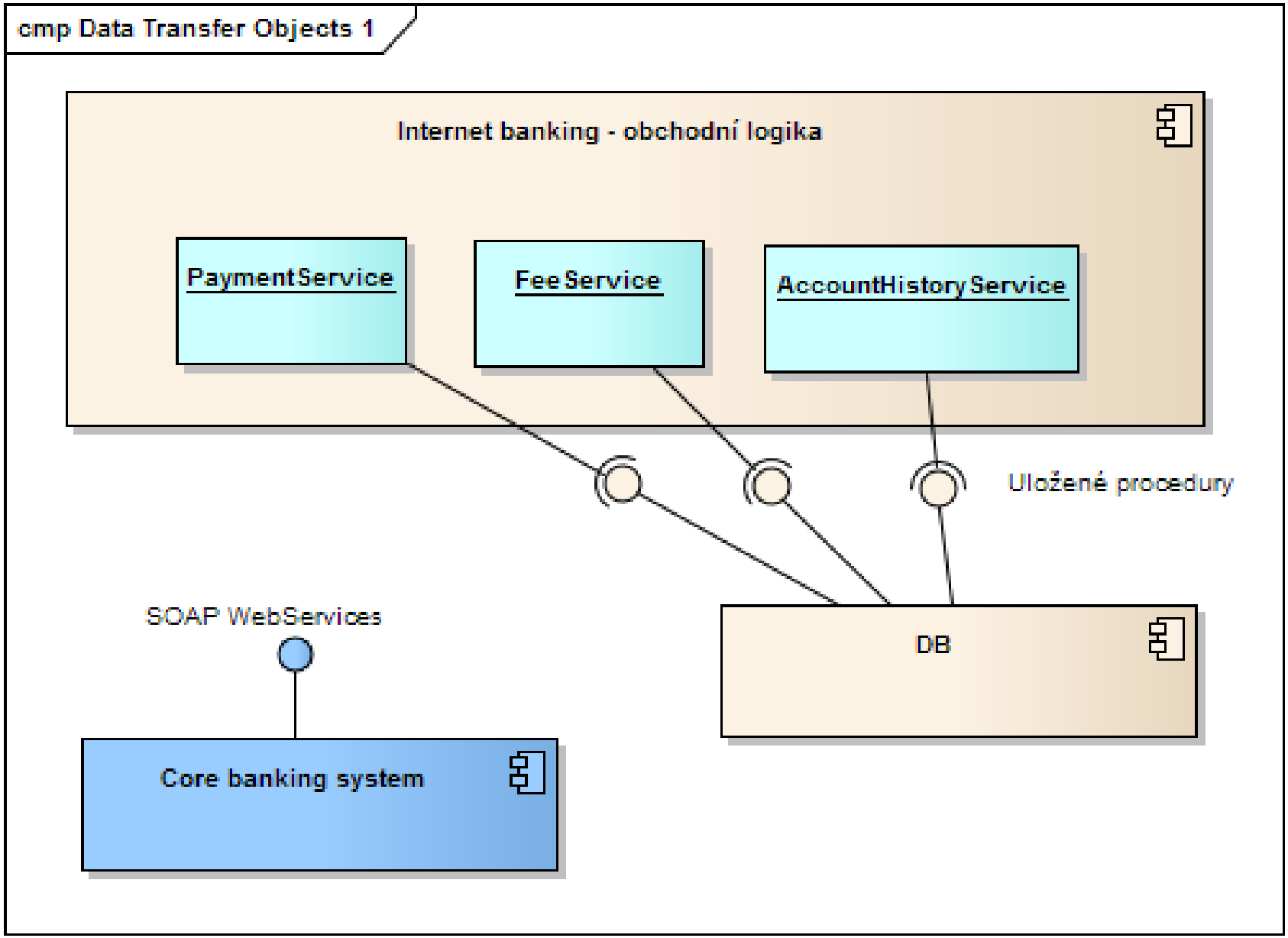
Dependency Injection 3

PROFINIT
new frontier group



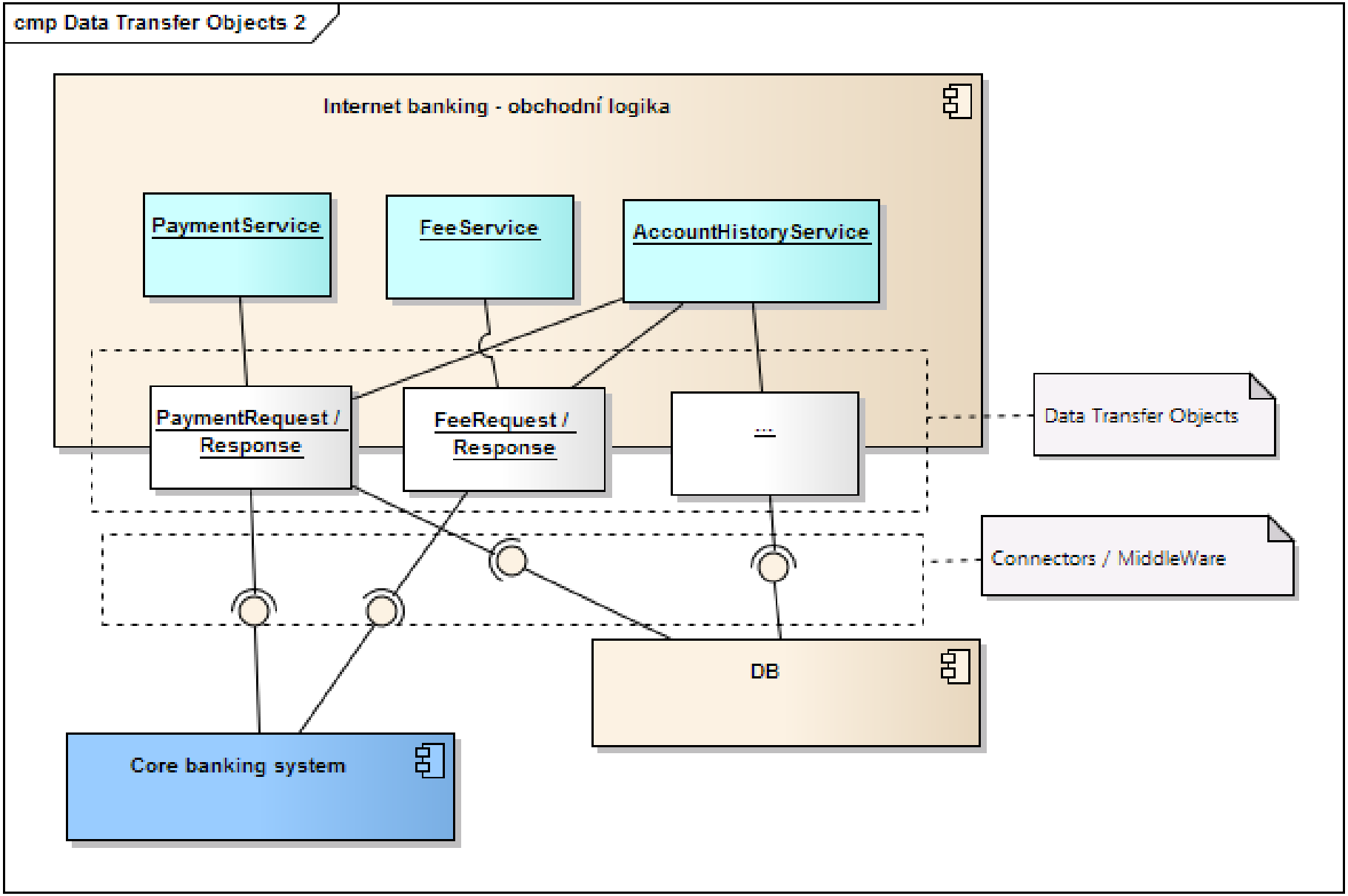
Data Transfer Objects 1

PROFINIT
new frontier group



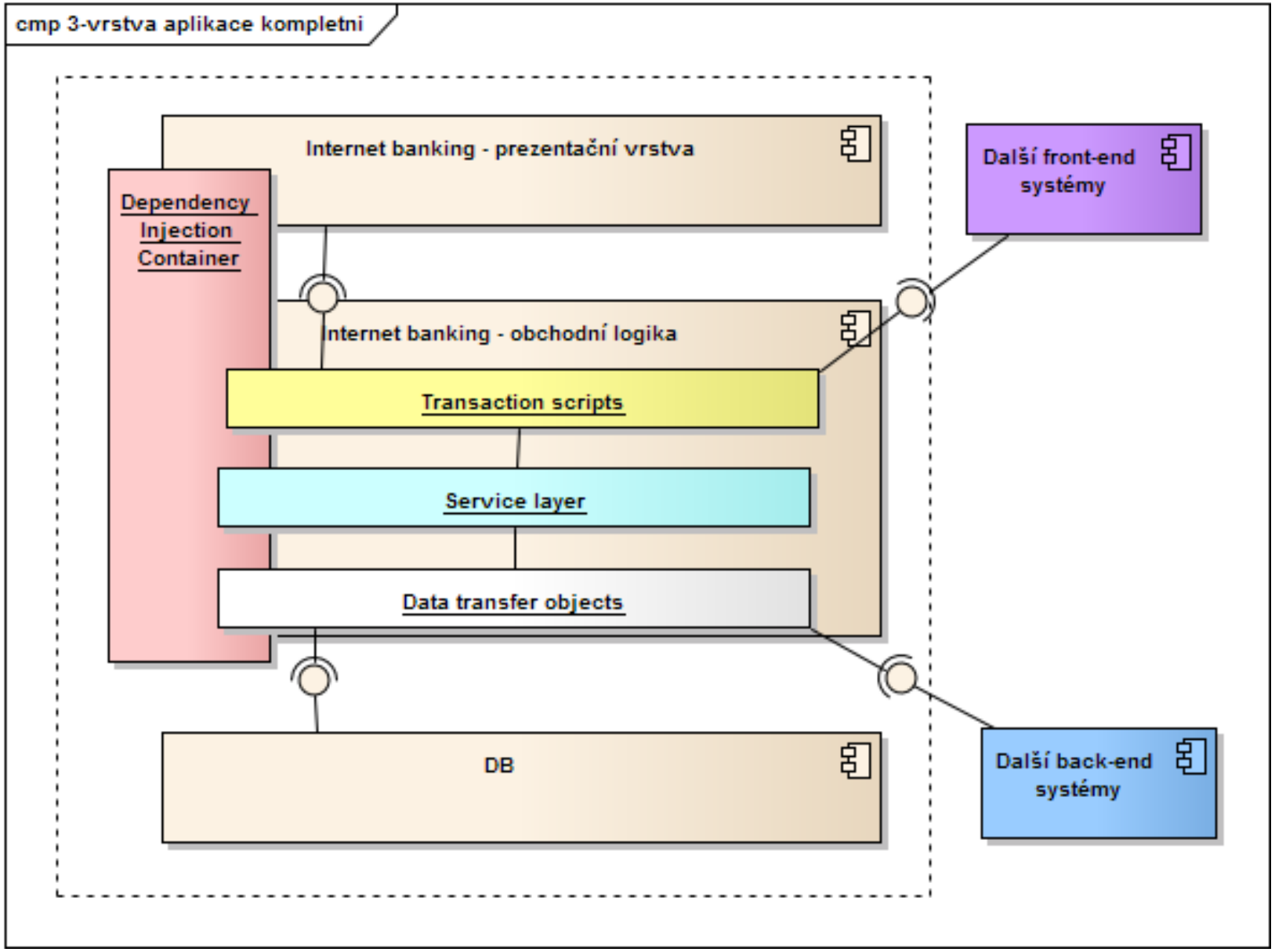
Data Transfer Objects 2

PROFINIT
new frontier group



Třívrstvá aplikace – implementační pohled

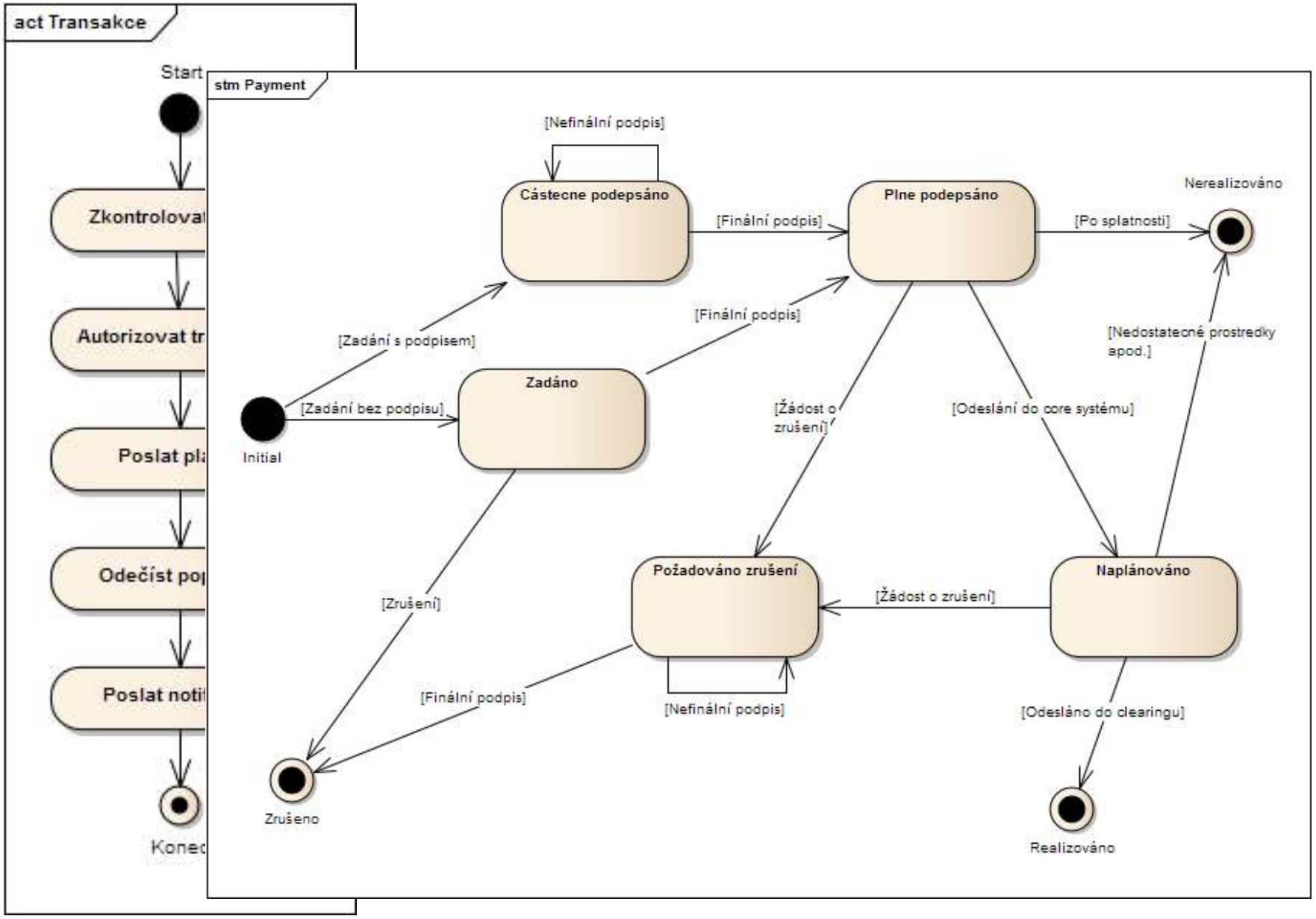
PROFINIT
new frontier group



Aplikační architektura na steroidech

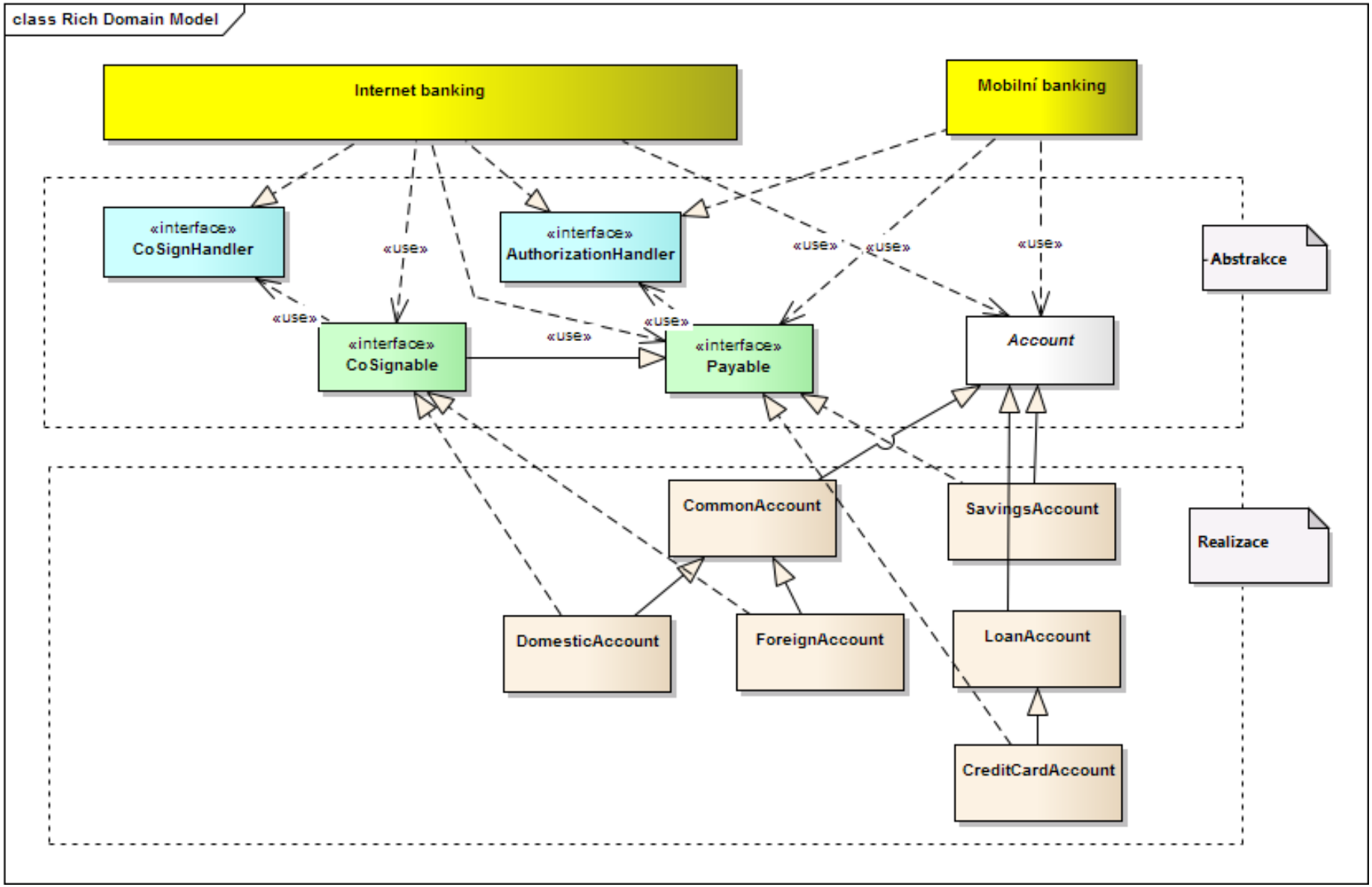
Procedurální programování

PROFINIT
new frontier group



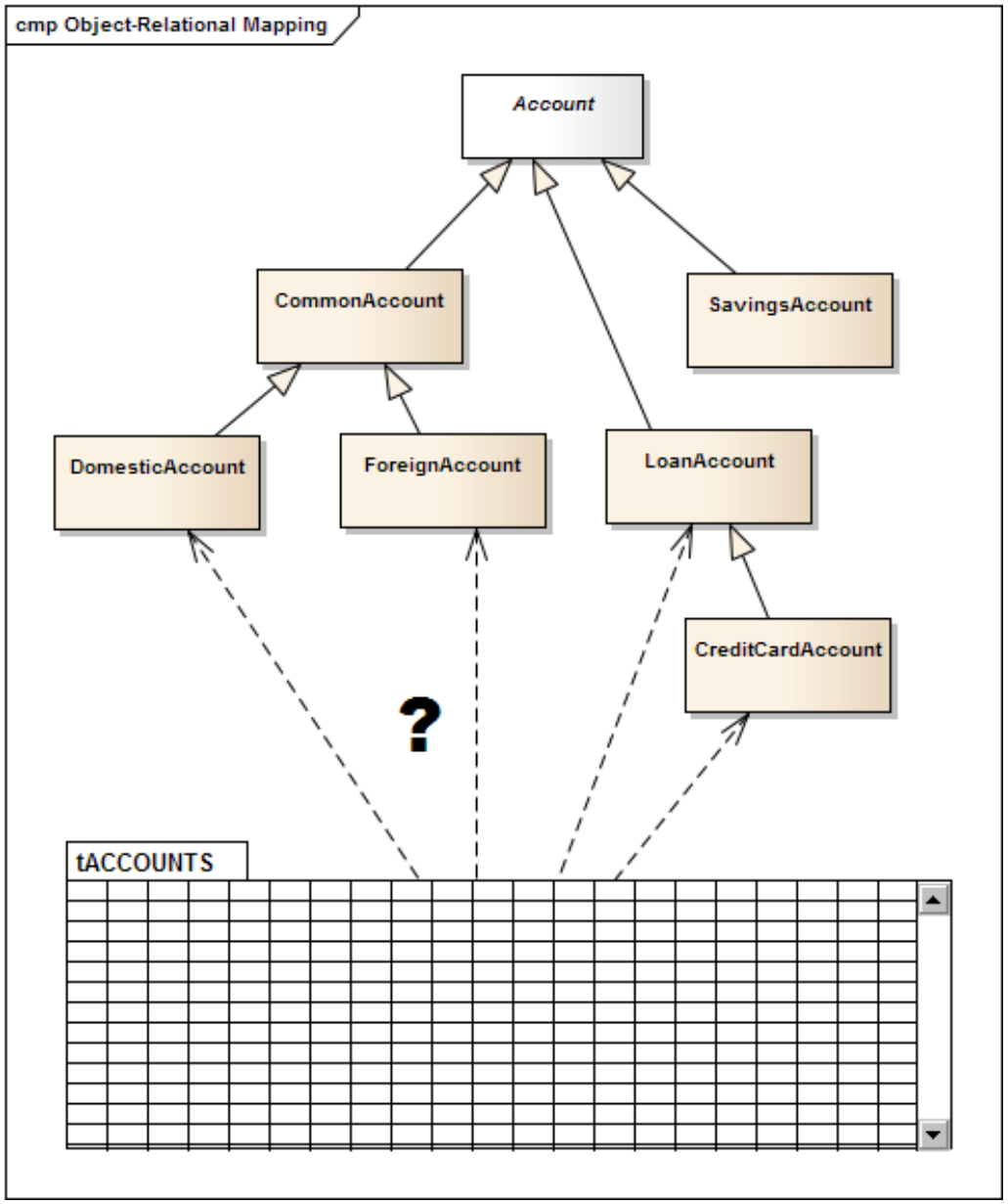
Rich Domain Model

PROFINIT
new frontier group



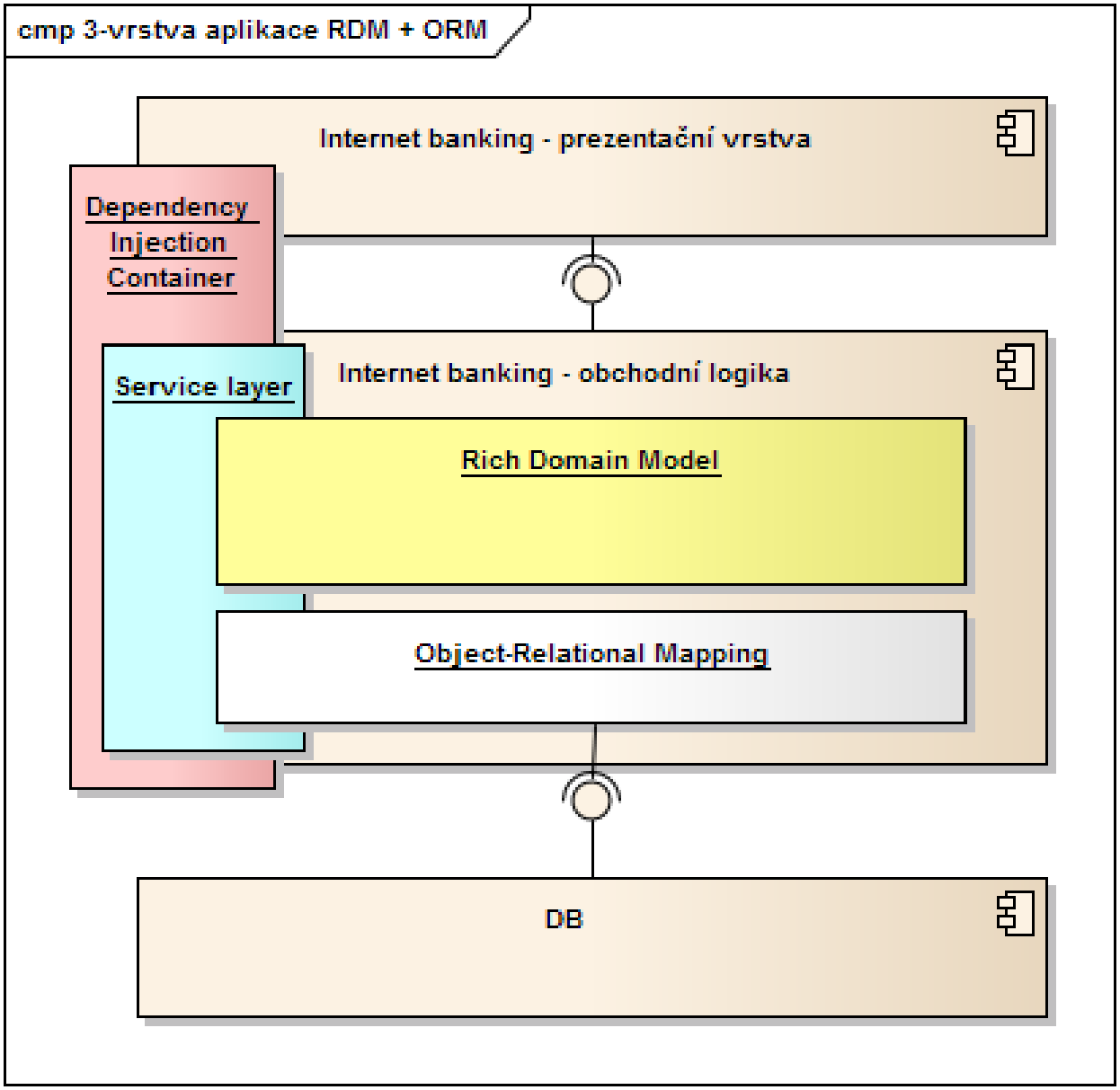
Object – Relational Mapping (ORM)

PROFINIT
new frontier group



„Dnešní“ aplikace (kolem r. 2009)

PROFINIT
new frontier group



Integrace

Integrace

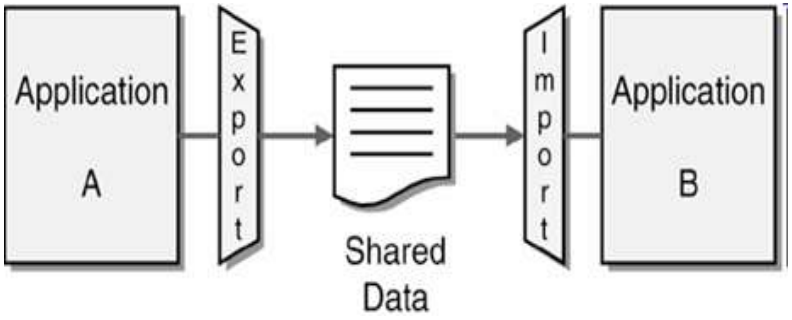
PROFINIT
new frontier group

- Velmi zajímavé a časté téma prakticky u každého většího projektu
- Často spojené s tématikou enterprise architektury
- Často velmi netechnologické (procesy, entity)
- Uživí se zde mnoho buzzwords (EAI, SOA, MOM, …)
- Obvykle velmi problematické (odpovědnost a peníze chybí, neochota, …)

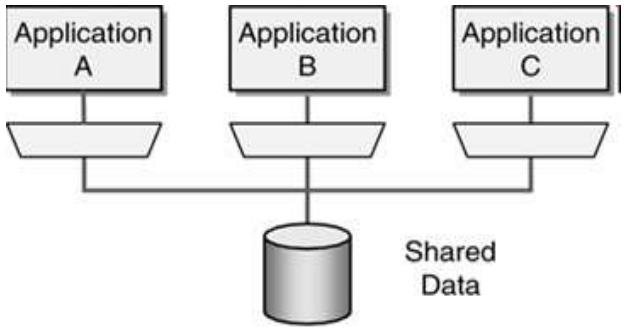
Základní koncepty

PROFINIT
new frontier group

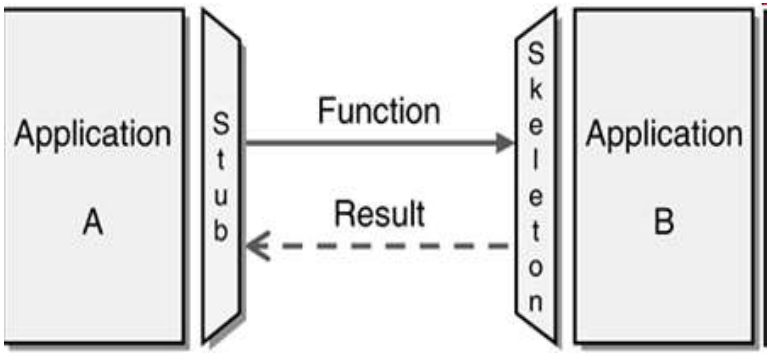
File transfer



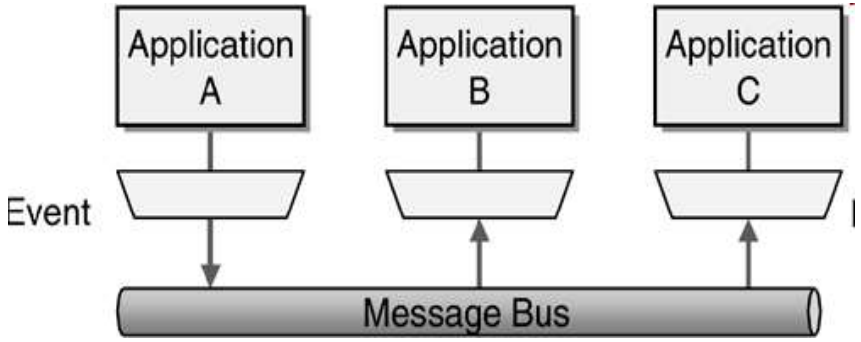
Shared database



Remote procedure call

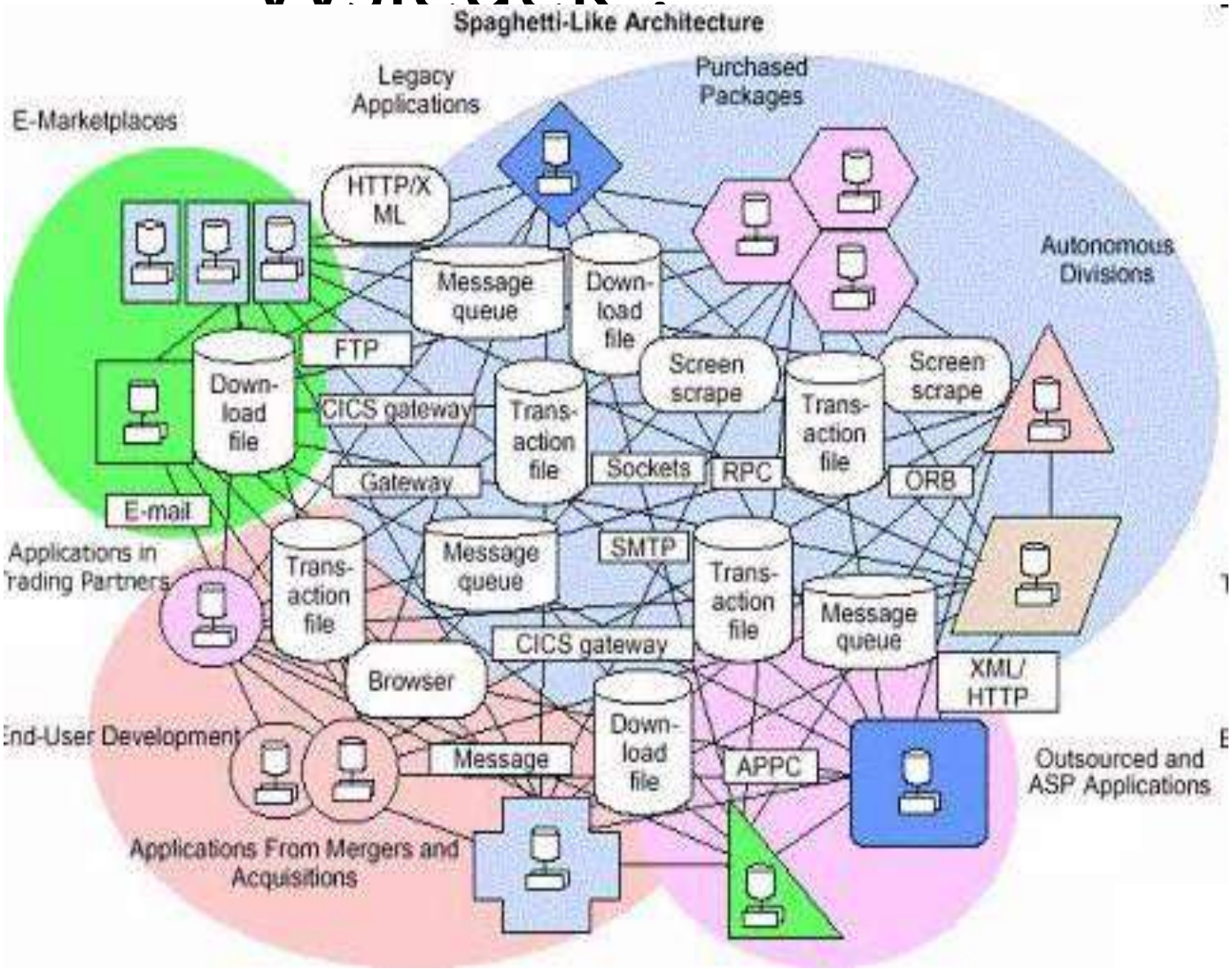


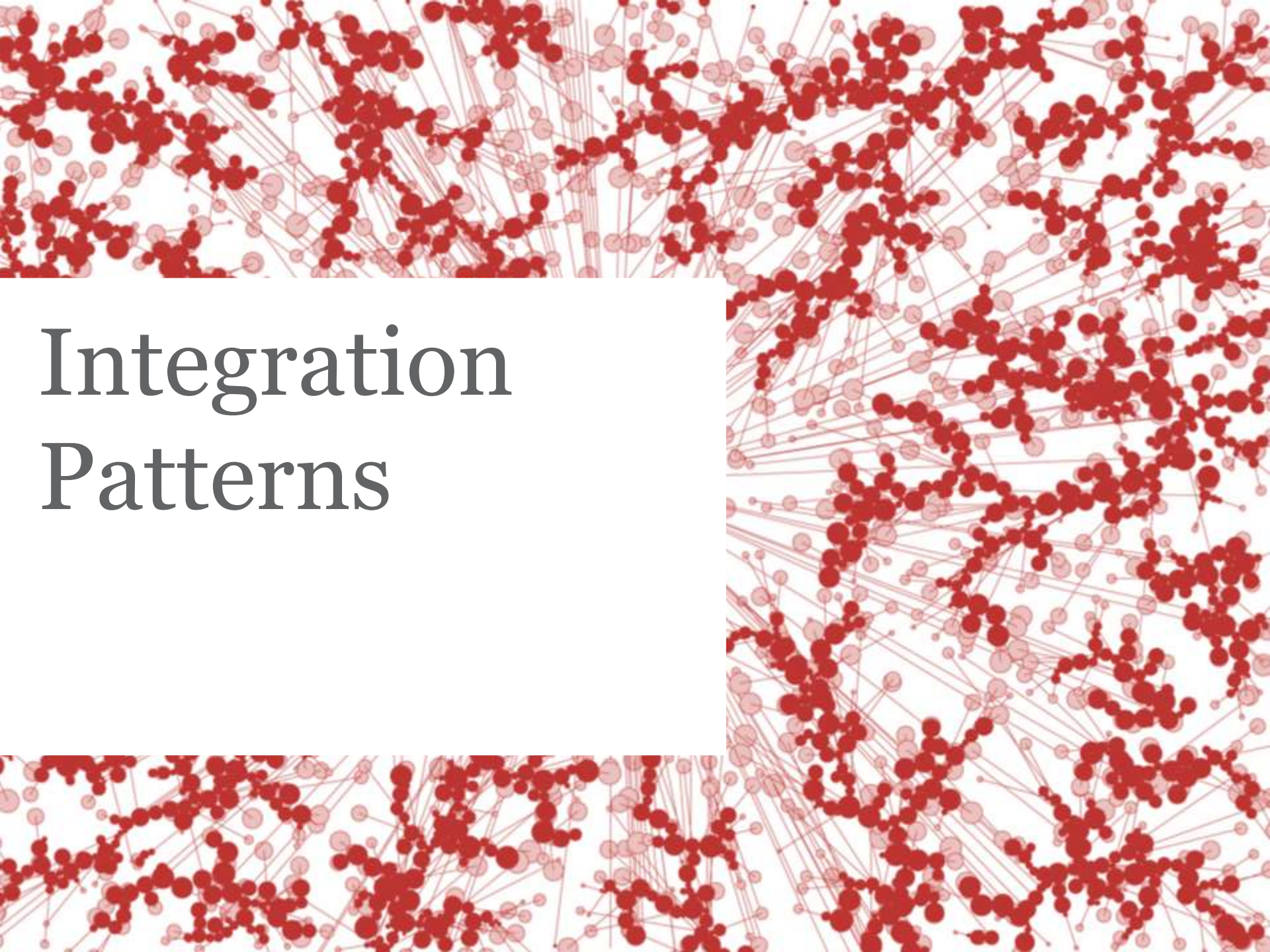
Messaging



4 jednoduché koncepty ! A výsledek ?

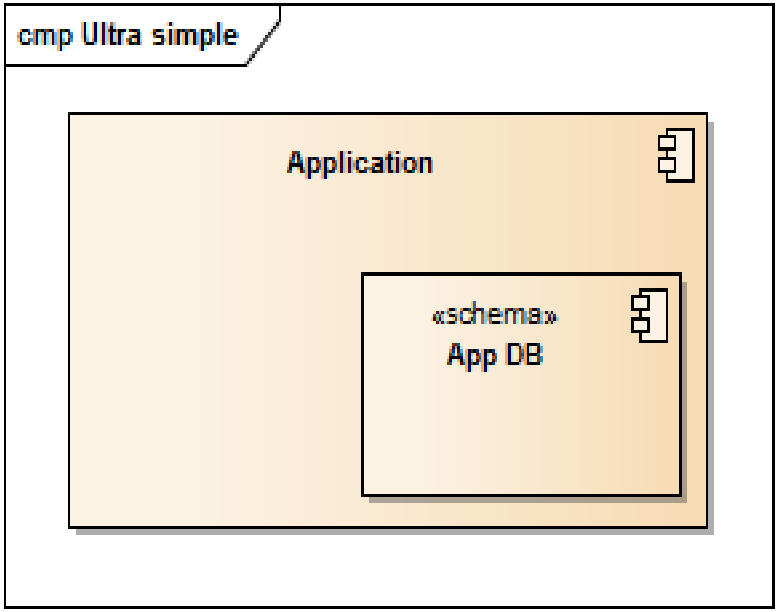
PROFINIT
new frontier group




Integration
Patterns

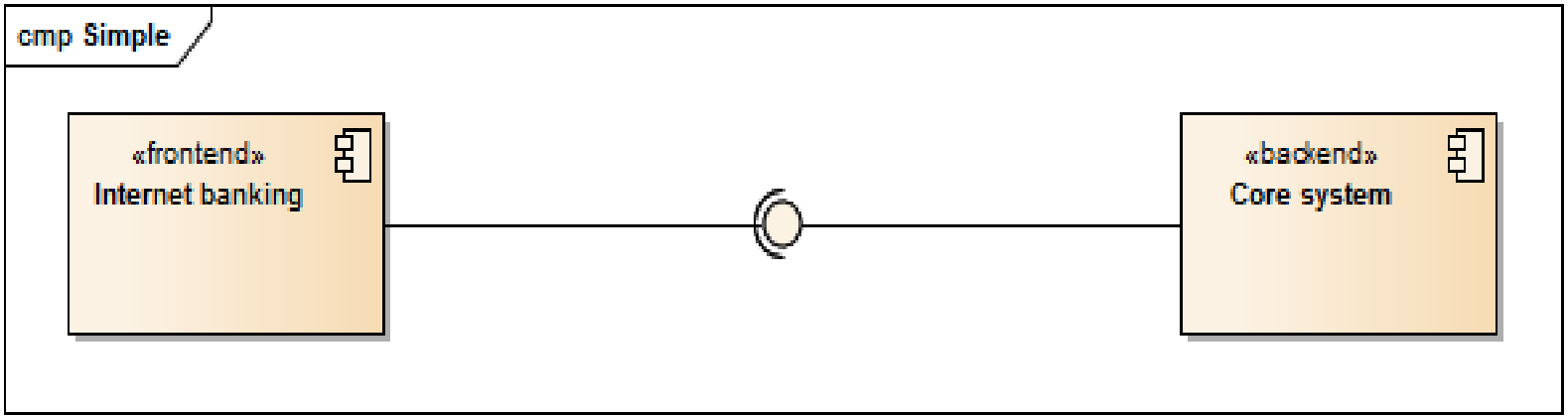
Jednoduchá aplikace

PROFINIT
new frontier group



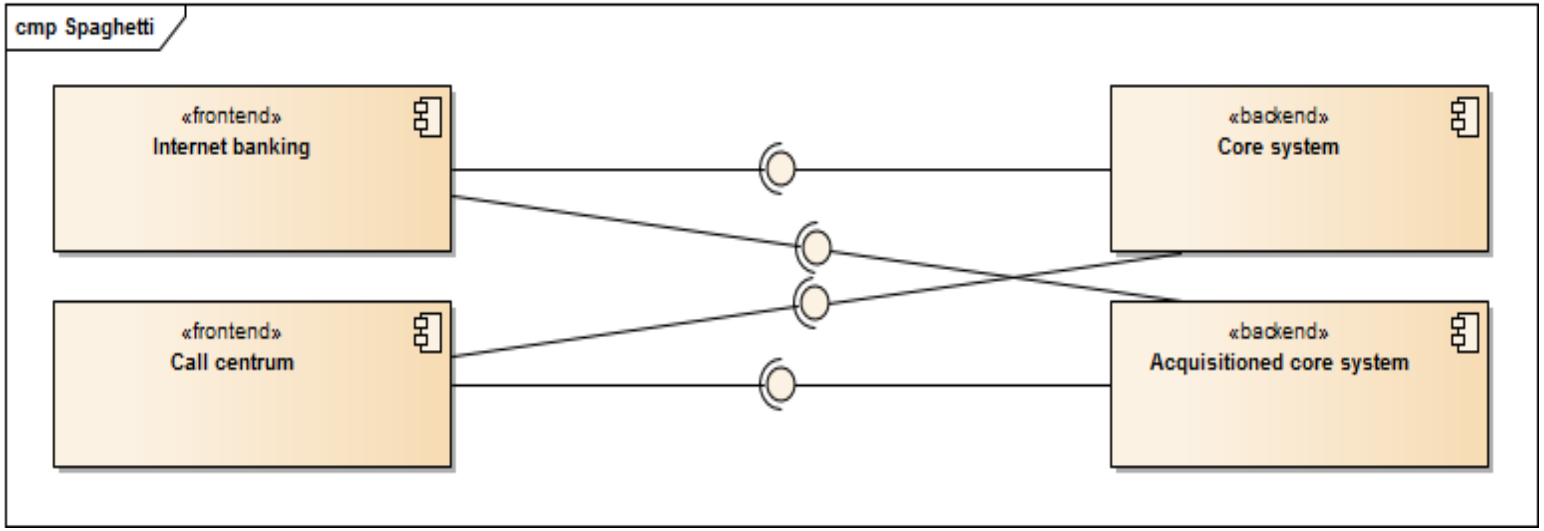
Rozdělení frontend/backend

PROFINIT
new frontier group



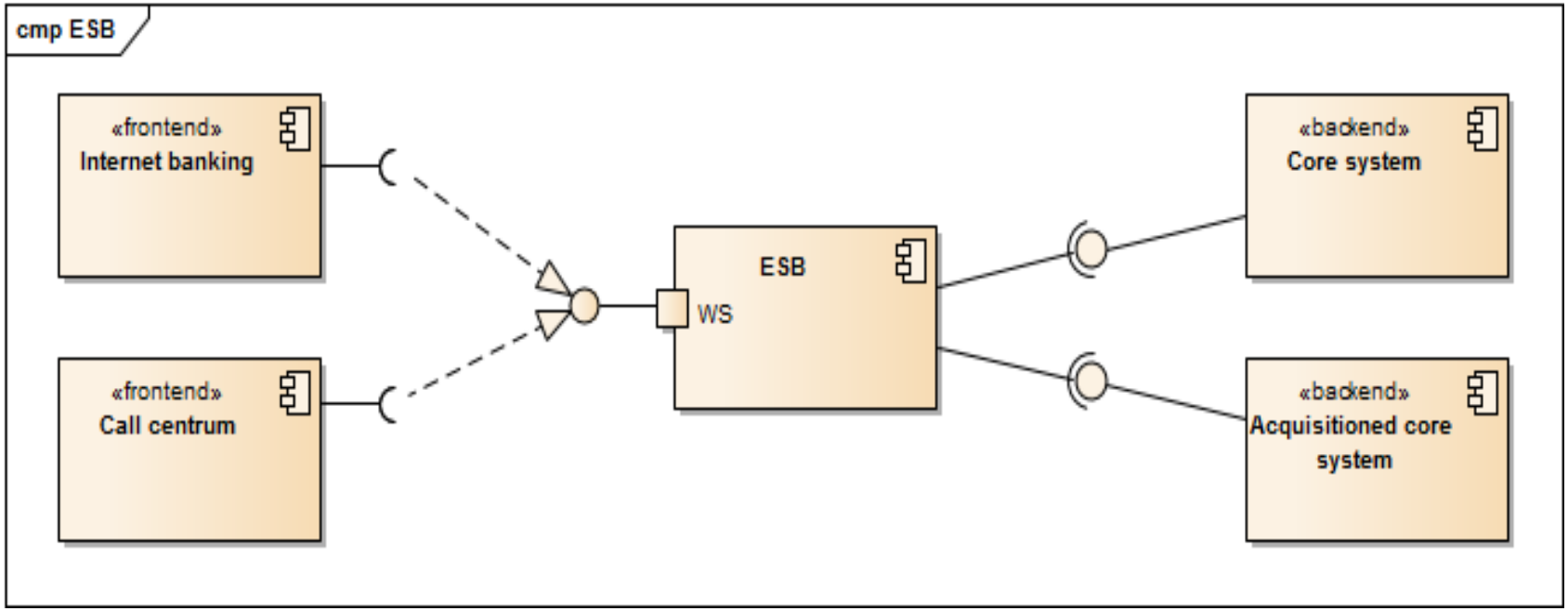
Situace se komplikuje

PROFINIT
new frontier group



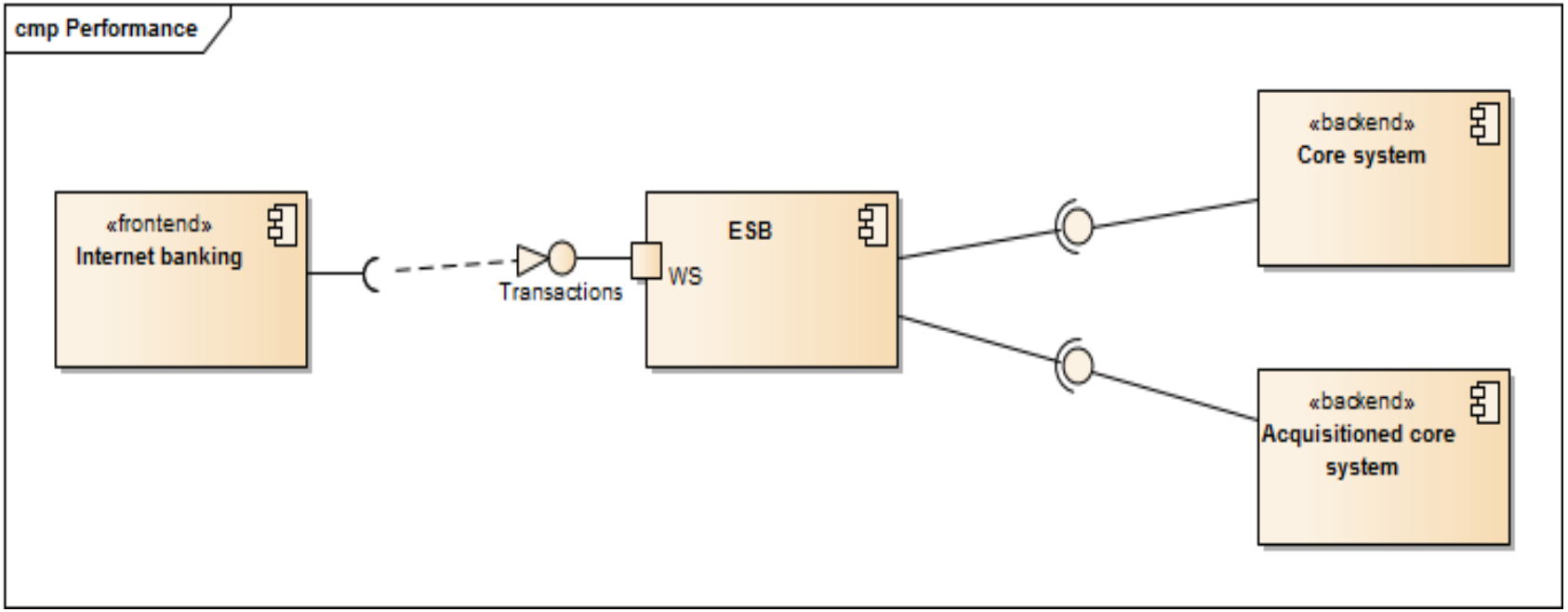
Service Oriented Architecture

PROFINIT
new frontier group



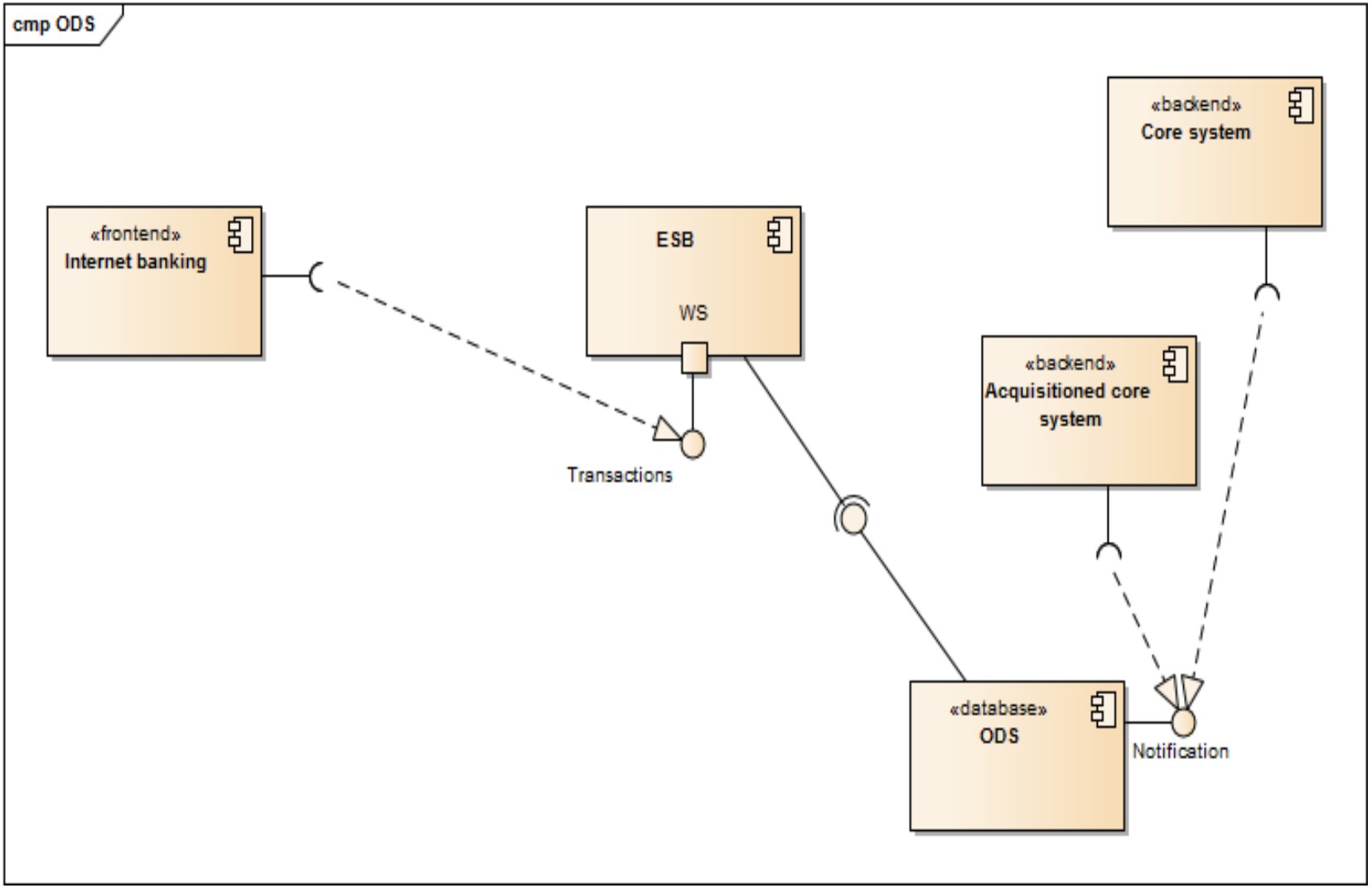
Výkon?

PROFINIT
new frontier group



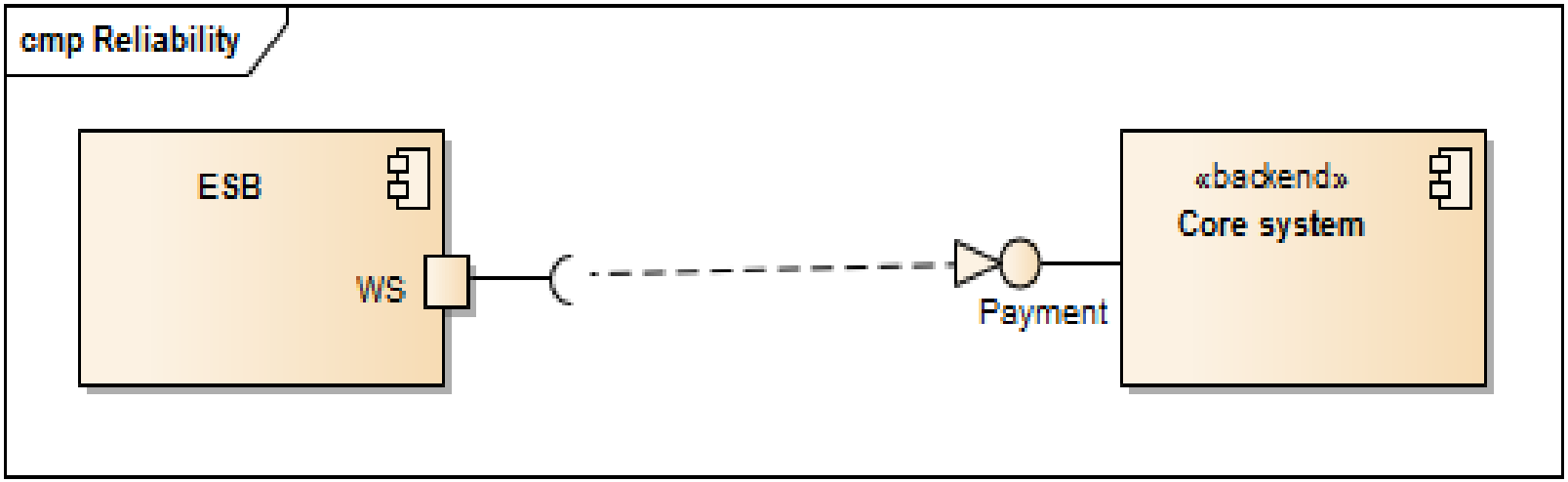
Online Data Store

PROFINIT
new frontier group



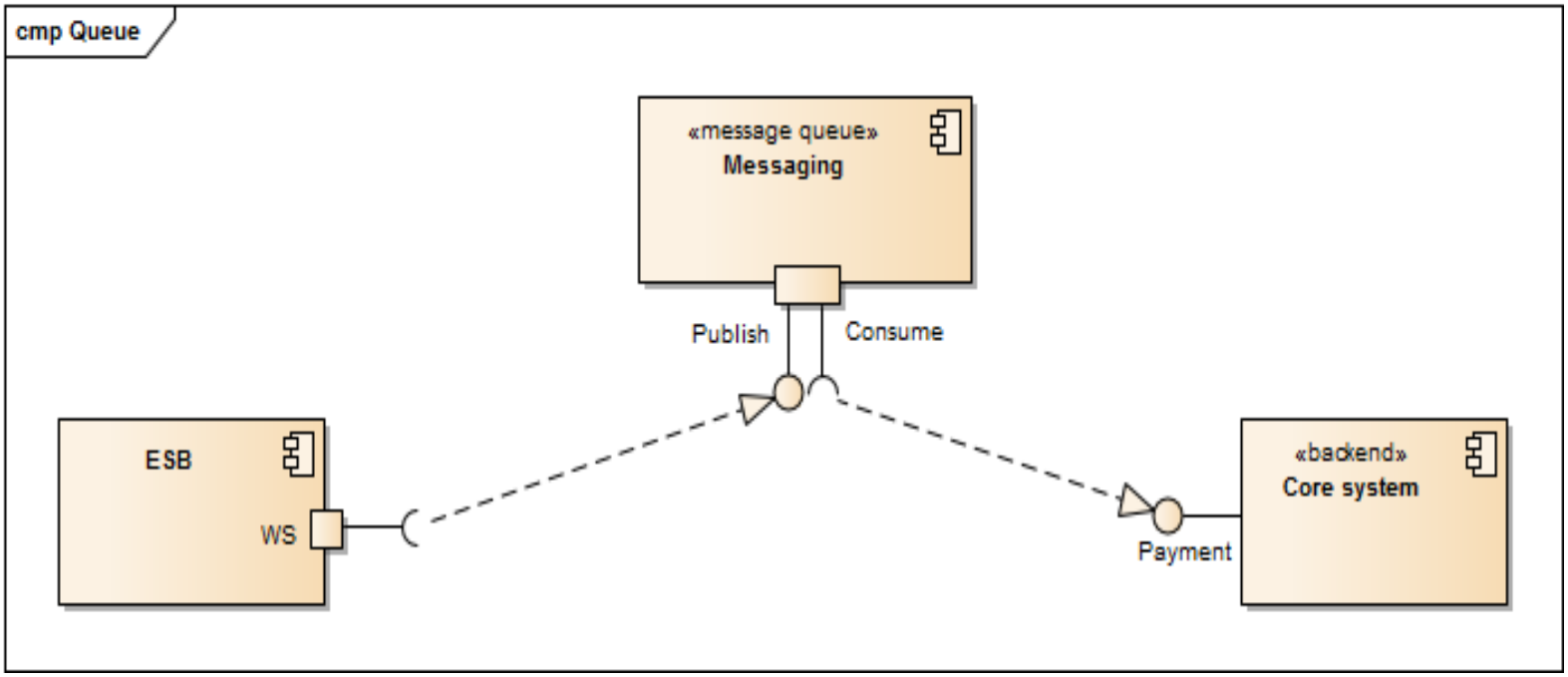
Spolehlivost?

PROFINIT
new frontier group



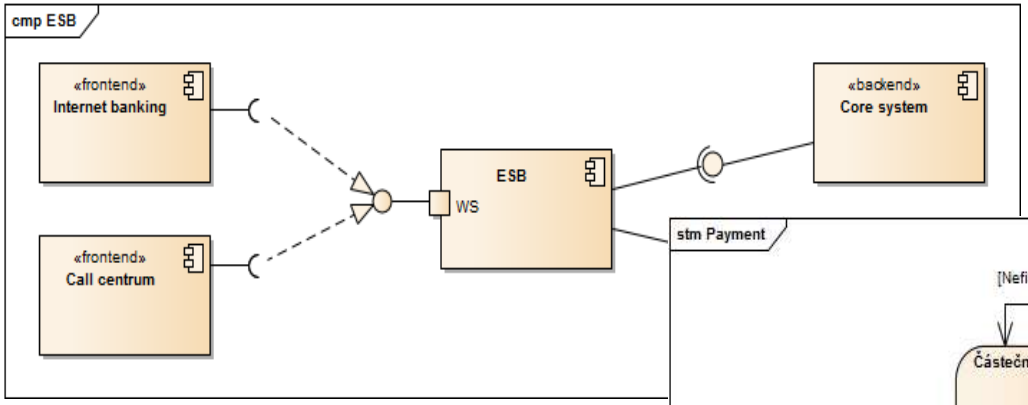
Message Queue

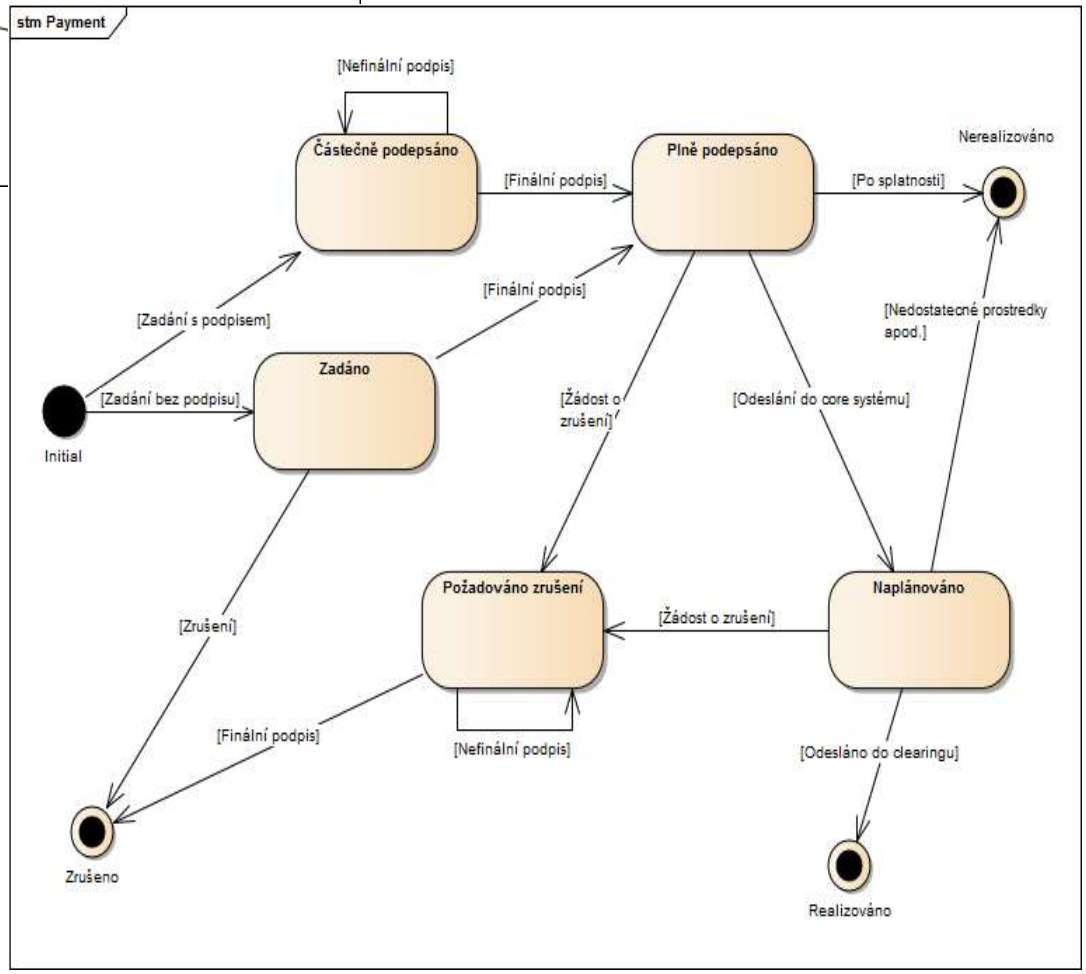
PROFINIT
new frontier group



Přehlednost?

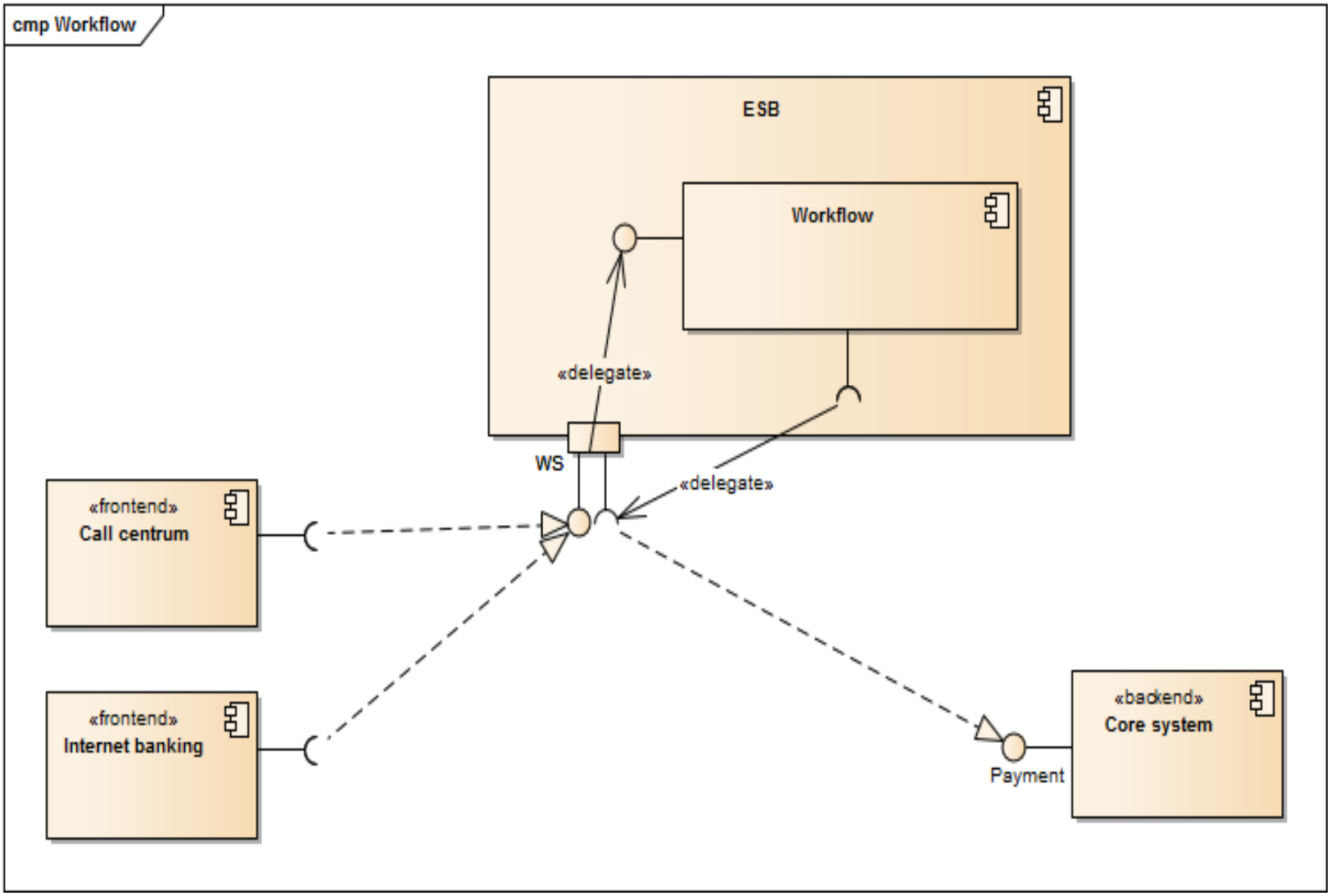
PROFINIT
new frontier group





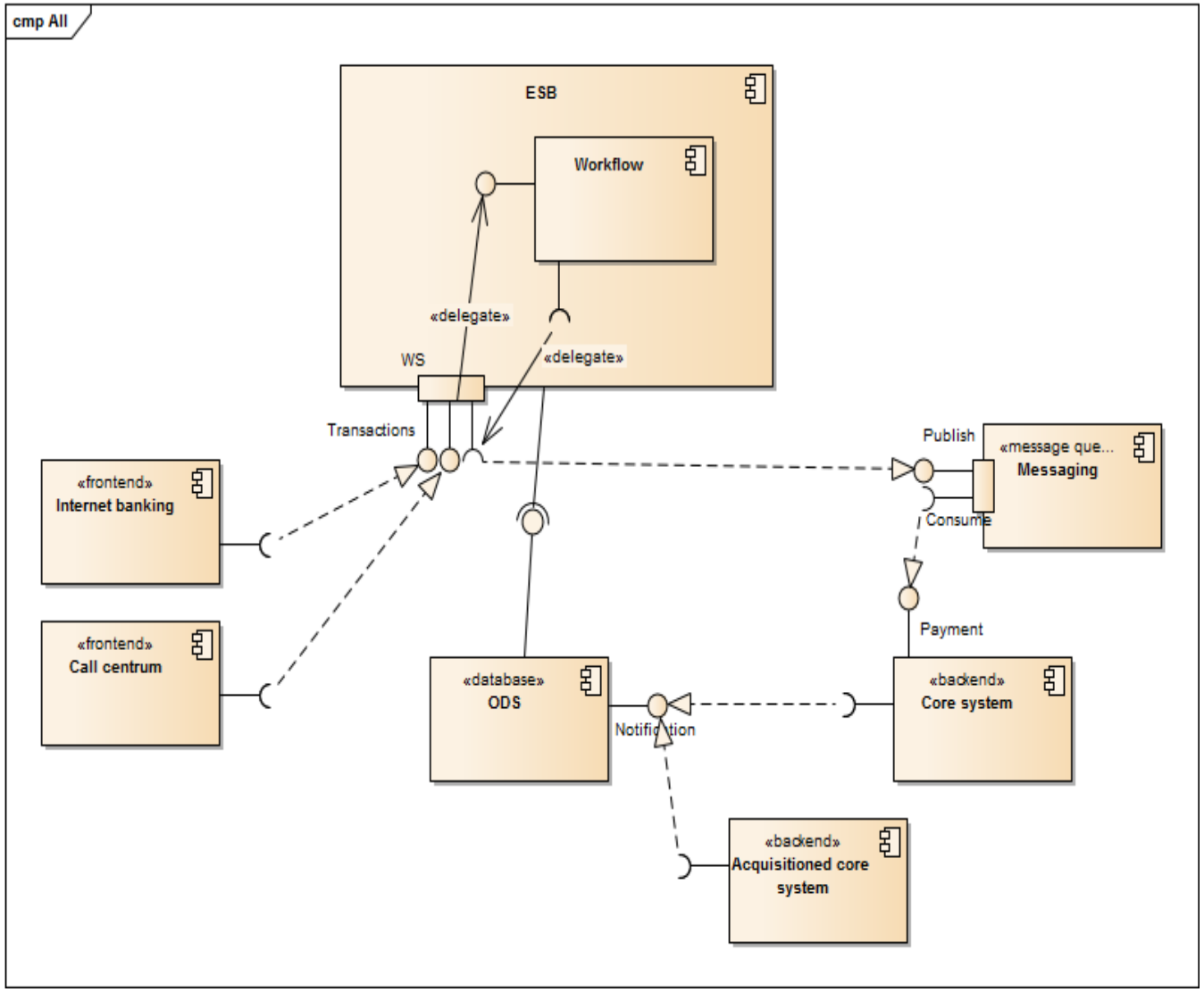
Byznys proces workflow

PROFINIT
new frontier group



Kam jsme se to proboha dostali?

PROFINIT
new frontier group



Ukázky z praxe

PROFINIT
new frontier group

Letiště Praha

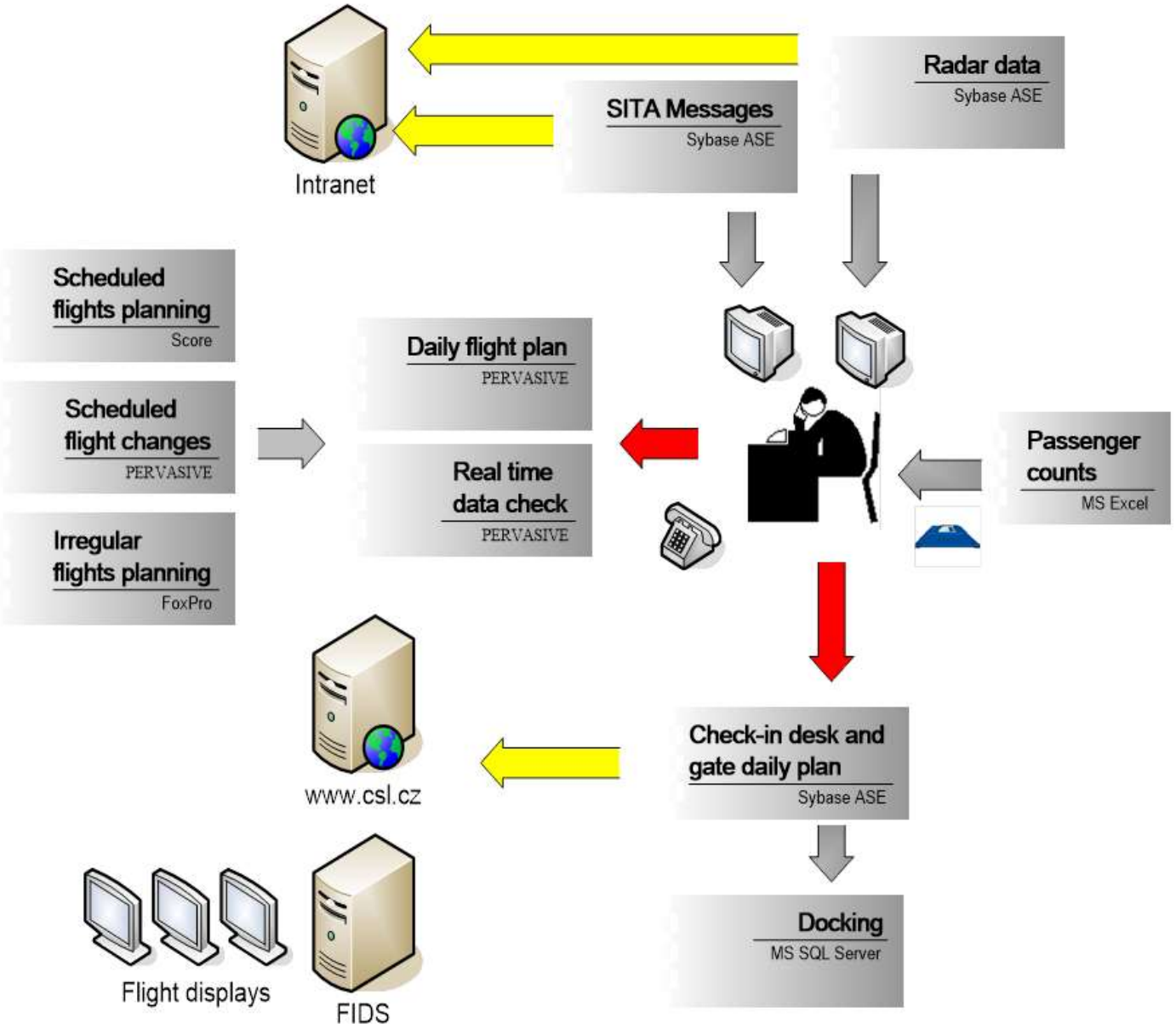
Letiště v roce 2001

PROFINIT
new frontier group

- Požadavky
  - „Dát do pořádku“ datové toky v podniku
  - Navrhnout novou architekturu sdílení dat o letech
  - Snížit rozsah ruční práce
- Řešení
  - Centrální operační databáze
  - Unifikace integračních mechanismů

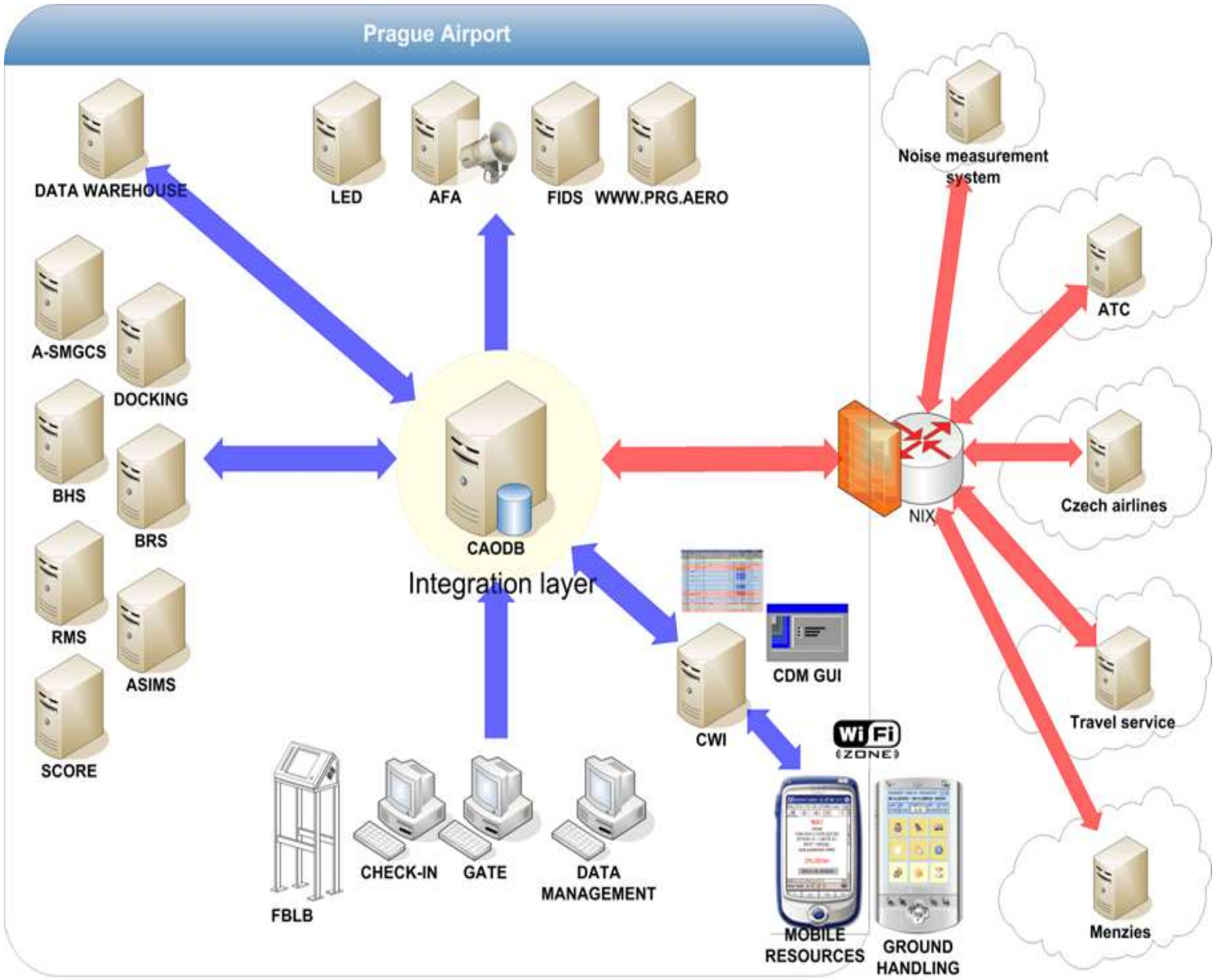
Výchozí stav – 2002

PROFINIT
new frontier group

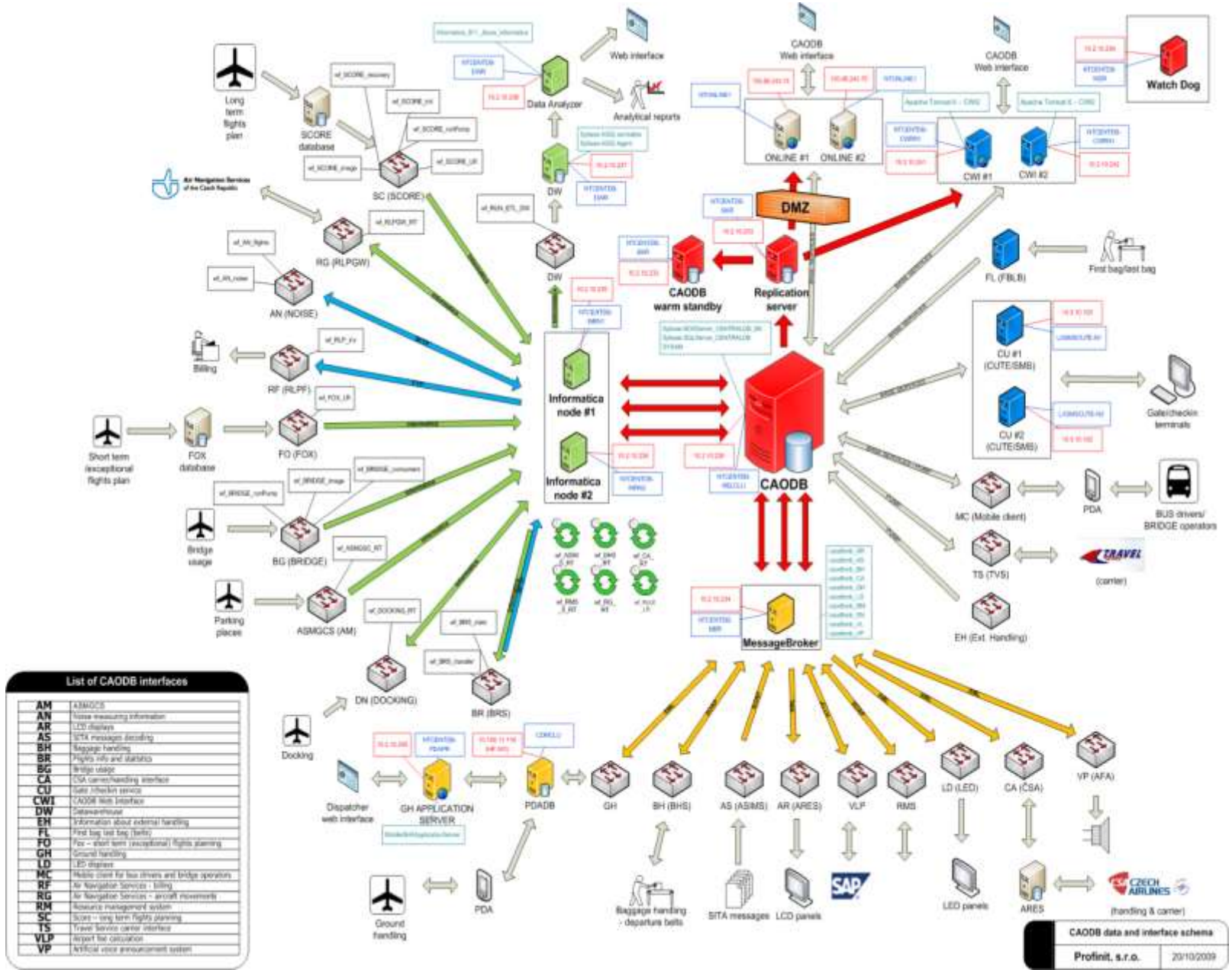


Plynulý rozvoj – 2009

PROFINIT
new frontier group



Aktuální stav – 2012



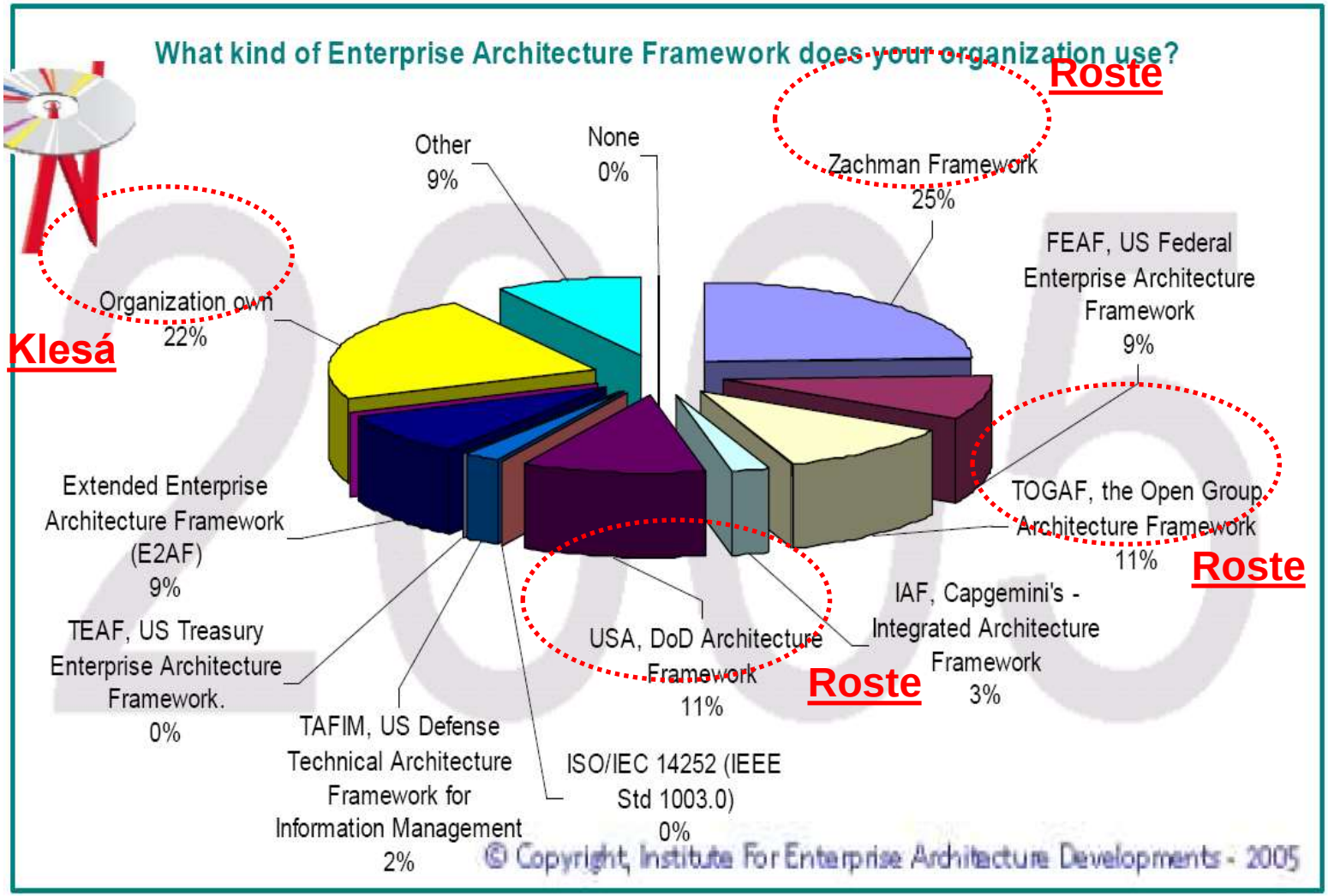
Letiště Praha

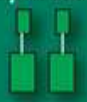
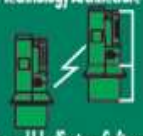
PROFINIT
new frontier group

- Změny pouze na úrovni IT
- Architektura umožnila rychlé propojení s dalšími systémy
  - Hlasové zprávy
  - Informační panely
  - Uživatelské systémy (CWI)
  - Datový sklad
  - CDM
- Modularita umožňuje snadné nahrazení morálně zastaralých komponent bez nutnosti měnit ostatní komponenty

Další oblasti, buzzwords

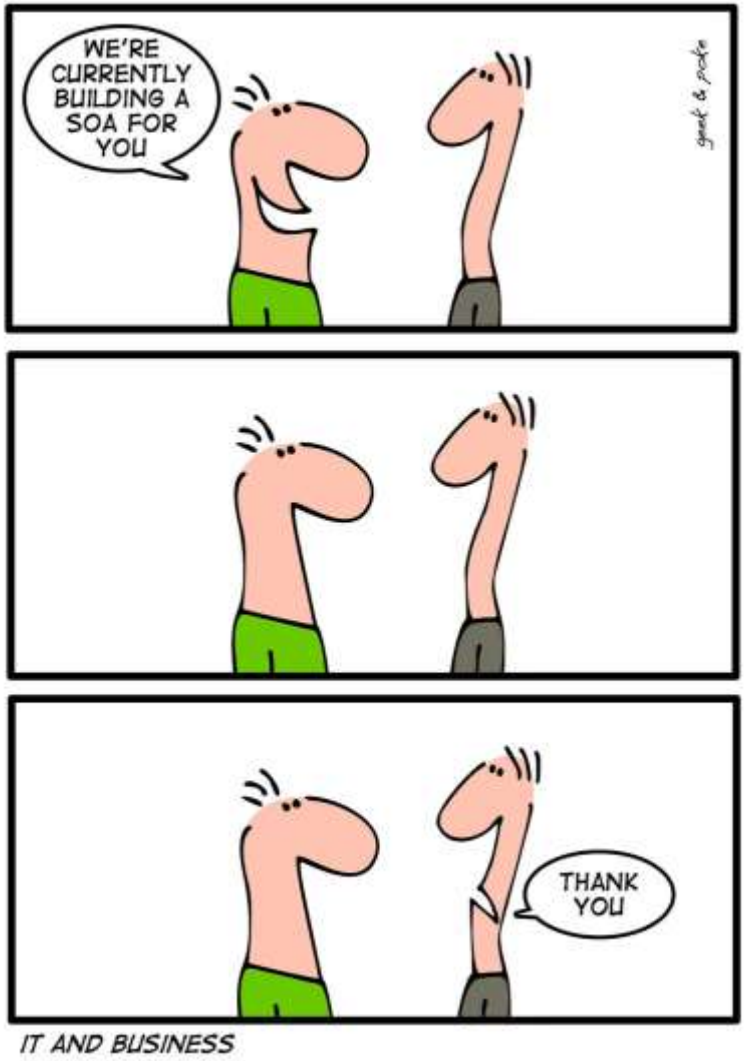
Frameworks pro Enterprise architekturu



	WHAT	HOW	WHERE	WHO	WHEN	WHY
	DATA	**FUNCTION**	**NETWORK**	**PEOPLE**	**TIME**	**MOTIVATION**
SCOPE {contextual} Planner	List of Things Important to the Business  Entity = Class of Business Thing	List of Processes the Business Performs  Process = Class of Business Process	List of Locations in Which the Business Operates  Node = Major Business Location	List of Organizations Important to the Business  People = Major Organizational Unit	List of Events/Cycles Significant to the Business  Time = Major Business Event/Cycle	Lists of Business Goals/Strategies  Ends/Means = Major Business Goal/Strategy
BUSINESS MODEL {conceptual} Owner	e.g., Semantic Model  Entity = Business Entity Relationship = Business Relationship	e.g., Business Process Model  Process = Business Process I/O = Business Resources	e.g., Business Logistics System  Node = Business Location Link = Business Linkage	e.g., Work Flow Model  People = Organization Unit Work = Work Product	e.g., Master Schedule  Time = Business Event Cycle = Business Cycle	e.g., Business Plan  End = Business Objective Means = Business Strategy
SYSTEM MODEL {logical} Designer	e.g., Logical Data Model  Entity = Data Entity Relationship = Data Relationship	e.g., Application Architecture  Process = Application Function I/O = User Views	e.g., Distributed System Architecture  Node = I/S Function (Processor, Storage, etc.) Link = Line Characteristics	e.g., Human Interface Architecture  People = Role Work = Deliverable	e.g., Processing Structure  Time = System Event Cycle = Processing Cycle	e.g., Business Rule Model  End = Structural Assertion Means = Action Assertion
TECHNOLOGY MODEL {physical} Builder	e.g., Physical Data Model  Entity = Segment/Table/etc. Relationship = Pointer/Key/etc.	e.g., System Design  Process = Computer Function I/O = Data Elements/Sets	e.g., Technology Architecture  Node = Hdw/System Software Link = Line Specifications	e.g., Presentation Architecture  People = User Work = Screen Formats	e.g., Control Structure  Time = Execute Cycle = Component Cycle	e.g., Rule Design  End = Condition Means = Action
DETAILED REPRESENTATIONS {out-of-context} Subcontractor	e.g., Data Definition  Entity = Field Relationship = Address	e.g., Program  Process = Language Statement I/O = Control Block	e.g., Network Architecture  Node = Address Link = Protocol	e.g., Security Architecture  People = Identity Work = Job	e.g., Timing Definition  Time = Interrupt Cycle = Machine Cycle	e.g., Rule Specification  End = Sub-condition Means = Step
FUNCTIONING ENTERPRISE	e.g.: DATA	e.g.: FUNCTION	e.g.: NETWORK	e.g.: ORGANIZATION	e.g.: SCHEDULE	e.g.: STRATEGY

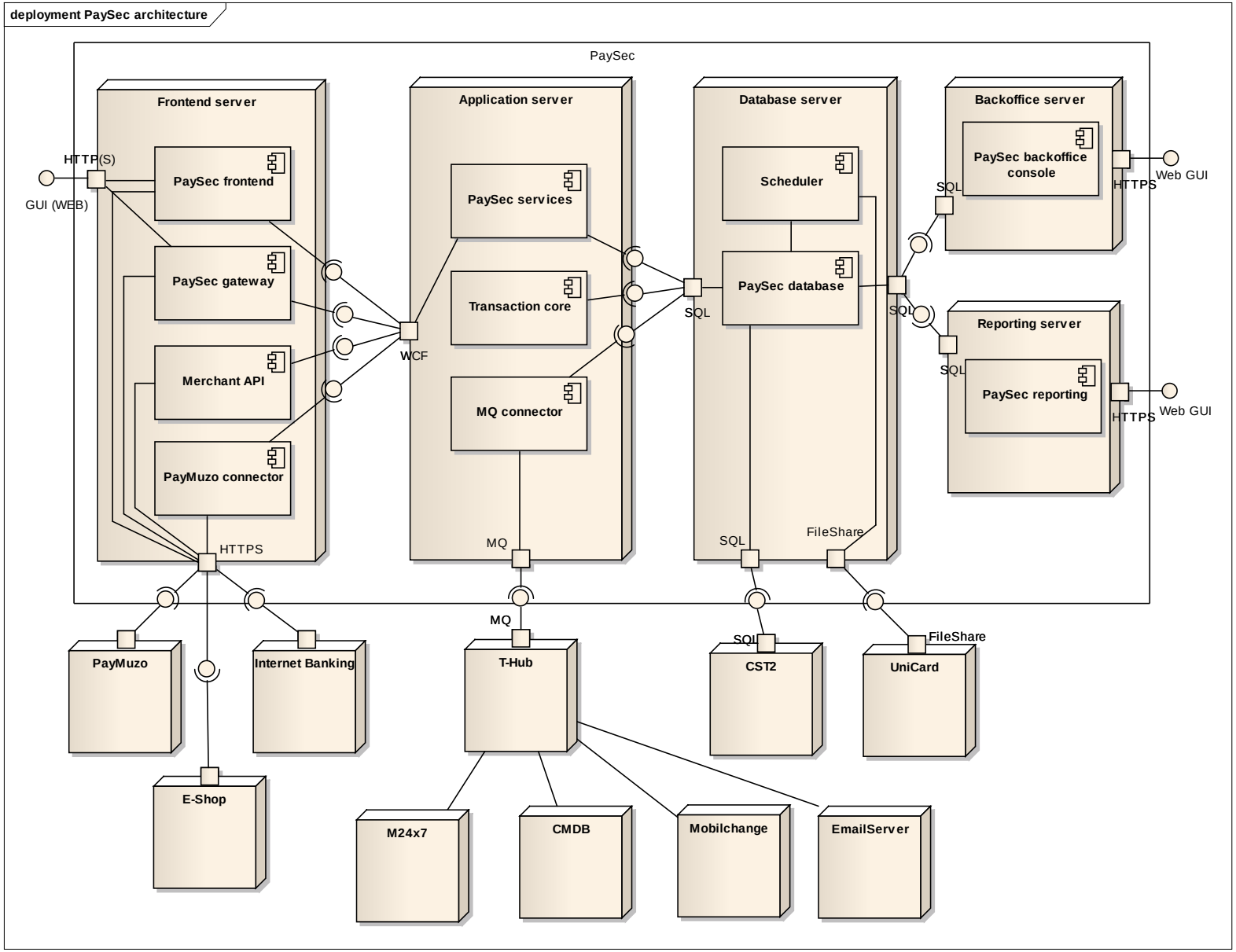
Service Oriented Architecture (SOA)

PROFINIT
new frontier group



Fyzická struktura

PROFINIT
new frontier group



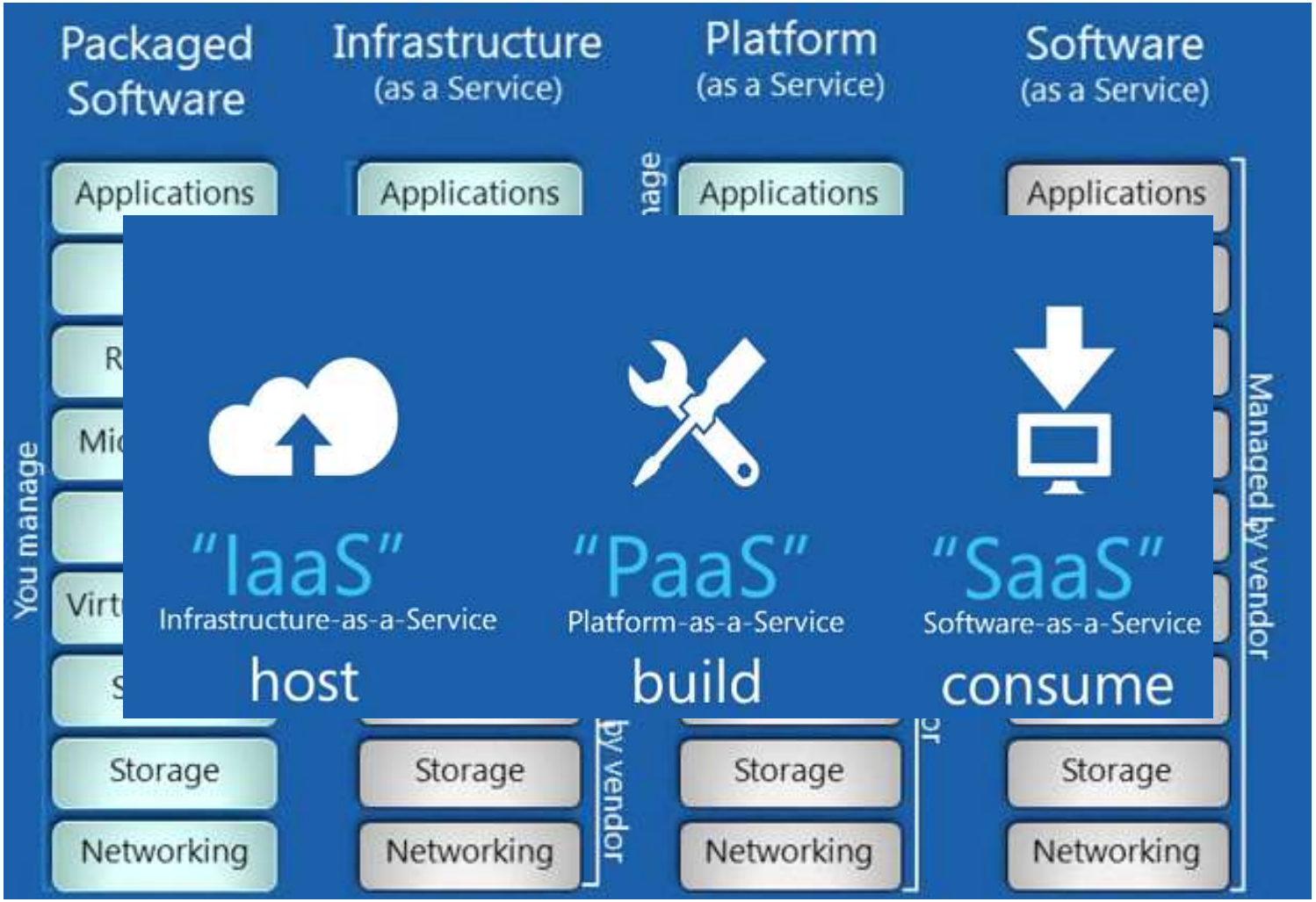
Cloud?

PROFINIT
new frontier group

- Princip, v čem spočívá?
- Čím je to (ne)zajímavé pro firmy, čím pro dodavatele?
- Jak souvisí s pojmy **SAAS**, **PAAS** a **IAAS**
  - Kdo provozuje infrastrukturu?
  - Kdo zajišťuje platformu (*social application platforms*, *raw compute platforms, web application platforms*, *business application platform)*?
  - Kdo píše aplikační kód?

IaaS, PaaS, SaaS

PROFINIT
new frontier group



http://www.silverlighthack.com/post/2011/02/27/IaaS-PaaS-and-SaaS-Terms-Explained-and-Defined.aspx

Literatura

Literatura

PROFINIT
new frontier group

Materiály SWENG - Arch design

ČLÁNKY

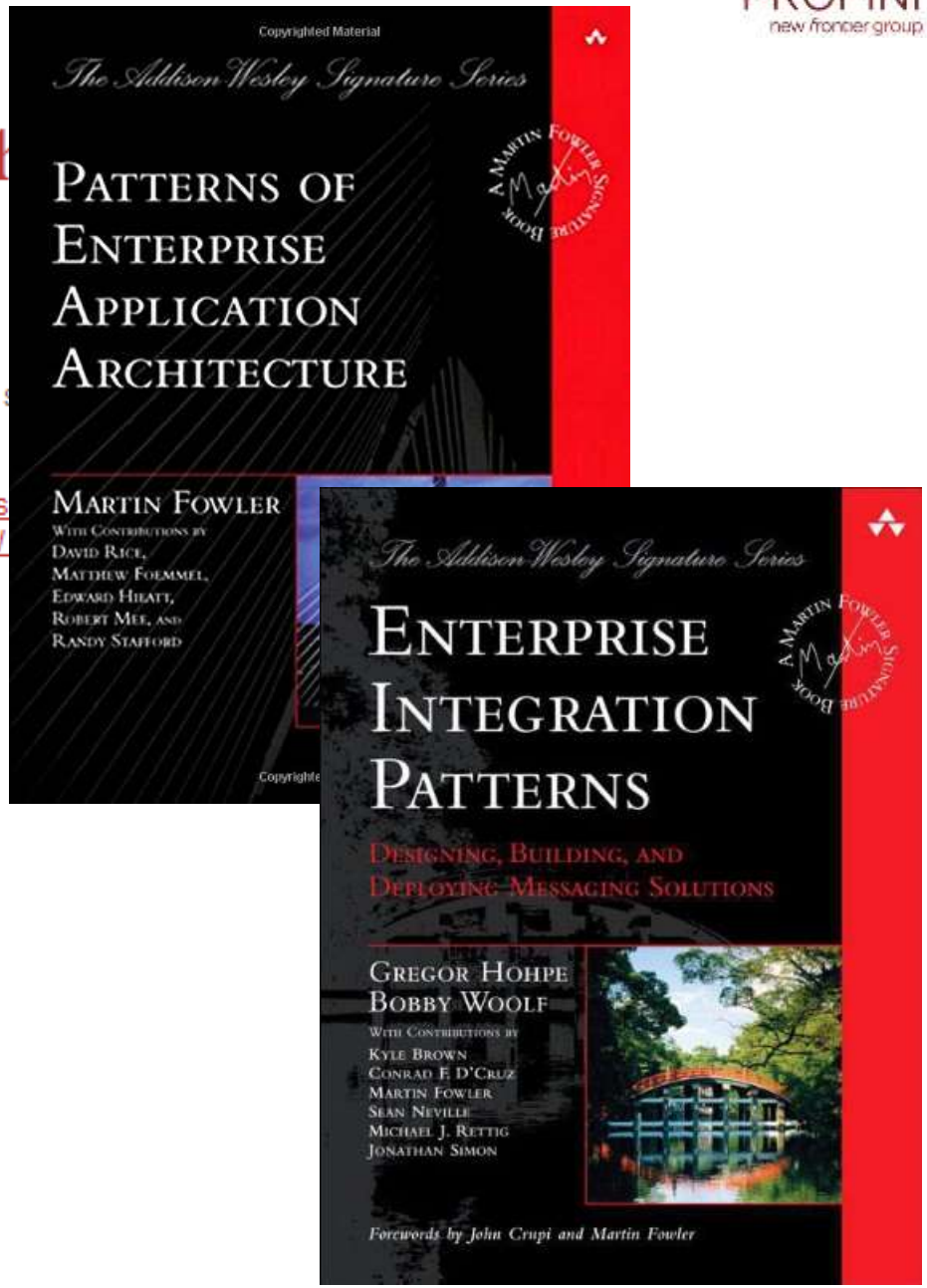
- Softwarová architektura - nezúžený, klasický, úvod do
- An Introduction to Software Architecture
- On the Definition of Software System Architecture
- On the Criteria To Be Used in Decomposing Systems
- Architectural Blueprints - The "4+1" View Model of SW
  způsob a formu dokumentace architektury systému
- Who Needs an Architect?
- A Rational Design Process: How and Why to Fake It

CHECKLISTS

- CxCheck_SwArchitecture.txt
- CxCheck_HighLevelDesign.txt
- CxCheck_HighQualityModules.txt

TEMPLATES

- SwDesignSpec.doc
- MIL-STD-498_InterfaceReqsSpecification.doc
- MIL-STD-498_InterfaceDesignDescrption.doc
- MIL-STD-498_SwDesignDescription.doc
- MIL-STD-498_SysSubsysSpecification.doc
- MIL-STD-498_SysSubsysDesignDescription.doc




Děkuji za
pozornost