



# Ministério da Fazenda

Serviço Federal de Processamento de Dados (SERPRO)



# Demoiselle

## FRAMEWORK

Large projects, Large Teams.  
A technical approach of systems  
development for brazilian governenmt



Authors: Elizier Santos  
Diego Ribeiro  
SERPRO/BRASIL



**Elizier Santos is graduated in Mechanical Engineering by Federal Center of Technology of Rio de Janeiro and post-graduated by Federal University of Rio de Janeiro in Internet and Graphical Interfaces.**

**System Architect in Serpro's large projects like: Siscomex, SIEF, SIAFI, IRPFJava(Brazilian online tax rates), Rais, Brazilian Government Portal, Brazilian Passport, Brazilian Public Schools Frequency Control and more. In 2004 wins the Dukes Choice Award by the IRPFJava project.**

**Now a days works as team leader of Demoiselle JEE Framework JEE for government development .**

**Diego is graduated in Computing Science and master in Software Engineer by Federal University of Pernambuco.**

**System Architect in Serpro's large projects like: SIAFI, Brazilian Passport, Brazilian Public Schools Frequency Control, Intellectual Rigths Registrantion System and more.**

**Now a days works as chief of SERPRO's architect and suport department.**





- **Schedule**

- SERPRO – IT Provider for Government**

- Data Center

- Network

- Development Environment

- Important Clients

- Demoiselle**

- Large Projects/Large Teams

- Concepts

- Architecture

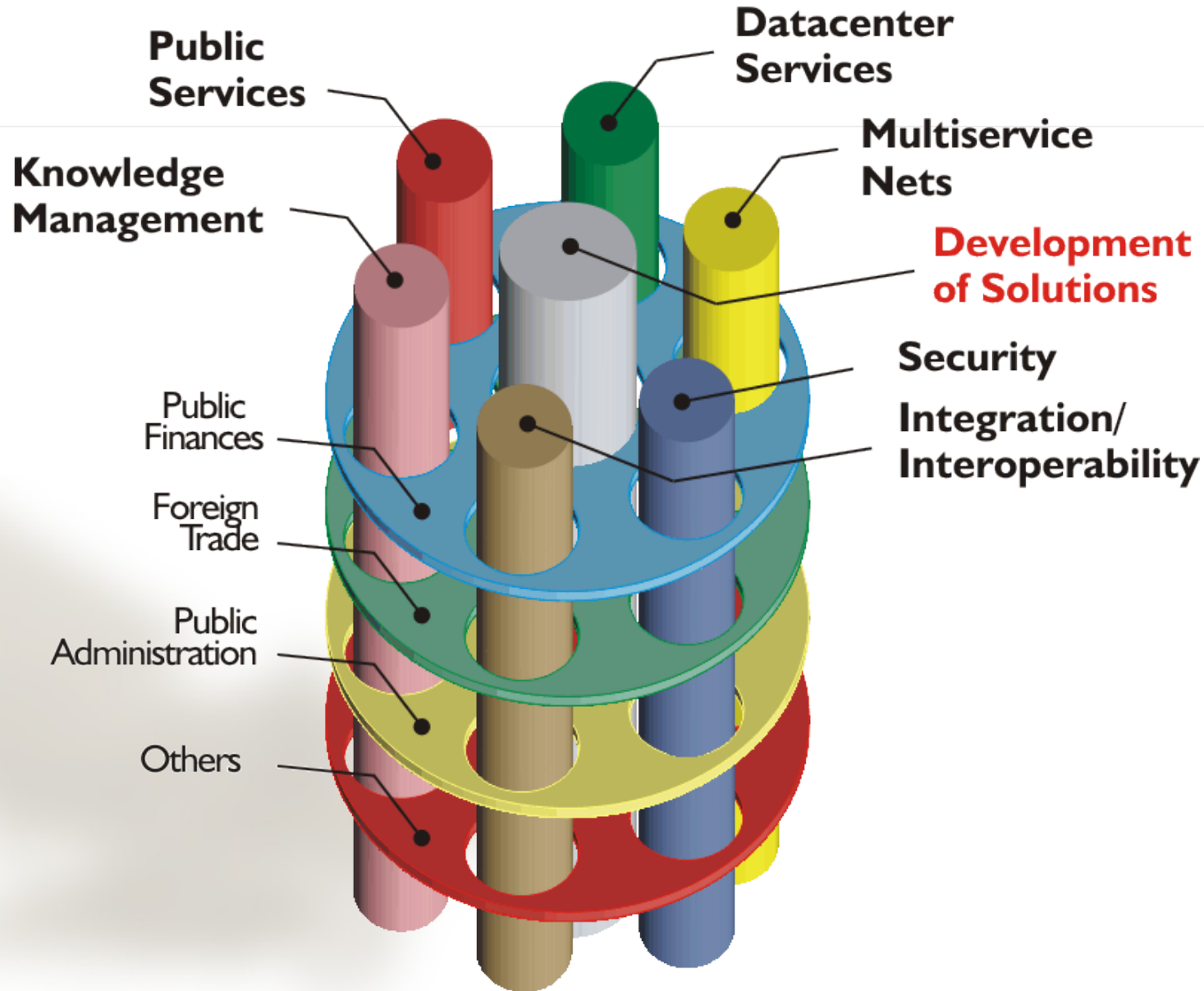
- Conclusion**



- **Greatest IT provider of Brazilian Government**
- **Clients: Brazilian Citizens and Government.**
- **More than 3 billion of transactions/year**
- **Multi-platforms and open standards**



# Systems Integrator and Information Provider





Mainframes  
OS/390



UNIX/RISC



LINUX/MICROSOFT  
INTEL

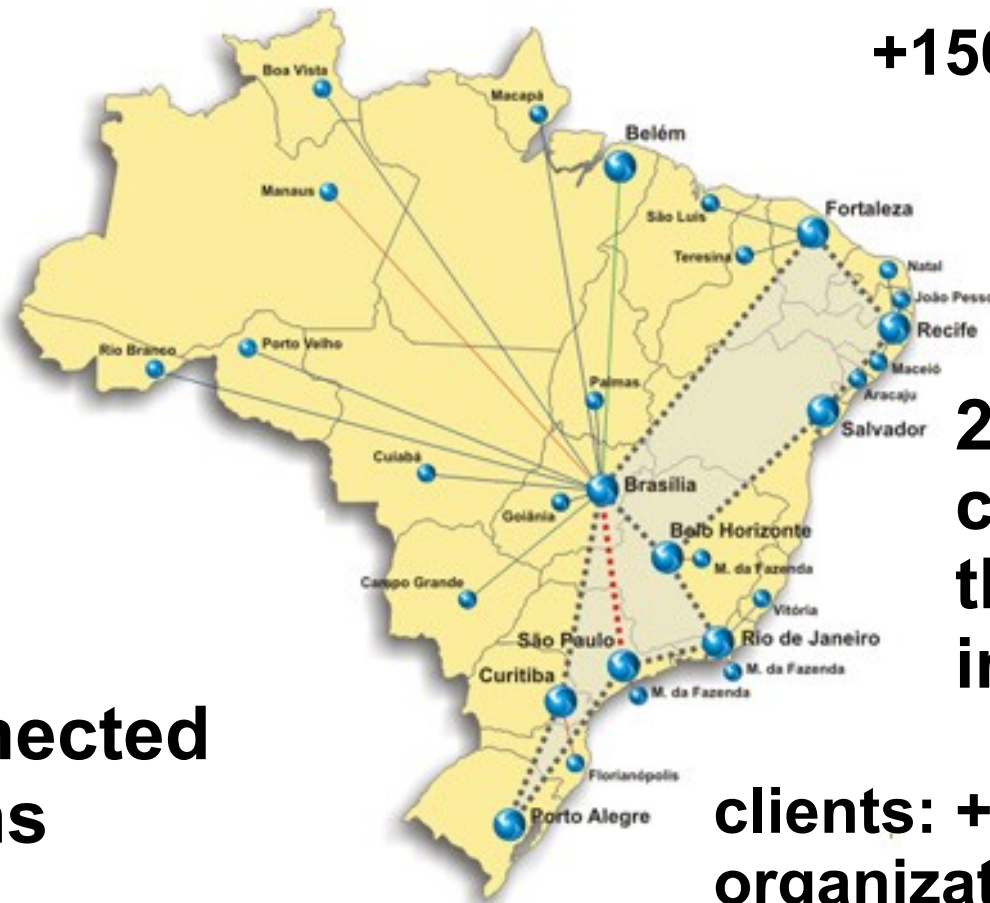
5.002 MIPs and 50 TeraBytes



**1.200 cities**

**230.000 users**

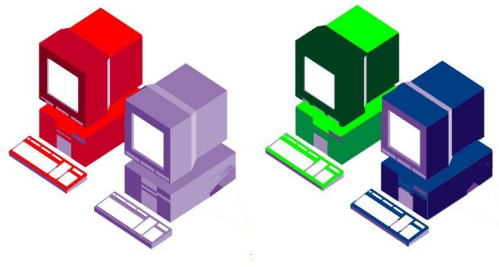
**85000 connected  
workstations**



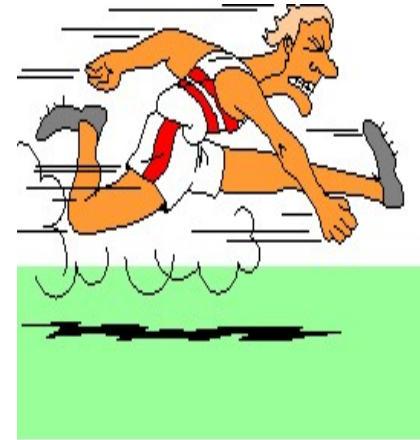
**+150 networks**

**250000  
connections at  
the same time to  
internet**

**clients: +36 government  
organizations**



Multiplatform



Fast Development



Free Software



[www.inpi.gov.br](http://www.inpi.gov.br)



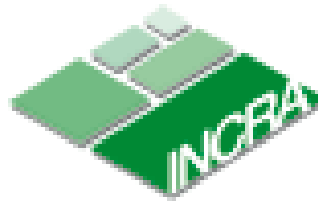
[www.dpf.gov.br](http://www.dpf.gov.br)



[www.receita.fazenda.gov.br](http://www.receita.fazenda.gov.br)



[www.pgfn.fazenda.gov.br](http://www.pgfn.fazenda.gov.br)



[www.incra.gov.br](http://www.incra.gov.br)



[www.denatran.gov.br](http://www.denatran.gov.br)

**TESOURO NACIONAL**

[www.stn.fazenda.gov.br](http://www.stn.fazenda.gov.br)

**Tribunal de Contas da União**

[www.tcu.gov.br](http://www.tcu.gov.br)

Avançar



[www.mec.gov.br](http://www.mec.gov.br)



[www.presidencia.gov.br](http://www.presidencia.gov.br)



[www.fazenda.gov.br](http://www.fazenda.gov.br)



[www.cgu.gov.br](http://www.cgu.gov.br)



[www.transportes.gov.br](http://www.transportes.gov.br)



[www.desenvolvimento.gov.br](http://www.desenvolvimento.gov.br)



[www.mte.gov.br](http://www.mte.gov.br)



[www.agu.gov.br](http://www.agu.gov.br)



[www.planejamento.gov.br](http://www.planejamento.gov.br)

Avançar



## Large Projects

- many kinds of government business
- government structures systems
- no standardized architectures
- many legacy systems
- more than one geographical team/project

## Large Teams

- more than 2500 developers
- 11 distributed offices of development
- heterogeneous technologies acknowledges
- more than 30 developers/project



- **How organize a heterogenous development environment and teams?**
  - **Stablish a simple but standardized architecture for systems development**
  - **Standardize development environment**
  - **Standardize the selection of libraries with market standards**
  - **Use design patterns**



- **History**

- **Demoiselle**

- The best airplane made by Santos-Dumont (1907) that really influenced the aviation;
    - Demoiselle has realized flights of 18 km over the 200m of 14 bis;
    - It was a “Open-Project”.

*“Santos-Dumont present the world, with no cost, all of his inventions.”*



## ▪ Framework

- The focus of development is solve business problems
- Reduce efforts to solve infrastructure problems like security, data access and integration with other systems or legacy

*“In a software development a framework is a infrastructure well defined that bases its development and put together plug-and-play components”*





- **Framework Demoiselle**
  - **Common Objectives**
    - Acknowledge reuse
    - Propose a development environment
      - Open
      - Standardized
      - Colaborative
    - Integration oriented
      - Diferent organizations
      - Diferent technologies



- **Framework Demoiselle**

- **Technical objectives**

- Extensible architecture using components
    - Provide a reference architecture for web applications using JEE standart
    - Provide a system integration layer engine
    - Provide a transparent transaction control
    - Provide infra-structure utilities for web applications
    - Provide a security engine for authentication, criptography and digital documents signer using Brazilian's PKI



- **Framework Demoiselle**

- **Domain Structure**

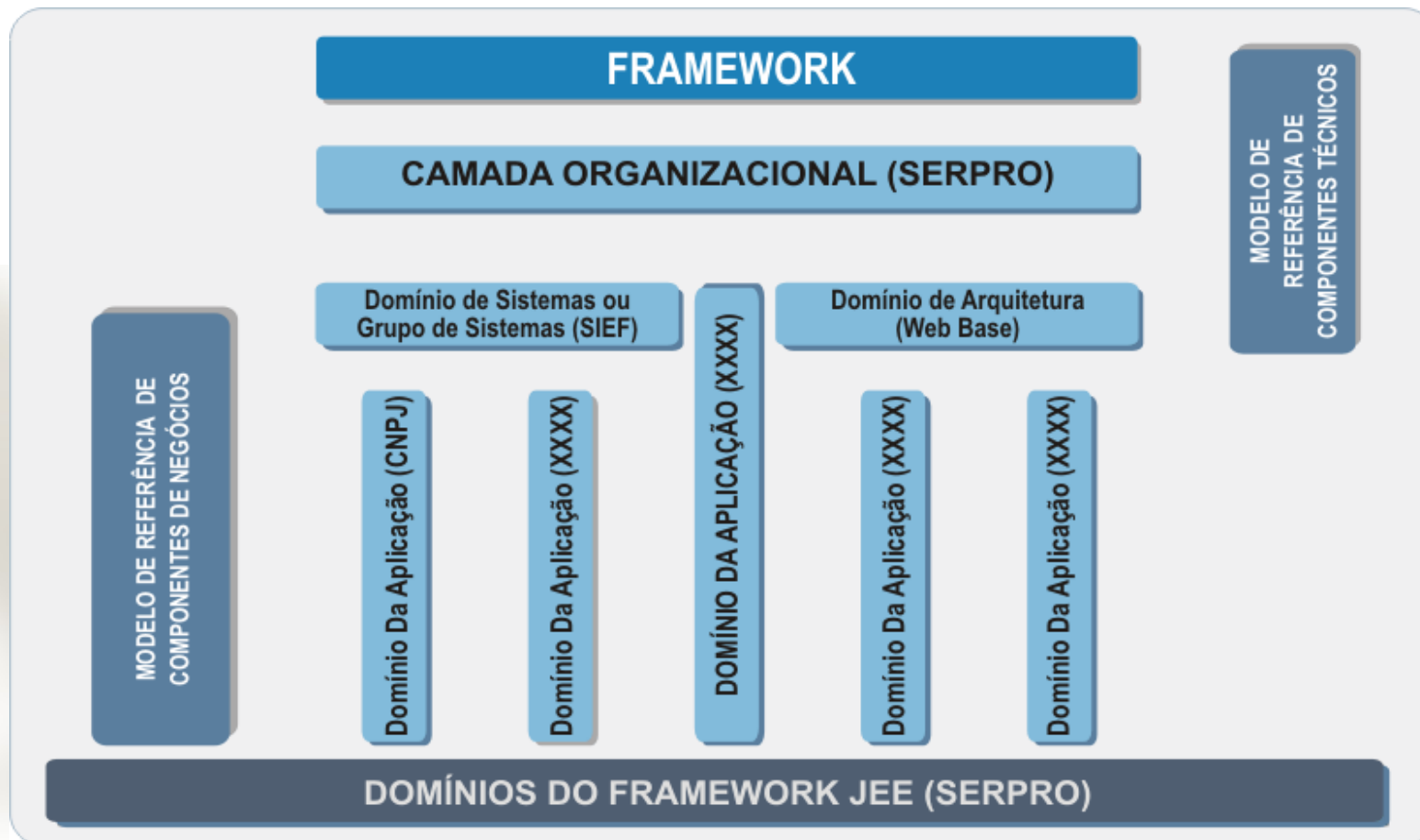
- Layer organized by business domain
    - Specifics Domains
      - Architeturual Framework – A common structure to any government organization
      - Organization – Internal integration for each organization. Defined by each organization needs
      - Systems – Integration between a group of systems with a common business



- **Framework Demoiselle**
  - **Domain Structure**
    - Components orientation
      - Tecnology – Reuse methods, technics and standarized process
      - Business – Reusable business components



- **Framework Demoiselle**
  - **Domain Structure**





- **Framework Demoiselle**

- **Standardization**

- This Framework improves the standardization of government solutions:

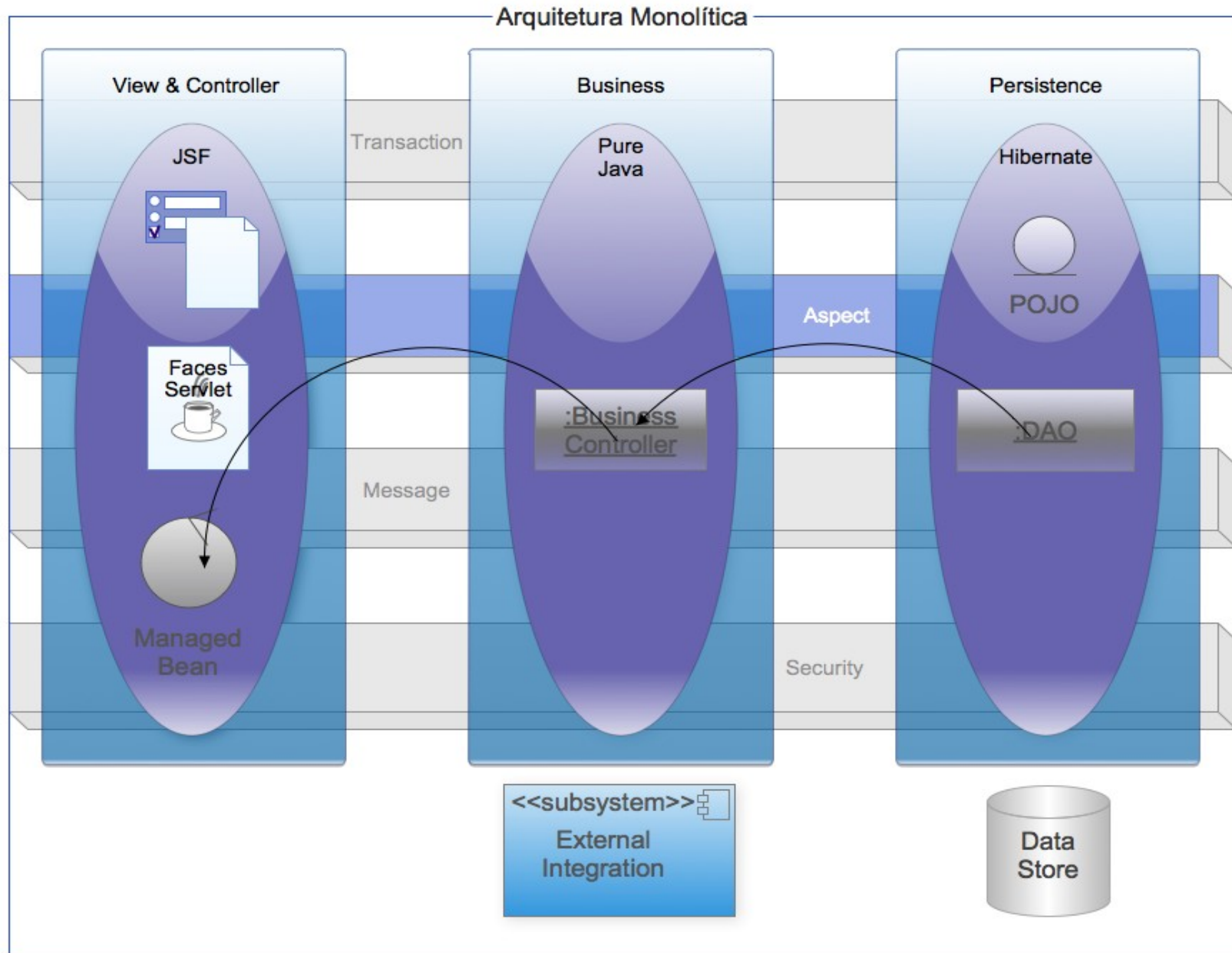
- **Technology Standardization**

- Selects, integrates and uses the most recognized technologies and libraries by developers community

- **Architecture Standardization**

- Access: Layer interface interacts with systems users
      - Business: Logical layer that contains systems business roles
      - Data: Data storage layer

# Basic systems reference architecture





## ▪ Integrator Framework

### Integrator Framework



Bouncy Castle



Java Technology



JavaServer Faces Technology



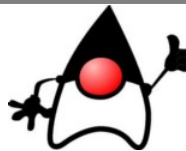
SQLADA



JBoss RichFaces

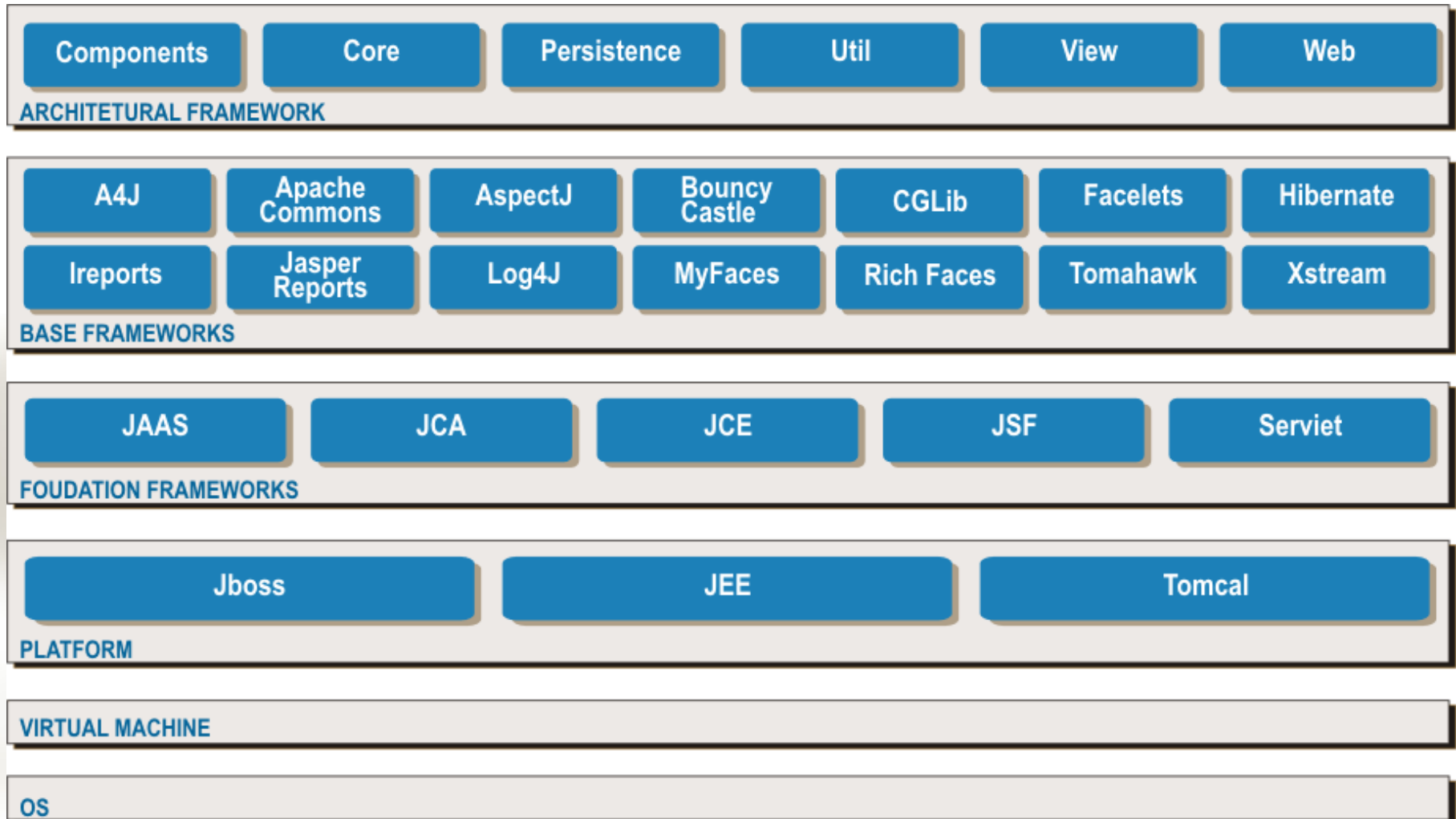


*“This Integrator Framework has a main objective: improve systems development with out wasting time choosing and integrating specialist libraries. Its results in improvement productivity and guarantees system maintenance.”*





- Package





## Package

- **Architectural Framework**
  - Represents Demoiselle's implemented modules.
- **Base Frameworks**
  - Represents integrated specialists frameworks and libraries used and compatible with Demoiselle.
- **Foundation Frameworks**
  - Represents standards specifications(API's) implemented by Architectural Framework that provides engines of transaction control, security, data access and others.
- **Platform**
  - JEE compatible application and web servers



- **Demoiselle is based and oriented by software architecture**
- **Architecture based in Design Patterns**
- **Reuse code with plug-and-play components**
- **Standardization improves integration and maintenance of systems**