



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

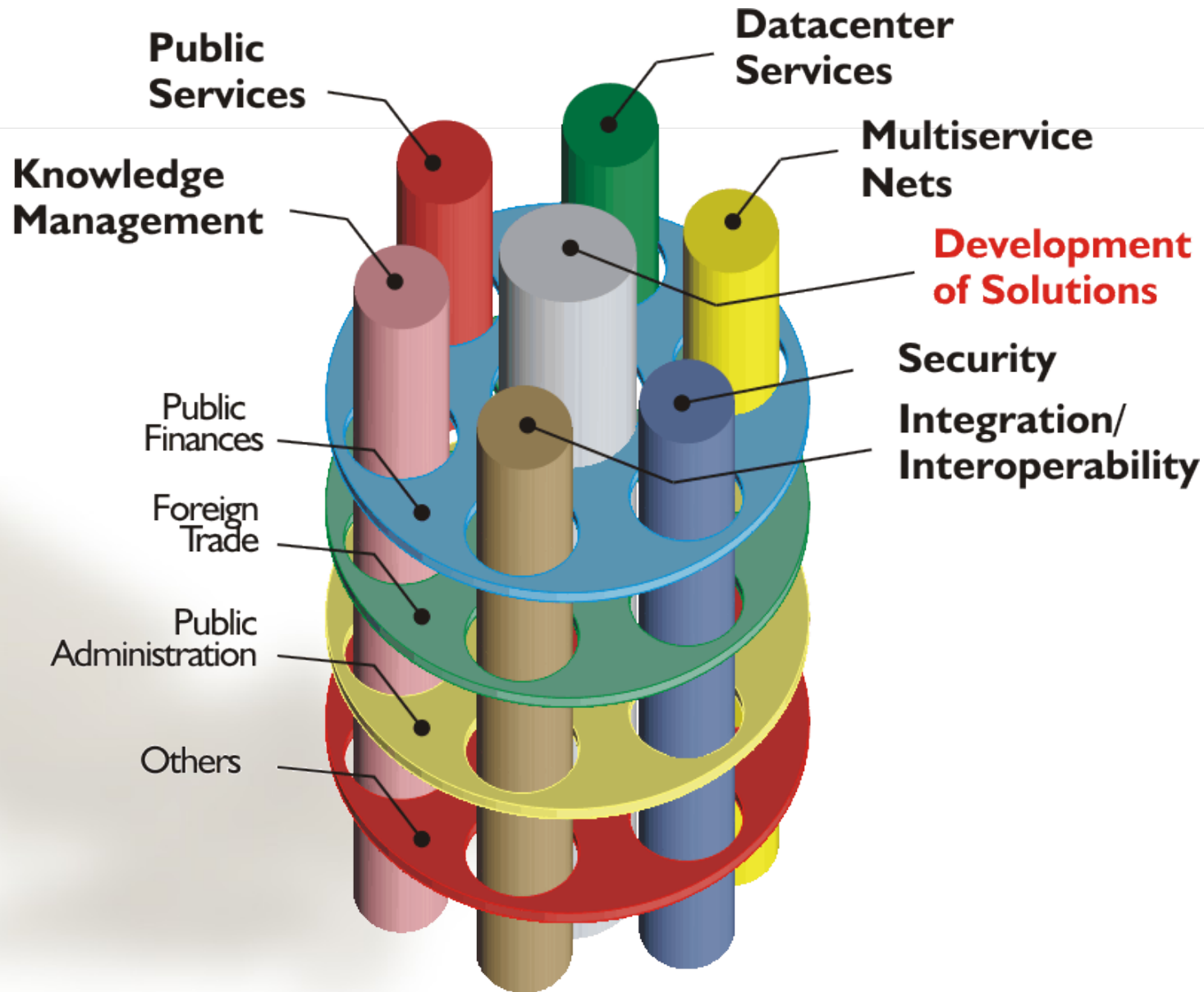
- Conclusion**



- **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

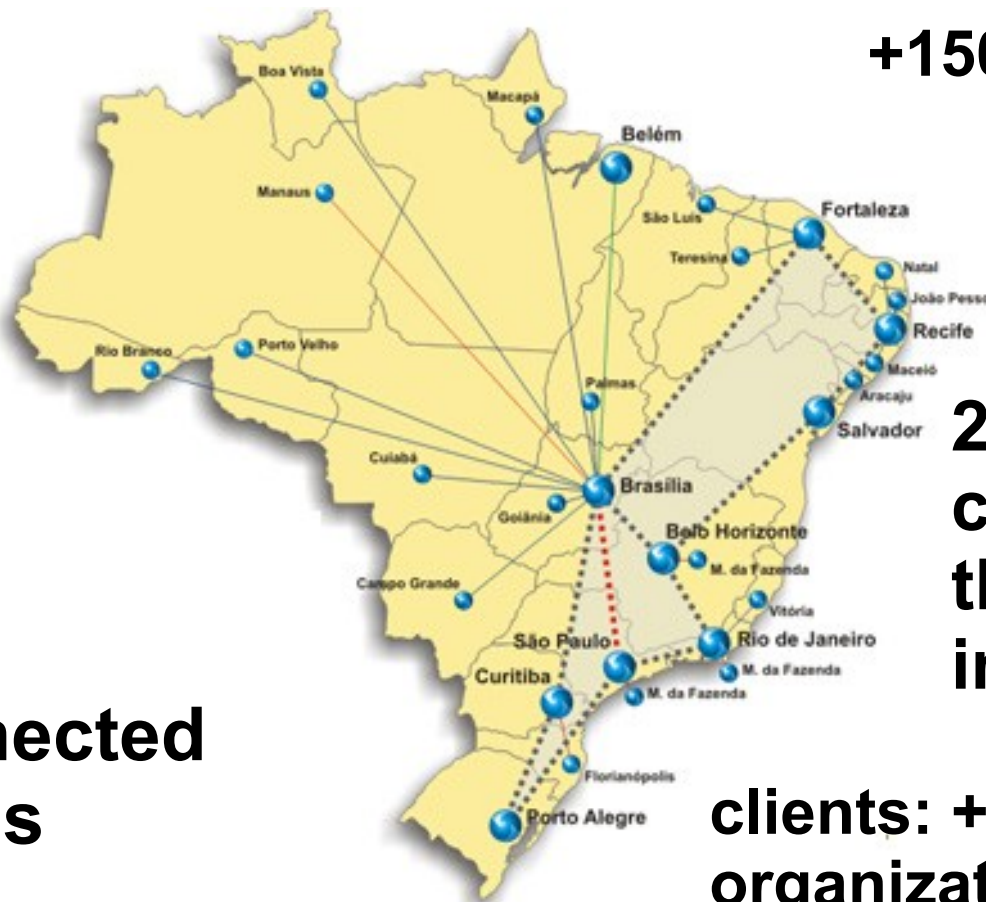
5.002 MIPs and 50 TeraBytes



1.200 cities

230.000 users

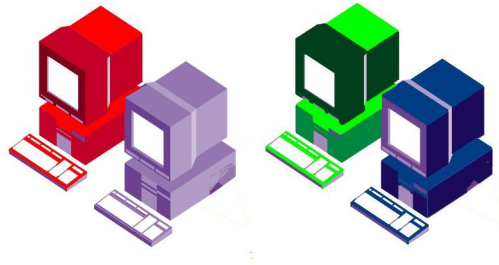
**85000 connected
workstations**



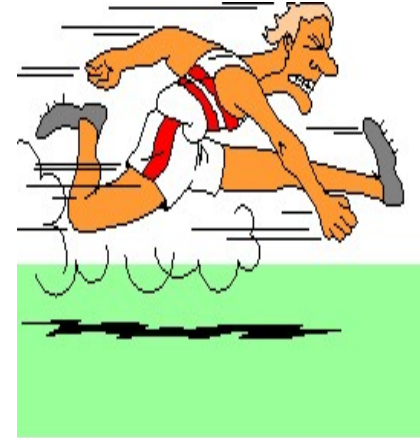
+150 networks

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

**clients: +36 government
organizations**



Multiplatform



Fast Development



Free Software



www.inpi.gov.br



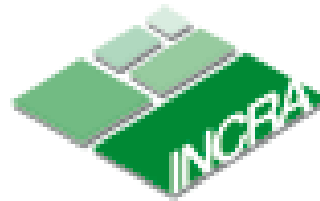
www.dpf.gov.br



www.receita.fazenda.gov.br



www.pgfn.fazenda.gov.br



www.incra.gov.br



www.denatran.gov.br

TESOURO NACIONAL

www.stn.fazenda.gov.br

Tribunal de Contas da União

www.tcu.gov.br

Avançar



www.mec.gov.br



www.presidencia.gov.br



www.fazenda.gov.br



www.cgu.gov.br



www.transportes.gov.br



www.desenvolvimento.gov.br



www.mte.gov.br



www.agu.gov.br



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**

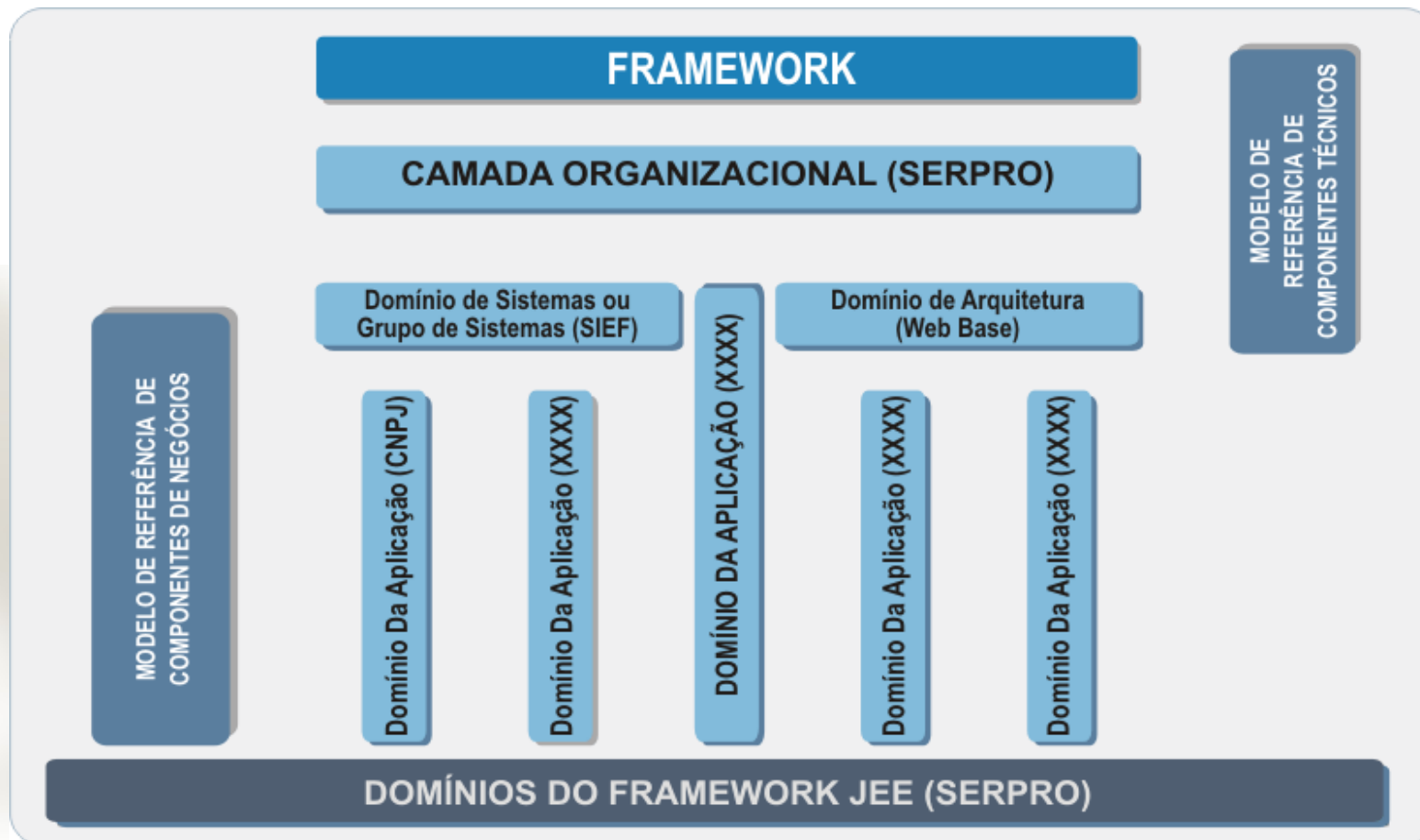
- Layer organized by business domain
 - Specifics Domains
 - Architeturational Framework – A common structure to any government organization
 - Organization – Internal integration for each organization. Defined by each organization needs
 - Systems – Integration between a group of systems with a common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

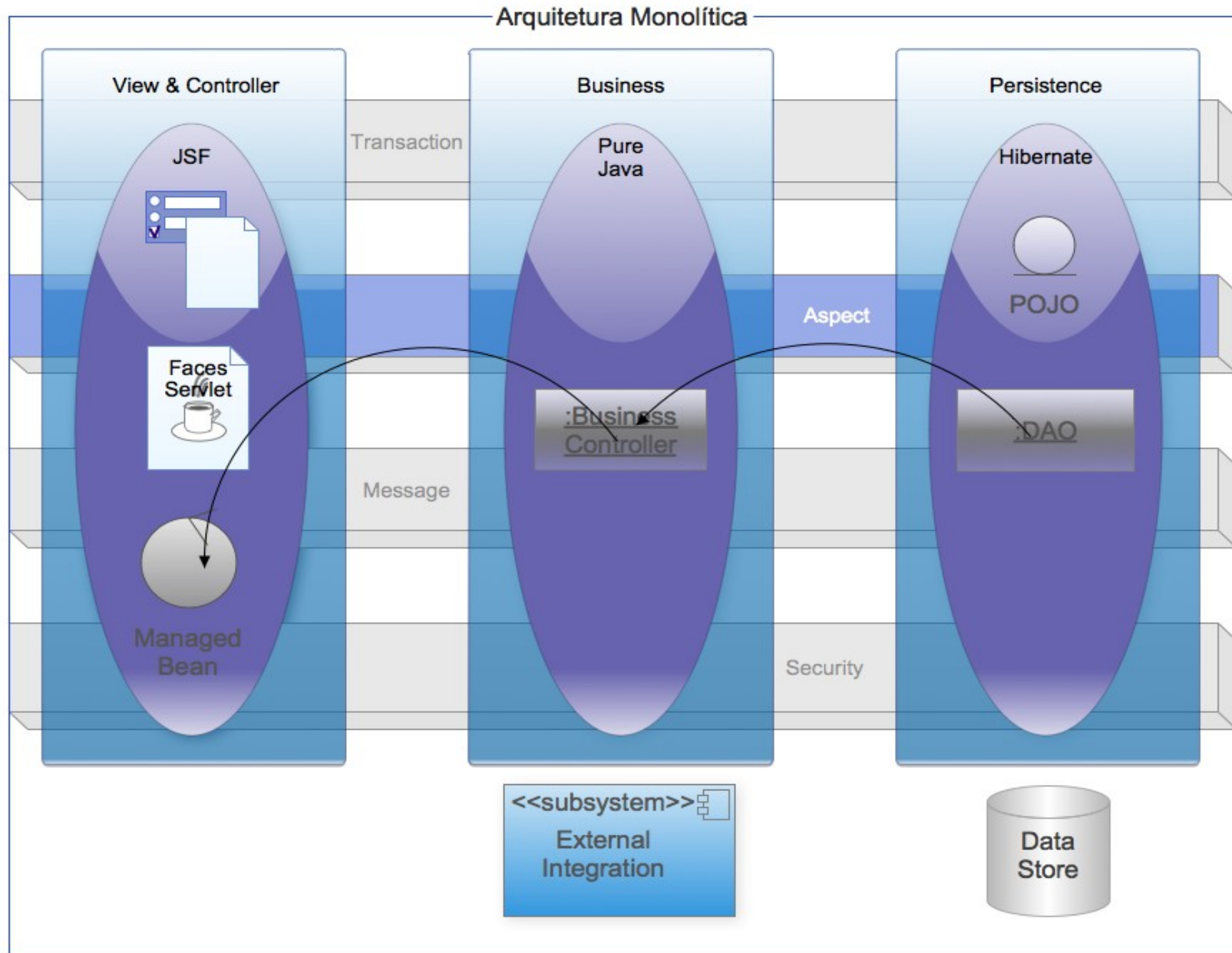
- **Technology Standardization**

- 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



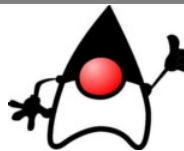
SQLADA



JBoss RichFaces

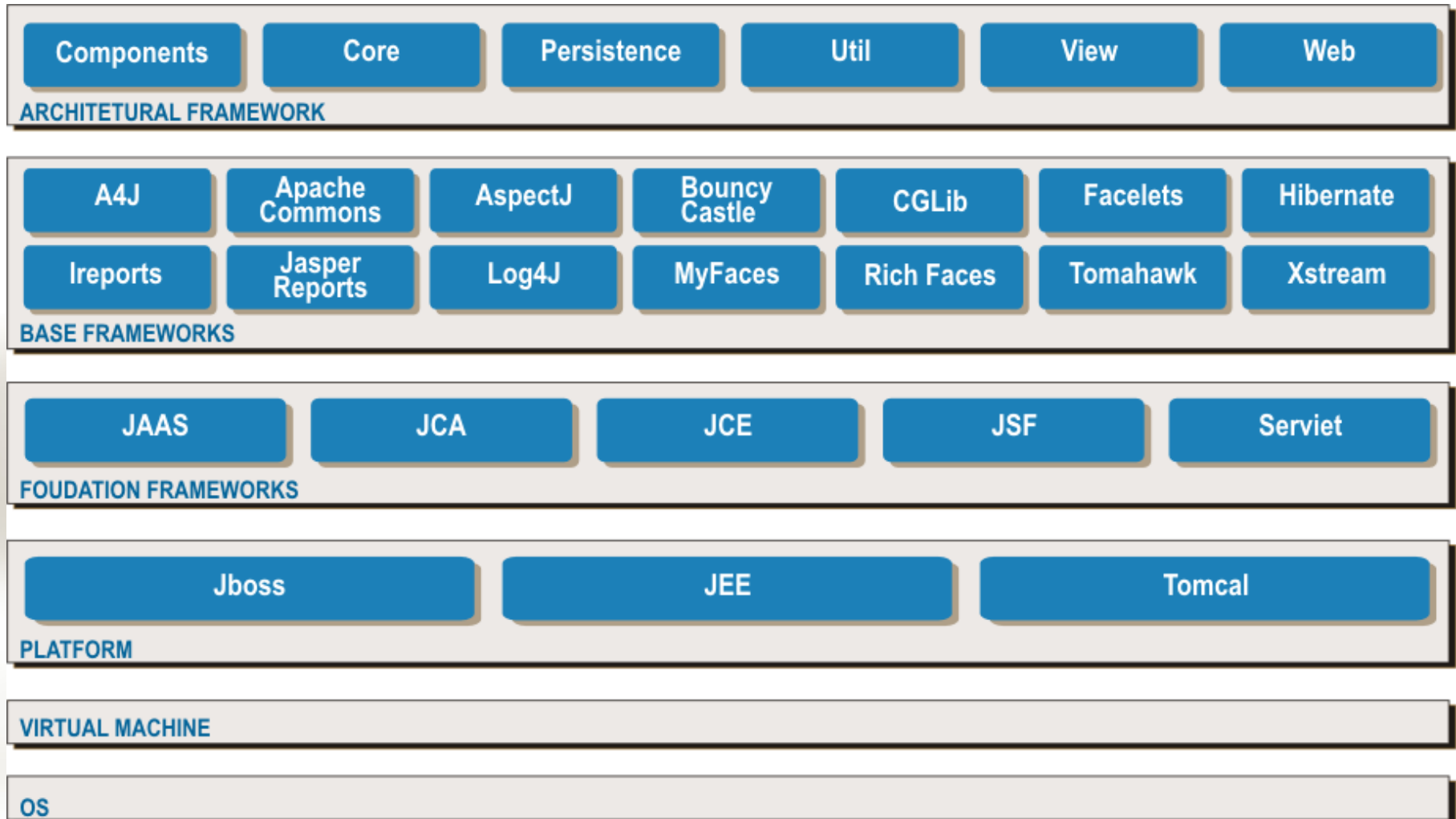


“This Integrator Framework has a main objective: improve systems development with out wasting time choosing and integrating specialist libraries. Its results in improvement productivity and guarantees system maintenance.”





- 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 Arquitectural 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**