Application Interconnection and Execution of Business to Business Transactions over the Internet

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Overview of PRAXIS

The PRAXIS project is co-funded by the 3rd Community Support Framework (CSF) under the Information Society Programme.

PRAXIS Consortium:

➡ Singular SA (Project Coordinator)

➡ OneWorld SA

➡ AUEB - Software Engineering and Security Lab

➡ NTUA - Management and Decision Support Systems

➡ General Secretariat of Informations Systems (GSIS)

As users of the prototype system the project selected Alpha Bank SA, Oxford Company SA, Nireas SA, Computer Project SA. Finally, the project is endorsed by Microsoft Hellas as provider of systems and technologies for e-business applications.

Goals

The main goals of the PRAXIS project are:

➡ The formation of a set of processes, reference architectures, and protocols for the execution of financial transactions.

➡ The design, development and pilot operation of a prototype software system that will allow the interconnection of business applications and the safe asynchronous transfer of transaction economic related data.

➡ The implementation of a financially viable software solution, including a business plan, to be adopted by Greek SMEs and small companies by means of hiding the complexity of the transactions from the usual everyday user and developing low cost products.

Processes

The project must produce a set of 23 electronic processes. These are categorized in two classes: (1) The internal processes are small transactions in the PRAXIS Server. A business process consists of a set of internal processes. Only the system is aware of these processes.
(2) A Business process is triggered only by PRAXIS participants. They are divided in 6 categories (figure 1):

➡ Business 2 Business (B2B)

➡ Business 2 GSIS (B2GSIS)

➡ Business 2 National Statistical Organisation (B2NSO)

➡ Business 2 Insurance Organisation (B2INS)

➡ Business 2 Bank Organisation (B2BANK)
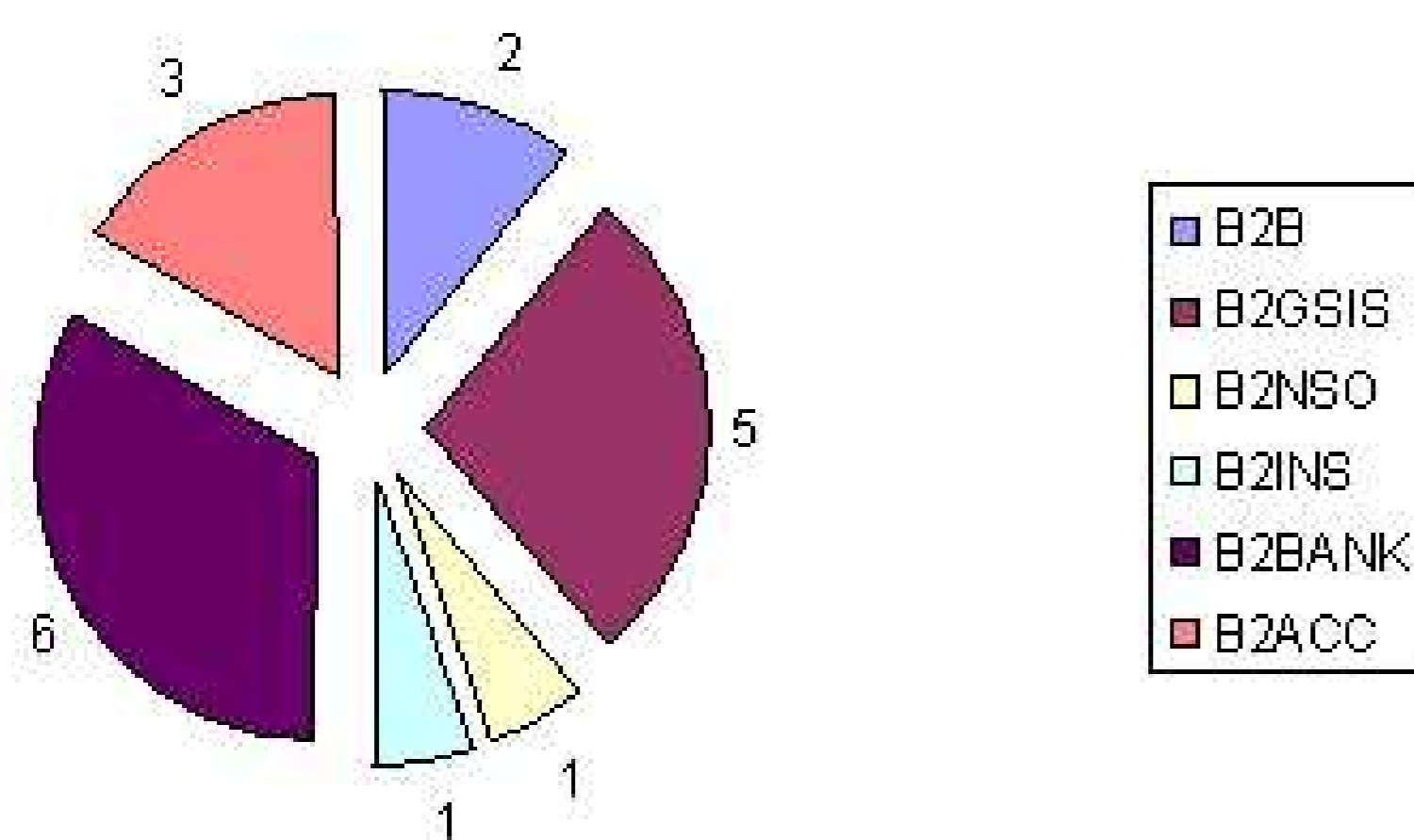
➡ Business 2 Accountant (B2ACC)

Figure 1: PRAXIS Processes categorisation

PRAXIS Participants

A member of PRAXIS can have 6 distinct roles.

➡ Business

➡ General Secretariat of Information Systems

➡ National Statistical Organisation

➡ Insurance Organisation

➡ Bank

➡ Accountant

Technological Infrastructure

The PRAXIS system consists of 2 main parts.

➡ PRAXIS Server

➡ PRAXIS Clients

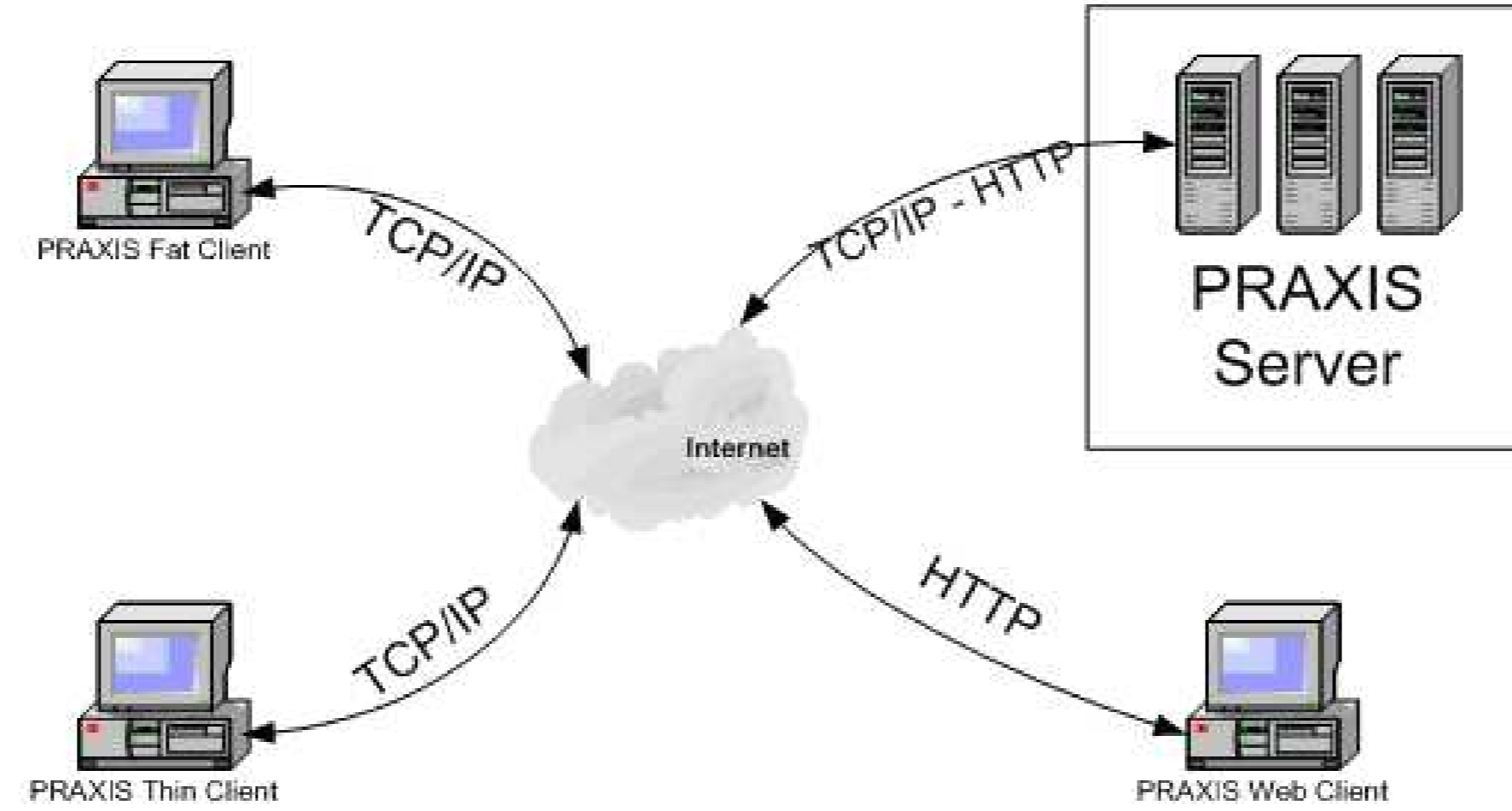The system architecture is illustrated in figure 2.

Figure 2: PRAXIS System Architecture

In the standard distribution of the praxis system, there are three different types of clients. These are:

① "Fat" Client (Singular Application)

② Thin Client (Java application)

③ Web Client (Web Application)

PRAXIS Server

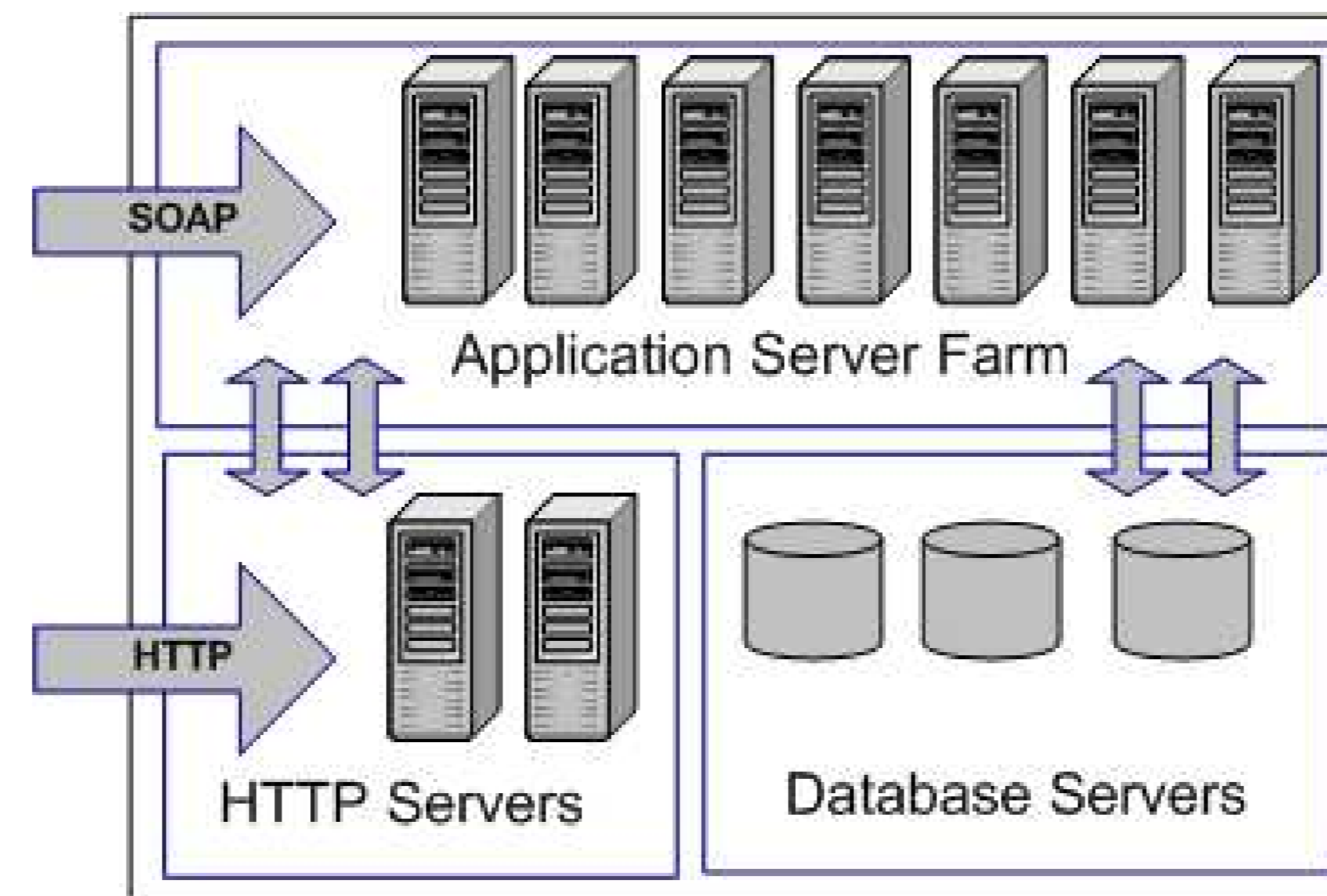The following figure depicts the internal components of PRAXIS Server.

Figure 3: PRAXIS Server

The server consists of three components,

➡ Application Server Farm

➡ HTTP Servers

➡ Database Servers

and performs three functions. These are:

➡ Registry and Repository

The registry provides a mechanism to find and retrieve the XML documents of the system and their schemas. It is also responsible for keeping logs for the system transactions.

➡ Store and forward

Store and forward provides a mailbox style mechanism for the users of the system.

➡ Web Front-end

The Web-front end is a web application. In order to increase the interoperability of the system, we decided to implement a web service gateway to the system function.

PRAXIS Clients

The PRAXIS Client is a software component which is integrated with other business management applications. For example, PRAXIS FAT client is integrated with Singular Application (One of the main products of Singular S.A.). The architecture of PRAXIS FAT Client is depicted in figure 4.
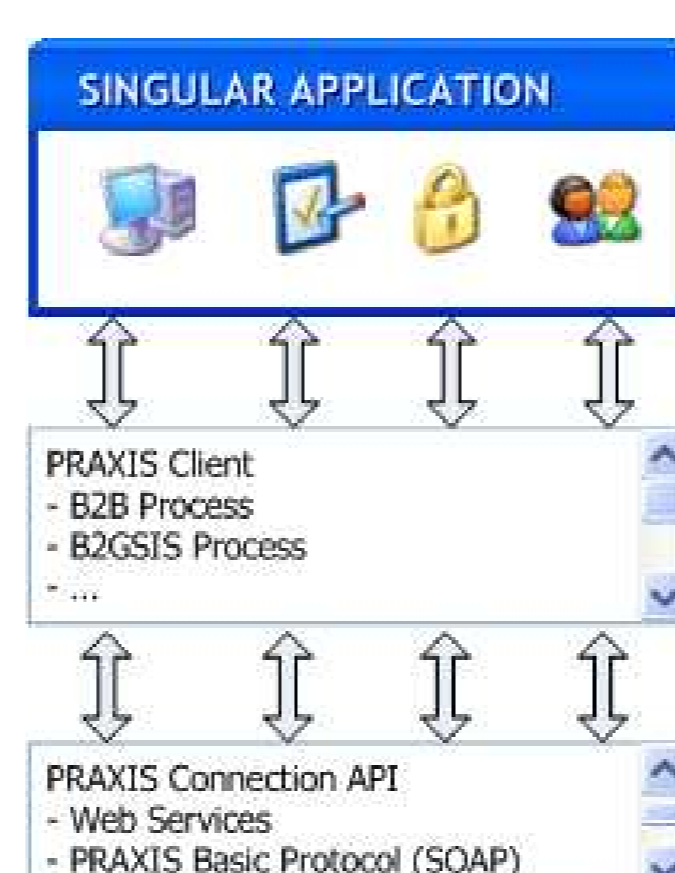

Figure 4: PRAXIS "FAT" Client

PRAXIS Data Modeling

One of the most important tasks of PRAXIS System design, was the data modeling. One choice had to be made, between a handful of XML Standards that support financial transactions and a tailor made solution. Our approach to the problem had three steps:

① Selection of comparison criteria

② Selection of the most popular standards

③ Comparison and finalisation of our decision

Selection Criteria

The selection criteria that we used for the comparison were:

Criterion	Description
PRAXIS Goals	The standard should be able to support the specific goals set out by the PRAXIS system.
Expansiveness	The standard should be able to expand in order to incorporate the specific particularities of Greek Economy (including the Public Sector).
Ease of Implementation	It should not burden excessively the system implementation effort.
Compatibility	The standard should be based on or compatible with several other standards.
Support	It would be desired for the standard to be supported by major organizations, industrial players.
Maturity	It should be mature and widely adopted.
Licensing	The standard should be available under the appropriate license.

Selected Standards

The list of the selected standards follows:

Standard	Business Process	Business Documents
UN/EDIFACT		✓
UN/CEFACT		✓
ebisXML	✓	✓
ebXML	✓	
RosettaNet	✓	
xCBL		✓
XBRL		✓

PRAXIS XML Messages

All the proposed standards are focusing on specific fields of operation. In addition, PRAXIS has the singularity of modeling mainly processes between businesses and other organisations, such as GSIS. The standards cover only 2 of 18 business processes. Not one of the proposed standards matches all of our criteria. So a tailor-made solution is proposed with the following characteristics:

➡ XML as basic technology

➡ Compatibility with other standards (such as xCBL etc.)

➡ Protocol Openness

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