CONSORZIO OPERATIVO GRUPPO MPS

GRUPPO MPS

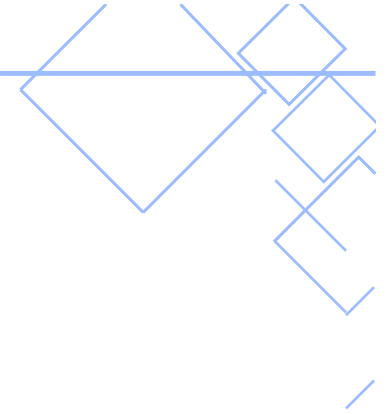# From Web Services to Grid: Internal ad esternal use

Piero Poccianti
Staff Pianificazione e Sviluppi Strategici
Consorzio Operativo Gruppo MPS

EGEE 2006
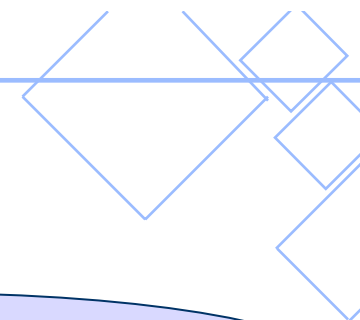
Agenda

From Web services to Grid

Introduction

2001 → SOA Architecture

2003 → web services examples

2005 → Internal Grid solution and applications

2006 → Evolution

GRUPPO**MPS**

Il Gruppo MPS

Employes: ≈ 27.000

Retail Banking
 1.886 Domestic Branches
 2.180 ATM
66.930 POS

Corporate Center

Banks

Products company

Foreign presence
❖ 33 Branches and Offices

Service Company

GRUPPO**MPS**
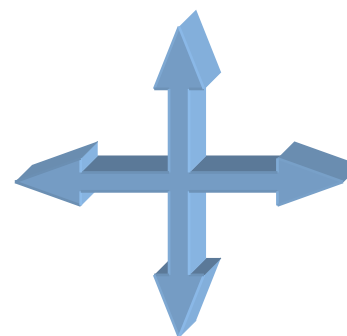
Il Consorzio Operativo GMPS

"Il consorzio ha il compito istituzionale di gestire i sistemi informativi ed i servizi amministrativi, accentrati e non, nell'ottica della centralizzazione dell'informatica e dei servizi amministrativi stessi a livello di gruppo bancario M.P.S., fornendo supporto alle più generali strategie di gruppo, in coerenza con le esigenze di evoluzione tecnologica del gruppo stesso e degli altri consorziati"

Art. 2 Statuto del Consorzio

Le aziende consorziate:

Banca Monte dei Paschi di Siena

Banca Toscana

Banca Agricola Mantovana

MPS Banca Personale

MPS Banca Per l'Impresa

MPS Leasing & Factoring
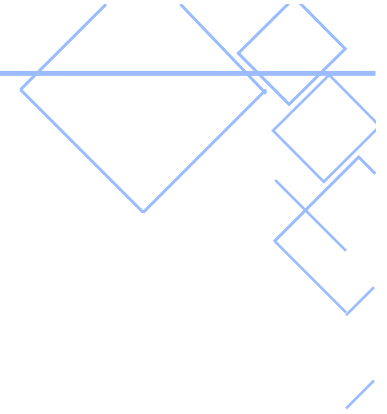
MPS Gestione Crediti Banca

MPS Finance

GRUPPOMPS

Agenda

From Web services to Grid

Introduction
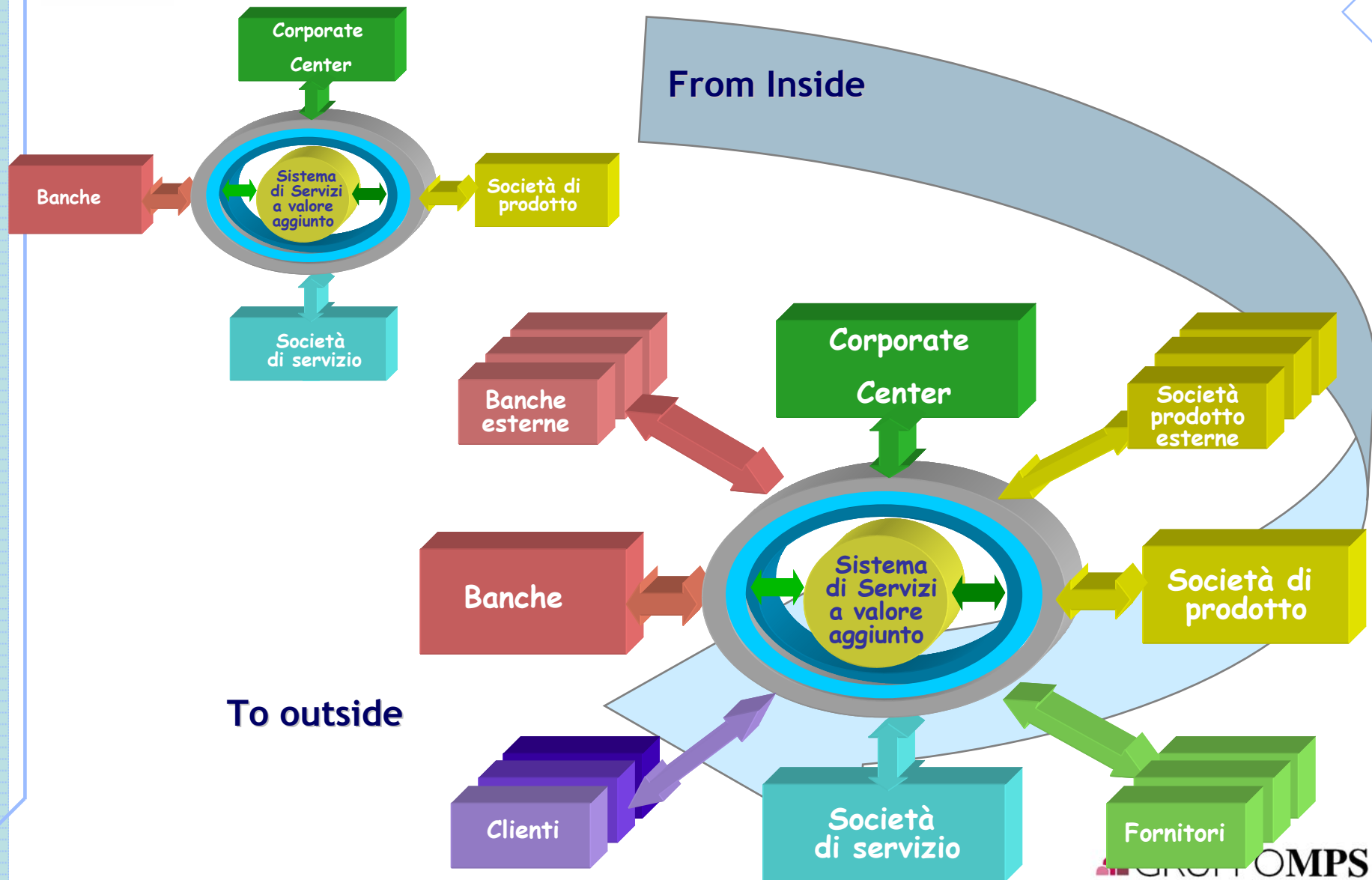
2001 → SOA Architecture

2003 → Web Services examples

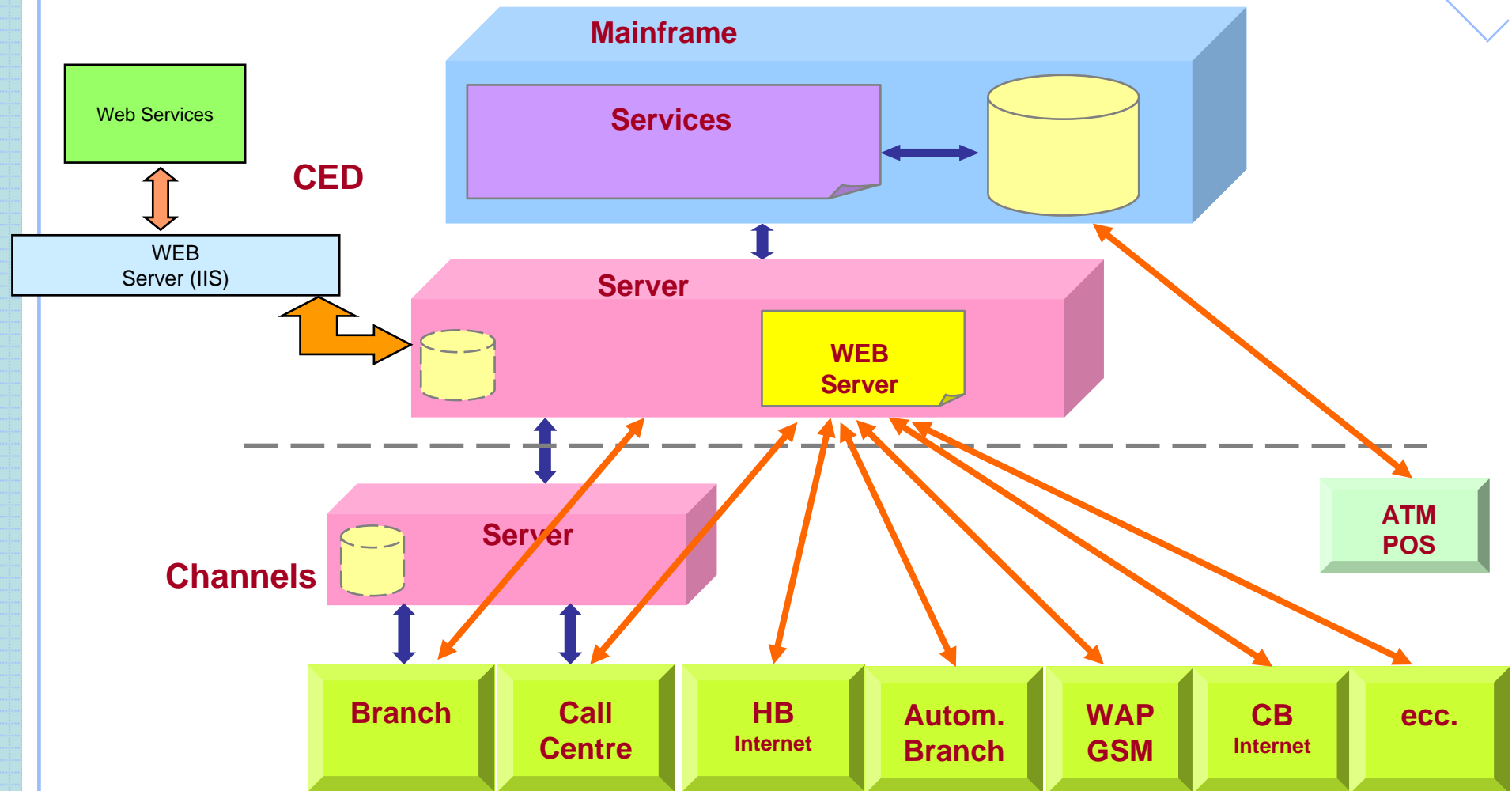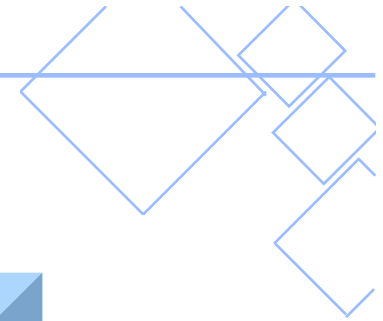2005 → Internal Grid solution and applications

2006 → Evolution

GRUPPO**MPS**

Group's Information System

Estended Multichannell Architecture

Web Services

CED

Mainframe

Services

WEB
Server (IIS)

Server

WEB
Server

Channels

Server

Branch

Call
Centre

HB
Internet

Autom.
Branch

WAP
GSM

CB
Internet

ecc.

ATM
POS

GRUPPO**MPS**

Broker

Layer Broker

Piattaforma Windows

Broker Server .NET

Client windows based

DCOM / .NET

DCOM /.NET

Oggetti di Business COM/.NET

SOAP   SOAP

Piattaforma J2EE

Broker Server J2EE

Broker Gateway

J2EE application

IIOP

IIOP

Oggetti di Business J2EE

JCA

JCA / IIOP

JCA / IIOP

Piattaforma CICS TS 1.3 o succ.

CICS programs

DPL

Broker Server JCICS

Piattaforma CICS TS 2.2 o succ.

DPL

Piattaforma CICS TS 1.3 o succ.

Oggetti di Business CICS

GRUPPO**MPS**

Infrastructure

Partners: Microsoft & IBM

Agenda

From Web services to Grid

Introduction

2001 → SOA Architecture

2003 → Web Services examples

2005 → Internal Grid solution and applications

2006 → Evolution

GRUPPO**MPS**

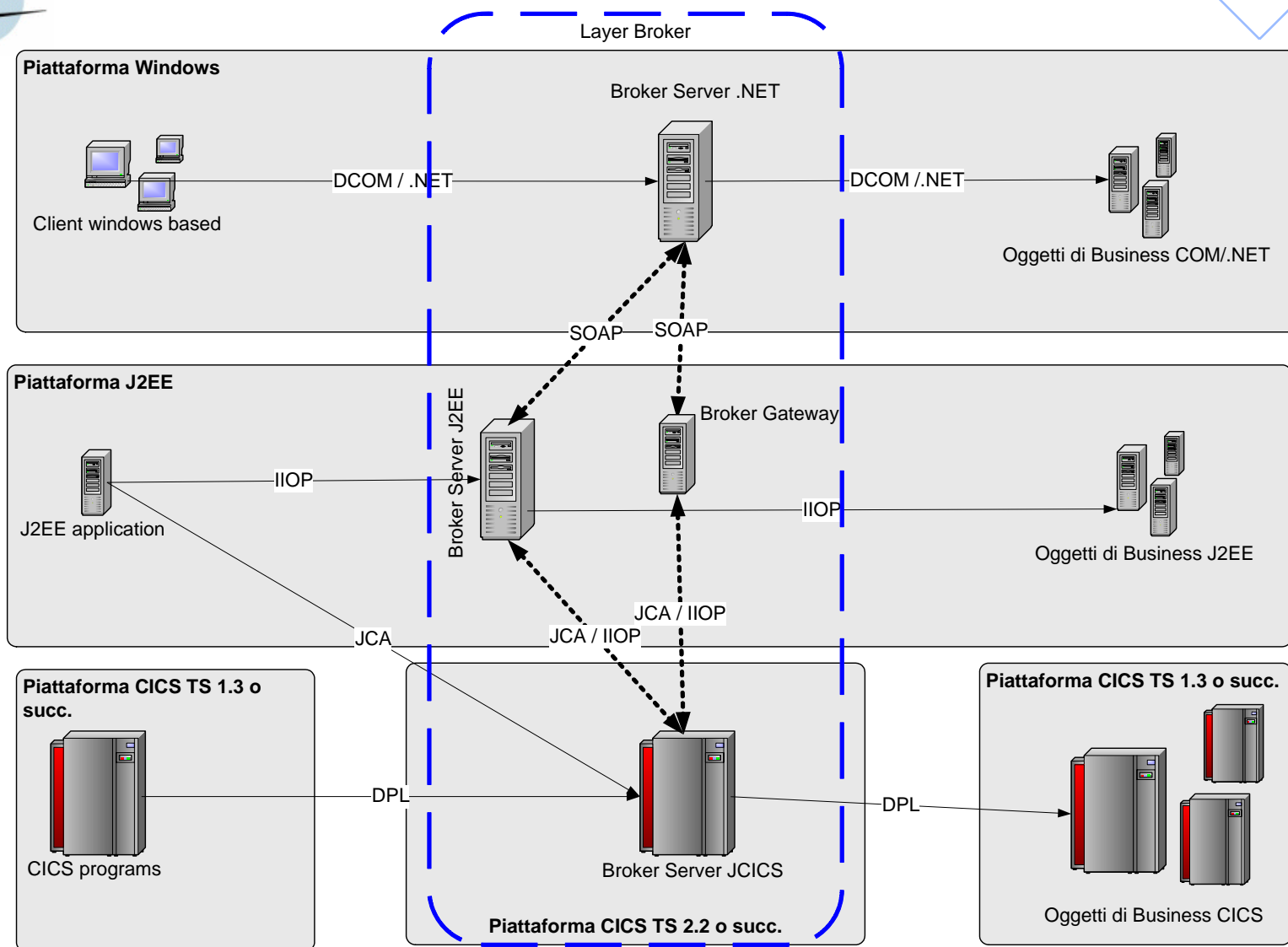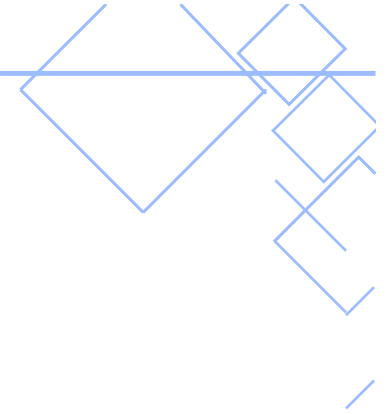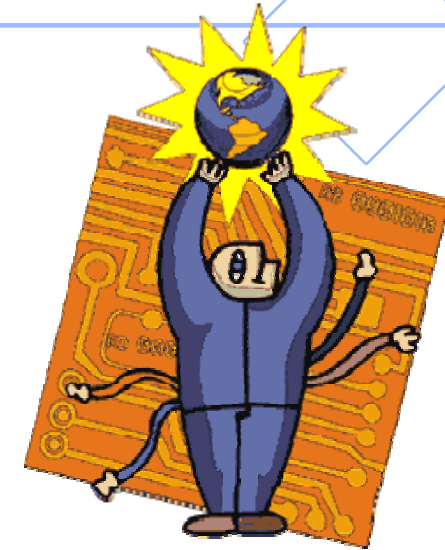# Web Services since 2001 ➜

- Virtual POS
- Financial Desktop
- Selling MPS NET' product
- Insurance simulation: MPS VITA
- Interactions for "Loans" BanKs ⇔ Consum.it
- Unix Private Banking ⇔ multichannel
- Corporate Banking
- CERVED services
- "Mandati:Reversali" with digital signature
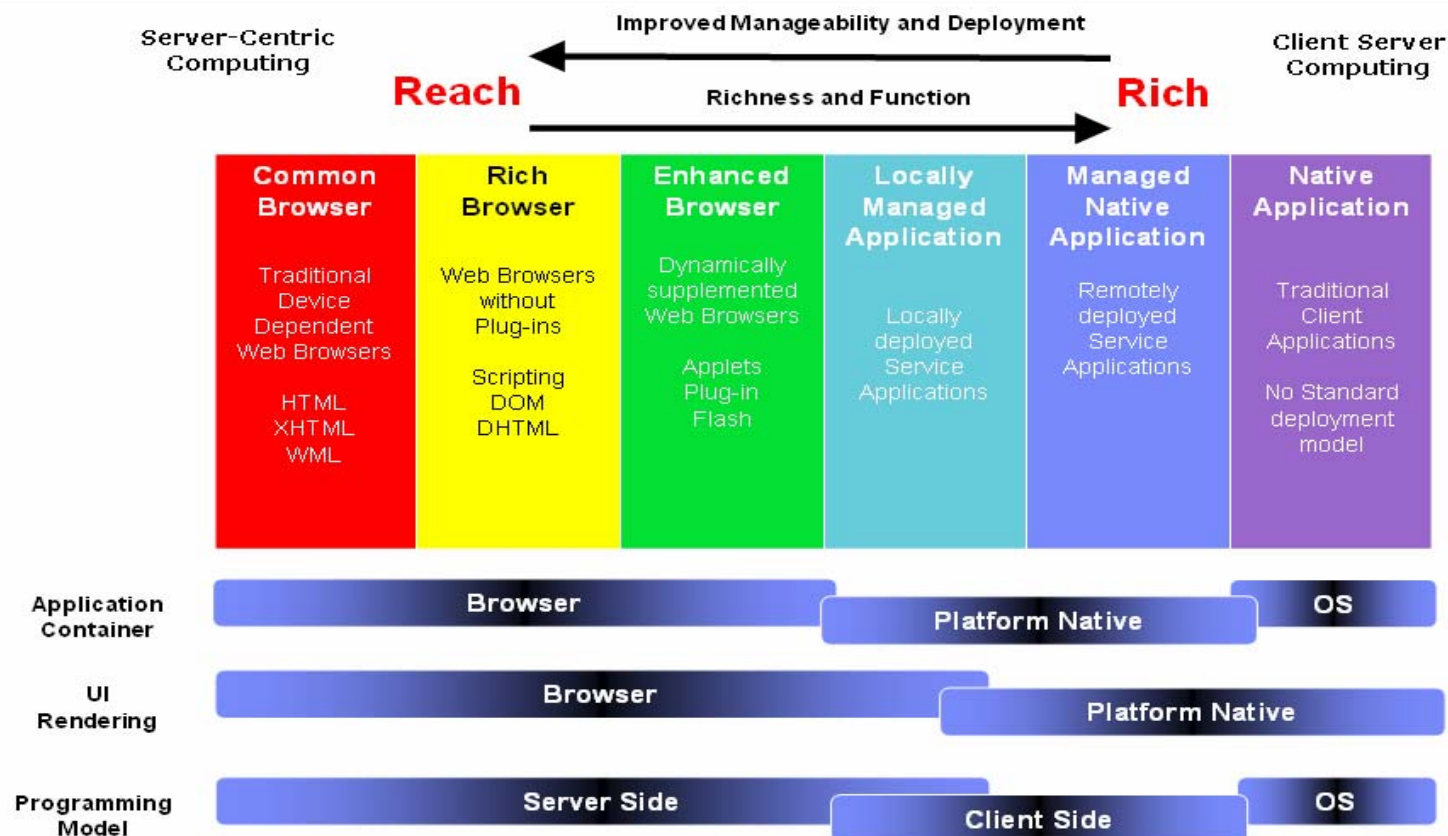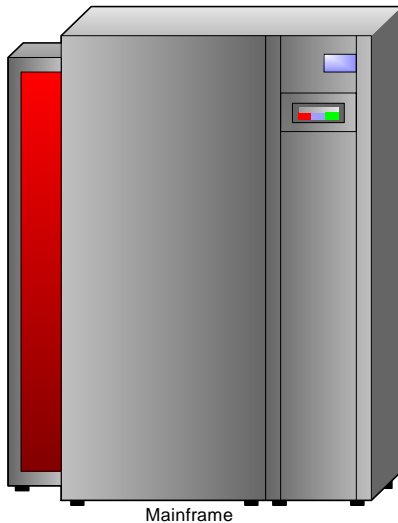- New Channel for multichannel
- ...

GRUPPO**MPS**

Smart Client – IBM vision
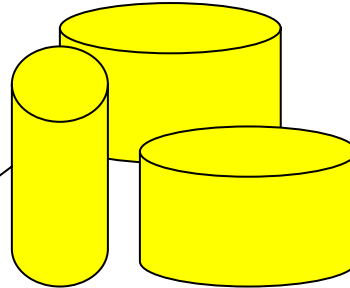
User Experience Technology Spectrum

Server-Centric Computing

Improved Manageability and Deployment

Client Server Computing

Reach → Richness and Function → **Rich**

Common Browser	Rich Browser	Enhanced Browser	Locally Managed Application	Managed Native Application	Native Application
Traditional Device Dependent Web Browsers	Web Browsers without Plug-ins	Dynamically supplemented Web Browsers	Locally deployed Service Applications	Remotely deployed Service Applications	Traditional Client Applications
HTML XHTML WML	Scripting DOM DHTML	Applets Plug-in Flash			No Standard deployment model

Application Container

Browser | Platform Native | OS

UI Rendering

Browser | Platform Native

Programming Model

Server Side | Client Side | OS

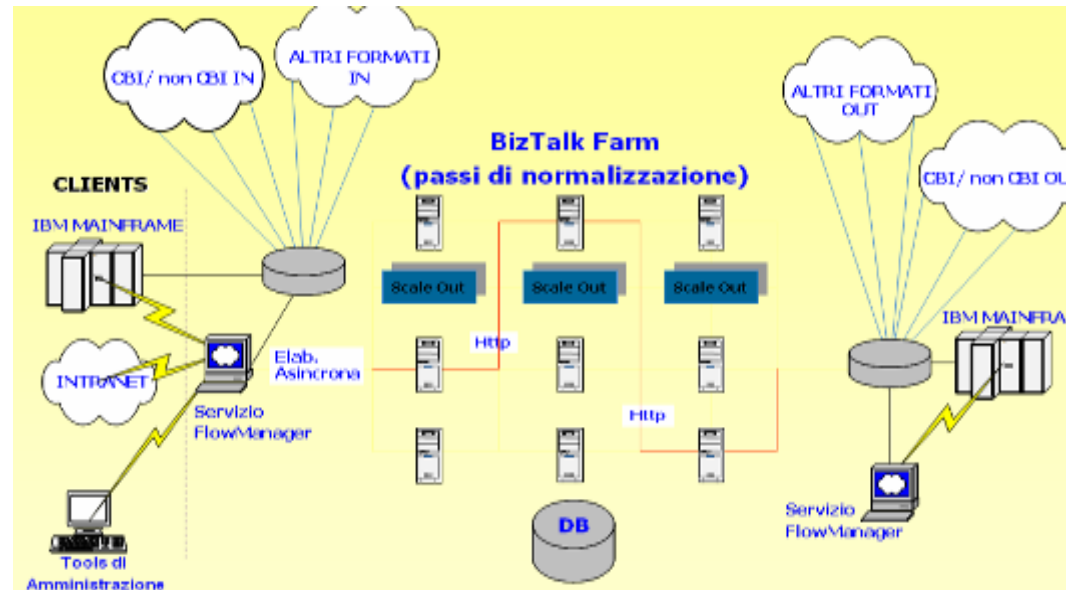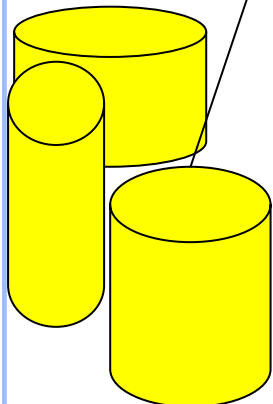# Batch Processing

- IBM Tivoli Workload Scheduler
- CICS (PAF) Batch TP
- Flows Converter (BTS)
- GRID (AGA)
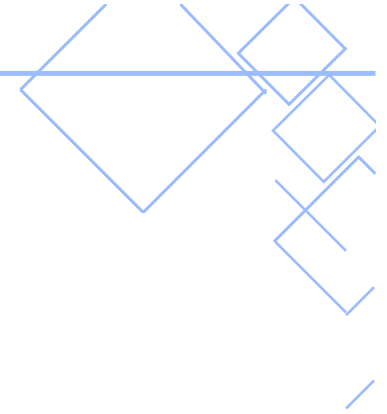
Mainframe

GRUPPO**MPS**

Agenda

From Web services to Grid

Introduction

2001 → SOA Architecture

2003 → web services examples

2005 → Internal Grid solution and applications

2006 → Evolution

GRUPPO**MPS**

Our Definition of "Grid Computing"

Internal Grid is a specialized workload management system for specialized compute-intensive jobs. Like other full-featured batch systems, it provides a job queueing mechanism, scheduling policy, priority scheme, resource monitoring, and resource management. Users submit their serial or parallel jobs to Grid, It places them into a queue, chooses when and where to run the jobs based upon a policy, carefully monitors their progress, and ultimately informs the user upon completion.

Grid Computing

Application

Owner A   Owner B   Owner C

Gartner

GRUPPOMPS
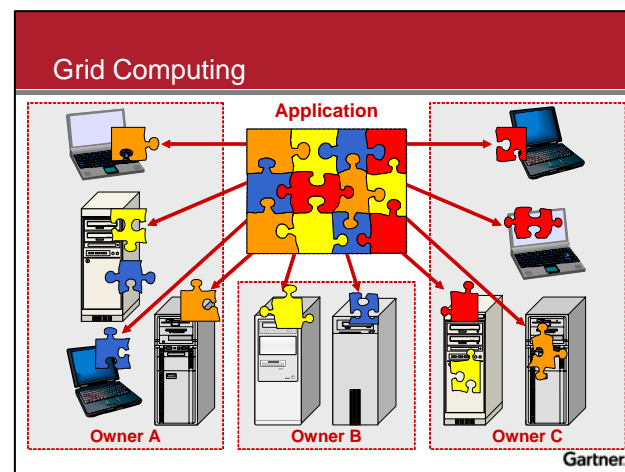
Our Tactical Approach

- **Internal Grid uses server and client idle resources**

- **Its application domain is for CPU intensive tasks, not for data intensive ones**

- **Task must be composed by slightly correlated subtasks**

GRUPPO**MPS**

Accomplishments

- Current Accomplishments
  - Clickstream analysis (January 2005)
  - IAS 32-39 (August 2005)
  - Top Management Monitoring (January 2006)
  - Basel II (Algoritmics) (October 2005)
  - DOC1 (December 2006)
- Next Steps
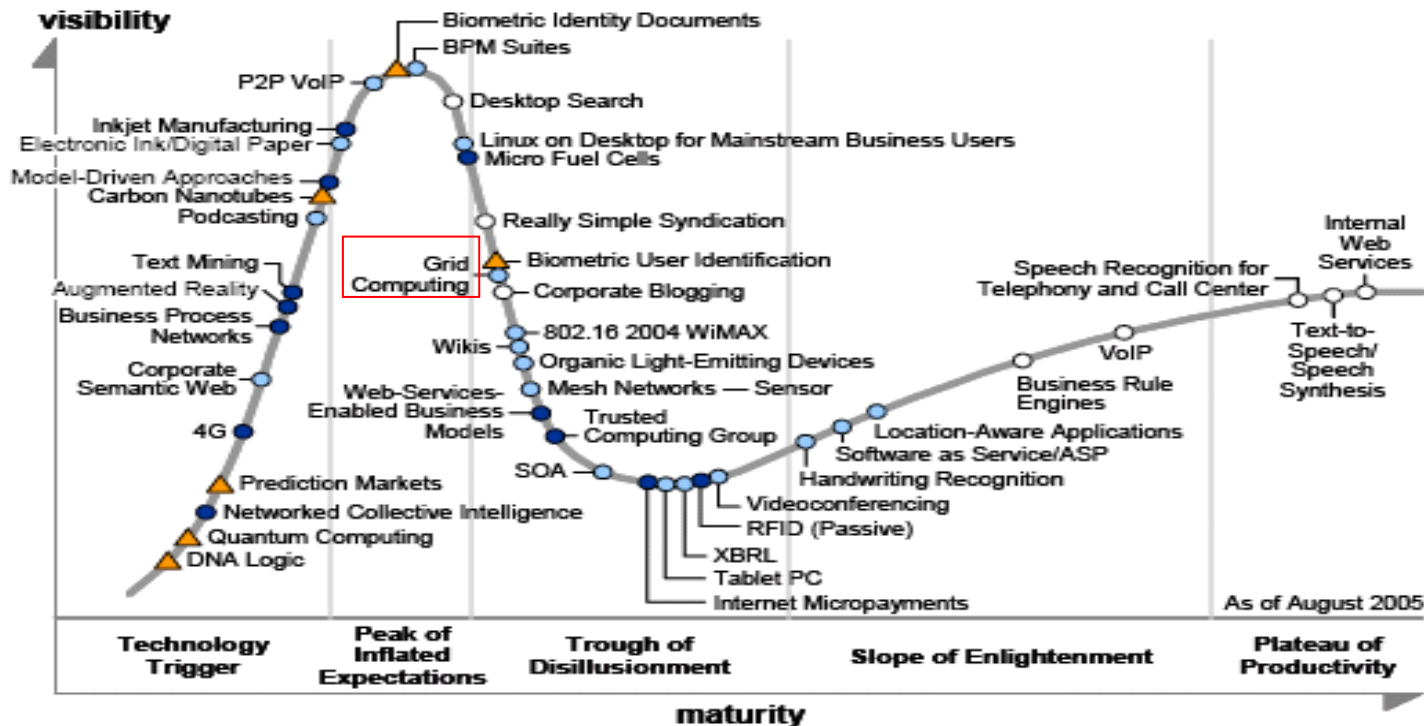 - Host Batch downsizing
  - ....

GRUPPO**MPS**

MPS Internal Grid

- Use idle resources for CPU intensive jobs
- Interaction with heterogeneous systems (desktops, servers, dedicated server farms or even Host) by means of standard or standards-to-be protocols.
- Evolution from Condor to a custom solution developed with Avanade
- Communication between nodes is performed using Web Services

GRUPPO**MPS**

Gartner's vision on Grid Computing Source Gartner 3 Ago 2005

Figure 1. Hype Cycle for Emerging Technologies, 2005

The Grid

Computing power
is **everywhere,**

we try to make it usable by **anyone.**

Miron Livny

- ❖ **Average Mainframe usage: 80%**
- ❖ **Average RISC Servers usage: 45%**
- ❖ **Average Intel Servers usage: 10-15%**
- ❖ **Average Client usage: lower than 10%**

- ❖ **Year 2008 will see a doubling in usage of Servers**

Source: Gartner

- ❖ **Server usage will further increase in the future**

There's a lot of space in the bottom

Richard P. Feynman

GRUPPO**MPS**

Realizations

- AGA.NET Architecture
  - Developed as a joint effort with Avanade
  - Characteristics
    - Secured
    - Extendable
    - Web Services as glue
    - Easy to develop upon it
    - Easy to maintain
    - Implemented using C# .NET

- Advantages:
  - Costs (perceived)
  - Fast processing

GRUPPO**MPS**
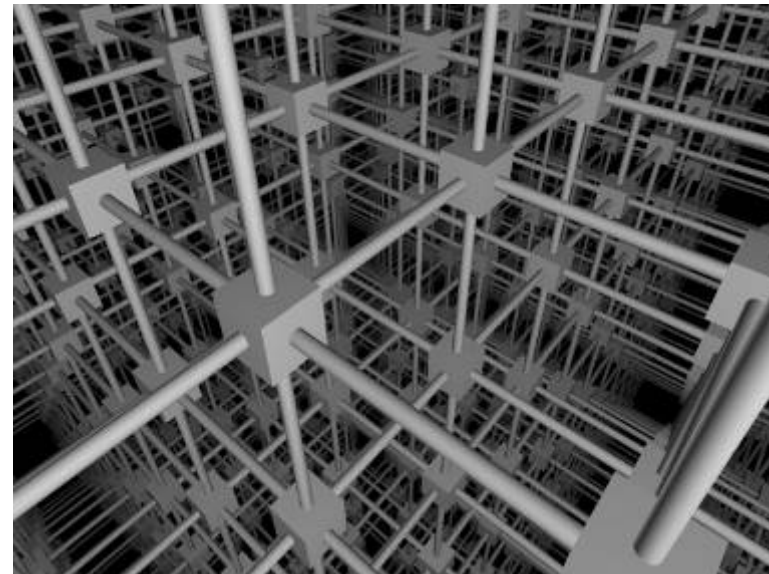
Server farm

- About 200 non-dedicated Windows and Linux servers
- We expect to have 1.000 central servers with Windows 2003 Server

Realizations

- Clickstream analysis
  - In production since the start of the year
  - About 50 sites
  - 476 instances on single servers
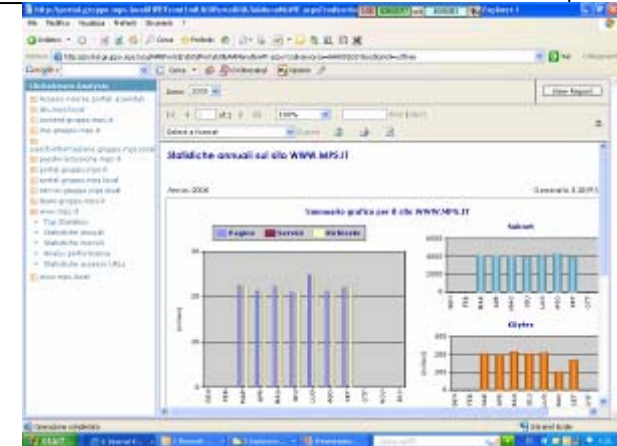
Job entity valued in 2-4 CPUs servers working for 8 hours

The same job requires 2 hours of our Grid infrastructure

Phase I. Open Source + Condor

Phase II. Open Source + AGA

Phase III. SQL Server (AS) + AGA

IAS 32-49

- First hypothesis on Mainframe (Cobol+ DB2)
- Realization with GRID (Cobol + AGA + SQL Server)
- In production since July 2005
- Elaboration timings less than1 hour

Basel II

- Chosen the Algorithmics's (Unix/Linux and Oracle) for Market Risks Analysis Job

- Proposed a SUN machine or a Grid DataSynapse

- Solution based on AGA.NET (on Windows Servers) with Linux nodes (we are discussing the porting of Algoritmics on Windows), including data loading

- in production since 2005' end

BASEL II
New Capital Adequacy Framework

GRUPPO**MPS**

Top Management Monitoring

Datawarehouse for compliance

- First implementation dedicated scheduler and machines
- Today Grid scheduler……

Microsoft Reporting Services

- loading data with Grid

GRUPPO**MPS**

Generation of documents for Customers

- Developed DOC1 for Host
- Effort estimated: 6 days of elapsed working time (of a 8.000
- MIPS machine).
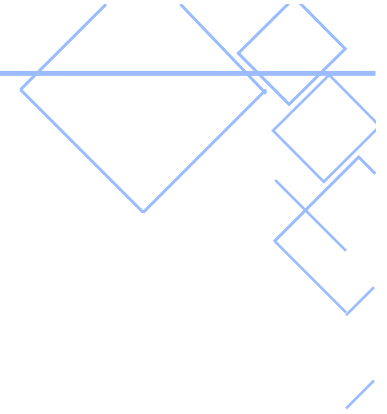- Today the first bank in production on GRID (6 hours on mainframe, 2 hours on Grid- few machines).

GRUPPO**MPS**

Conversion of Batches on Mainframe

- Currently testing the porting of Batches
  - PL/1
  - Cobol

GRUPPO**MPS**

Agenda

From Web services to Grid

Introduction

2001 → SOA Architecture

2003 → Web Services examples

2005 → Internal Grid solution and applications

2006 → Evolution

GRUPPO**MPS**

Grid Services

- Web Services allow integration of heterogeneous systems to achieve A2A communication and for short-term transactions, involving the exchange of relatively small quantities of data.

- Grid Services will allow integration for more significant jobs, considering the CPU usage and also the quantity of data.

- GRID vision allows the network to evolve to an environment in which machines and human beings can collaborate.

- Three instances:
  - Internal grid computing
  - Ethic and Scientific projects
  - A global vision

University of Victoria Particle Physics Grid Testbed
http://grid.phys.uvic.ca
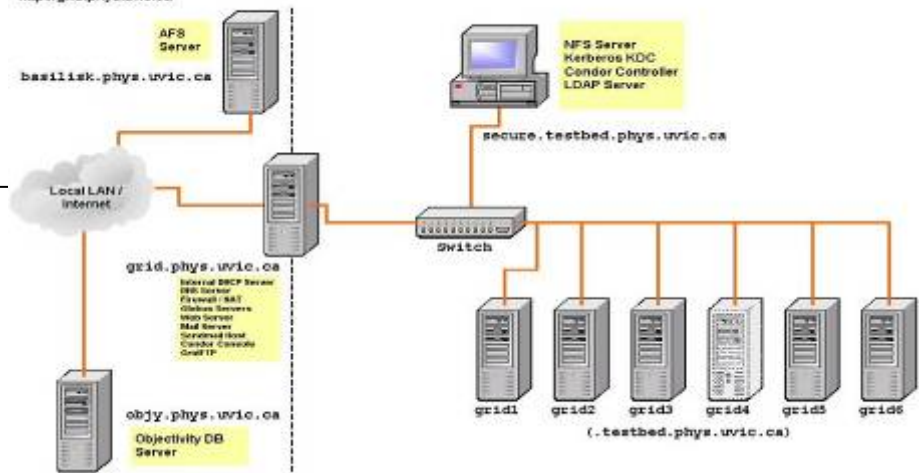
Mainframe downsizing

- On line TP Scale Out Scalability
- HPC useful for a lot of complex multistep task
- Internal Grid very useful for distributed batch processing

GRUPPOMPS

Evolution

- We are exploring new area:
  - New application in Finance Area,
  - Integration of grid computing and HPC paradigm,
  - Grid services for job invocation Corporate Banking services

GRUPPO**MPS**

« Croire tout découvert est une erreur profonde,
c'est prendre l'horizon pour les bornes du monde ! »

Camille Flammarion

- Information tecnology is not only support for business.
- It's changing our way of learn, exchange knowledge, buy, work, etc.

GRUPPO**MPS**

Thank you

Piero Poccianti
Staff Pianificazione e Sviluppi Strategici
Consorzio Operativo Gruppo MPS

piero.poccianti@bancatoscana.it