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# BE09 Demonstrator

David Brossard - BT CTO

Involved Partners: ANDAGO, ATOS, BT, CRMPA, URJC



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09  
**BEinGRID**  
BUSINESS EXPERIMENTS IN GRID

*All work and no play  
makes Jack a dull boy*

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## To develop and validate a **Virtual Hosting Environment (VHE)** for application service providers

### An advanced ICT environment for

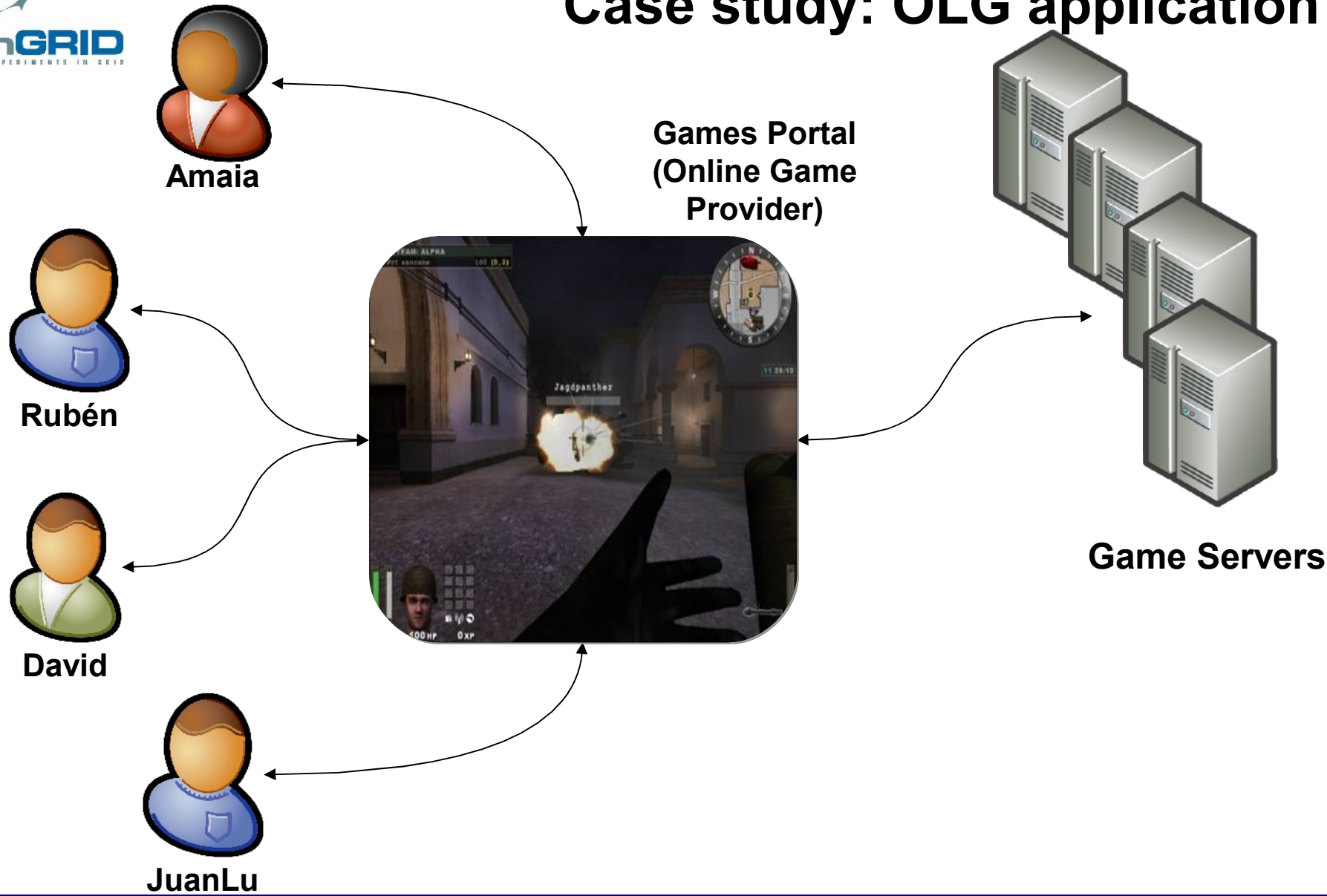
- integrating **business services across enterprise boundaries**, and
- **virtualising the (cross-organisation) ICT environment** where these services operate

### An enabler of new SaaS provisioning models that

- exploit **economies of scale for the business & ICT infrastructure service providers**
- have **shorter concept-to-market time-scales** by enabling rapid service composition and exposure of SaaS capabilities

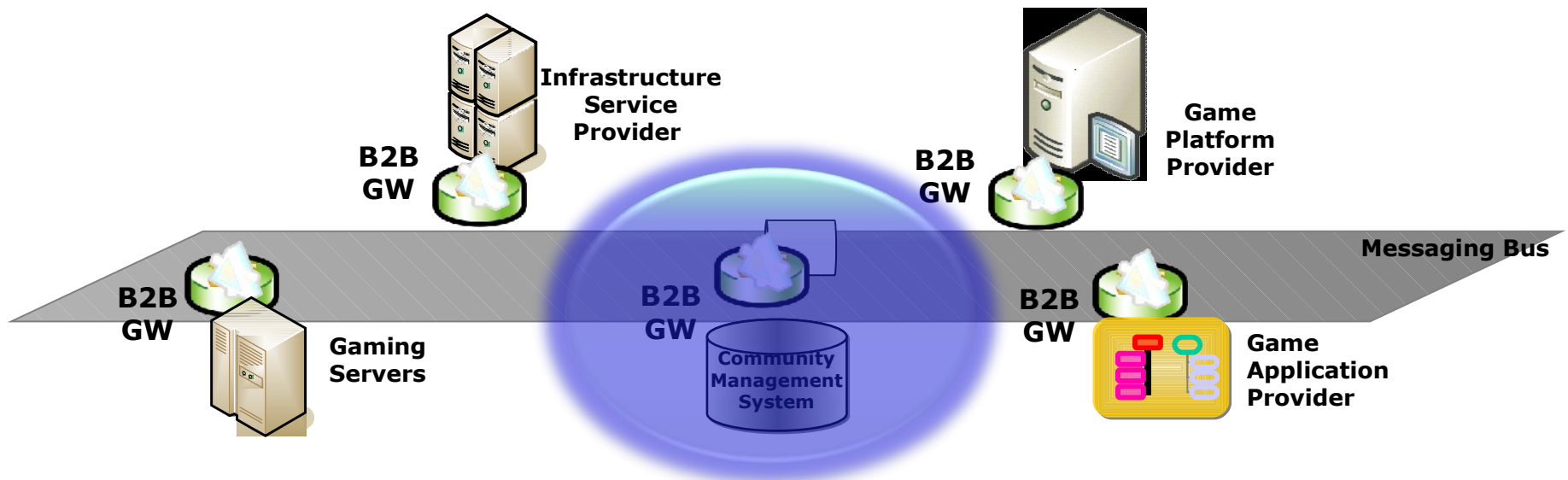
# BE09 goal

## Case study: OLG application



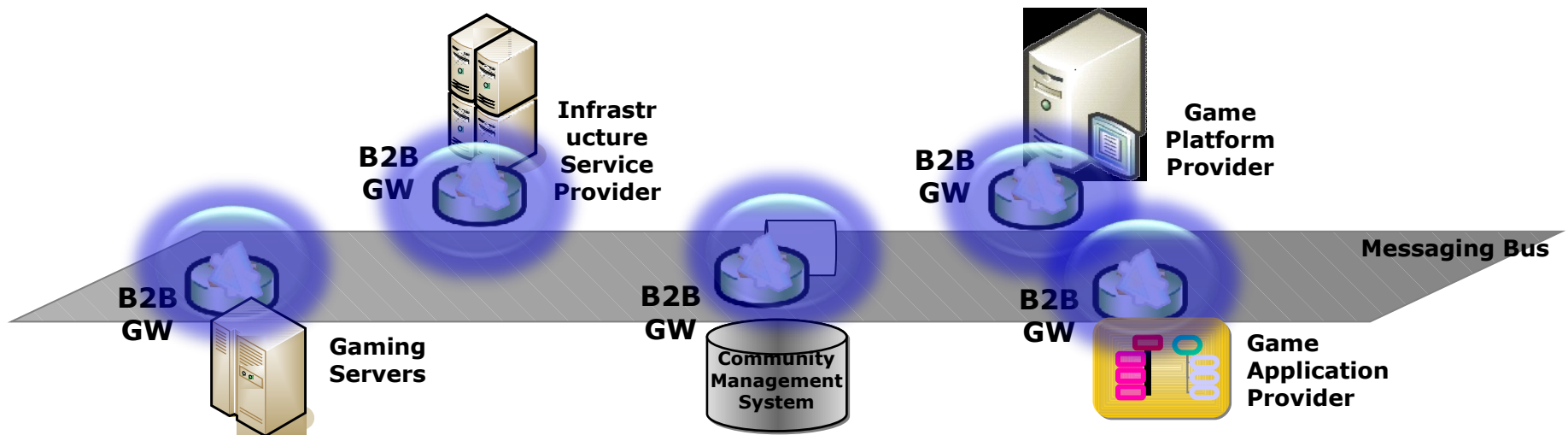
# VHE: key concepts

- **Virtual Organisation (VO) Management Service**
- **B2B Service Gateways**
- **Hosting Environment**
- **Value-Adding (infrastructure) Services**



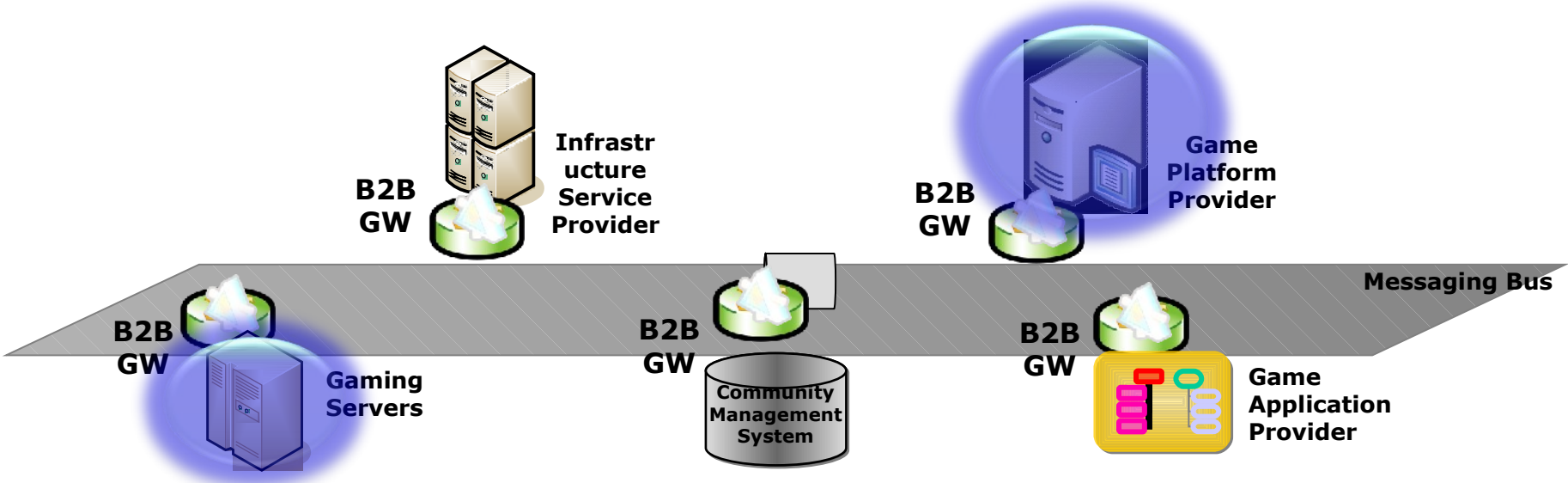
# VHE: key concepts

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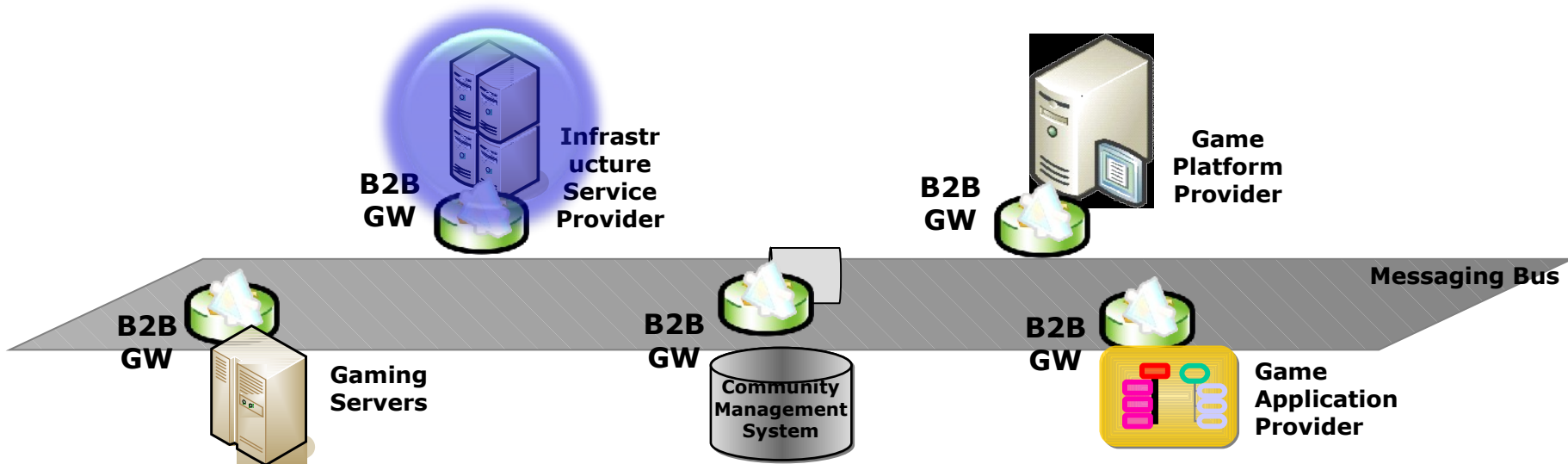
# VHE: key concepts

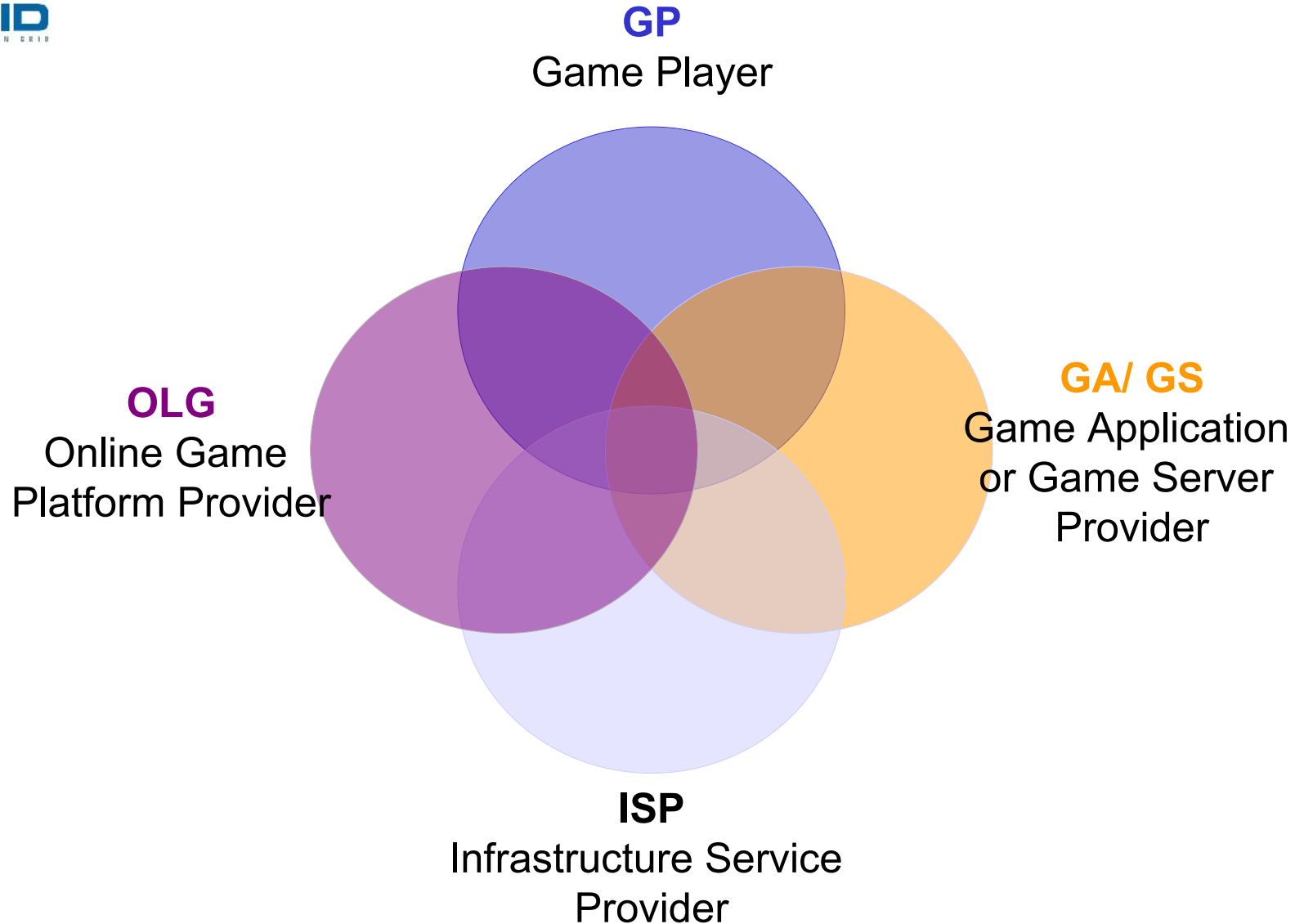
- Virtual Organisation (VO) Management Service
- B2B Service Gateways
- **Hosting Environment**
- Value-Adding (infrastructure) Services



# VHE: key concepts

- Virtual Organisation (VO) Management Service
- B2B Service Gateways
- Hosting Environment
- Value-Adding (infrastructure) Services





## Games Player (GP)

- Plays multiplayer games
- Member of online gaming communities
- Is a customer of the Online Games Platform Provider



## Games Server Provider (GA/GS)

- Offers game host environments
- Advertises game application services that meet certain QoS levels
- Participates in VO formed by OLG



## Online Games Platform Provider (OLG)

- Identifies business opportunity
- Selects the game titles to offer
- Find game providers
- Forms the VO for the OLG service
- Manages the lifecycle of matches for the selected game title

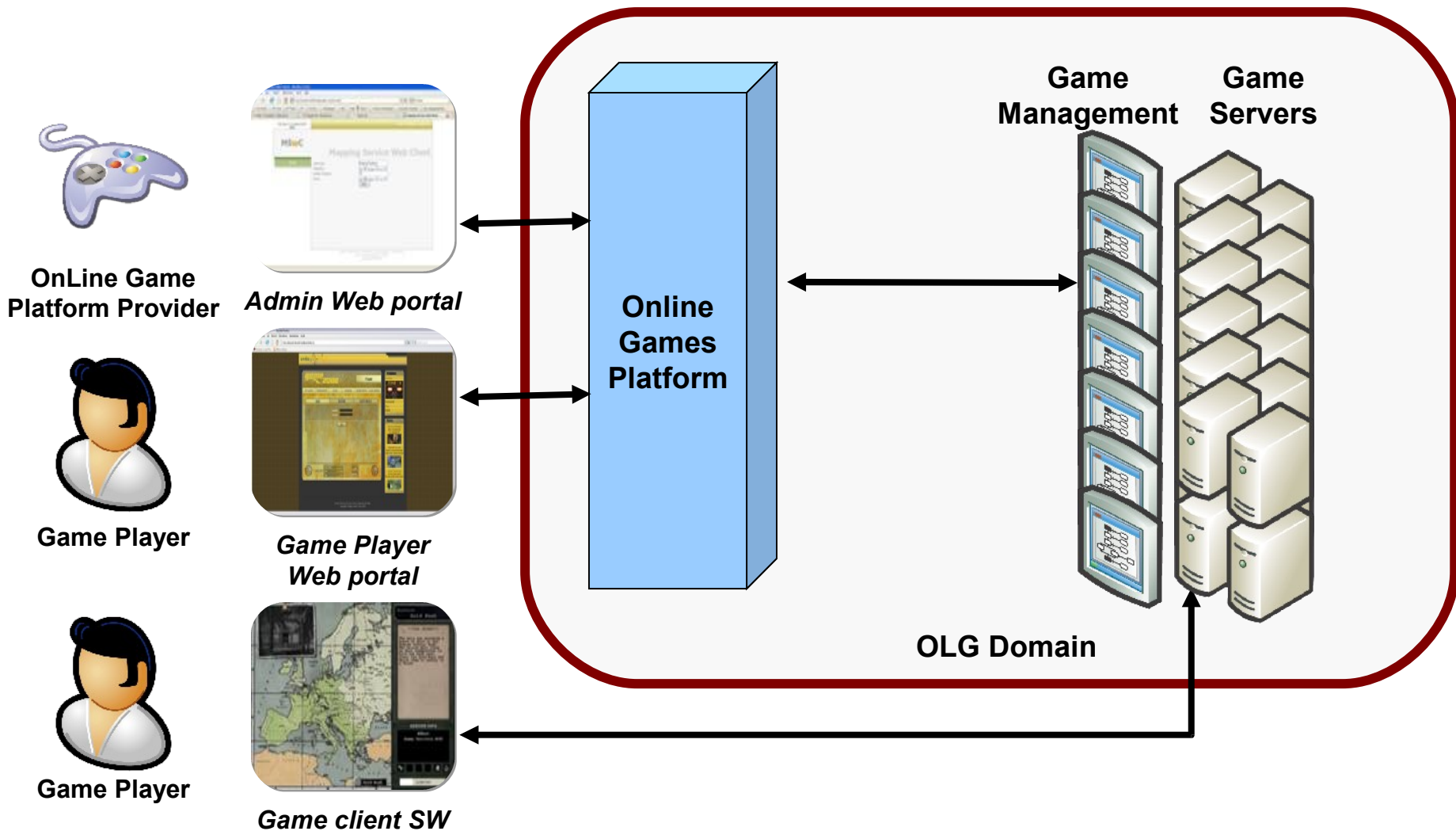


## Infrastructure Provider (ISP)

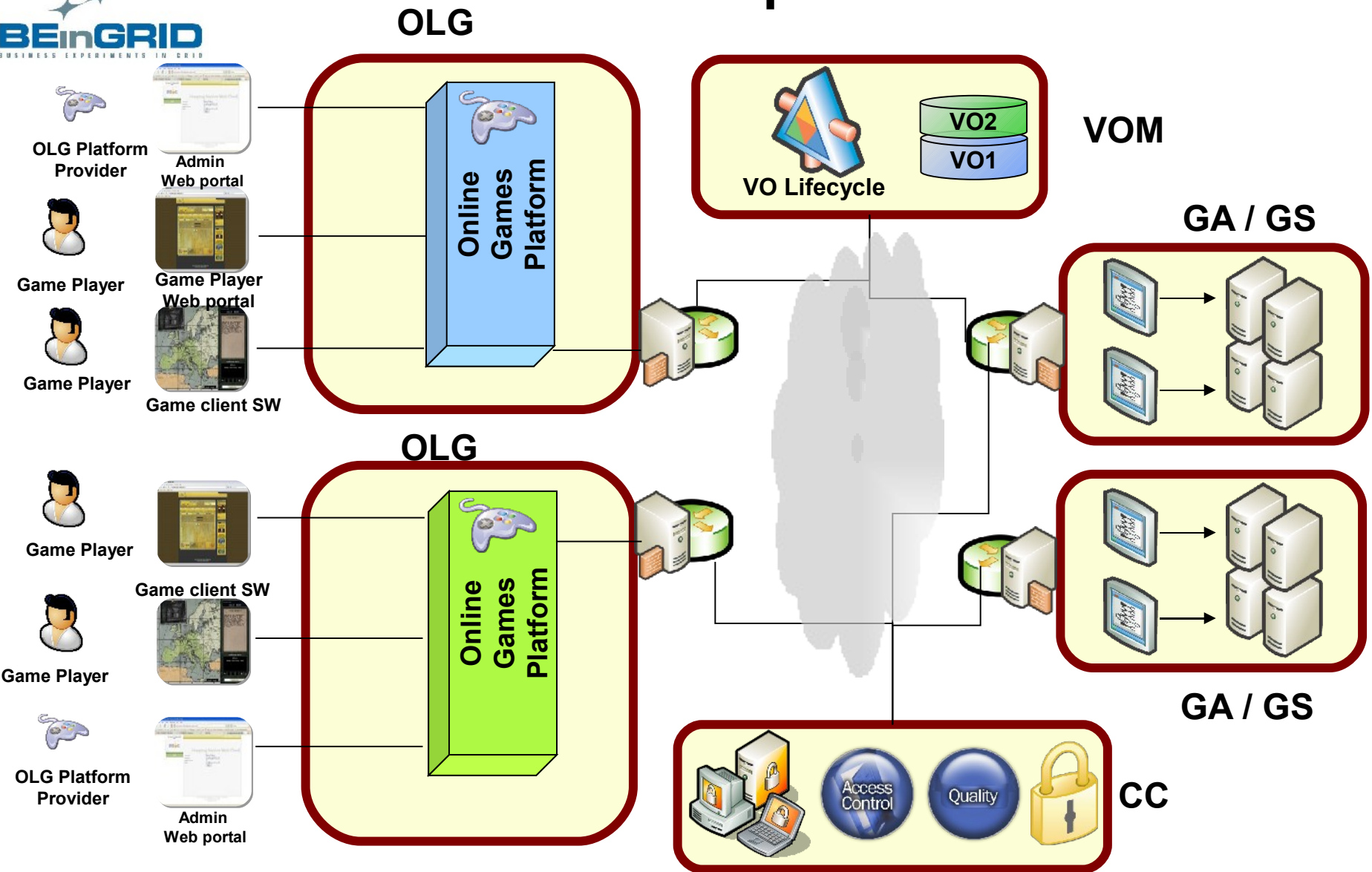
- Enables lifecycle management of VO for online game provisioning
- Mediates discovery of GA/GS by OLG
- Brokers agreements between them
- Facilitates use of common capabilities offered by third party providers
- Offers business service registries



# OLG platform without VHE



# OLG platforms over a VHE

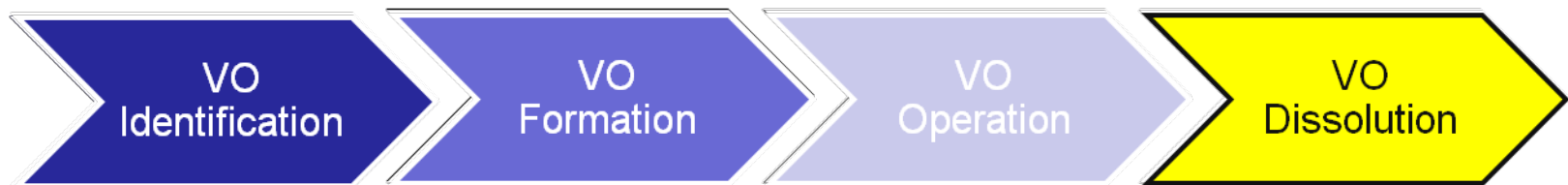


# Actors: Benefit of VHE for the OLG

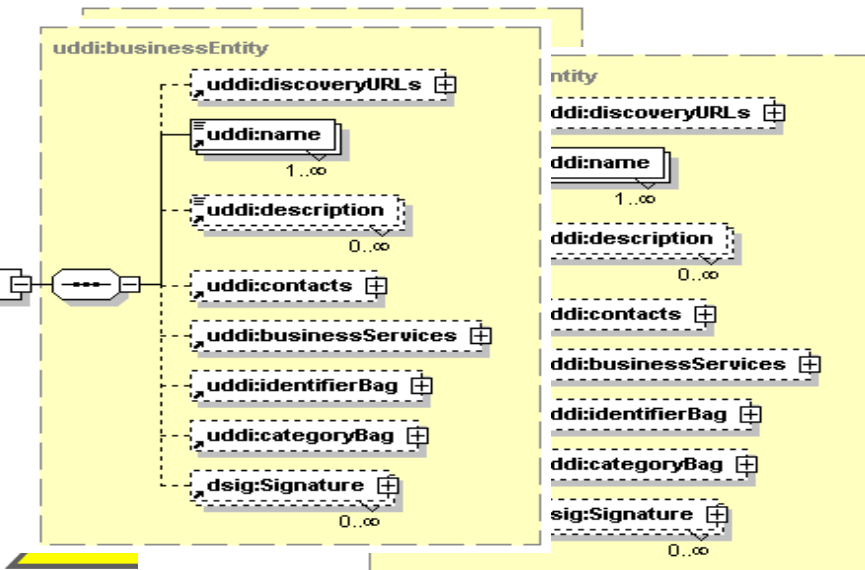
Before BE09 (without VHE)	After BE09 (with VHE)
<p>OLG has to invest on its own ICT infrastructure in order to:</p> <ul style="list-style-type: none"> <li>- host and execute games</li> <li>- set up the back-end of an on-line gaming environment</li> </ul>	<p>OLG will use the VHE in order to exploit economies and reduce ICT investment by:</p> <ul style="list-style-type: none"> <li>- Creating on-demand and managing a VO</li> <li>- Selecting game services from other (GA/GS) and remotely manage the life-cycle of their instances</li> <li>- Rapidly integrating outsourced common capabilities (i.e. SLA mgmt, identity federation, access mgmt, and security) from specialised infrastructure service providers</li> <li>- Integrating all the above on the basis of high-level processes, policies and agreements</li> </ul>

# Lifecycle view of the scenario

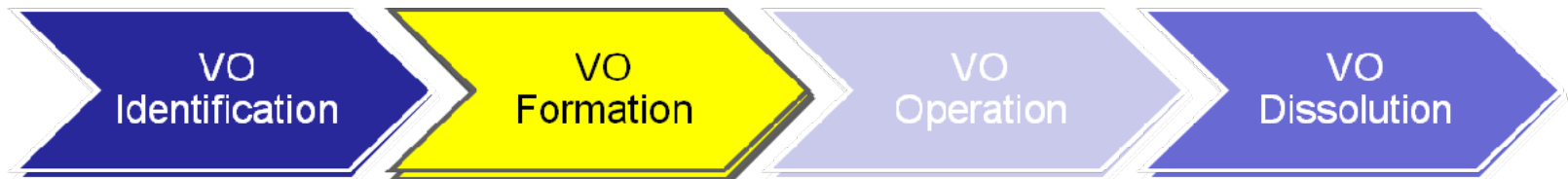
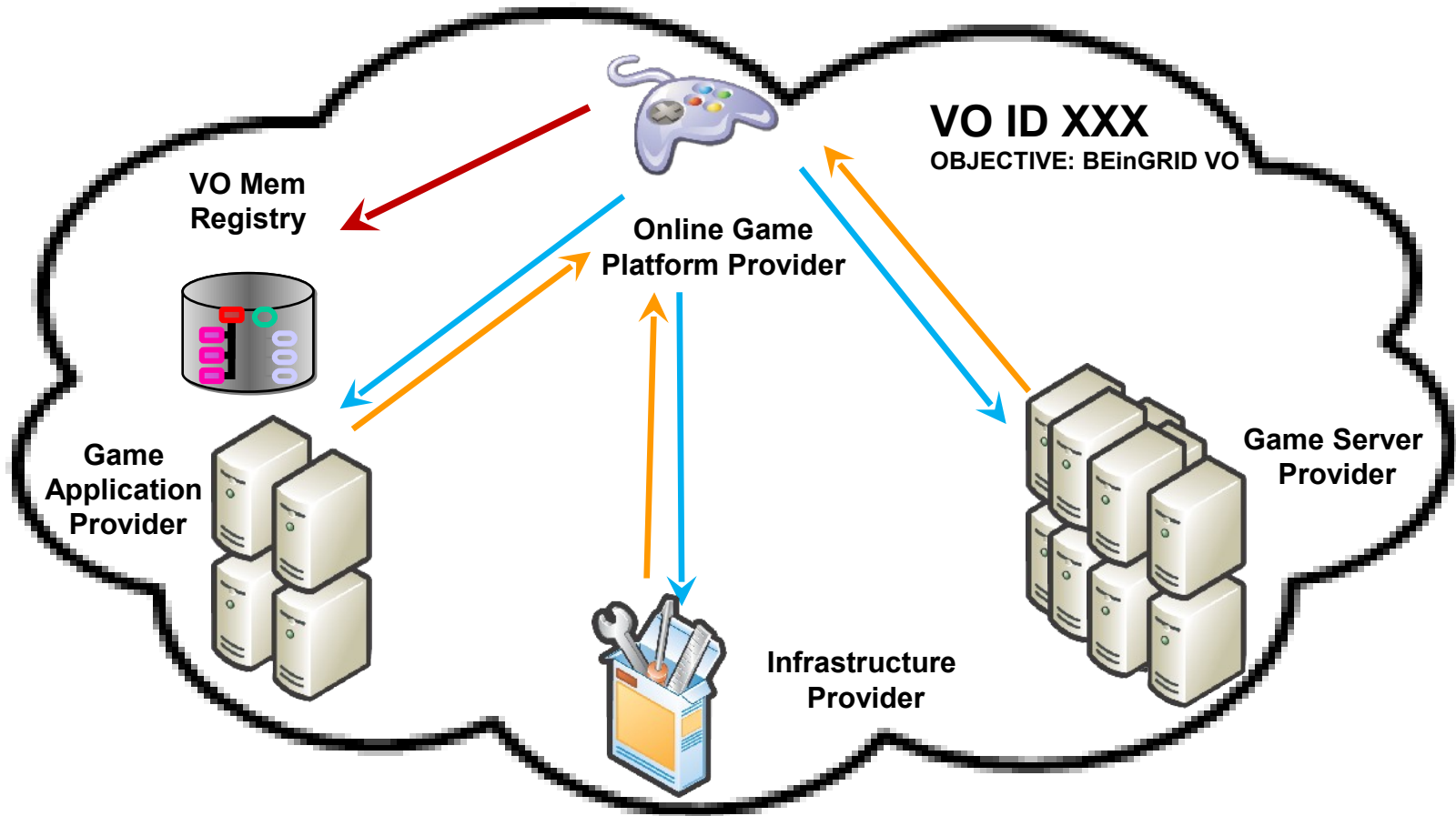
- Prerequisites
  - GA / GS advertise their capabilities (e.g. game titles)
- VO lifecycle
  - VO Identification
    - Business Objective Definition / Process Definition
  - VO Formation
    - Business Partner Selection & Acceptance
    - Circle of trust definition
  - VO Operation
    - Automatic configuration of the enabling ICT infrastructure
    - Match lifecycle management
  - VO Dissolution
    - Dissolve agreements, free resources



# VO Identification



# VO Formation

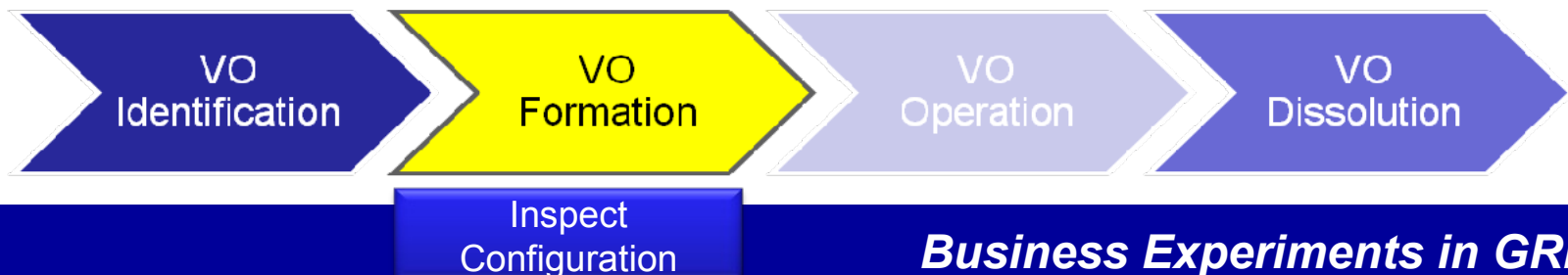


# Inspect Configuration

- Each partner can use their Gateway management interface to 'inspect' the configuration of their infrastructure. By now the following changes have occurred:
  - The **infrastructure services** supporting this VO have been integrated and configured
  - Their **Identity Provider** has *built trust* with the Identity Providers of other VO partners.
  - **Baseline configuration** defining who can issue policies and SLAs have been activated
  - For each actor **VO-specific policy templates** about QoS, identities, access, billing, etc, have been created in a policy repository of their Gateway;

This configuration is associated with a **unique VO-ID**

- *Different configurations may exist and enact simultaneously over a virtualised infrastructure*
- Each VO partner can access a VO specific view of the VO Registry
  - **Discovery** for VO members is limited to the services and SLAs offered within the scope of the VO
  - A policy correlating high-level QoS requirements with ICT metrics has been instantiated (**mapping service**)



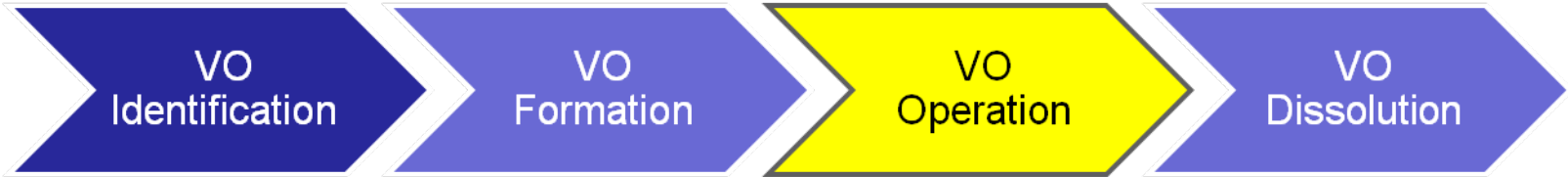
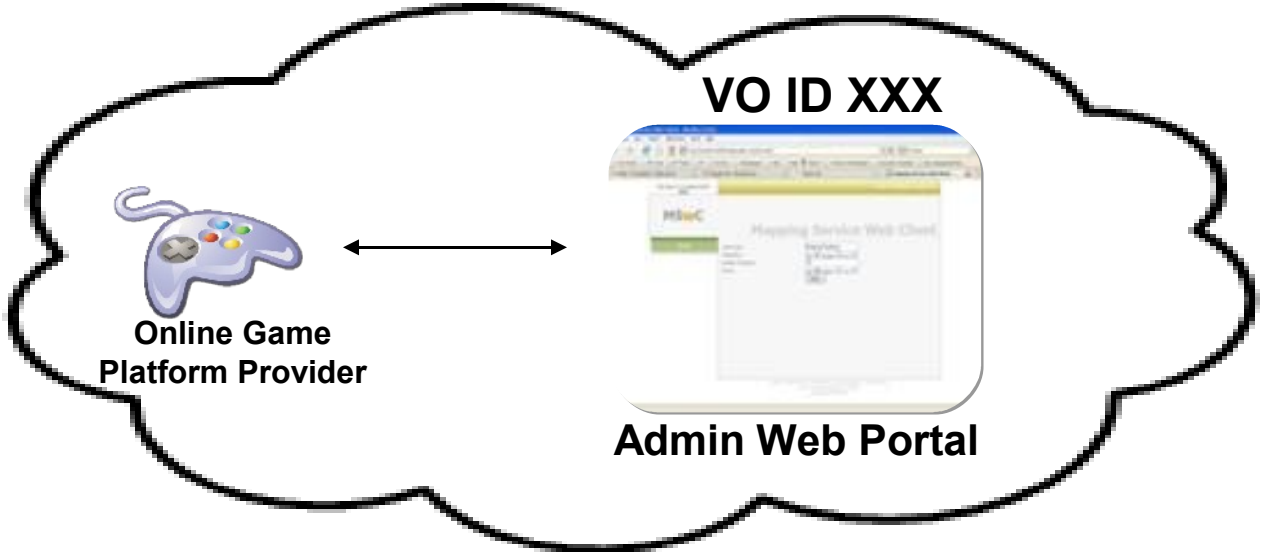
# VO Toolkit (VOTK) Initiator Edition – *Andago (OLG)*

Virtual Organisation (VO) Management  
Service





- Before players can select and play a match, the Administrator of the OLG must create a match of the EnemyTerritory game title
  - He uses the administration Web portal of the OLG



- **During the match creation, the Infrastructure Provider sets up and configures all the management services**
  - **Configures the B2B GW and finalise the agreements** ?
  - **Configures the common capabilities**
    - **set-up the right metrics to be monitored and evaluated against the SLO at run-time**
    - **update the policy and Id Mng components (PEP, PDP, STS) to ensure secure E2E interactions**
  - **Updates VO specific Service Registries**
    - **Introduce new access points**



# Match Creation Video

- **OLG View**
  - OLG administrator portal
  - Mapping Service
  - Service Locator
- **Member View**
  - B2B Gateway
  - Configuration of the Infrastructural services (PEP, PDP, STS, SLA)

# Agasy User Interface

## Looking for a match

Online Games Platform Provider (OLG)



# Virtualization Service Policy Store (VS)

## *Sunny's Perspective*

BT Gateway Governance Layer

Value-Adding (infrastructure) Services



# The Security Token Service

Security Subsystem

Value-Adding (infrastructure) Services



[Click to view](#)

# The XML Security Gateway - Events

Security Subsystem

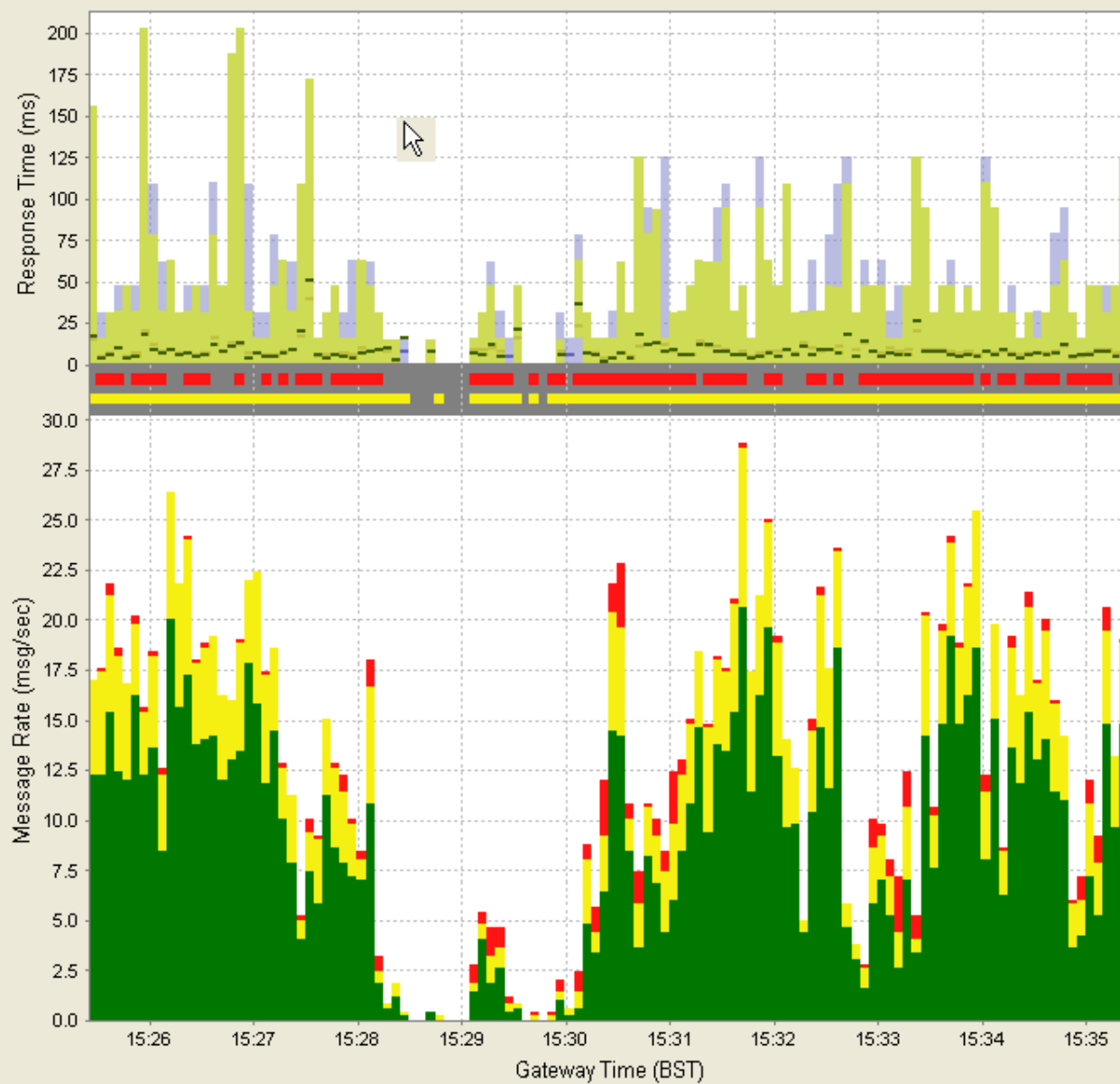
Value-Adding (infrastructure)  
Services



Gateway Node: &lt;All Nodes&gt;

Published Service: &lt;All Services&gt;

Resolution: Fine (5 seconds)



Last 5 Seconds

From: 2007-06-20 15:35:20

To: 2007-06-20 15:35:25

Response

Time	Front End	Back End
max.	125 ms	125 ms
avg.	22 ms	24 ms
min.	0 ms	0 ms

Routing Failure	1 msg
Policy Violation	20 msg
Success	74 msg
Total	95 msg

# SLA Visualizer

SLA Subsystem

Value-Adding (infrastructure) Services



Start Listening

Stop Listening

Clear Output

Output

Large empty rectangular area for displaying output.

Subscription

Notification Producer EPR

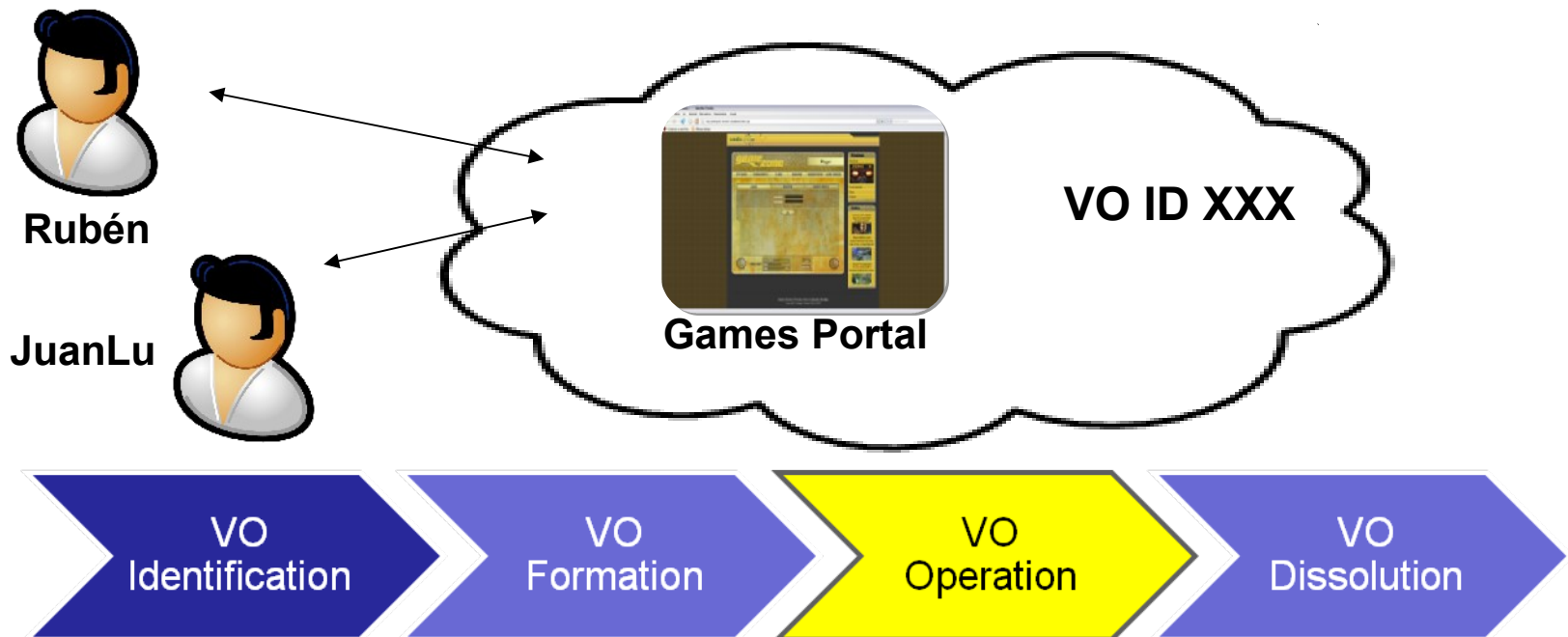
Topic

Namespace

Subscribe

# Player Joins

- John and Mary, two Game Players, want to join a match of the Enemy Territory Game Title
- They use the web portal provided by the OLG provider to find and select a previously created match
- For each “Player” joining the match an SLA Contract is established/delivered

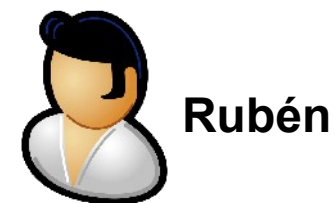


# Player Joins

[Player perspective]



OnLine Game Platform Provider



JuanLu

Enemy Territory

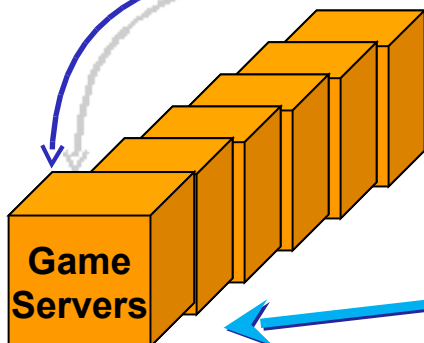
- GR= high; AV= high
- GR= Medium; AV= high
- GR= Low; AV= Medium

Pac Man

- GR= Low; AV= high
- GR= Low; AV= high
- GR= high; AV= Medium

Games Portal

Game Client Software



VO ID XXX



**When John and Mary play a match, the execution of the match is managed**

- **Game Servers are continuously monitored**
- **The QoS metrics present in the “Agreement Contract” are “Measured” and “Evaluated”**
  - **Violations are raised if the contract terms are not respected**
- **unauthorised accesses to Game servers / Game application are detected and blocked**





**Objective:**  
**Seawall Battery**

\*\*\*TOP SECRET\*\*\*

The mighty Axis shore battery 'Siegfried' is harassing Allied shipping in the Mediterranean. The Axis must protect Siegfried from Allied attempts at sabotage.

**SERVER INFO**

ETsancane  
Enemy Territory MOTD

Record  
Stop  
Pause

## Phased roll-out:

- Engage with a customer who needs to secure, reliable and high-performing exposure of hosted services: **B2B Gateway**
- As customer needs grow...
  - introduce Value-Adding Services (VAS) for
    - **Federated identity** and **access management**
    - **SLA monitoring** and evaluation.
    - other VAS such as those for remote presence, VOIP, etc...
- 3. As the number of VAS grows ...
  - introduce the customer to the **Governance** layer of the VHE
- 4. As the use of the infrastructure expands...
  - introduce VAS for **Virtual Organisation Management**

# Evaluation & Conclusions



## Core Team

BT & Atos are a strong core team

- Complementary objectives & strategy
- Well positioned to take advantage of the technology

## Vendor Engagement

Key Vendors have been engaged

- Axiomatics
- Layer 7 Technologies
- Vordel

## Competitors

...are still emerging

- Volatile market
- Reliance on SOA appliance vendors
- Emergence of network centric propositions
  - Service oriented infrastructure
  - Application Defined Networking
  - Cloud computing

## Early adopters

Early adopters have been engaged

Primary targets:

- BT Web 21C
- BT Service Delivery Platform

## New markets

consumer opportunities : IP TV, pervasive gaming, etc...

BE09 on-line gaming scenario to be used by corporate PR as innovation demonstration in order to attract customers in the area



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# 09 BEinGRID

BUSINESS EXPERIMENTS IN GRID

So what are you waiting for? Let's **play!**

Thank you for your attention

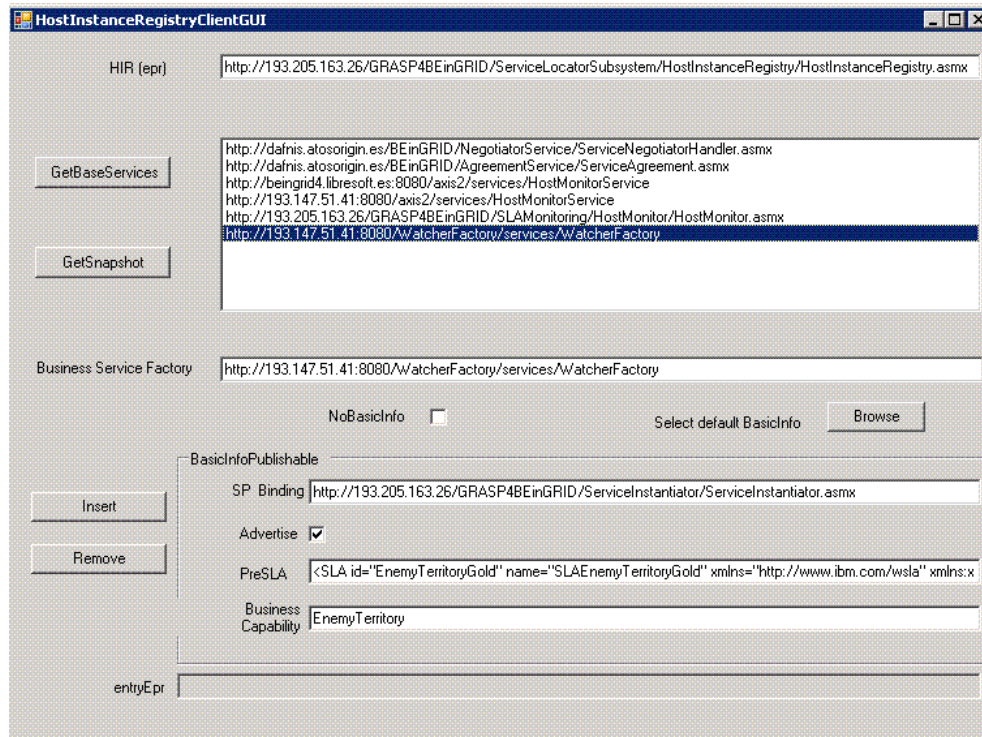
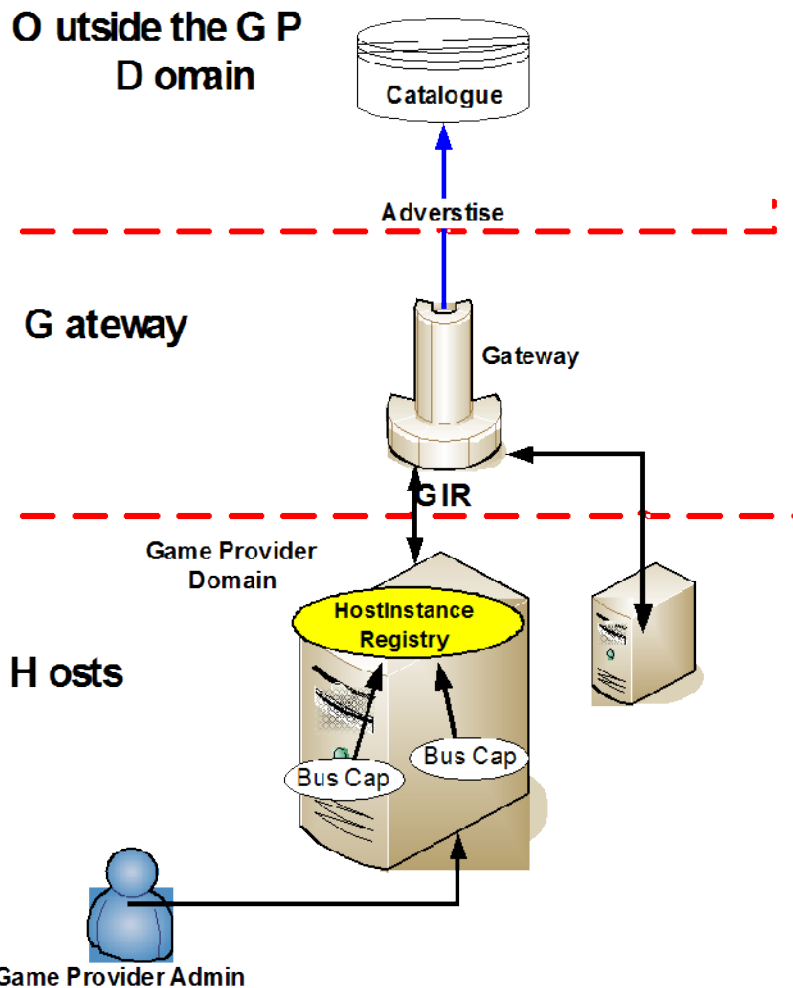


## Pre-Requirement Game Providers advertise their capabilities

- Done off-line by the Game Provider Administrator
- The Game Provider presents a single point of access and a two level hierarchy of registries to publish its business capabilities
  - One on each hosts of the provider domain – Host Instance Registry
  - One on the provider gateway – Gateway Instance Registry
- The Game Provider has a business relationship with an entity providing a general catalogue
  - If it wants, the Game Provider advertises to the rest of the world its capabilities via the catalogue

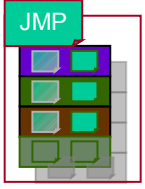


# Pre-Requirement Game Providers advertise their capabilities



# Match Creation

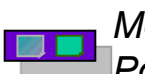
[Infrastructure perspective]



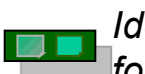
Group of policies re: GamesInstance1



Virtual Address re: GamesInstance1



Message Protection & Routing Policy for PEP re: GamesInstance1



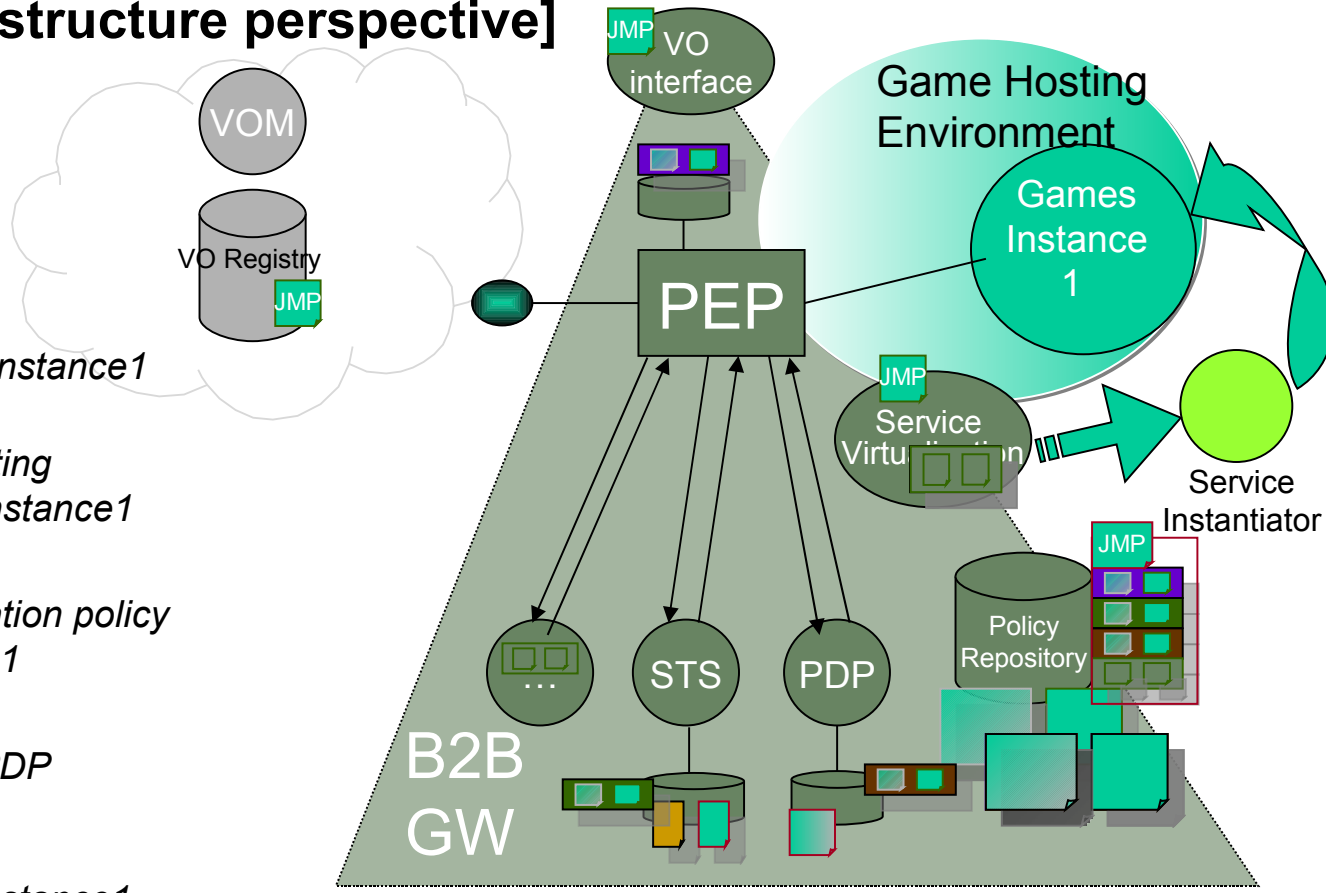
Identification & token validation policy for STS re: GamesInstance1



Access Control Policy for PDP re: GamesInstance1



... policy for ... re: GamesInstance1



AGASY Game Provider FID Provider biz card

Game Hosting Env FID Provider business card

Accept policies about Game Host Instance from Game Hosting Env and VOM

Game Hosting Env access policies:

from Game Hosting Env

from VO Manager

# OLG selects a game

I'd like to create a Game instance with the following capabilities.  
Firstly I have to search for it



Enemy Territory

- GR= high; VO\_ID: ACD\_23df; SP=XXX

- GR= Medium;

Discovery Service

- GR= high; VO\_ID: ACD\_23df; SP=YYY

Pac Man

- GR= Low; VO\_ID: ACD\_23df; SP=XXX

- GR= Low;

- GR= high;

Pre Contract

Mapping Policy

QoS Search Template

VO\_ID:  
AXB\_54xx

VO\_ID:  
AXB\_15Y

VO\_ID:  
ACD\_23df

VO Identification

VO Formation

VO Operation

VO Dissolution



Match Operation (e.g. GPP select a Game)

Experiments in GRID