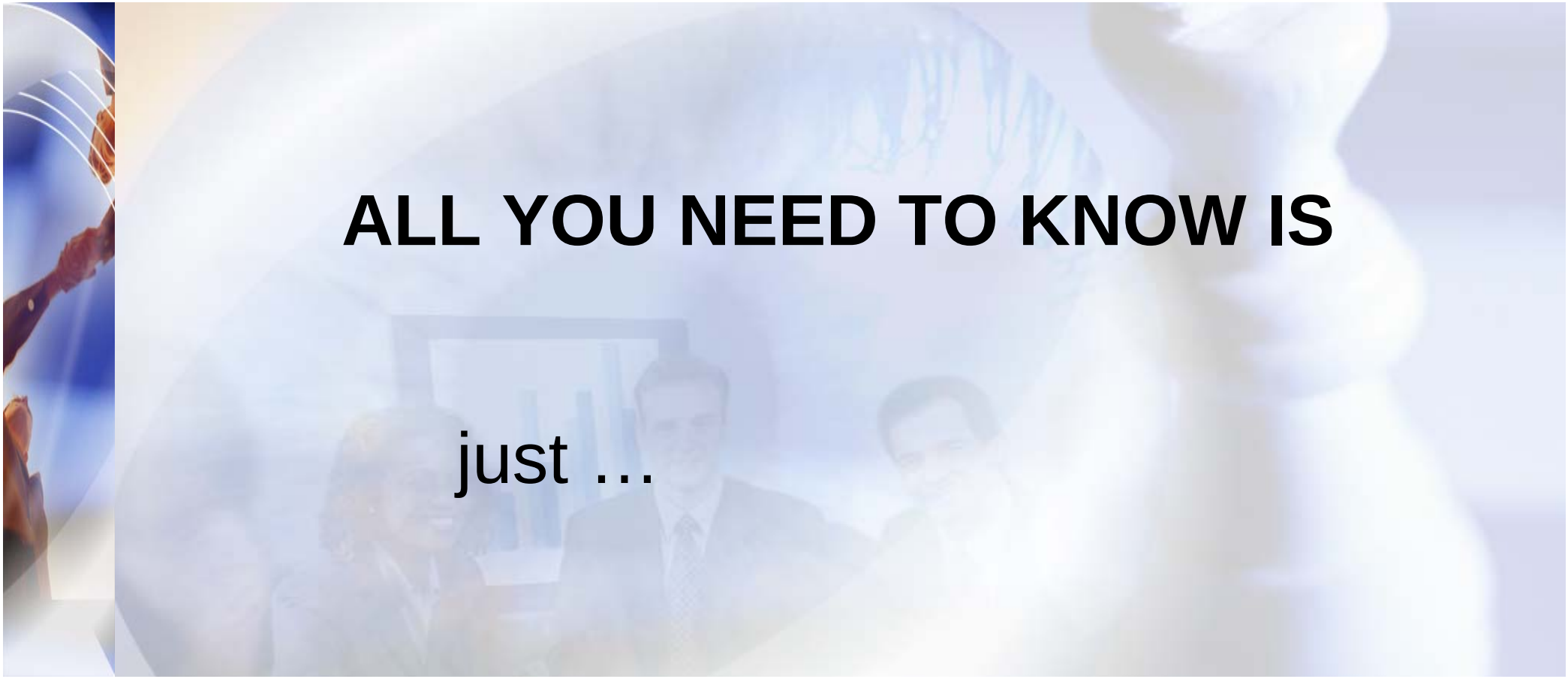
UNICORE in Production is easy to do

Sophia Antipolis
12. Oktober 2005

T-Systems
Solutions for Research GmbH
Gert Ohme

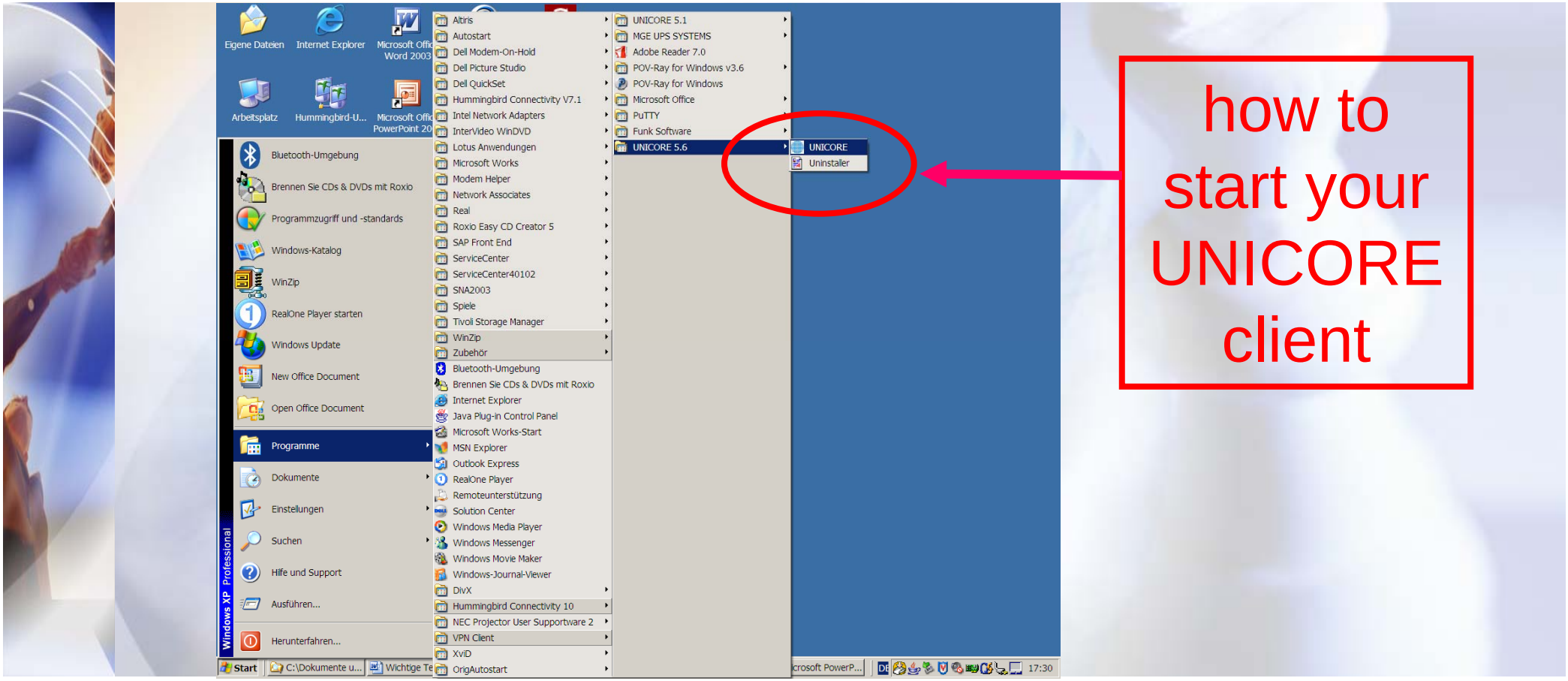
UNICORE in Production

Easy to use



UNICORE in Production

Easy to use



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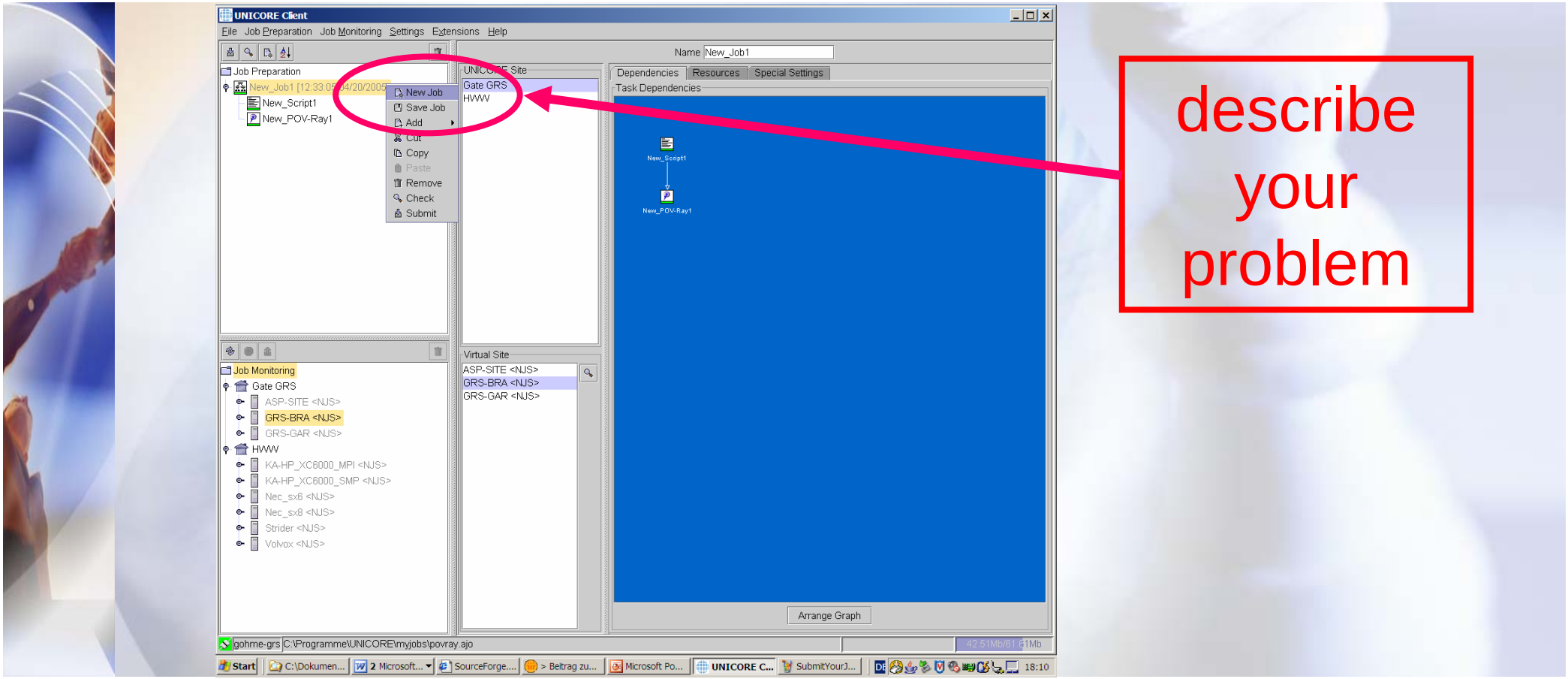

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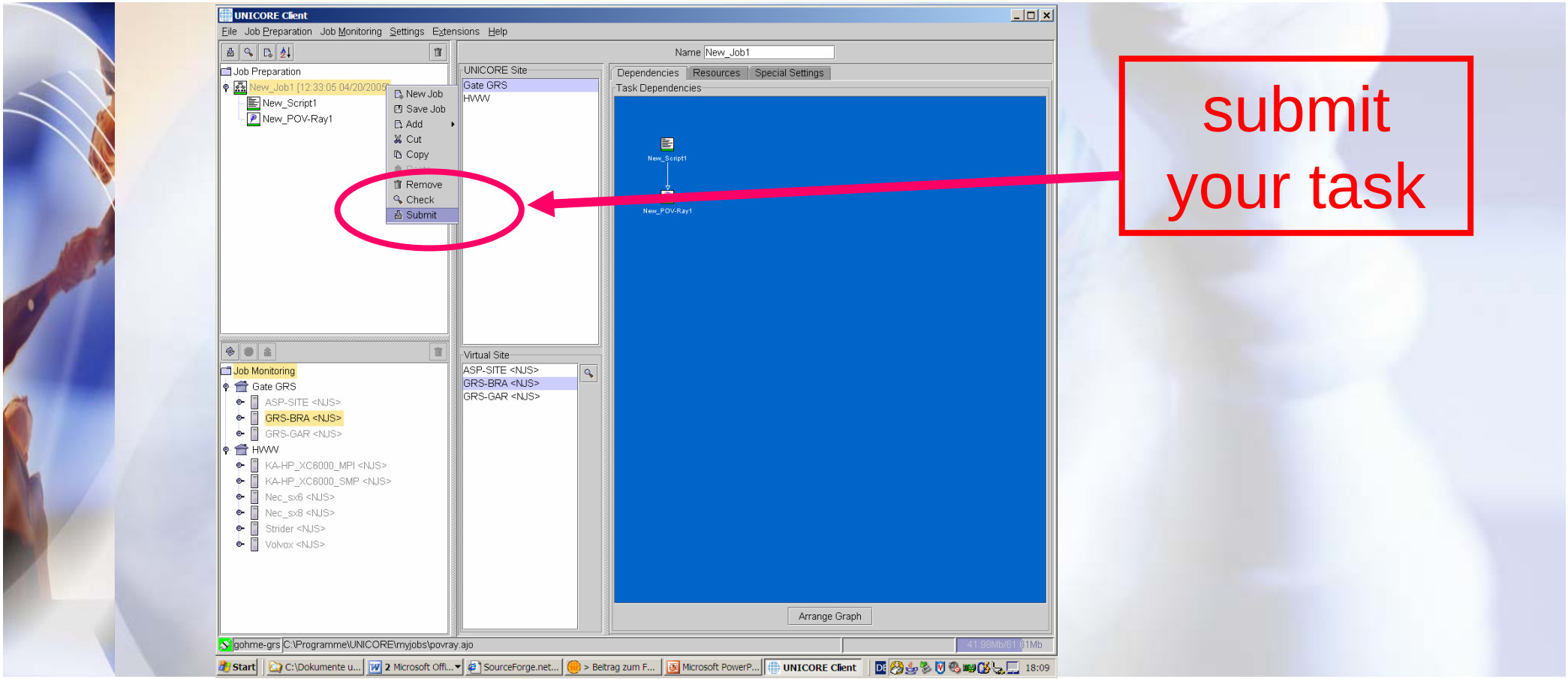

UNICORE in Production

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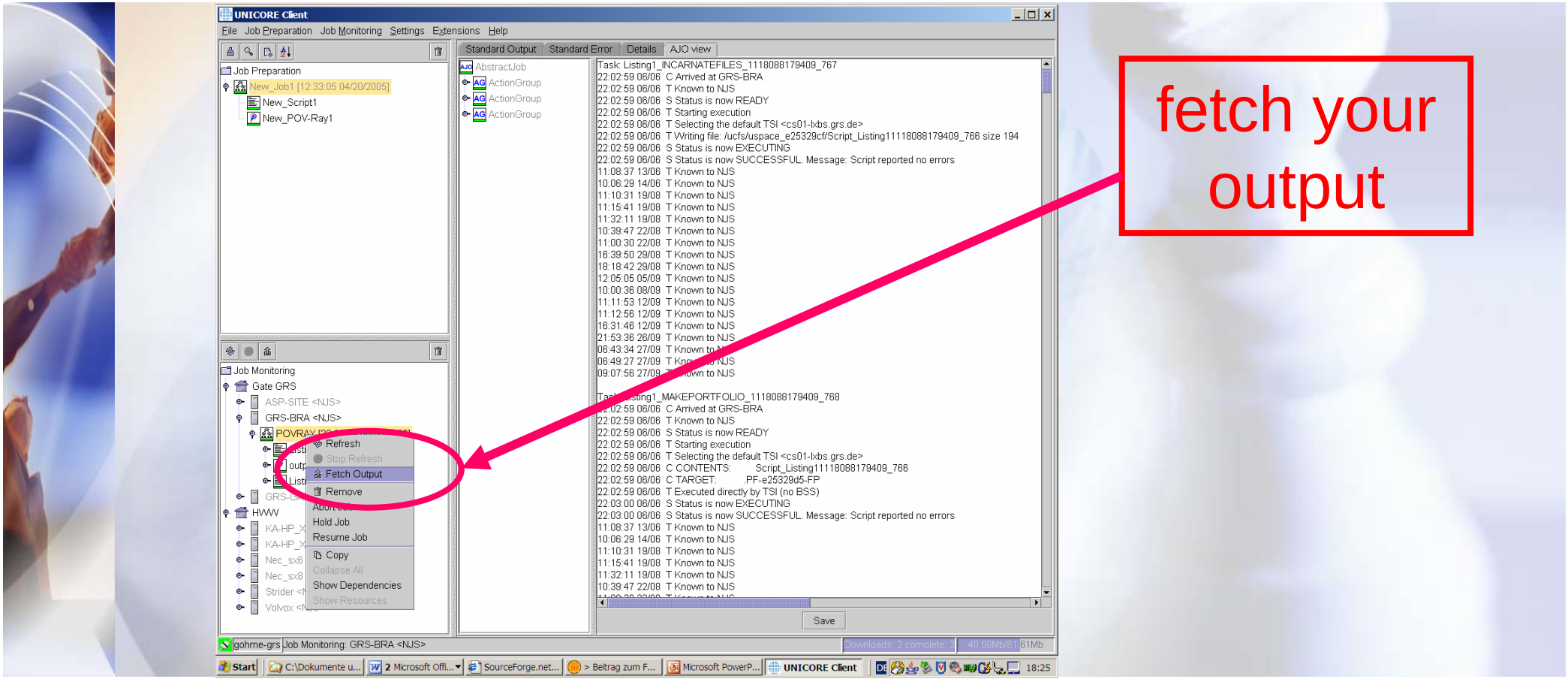

UNICORE in Production

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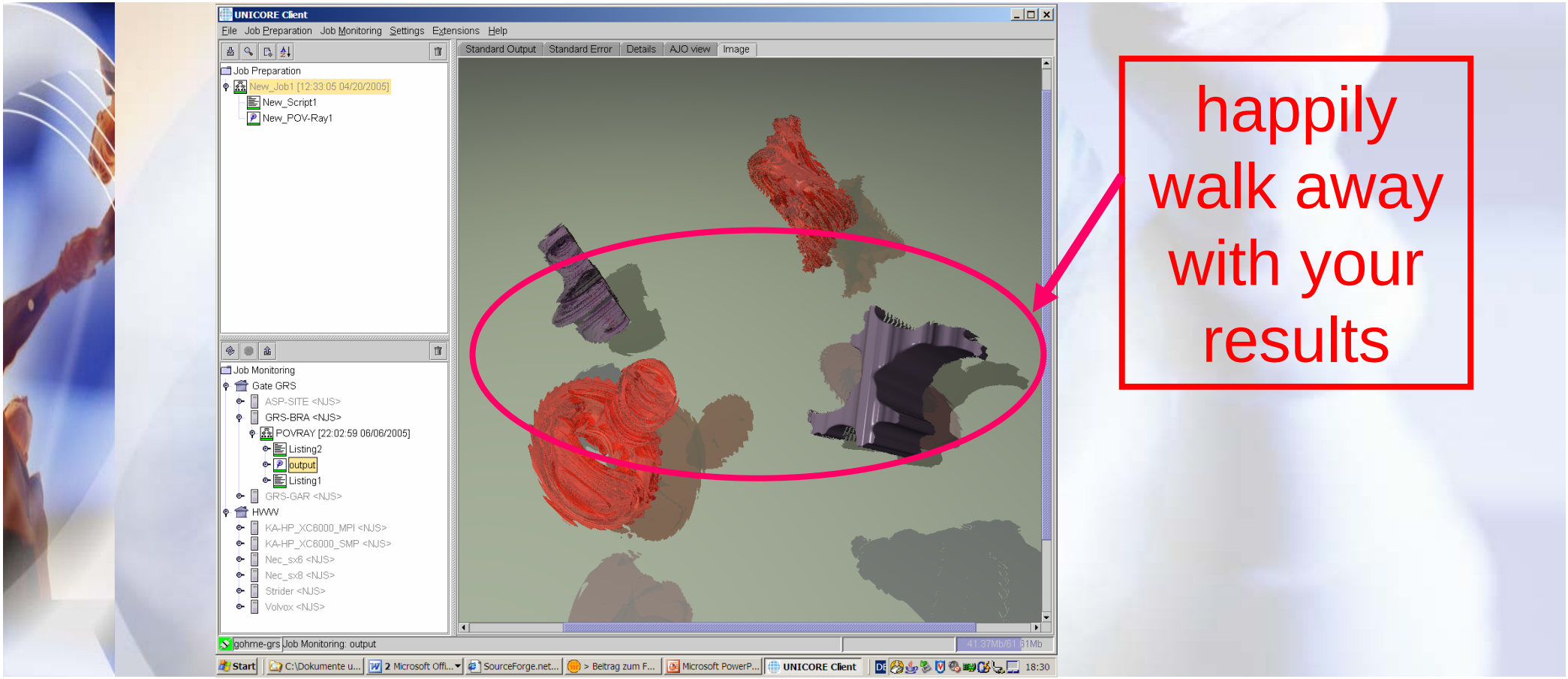
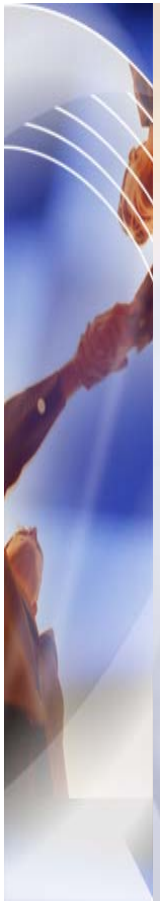


UNICORE in Production

Easy to use



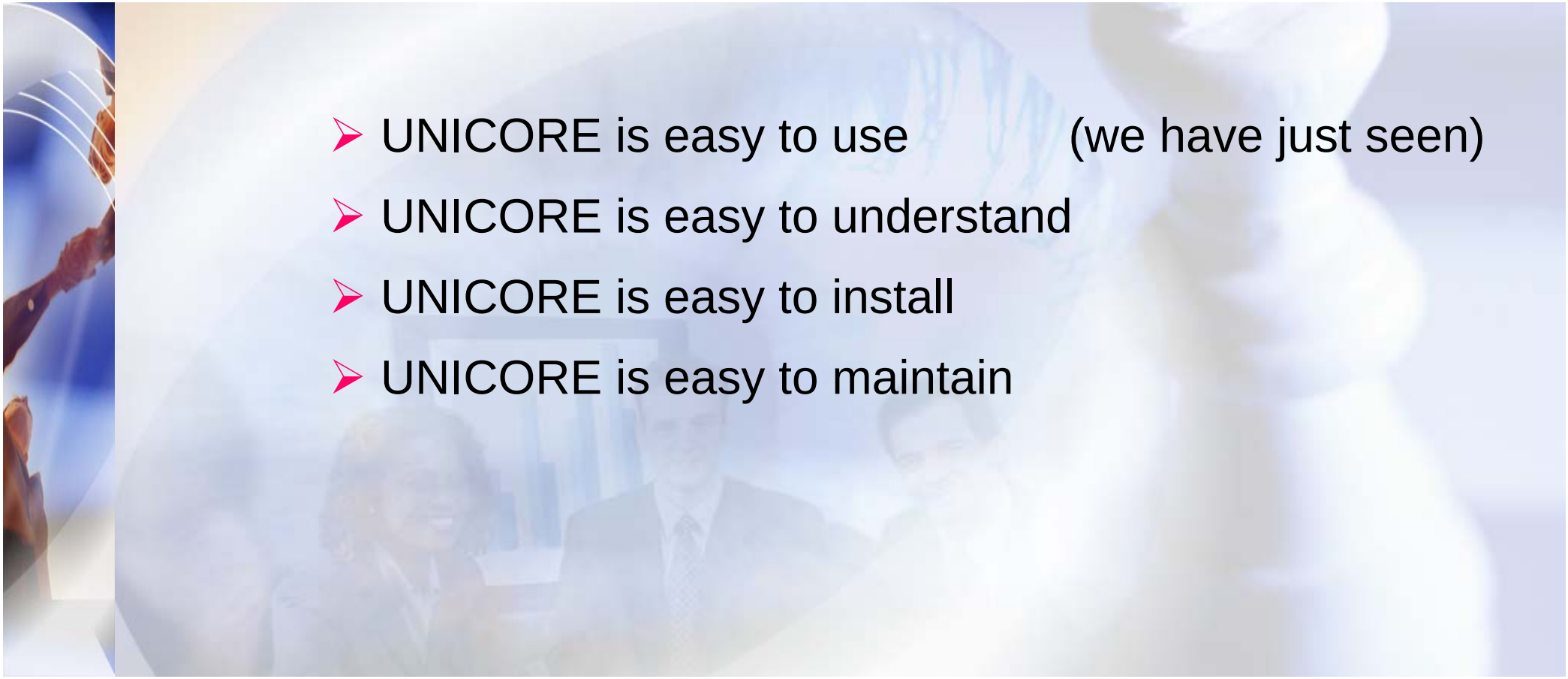
Thanks for listening to all of You,

which share the view of our customers ☺

UNICORE is such as easy to use !

UNICORE in Production

Easy to do: What next?



- UNICORE is easy to use (we have just seen)
- UNICORE is easy to understand
- UNICORE is easy to install
- UNICORE is easy to maintain

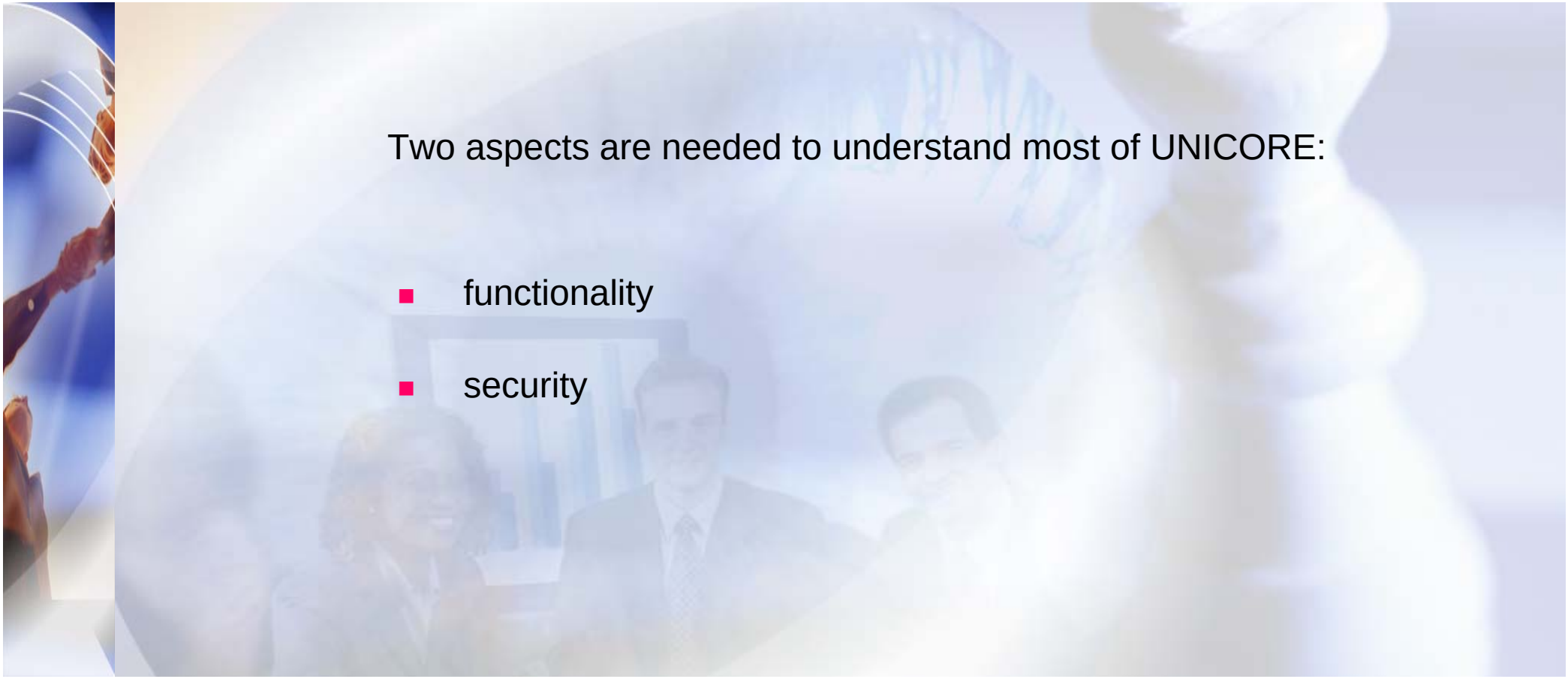
UNICORE in Production

Easy to do: What next?

- UNICORE is easy to use
- **UNICORE is easy to understand**
- UNICORE is easy to install
- UNICORE is easy to maintain

UNICORE in Production

Easy to understand

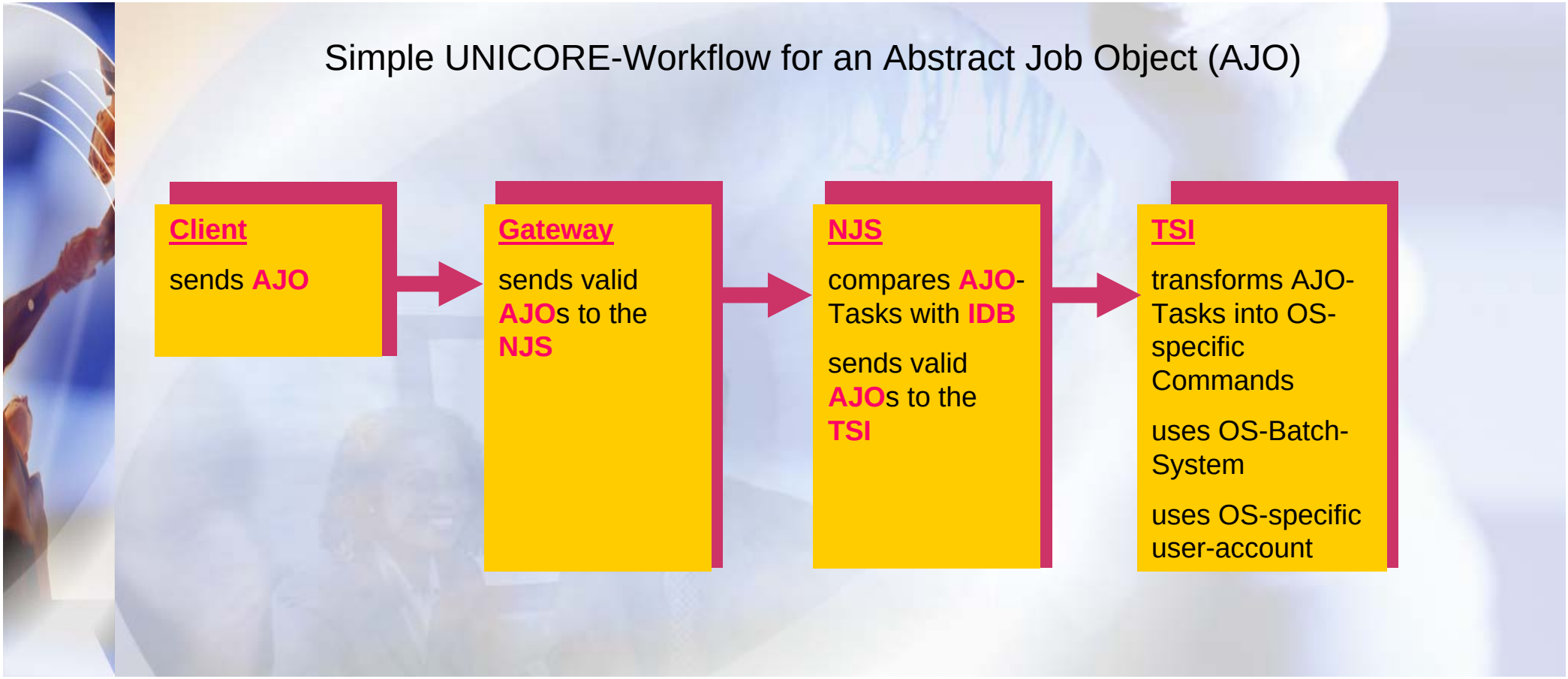


Two aspects are needed to understand most of UNICORE:

- functionality
- security

UNICORE in Production

Easy to understand : functionality



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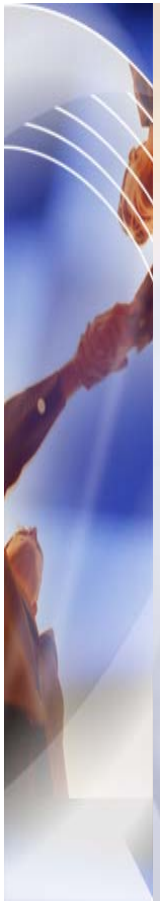
Easy to understand: functionality



UNICORE Vocabulary (the 9 technical terms) at a glance

- Client
- AJO (Abstract Job Object), messages between client and server
- Server Infrastructure
  - Gateway to USite (UNICORE Site)
  - NJS (Network Job Supervisor) manages
    - UUDB (Unicore User Database)
    - IDB (Incarnation Database)
  - TSI (Target System Interfac) on a VSite (virtual server)

UNICORE in Production

Easy to understand : functionality

Building Blocks of UNICORE, Term 1

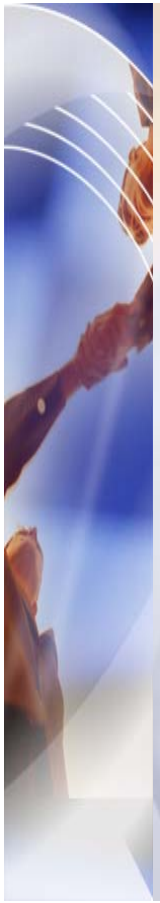
- Client

  The User Interface.

  You have already seen it.
  So we can go on.

UNICORE in Production

Easy to understand : functionality



Building Blocks of UNICORE, Term 2

- AJO (Abstract Job Object)

  This one contains either your requests or your results.

  The UNICORE-client first sends the AJO to the target , i.e. the Grid-Resource on the server side, that you asked for.

  The target sends the AJO back at the client, when you are asking for your results.

  Because of its nature, UNICORE-users and maintainers mostly do not notice, that it exists. Only code-diggers see, that it is there.

UNICORE in Production

Easy to understand : functionality

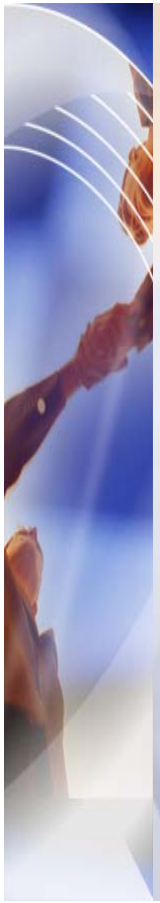
Building Blocks of UNICORE, Terms 3 and 4

- IDB (Incarnation Database)
  Data description of the target:
  The IDB describes the available resources at the target system.

- TSI (Target System Interface)
  Funtional description of the target:
  The functional layer works on the target system and connects the real world operating system with the abstract UNICORE world.

UNICORE in Production

Easy to understand : functionality



Building Blocks of UNICORE, Terms 5 and 6

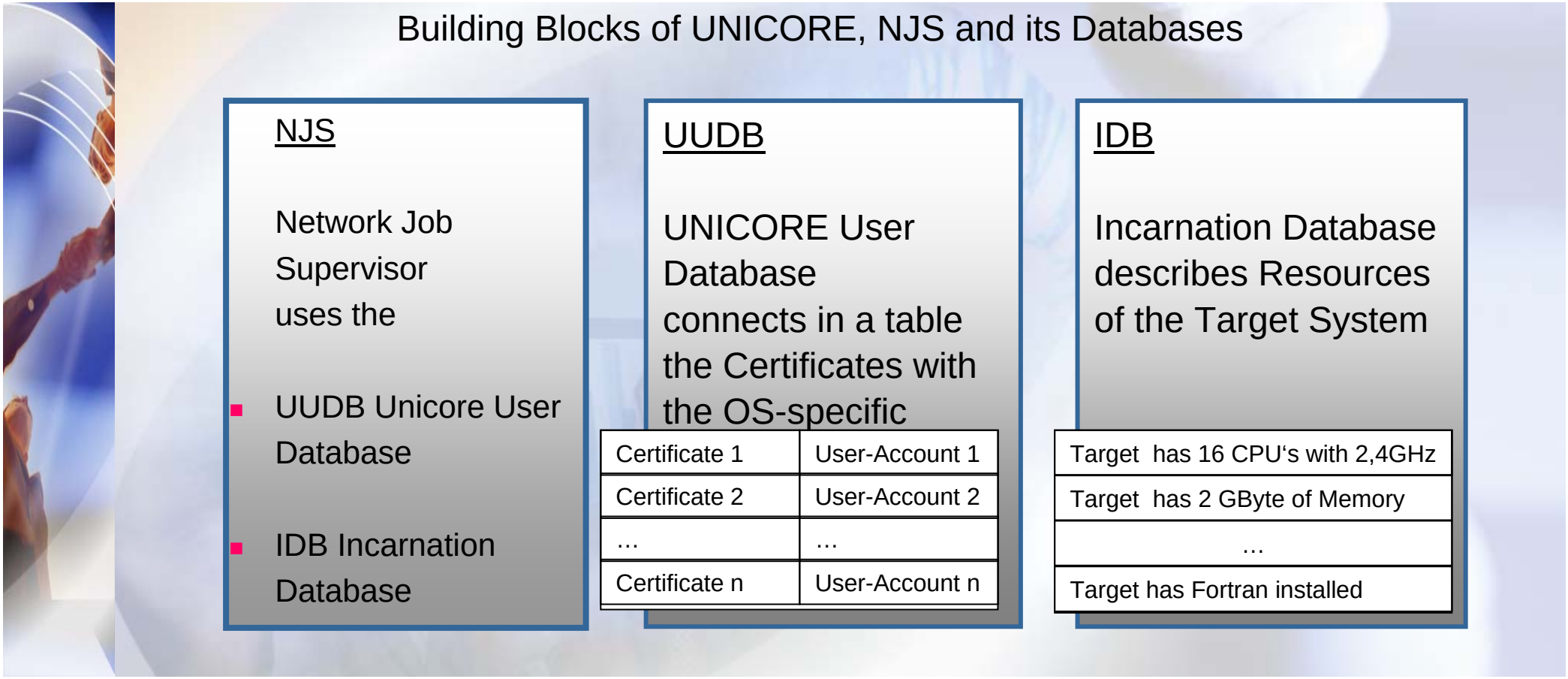
- UUDB (Unicore User Database)
  This database contains a table, which connects your certificate (i.e. your UNICORE-identity) with your user account on the operating system of the target.

- NJS (Network Job Supervisor)
  This code works like a servant of your UNICORE-task.

  On the front side, he identifies you, talks to your client and (if satisfied) writes down, what your wishes are.
  On the back side he acts as a shepherd, when your (sheepish?) task is handed over to the TSI of the target system.

UNICORE in Production

Easy to understand : functionality



UNICORE in Production

Easy to understand : functionality

Building Blocks of UNICORE, Terms 7, 8 and 9

- Vsite (Virtual Site)
  a server with its hardware and software, with least a TSI and the IDB is available, is called Vsite
- Usite (Unicore Site)
  a collection of Vsites in an intranet behind a firewall is called Usite
- UNICORE-Gateway
  the guard placed in the DMZ of a firewall, which pre-checks incoming AJO‘s.

UNICORE in Production

Easy to understand: security

SECURITY

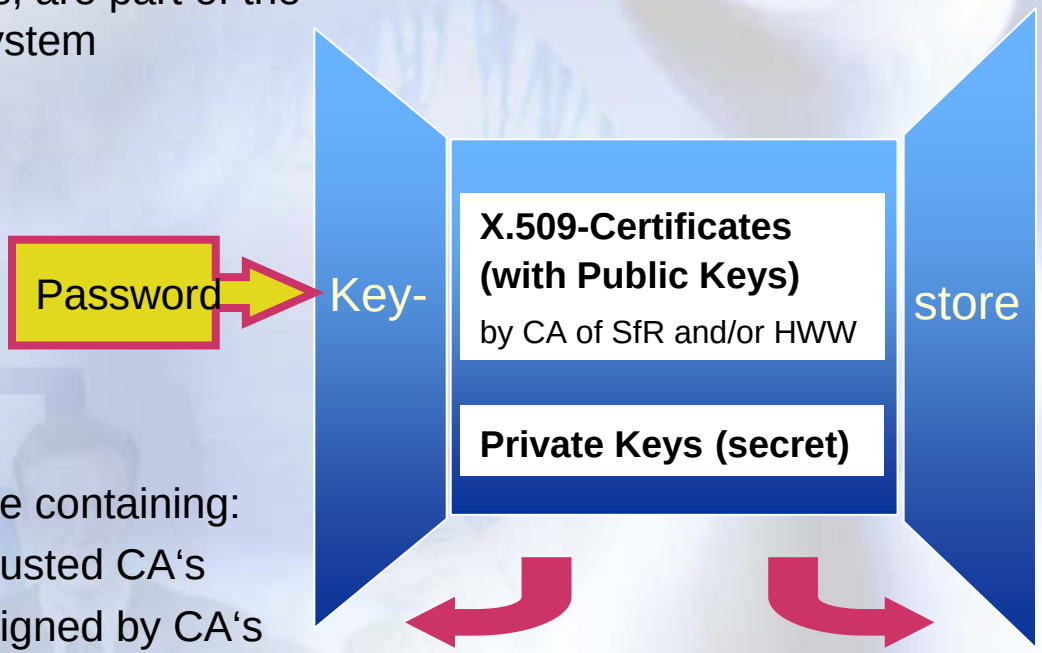
Security Aspects of UNICORE

UNICORE in Production

Easy to understand: security

Following Components, are part of the UNICORE-Security System

- Client (and plugins)
- Gateway
- NJS



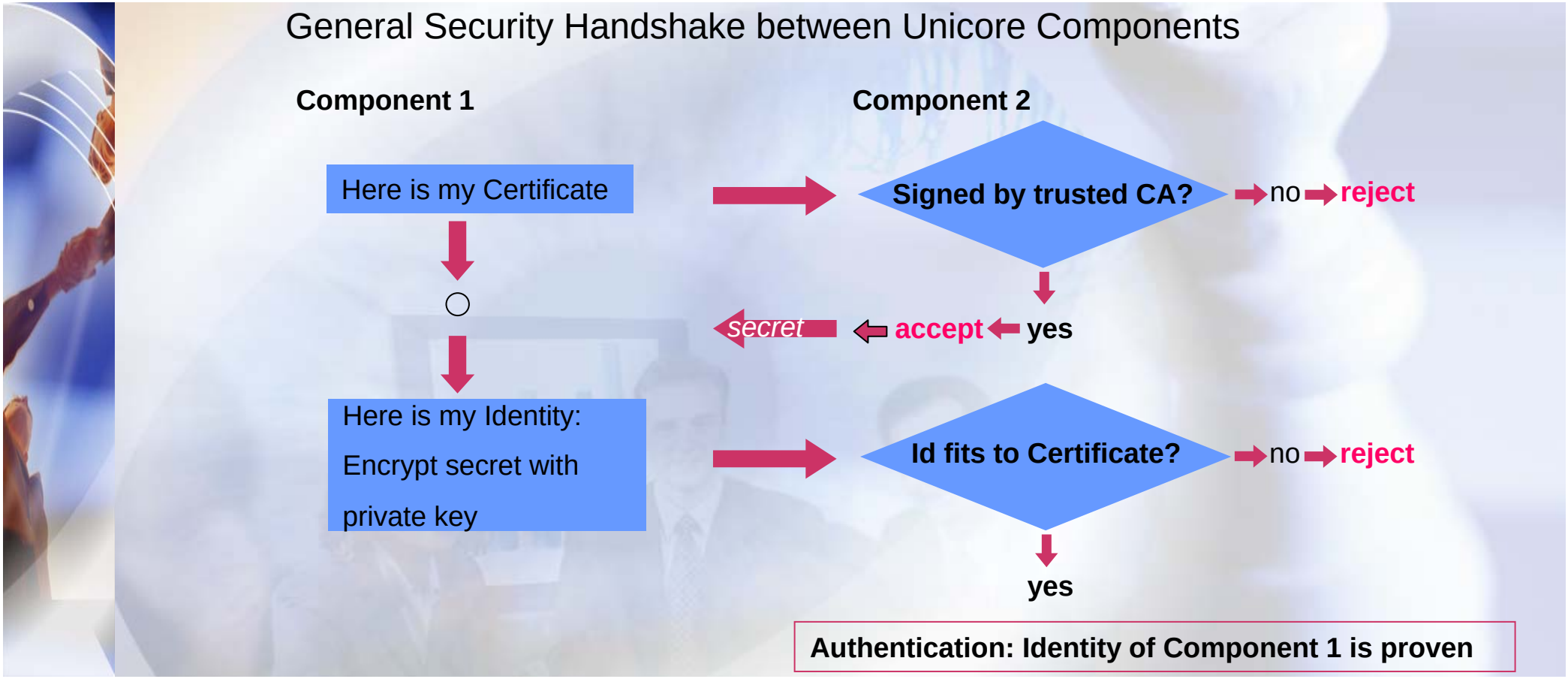
They all use a Keystore containing:

- Trust= Certs of trusted CA‘s
- Id-Prove= Id-Certs signed by CA‘s
- Identity= private keys fitting Id-Certs

The Keystore is protected by a single password

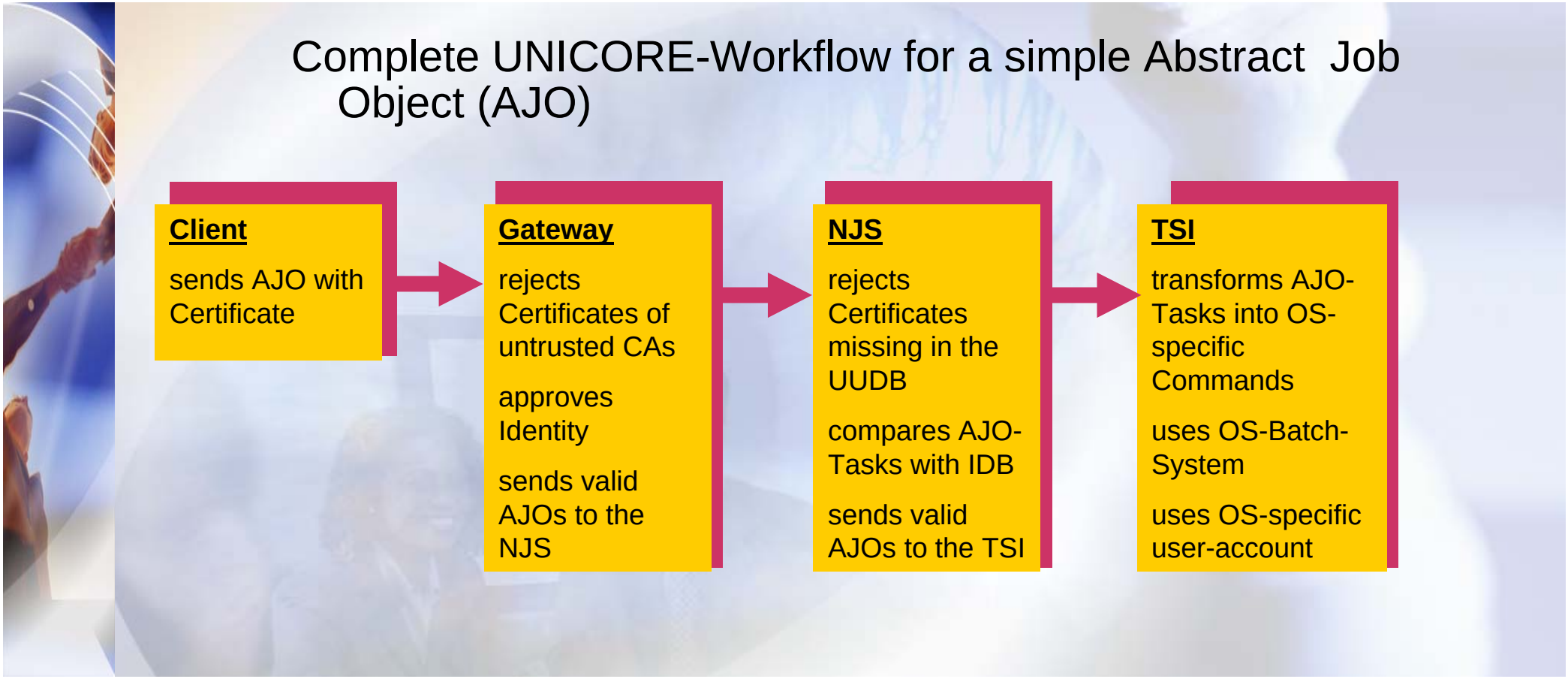
UNICORE in Production

Easy to understand : security



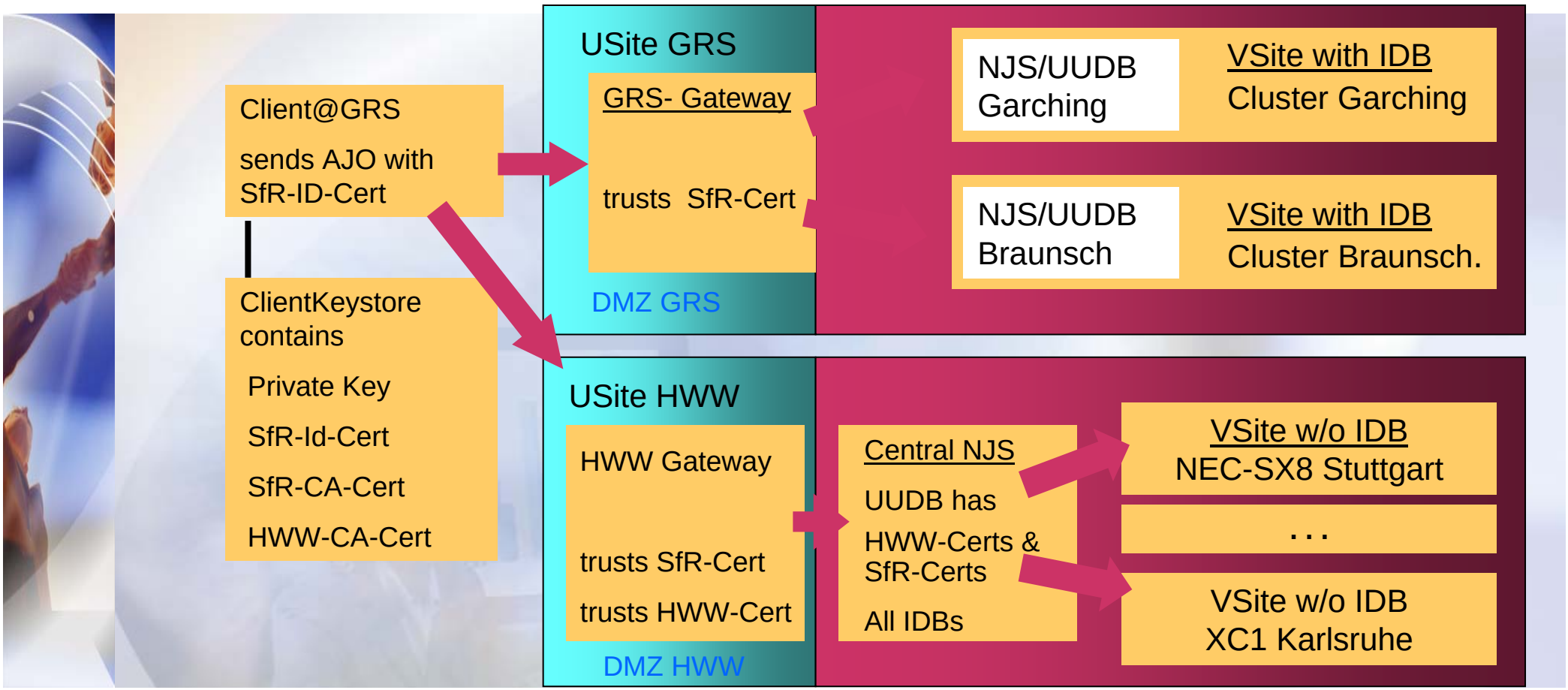
UNICORE in Production

Easy to understand : security



UNICORE in Production

Easy to understand: example GRS and HWW



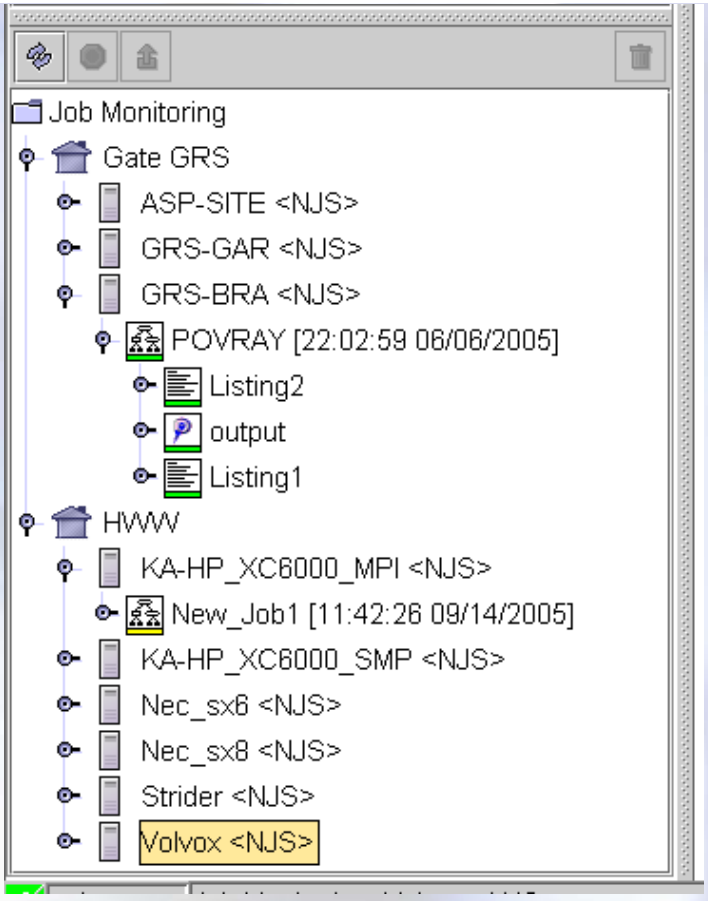
UNICORE in Production

Easy to understand: example GRS and HWW

The UNICORE-Client

shows all

USites/VSites reachable for customers, that are working for GRS



UNICORE in Production

Easy to do: What next?

- UNICORE is easy to use
- UNICORE is easy to understand
- **UNICORE is easy to install**
- UNICORE is easy to maintain

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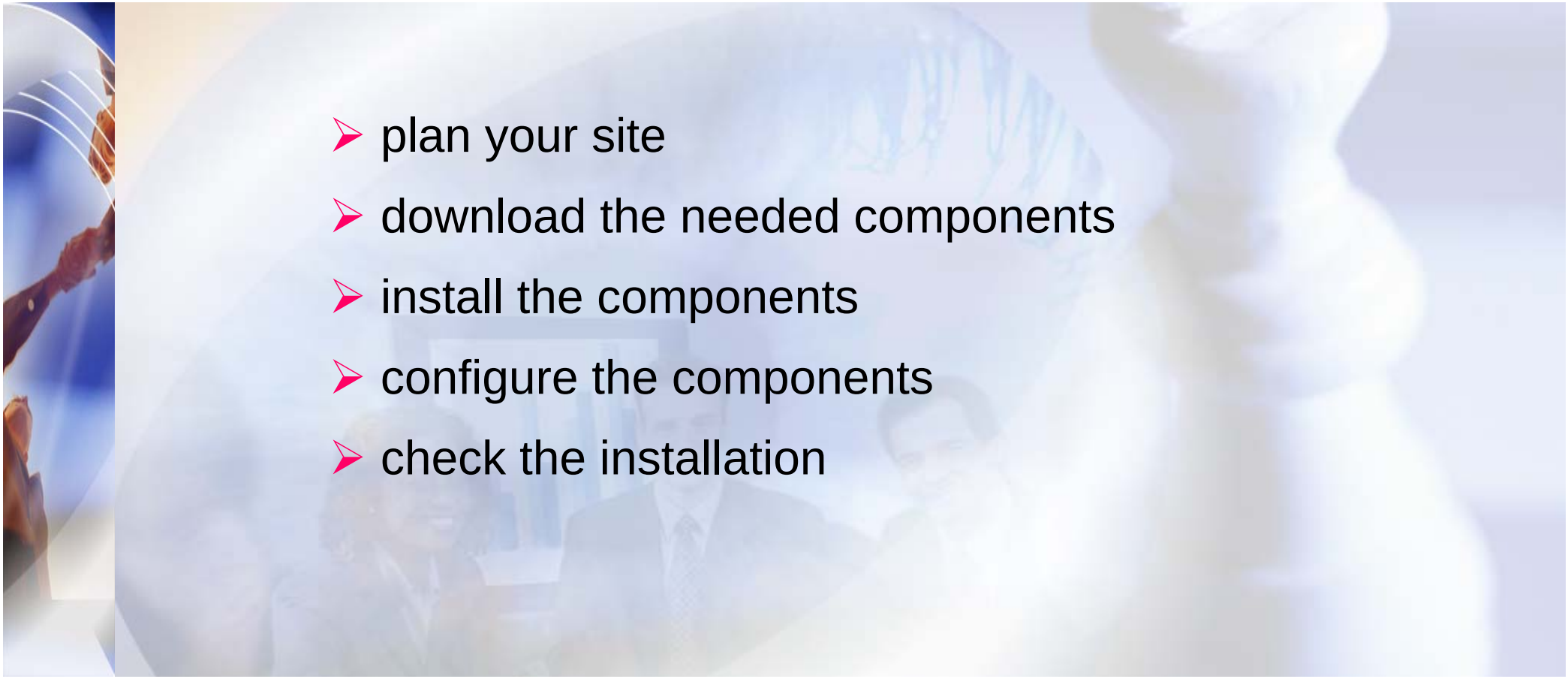
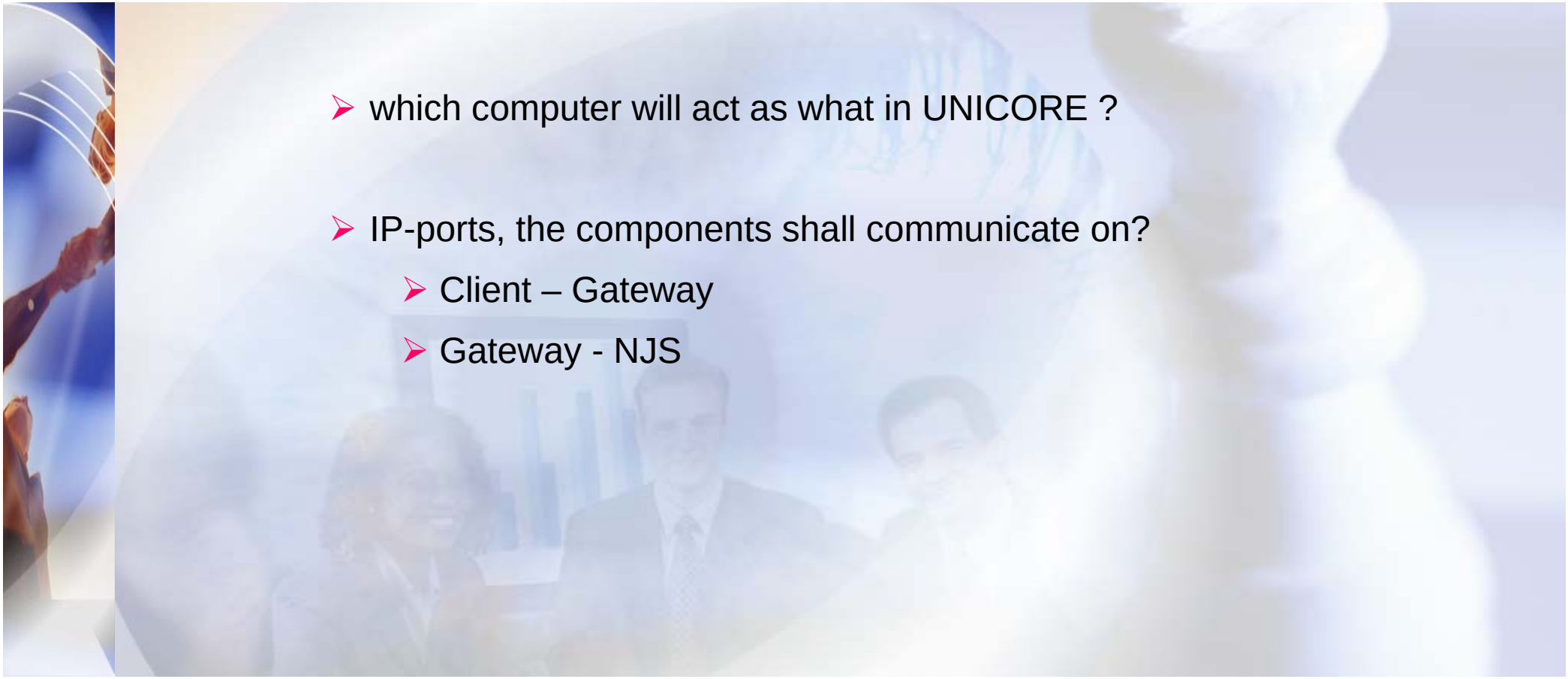
Easy to install



- plan your site
- download the needed components
- install the components
- configure the components
- check the installation

UNICORE in Production

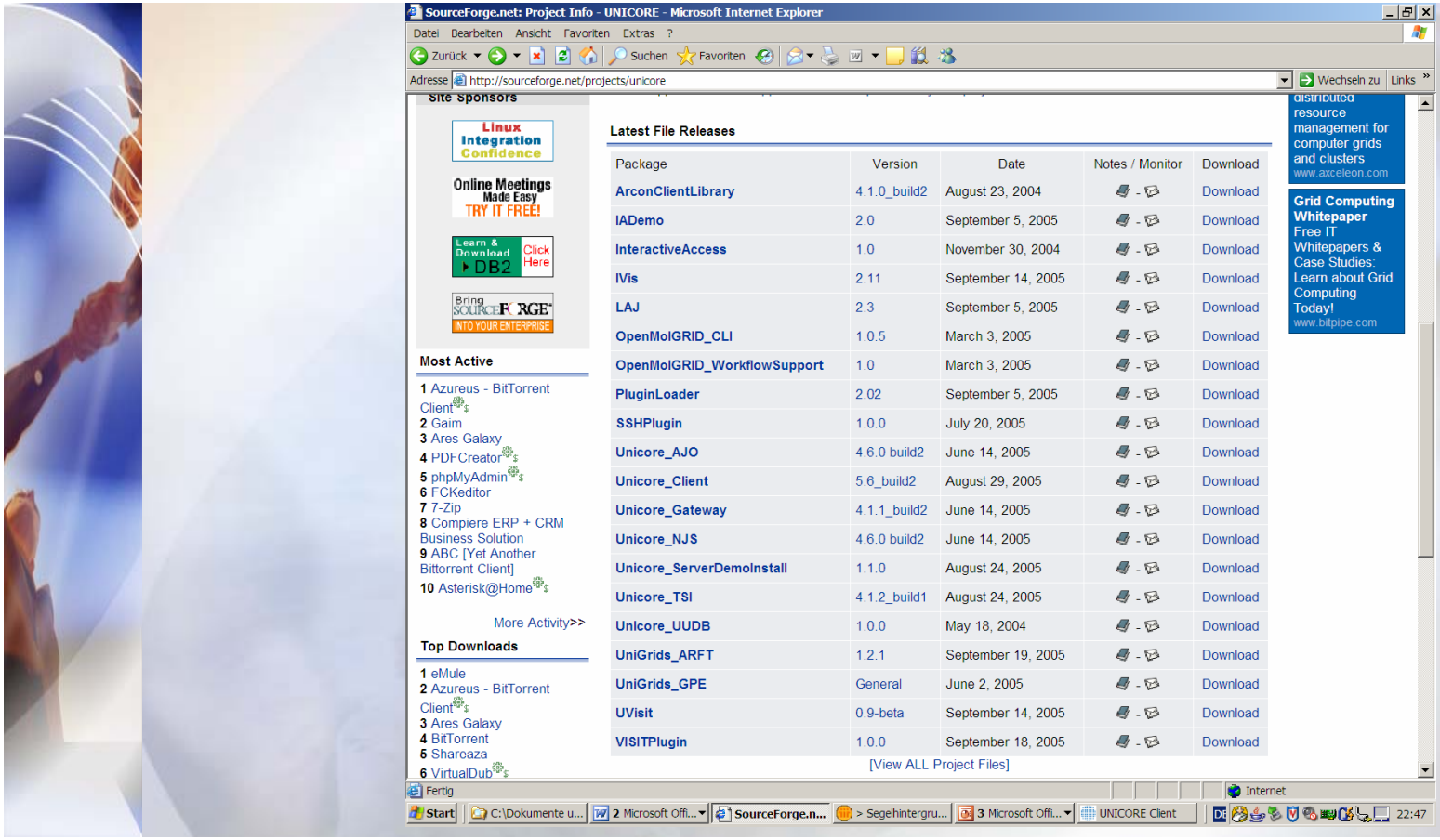
Easy to install: Plan your Site



- which computer will act as what in UNICORE ?
- IP-ports, the components shall communicate on?
  - Client – Gateway
  - Gateway - NJS

UNICORE in Production

Easy to install: Download the Software



Download the software from Sourceforge:

- Client
- Plugins
- NJS
- TSI
- UUDB
- Gateway

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Easy to install: Install the Components

- **Client**: downloaded file is self installing software

  Simply activate the downloaded file

- **Server Parts**: downloaded files are archive-files

  Extract them

  $ tar -xzf <filename>.tar.gz

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Easy to install: Configure the Server Parts

- Change to directory named **./conf**
- Adopt entries in ***.properties** file

  Simply follow the comments to use the right

  - hostnames and ports
  - certifcate files
  - etc

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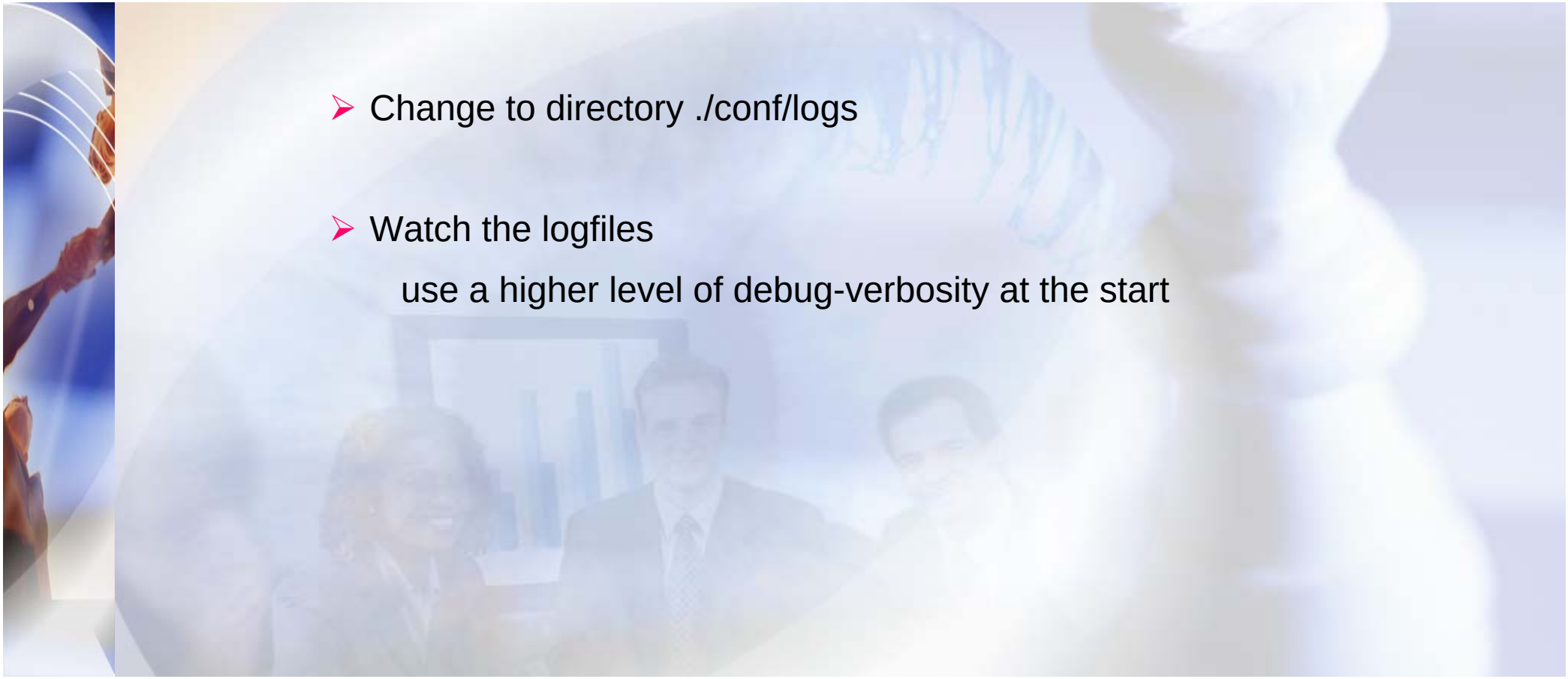
Easy to install: Check the Installation



- Change to directory ./conf/logs
- Watch the logfiles

  use a higher level of debug-verbosity at the start

UNICORE in Production

Easy to do: What next?

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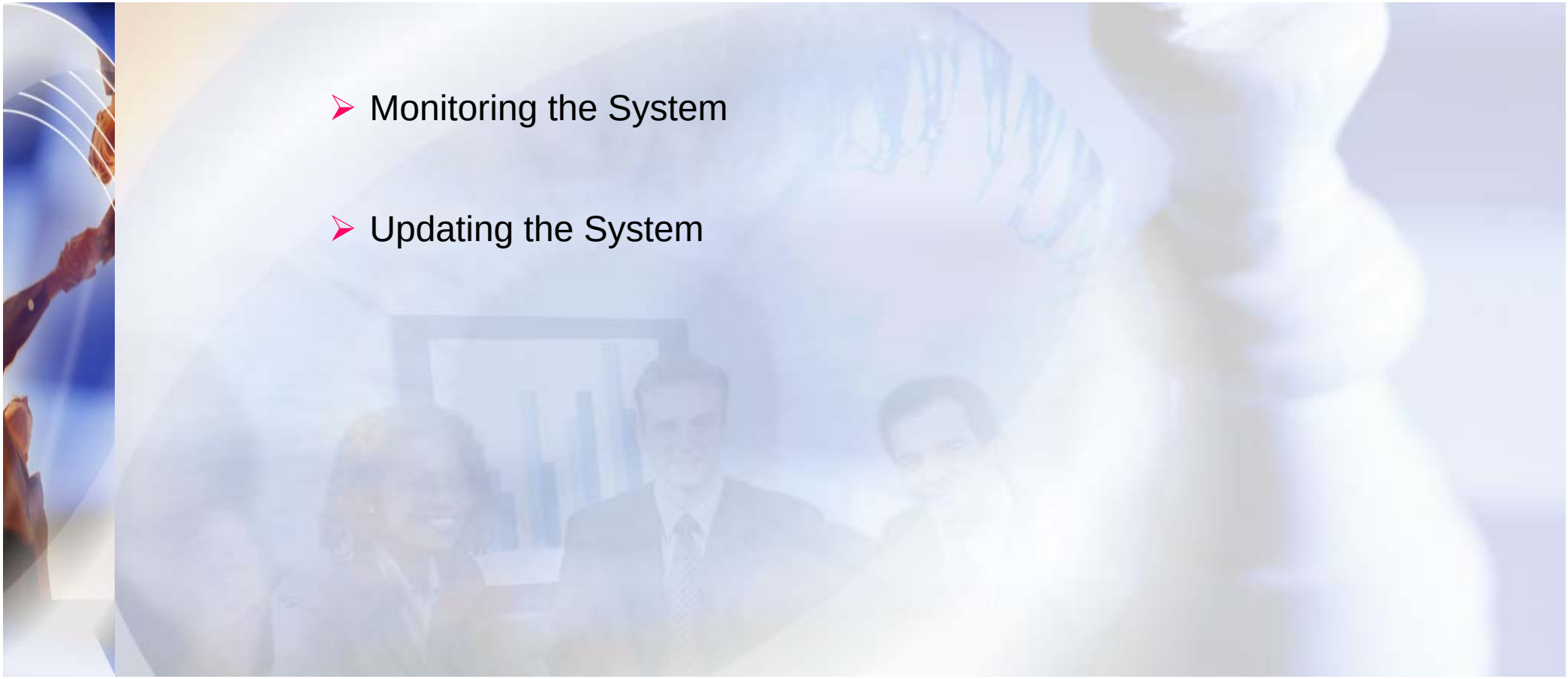
UNICORE in Production

Easy to maintain



- Monitoring the System
- Updating the System

UNICORE in Production

Easy to maintain: Monitoring

- Monitoring the System

  Use external tools

  - Big Brother (DWD, GRS)
  - Nagios (GRS and HWW; with reporting)

our experience**:**

OS-specific tools break much more often, than UNICORE does

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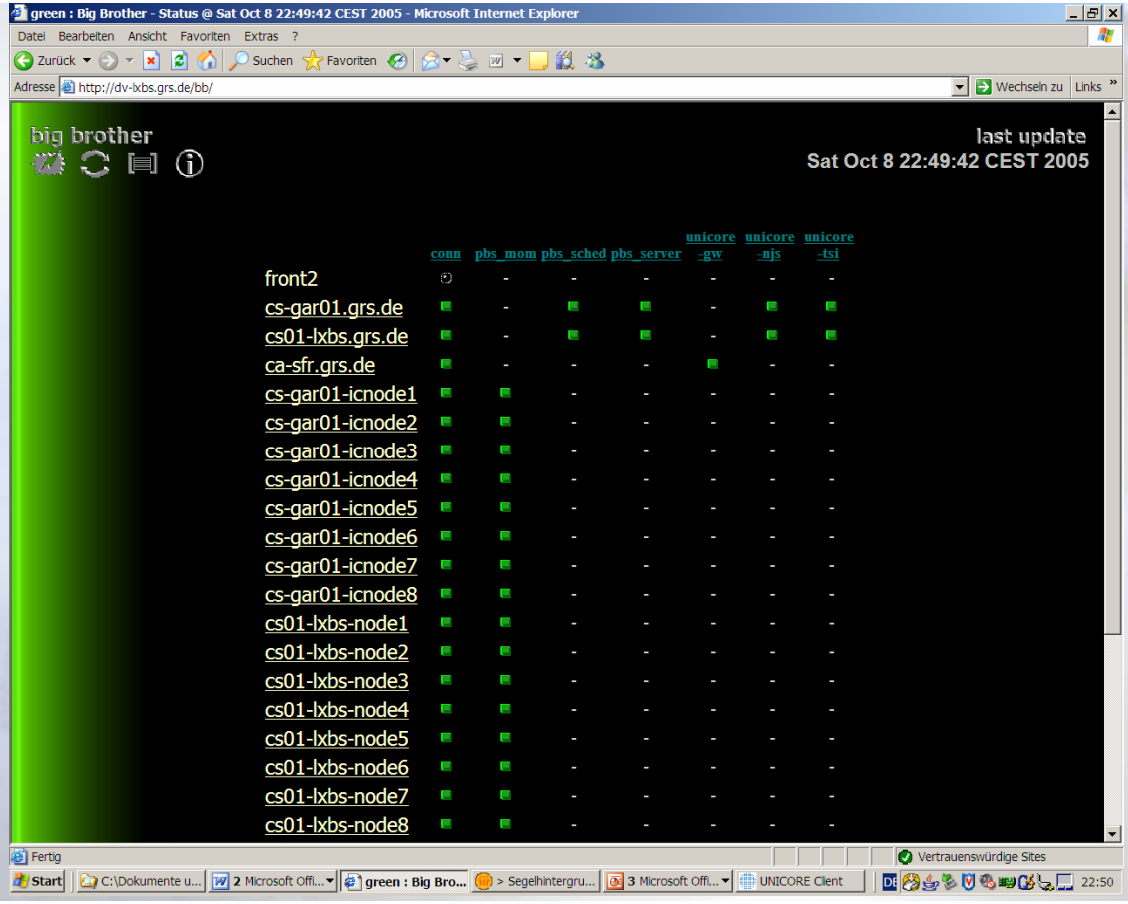
Easy to maintain: Monitoring with Big Brother



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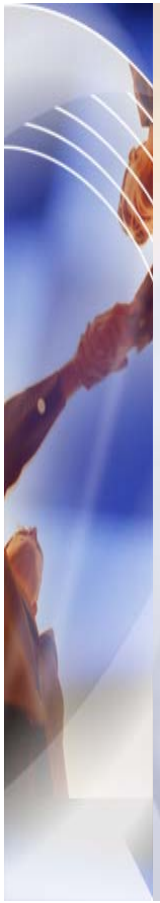
Easy to maintain: Update



- Update the System

  Watch, if something has changed on SourceForge,

  Download and reinstall.

  Keep the configuration files.

OR …

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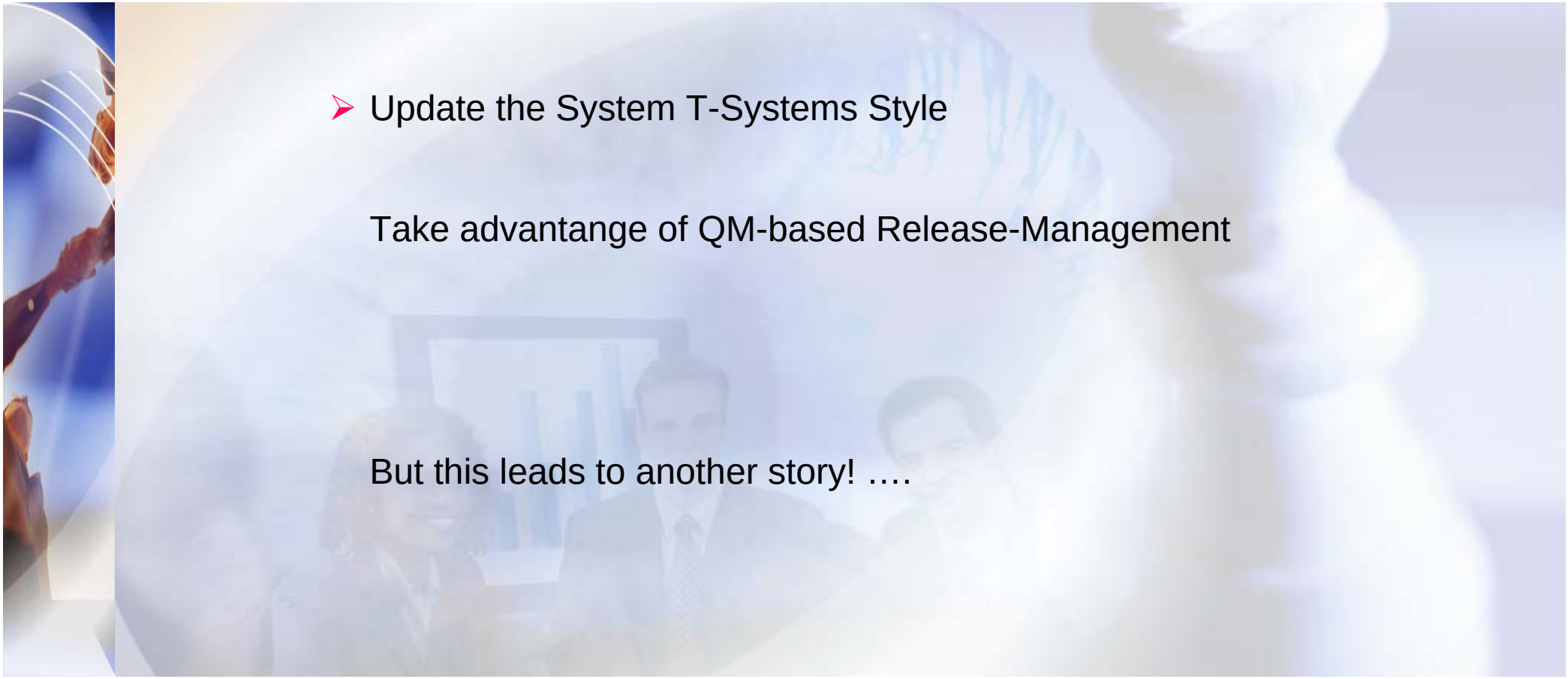
Easy to maintain: Quality Managed Update



- Update the System T-Systems Style

  Take advantange of QM-based Release-Management

  But this leads to another story! ….

UNICORE in Production

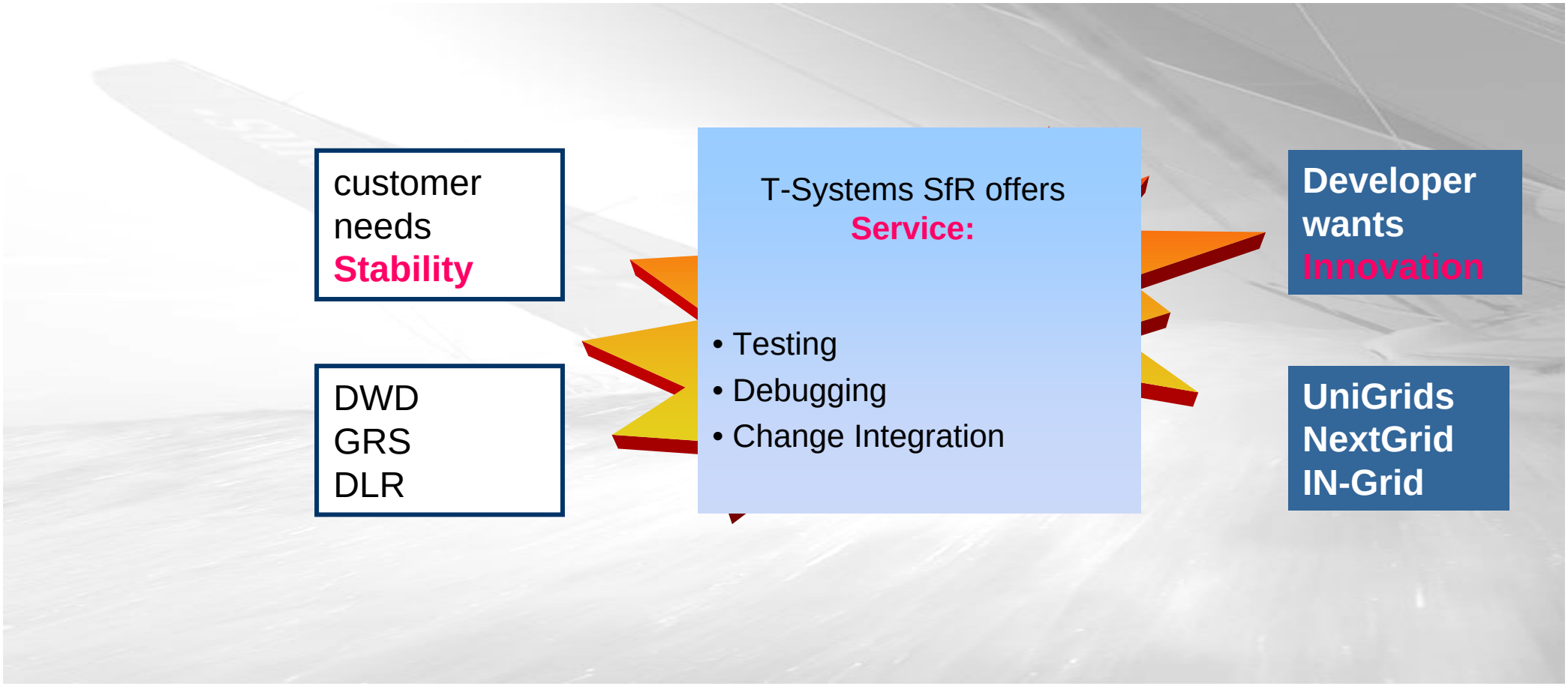
Is Easy to do

Release Management for UNICORE

1. **Customer Aspects**
   - Deliver **innovative *and* stable GRID-Software** to the customer (just an update)

2. **Developer Aspects**
   - Synoptical check of UniGrids with prerequisite packages
   - Formalize dependencies and versioning
   - Early warning system of malfunctions
   - Continous Integration Tool: Apache Gump

Release Management:
Customer Aspects (just an update)



Release Management: Developer Aspects

Release Management: Developer Aspects

Unigrids breaks if another project fails or changes definitions

Jar-Hell threatens:

http://www.krysalis.org/version/jar-hell.html

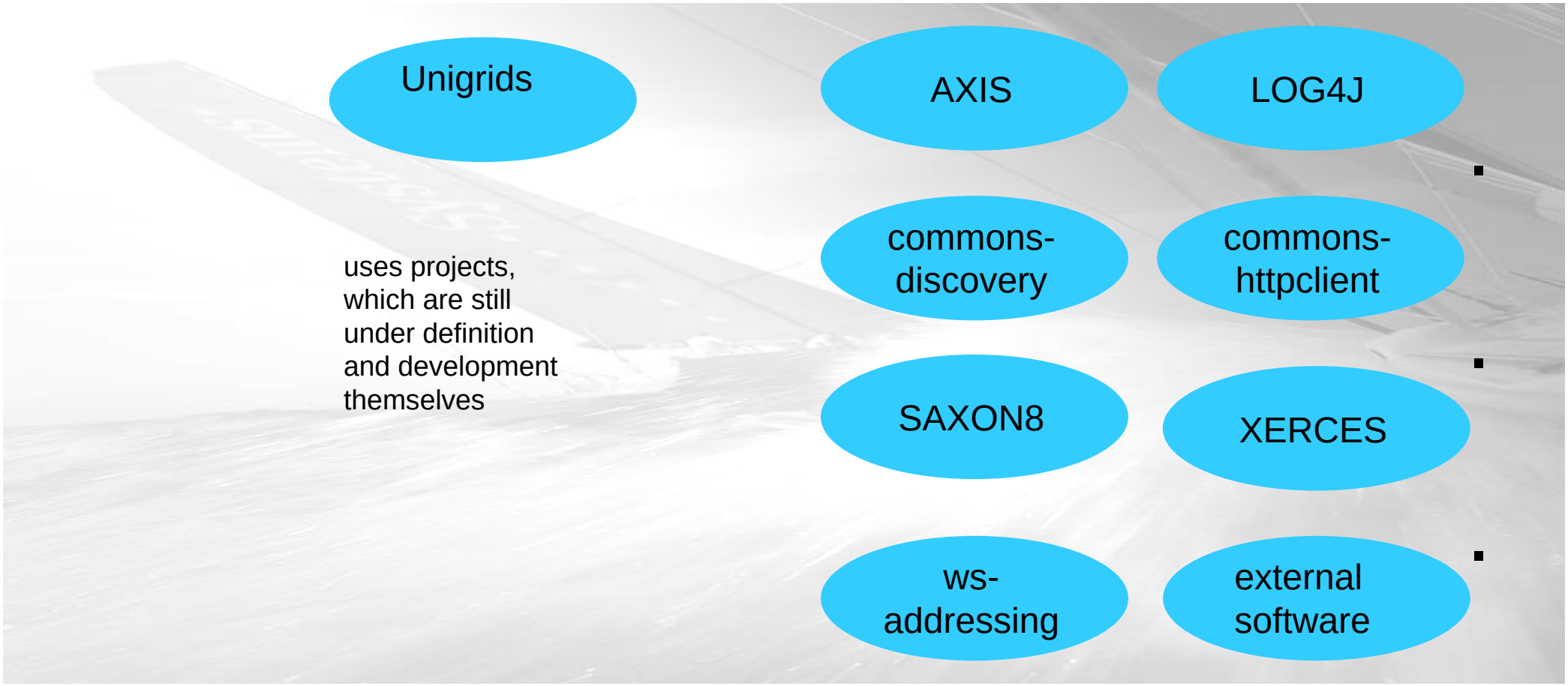
Approved Solution: Continuous Integration Tool

Release Management
Solution: Continuous Integration Tools

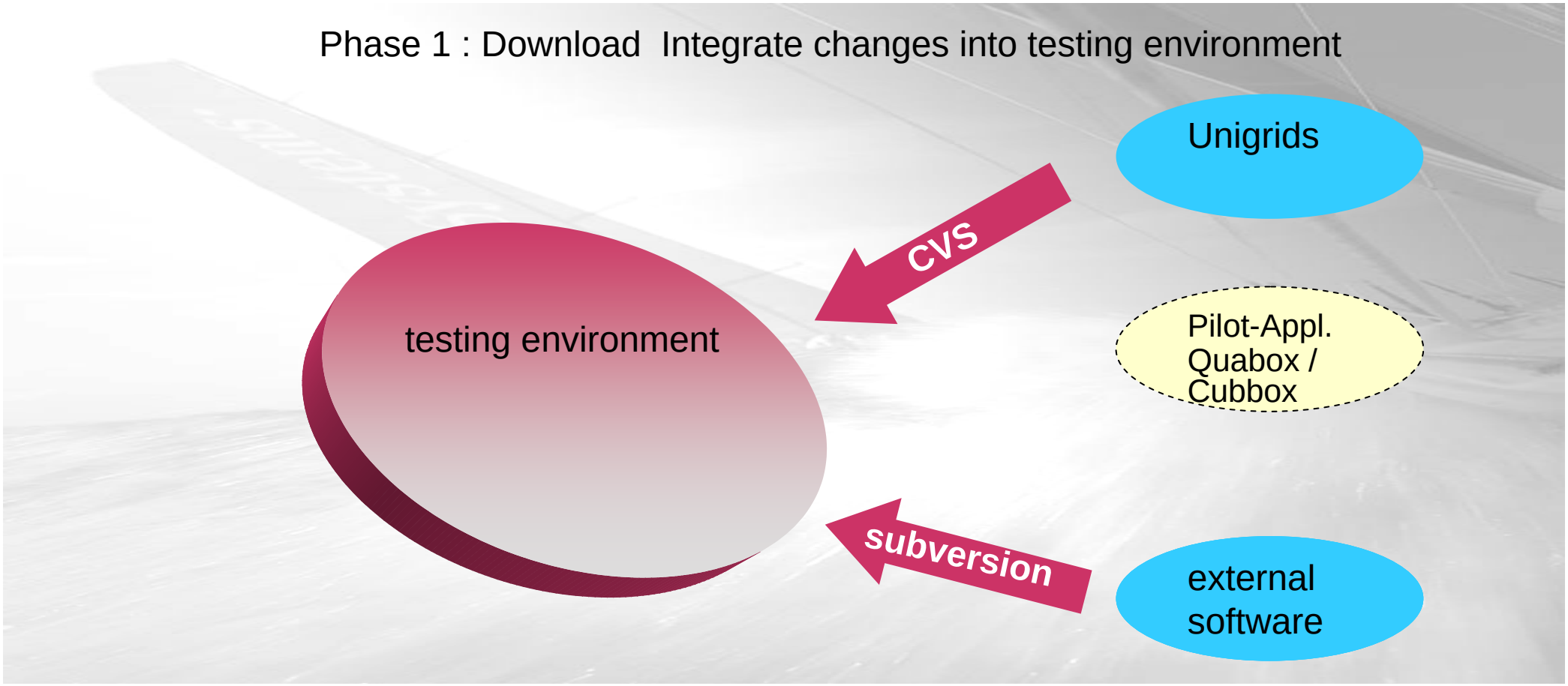
There are many Continuous Integration Tools

- CruiseControl
- DamageControl
- Tinderbox
- BuildBot
- Anthill
- BeetleJuice
- LuntBuild
- **Gump (Apache)** <= Unigrids depends on Apache-Projects mostly
- Draco.NET
- Continuum
- Sin
- Parabuild

Release Management: How Gump works



Release Management: How Gump works



Release Management: How Gump works

Release Management: How Gump works

Phase 2 : Build- and functionality Testing

building tools

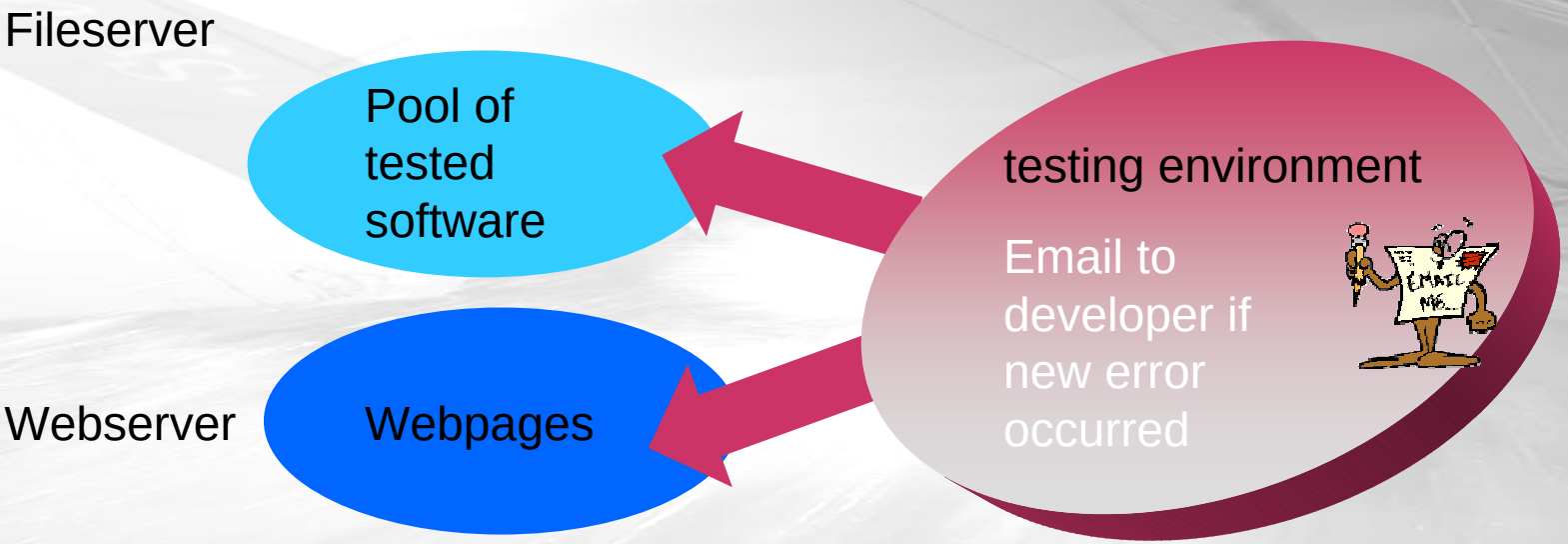
- ant
- maven
- make

testing tools

- junit
- user defined

Release Management: How Gump works

Phase 3 : Results, Presentation and Notification



- for developer: logfiles
- for customer: observable metric (ex. error-count)

Release Management: Work already done with Gump

For Phase 1: Download
- Description of Repositories

For Phase 2: Building and Testing
- Description of Unicore/UniGrids Package Dependencies

For Phase 3: Results, Presentation and Notification
- Web-Server

  http://tdb.grs.de/gump (URL will change)

- File-Server with central Download-Pool for the Customers is in Preparation

Thank You

Gert Ohme
T-Systems SfR GmbH
Customer Center GRS

mailto: Gert.Ohme@t-systems.com
Internet: http.//t-systems.com

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