Real-life Example with Refactoring of Jazz/CLM/DevOps Infrastructure Into a Private Cloud

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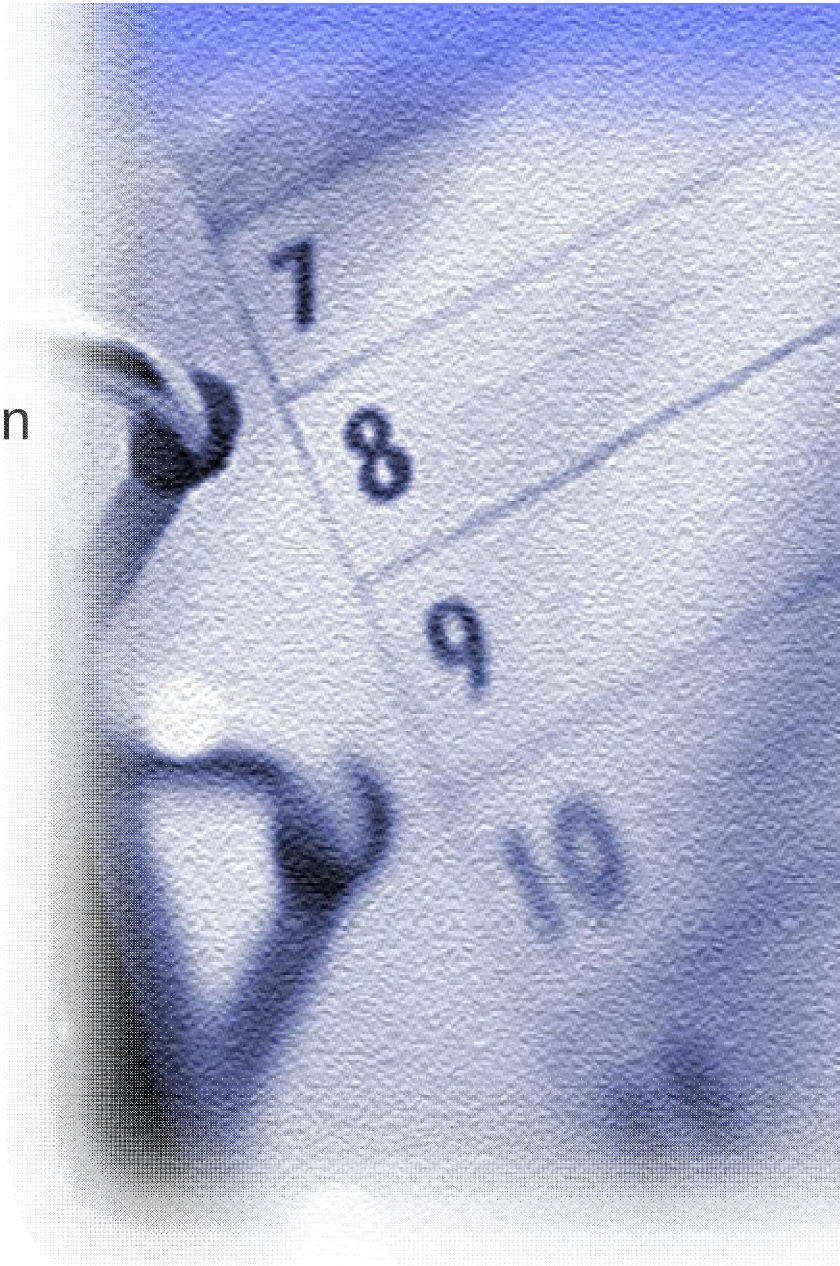
Agenda

- Siemens – Siemens Building Technologies Division
- The « Early Years »
- Why to leave the « Comfort Zone »
- On the way into the Cloud
- Next Stations
- Special Adventures
- Conclusion

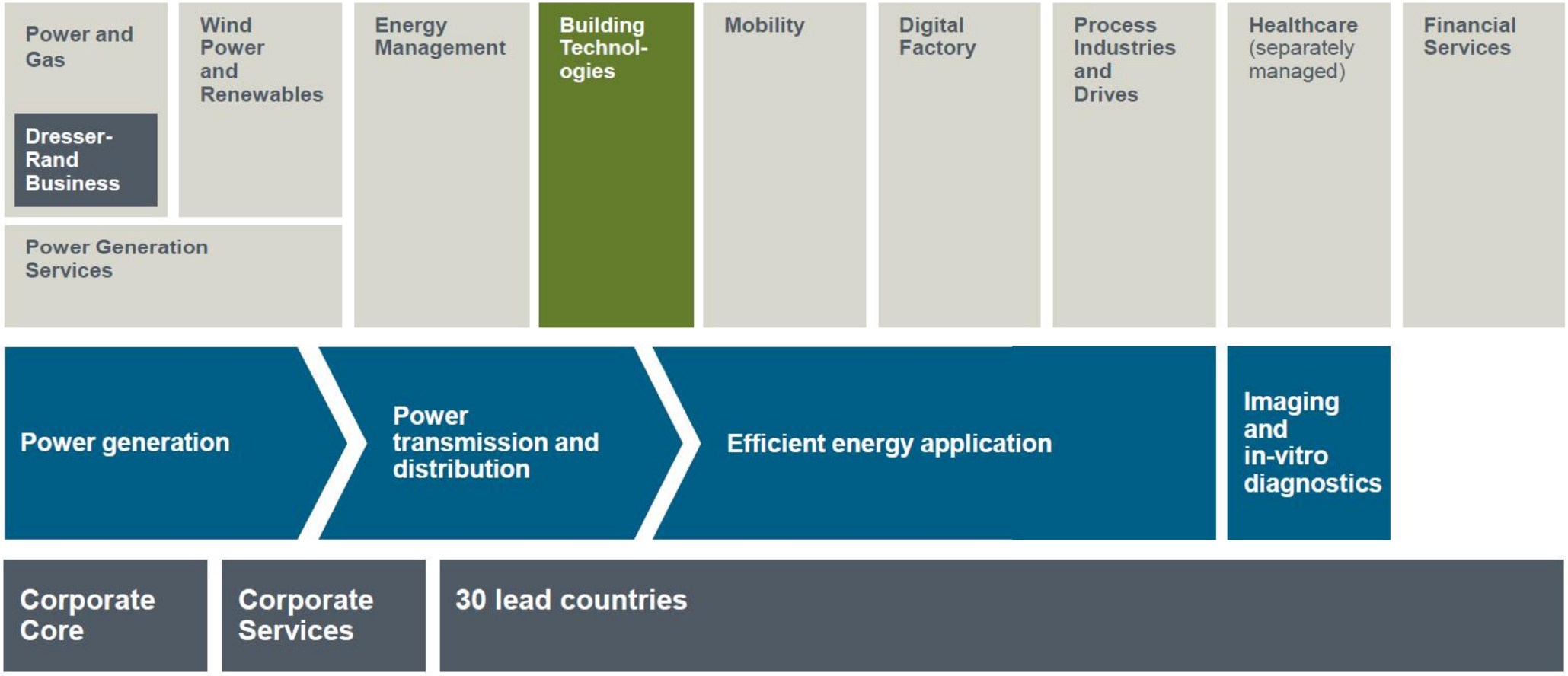


- Siemens –

- Building Technologies Division -

Building Technologies: a Siemens Division

SIEMENS



Building Technologies: Solutions Examples

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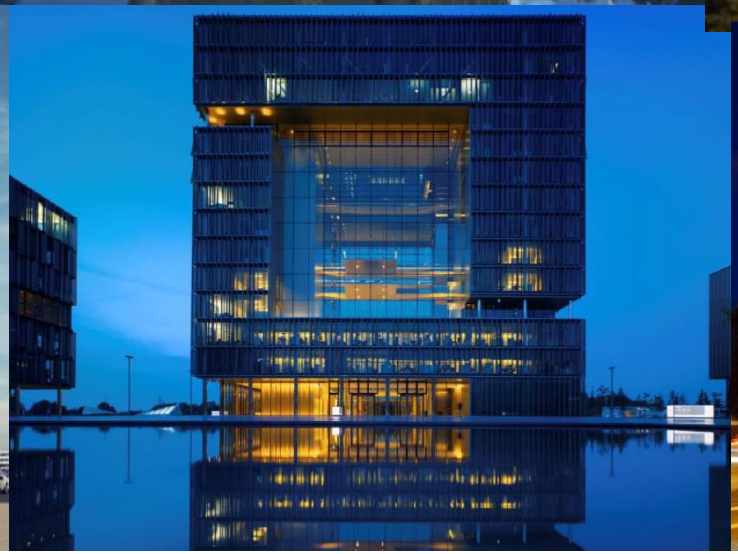
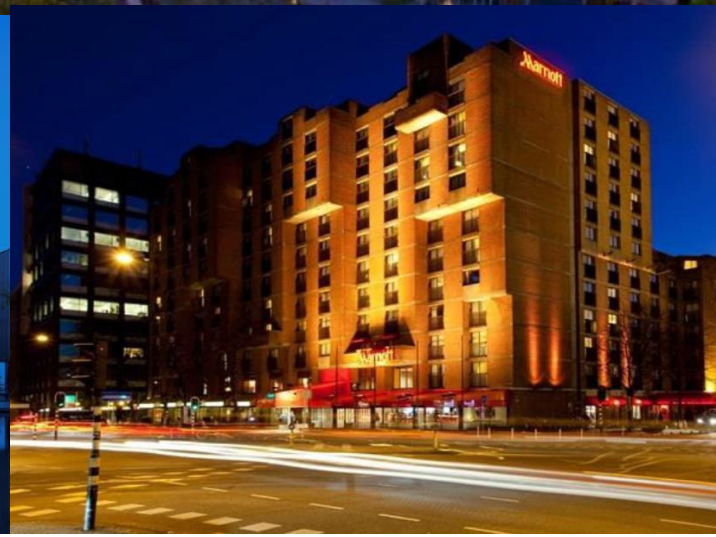
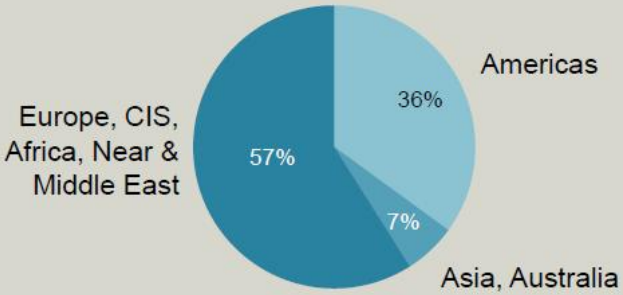




Building Technologies Division: Our key figures

	2014 fiscal year 10/1 – 9/30	2015 fiscal year 10/1 – 9/30
New orders (€ million)	5,587	6,099
Revenue (€ million)	5,569	5,999
Profit (€ million)	511*	553*
Employees (on 9/30, excl. trainees)	27,091*	27,095*

Revenue

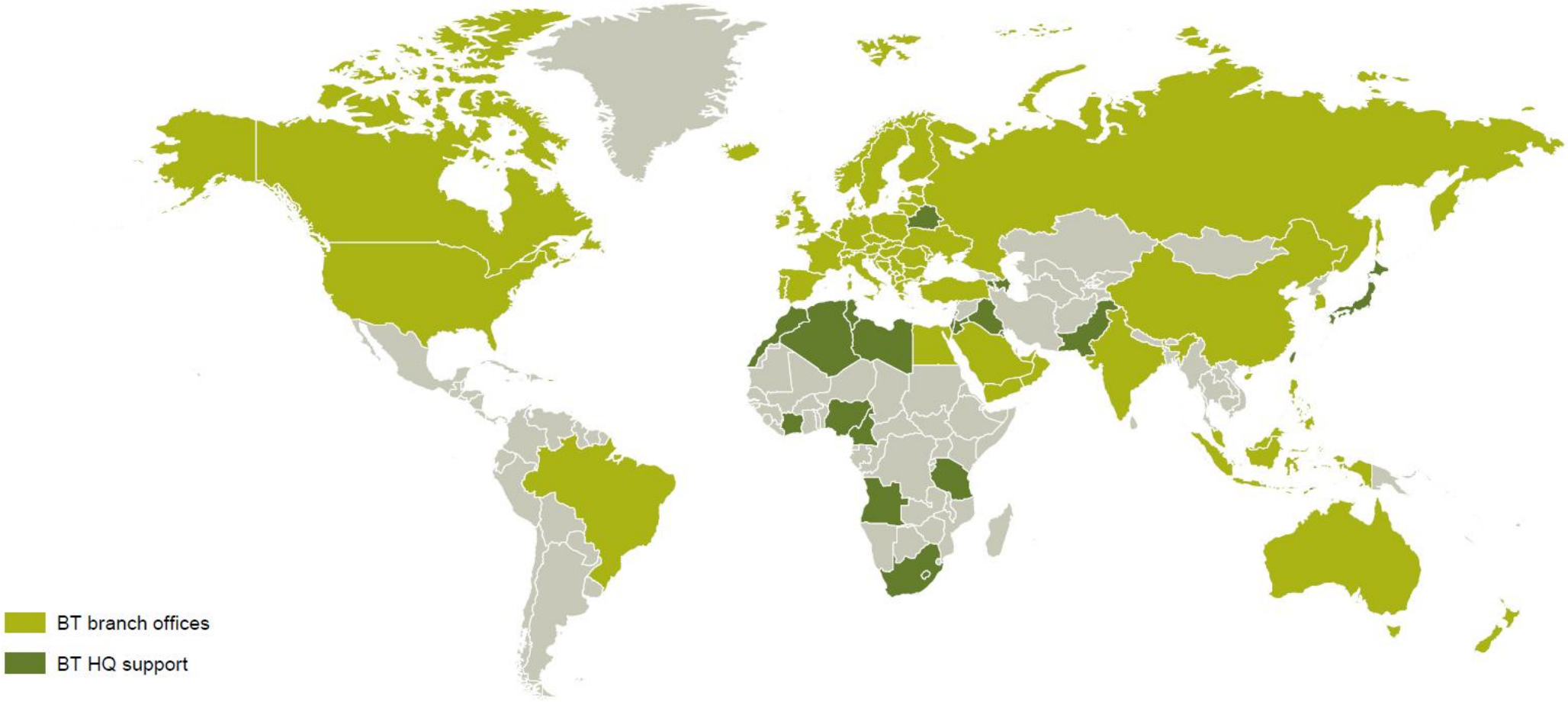


Employees

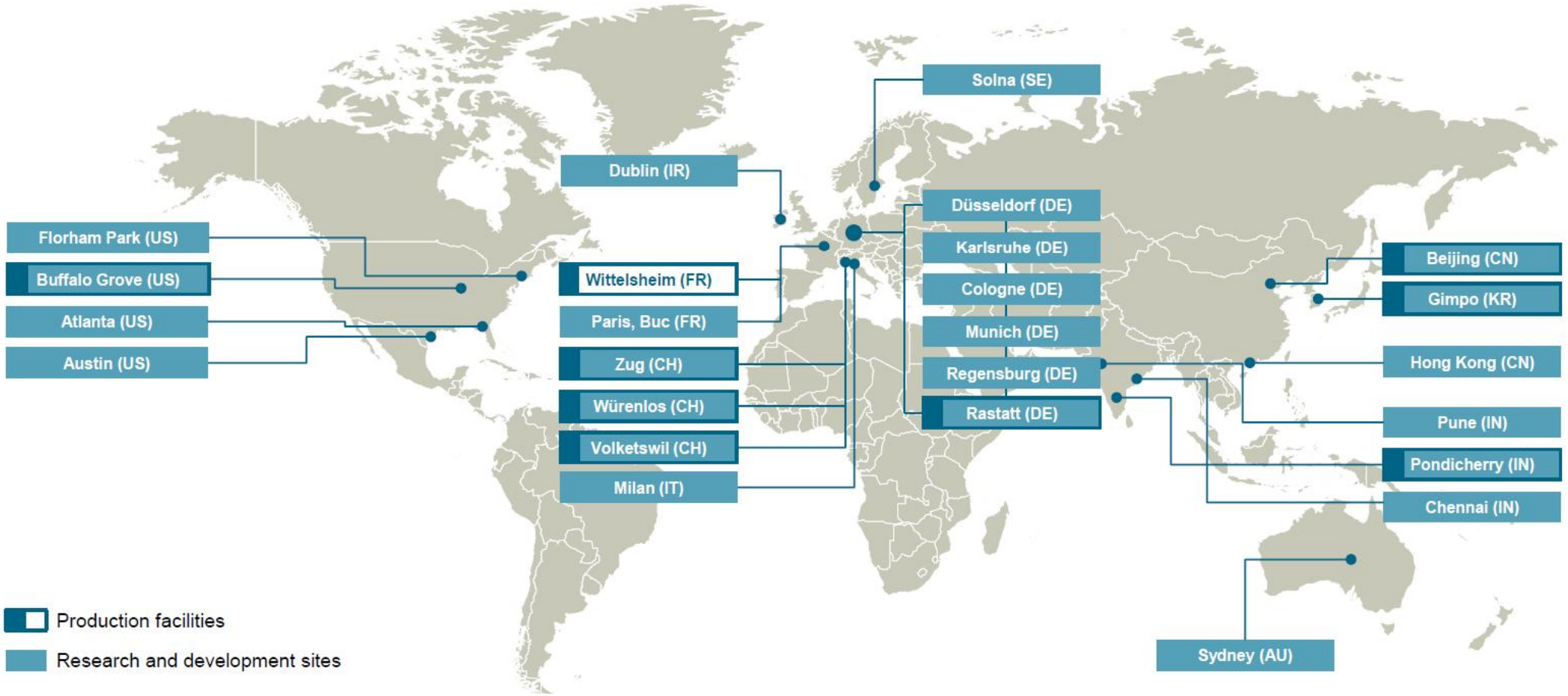
*new structure

We are there for our customers around the world thanks to our global presence

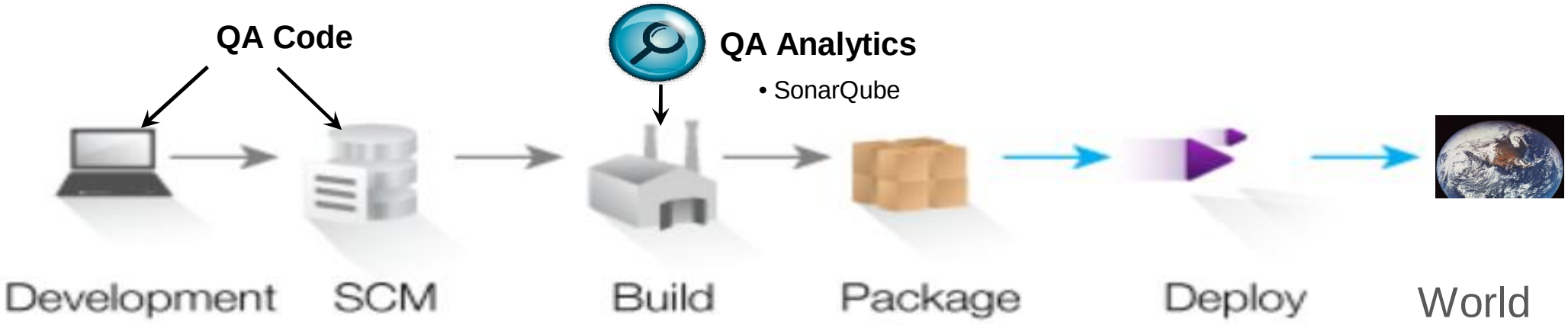
SIEMENS



Where are our „Jazz“ Users?



The Software Development Factory



Mgmt:
- RTC Jazz
- DoorsNG Jazz
- RQM Jazz
- RDM Jazz (Design)

- RTC Jazz (SCM)
- GitLab
- ClearCase
- Subversion

- Jenkins
- RTC Jazz (JBE)

- Artifactory

In evaluation
- UrbanCode
- Chef
- Puppet
- Ansible
- Others

DevTools:
- VS
- Eclipse
- Rhapsody
- Others

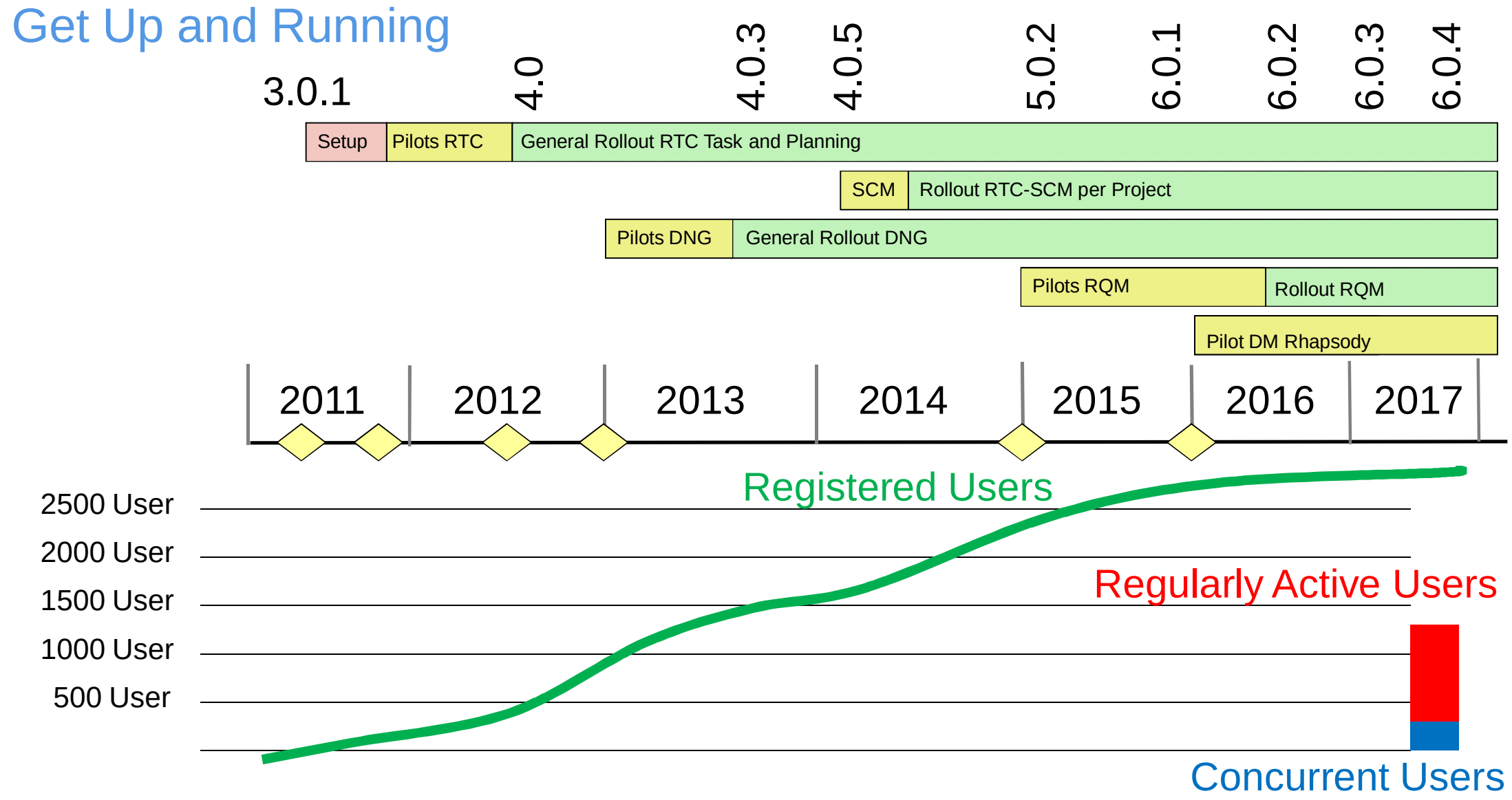
QA System
- ClearQuest
- HP QC
- RQM Jazz

Over midterm tools with decreasing usage

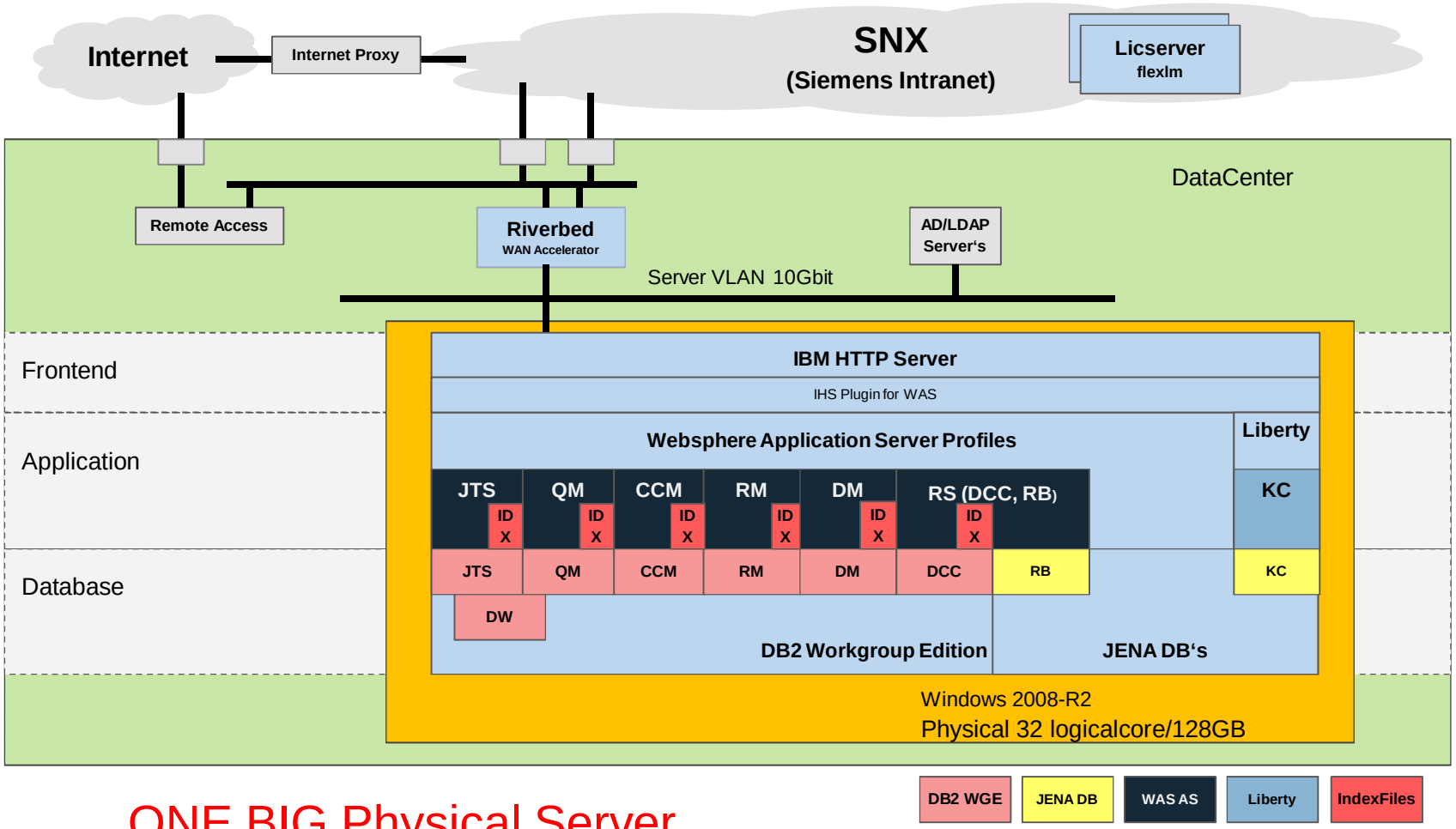
- Jazz @ BT -

The Early Years

Get Up and Running



Keep it Simple



ONE BIG Physical Server

Great for startup

Comfortable for Admins

No Latency internal

- Jazz @ BT –

Why to leave the Comfort Zone

The Bell rings – Events hitting the System Admins

- DNG guzzling all the Memory
  - To less Memory for DNG and file caching (OS) of Index files.
  - 128GB is to less for our size for an ALL-IN-1 system
  - Views with 5-10 minutes load time
  - Discussions with support are very hard, if the configuration does not match their expectation
- RTC Birt Reports on Dashboards kills the Disk Performance
  - IO problems on the database, especially for Data Warehouse (DW) table spaces and indexes
  - DW table spaces and indexes spread over 3 RAID channels but still
    - up to 5min 100% disk IO
    - queue length of 10+ just by starting RTC dashboards
- LQE does not work
  - Impossible to start. “Native Memory exhausted”
  - Show stopper for Global Configuration
- IBM Support under Fire
  - Very difficult to identify which application made other applications bad responding.
  - Performance is always a “blind flight” in such an environment.

Big Brother – the central IT – makes pressure

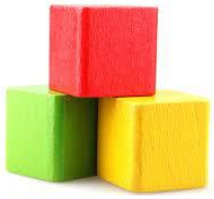
- Security – OneAD
  - Siemens decided to rebuild the Corporate Active Directory (AD) to reach higher security, higher automation and lower cost.
  - From a Multi Domain Forest to new Single Domain Forest
  - ➢ Reinstallation in new AD Forest
  - ➢ Support multiple forests during more than two years
- (Private) Cloud First
  - Siemens decided to bring all application servers into the Cloud. First step private IaaS of an external provider
  - Make applications ready for public Cloud like AWS, AZURE, Others
  - All application owners should prepare/renovate their applications to be cloud ready
  - ➢ Physical Servers only on Exception request
  - ➢ Decomposition into smaller cloud ready pieces similar Amazon T-Shirt sizes
  - ➢ Automation of Deployment e.g. UrbanCode, Ansible, GIThub…)
- Operating System Renewal
  - At least Windows Server 2012-R2 or Redhat Linux 7.x
  - ➢ Reinstallation on Windows 2012-R2

- Jazz @ BT –

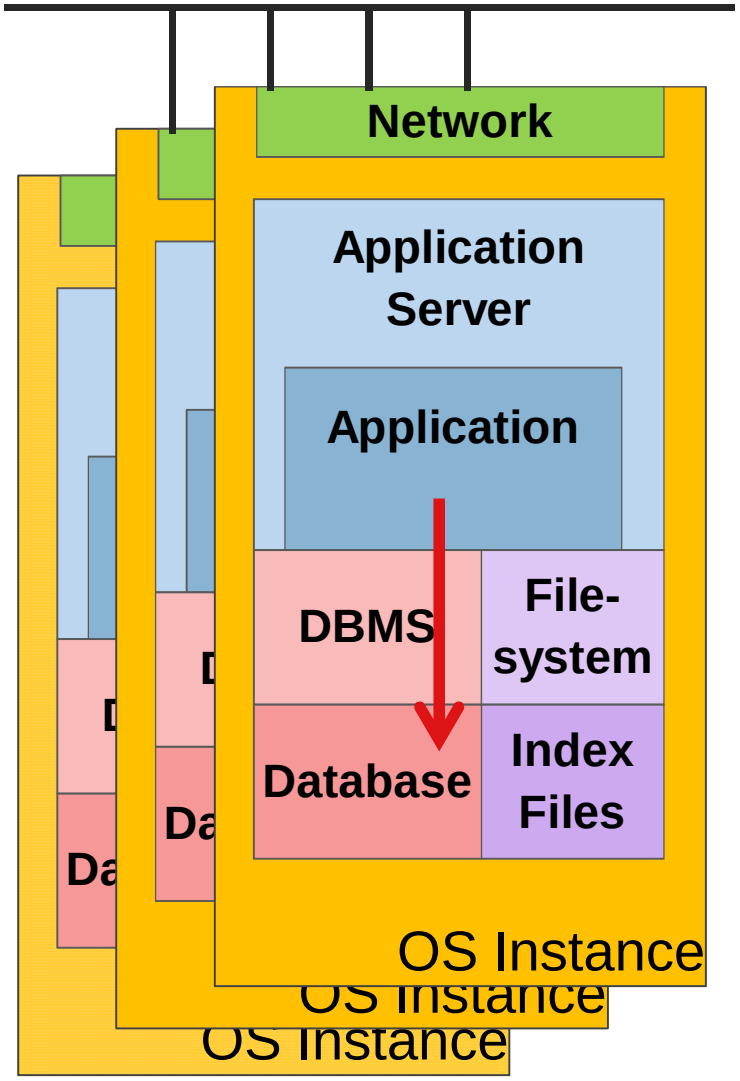
On the way into the Cloud

Vertical Slicing

Minimal Latency between App and DB



Standard Building Blocks



Migrate to WAS Liberty

Small footprint

Simple admin

Cloud ready

→ Simple migration from WAS to Liberty

→ Easy deploy with standard files

→ Only two profile specific files

→ Start as a Service

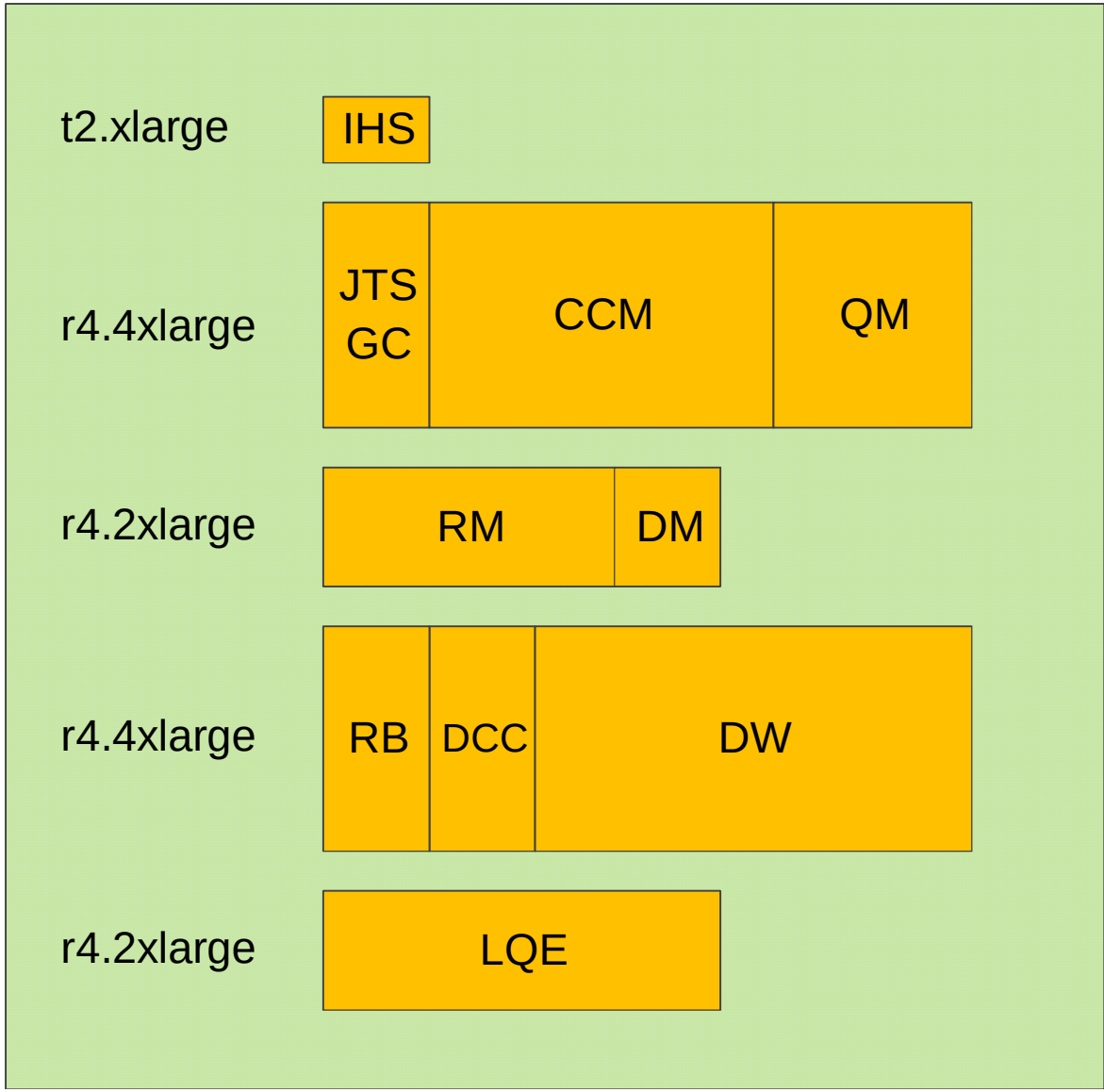
→ Easy patch deployment

T-Shirt Size

AWS like Standard Catalogue

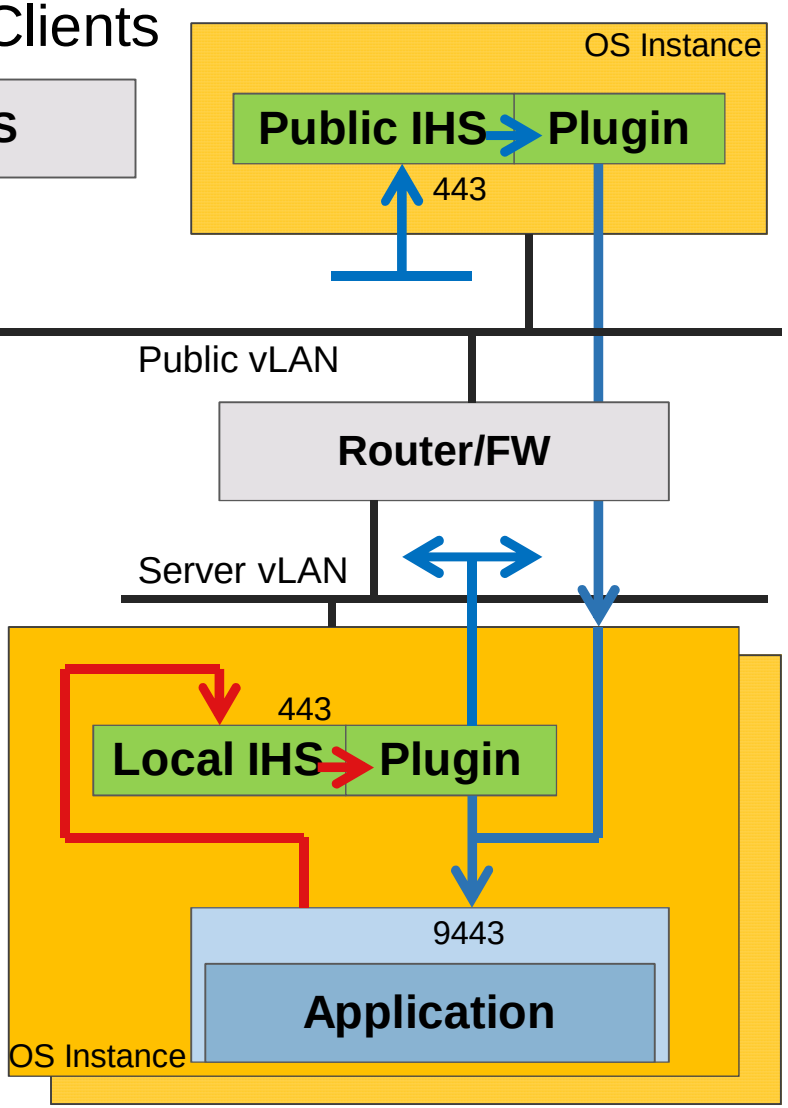
Flexible Up/Down size

Split / Add / Merge Instances on Experience



Multiple Reverse Proxies

- Stable URI in DNS for Clients
- REST calls to itself with no latency
- REST calls between Apps are kept internal
- Security by not letting clients into app server
- Stable URI in \etc\hosts for App Profiles
- Standard plugin-cfg.xml



Standardized Disk Layout

Smaller Backup-footprint by excluding Disks

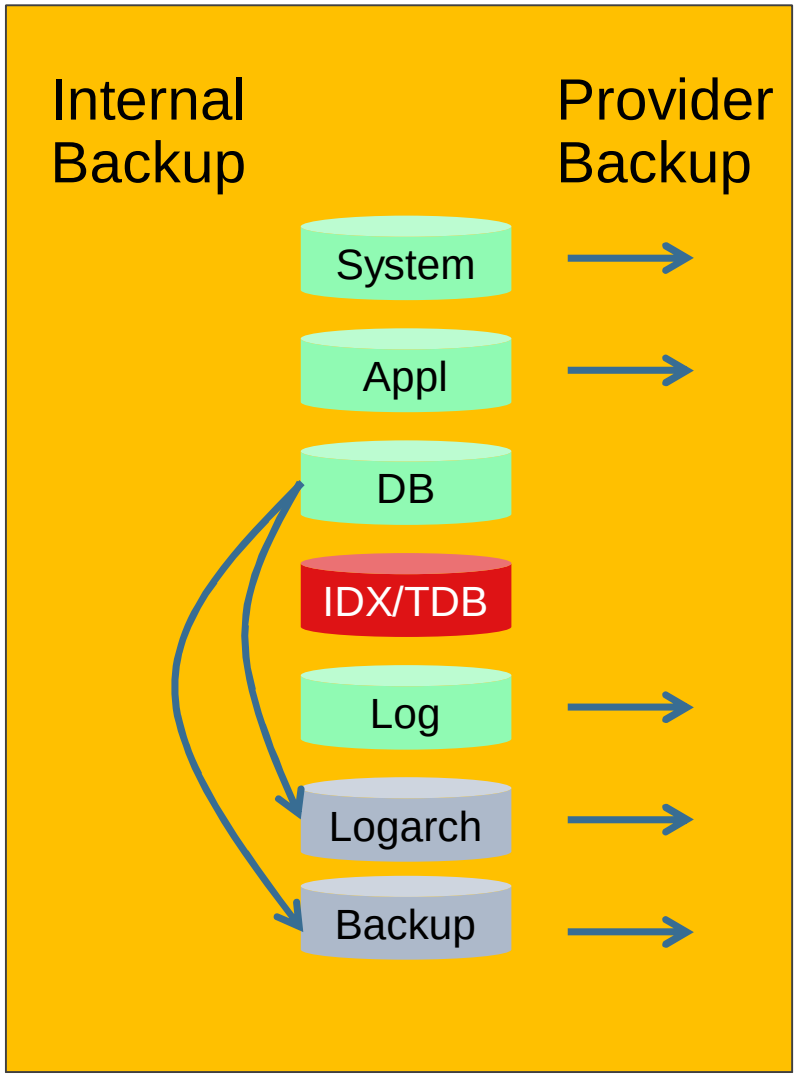
IOP requirements per Disk

High

Medium

Low

Easier Automation with Standards



Multiple Forest Support (1)

Multi Domain Forest

2 years

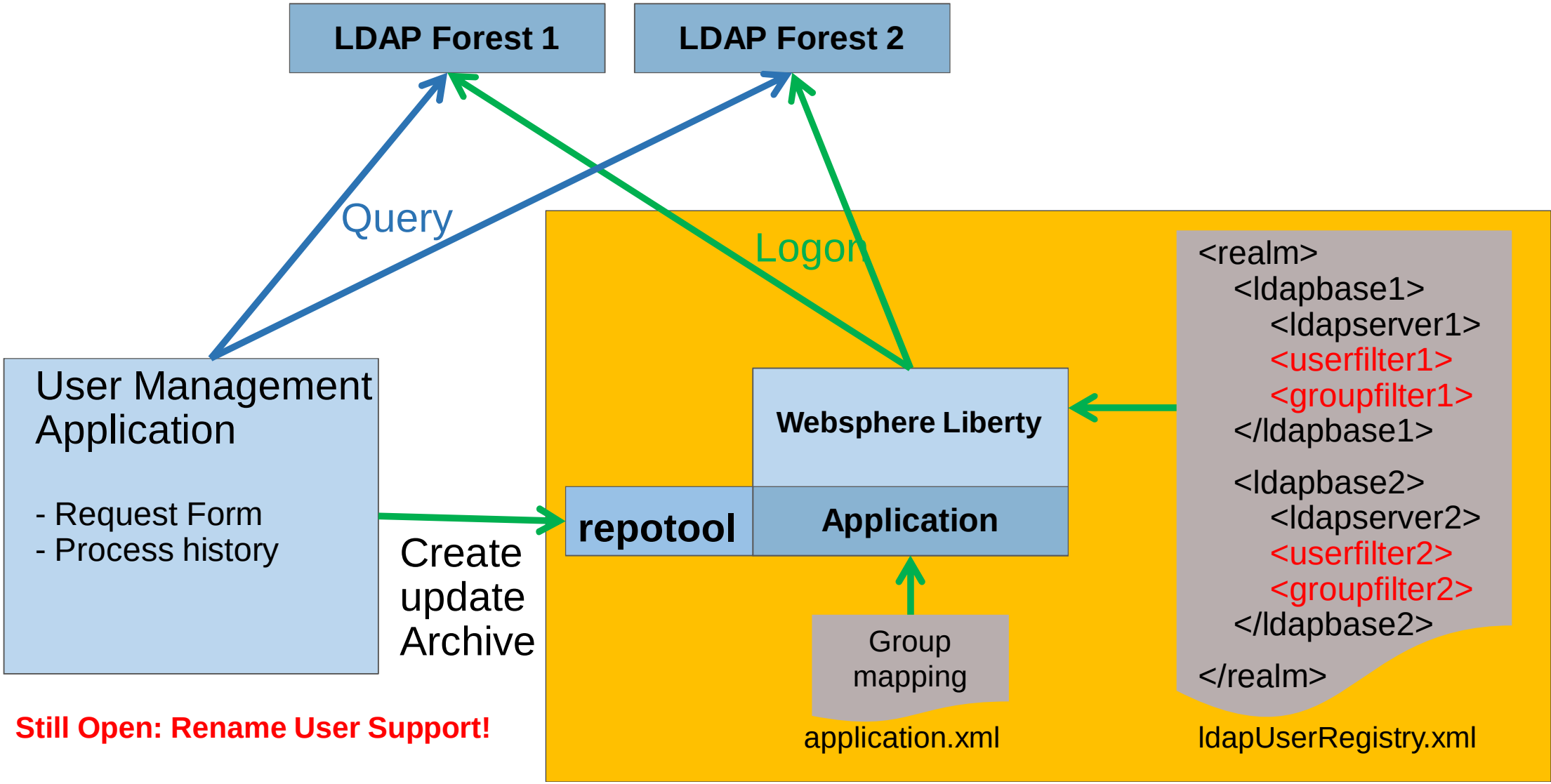
Single Domain Forest

CLM does not officially support multiple forest

Namespaces are overlapping
siemens.net
ad001.siemens.net

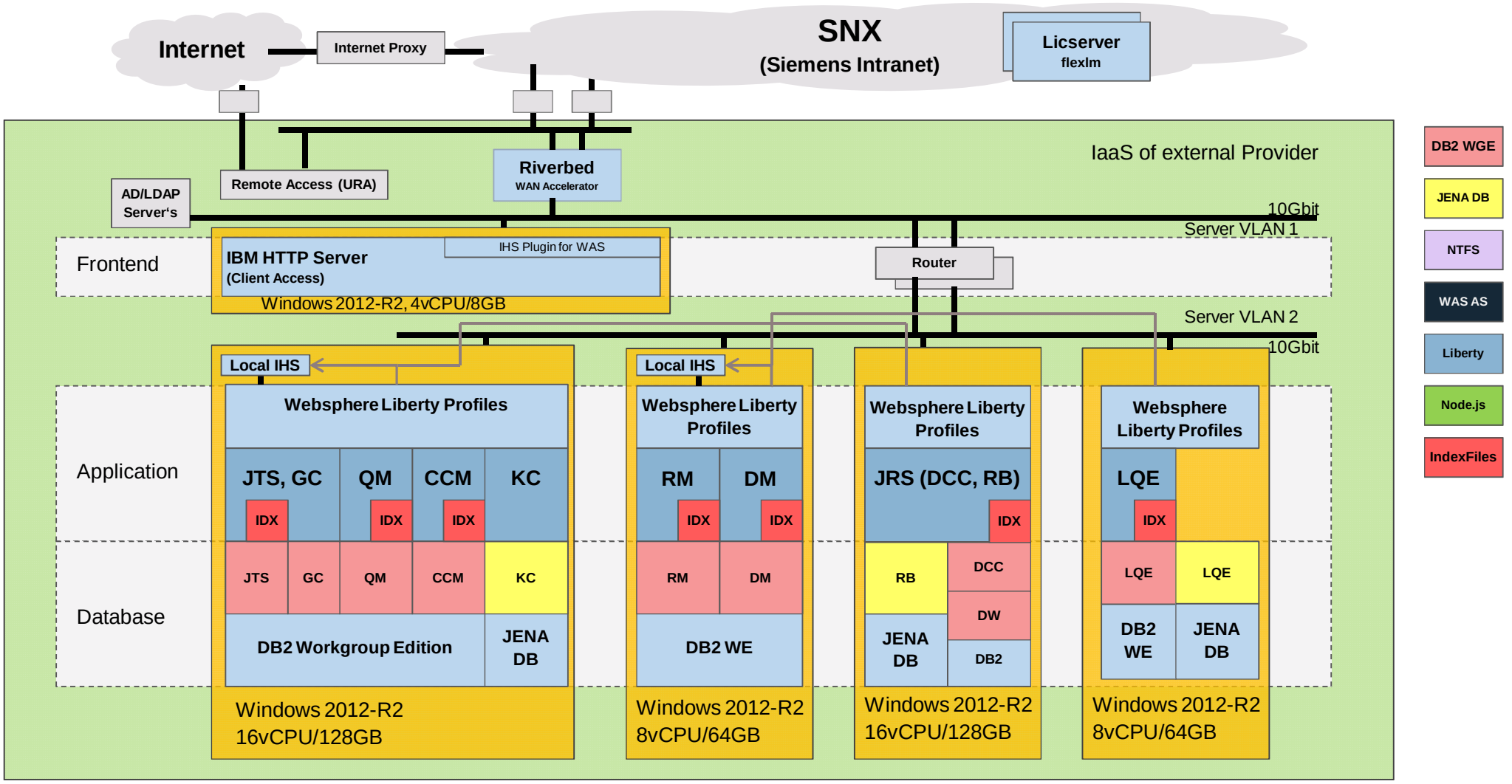
How to do User Management

Multiple Forest Support (2)



Still Open: Rename User Support!

Infrastructure, Nov.2017 / IaaS on Private Cloud



Experience after 12 months of operation

- Factors faster than old infrastructure
- up to 250 concurrent users without seeing performance degradations
- Instances are oversized. Specially regarding number of cores
- LQE reindex performance acceptable now with workarounds (next slide)

- One unplanned downtime of 6 hours because of Virtual SAN Problem on Cloud Data Center (VMware)

- Independent pieces are easier to manage
- Liberty is a excellent application server and simple to handle
- We have to do more automation

- Special Adventures -

Experience with LQE

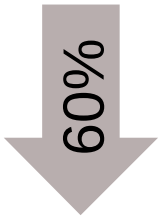
Full Reindex must be possible within 24 hours

Often an App update requires a reindex of one ore more data sources

Removing all resources on reindex requires more than 60% of reindex time!

4 times faster

- Increase IOP of Jena TDB disk to >3000 IOPs
- get latest LQE Patches (hope all is in latest version)
- use Direct-IO mode



100%

40%

- Prepare a second LQE Instance before upgrade for reindexing containing **EMPTY** data sources

Questions

-

Your Experiences

-

Discussion

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Lead ALM Ecosystem

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IBM