

CICS and the Cloud

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Agenda

- A (very) Brief History of Computing
- The Anatomy of a Cloud
- What can you do with CICS in a cloud style?

In the beginning....



...was the mainframe

- The IBM S/360
- IBM created the first fully *virtualized* hardware machine in 1967
- and made it a standard feature of all the S/370 mainframes in 1972

Many *Virtual Machines* able to run on a single mainframe, sharing the CPUs, memory, storage and network

Users accessed the VMs from *thin clients* (“dumb terminals”)

The usage of the mainframe was broken down in detail to allow charge-back to the users’ departments

and then things got distributed...

- The '80's saw the shift to Personal Computing...
 - Democratization of computing, making it cheaper for more people to have access to computers
 - Initially a shift to “computers for all”, with each user having the whole machine dedicated just to them



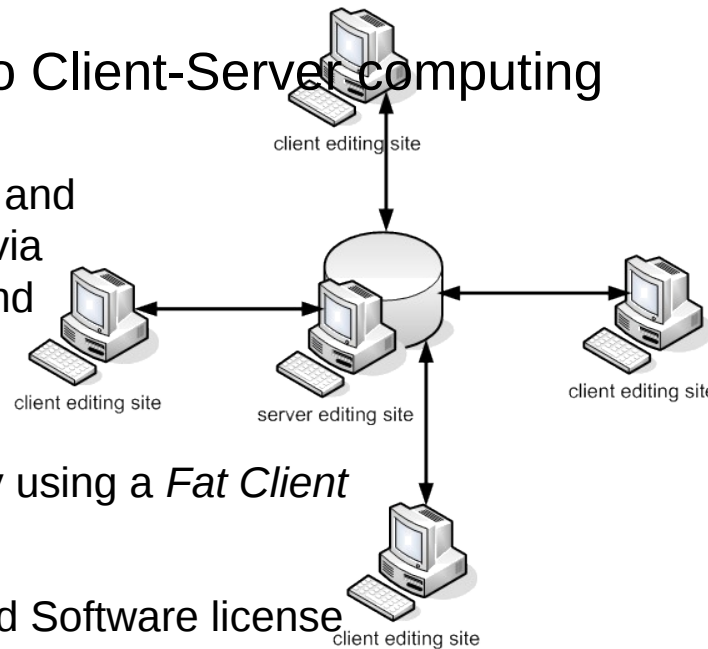
**Optimized
for
Agility**

■ ... the 90's to Client-Server computing

▶ Sharing data and applications via Client PCs and Server PCs

▶ User typically using a *Fat Client*

▶ Hardware and Software license costs per machine



...and the web took this to the extreme

- The turn of the millennium saw further democratization of computing...
 - Now a shift to “sharing for all” and “content for all”
 - But also a shift back to *thin clients* (the web browser) to access the applications as services

- ...and emergence of standards to re-connect the distribution

- ▶ to try and help to join back up all the distributed computers
- ▶ Grids, Web Services, and Utility Computing have visions of “Virtual Organizations”

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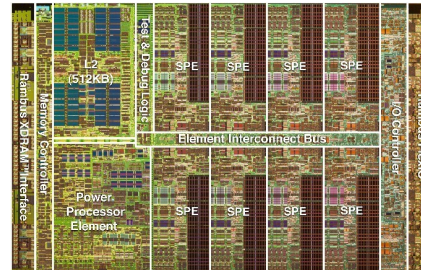
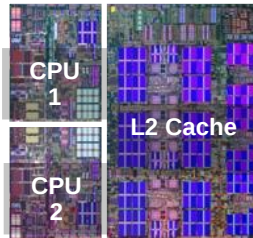
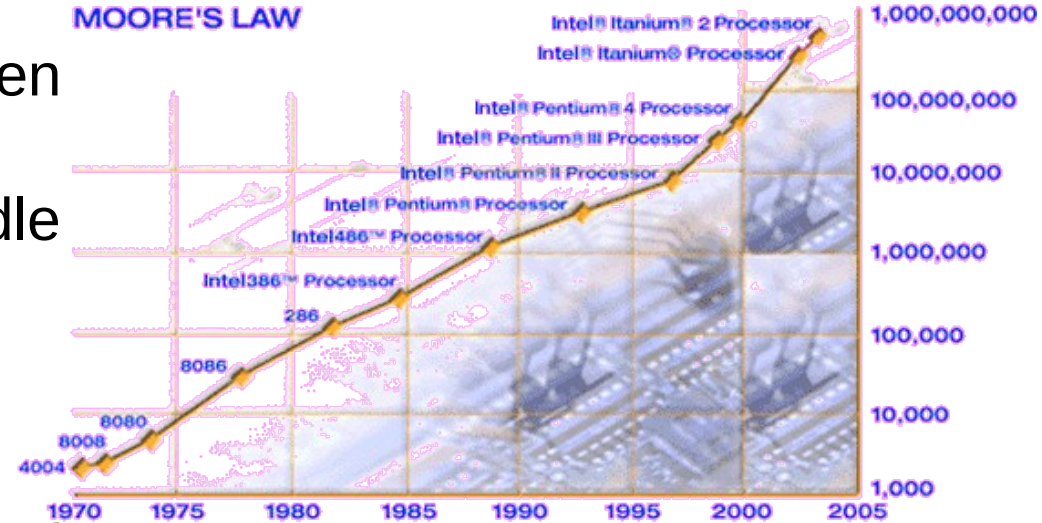
Optimized
for
Scale



Meanwhile...the hardware “free lunch” runs out



- Whilst processors had been getting faster and faster, individual PCs could handle the increasing workloads
- But although transistors continue to shrink, we could no longer make them run faster and faster*
- The solution was to *scale out* (with multi-cores and commodity hardware) rather than *scale up*

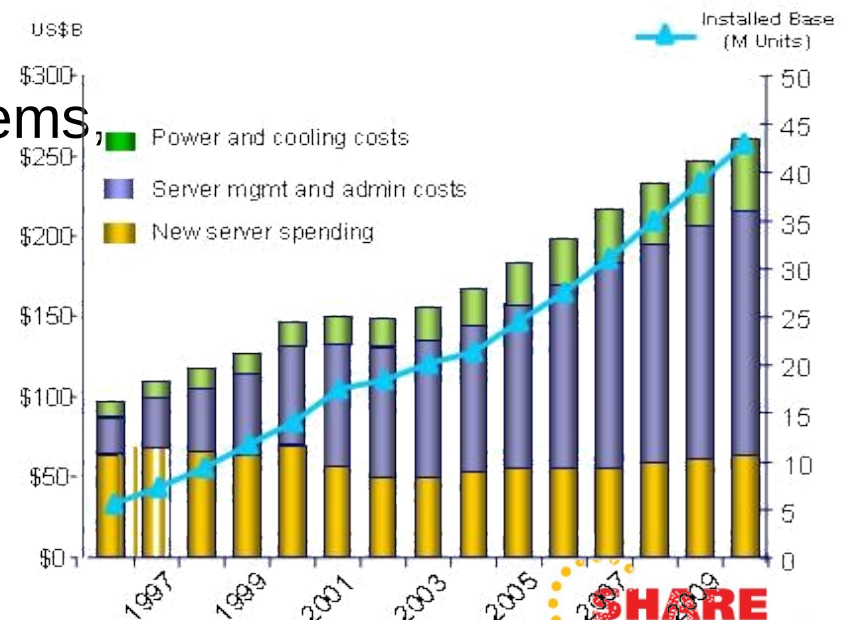


But what was wrong with this picture?

- The key values from the mainframe platform were lost
 - The management capabilities of a single platform
 - The high utilization
 - The redistribution of costs of the platform to its users

Server machines bought and installed for specific applications

- Many different operating systems, software and middleware to manage
- Very low utilization per server
- All consuming power
- All needing cooling



Source: IDC, 2008



With the economic climate, and ecological issues, things had to change...



Doing more with less

Reduce capital expenditures and operational expenses



Reducing risk

Ensure the right levels of security and resiliency across all business data and processes



Higher quality services

Improve quality of services and deliver new services that help the business grow and reduce costs



Breakthrough agility

Increase ability to quickly deliver new services to capitalize on opportunities while containing costs and managing risk

So what is Cloud Computing?

... a style of computing in which dynamically **scalable** and often **virtualized** resources are provided **as a service** over the Internet. Users need not have knowledge of, expertise in, or control over the technology infrastructure “in the cloud” that supports them.

Wikipedia

- “The Cloud” is the infrastructure that a “service” runs on
 - A collection of *resources* pooled together, and **virtualized**
 - **Standardized** service running on *virtual resources* in that pool
 - As demand increases, the service is *rapidly provisioned* through **automation**, on more *virtual resources* from the pool – *elastic scaling*

Effectively, it's the value proposition of the ~~mainframe, client-server, and web~~, all converging together

CICS TS
Version 4

SOA **Web 2.0** **CICS**



The NIST Definition of Cloud Computing

- *Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential **characteristics**, three **service models**, and four **deployment models**.*

(Essential) Characteristics

- On-demand Self Service
 - *A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service's provider.*
- Broad Network Access
 - *Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).*
- Resource Pooling
 - *The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. ...*
- Rapid Elasticity
 - *Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in. ...*
- Measured Service
 - *Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts). ...*

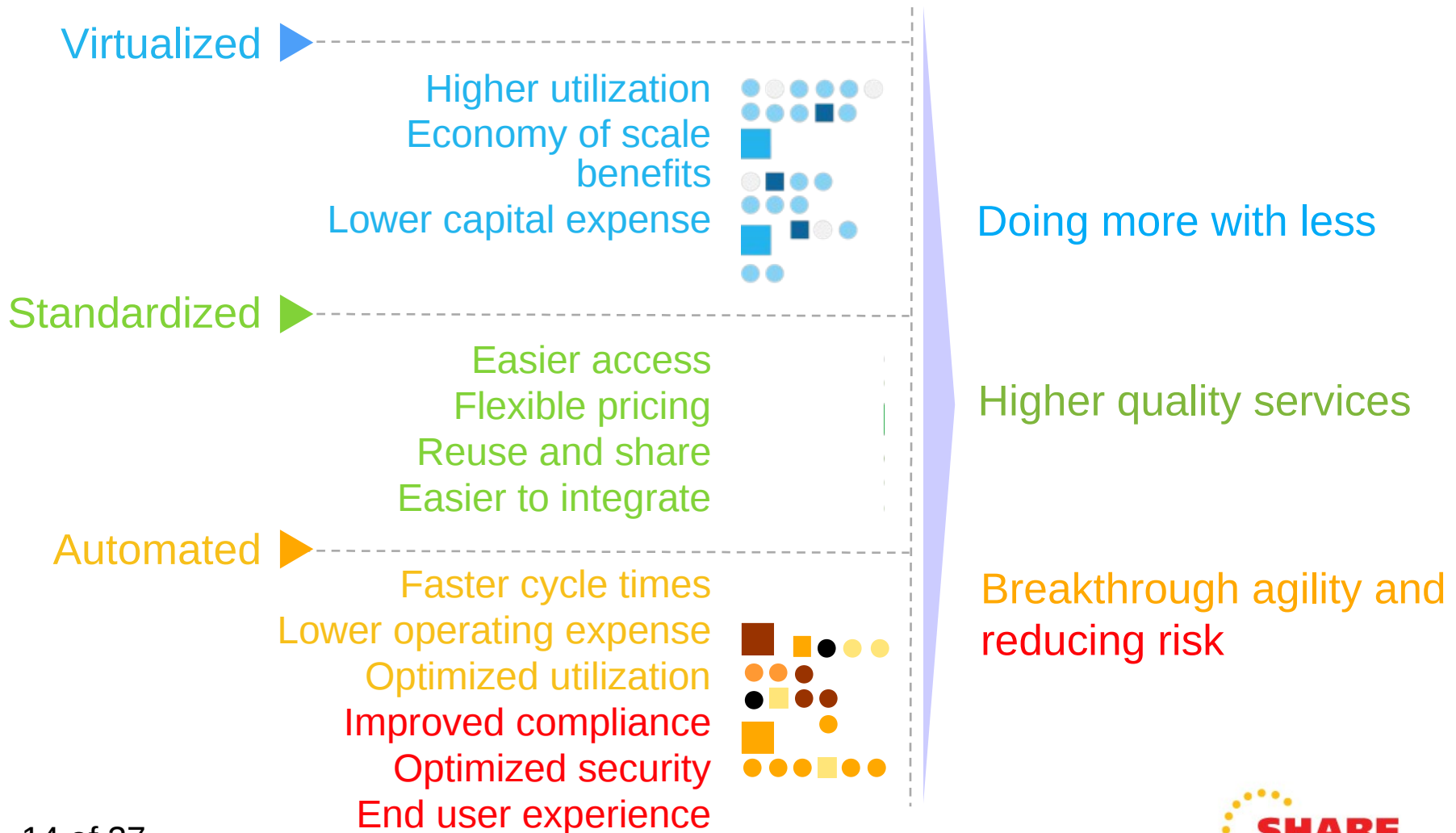
Draft NIST Working Definition
of Cloud Computing

Service Models

- *Cloud Software as a Service (SaaS)*. The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. ...
- ***Cloud Platform as a Service (PaaS)***. The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider. ...
- *Cloud Infrastructure as a Service (IaaS)*. The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. ...

*Draft NIST Working Definition of
Cloud Computing*

Cloud computing is an Evolution that helps deliver IT and business benefits



Cloud Computing Deployment Models

Flexible Deployment Models

Private ...

Privately owned and managed.
 Access limited to client and its partner network.
 Drives efficiency, standardization and best practices while retaining greater customization and control

Standardization, capital preservation, flexibility and time to deploy

Cloud Services

Cloud Computing Model

Public ...

Service provider owned and managed.
 Access by subscription.
 Delivers select set of standardized business process, application and/or infrastructure services on a flexible price per use basis.

Customization, efficiency, availability, resiliency, security and privacy

Hybrid ...

Access to client, partner network, and third party resources

ORGANIZATION

CULTURE

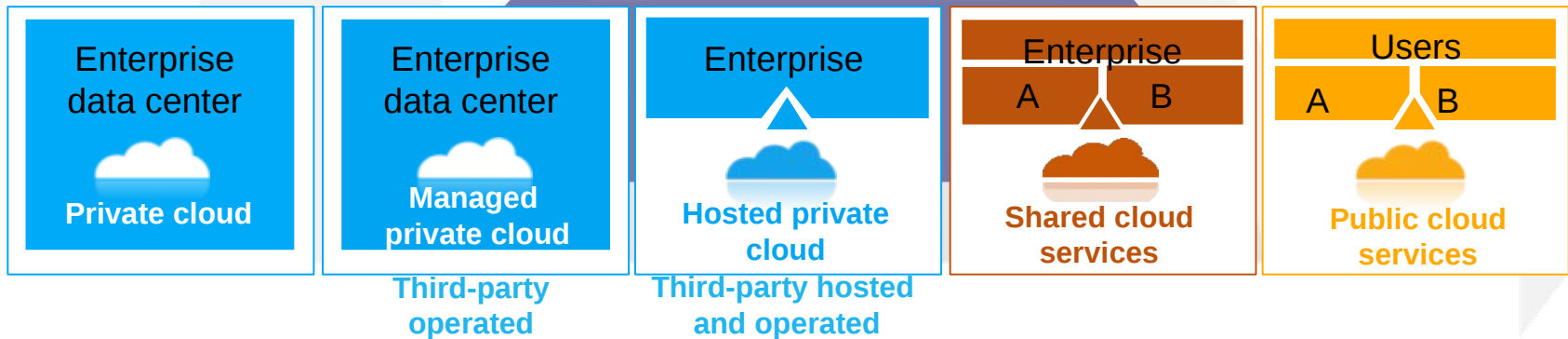
GOVERNANCE

Cloud Computing Deployment Models

Flexible Deployment Models

Private ...

Public ...



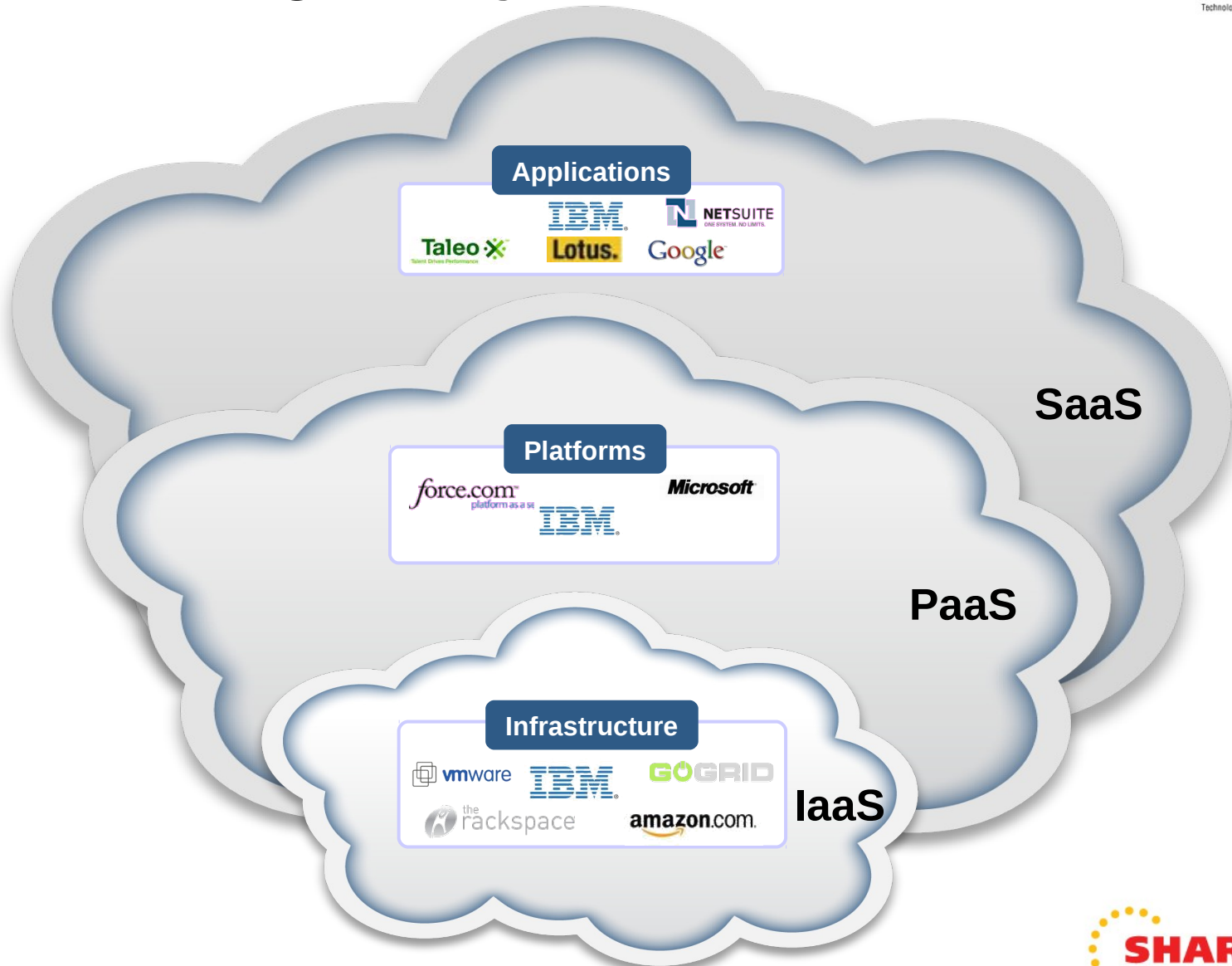
Hybrid ...

ORGANIZATION

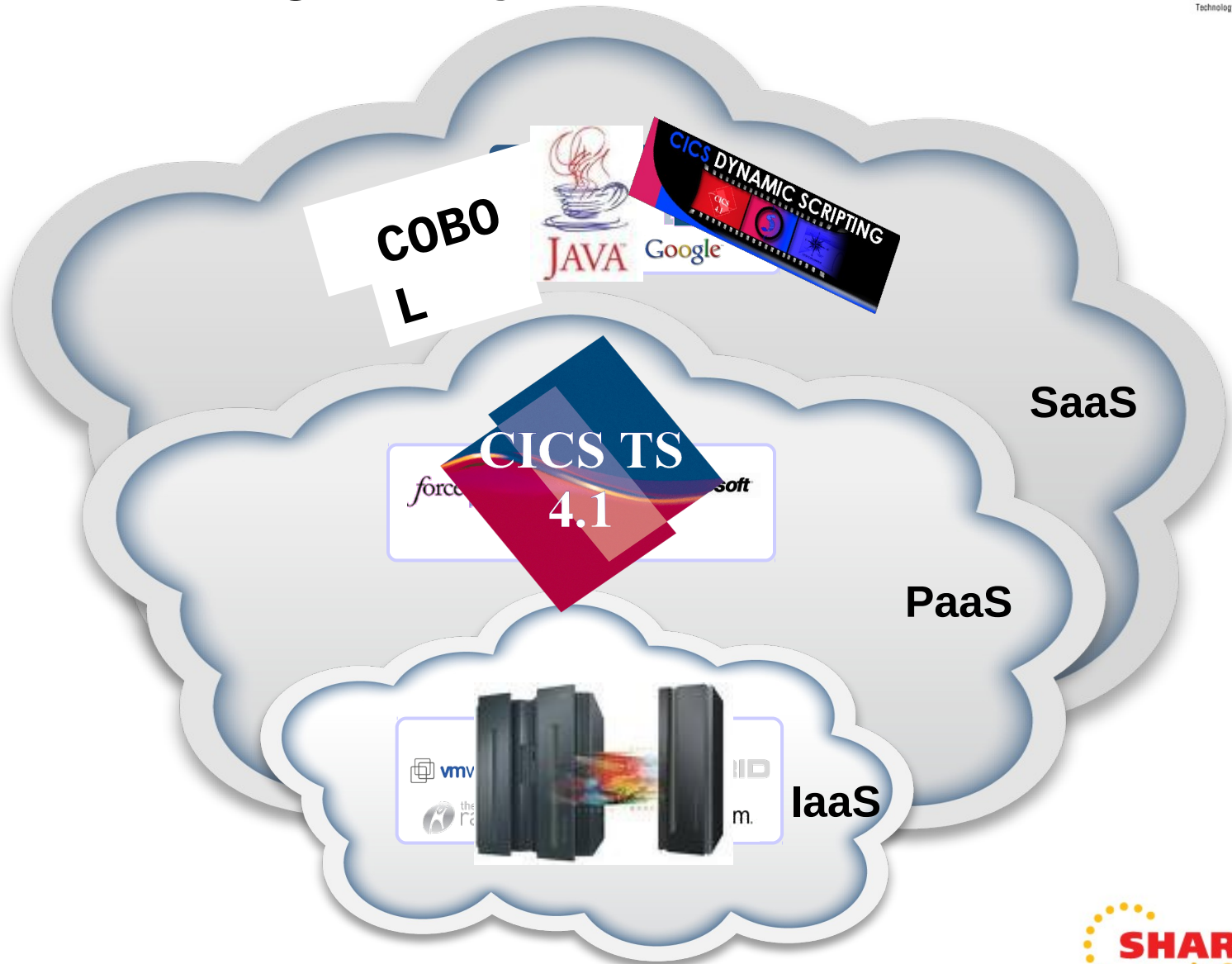
CULTURE

GOVERNANCE

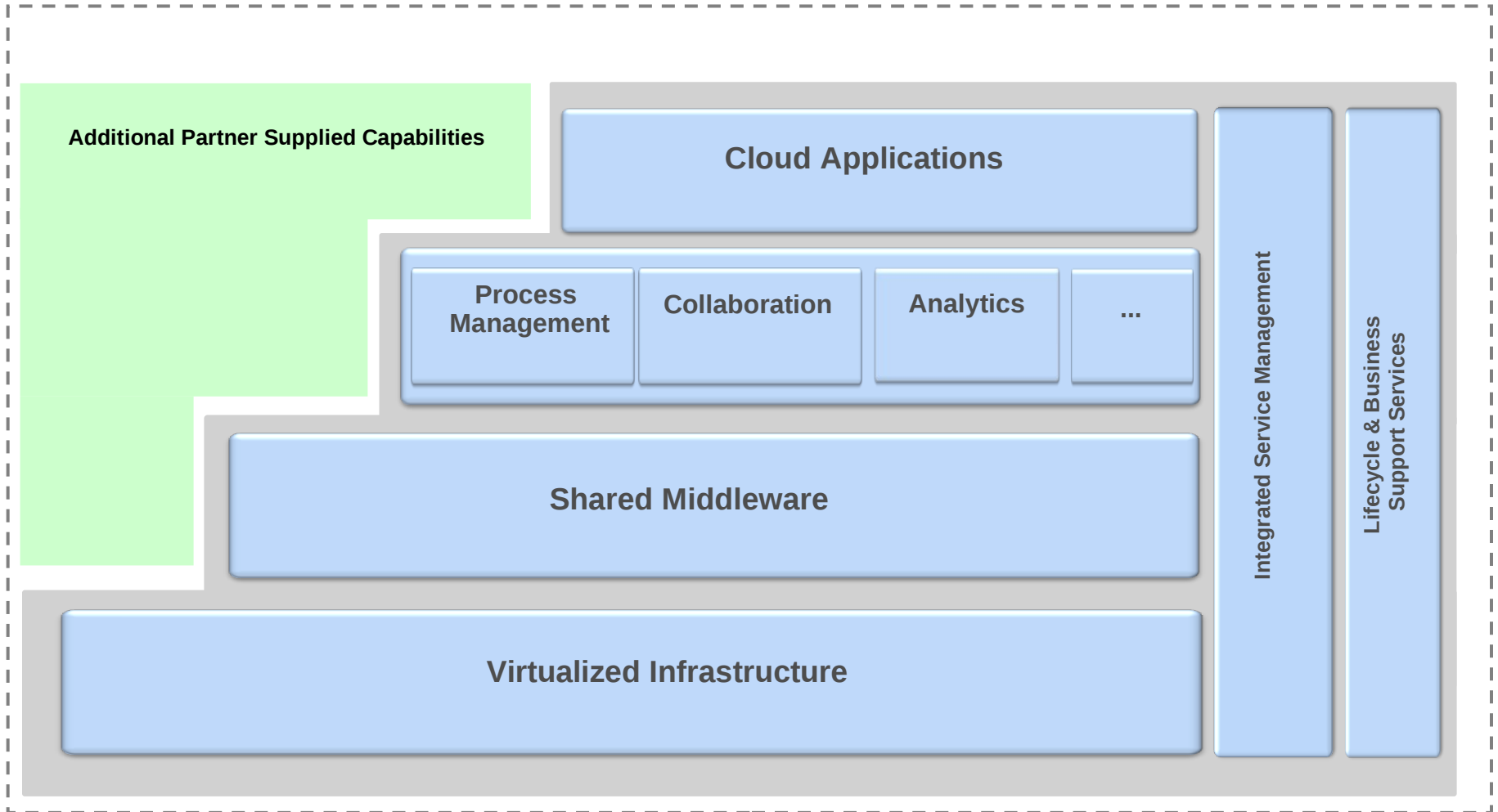
There are a range of layers to clouds



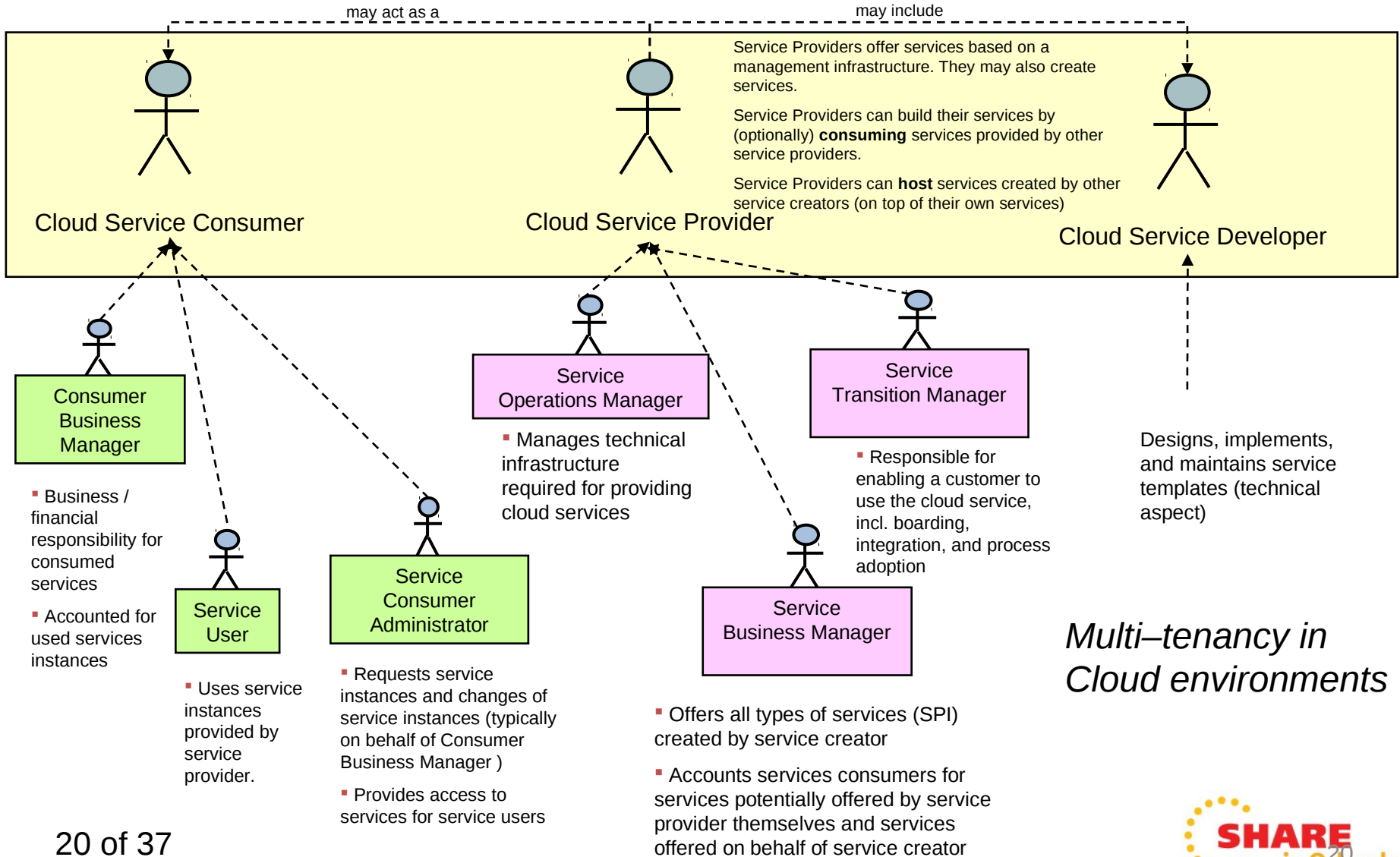
There are a range of layers to clouds



An IBM architectural view of cloud computing



Common Role definitions



Multi-tenancy in Cloud environments

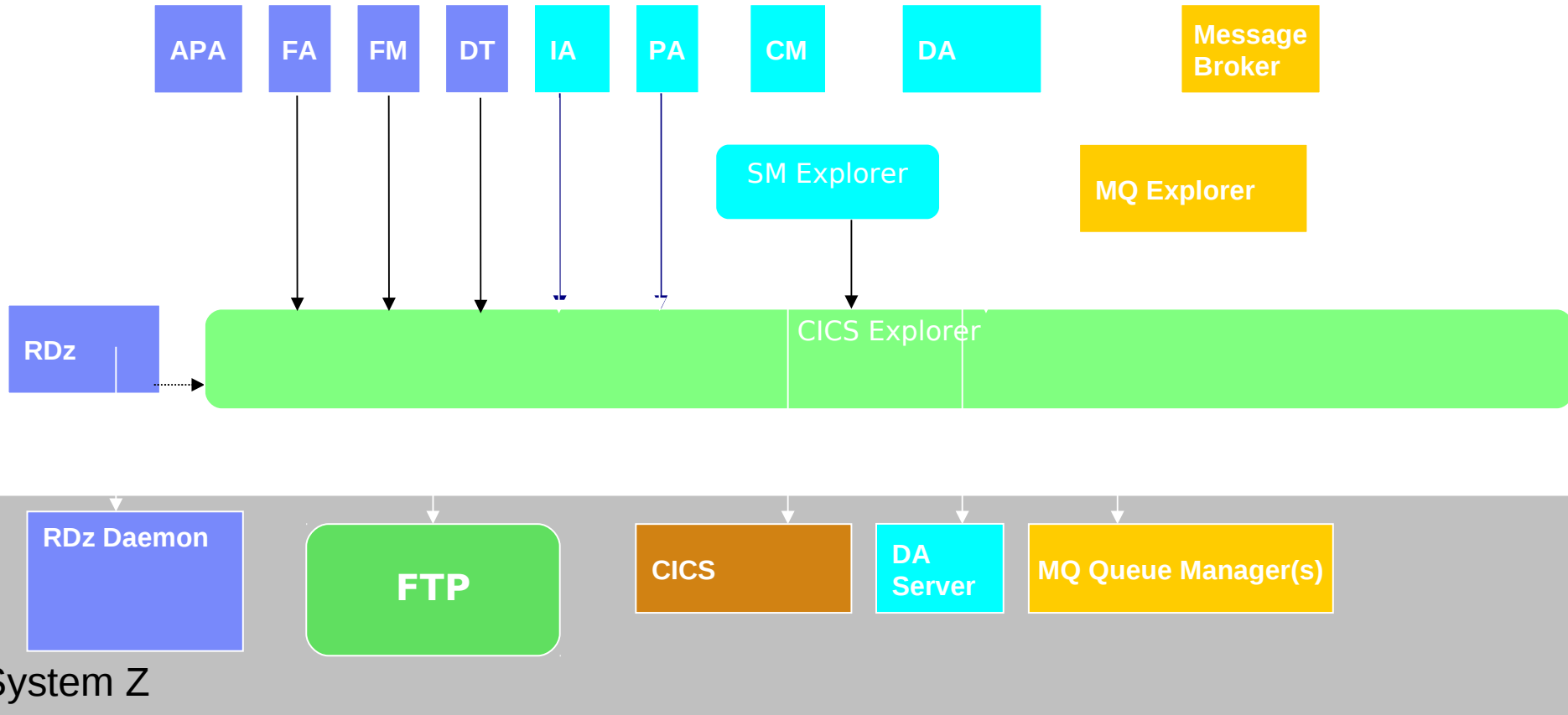
Agenda:

- CICS Explorer
- CICS Deployment Assistant
- A bit of vision....

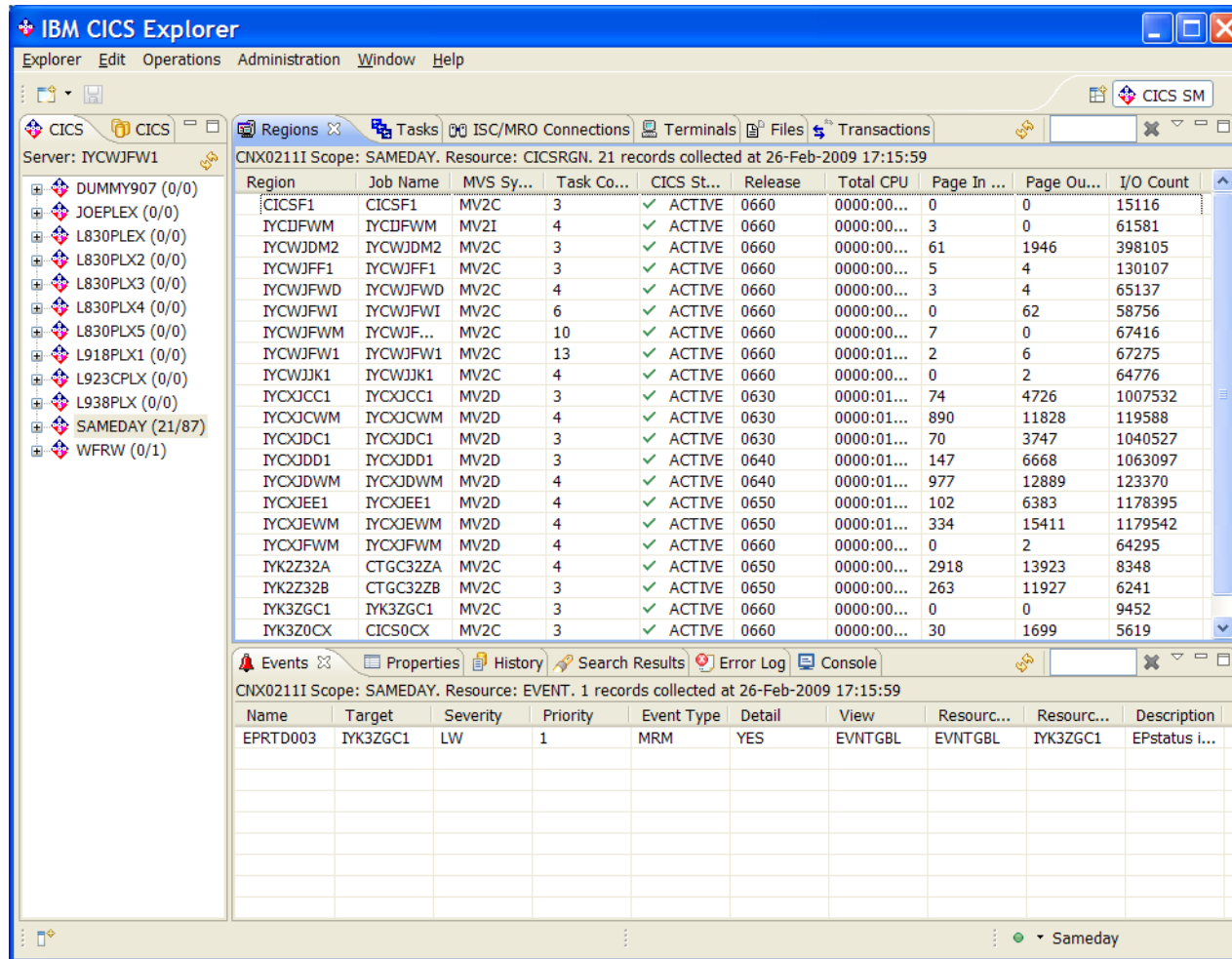
Why CICS Explorer ?

- *Simplify CICS*
 - ***New users, familiar user interface, high learning curve, grey hair investment***
- *Integration platform*
 - ***Value of the sum exceeds the part, first class cross tool scenario integration.***
- *Wide and deep*
 - ***Streamline process and add value to experienced CICS professionals***

Explorer Landscape



The Look: CICS Explorer



The screenshot displays the IBM CICS Explorer application window. The main pane shows a list of CICS regions for the server IYCWJFW1. The regions are listed with their names, job names, MVS systems, task counts, CICS status, release numbers, and various performance metrics like CPU time and I/O counts. The 'SAMEDAY' region is highlighted in the left-hand tree view.

Region	Job Name	MVS Sy...	Task Co...	CICS St...	Release	Total CPU	Page In ...	Page Ou...	I/O Count
CICSF1	CICSF1	MV2C	3	✓ ACTIVE	0660	0000:00...	0	0	15116
IYCIJFWM	IYCIJFWM	MV2I	4	✓ ACTIVE	0660	0000:00...	3	0	61581
IYCWJDM2	IYCWJDM2	MV2C	3	✓ ACTIVE	0660	0000:00...	61	1946	398105
IYCWJFF1	IYCWJFF1	MV2C	3	✓ ACTIVE	0660	0000:00...	5	4	130107
IYCWJFWD	IYCWJFWD	MV2C	4	✓ ACTIVE	0660	0000:00...	3	4	65137
IYCWJFWI	IYCWJFWI	MV2C	6	✓ ACTIVE	0660	0000:00...	0	62	58756
IYCWJFWM	IYCWJF...	MV2C	10	✓ ACTIVE	0660	0000:00...	7	0	67416
IYCWJFW1	IYCWJFW1	MV2C	13	✓ ACTIVE	0660	0000:01...	2	6	67275
IYCWJJK1	IYCWJJK1	MV2C	4	✓ ACTIVE	0660	0000:00...	0	2	64776
IYCXJCC1	IYCXJCC1	MV2D	3	✓ ACTIVE	0630	0000:01...	74	4726	1007532
IYXJCWM	IYXJCWM	MV2D	4	✓ ACTIVE	0630	0000:01...	890	11828	119588
IYXJDC1	IYXJDC1	MV2D	3	✓ ACTIVE	0630	0000:01...	70	3747	1040527
IYXJDD1	IYXJDD1	MV2D	3	✓ ACTIVE	0640	0000:01...	147	6668	1063097
IYXJDWM	IYXJDWM	MV2D	4	✓ ACTIVE	0640	0000:01...	977	12889	123370
IYXJEE1	IYXJEE1	MV2D	4	✓ ACTIVE	0650	0000:01...	102	6383	1178395
IYXJEW1	IYXJEW1	MV2D	4	✓ ACTIVE	0650	0000:01...	334	15411	1179542
IYXJFWM	IYXJFWM	MV2D	4	✓ ACTIVE	0660	0000:00...	0	2	64295
IYK2Z32A	CTGC32ZA	MV2C	4	✓ ACTIVE	0650	0000:00...	2918	13923	8348
IYK2Z32B	CTGC32ZB	MV2C	3	✓ ACTIVE	0650	0000:00...	263	11927	6241
IYK3ZGC1	IYK3ZGC1	MV2C	3	✓ ACTIVE	0660	0000:00...	0	0	9452
IYK3Z0CX	CICS0CX	MV2C	3	✓ ACTIVE	0660	0000:00...	30	1699	5619

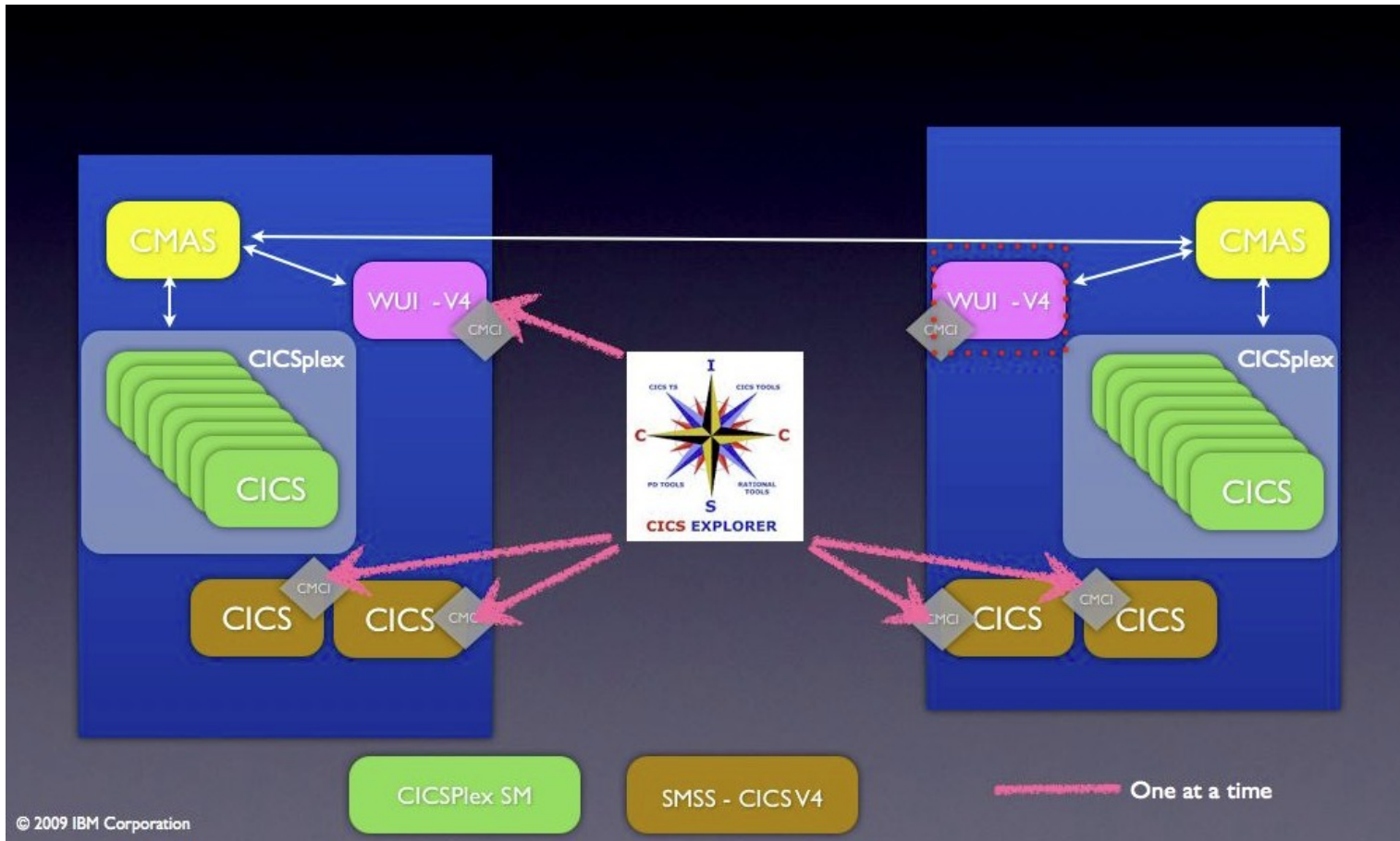
The bottom pane shows an event log for the 'SAMEDAY' region. It contains one event record:

Name	Target	Severity	Priority	Event Type	Detail	View	Resourc...	Resourc...	Description
EPRTD003	IYK3ZGC1	LW	1	MRM	YES	EVNTGBL	EVNTGBL	IYK3ZGC1	EPstatus i...

CICS Explorer V1.0.1 system Z support

- CICS Explorer base component
 - Integrates into CICS Explorer SDK
 - Access via FTP to:
 - Datasets
 - USS File System
 - Spool
- Usually zero-config for the 'host component'
 - It's FTP!
 - So probably already running!
 - Secure FTP supported
 - Bad news however if client cannot reach host using FTP...

CICS Explorer CMCI Topologies



CICS Deployment Assistant v1.1 – Functions I

- Discover Running CICS
 - Capture to a shareable 'model'
 - Saved as a CICS DA project
 - Use Eclipse team support to share
- Display model
 - System Topology details
- Exploitation of CICS Explorer V1.0.1 system z support:
 - Data set/USS File system, completed spool
- Active Spool support
 - Look at your running CICS joblog
 - View SYSLOG
 - Enter MVS commands

CICS Deployment Assistant v1.1 – Functions II

- Specify Start Policy
 - Started task/job or Batch
 - Start a CICS based on pre-defined policy within CICS Explorer
 - Stop CICS
- Clone an existing CICS
 - Typically AOR/TOR
 - Some plumbing included
- SIT option display
 - SYSPARM resource for CICS TS V4
 - Subset of function for CICS TS V3
- Linkage between SM and DA perspectives
- Cheat-sheets
 - CICSplex SM Setup
 - Upgrading CICS TS V3.1/V3.2 -> V4.1

Product Details

- Program Number: 5655-W48
- S&S PID: 5655-W62
- FMID: HGEM110
- GA date: 24 September 2010
- Product prefix: CPH

- Client download:
<http://www.ibm.com/cics/explorer/download>

- Client prereqs:
 - Same as CICS Explorer V1.0.1:
 - x86 platform
 - 32-bit
 - Windows XP, Vista, 7, Server 2003, Server 2008
 - Linux (Red Hat 5, SUSE Linux Enterprise Server 10)

Explorer 1.0.1 / CICS DA Function Comparison:

<i>Function</i>	<i>CICS Explorer V1.0.1</i>	<i>CICS DA V1.1.0</i>
Edit z/OS Dataset sequential and Partitioned	✓	✓
Edit z/FS file	✓	✓
Create new member	✓	✓
Display 'jobs'	✓	✓
Select 'job' queue (Input/Output/Active)	✓	✓
Display completed spool	✓	✓*
Display active spool	✗	✓
Display system log	✗	✓
Display CICS Version 4 SIT options †	✓	✓
Display CICS Version 3 SIT overrides	✗	✓

† - Requires UK60398 and UK60399

* - Faster with CICS DA

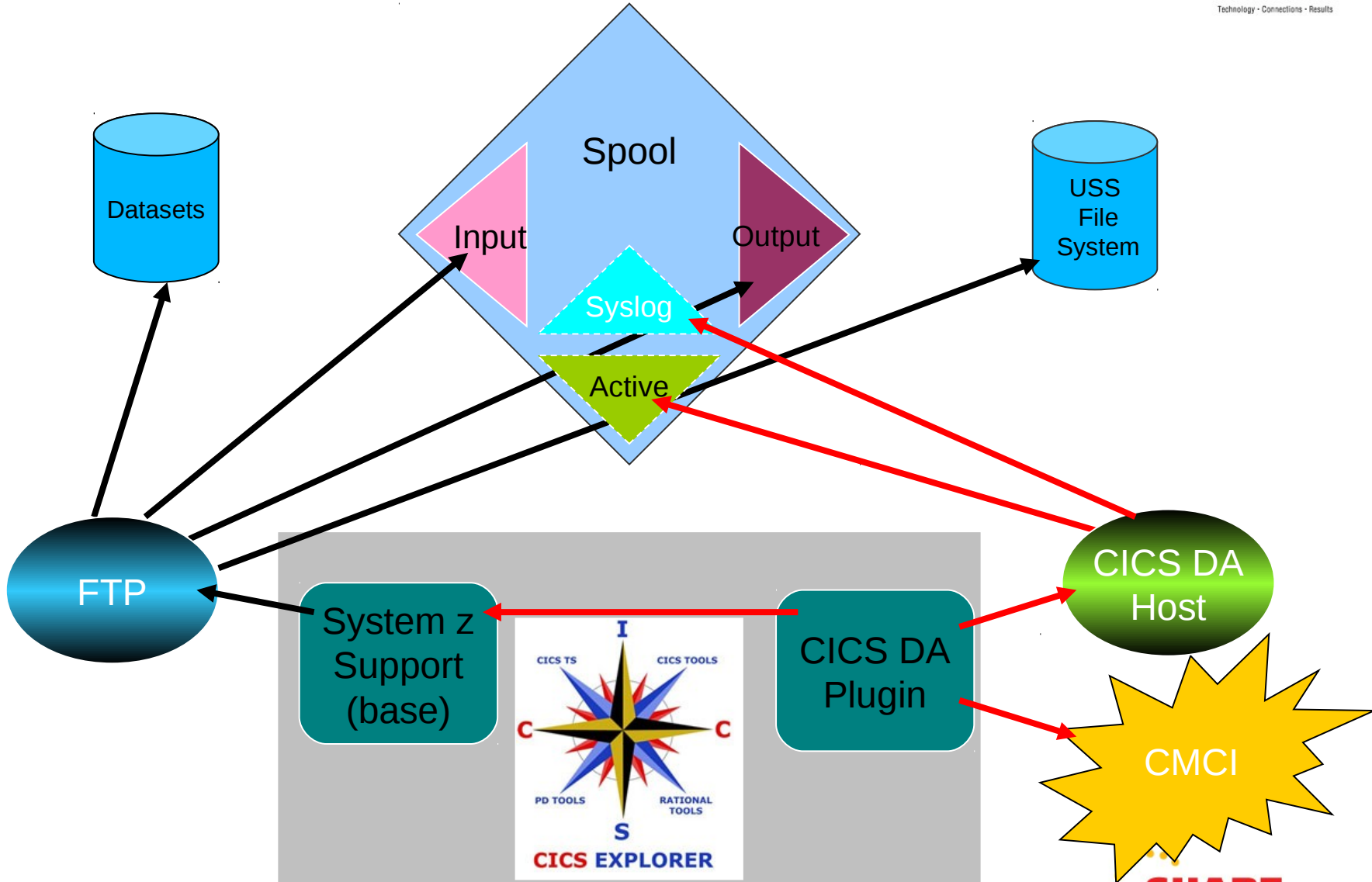
CICS DA 1.1 Prereqs

- CICS TS V3.1 or higher
 - Experience will be better with later versions of CICS TS
- z/OS 1.9 or higher
 - JES3 Users will need z/OS 1.10
 - Syslog support requires z/OS 1.11
 - JESplex auto detection requires z/OS 1.11
- For SIT support on V4:
 - CICS TS V4 Users need PTFs for APARs PM15214 and PM15583
- CICSplex SM
 - If systems to be managed not part of a CICSplex SM managed CICSplex use DA cheat sheet to help set it up

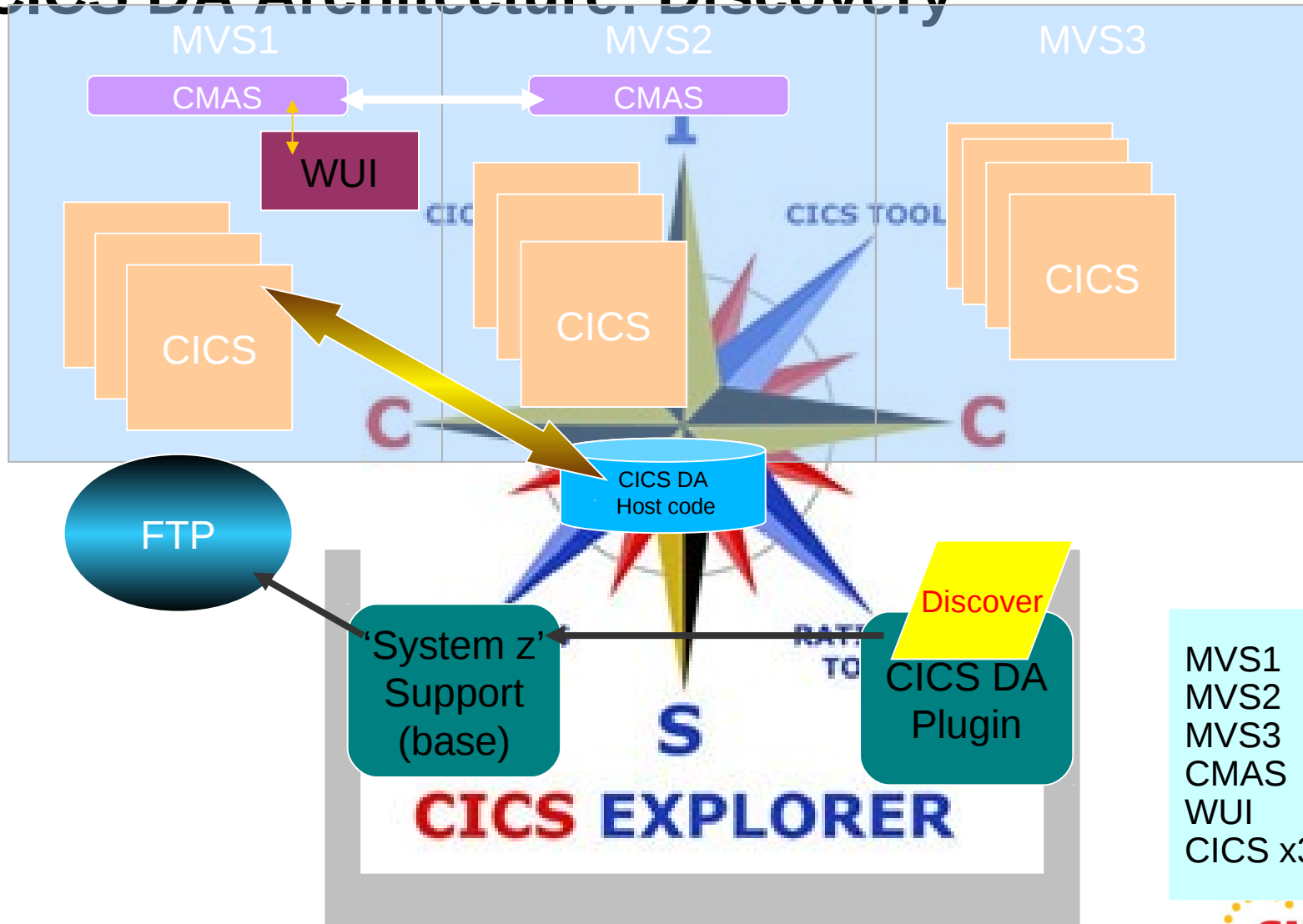
Installation/Config

- Host Component Installation (< 30mins)
 - Standard SMP/E install
 - Small, just 3 datasets
- Host Component Configuration (< 30mins)
 - APF Authorise SCPHAUTH
 - Add SCPHLOAD to CICSplex SM Web User Interface (WUI) Server
 - Add and Install CICS Resource definitions to WUI
 - System z support in CICS Explorer 1.0.1 requires
 - FTP JESINTERFACELEVEL=2
- Client Installation (< 30mins)
 - Download CICS Explorer 1.0.1 (if you don't already have it)
 - Download and Install CICS DA plugin

CICS DA Architecture: Access to z/OS

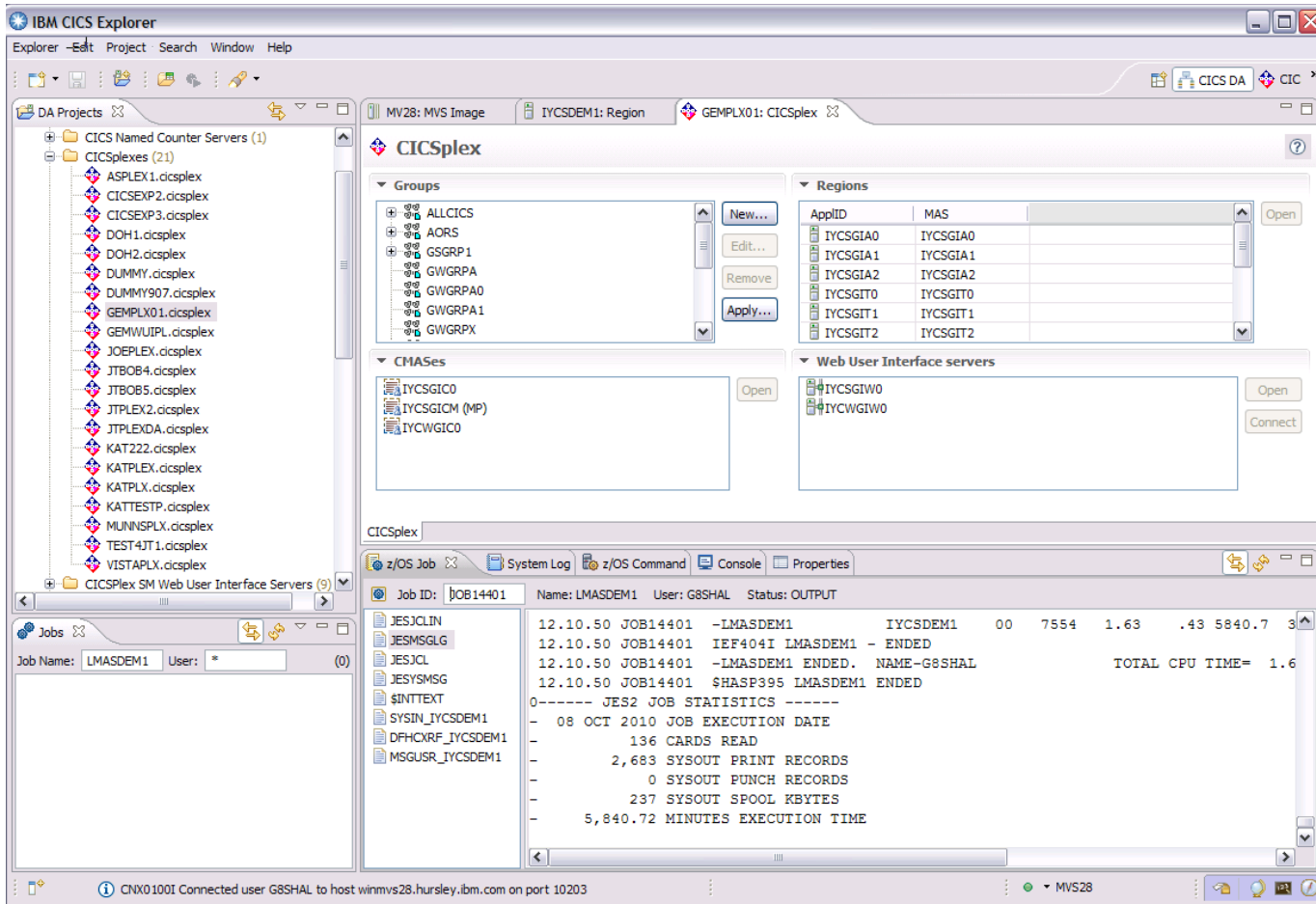


CICS DA Architecture: Discovery



MVS1	<input checked="" type="checkbox"/>
MVS2	<input type="checkbox"/>
MVS3	<input type="checkbox"/>
CMAS	<input type="checkbox"/>
WUI	<input type="checkbox"/>
CICS x3	<input type="checkbox"/>

What you experience...



The screenshot displays the IBM CICS Explorer application window. The interface is divided into several panes:

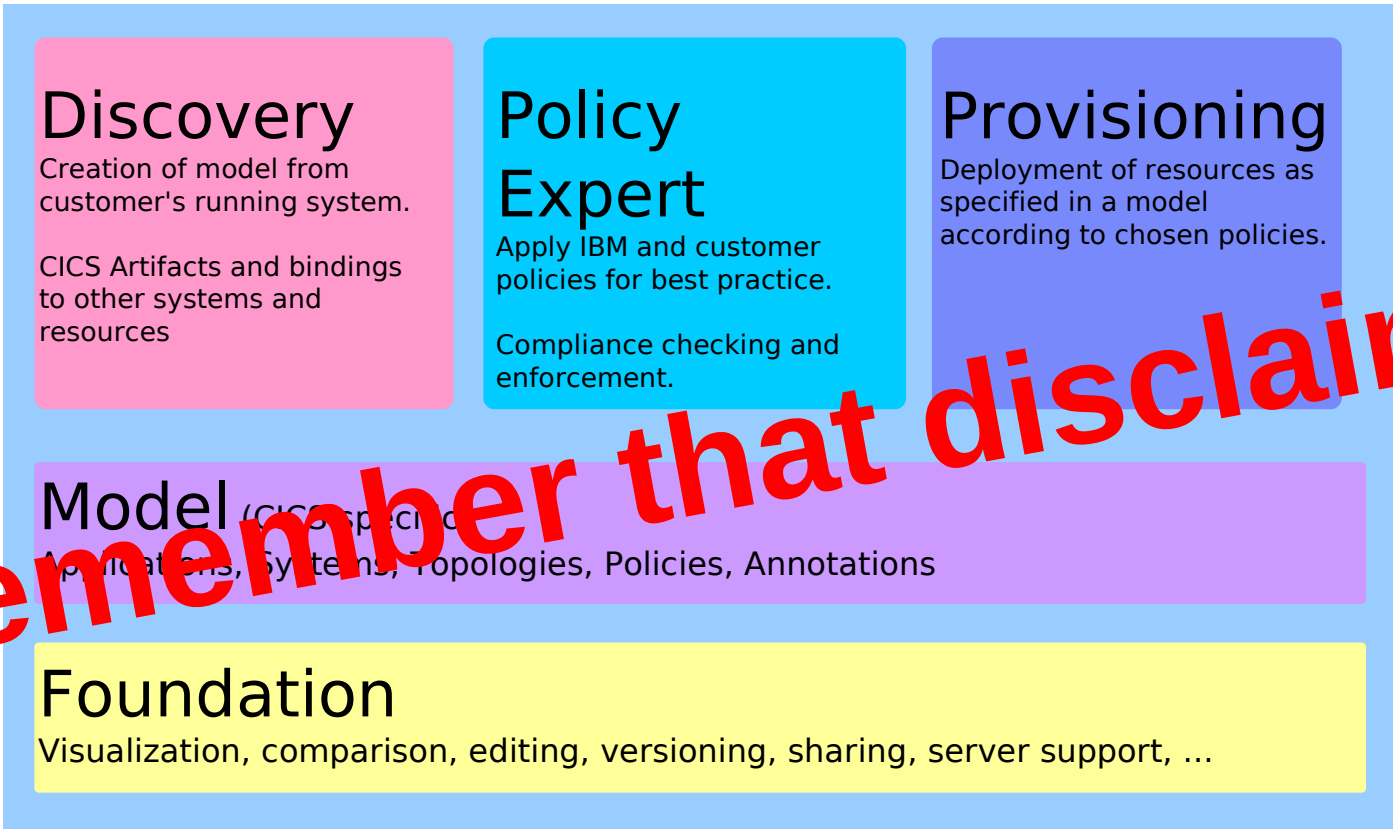
- Left Pane (DA Projects):** A tree view showing a hierarchy of CICS Named Counter Servers (1) and CICSplexes (21). The selected CICSplex is GEMPLX01.cicsplex.
- Top Pane (CICSplex):** Configuration details for the selected CICSplex. It includes:
 - Groups:** A list of groups including ALLCICS, AORS, GSGRP1, GWGRPA, GWGRPA0, GWGRPA1, and GWGRPX.
 - Regions:** A table listing regions with columns for ApplID and MAS.

ApplID	MAS
IYCSGIA0	IYCSGIA0
IYCSGIA1	IYCSGIA1
IYCSGIA2	IYCSGIA2
IYCSGIT0	IYCSGIT0
IYCSGIT1	IYCSGIT1
IYCSGIT2	IYCSGIT2
 - CMASes:** A list of CMASes including IYCSGIC0, IYCSGICM (MP), and IYCWGIC0.
 - Web User Interface servers:** A list of servers including IYCSGIW0 and IYCWGIW0.
- Bottom Pane (z/OS Job):** A console window showing the execution details of a job.

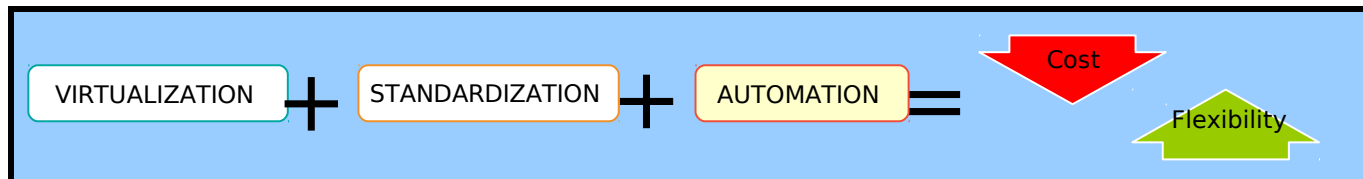

```

Job ID: JJOB14401 Name: LMASDEM1 User: G8SHAL Status: OUTPUT
JESJCLIN 12.10.50 JOB14401 -LMASDEM1 IYCSDEM1 00 7554 1.63 .43 5840.7 3
JESMSGGL 12.10.50 JOB14401 IEF404I LMASDEM1 - ENDED
JESJCL 12.10.50 JOB14401 -LMASDEM1 ENDED. NAME=G8SHAL TOTAL CPU TIME= 1.6
JESYSMSG 12.10.50 JOB14401 $HASP395 LMASDEM1 ENDED
$INITEXT 0----- JES2 JOB STATISTICS -----
SYSIN_IYCSDEM1 - 08 OCT 2010 JOB EXECUTION DATE
DFHCXRF_IYCSDEM1 - 136 CARDS READ
MSGUSR_IYCSDEM1 - 2,683 SYSOUT PRINT RECORDS
- 0 SYSOUT PUNCH RECORDS
- 237 SYSOUT SPOOL KBYTES
- 5,840.72 MINUTES EXECUTION TIME
      
```

A bit of vision...



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