



Integration of Middleware for Compute Farms

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Some Facts und Figures about s+c

- Revenue 2003/04: 20 Mio €
- Employees: 190 (September 2004)
- Locations: Tübingen, München, Berlin, Duisburg
- Company established: September 1989
- Legal Form of Company:
Privately Owned Stock Corporation

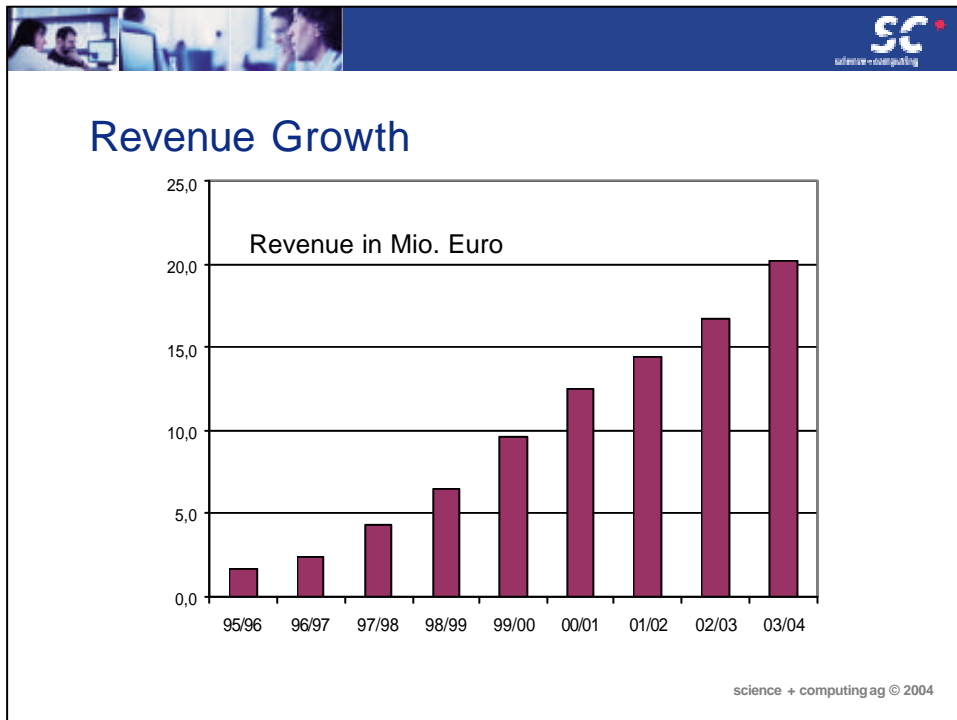
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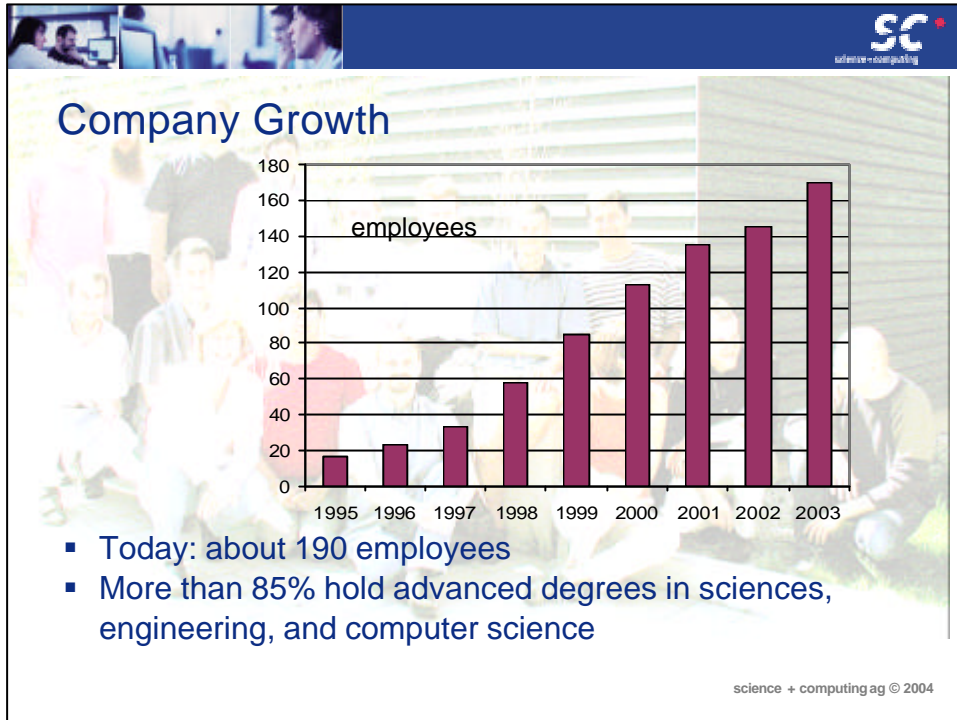


Our Focus

We offer
IT services and solutions
for efficient IT management
in technical computing

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An educated guess

Most of our customers do not want to operate Compute Farms ...

... they want solutions for their simulation problems

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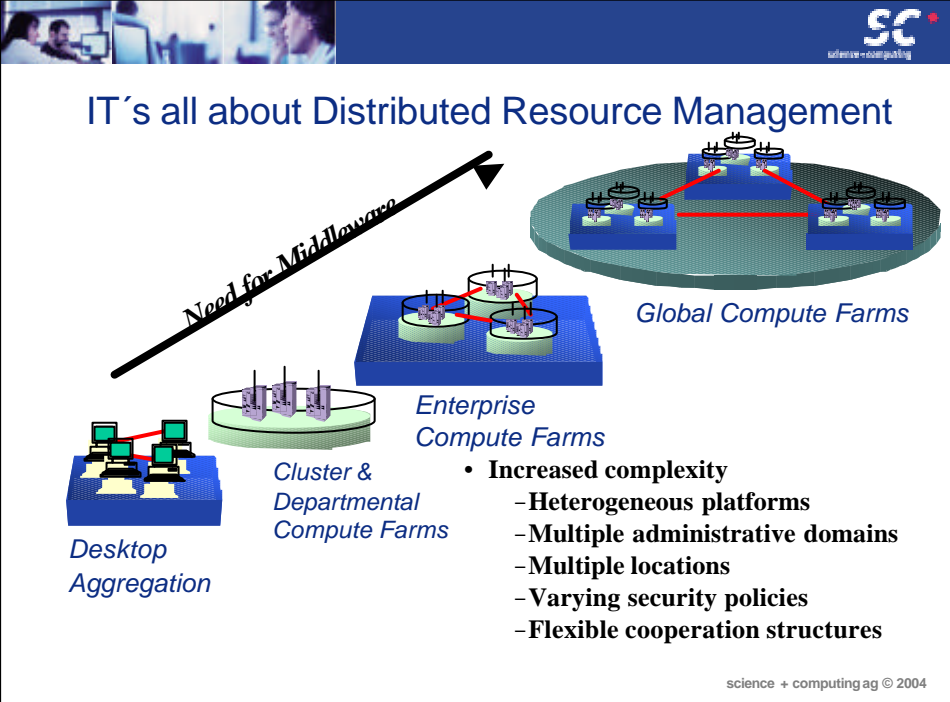
IT-Services scITservices

scITservices

- System Administration of Linux/Unix/Windows
- Installation and Configuration of Compute Farms
- Operation of Compute Farms
- Integration of Clusters in department networks
- Update of Applications/Operating System
- Operating System and Application specific Know-How

Kunden s+c Service Desk

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IT's all about Distributed Resource Management

Need for Middleware

Desktop
Aggregation

Cluster &
Departmental
Compute Farms

Enterprise
Compute Farms

Global Compute Farms

- **Increased complexity**
 - Heterogeneous platforms
 - Multiple administrative domains
 - Multiple locations
 - Varying security policies
 - Flexible cooperation structures

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The Administration with scVENUS



The functionality of computers are **Group concept** and their group membership

Automated **Method concept** system administration: reproducible, solid/stable


Performance, **Parallelization** unreachable clients

Single point of administration

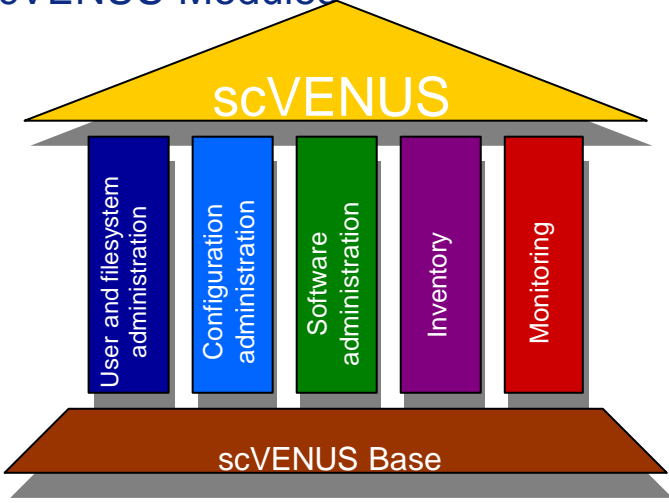
Multi administrator environment, Different administrator accounts, different **environment**, log files



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scVENUS Modules




scVENUS





- User and filesystem administration
- Configuration administration
- Software administration
- Inventory
- Monitoring

scVENUS Base


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Integration and Job Flow - Software Layers

	Easy access to compute resources over a WEB interface
	Comfortable job flow management with a graphical editor
	Optimal utilization of compute resources , LSF
LS-DYNA, NASTRAN, ...	Integration of different applications
	Automate and reproduce system administration
node node node	Operating systems


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Integration and Job Flow - I

System Environment


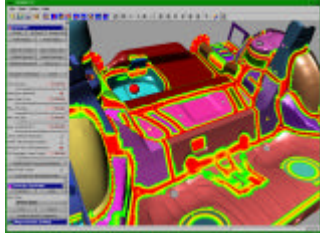
Compute Farm





WS ...



In a preprocessing process the CAE engineers are building the input decks on their workstations


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Integration and Job Flow - II

System Environment


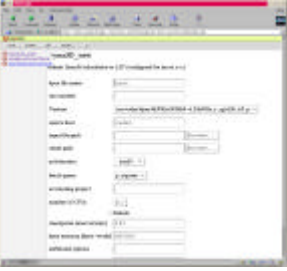
Compute Farm







WS ...

The CAE engineers submits batch jobs over a WEB interface, generated from EnginFrame


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Integration and Job Flow - III

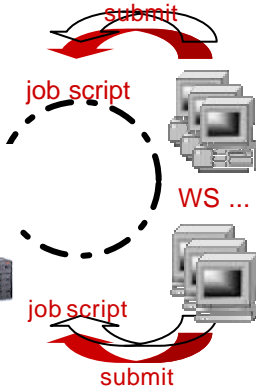
System Environment

Compute Farm







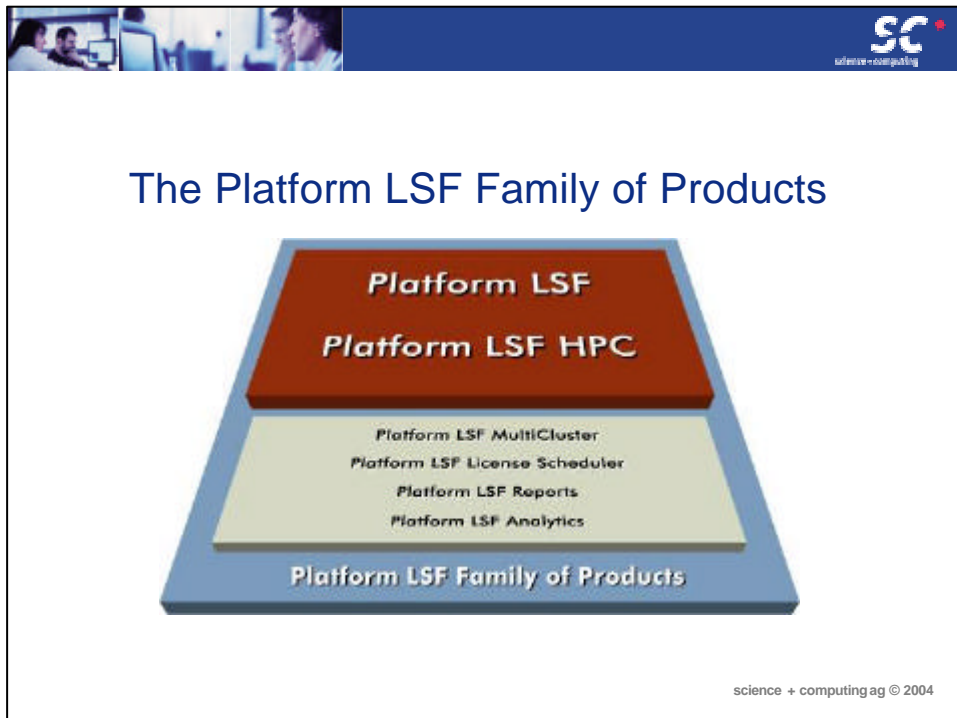
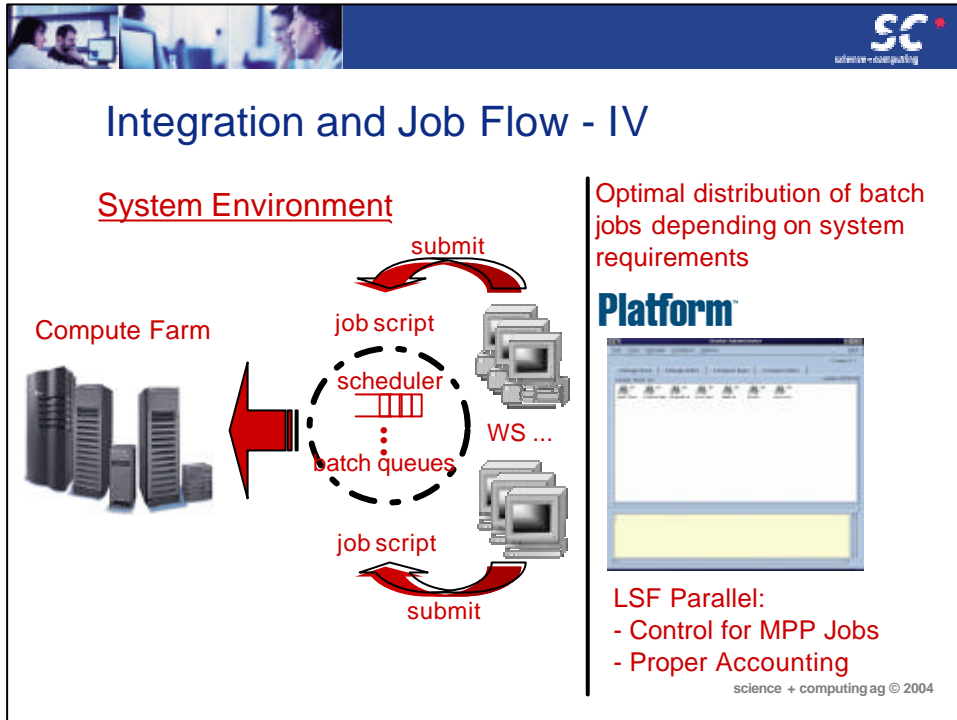
WS ...

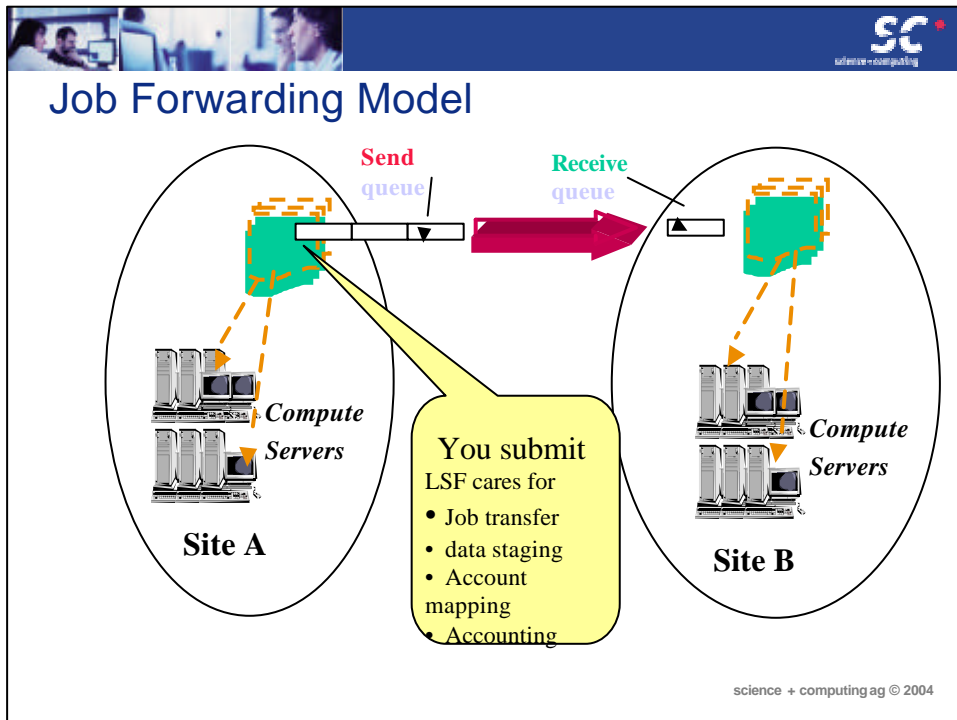
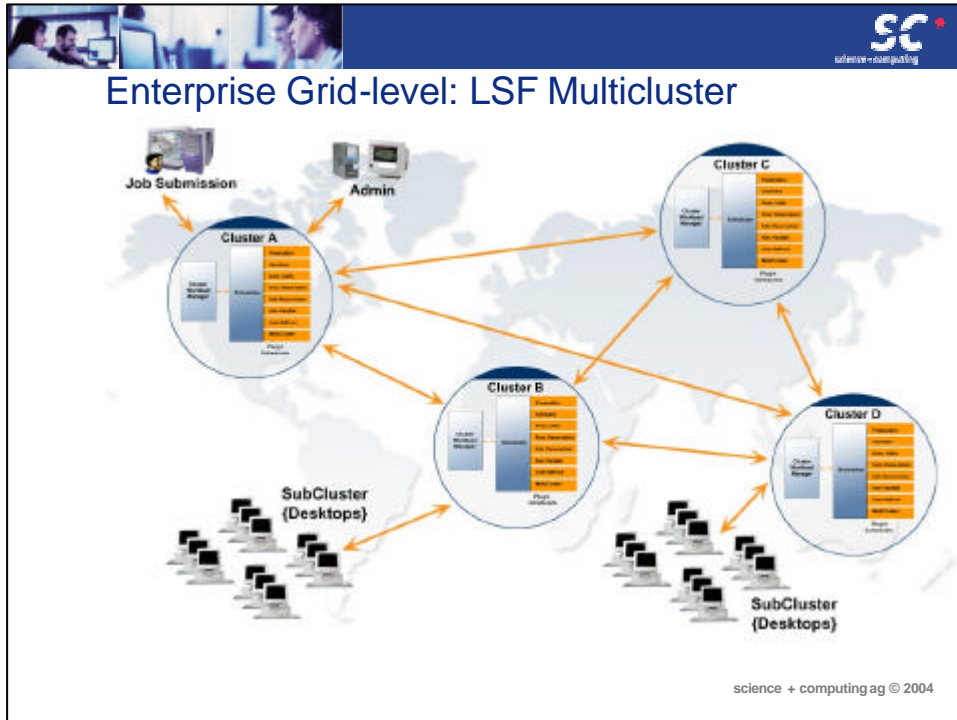



With flowGuide the batch jobs are prepared to be submitted as job scripts in a load sharing tool, like LSF

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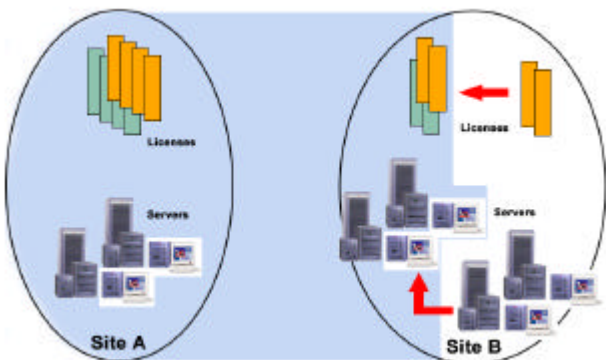





Resource Leasing Model

Single system image, ease of admin, scalability

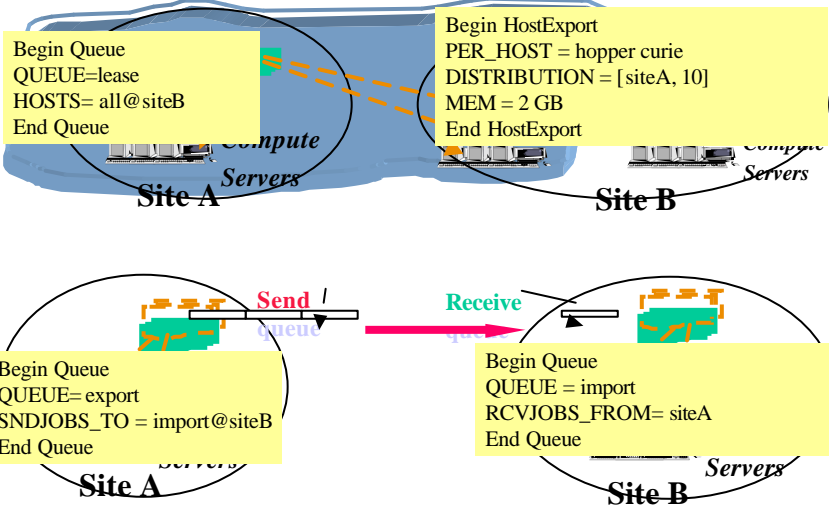
Enable fairshare, preemption, pending reason support, chunk jobs, advance reservation, interactive jobs, parallel jobs, ... across clusters



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Easy to Configure



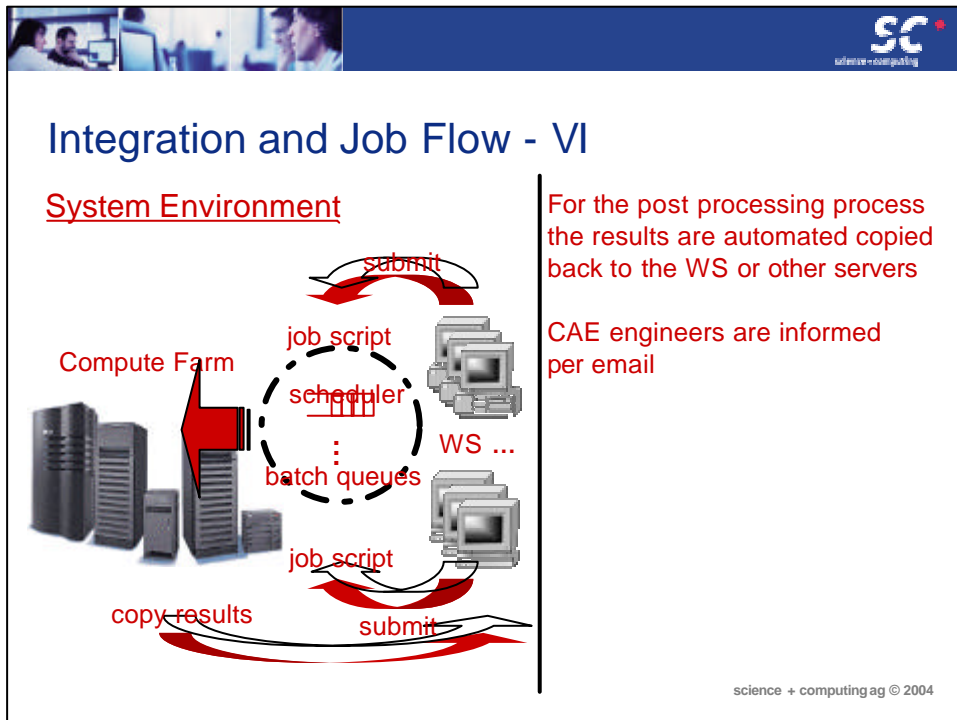
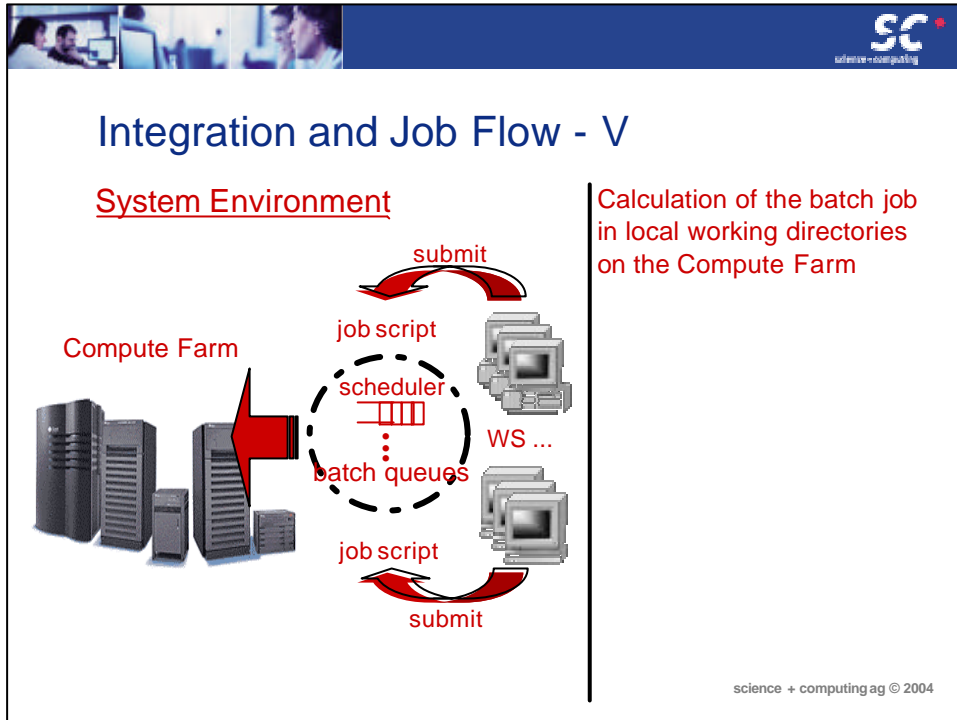
Begin Queue
 QUEUE=lease
 HOSTS= all@siteB
 End Queue



Begin HostExport
 PER_HOST = hopper curie
 DISTRIBUTION = [siteA, 10]
 MEM = 2 GB
 End HostExport

Begin Queue
 QUEUE= export
 SNDJOBS_TO = import@siteB
 End Queue

Begin Queue
 QUEUE = import
 RCVJOBS_FROM= siteA
 End Queue

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Summary

- Simple and comfortable to use solution for CAE engineers (Compute Power out of the Box)
- Support of heterogeneous environment (Linux, Unix, Windows)
- Flexible configuration due to modular software layers: Easy to administrate with scVENUS
- Efficient distributed resource management with Platform LSF
- Comfortable user oriented workflows with flowGuide
- Portal Solutions with EnginFrame

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Thank you for your attention

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