



HPC-Provisioning for Industrial Corporates

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Observations.

- The workload coming from industrial corporates in simulation-intensive fields (aerospace, automotive, oil&gas,...) can be split up in 4 categories:
 - Base-throughput (capacity) in development and product related research
 - Peak-throughput (capacity) in development and product related research
 - Peak-capability in development and product related research
 - Peak-capability in pre-competitive research
- A holistic service-approach has to cover all 4 areas

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What is different in Industrial Corporates?

- **Differences to public Science and Research**
 - Horizontal separation of application layer and service layer instead of complete vertical integration.
 - HPC (except for research-departments) is integrated into the corporate process-structures
 - OPEX instead of CAPEX
 - Organisational scope instead of regional scope
- **Differences to SMEs**
 - HPC in most corporates is covered by IT governance
 - Relationship to ISVs is managed separately from relationship to HPC-services

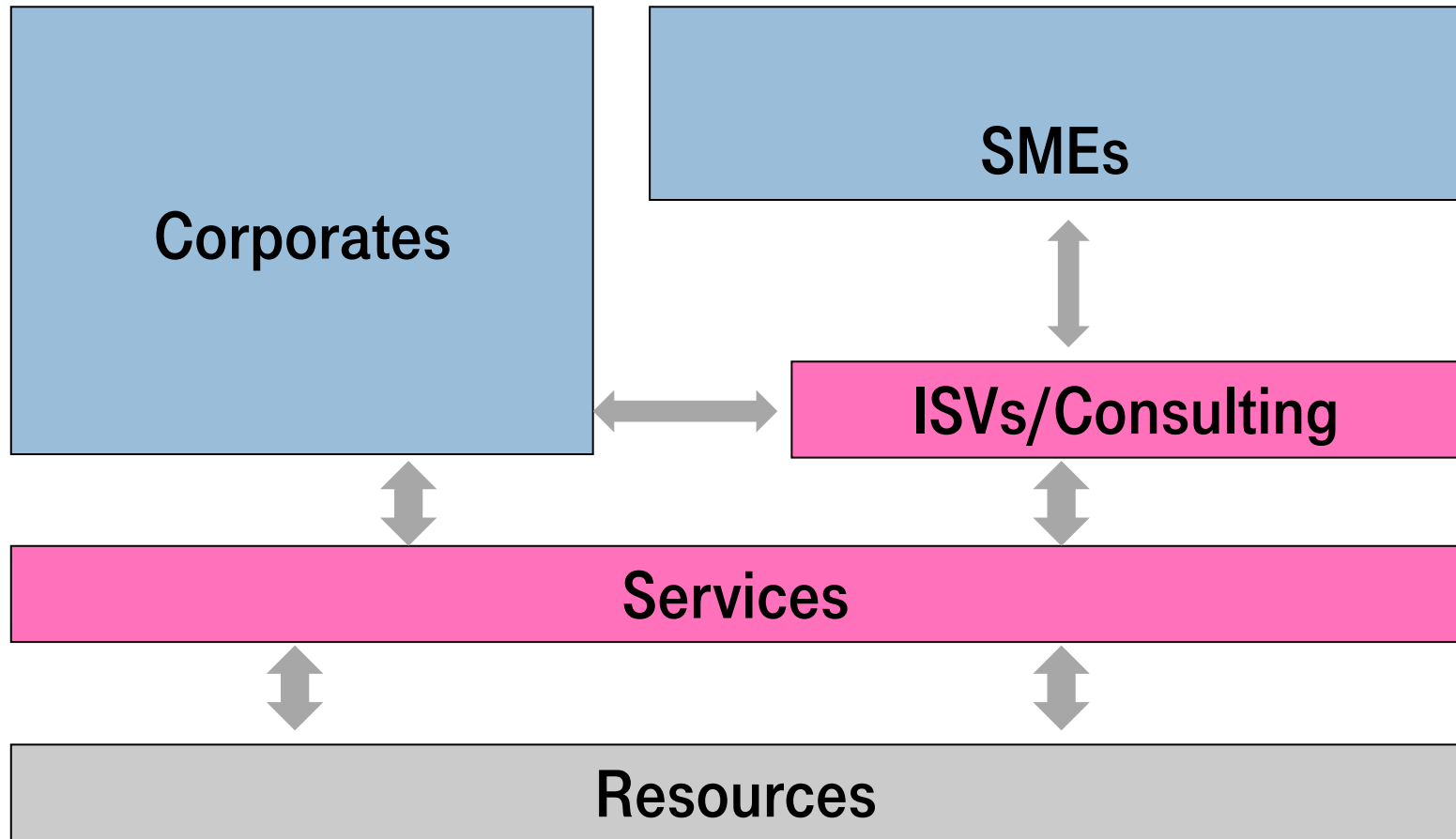
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Consequences.

- We have to address
 - Service-Model
 - Provisioning-Concept
 - Access to public Tier0/Tier1 resources
 - Integration of HPC into IT-Service processes of the customers

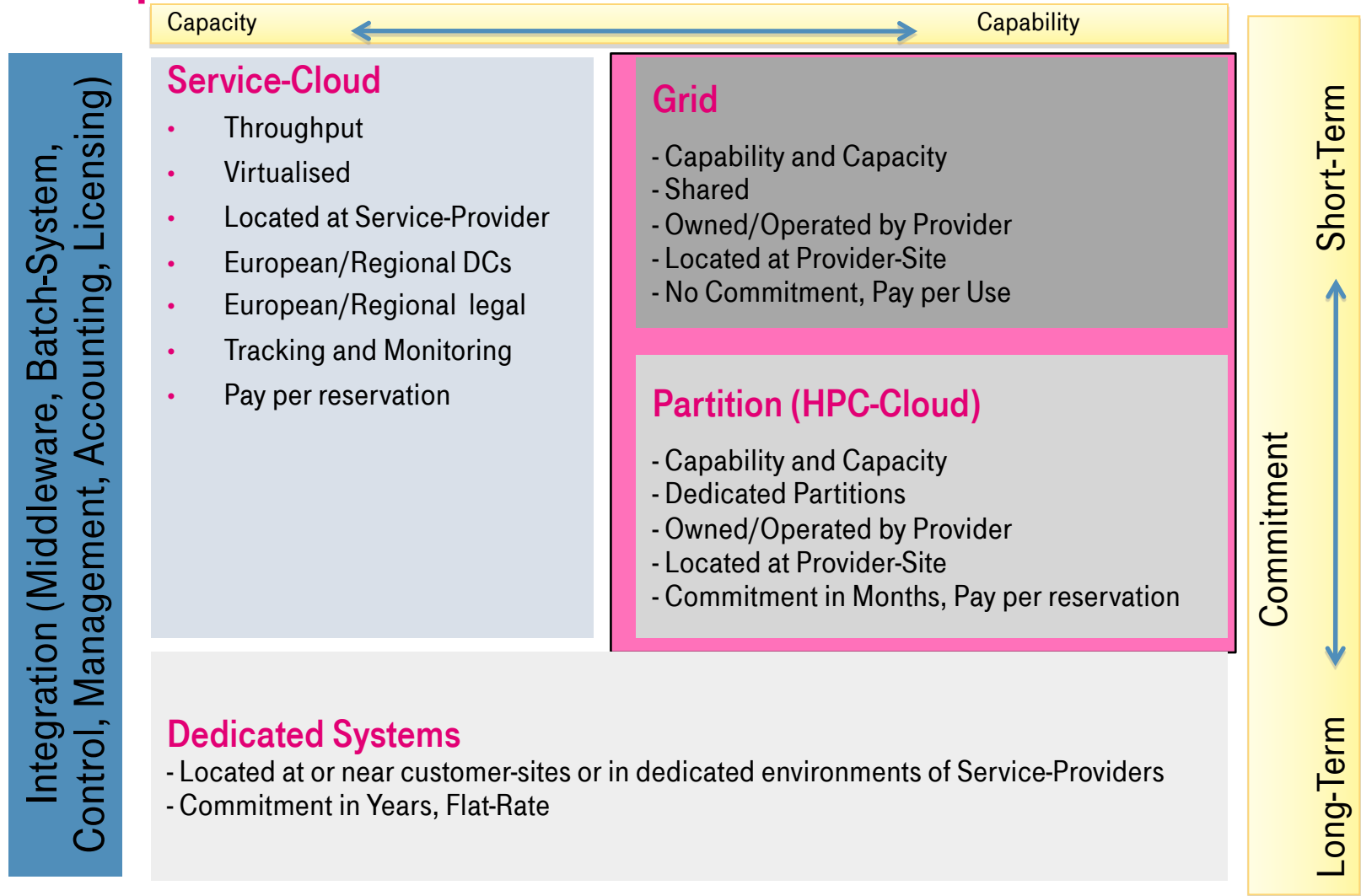
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Service Model in the Industrial Sector



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Provisioning-Model for Scientific and Technical Computing in the Corporate Market.



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The hww Approach

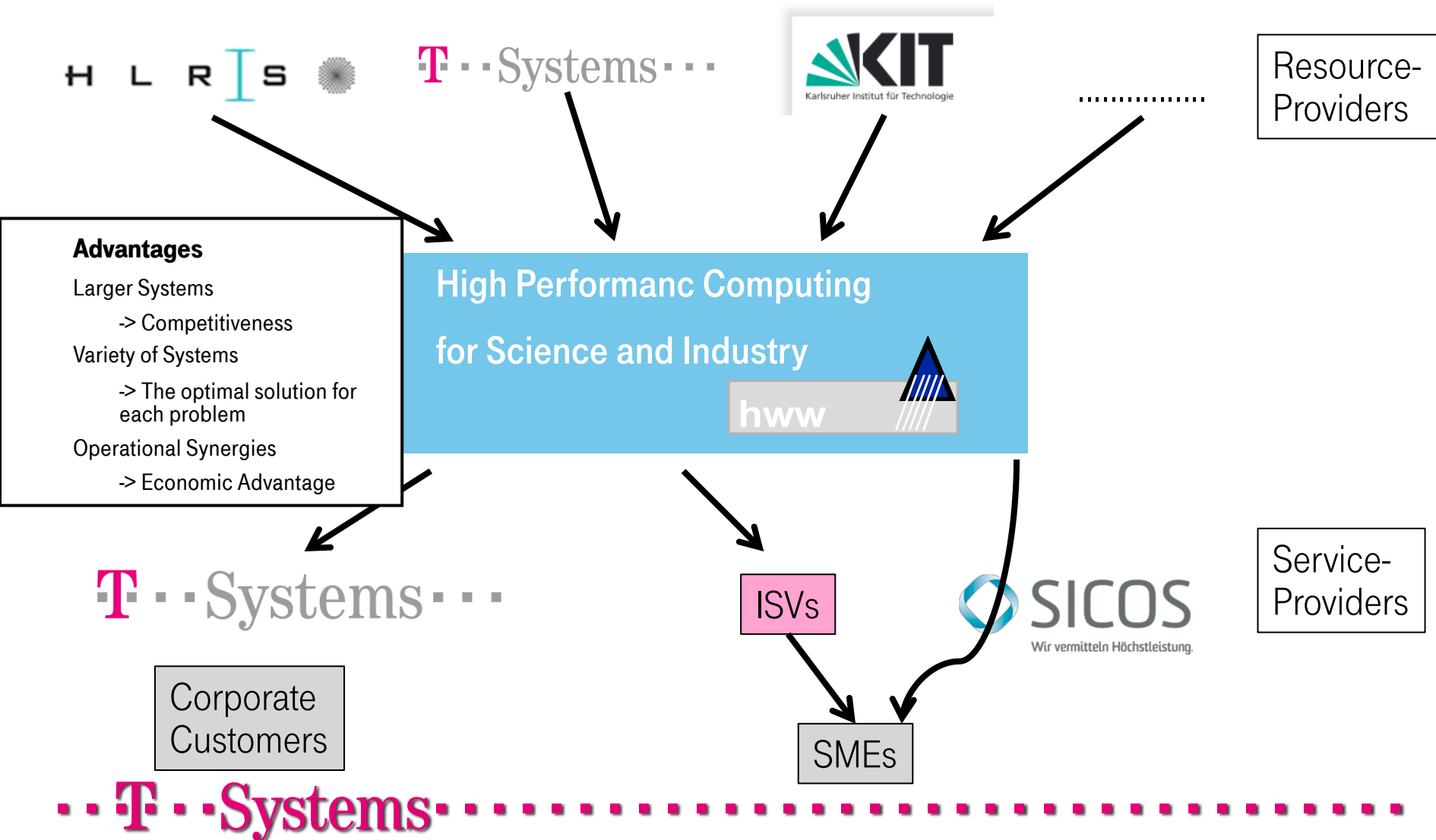
Industrial Pay per Use Access (not only) to Tier0/Tier1 Systems

- The performance-level of Tier0/Tier1 Centers as a capability-resource is needed for
 - Research-Projects (public review/publication process if pre-competitive)
 - Leading-edge simulations in development as a base for competitiveness
- Neither large end-user industries nor service-providers could run top-end capability-platforms economically.
 - No base-load as it occurs from fundamental research
 - Peaks occur in projects (not really plannable)
 - Tier0/Tier1 systems are a public infrastructure like roads and airports
- The hww-concept
 - PPP to jointly provide high-end HPC-resources to science and industry
 - Integration into the process-landscape of corporate customers by a commercial service-provider
 - Support and handling of SMEs either via ISVs or by the non-profit public organisation SICOS.
 - hww is a joint-venture of the state of Baden-Wuerttemberg, KIT, Stuttgart University, Porsche, T-Systems International and T-Systems Solutions for Research

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Industrial Access to high-end Public and Private Resources



IT-Management Processes and HPC

- **Relevant Processes according to the IT Infrastructure Library (ITIL)**

- Incident Management
- Problem Management
- Change Management
- Request Management
- Escalation Management
- **Business Continuity Management**

Whereas business-continuity in commercial IT typically means high availability, this term has no real meaning in HPC. In HPC instead, the goal is to achieve a high throughput and a low rate of aborted and rerun jobs. In industrial service-contracts typically the service-provider has to guarantee turnaround-times for jobs and to rerun aborted jobs in his responsibility.

- **Release Management**

In the industrial design-process non-reproducible results are unacceptable, even if the underlying scientific or engineering problem is unstable from its nature. Therefore software-releases have to be fixed for the runtime of single projects. This can create complicated interdependencies between otherwise independent projects and between the projects and the IT infrastructure.

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Thank You!

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