

A large, light gray wireframe mesh of a human hand is visible in the background, extending from the top left towards the center of the slide.

Fit CAE to Reality
Fit Monte Carlo Simulation to your HPC Reality

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It is a fact that inefficient compute resources are, besides organizational barriers, the main obstacle between today and mainstream use of MCS in CAE.

The mission of TeraPort is to remove this barrier.

- **What are the problems?**
- **What is needed?**
- **What shapes a solution?**
- **What are the alternatives?**

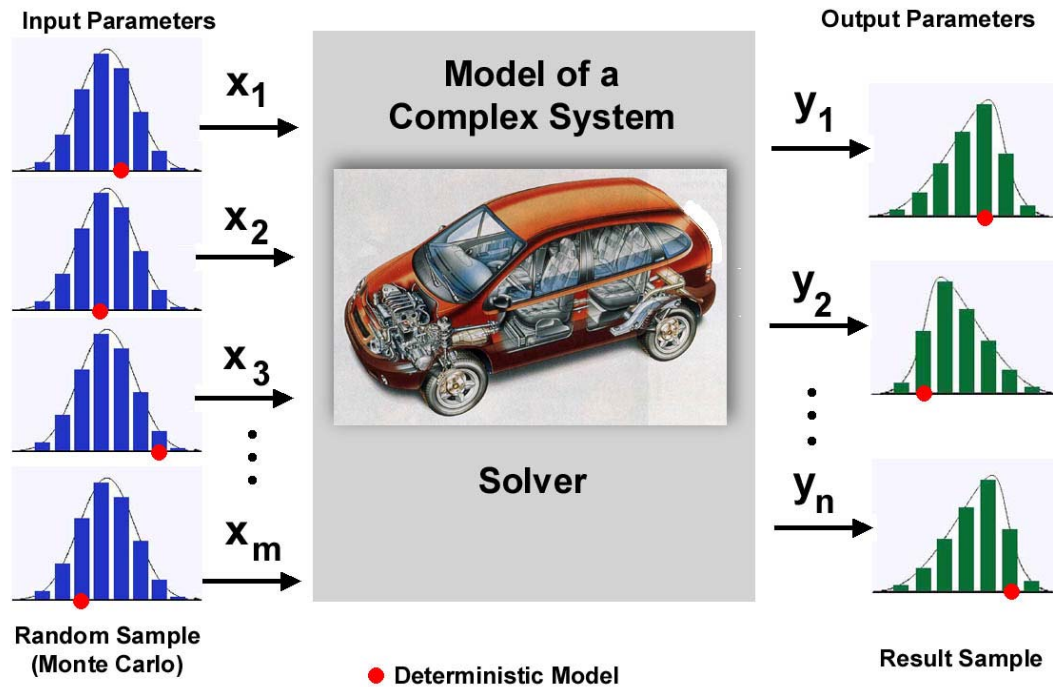
MCS has received immediate acceptance by some of the major players in the automotive industry. The return motivates investments in large compute resources.

Audi, BMW, Daimler Chrysler, Ford, Jaguar, Nissan, Porsche, Toyota, Volkswagen

Why was it easy?

- **Organisational acceptance**
- **Larger Organisations**
- **Site Licenses**
- **Larger Budget / Investment**
- **HPC Experience**
- **Distributed Resource Management**

Access to Compute Resources for Robust Engineering – Example



Any Bottleneck in the CAE workflow and organisation will now increase with a magnitude of 50 - 100. How prepared are we for this?

What are typical obstacles?

- **Stochastic Methodology**
- **CAE / Testing Methodology**
- **Organization**
- **Compute Resources**

Compute Resources

- **Technology Aspects**
 - Parallel execution on multiple platforms
 - CPU allocation
 - Smooth application workflow and data management
 - Systems operation
- **Organisational Aspects**
 - Accounting and Billing
 - Longer Solver Cycles
- **Business Aspects**
 - Licensing enabling Monte Carlo Simulation
 - Licensing enabling Parallel execution

What is needed for rapid implementation?

- Rapid application integration
- Best price / performance
- All services included
- Small investment or budget
- High performance
- Parallel execution
- Consider hardware life cycle
- Scalability in resources
- OS independent
- Pay-per-CPU-hour or analysis
- Security
- Stability
- Resource allocation
- Accounting and billing
- Configuration management
- Hardware independency
- End-user friendliness
- Scalability in number of users
- Disperse locations
- Systems manager friendliness
-

Same Issues as general HPC

- Workstation Clusters
- Linux Clusters
- Platform Independent GUI/CLI
- Job Scheduling
- Accounting and Billing
- Efficient Systems Operation
- Workflow Management
- Distributed Resource Management, P2P computing
- Application Integration
- ...

Introduce Portal Computing

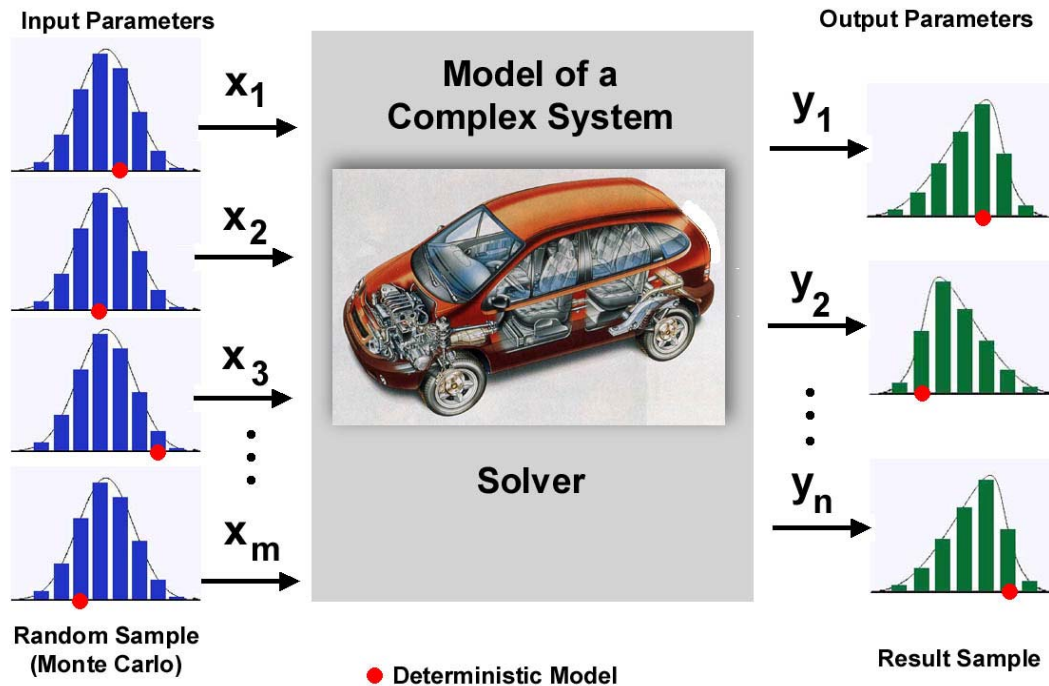
Four horizontal blue lines of varying lengths are positioned to the left of the word "Computing".

- **Platform independent user interface**
- **End-user friendly**
- **Hide any resource allocation**
- **Stabile and secure**
- **Monitoring**
- **Pay-per-use**

Stochastic Excellence Center for Crash Simulation

Stochastic Analysis Alliance between TeraPort and EASi Engineering to provide

the turnkey solution: **Stochastic Excellence Center**



Example: Stochastic Excellence Center at EASi Engineering

Secure VPN / Intranet / Internet / ENX

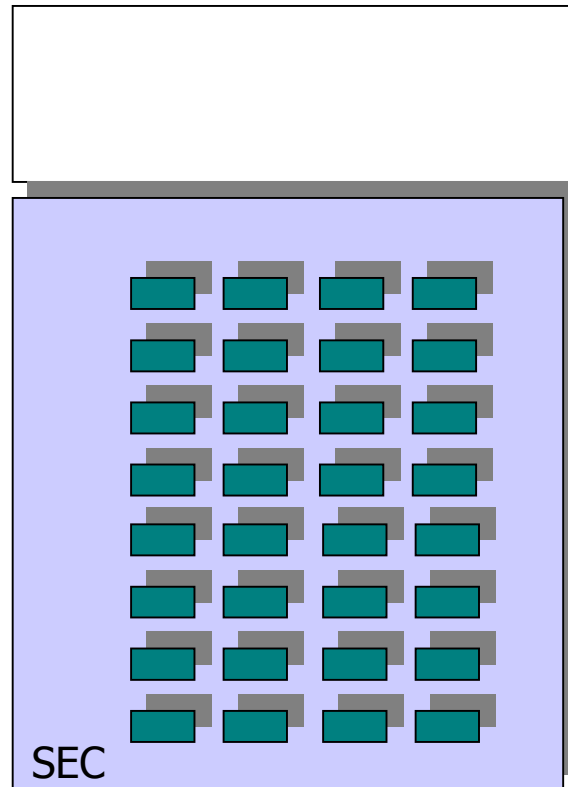


ST-ORM preprocessing
Initial Run →

Defining ST-ORM RUNs and SHOTs

Submission into

Result transfer to Client



24 CPU PIII
24 GB Mem
>600 GB Scratch

Linux
TeraPortal
ST-ORM
PAM-CRASH
LSF
MPI



JOB RESSOURCEN KONTO SUPPORT

PASSWORT LOGOUT ABOUT

User: atum
Status: logged in
Konto: B_FEM

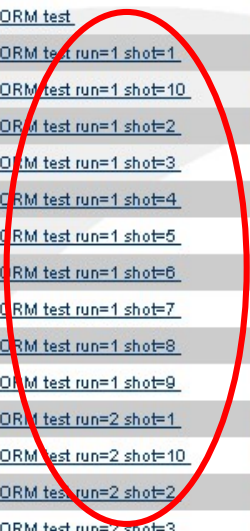
Version:

Jobs auflisten Hilfe

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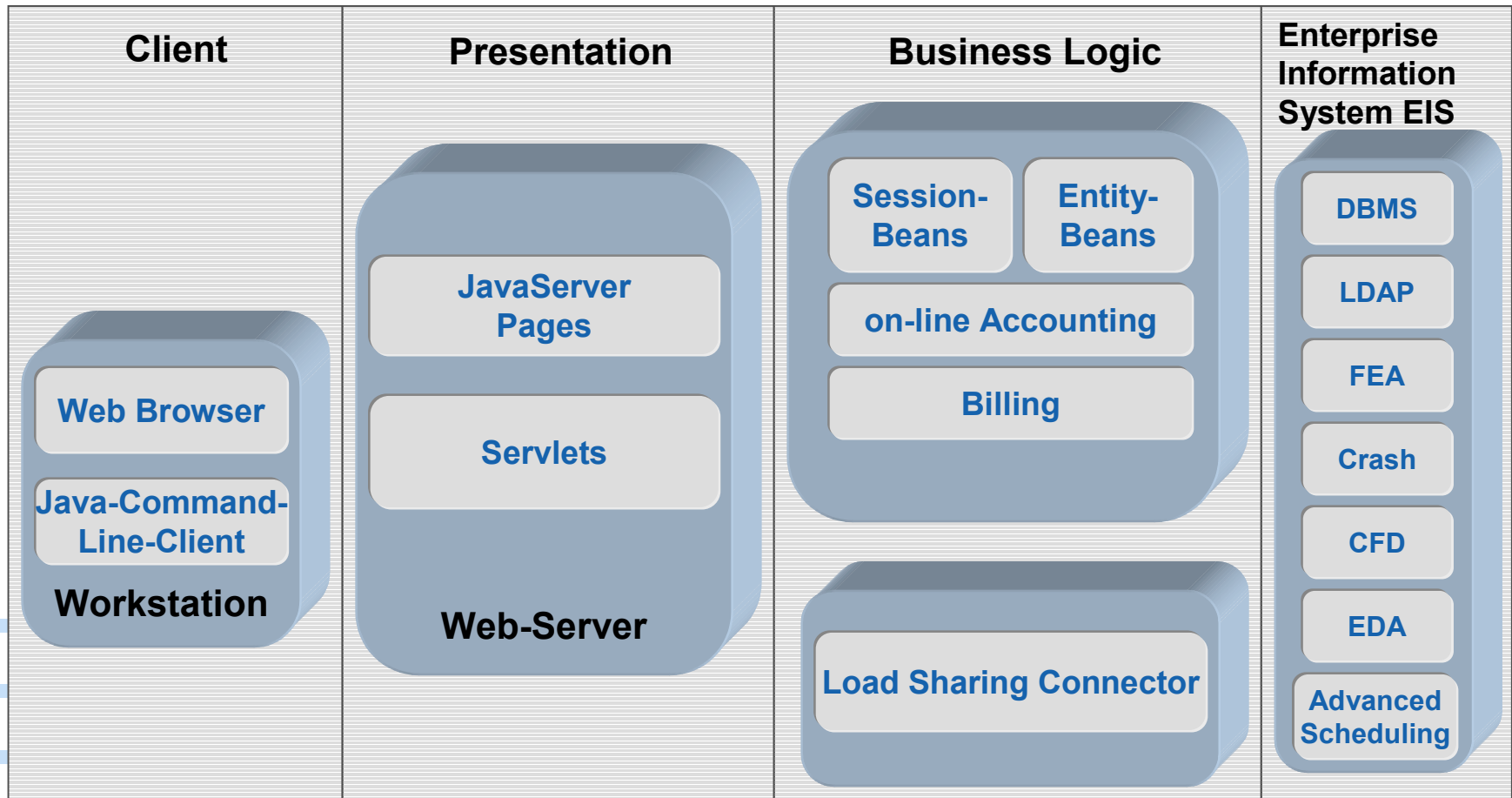
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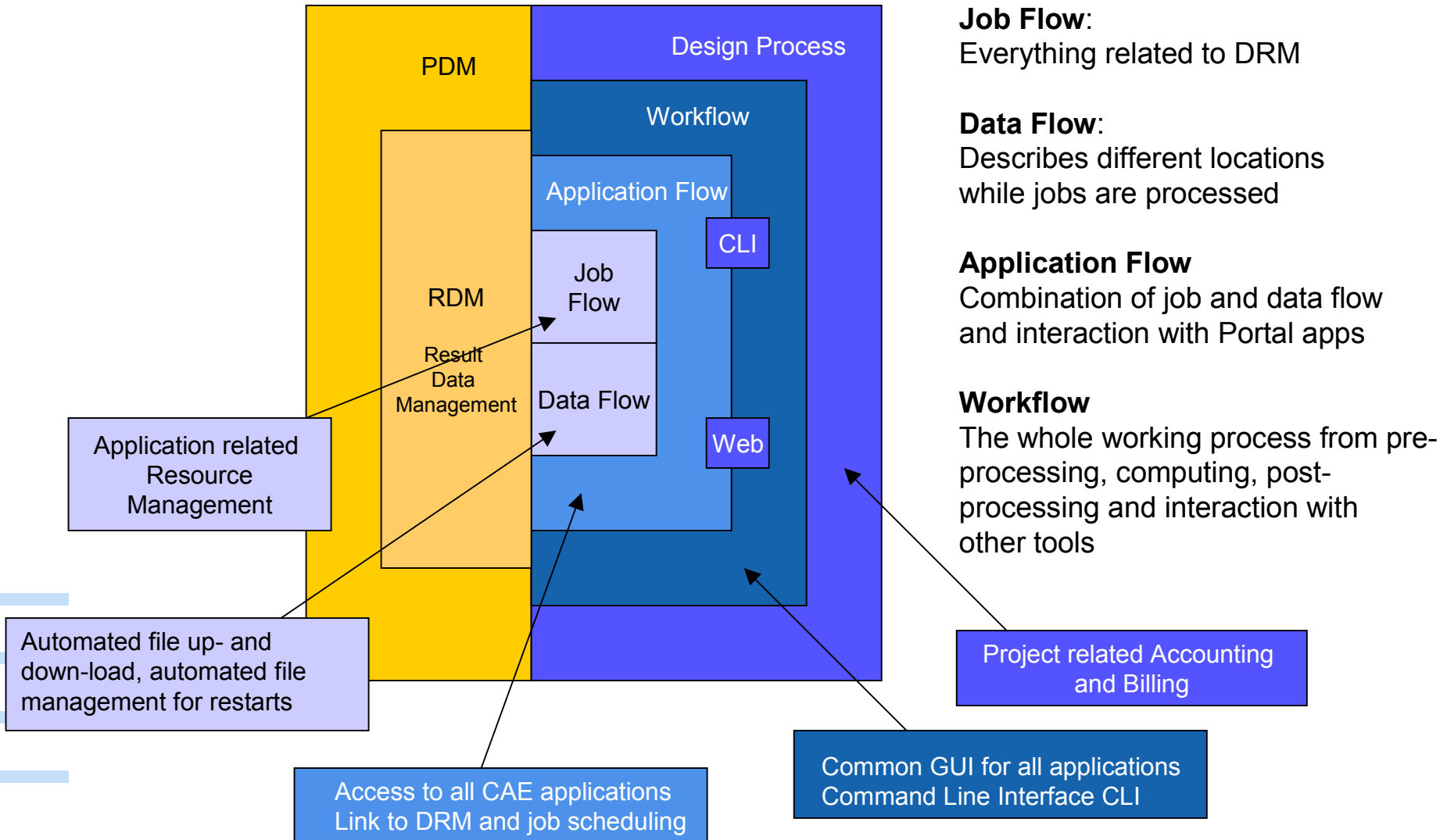


STORM runs and shots

The Portal Architecture – An Enterprise Computing Platform



Integration And Adaptive Process Improvements with a Portal



Job Flow:
Everything related to DRM

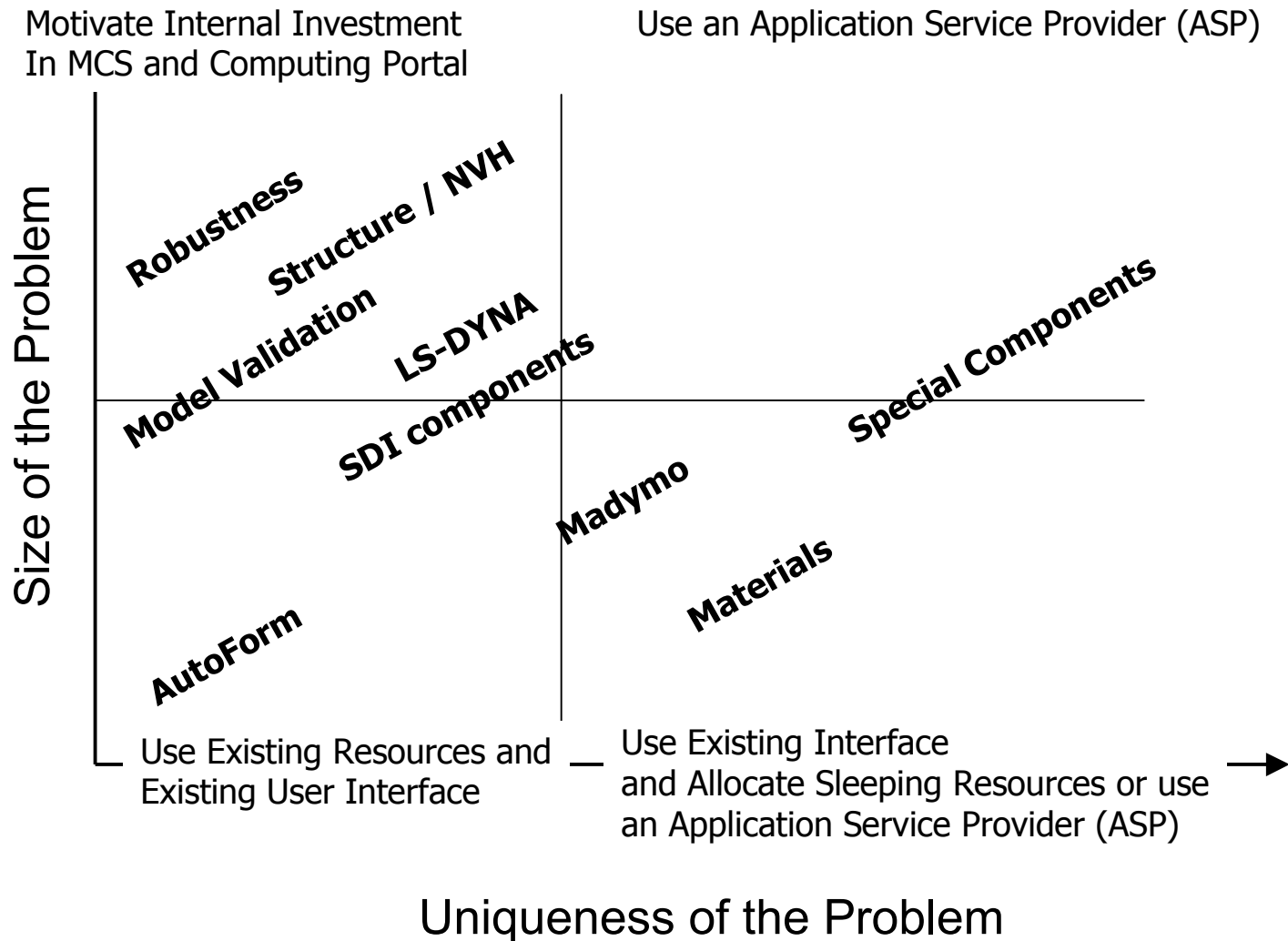
Data Flow:
Describes different locations while jobs are processed

Application Flow
Combination of job and data flow and interaction with Portal apps

Workflow
The whole working process from pre-processing, computing, post-processing and interaction with other tools

- **Technical Items**
- **Business Related Items**

Different Approaches towards finding the appropriate resources



Summary

