

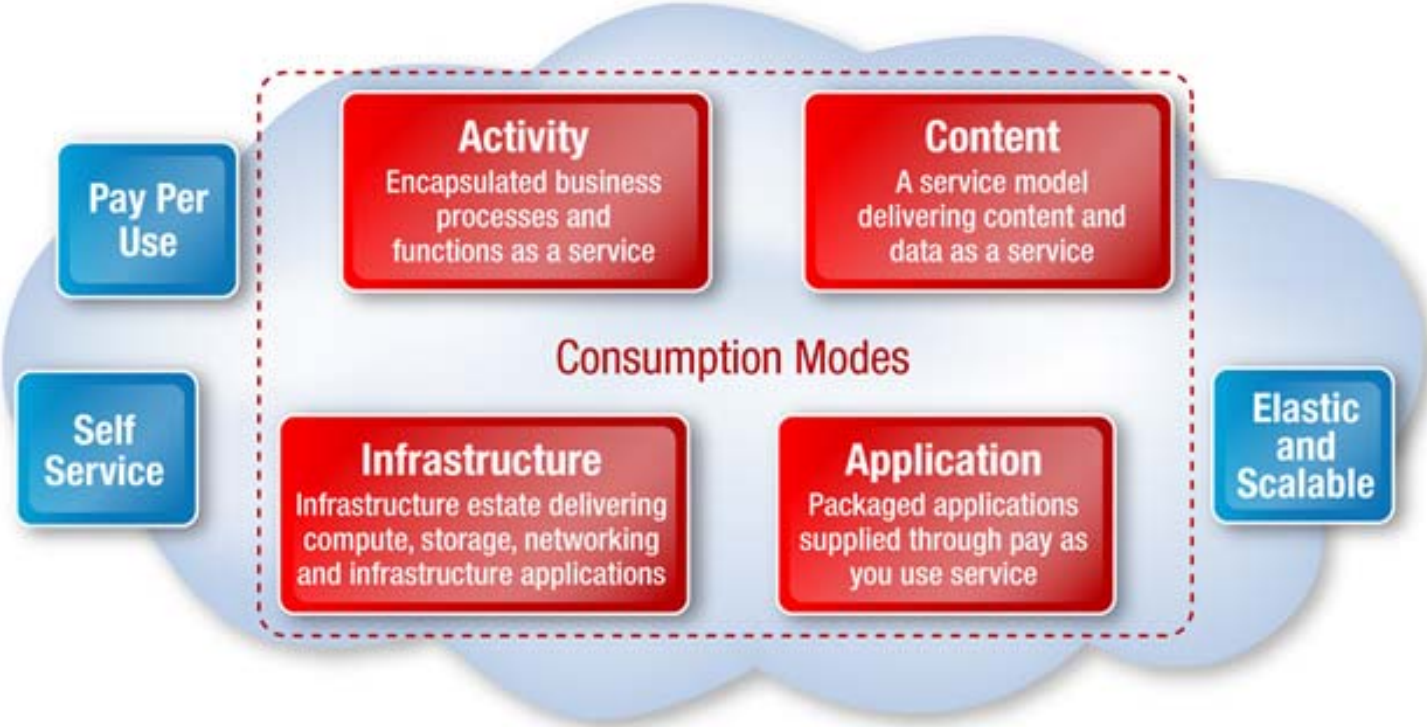


shaping tomorrow with you

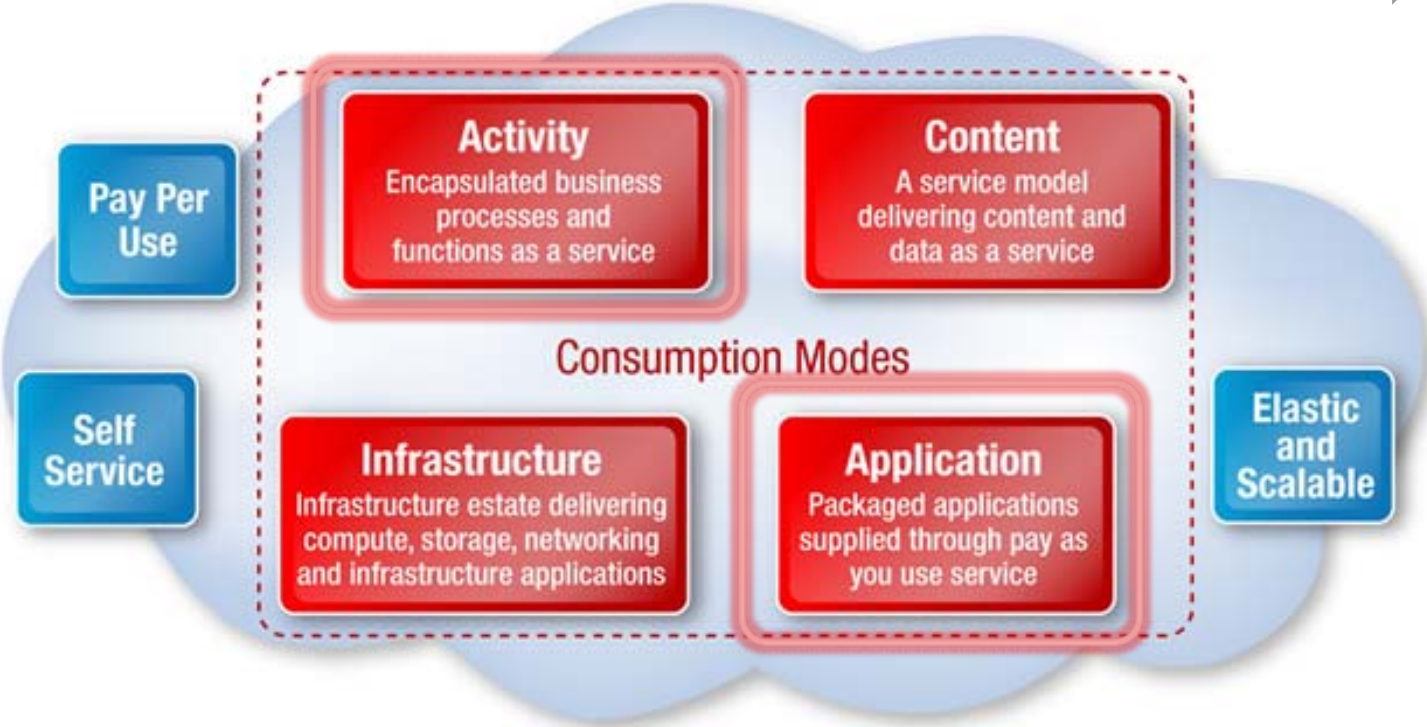
# SynfiniWay

Shaping HPC clouds for industry

# What the Cloud means to Fujitsu



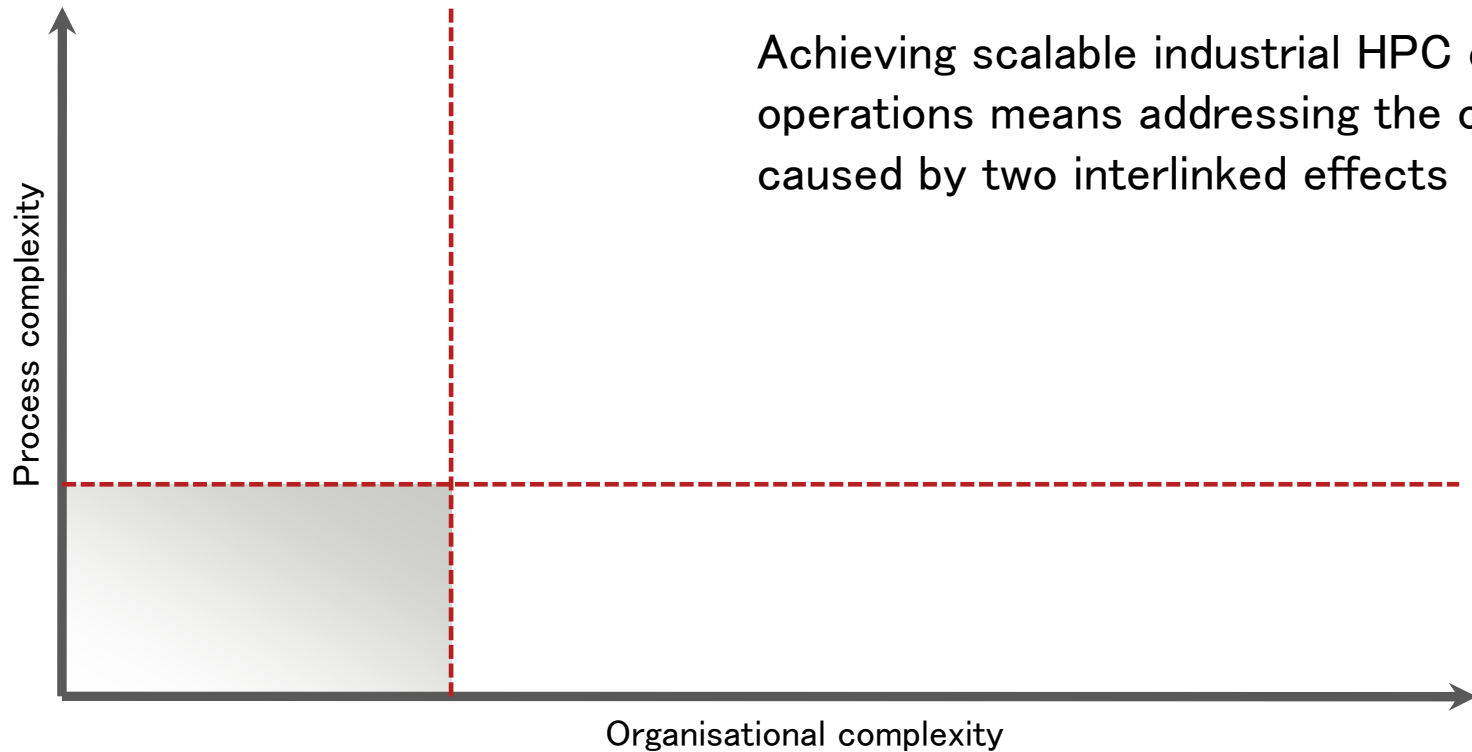
# What the Cloud means to Fujitsu



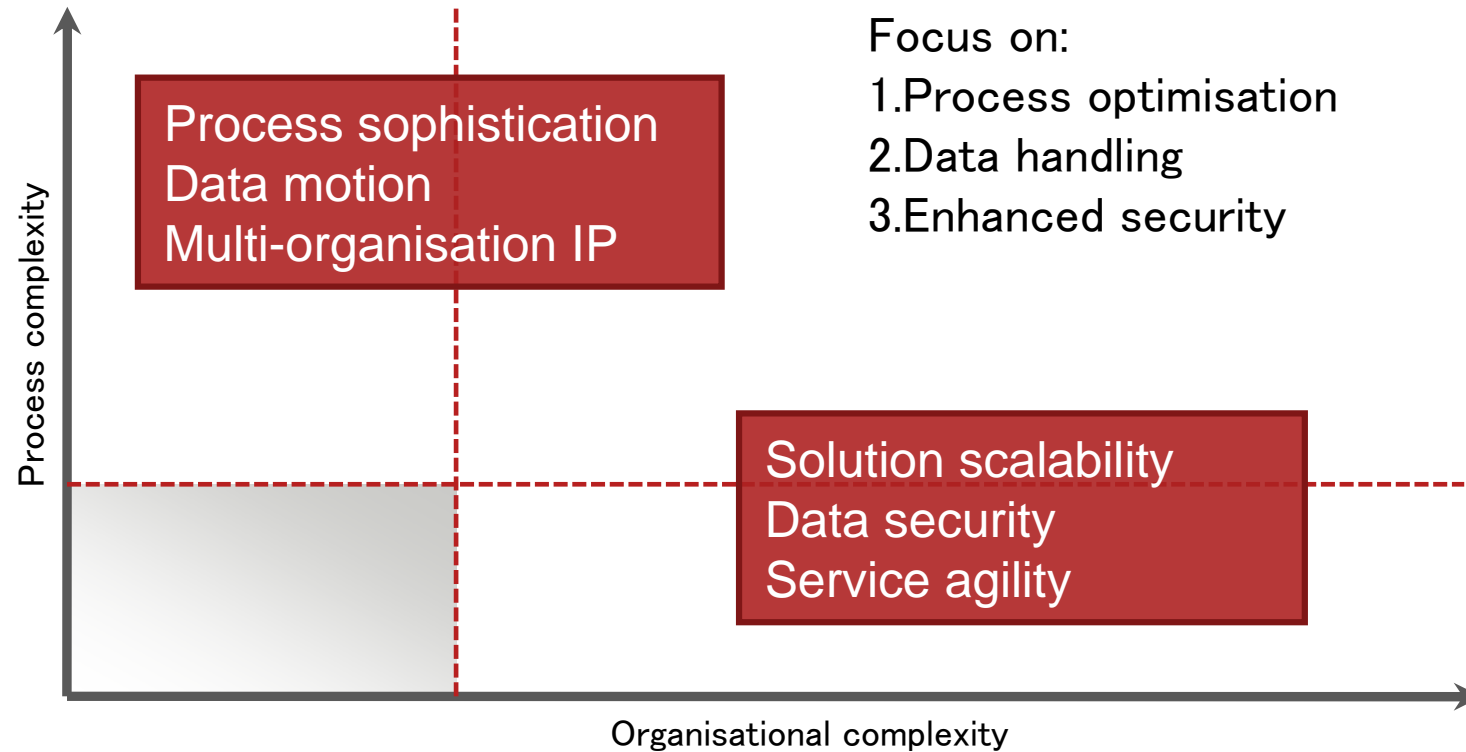
- Achieving cost-effective cloud performance
  - Dynamic, adaptive, transparent scalability
  - Optimised common data delivery, synchronisation, ultra-fast data transfer
- Intuitive use
  - Automatic service discovery, monitoring and auditing
  - Persistent and recoverable
- Leverage for collaboration
  - Virtual organisations
  - Extended enterprise

- Data security and control at the top of users' list of cloud issues
  - Security services rank 5.41 out of 6 in importance from a recent Fujitsu survey
- HPC cloud applications generate particular data handling needs
  - Motion – flow, replication
  - Transformation – conversion, QoS
  - Compliance – cleanup, traceability

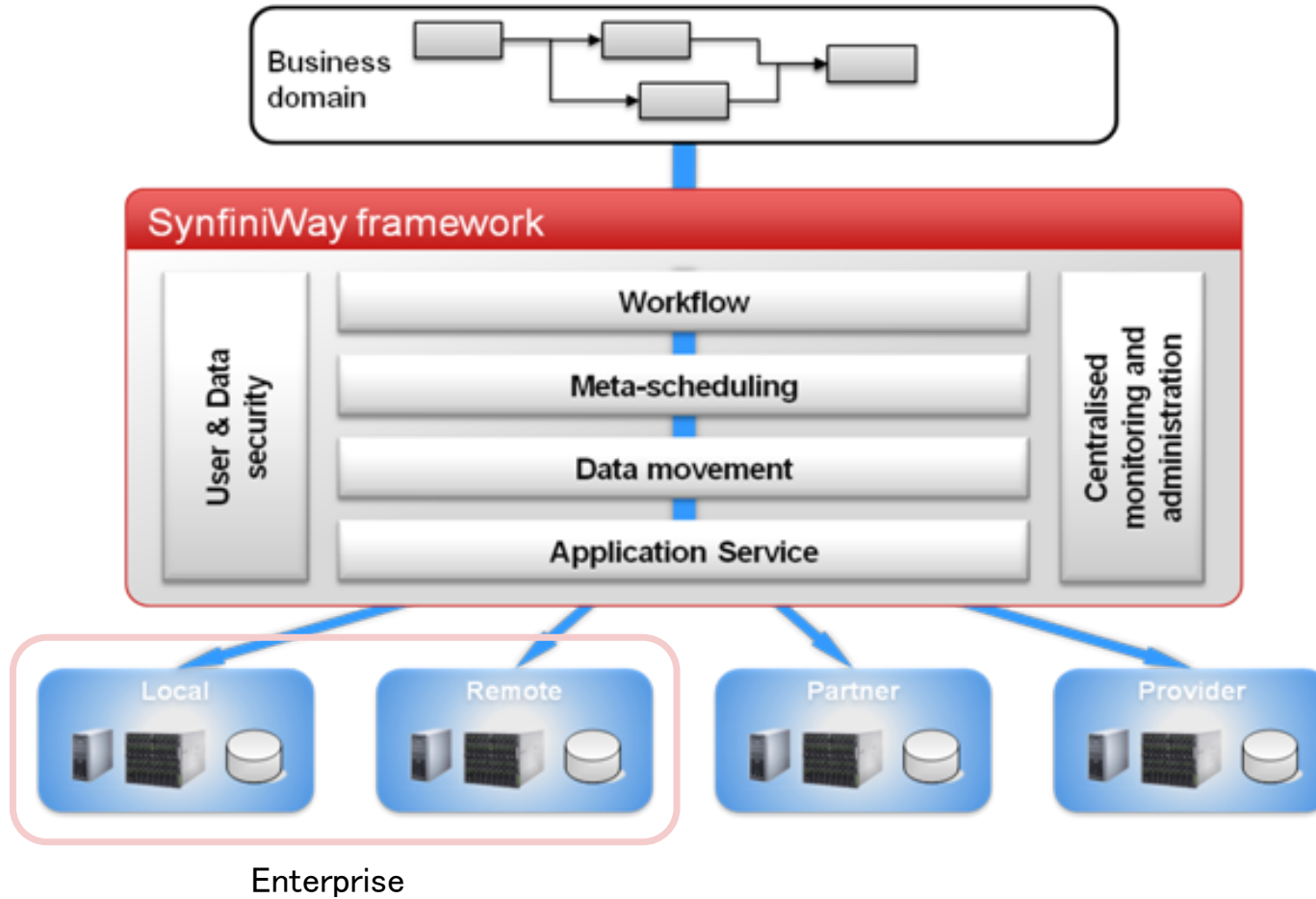
# Complexity – HPC Cloud adoption barriers



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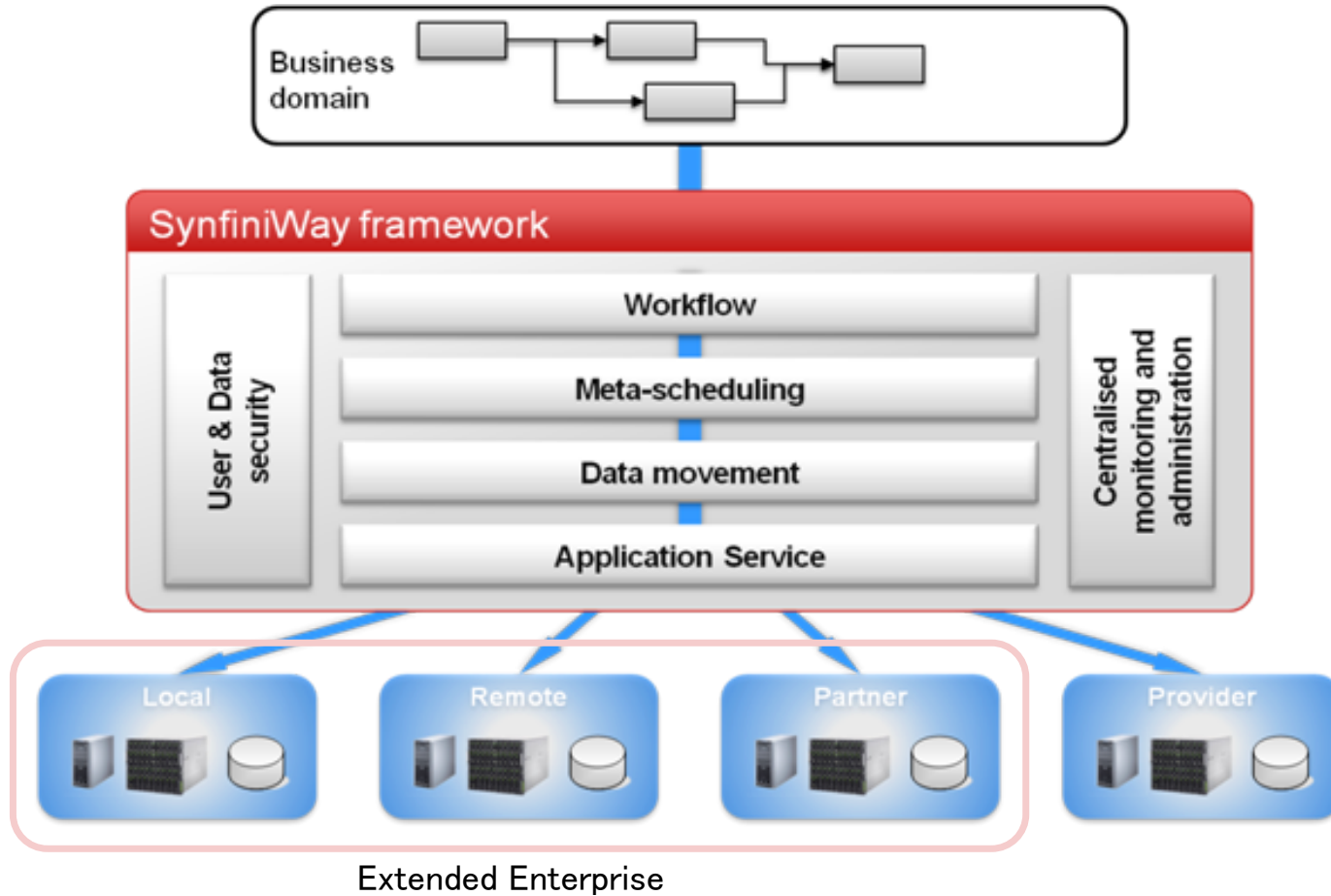


# HPC Cloud – SynfiniWay highlights

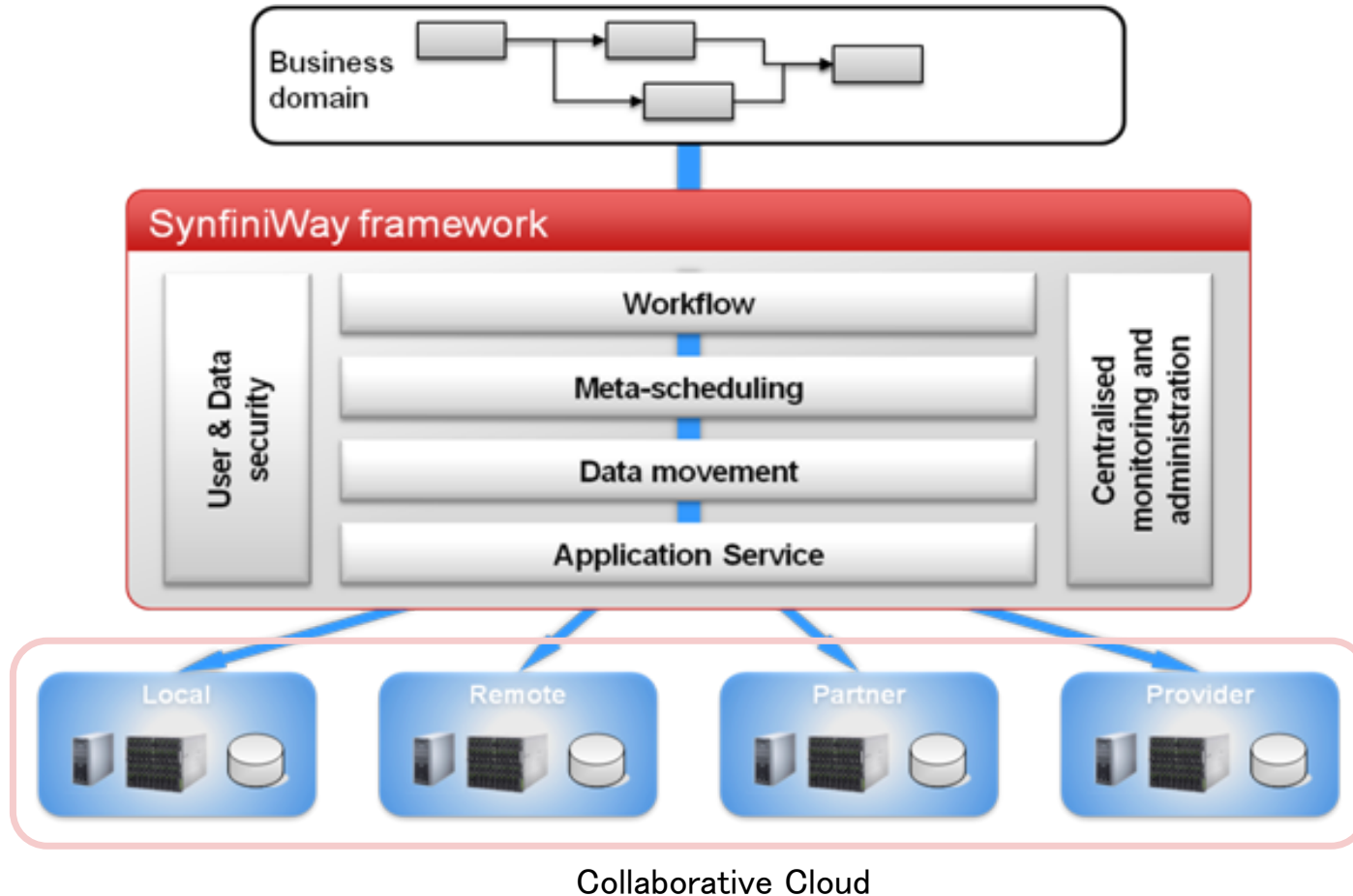




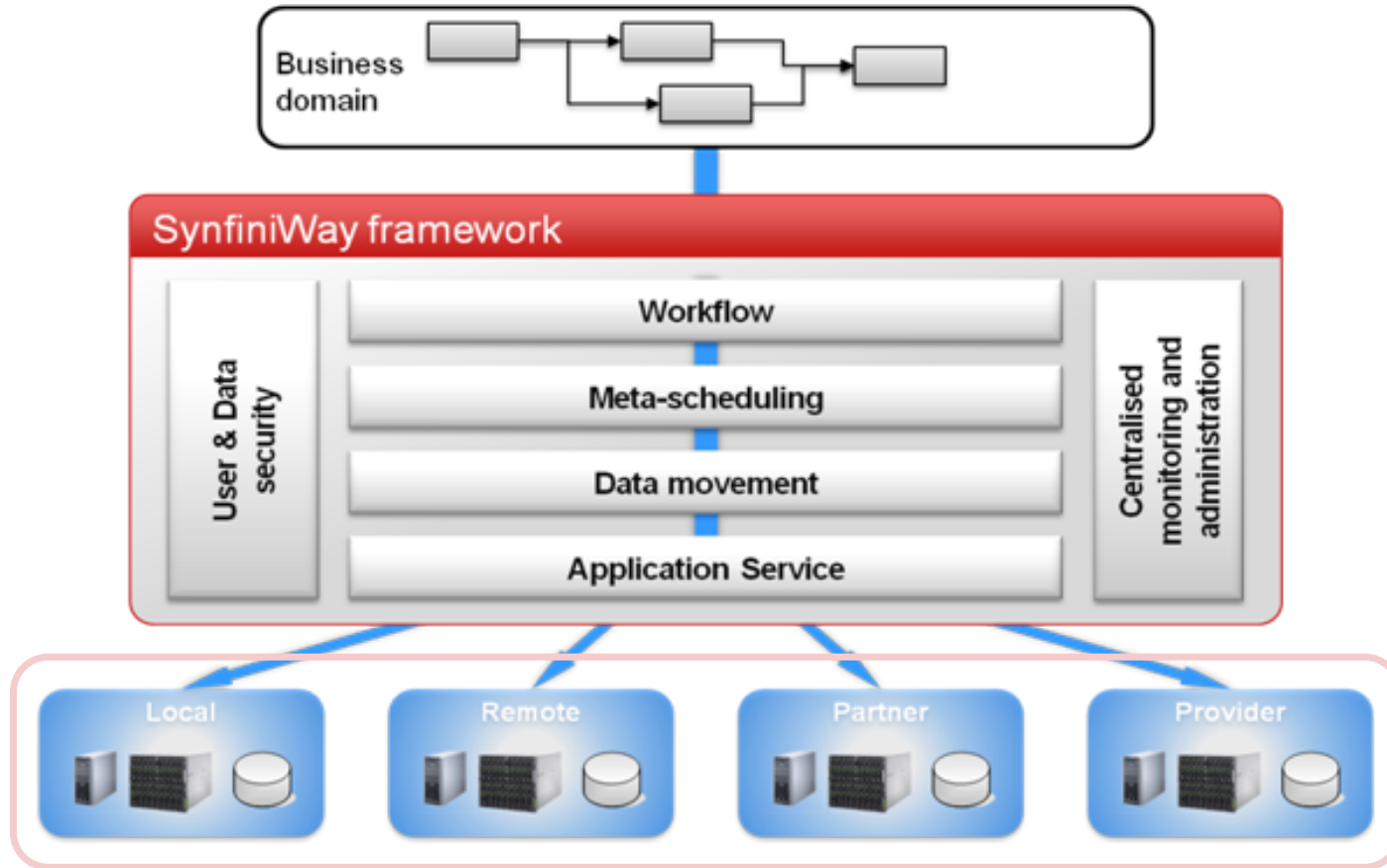
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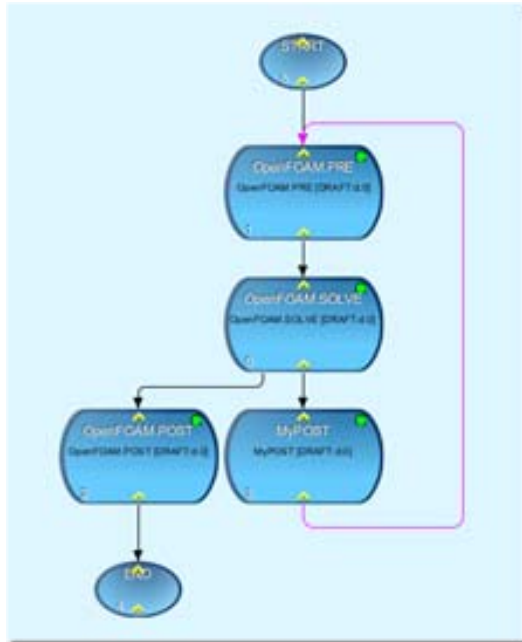
# HPC Cloud – SynfiniWay highlights



Coherent and integrated cloud usage model

- Business process enabled as a scalable adaptable workflow
- Efficient and resilient data motion based on a global process schedule
- Resource abstraction, dynamic discovery with full RBAC security

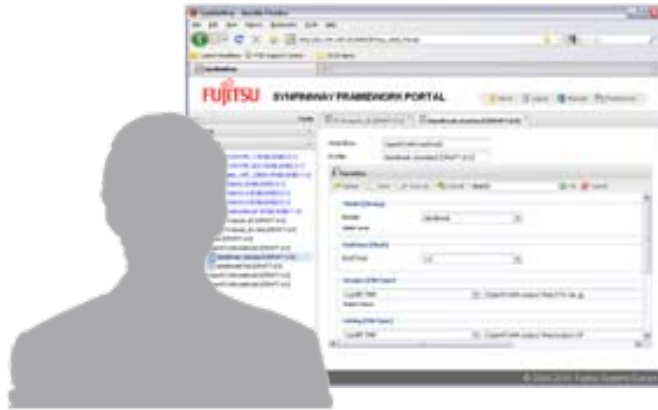
# Workflow automation – HPC Services



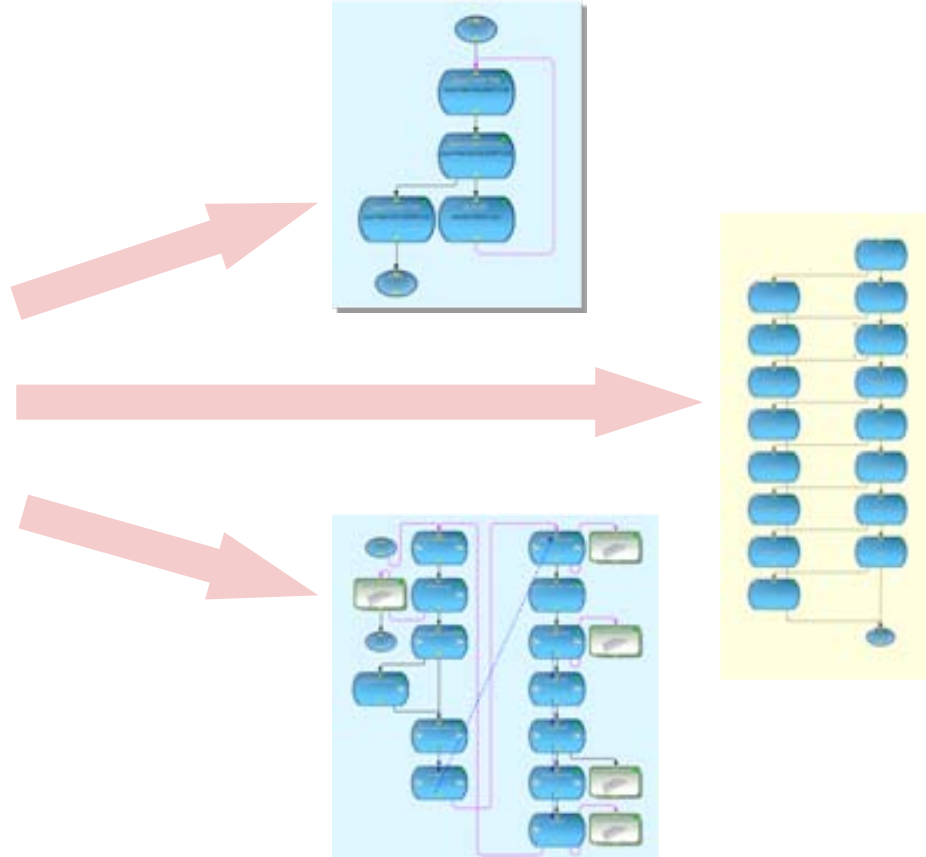
- Encode and automate practically **any business process** – complex conditionals, iterative
- Workflow of sub-flows for re-use of tried and tested **best practice** templates and IP protection
- **Scale** workflows across any IT infrastructure
- Fine-grained control over authorisation based on **role**
- Implicit **data transfer** management, supporting large files and traceability

# Workflow automation – HPC Services

Consolidated view of HPC services



Dynamic update  
User-specific case profiles



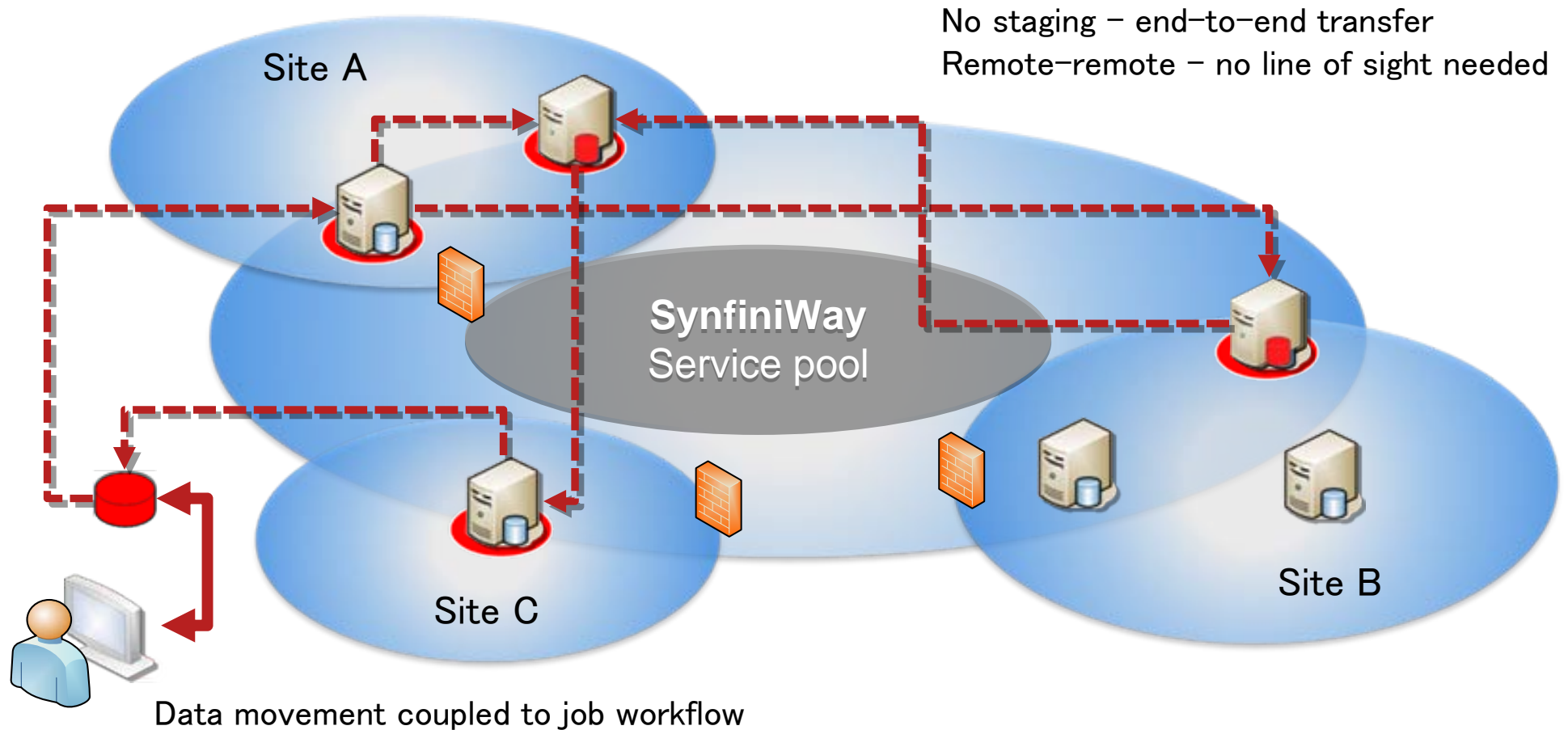
# SynfiniWay service architecture

SSO entry point into  
SynfiniWay framework

Same view of resources  
from any location



# Data motion





- Data movement implicitly directed by the job workflow – files, variables
- Delivered before task submitted to optimise resource efficiency – no wait
- Transformations applied during transfer – compress, integrity check, convert, ...
- Data replication to multiple locations
- Cleanup after task completed
- QoS from retry, resume

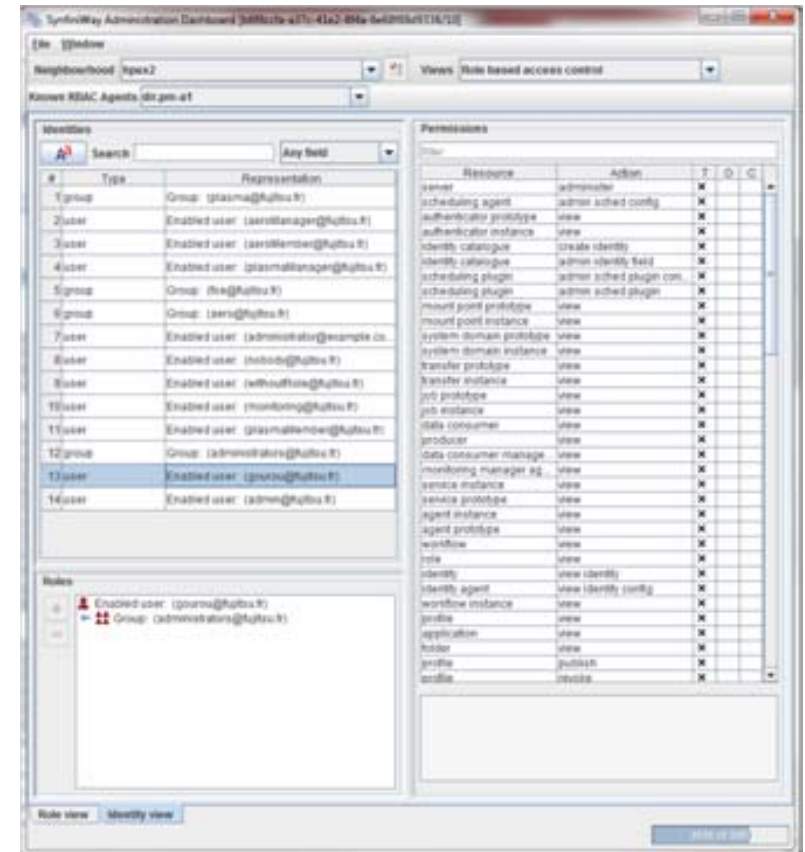


# Securing the cloud with RBAC

- RBAC = Role-Based Access Control
- With RBAC, security or access control is managed in a way that mimics an organization's structure
  - Role is a set of one or more permissions (eg: project leader, method editor, analyst, ..etc)
  - Permission is an action that can be applied to a resource (and SynfiniWay object)
- In SynfiniWay roles are applied to identities (cf. users, groups),
  - An identity can contain other identities – thus groups of groups are supported
- SynfiniWay implements a hierarchical form of RBAC
  - Senior roles acquire permissions of their junior and juniors acquire users of their seniors – role inheritance

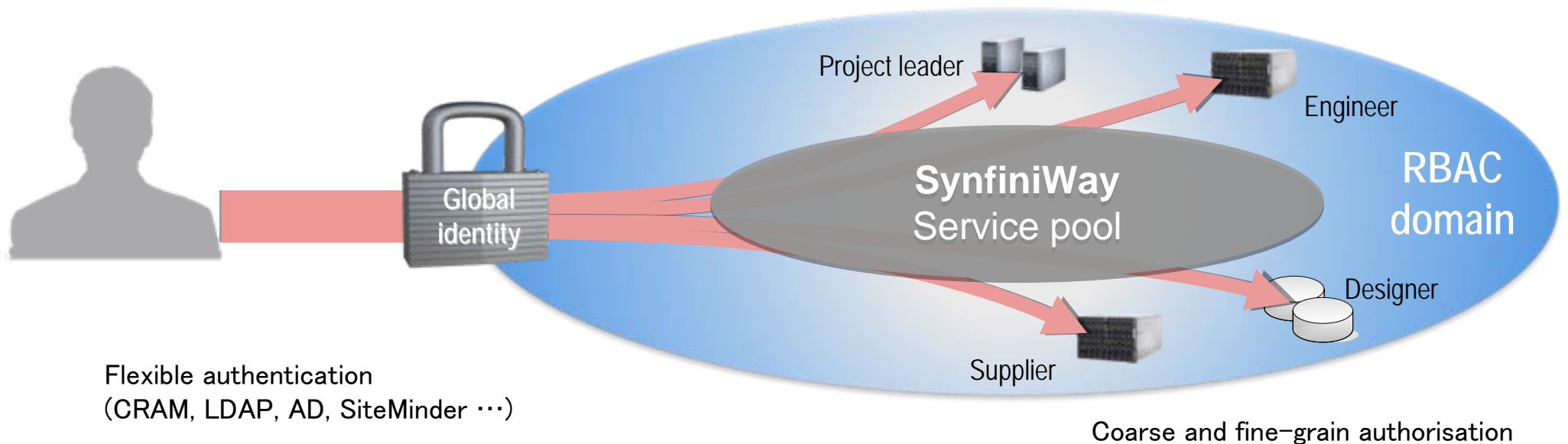
# Securing the cloud with RBAC

- Assigning permissions in the RBAC system can be done by different members of a distributed environment
  - Most RBACs are for single servers – SynfiniWay implements RBAC on a grid of resources
- SynfiniWay extends the standard RBAC model by enabling permissions for dynamic objects (such as workflow instances and data transfers)
- SynfiniWay implements a resource group which factorizes the way permissions are assigned to a set of resources

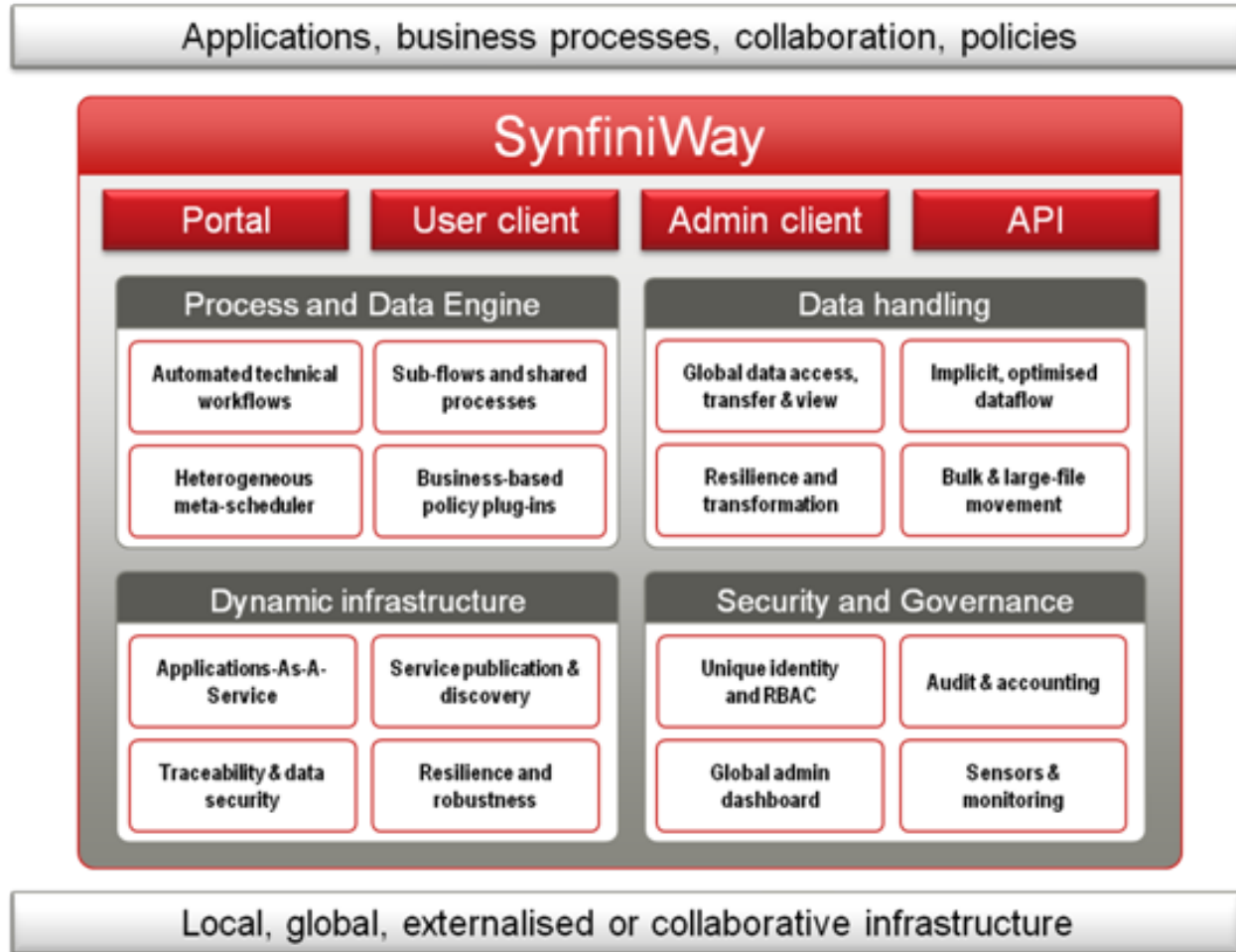


# RBAC advantages

- Flexible management – central or distributed
- Easier human understanding of the security policy and implementation
- Simple to add new resources to a resource group for faster user access – big reduction in management overhead, access control is simpler to understand and manage



# SynfiniWay Features



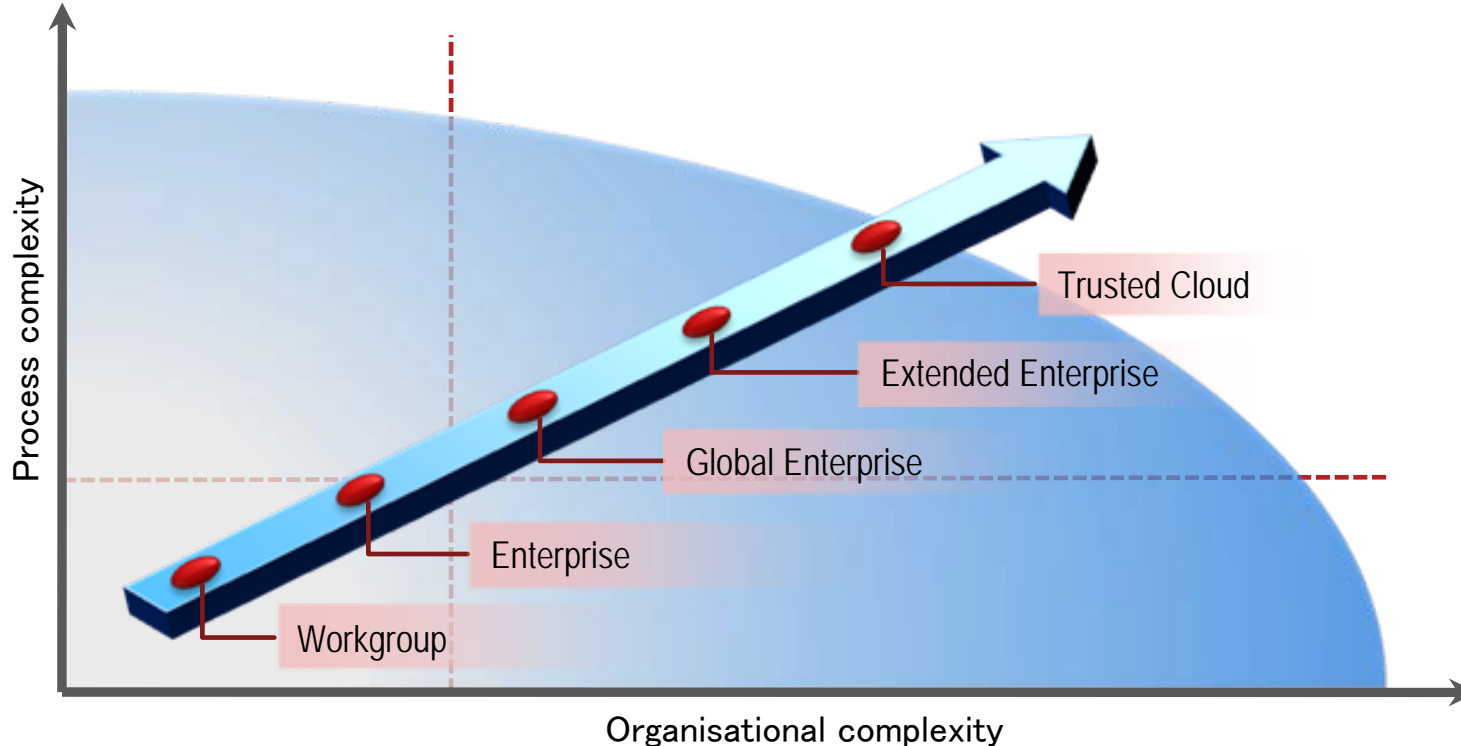
Creating a user environment for improved work organisation, optimised processes, higher security and increased productivity


Abstracting, sharing and optimising a global and dynamic infrastructure within and between organisations and service providers

# Shaping HPC Clouds for Industry

SynfiniWay overcomes complexity barriers with a **consistent and secure** solution for use and operation at any scale

Enables industry to **safely and flexibly** incorporate cloud within the Applications and Activity of their mainstream business processes





**FUJITSU**

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