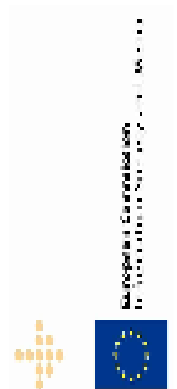




Future Internet Services (FIS)

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FIS and Trust Issues

An entity **A** is considered to trust another entity **B** when entity **A** believes that entity **B** will behave exactly as expected and required.

International Telecommunication Union

Can future internet services be modeled as a generic entity ?

Future Internet Services

Bunch of high-level services

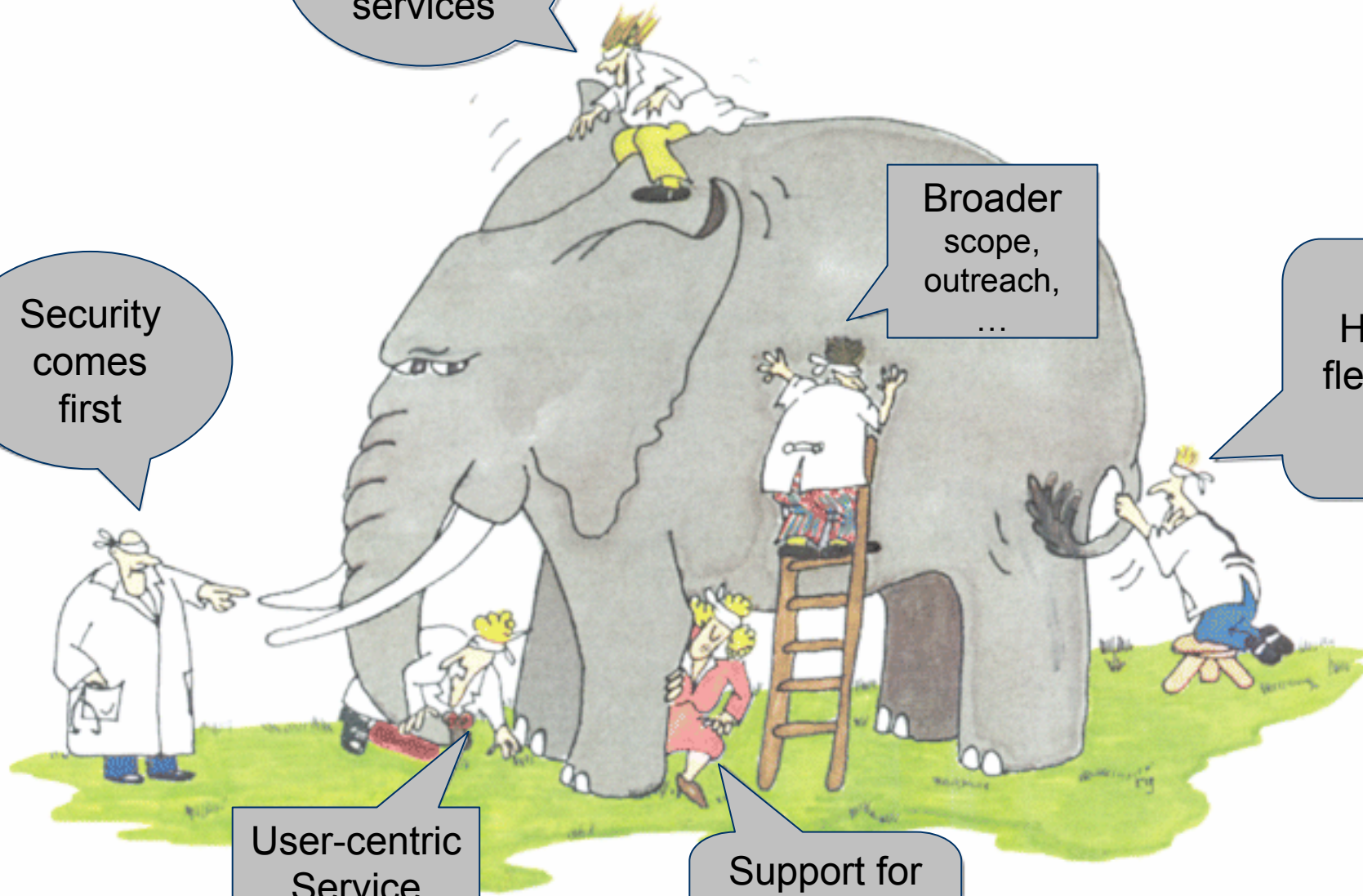
Security comes first

Broader scope, outreach, ...

Higher flexibility

User-centric Service Frontend

Support for Vertical Handover





FIS – from Google search ...

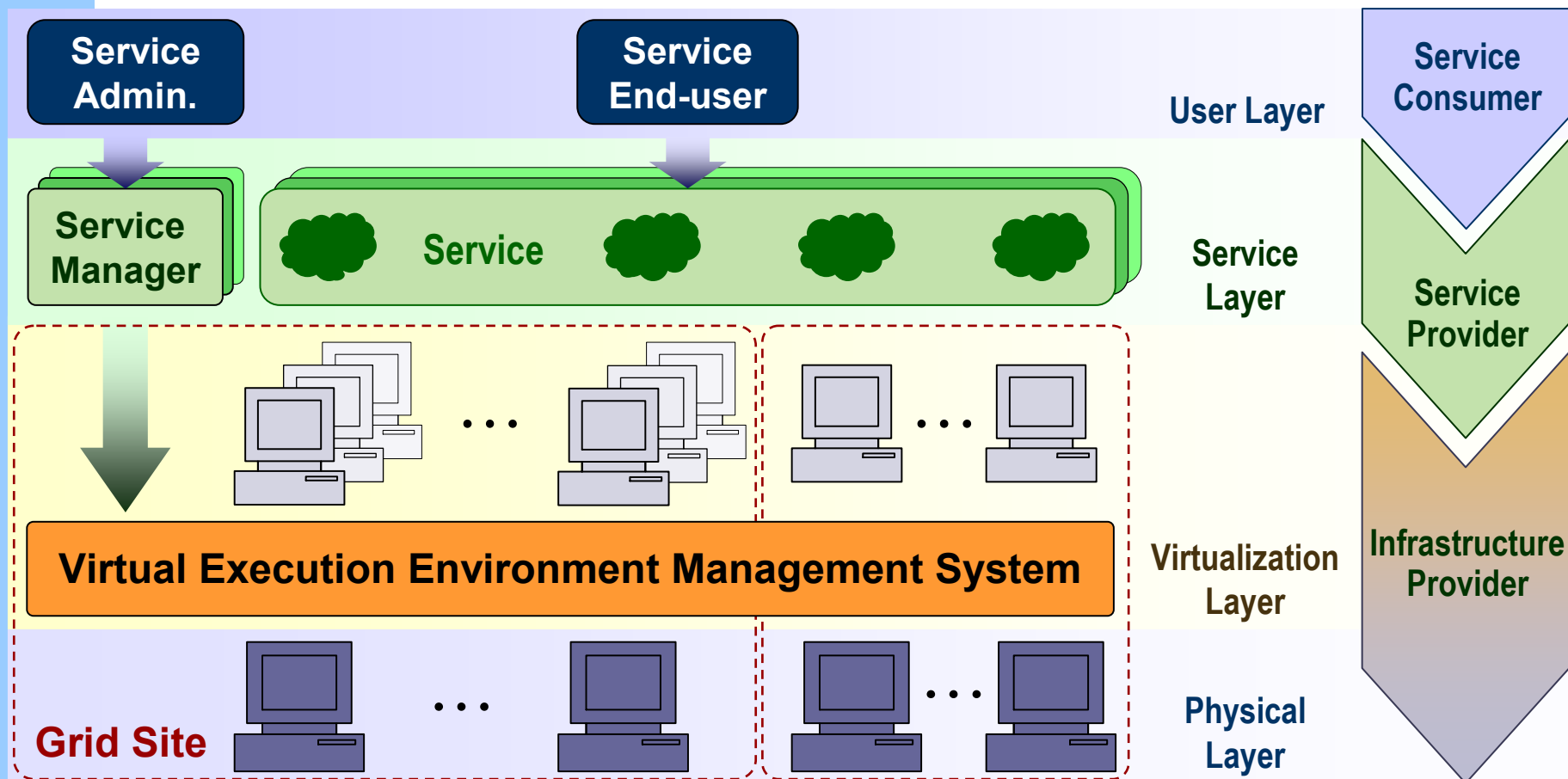
Active services Reactive services Proactive services Federated services
Software as a service Resource as a service Communication as a service
Process as a service System as a service Information as a service
Loosely-coupled services Service utilities Guaranteed quality of service
Open services Highly available services Interoperable services
Universality of services Accessibility of services Software-based services
Data services Information services Knowledge services Virtual services
Virtualization of services Value added services Semantically rich services
Autonomic services Personalized services Localized services
Network-aware services running over the service-aware networks
Collaborative services Intelligent services Business-oriented services
Secured services User-centric services

FIS – Convergence Areas for Trust

- Scalable set of services
- Federation of services
- Universal discovery of services
- Interoperable services
- Resilient services
- Dependable services
- Interactive user-centric services

FP7 Project RESERVOIR

Value Chain



RESERVOIR Security Challenges

- **Guarantee the security of applications and associated data, allowing end users to specify requirements for service tasks**
 - Protecting a service from other services running in the same virtual environment
 - Protect confidentiality of stored service data
 - Need to protect service data relating to amount of resources consumed, accrued billing...
 - Handle requirements induced by multi-tenancy
 - The Service Definition will need to support special requirements/restrictions due to multi-tenancy
 - Example: I don't want my data residing on the same physical storage as my competitor
 - Protecting a VEE from other VEEs running in the same compute node

RESERVOIR Trust Challenges

- **Guarantee the ability of SOI vendors to interoperate in a secure way, building mutual trust and defending themselves from misbehaving vendors or end users.**
 - Ensure the authenticity and integrity of management entities, compute nodes and VEEs.
 - Secure communication of sensitive end user and vendor data over local and wide area networks (message integrity and confidentiality)
 - Protecting the access to the management interfaces
- **Security policies for a site must be securely discoverable in order for cross-domain migration**
 - i.e. only allow migration to sites with the same security policy