

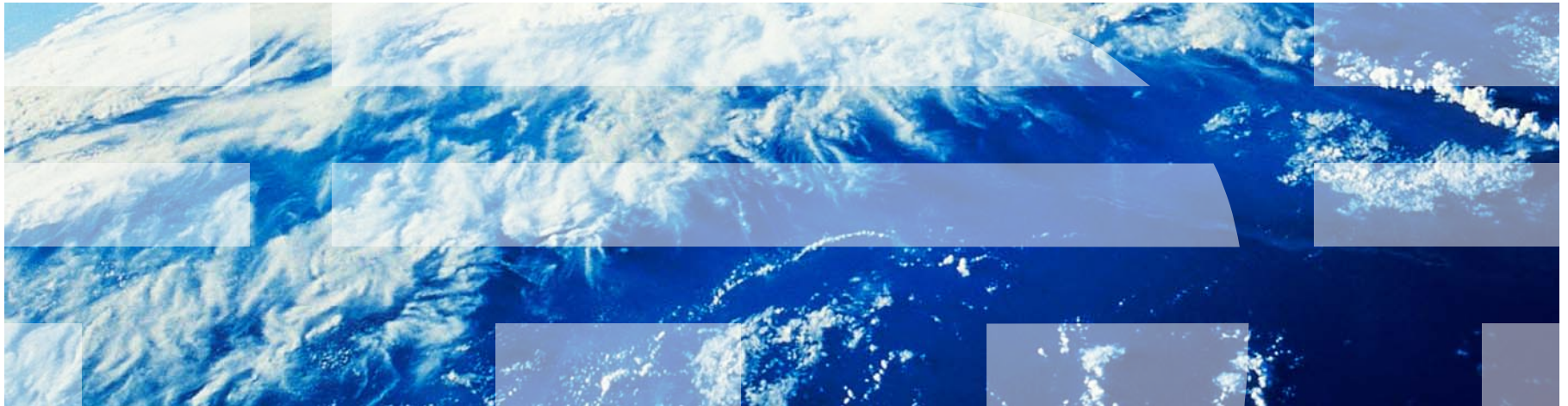
Dr. Yaron Wolfsthal, Senior Manager

System Technologies and Services, IBM Research Lab in Haifa

---



# The Future Internet: Laying out the Infrastructure



# IBM Haifa Research Lab – Facts and Figures



~100 PY

- Among largest IBM Research facilities
- Employs 300 researchers (~500 employees)
- Spans many Research strategy areas

Cloud Computing, Data Storage,  
 Event Processing, Optimization, Distributed  
 Middleware, Software Development, Healthcare, Telco

**Area Mission:**  
 Advanced system and storage technologies aimed to help IBM lead with best-of-breed IT products and services.

- ◆ Research 
- ◆ Architecture
- ◆ Coding 



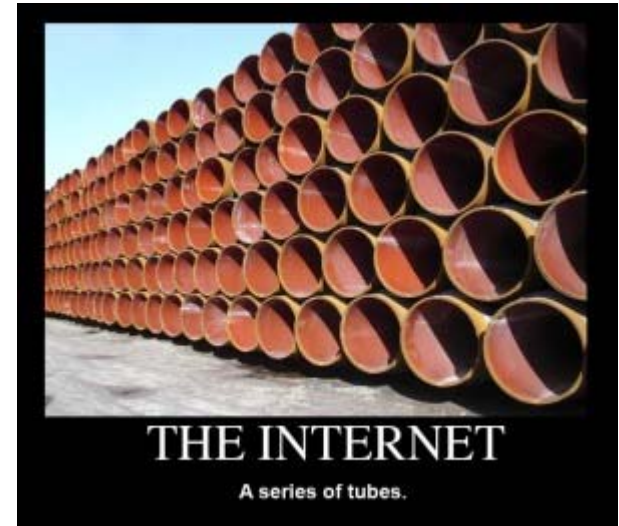




## The Internet as of Today

- Backbone for communication between people and enterprises
- Enabling collaboration, innovation, and creativity
- Access information on anyone, anything, anywhere, anytime
- This was all considered imaginary 20 years ago,

Now, we need to look 20 years ahead  Back to the Future



# The Future Starts from the Foundations: Computing and Network Infrastructure



Utility model – provision over the web on demand, charge back on use



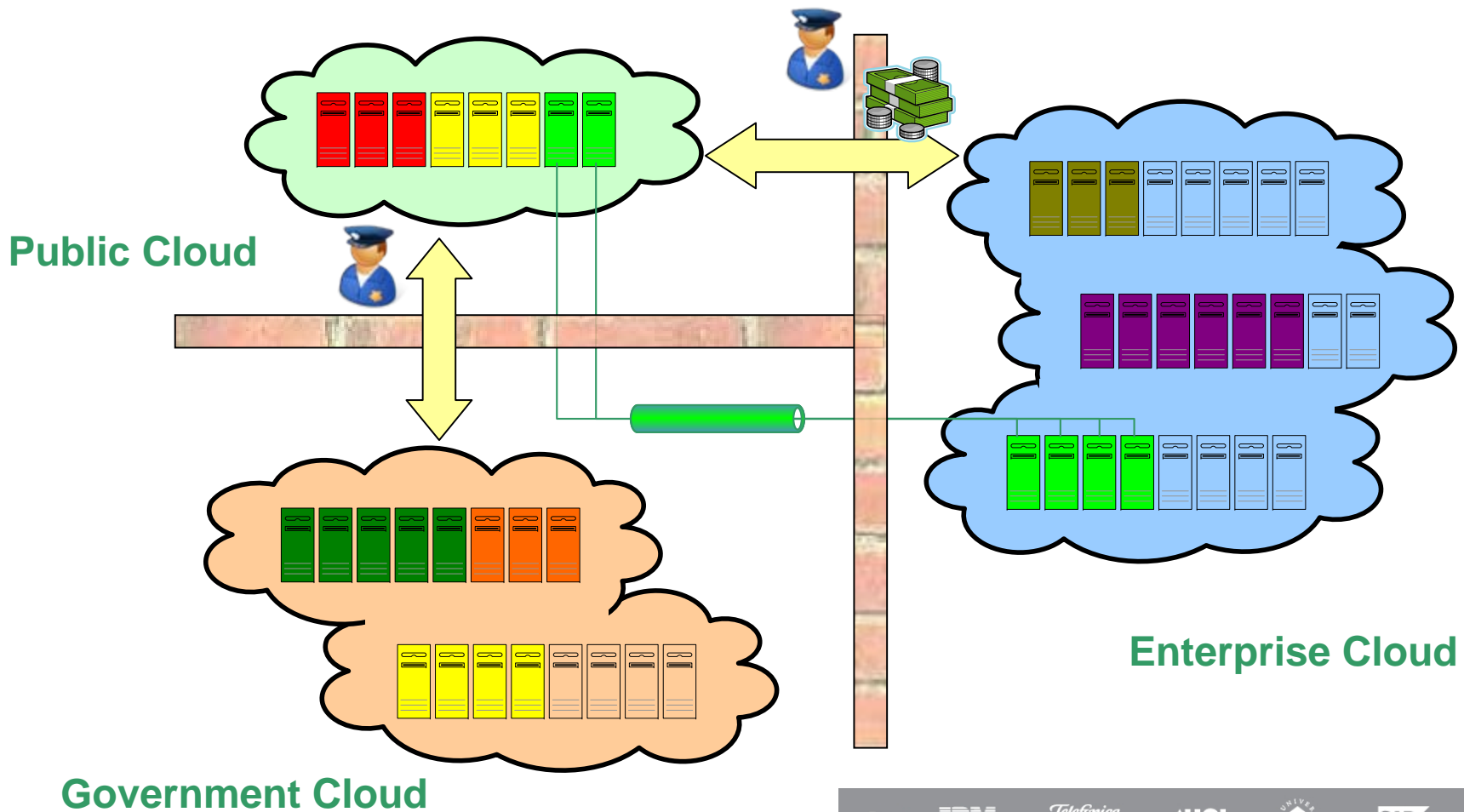
# Moving from Basic Cloud to the Future Internet

- Basic Cloud - web access to storage, servers or applications on a service basis can only be the first step.
- To move forward -  
the **ICT infrastructure** must provide advanced functions

## Examples

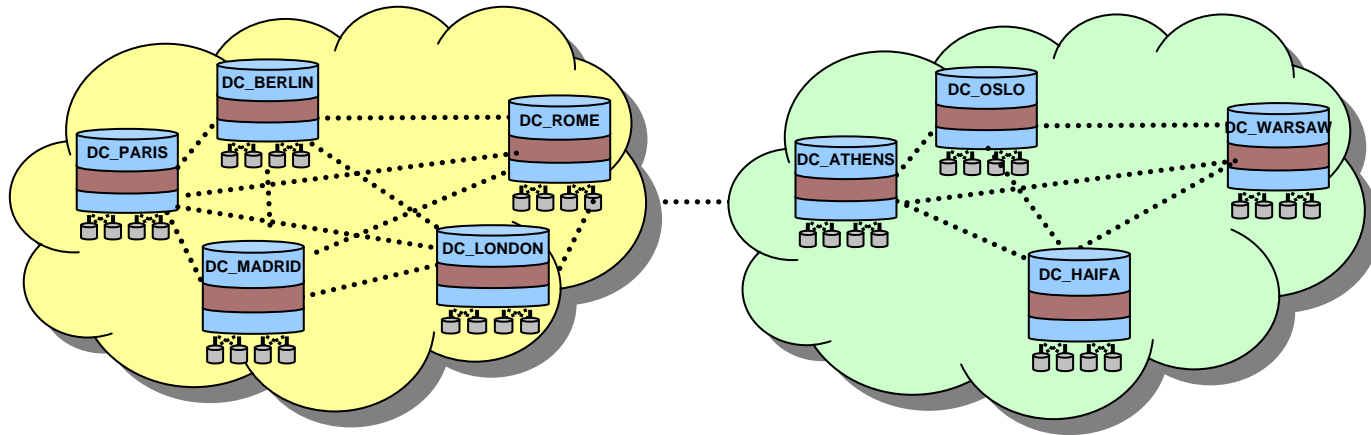
1. Flexible and reliable provisioning of virtual resources across the cloud  
Analogy to electric grid
2. Cloud Storage  
Enabling Data-Intensive Services

# The Reservoir Project: Federation of Computing Clouds via Flexible VM Mobility



# The VISION Initiative

## “Virtualized Storage Services for the Future Internet”



1. Raising Abstraction Level of Storage
2. Data Mobility and Federation
3. Computational Storage
4. Content-Centric Access

SIEMENS



DEUTSCHE WELLE  
DW

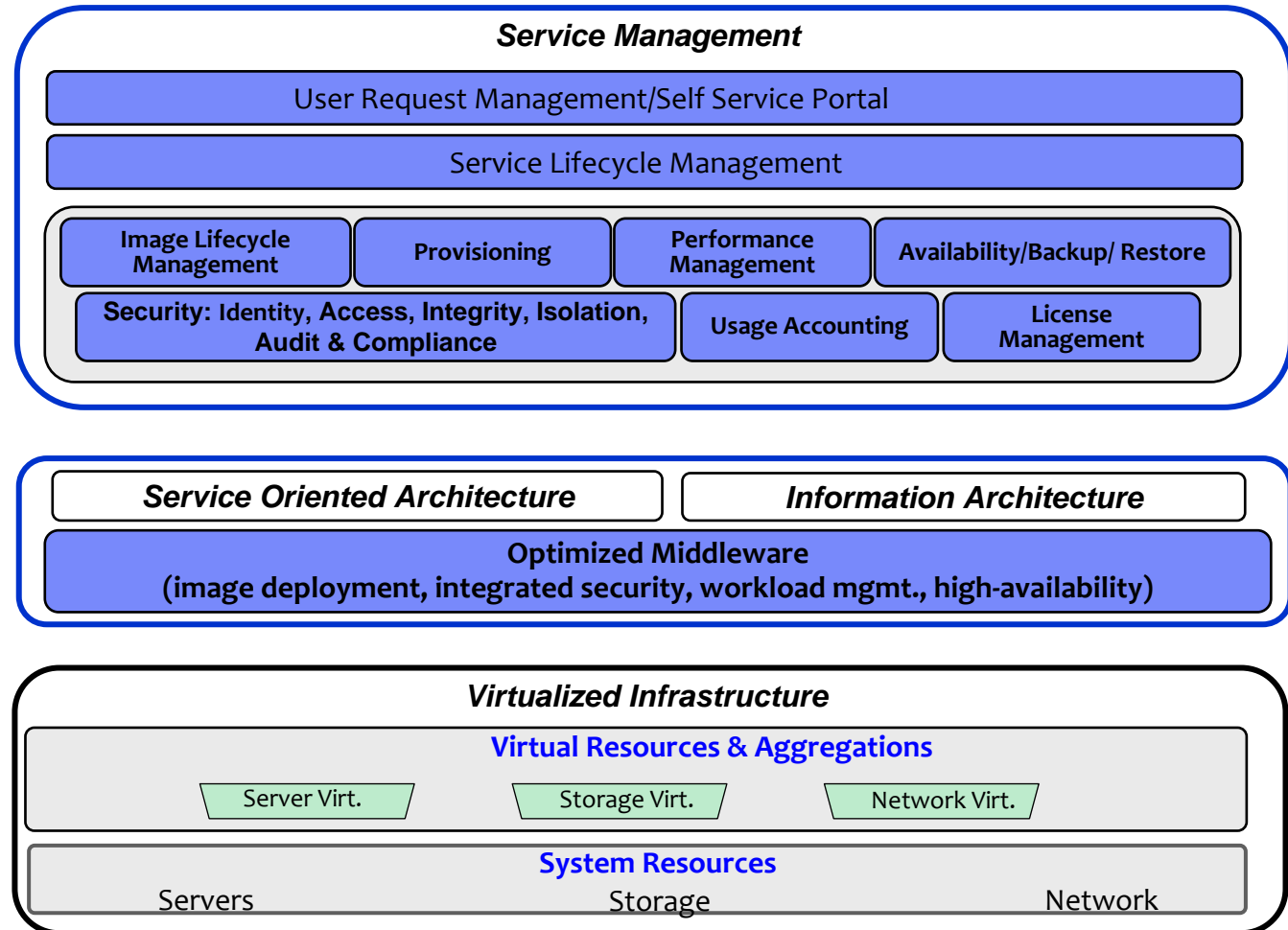


- Convergence of ICT/Telco/Media
- Data-Intensive Services

# The Next Step: ICT Infrastructure for the Future Internet

*A cloud-based service oriented infrastructure that provides end-to-end visibility, control, and automation of the IT infrastructure in support of business services*

*Building upon the results of emerging technologies from FP7 projects, e.g. Reservoir and VISION, as well as other assets of European partners*



# Potential Contributions of IBM

- System research expertise
  - IBM Haifa and Zurich Labs participate and lead challenging FP projects in the area of software, services and SOI
  
- System development skills
  - IBM Haifa and Zurich Research Labs participate in product development efforts, e.g. Tivoli and Systems Director
  - Special expertise in cloud products
  
- Wide access to users and requirements
  - Through IBM customer centers, e.g., in Montpellier, Mainz
  - Familiarity with convergence of Telco/ICT/Media
  - Synergy with IBM's Smarter Planet initiative (e.g., Smart Cities)
  
- Software assets
  - Through a large developer network, e.g. IBM alphaworks

# Summary

- Cloud Computing enables a new dimension of services
- But...
  - ... access to IT on a service basis can only be the first step.
- To move forward with the added value and quality of services needed for the Future Internet, **the infrastructure must provide powerful functions**
- We welcome collaboration in the area of cloud-scale service delivery platform for the Future Internet.
- IBM's interest is in **infrastructure architecture and system software**
  - Workload management and mobility, data storage, virtualization, security, networking, high availability...

