



# HP Flexible Computing Services Grid:

## Powering Oil & Gas Industry Computing Demands

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# Agenda

- Utility definition, benefits, trends
- HP Utility portfolio
- About the HP Oil & Gas offer
- Schlumberger – Platform – EngineFrame – HP solution
- Benefits

# What is a utility?

- Provided by an infrastructure invisible to the end-user
- Standard interface and properties
- Expected to be always available
- Low cost to plug in to
- Payments aligned with usage
- Delivered as a service



# The need for utility computing – The business requirements view



## CFO

- Shift from CapEx to OpEx
- Match cost of infrastructure with business value



## CIO

- Manage rapid growth
- Match cost of infrastructure with business value
- Maintain control of the infrastructure



## Line of Business Manager

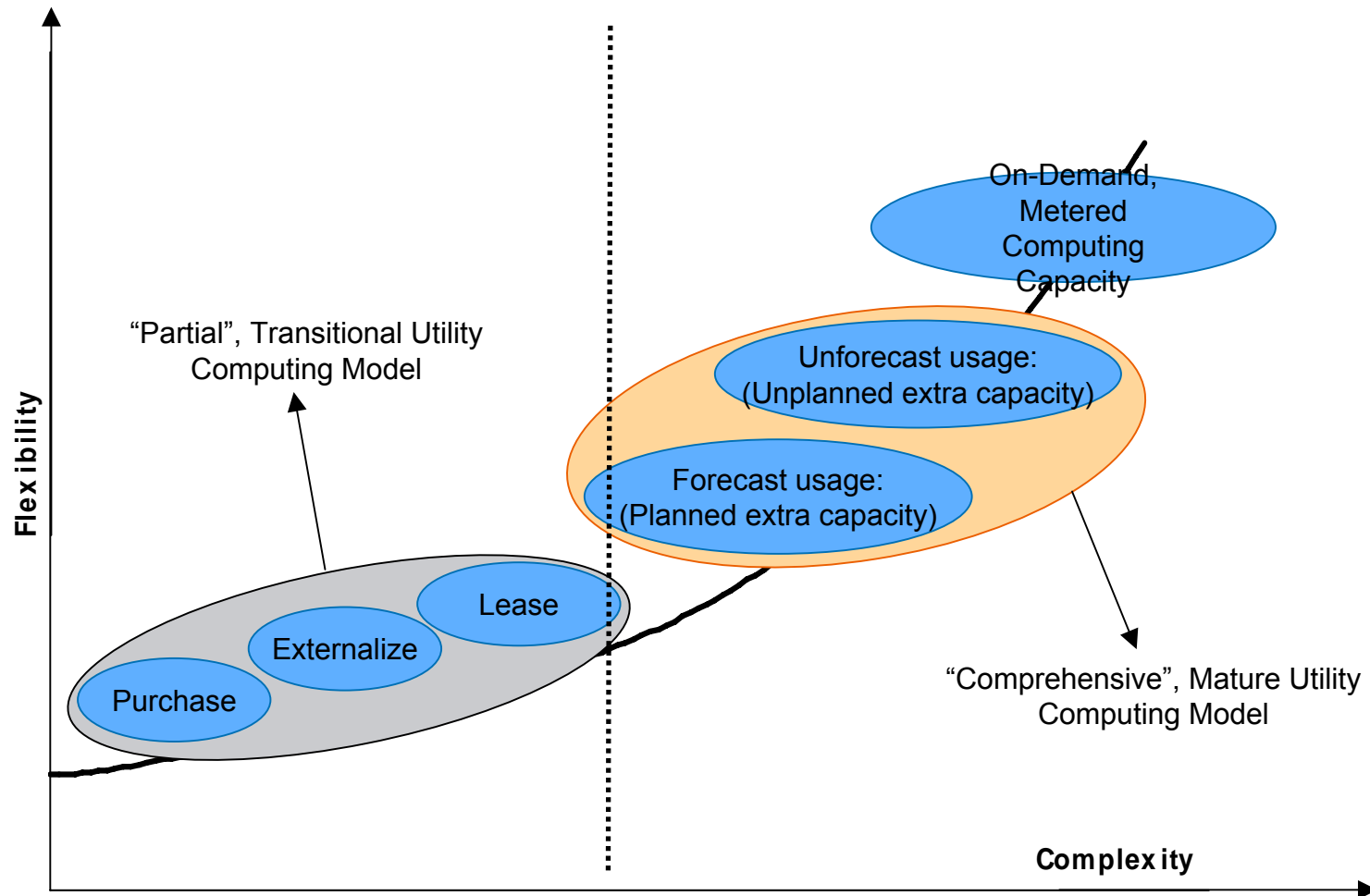
- Address rapid growth
- Accommodate business peaks and troughs



# Utility computing services trajectory



Utility Computing Services Spectrum



Source: "WE Utility Computing Services Market, 2004-2009 Forecast and Analysis", IDC, April 2005

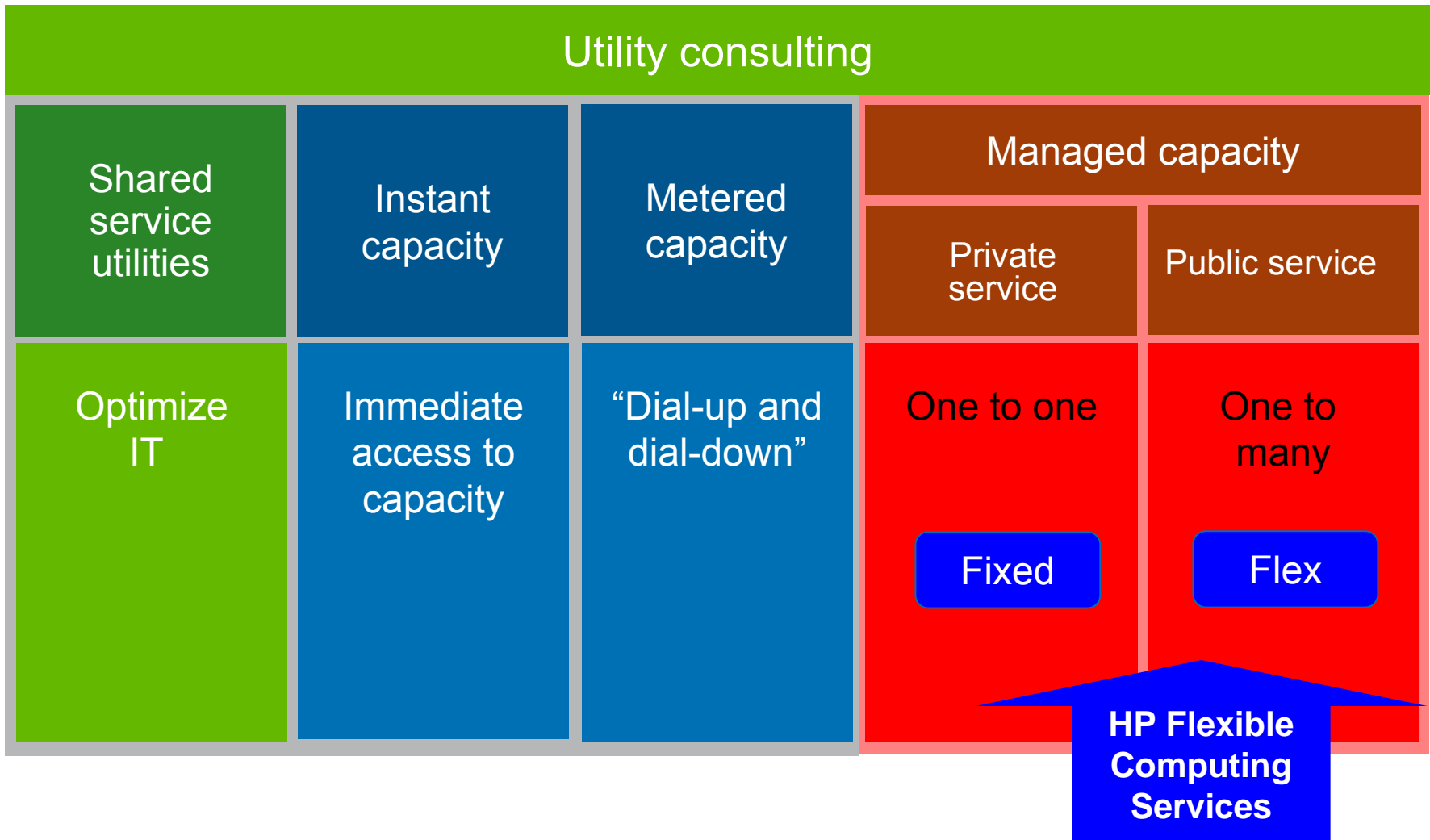
# HP Utility Computing Services: offering customers innovation and choice



**Build your own**

**Plug in to HP**

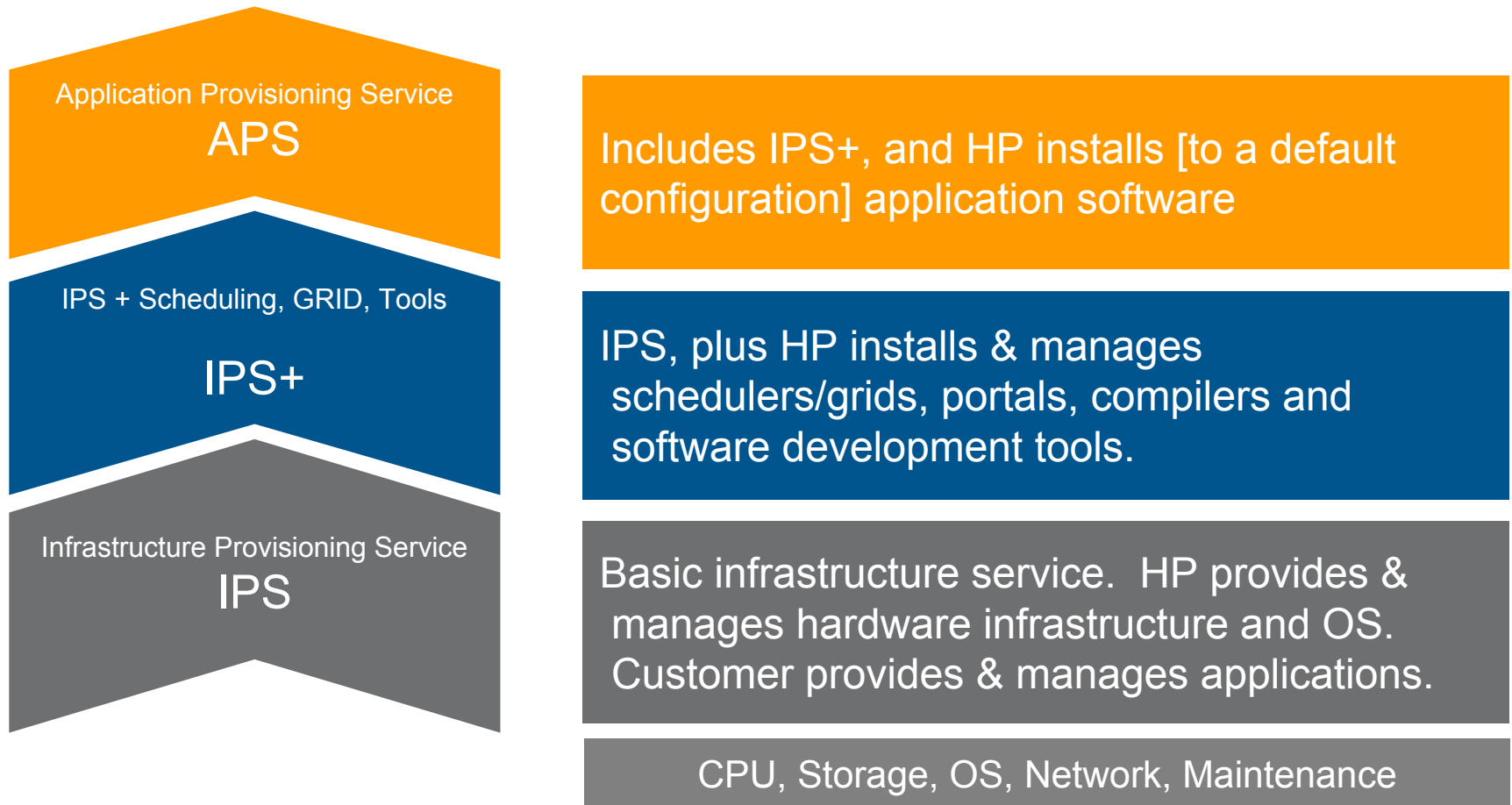
Utility consulting



# HP Flexible Computing Services portfolio



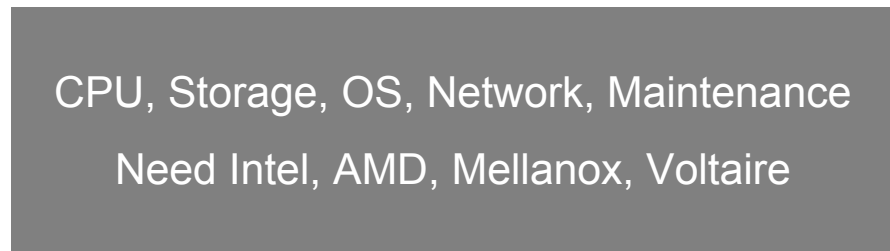
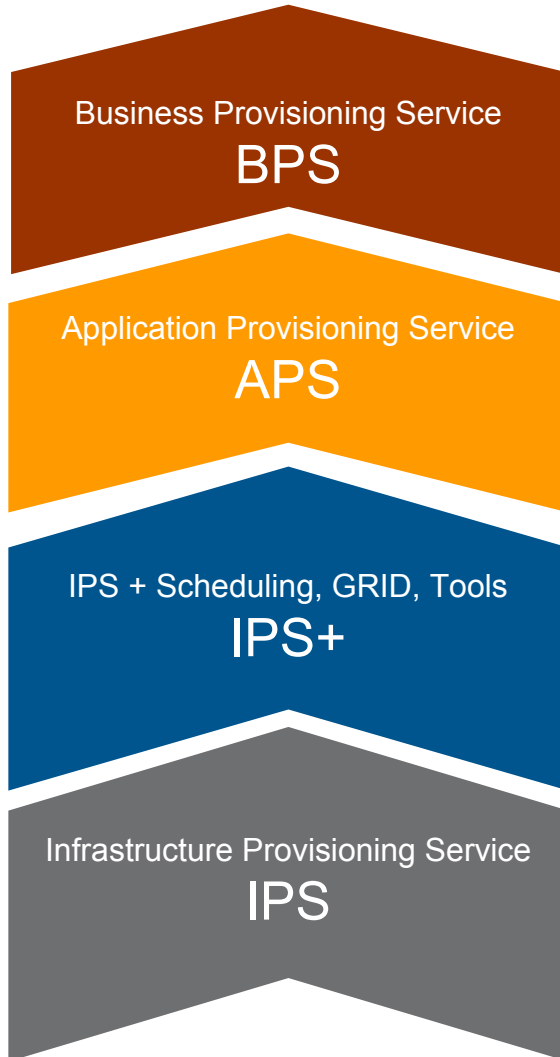
Customers choose how to plug in



# APS for Manufacturing: Oil & Gas Focus

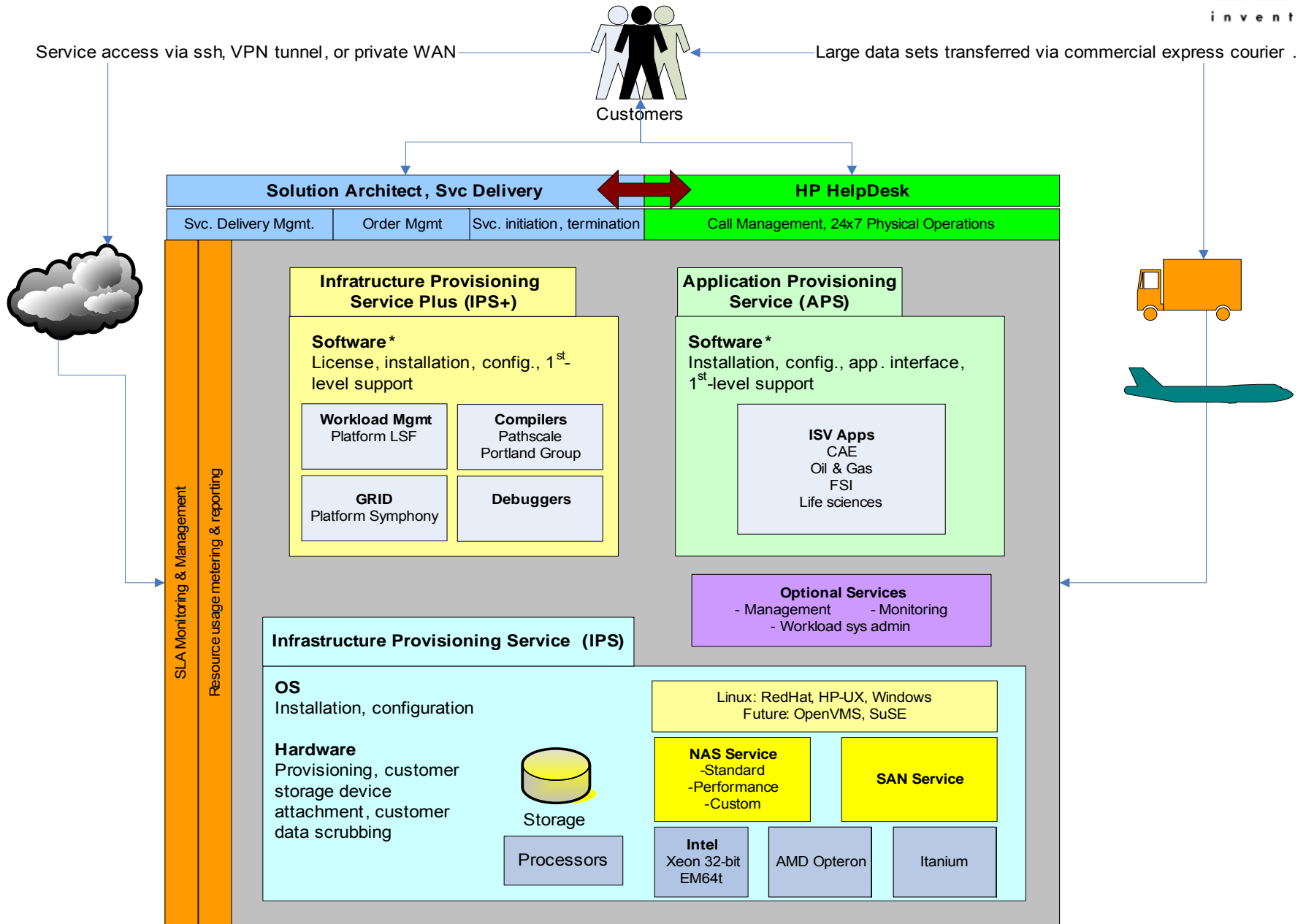


Customer



Management, Monitoring, Security, QoS

# structure



# HP Flexible Computing Services



acoustics

gene sequencing

str

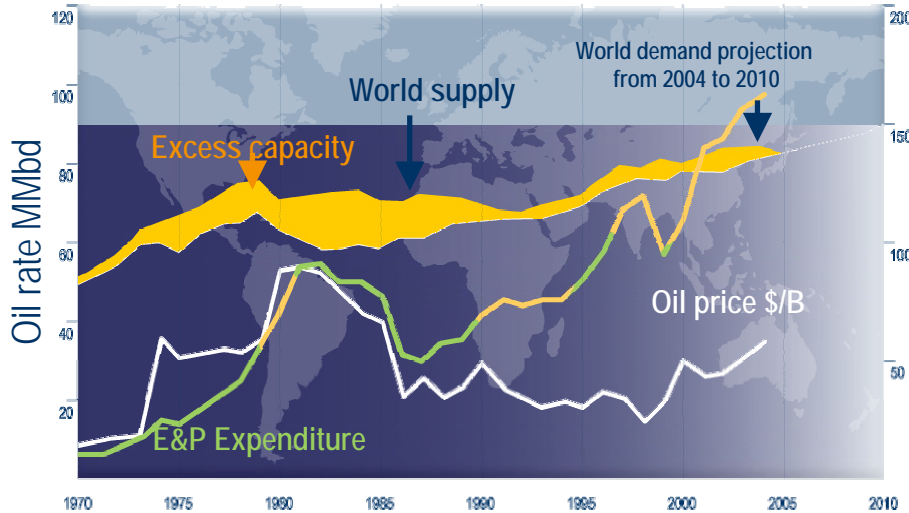
Ushering in the age of  
Utility Computing  
Services

seismic

liquidity modelling



# Oil and Gas - Addressing the Challenges



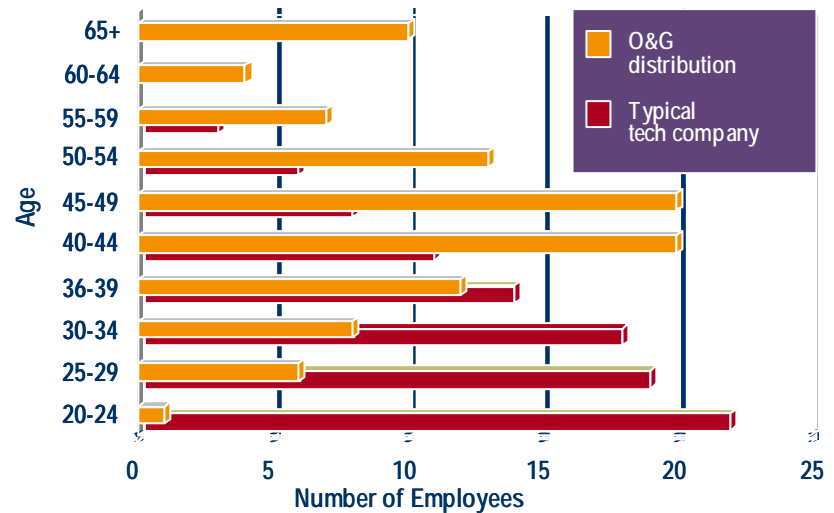
## Challenges in the field:

- Production shifting to mature, complex and lower-margin fields
- Reliable prediction and delivery of production objectives

## Challenges within the workforce:

- Increasing productivity and the impact of fewer experts
- Collaboration among dispersed work groups who have access to vast amounts of information
- Need to make risk-qualified decisions in a more timely manner

## Workforce Age Distribution

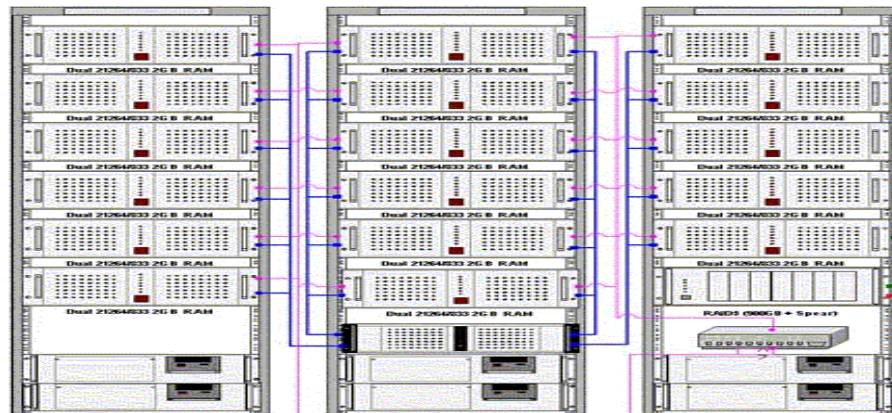


# Problems and Solution

- Problems:
  - Huge increase in demand for reservoir simulation
  - Simulation activity is increasingly episodic and “on demand”
  - Demand cannot be affordably met through traditional work practices, computer resourcing, and IT policies.
- Solution:
  - Advances in software e.g. Petrel, COUGAR, Mepo ...
  - Advances in computer systems, clustering, high-speed, low-latency interconnects
  - Grid Computing
    - Utility Computing

# What's important in selecting a platform..

- All components becoming standardized/commoditized
- Maximum performance essential for competitive advantage – scalability through parallel methods is essential
- Workload management and maximum throughput is essential – job queuing
- But also: deployability, usability, sustainability ...
  - IT strategy



# What are the challenges we are trying to address ?

- In General:
  - Security
  - Run large numbers of models
    - Computer assisted history matching
    - Uncertainty
  - Controlling resources such as licenses, fairshare and making sure jobs run on suitable systems
  - Enabling ease of use of remote or utility computing
- To ECLIPSE Specifically:
  - Data + executables must be transferred to the host machines reliably and securely, this includes all additional include files etc.
  - Must be easy to use and pretty much invisible to the user
  - Results data must be transferred back seamlessly and remote machine tidied up.
  - Configuration of resources on remote machines needs to be controlled including:
    - OS levels and patches
    - Access to a license manager
    - Matching of job type ( e.g. parallel ) to machine type ( e.g. cluster )

# Schlumberger



A leading supplier of oil field services and application software to the oil & gas industry

## The HP difference

- Flexible solution
- Rapid delivery of resources
- Latest technology for faster runs
- Easier to contract with



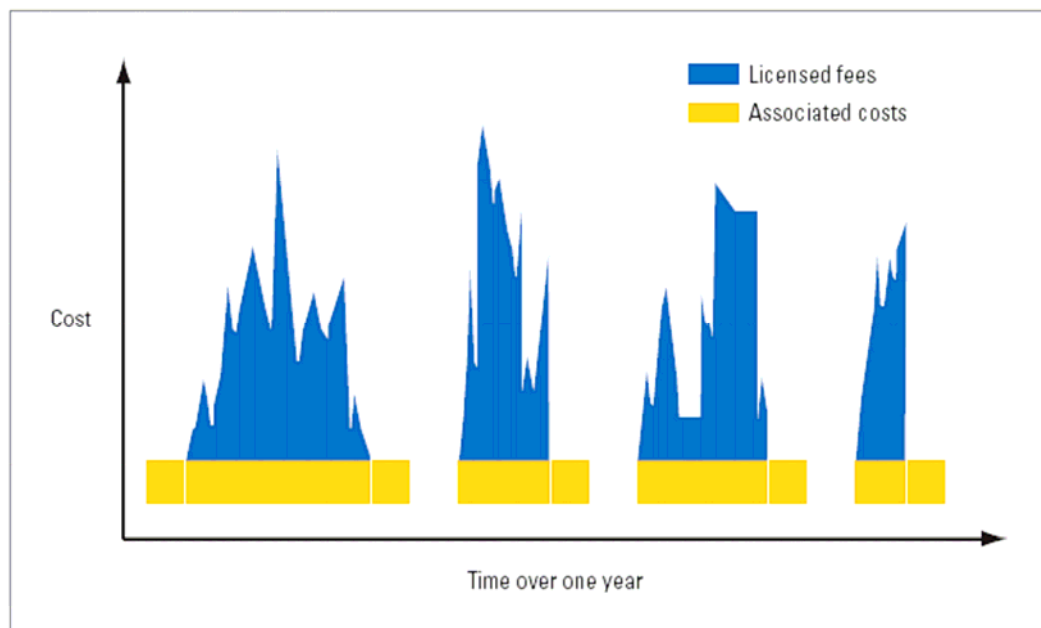
Challenge	Solution	Result
<ul style="list-style-type: none"><li>• Major oil and gas exploration and production companies around the world, customers for the company's Eclipse Reservoir Simulation software, have a problem with too few compute cycles to run critical simulations fast enough in pursuing new oil reserves</li></ul>	<ul style="list-style-type: none"><li>• HP Flexible Computing Services enabled Schlumberger to provide a complete environment for their major oil and gas customers to perform reservoir modeling, as a utility service<ul style="list-style-type: none"><li>• LSF, and Eclipse on HP servers with Infiniband</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Schlumberger was able to provide instant capacity to their Eclipse customers who otherwise could not have run critical Eclipse simulations</li><li>• Schlumberger's customer was able to do the equivalent of 6 years work (doing it the old way), in under 3 months</li><li>• Schlumberger is extending the service to more customers, creating a new business for this service,</li></ul>

# ECLIPSE Rapid Response Simulation Services

## KEY BENEFITS

- Addresses the current shortage of reservoir engineers
- Improves the quantification of uncertainty and risk
- Can handle complex simulation problems when time is at a premium
- As-required solution satisfies peaks in demand for simulation
- Offers pay-per-use business model
- Parallel processing minimizes run times
- Significantly reduces long lead times for complex hardware and software purchases
- Data center technology is refreshed on a regular basis.

**Additional processing power and ECLIPSE\* software licenses are available as required, on a pay-per-use basis, using ECLIPSE\* Rapid Response Simulation Services to meet periodic peaks in demand for reservoir simulation runs.**



*When using ECLIPSE Rapid Response Simulation Services, the commissioning, decommissioning, and hardware costs for use of the HP Flexible Computing datacenter are fixed based on time and the particular CPUs used, while the ECLIPSE software licenses required to complete the simulations are engaged on a pay-per-use basis.*

# Thank You

