

Clouds in the sky: a strategic vision

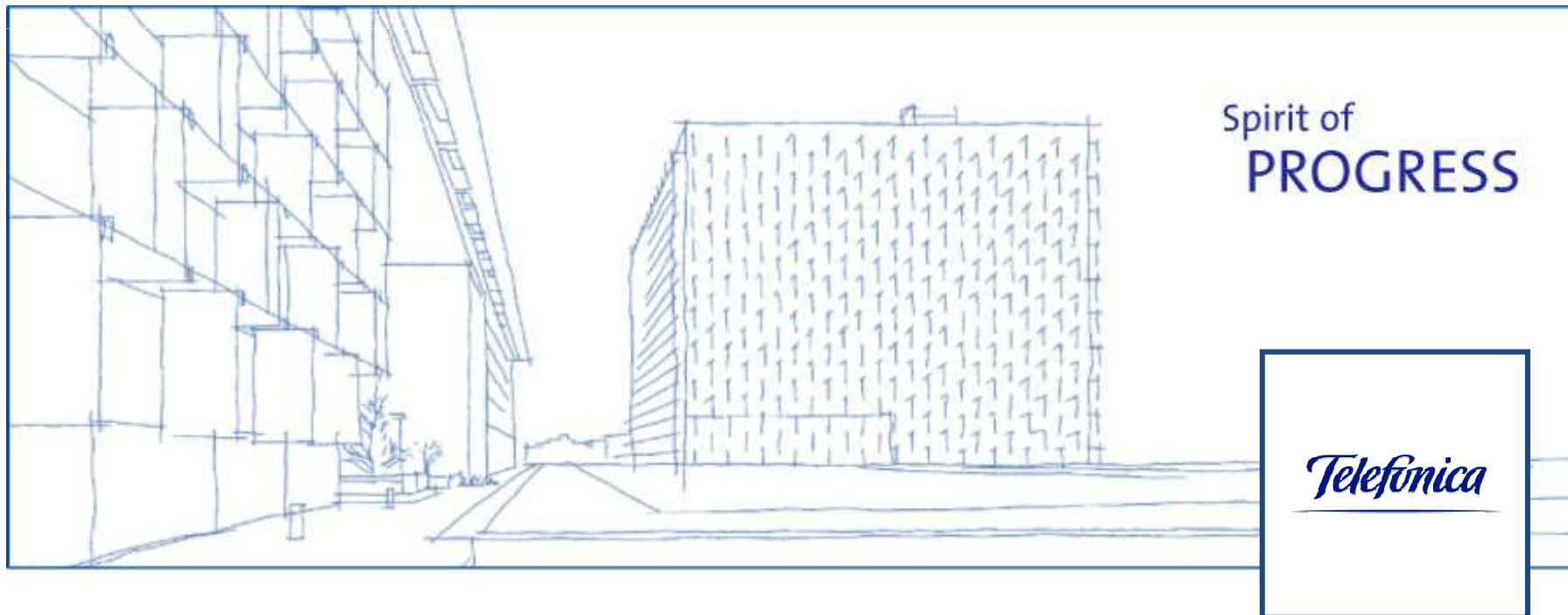
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**Forecasts announce that
skies will be “Cloudy”
tomorrow but ...**

**... What do we mean by “Clouds”
nowadays ? ... and tomorrow?**

There are multiple definitions ...

"Cloud computing is using the internet to access someone else's software running on someone else's hardware in someone else's data center"

Lewis Cunningham

"A hosted infrastructure model that delivers abstracted IT resources over the Internet"

Thomas Weisel Partners LLC

"Cloud computing is an emerging approach to shared infrastructure in which large pools of systems are linked together to provide IT services"

IBM

What is ours?

"A style of computing where massively scalable IT-enabled capabilities are delivered 'as a service' to external customers using Internet technologies"

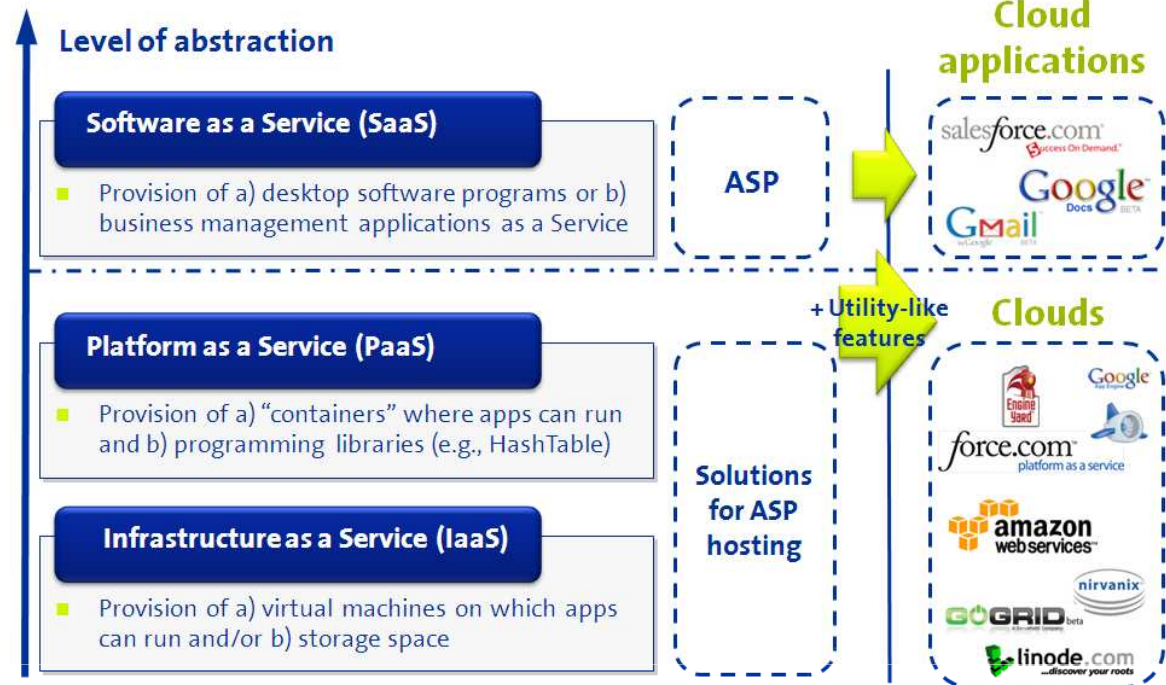
Gartner

"A cloud-based, highly scalable, and managed compute infrastructure capable of hosting end-customer applications and billed by consumption"

Forrester Research

Today ...

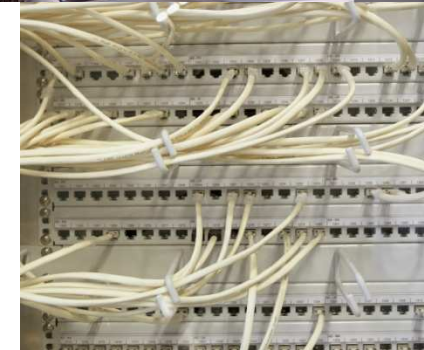
Clouds aim to support the **Utility-like provision “as a Service”** of **Infrastructures / Platforms** for application **hosting**



- Ease of use, self-service
- Pervasive
- Hidden complexity
- Scalable on demand
- Pay per use (much cheaper than if you set it up on your own)
- Reliable
- Secure

Cloud Hosting: some challenges are still there

- Need for a higher level of abstraction for describing applications to deploy on the Cloud
 - Just what a programmer would know
 - Most efficient multi-tier architecture is automatically setup by the Cloud
- Higher-level abstract language customers can use to describe their business requirements
 - Elasticity rules
 - Monitoring
- Convergent and efficient allocation of, both, computing and communication resources (Bandwidth, VPNs, VLANs, ...)
 - Both internal communication resources and in-outbound connection resources
 - Need definition of NaaS (Network as a Service) layer to handle communication resources



But hosting is just one part of the story ...

PaaS Clouds will transform into **business ecosystems** helping **application providers** to grow their business ...



- How can I make money ?
Marketplace functions
 - Support to multiple/flexible pricing/revenue models
 - Rating, Billing and Settlement as a Service
- How can I best promote my app ?
Mashup as a Service
 - Be able to combine with apps/services from others
 - Let end users develop their own apps

Mashup as a Service (MaaS)

- “Mashup as a Service” (MaaS) will be a key feature in future Clouds
 - End users search for, pick and select gadgets in a catalogue and assemble them together to support most frequent operations in their daily life
 - Beyond state of the art mashup technologies on the Internet today (e.g., iGoogle or NetVibes): ability to connect gadgets, share mashups, ...
 - Some gadgets linked to network capabilities/APIs or Cloud Apps (e.g., YouTube, Flickr, Terabox, ...)
- Target scenarios:
 - Consumers: pick a photo on flickr and send it by MMS, Take a photo on Terabox/Flickr and publish it on Facebook, twitt a feed you read, ...
 - SMEs: Access to a marketplace of SaaS applications, pick Trouble-ticketing app from provider A, Customer Database app from provider B, combine them together with Cloud Services, ...
- Check beta site: <http://ezweb.tid.es>



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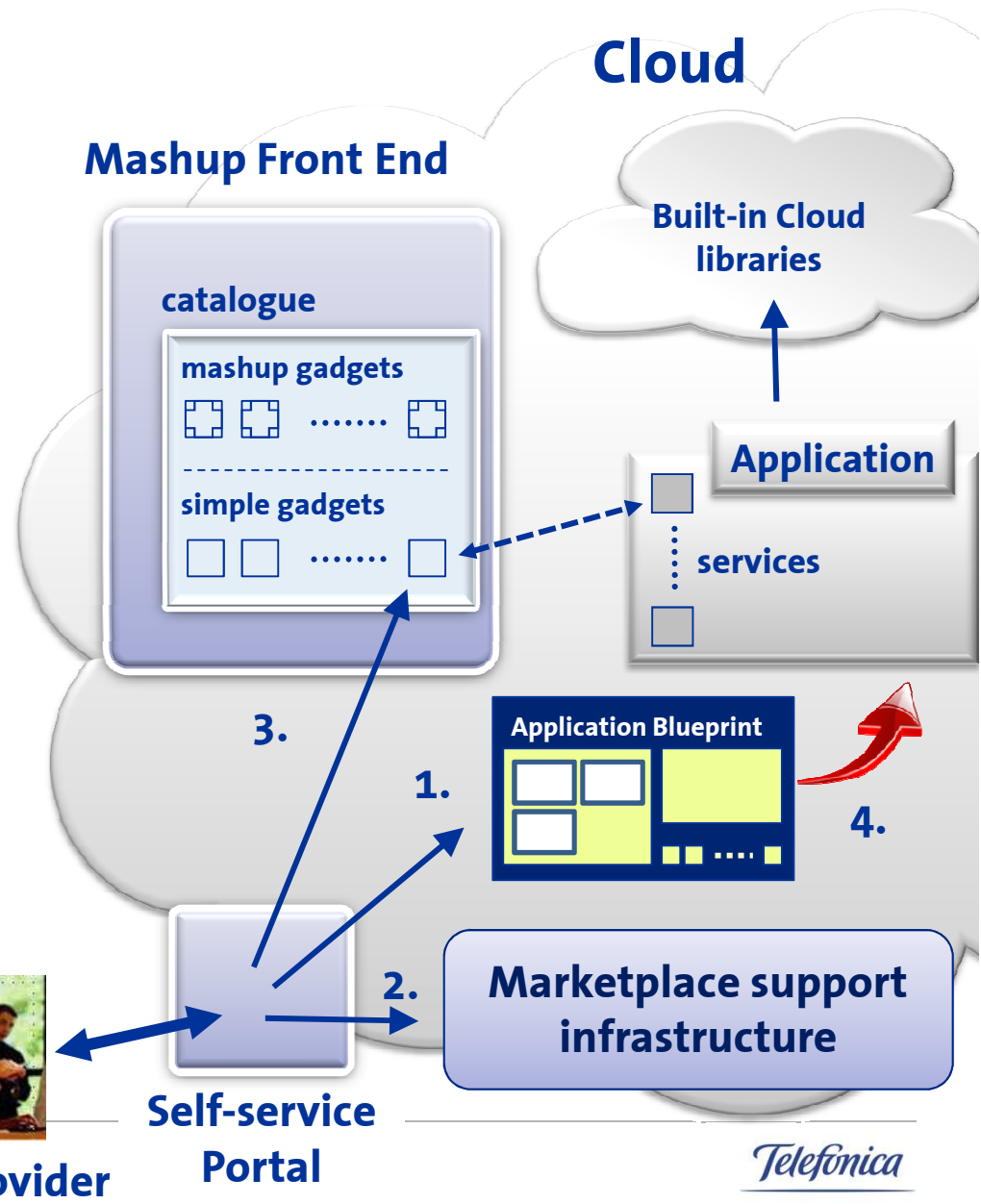
... **PaaS Clouds** will also evolve as to provide the **richest programming framework** helping app providers to create **killer applications**



- **Rich set of APIs** accessible “as a Service” from apps hosted in the Cloud:
 - **Context** as a Service
 - **Backend EAI tools** as a Service (Publish/Subscribe, ...)
 - **Network Enablers** as a Service
 - **Content** as a Service
 - **DataStore** as a Service
- **Mobile Web** access development tools

The global picture

- Applications providers:
 1. Register Application Blueprint on PaaS Cloud infrastructure
 2. Choose revenue model (pay per use, share, ads) and bundling conditions
 3. Publish suite of front-end gadgets (optional)
 4. Deploy application
- The application uses built-in functions (context, comm services)
- End customers (SMEs, individuals) are able to mashup apps coming out from different app providers



Morfeo Cloud hosting technologies: building the Open Cloud

- Key participation in most relevant EU FP7 and Avanza projects related to Cloud



- Building the MaaS concept: EzWeb
- Building open components for the governance and business oriented layers in IaaS and PaaS Clouds
- <http://cloudtechnologies.morfeo-project.org>



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