

**Denzel IGC Keynote  
MONDAY, June 6, 2005  
Barcelona, Spain  
5:25 P.M. – 5:50 P.M.  
25 MINUTES**

**“Forget bandwidth  
Agility: the new metric for Internet performance”**

**Slides**

**Followed by 40 minute Panel Discussion with Dr. Shin Miyakawa**

[1] **Introduction**

[Slide 1]

You will speak after Dr. Miyakawa from NTT Communications speaks on IPv6. You will be introduced by Santiago Cortés, Chairman and Managing Director, Hewlett Packard, S.A España.

## [2] Digital, Virtual, Mobile, Personal

[Slide 2]

- As we've just heard from Dr. Shin Miyakawa, IPv6 will soon be a reality. Moore's Law continues to make computing better, faster and cheaper.
- Ubiquitous Internet = business enabler. Change way consumers experience DVMP world.
- Enterprise, consumer, government issues?
- Bandwidth and processor speed won't measure network performance. Forget bandwidth
  - § Unlike today - if you have a dial-up modem or an old PC.
  - § Unlike today - if government regulations imposes limits on carriers.

### [3] What we measure changes

[Slide 3]

- Measuring performance: Shifting bottlenecks
  - § Measures of performance shifted over past 40 years.
  - § No software engineer fine tunes page-swapping memory algorithms today – there's an abundance of memory in modern systems.
- **Pre-1980 Early-stage systems:** performance measures strictly physical issues (disk and memory bottlenecks)
- **1980-2000 Mid-stage systems:** performance measures system latency (backplane speeds, bandwidth and communication bottlenecks)
- **2000 on Evolved Internet systems:** performance measures web server capacity under peak load stresses, network robustness etc.
  - § What will we measure tomorrow? When bandwidth is freely available then Agility becomes the new measure of performance. Why?

#### [4] **Agility: the new measure of performance**

[Slide 4]

- Agility (degree of Automation & virtualization) measures systems in terms of Time, Range and Ease
  - § Time: How quickly can I access? Is access always available?
  - § Range: How broad are the changes I need to implement?
  - § Ease: How many resources are consumed?

#### [1] **Enterprise:**

- § “The ability to adapt to changing workloads and applications”
- § Darwin said it best – the survival of the fittest

#### [2] **Consumer:** seamless experience of the multimedia web.

#### [3] **Governments:**

- § Transparency + “No wrong door” + Privacy

## [4] **Challenges, Issues and Remedies for an Agile Enterprise**

§ Consider what makes headlines today. All topics raise issues, all have remedies.

§ Will discuss Challenges, Issues and Remedies of a range issues we see are of concern for CIO's who must deal with effects of change.

***Challenges:***

- § 7x24 access e.g. VoIP access to emergency services.
- § Transparent roaming access, continuously from device to device.
- § Large numbers of mobile users: streaming media, scaling
- § Demands of Multi-media content
- § Providing continuity over a citizen's lifetime: wireless number portability, email address portability.
- § **Challenge the audience:** Is one email address for every citizen in the EU even a possibility? Why not? We can do it technically. What prevents it happening?

***Issues:***

- § Network loads change. Demand spikes by time zone or season or event driven – e.g. the Vatican servers the week of April 3rd.

## [6] **Continuity: Remedies**

- § Technical simplification - networks function better with a reduced number of elements, eliminate customization and automate change.
- § Many of you are technologists working to make this happen.
- § Many with government responsibilities are pushing on this from the policy side.



## [7] Compliance: Challenges and Issues

[Slide 6]

### ***Challenge:***

- Policing the web. Keeping order. Security.

### ***Issues:***

- Internet worms, virus, denial of service attacks, phishing, spyware and malware. How to protect citizens?

## [8] Compliance: Remedies

- Legislative compliance: EU-wide, Government level, intra-community
- ILM
- Standards
- Intelligent proxies.
  
- HP Labs solutions.
  1. A complete record of your data – any issues and actions taken.  
This provides compliance with Basle II and others.
  2. HP Labs Virus Throttle.
    - a. Restricts network connections to new IP addresses.
    - b. Throttles “bad boy” behaviour.
    - c. Doesn’t need to know anything about a virus or a worm to stop it.

## [9] Consolidation: Challenges and Issues

[Slide 7]

### ***Challenge:***

- Increased consolidation among vendors, internet hosts, owners of the pipes.

### ***Issues:***

- Providing VoIP number and email address portability.
- Carriers and Agencies who provision access face higher costs, go out of business.

## [10] **Consolidation: Remedies**

- Legislate framework to protect consumers when vendors merge. Many of you in this room who are legislators are working to make this happen. Taking advantage of economies of scale with shared services model and hosted solutions to take costs out for citizens. HP have worked with countries like Sweden on this.
- Standards reduce impact of vendor changes – enable enterprise and consumer agility. HP supports important standards work. We sit on pretty much every major standards group in the W3C.

***Challenge:***

- Horizontal global network demands standards and a common language – problem with apples and oranges trying to collaborate.
- Network communications technologies (IM, Email, web) are all technologies for sharing text with rich media glued on as an afterthought, and interaction glued on even more clumsily as a later afterthought (. Rich collaboration requires the ability to explore rich visualization landscapes together, and a network which supports low-latency communication.

***Issues:***

- Conflict between local rights and need for global collaboration on the net

## [12] **Collaboration: Remedies**

- Standards and sharing. Some interesting Open Source developments.
- Europe is ahead with ITIL (founded in UK)
- Governments in Europe are standardizing on Open Source [e.g. Munich and Bergen, Norway]

[13] **Collaboration: Croquet Systems and Tycoon** [Slide 9]

- Alan Kay - father of the internet - head of PARC created much of modern computing, including: PC with bitmap, GUI, WYSIWYG, Ethernet etc. Alan's latest project:
- **Croquet systems**
  - Enables collaboration from the ground up.
  - Resource sharing among large numbers of users
  - Enables massively multi-user peer-to-peer collaboration
  - "An operating system for the post-browser Internet".
- HP Labs **Tycoon** makes the network agile.
  - Allocates computer resources via market-based bidding
  - More efficient than time-sharing schemes,
  - More AGILE than current methods.

[14] **Challenges for seamless consumer experience** [Side 10]

***Challenge:***

- Provide the consumer with a seamless user experience on the multimedia web.
- Agility in terms of what we see and hear.
- Digitization at the point of capture is an issue
- Governments relying on paper forms etc.

***Issues:***

- Poor or inconsistent user experience
- Fragmented network domains separately managed & administered
- Unreliable QoS of network connections
- Lack of interoperability
- Diverse end-user devices and environments
- Diverse network domains difficult to manage & monitoring



## [15] **Remedies for seamless consumer experience**

- Provide the consumer with a seamless user experience with networked multimedia.
- Capture, distribute, and share what we see and hear.
- Do this with agility.
- Digitization at the point of capture is an issue - Governments relying on paper forms, etc.

[16] **Openstream for seamless, agile consumer experience** [Slide11]

- HP Labs OpenStream Project
- Tablets and pens can digitize and capture rich media for governments
- Life-size, face-to-face virtual collaboration solutions are coming – way beyond teleconferencing
- HP's work with Imaging and Printers relevant

OpenStream architecture and Services

Links heterogeneous networks to enable the converged experience

[17] **Openstream for seamless consumer experience**

[Slide 12]

- Not going into all the details. Just show that the User Experience Layer is primary. We put Agility first. Design in.

## [18] **Conclusion: Challenge and Call to Action**

[Slide 13]

- How agile are you in the internet age?
  - At the enterprise level
  - In the experience your consumers have
- What's the agility of your net compared to other regions or companies?
- As you solve the important tactical issues you are meeting to discuss over the rest of this conference – as HP scientists continue to Invent.
- I ask you to consider: will this contribute to a more agile internet or not?