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Minister for Innovation and Technologies

*The Role Of Government in Broadband Deployment in Italy*

“Broadband: Infrastructure, Applications and Use”

Joint WP TISP/IE Workshop
OECD, Paris 5 December 2001
The definition of broadband relates to different components: infrastructure, contents, services and applications, a context which is in constant evolution.

**Broadband can be defined as the technological environment which permits the use of digital technologies right up to the highest levels of interactivity.**

<table>
<thead>
<tr>
<th>Technological environment</th>
<th>Digital technologies</th>
<th>Interactivity</th>
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<tbody>
<tr>
<td>• Applications</td>
<td>• The evolution of digital technologies is determined by the request for bandwidth for applications and innovative services.</td>
<td>• Real bidirectionality</td>
</tr>
<tr>
<td>• Contents</td>
<td>• Up until now, bandwidth requirements have been limited to hundreds of Kbps.</td>
<td>• The possibility of the user (private, firms and PA) creating and publishing services and applications.</td>
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<tr>
<td>• Services</td>
<td>• Bandwidth in terms of Mbps will be required in the short to medium term.</td>
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<tr>
<td>• Infrastructures</td>
<td>• Businesses and public administration are already at the point where their bandwidth needs to run to Mbps, a capacity that will have to increase in the future.</td>
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Forecasts for the worldwide evolution of broadband services up until 2010 underscore the interrelation between available capacity, applications diffused and market conditions.

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<tbody>
<tr>
<td></td>
<td>128 kbs</td>
<td>384 kbs</td>
<td>2 Mbs</td>
<td>10 Mbs</td>
<td>30 + Mbs</td>
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</tbody>
</table>

**Applications**

**Phase 1**
- Low quality video conferencing (< 35 frames per second)
- Limited use of digital media due to speed and cost restrictions

**Phase 2**
- Audio streaming
- Data streaming
- Basic video Streaming and video conferencing (<384 kbs)
- Audio-video applications increasingly employed for simple data delivery

**Phase 3**
- High quality video streaming
- Basic desktop video conferencing
- Complex graphics and animation
- Media driven interaction

**Phase 4**
- Broadcast and multicast streamed media (audio, video and data)
- High quality desktop video conferencing
- High definition TV-quality video conferencing
- Wide adoption of high-quality audio-video applications for corporate communications: real time media

**Phase 5**
- Virtual conferencing (holographic)
- Virtual reality
- Total immersion video
- Evolution of digital media in the direction of virtual reality interaction.
Broadband deployment becomes possible through an evenly paced growth of services and infrastructures

**Present Situation**
- Services, contents and applications are developing more slowly than predicted.
- Current procrastination risks creating a vicious circle. In such a situation, services are not developed until there is demand and yet demand waits to latch on to available services in order to take off.

**Infrastructures**
- The infrastructure market slows down development through the uncertainty of demand for services and applications.
- Trying to keep a step ahead in creating infrastructure does not necessarily guarantee an immediate return on investment.

**Evolution**
- Services and infrastructures must develop at an even pace.
- Demand for services and infrastructures is both the main input in the service/infrastructure system and a factor that has to be sustained by the system.
- Bandwidth requirement resulting from this development will sustain the evolution of infrastructures.

_The deployment of infrastructures and the development of services, contents and applications should progress at an equal rate, thus creating a “virtuous circle”._
The task force definition sums up the problems and potential of broadband take up, providing pointers for government policy.
86% of sites requested in the first phase have been made available and 80% have been delivered. They are already in a position to be fitted out and client orders can now be sought.

Source: TELECOM Italia
Access network: the unbundling is a priority which greatly influences broadband diffusion

<table>
<thead>
<tr>
<th>Technologies</th>
<th>Players</th>
<th>Urgency</th>
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<tbody>
<tr>
<td><strong>Backbone network</strong></td>
<td><strong>Telecom Italia</strong></td>
<td><strong>Not a short-term necessity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Interoute</strong></td>
<td><strong>Excess infrastructure capacity</strong></td>
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<td></td>
<td><strong>Edisontel</strong></td>
<td><strong>New operator networks more advanced and efficient.</strong></td>
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<td><strong>E-Via</strong></td>
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<td><strong>Albacom</strong></td>
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<td><strong>Wind – Infostrada</strong></td>
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<td></td>
<td><strong>Others</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Citizen distribution network</strong></td>
<td><strong>Telecom Italia</strong></td>
<td><strong>Not a short-term necessity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>e-biscom</strong></td>
<td><strong>Fibre optic needed for medium-term use</strong></td>
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<tr>
<td></td>
<td><strong>Edisontel</strong></td>
<td><strong>Excess capacity and duplication</strong></td>
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<td></td>
<td><strong>Albacom</strong></td>
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<td><strong>Wind</strong></td>
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<td><strong>Atlanet</strong></td>
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<tr>
<td></td>
<td><strong>Others</strong></td>
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<tr>
<td><strong>Access network</strong></td>
<td><strong>Telecom Italia (copper)</strong></td>
<td><strong>Telecom Italia’s copper is of a good quality. However maintenance costs are very high.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>e-biscom (fibre)</strong></td>
<td><strong>A real competition on the market for copper is not yet developed.</strong></td>
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<td></td>
<td><strong>Other operators (copper through local loop unbundling)</strong></td>
<td><strong>xDSL performance for very high speed has not been fully tested.</strong></td>
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<td><strong>Optic development is required in the medium to long-term.</strong></td>
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- Fibre optic (primarily)
- Copper (residual)
- Copper x DSL (all Telecom Italia network)
- Fibre optic
- Other technologies*

* Satellite or Wireless Local Loop can offer an alternative on the access network, reaching areas not covered by copper and fibre optic.
Policy in a general framework of indirect government intervention can be pursued along five lines.

**GOVERNMENT POLICY LINES**

- **Development of infrastructures and technologies**
  - **OBJECTIVES**
    - Ensure the availability of broadband access, and promote the development of better technical conditions for users on a national level at an affordable price.

- **Boosting broadband demand and supply**
  - **OBJECTIVES**
    - Financial incentives for those willing to invest in broadband
    - Aggregate public demand (e-procurement)
    - Create band demand among firms and citizens through the development of digital services

- **The diffusion of digital services**
  - **OBJECTIVES**
    - Raise awareness concerning the benefits on offer from broadband
    - Bridge the technological literacy gap and reduce skills shortage
    - Reduce the different kinds of the digital divide

- **Regulation**
  - **OBJECTIVES**
    - Boost competition
    - Stop possible monopolies which may damage the market

- **Monitoring**
  - **OBJECTIVES**
    - Monitoring activities are essential to assess the development of broadband and the actual benefits of the interventions
Policy lines: sustain broadband demand and supply

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<tr>
<th>Tax relief and investment</th>
<th>Demand aggregation</th>
<th>Development of digital services</th>
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| • Fiscal incentives for civil works, hardware, software, training, integration of technologies/contents in the form of:  
  – Deferred VAT payment  
  – Detaxation (Tremonti Act II)  
  – Tax relief brought forward from previous losses  
  – Elimination of concession fee (2,5%)  
  – Tax bonus for the final user | • Development and aggregation of band demand from:  
  – Schools  
  – Hospitals  
  – Post offices  
  – Universities  
  – Legal offices  
  – Etc.  
  • Use of the “e-procurement” model | • e-learning / distance education  
• e-health  
• e-work  
• e-security |
The Government role for sector specific programmes

<table>
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<tr>
<th>Interventions to raise awareness</th>
<th>Interventions for training</th>
<th>Interventions for diffusion</th>
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<tr>
<td>• Bridge the dual digital divide by providing information on the benefits of broadband.</td>
<td>• Training centres (computer driving licence)</td>
<td>• Create kiosks in public offices as well as private places with simplified guidance to broadband technologies</td>
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</tbody>
</table>

<table>
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<th>Digital literacy for educators</th>
<th>Multimedia incentives</th>
<th>e-governance</th>
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<tbody>
<tr>
<td>• Support of public and private education and life long learning through the adoption of broadband technology</td>
<td>• Offer incentives for private and public collaboration to create pilot projects which will stimulate broadband contents production</td>
<td>• Form a closer relationship between citizens and institutions by taking advantage of the interactive and multimedia aspects of broadband</td>
</tr>
</tbody>
</table>
Policy lines: regulatory interventions. The authority must examine certain crucial features of broadband diffusion in Italy

- Problem of possible market dominance by one incumbent for international access: raised prices with a block on competition
- Foster competition to avoid “essential facility” or “bottle neck monopoly”

- Increased transparency to keep the calculation of incumbent costs in check, and make sure charges for Local Loop Unbundling are calculated on the basis of costs
- Revision the regulations for rights of way, zoning and building codes by local authorities. Local restrictions discourage entrants to roll out advanced broadband services on a timely basis.
Policy lines: Tools for monitoring

• Suitable monitoring instruments are required to **check and assess the effectiveness of interventions**

• Data regarding the quantity and quality of development and forecasts of the diffusion of broadband infrastructure should be examined:
  - on a territorial basis
  - for the type of technology used

• Monitoring will also have to comprise quantity and quality data on the type, consistency and diffusion of the supply and demand of contents and services.

• Mainly private operators are to be involved in the creation of such instruments