

Towards Future Media Internet

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Multimedia Content and the Internet

Today

Ø More than 100 million Internet users have downloaded at least one (multi)media file, and over 47 million of them do so regularly *

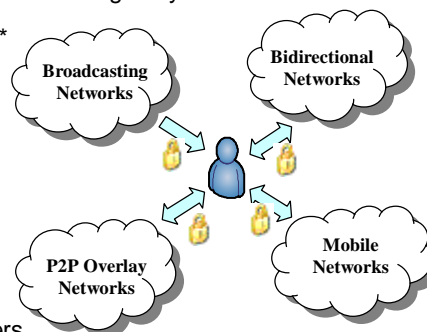
Ø Content: 160 Exabytes fuelled by users**

In the next few years

- Ø Everyone will be
- Content Producer/Provider
 - Content Mediator
 - Content Consumer

Ø Content: 990 Exabytes by 2010**

Ø Within 3 years, 70% of created and archived content expected to come from users



*Source: www.instat.com

** SAPIR "Large Scale Multimedia Search & P2P"



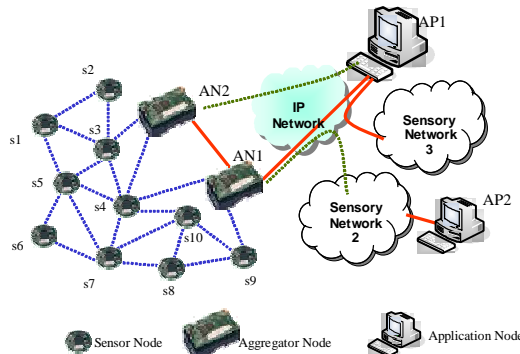
Content and the “Internet of Things”

Today

RFIDs and sensor applications have started to be deployed, but still in a rather isolated way due to physical limitations (power, packaging and processing).

In the next few years

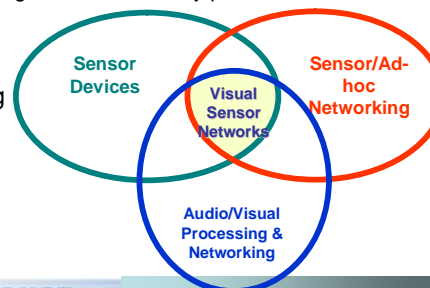
- Ride the “Moore’s law” curve down to ever-cheaper systems at fixed performance
- “Intelligent Dust”
- RFID tags and sensors embedded in objects



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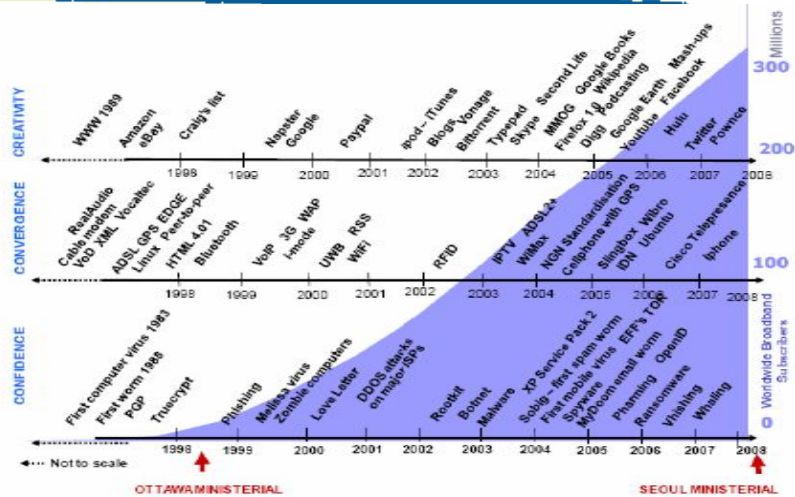
Visual/Multimedia Sensor Networks

- Typical Applications of Virtual Sensor Networks
 - **Surveillance** of facilities like buildings, homes, highways, airports, plants, stadiums.
 - **Monitoring** of inaccessible areas (e.g. environmental monitoring, toxic locations, etc.)
 - **Remote Control** combined with bi-directional communication and control messages (e.g. industrial robots, Unmanned (Aerial) Vehicles, deep space communications etc.)
 - **Creation of smart, interactive and immerse spaces** that use computer vision-based action to interpret what people are doing, and automatically provide feedback.
- Challenges in VSN
 - Multimedia capturing/processing/storing
 - Multimedia searching and retrieval
 - Multimedia streaming
 - Privacy, Security and Trust



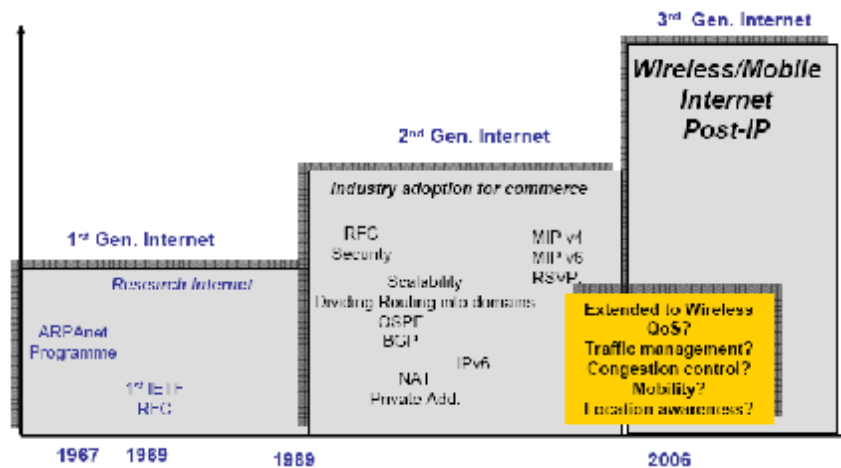
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The last 10 Internet years



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Internet Generations



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Technological Achievements by 2015

- Networked Media depends on key technologies:
 - Information Technology
 - (Broadband/Mobile) Networking
 - Electronic Equipment
 - Content
- Main axes related to these achievements include:
 - The *challenge of the true broadband*
 - The *challenge of personalised intelligent media*
 - The *challenge of distributed control*



Content Creation & Media Delivery Perspective

The Future Internet will provide...
the means to share and distribute...
(new) multimedia content and services with....
superior quality and striking flexibility...
in a trusted and personalized way...
improving citizens' quality of life, working
conditions, edutainment and safety



Towards Virtual Worlds

- **Are/will they be key?**
 - Replacing other forums/communication
 - Displacing other mass entertainment
- Games, TV, Sports
 - Unique art and architecture
 - New narratives and experiences
- **Will virtual worlds provide a rich space in which 3D Internet will develop?**



**Photorealistic
3D Rendering**



**Immersive
User Interface**



**High Definition
Audio, Video**



**Computational
Modeling**

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Real Life Applications Examples



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Improving Social Relationships



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Sales, Logistics, Meetings...



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Examples....



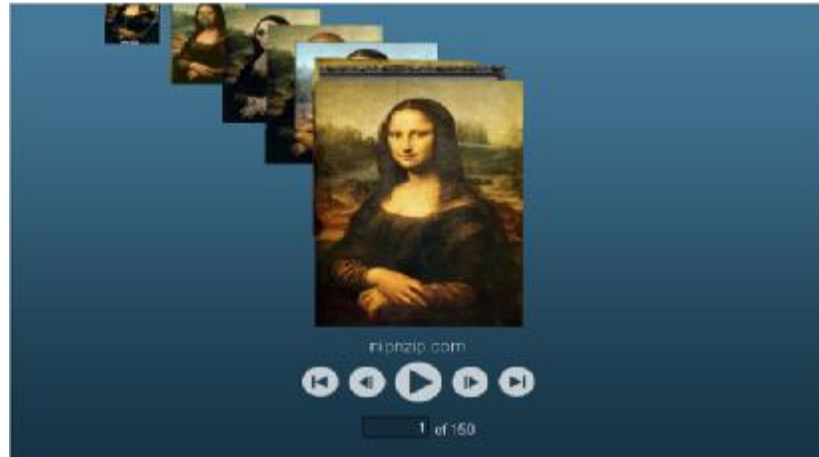
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Simulating urban disasters



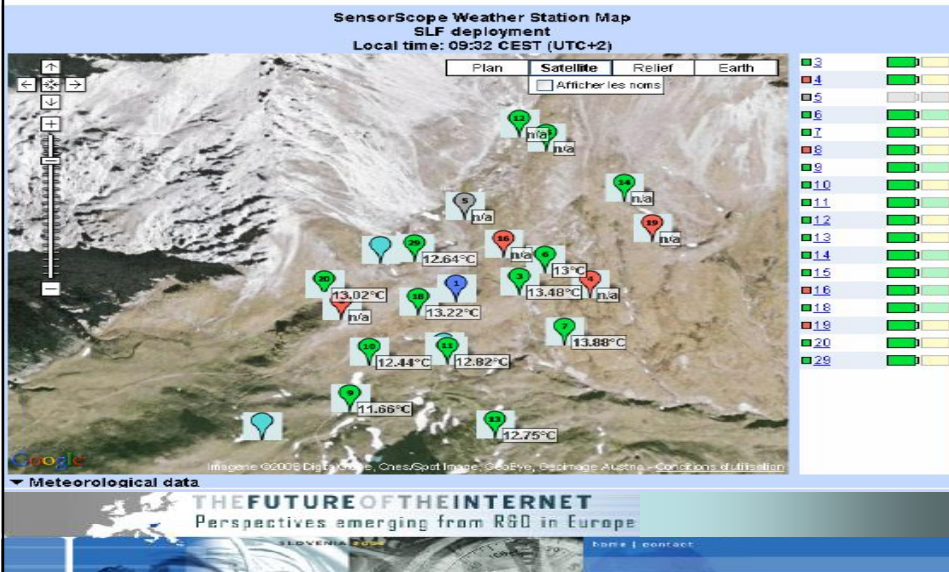
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TinEye



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Geolocation Services



Key Technological Challenges

- Richer media exchange anywhere- anytime
- New Models of interaction – Visual sensations
- Peer-to-Peer content search and delivery
- Ultra HDTV – IP TV with Ultra High Quality
- 3D Media Internet
- Virtual Communities –Virtual Presence- Massive multiplayer Games
- Visual Sensor Networking



Deployment Scenarios (1/2)

- **Multimedia Search, Optimised Delivery and Dynamic Adaptation**
 - Multi-layered/Multi-viewed content coding
 - P2P optimisation for content searching
 - P2P multi-source/multi-network content streaming
 - Media-to-network cross layer dynamic adaptation
 - Reduce start-up/modification/adjustment delays
- **3D Media Internet**
 - Virtual 3D collaborative platforms
 - New 3D content formats
 - Virtual 3D worlds, mixing real content with computer generated
 - Efficient 3D content search



Deployment Scenarios (2/2)

- **New Methods of interactivity**
 - New multimodal interfaces and viewing/displaying methods for consumption of professional/user generated content
 - New methods that will enable natural communication between people (virtual presence)
 - Increased demand for personalisation and aggregation of services
- **Personalisation/Privacy/Trust/Right of User**
 - New Methods of personalisation/ personalised adaptation
 - Identity management, ownership, right of use
 - New payment methods and business models for commercialisation and trading of (virtual) digital objects



The Steps towards Future Media Internet

- 30 March – 2 April 2008, Bled, Slovenia
 - The Bled Declaration
- 9-10 December 2008, Madrid, Spain
- 19 May 2009, Prague, Czech Republic



Bled Breakout Sessions

- Network focus (H. Abramowicz)
- Service focus (J. Domingue)
- Content focus (T. Zahariadis)
- “Internet of Thing” (N. Prasad)
- Security focus (V. Lotz)
- Experimental Facilities focus (A. Gavras)

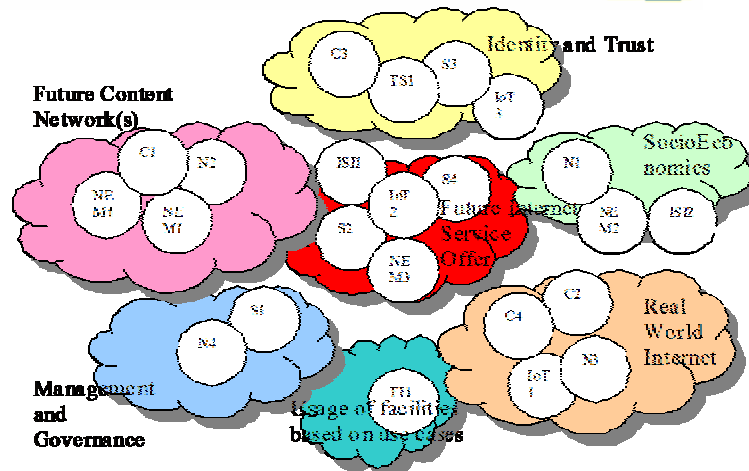


Madrid Proposals

Trust & Security	Network	Services	Content	IoT	Test Infrastruct.	NEM	ISI
TS1 (scalable trust for an open FI)	N2 (future content networks)	S1 (management and governance within FI)	C1 (media driven networks)	IoT1 (community things)	T11 (use scenarios for the FIRE facility)	NEM1 (vision towards future media internet)	ISI1 (the emergency internet)
	N1 (FI socioeconomics)	S2 (architectures and infrastructures)	C2 (physical-based virtual worlds)	IoT2 (personalised services and content)		NEM2 (content)	ISI2 (the mankind internet)
	N3 (real world internet)	S3 (trust at scale and high granularity)	C3 (identity mgmt for both users & content)	IoT3 (trust at scale and high granularity)		NEM3 (user-generated content)	
	N4 (self management)	S4 (lifecycle engineering for FI apps)	C4 (cognitive and visual sensor networks)			NEM4 (multimedia content delivery)	



Madrid Sessions



Possible Migration Paths

- A **position paper** explaining the vision of the Future Content Networks, identification of the current Internet limitations, content limitations, networking limitations and socioeconomic aspects
- **Research and experimentation** with new techniques in *Future Content Aware Networks* and *Future Network Aware Content*.
- **Presentations/Discussions** in workshops and concertation meetings
- Establishment of **exploitation directions**

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Thank you

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