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The AGORA Initiative : A competitive satellite "Triple Play" broadband access services offer for all and everywhere

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GLOBAL FORUM 2003:
Bridging the Digital divide: the Space contribution

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Main Conclusions in 2003

- **Satellite solutions have reached a technical and operational maturity level and can offer today an alternative solution to bridge every where and worldwide the digital divide: To overcome the cost barriers the current way is to share still high satellite access costs (user terminal and subscriber fees) among a group of users by hybridation of two-way satellite broadband access with a local area network for the « last mile » using wireless technology (such as Wi-Fi) and/or PLC wired solutions.**
- **Such approach have been demonstrated by CNES through the so-called concept « The Connected Village » and full scale deployments are on going in some French regions.**
- **New generation satellites with much higher capacity at much lower costs are under development to offer mid term two-way broadband access solutions competitive with terrestrial ADSL technology**

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Satellite Offer for High Speed Internet Access and Broadband Services

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- Maturity of low cost **uni-directional solutions or one way** using terrestrial return link.
  Convergence between IP and TV world.
- Very fast emergence of **bi-directional solutions or two-way**.
  Cost still high and only affordable for professionals but it may be reduced by shared use of the satellite access and mutualisation of usages (for example public and private) thanks to the hybridation of broadband satellite access with Wireless local area network (Wi-Fi, LMDS, …) and/or wired PLC technologies (Power Line Communications).

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Concept of a shared satellite broadband access infrastructure

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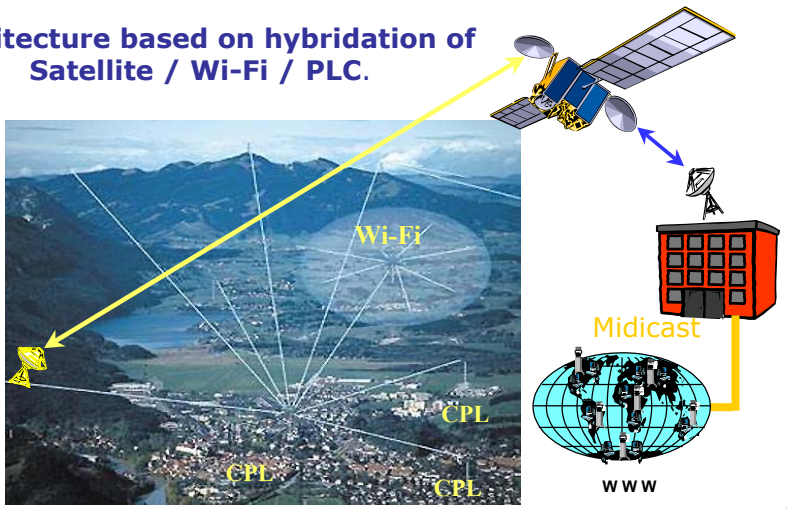
Architecture based on hybridation of Satellite / Wi-Fi / PLC.



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Full scale CNES Demonstrator : Proof of concept

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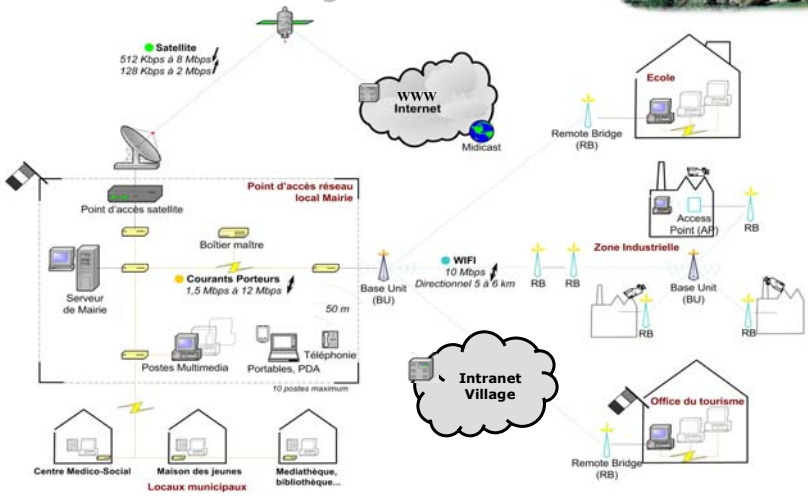
The Connected Village



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Why a new initiative ?

- The potential market is huge
- The broadband access solutions via satellites exist
- The service ramp up is slow
- WHY ?
- Satellite broadband access offer today is still too expensive for consumers and even for many SMEs
- Sharing thanks to LAN the expensive satellite channel bandwidth do not reduce its cost and do not allow to offer the best performances
- A new architecture is mandatory to initiate the virtuous circle of a new success story reaching the mass market and helping to bridge the digital divide

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What is Agora initiative ?

- Main objective: Aiming at the cheapest broadband satellite telecommunication services offer over Europe then worldwide

- AGORA acronym stands for "Affordable and Guaranteed Offers for Rural Areas " in English and "Accès Garanti et Optimisé pour les Régions et l'Aménagement du Territoire" in French

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The key technical features behind Agora's competitiveness

- Europe coverage with 40 high gain spot beams instead of large unique coverage of today broadcast satellites
- Use of Ka Frequency Band
- Adoption of new adaptive DVB S2/DVB RCS transmission standard
- Optimisation of satellite architecture and channelisation
- This combination allows both satellite increase troughput by a factor of 15 and channel cost reduction by a factor of 10
- Development of low cost (< 300 €) user terminals for the mass market

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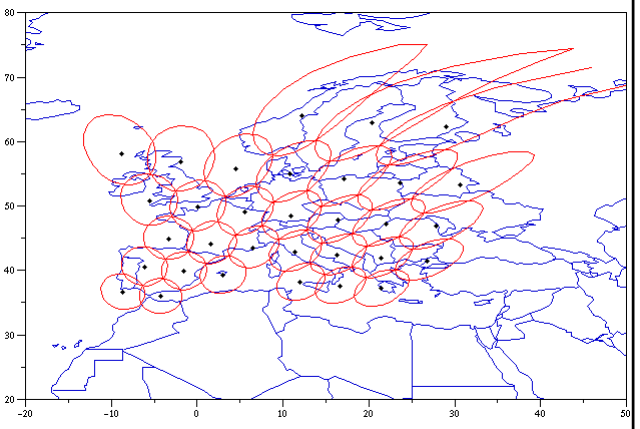
Agora: The European multibeam coverage

- An economical necessity
  - Typical European coverage
  - by 32- 40 spots of 0.65°



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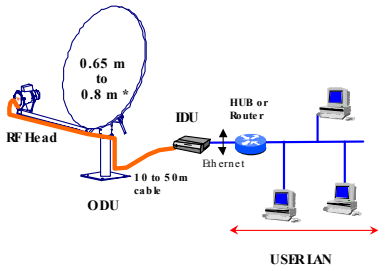
Typical broadband access services offered

- **For professionals (SME), local communities and access points:**
  2 Mbit/s : 1 Mbit/s
- **For tele-workers (Small office home office- Soho):**
  1024 kbit/s : 512 kbit/s

For residential:
512 kbit/s : 256 kbit/s



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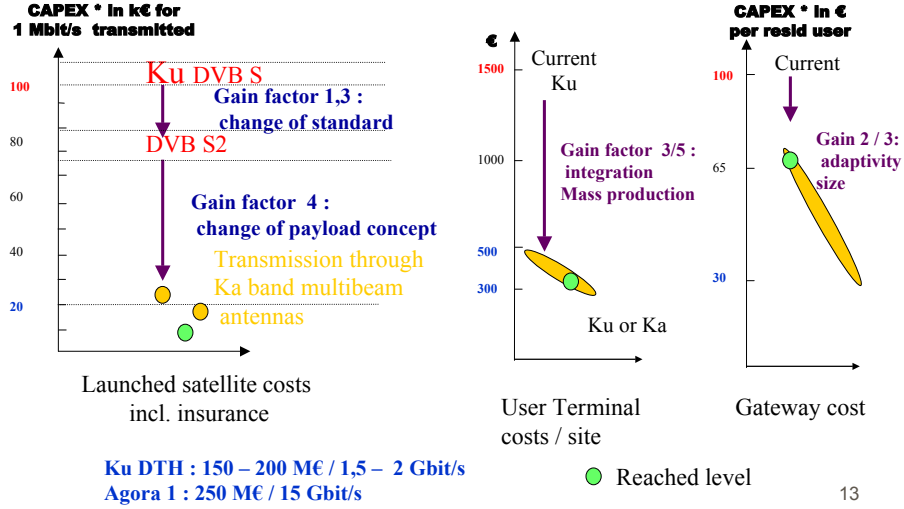
TV broadcast service on Agora

3 potential solutions :

- A1- TV over IP multiplexed in the Ka band traffic for each spot.
- A2- TV broadcast (IP or not) on specific channels in linguistic beams from a small optional payload on Agora.
- A3- Bundling of Agora pure access offer with TV offer of a major broadcaster already using satellite transmission.

Note: All those approaches are compatible with a unique user terminal

Economical objectives of Agora initiative



Ku DTH : 150 – 200 M€ / 1,5 – 2 Gbit/s
Agora 1 : 250 M€ / 15 Gbit/s

Agora: global scheme

2004 2005 2006 2007 2008 2009 2010 2011 2012

Step 1

Satisfy demand immediately with existing satellites
Efforts to expand satellite customers base
Promote new & attractive offers

Step 2 : dev. | exploitation

Develop and launch the first pilot satellite Agora 1 using already existing technologies (Off The Shelves bus and payload)
Crash program to reduce drastically the cost of satellite bandwidth

Step 3 : dev. | exploitation

Enhance the service performance and competitivity thanks to improved technologies
Offer redundancy and coverage extension of the pilot system for fully operational capability with satellite Agora 2.

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The key strengths behind an AGORA-based offering

- 99 % of the potential European customers can be reached immediately thanks to the wide multibeam coverage once the first Agora satellite is deployed.
- The AGORA system will dramatically transform the economy of the satellite-based broadband access sector
- With such levels of prices, AGORA can position itself as a natural component of the infrastructure owned or leased by TELCOs and ISPs, the one focussed on the less urban areas and less developed European countries
- TELCOs and ISPs may limit their commitment to leasing capacity, although other schemes fitting each individual strategy can be envisaged.

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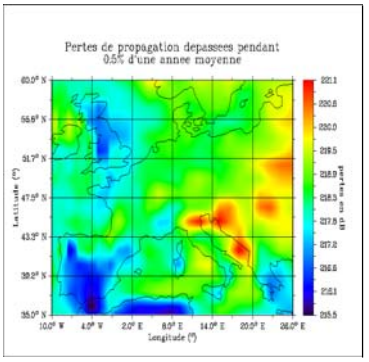
Agora first satellite capacity

- Actual sizing of Agora first satellite leads to a forward capacity at IP level in the range of 14 Gbit/s.
- The return link capacity is comfortably sized at 7 Gbit/s to support various mix of residential and professional users.
- The number of subscribers for one satellite depends on the offered average data rate. i.e. on the peak data rate divided by the global contention ratio.
- As an example for a 1 M bit/s offer, a satellite can satisfy :
  - With contention 10 (SME) .....140 000 SMEs
  - Or with contention 25 (SoHo) .....350 000 SoHos
  - Ou with contention 50 (résidential)...700 000 subscribers
- The flexibility of the system allow to deliver the services for various mix of those users categories.
- Further satellites can be added to allow system capacity expansion and redundancy.



Agora 1 : Off the Shelves platform

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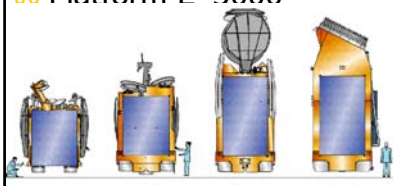
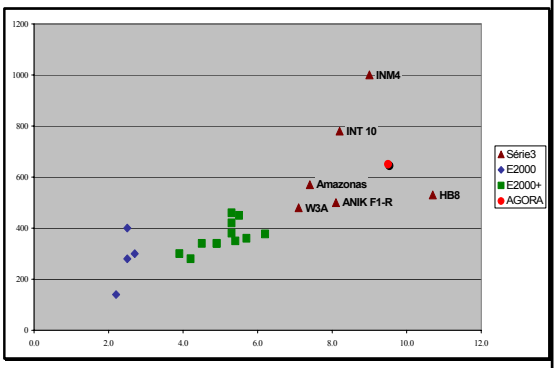
⌘ Platform E*3000





⌘ Features

- ☒Mass 5200 kg with ergols, 2560 kg dry
- ☒Power 12 kW SA, 9kW payload
- ☒No innovation No risk for minimum delay & risk

Compromise: peak rate / contention / price

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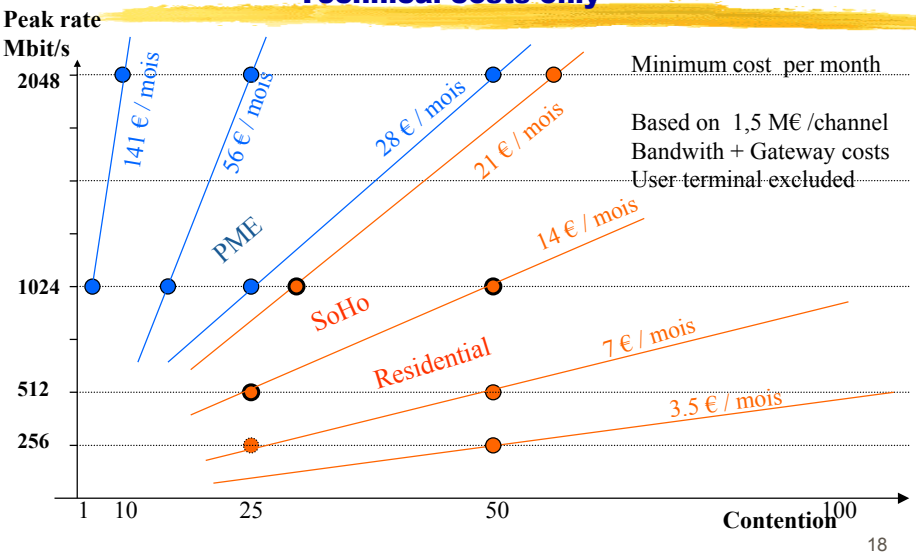
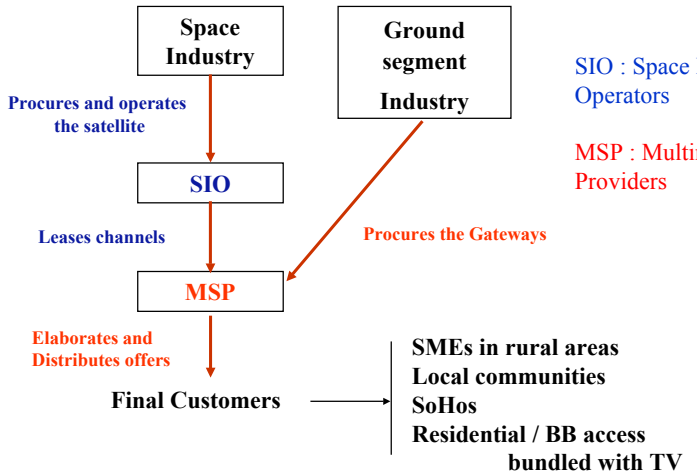
Technical costs only



A possible segmentation of the value chain



SIO : Space Infrastructure Operators

MSP : Multimedia Service Providers

ROI for the SIO

- Reference : A classical Ku satellite transponder costs between 1,5 and 2 M€ /year (36 MHz)
- Agora satellite price and number of channels slightly higher than big DTH Ku band satellite.
- >> target the same price range for Agora
  - Low cost >> 1,4 to 1,9 M€ / year / channel public price
  - Potential discount for long term partners and investors
  - Allows a satellite amortisation in 3 years of full capacity exploitation.
  - 70 * 1,5 >> 105 M€ / year of incomes
- Each Agora transponder channel amplifies 3 (resp. 4) carriers of 100 (resp 75) Mbit/s of IP traffic.
  - Each Agora transponder supports 300 Mbit/s of IP traffic versus 36 Mbit/s for a conventional DTH transponder.
  - >> Gain factor close to 10 compared to a wide coverage Ku band satellite

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Synthesis: example of a triple play offer

- A MSP may wish to increase its customer base by 60 000 new subscribers in its service area (typically covered by 4 spots) through a bundled offer (high data rate access + VoIP + TV) for instance at 44.9 € / month all inclusive
  - Offering a 1 Mbit/s with contention 50
  - Including a potential voice over IP service of a few hours per week
  - Bundled with 50 TV channels and an optionnal VoD service
  - With one single antenna and a combined IDU (or two separated box, one for TV and one for broadband access and voice)

Price split:

7,9 € for terminal amortisation (300€/ 350 € over 40 month)
11 € for information transport (transponder lease, access)
3 € for Gateway amortisation (over 40 month)
2.5 € for TV transponder lease (based on 60 000 subscribers)
11.5 € for service and margin
9 € for local VAT

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Agora: Next milestones for Q3 and Q4 2004

- Finalise technical optimisation of the Agora system, thanks to the active feed back of interested private partners.

>> specifications finalisation by end November 2004.

>> firm industrial commitment for the full development (satellites, gateways, terminals) expected by end dec. 2004

- Financing plan to be consolidated by December 2004 for initial investment

>> commitment of private actors up to end 2004.

IF YOU ARE INTERESTED BY THE AGORA INITIATIVE, PLEASE CONTACT ME FOR FURTHER INFORMATIONS AND TO BE INVITED TO THE SPECIFIC WORKSHOP FOR POTENTIAL INVESTORS PLANNED ON 18th NOVEMBER IN PARIS

THANK YOU FOR YOUR ATTENTION

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