Analysys

The business case for WiMAX vs DSL in rural areas

STEM business-modelling software for networks

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The economics of rural access

- Operators are considering BBFWA technologies such as WiMAX as a more cost-effective solution for delivering IP-based services in low-density subscriber areas
- We have developed a simple model where 2000 homes are connected over conventional copper to a local exchange, but in this rural area **only 60% are within reach of the current available DSL technology**
- WiMAX is suggested as an alternative broadband solution, and a network will be deployed during 2006, with the launch of commercial service scheduled for 2007

- We model scenarios for operating each technology in isolation, and also running both in parallel

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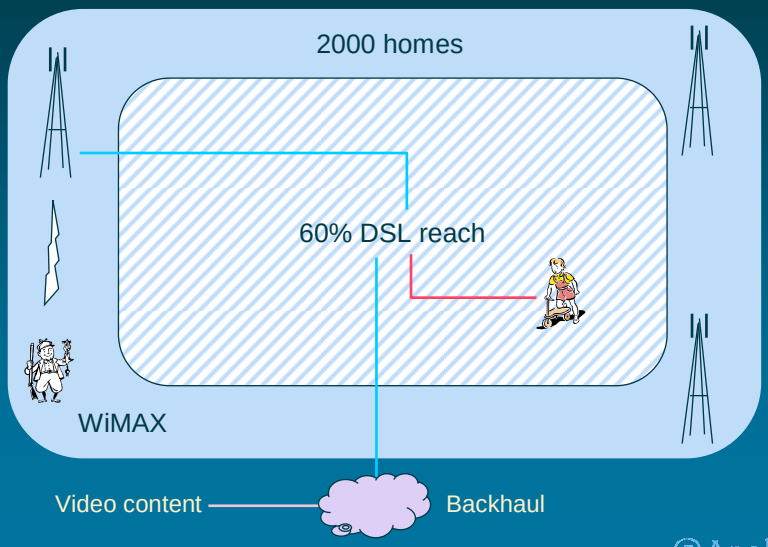
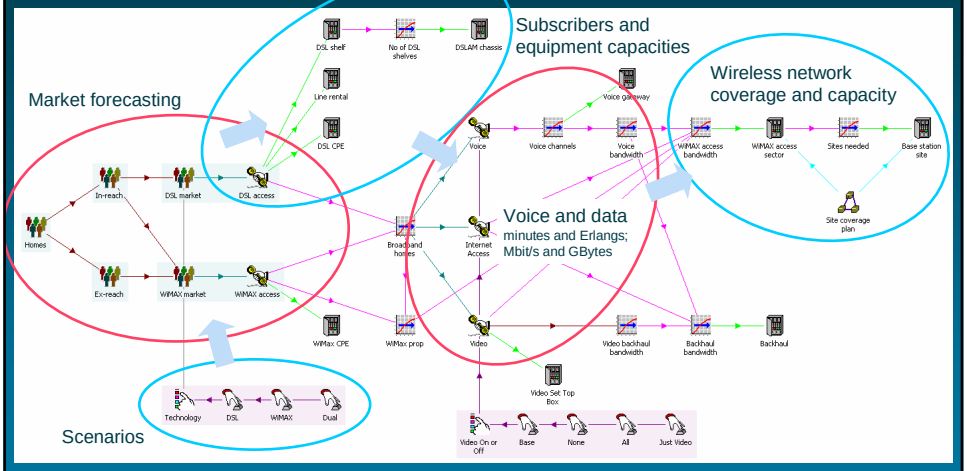
The big picture



Services

- WiMAX is offered as a total replacement technology for the outlying homes: **voice** and **Internet** services will both be carried over WiMAX for those subscribers
- Revenue arises from the two separate access platforms, as well as from the individual services
- The model makes a high-level dimensioning of the relevant network elements based on the numbers of subscribers and associated traffic levels
- The model also considers the addition of an **IPTV** service, and its impact on service revenues and required network elements

Compact model of key drivers



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Simplified network architecture

- DSL or WiMAX CPE
- DSLAM (and line rental, if modelling an alternative operator)
- WiMAX access sectors and base stations
- Backhaul
- Core network
- Set-top box and video server
- Two different access technologies, but the same backhaul and core network are used by both systems

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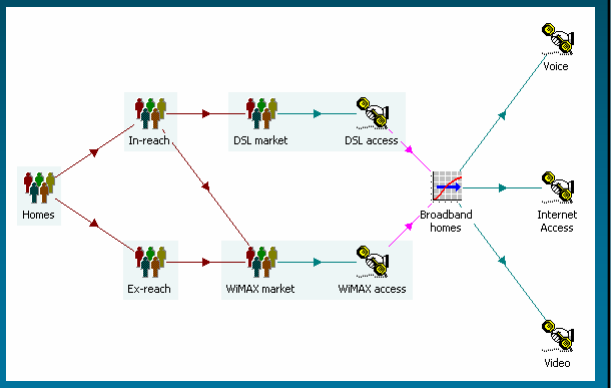
Market and service structure

- Target market for broadband access (BBA)
- Estimated take-up rate
- Optional services and associated tariffs:
  - voice
  - Internet access
  - IPTV



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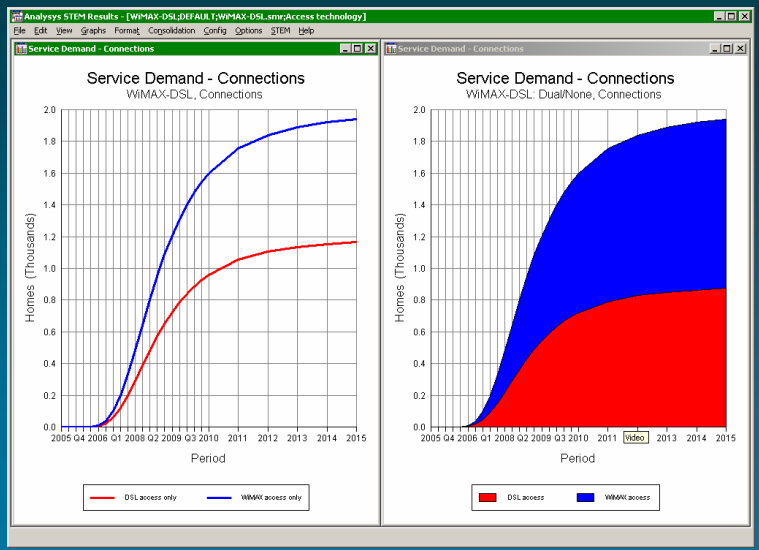
Access technology



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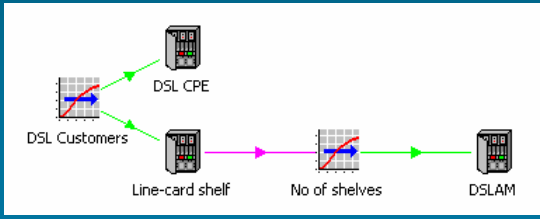
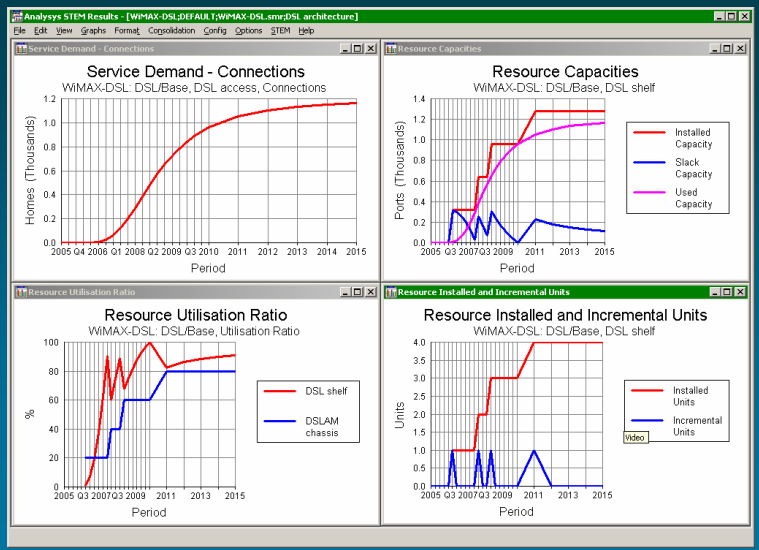
Simplified DSL architecture

- Each DSL access customer requires a DSL modem
- Line cards are supplied in unit of packed shelves with 320 ports
- DSLAM chassis can accommodate up to five shelves
- DSLAM backplane throughput capacity assumed to be 'enough'

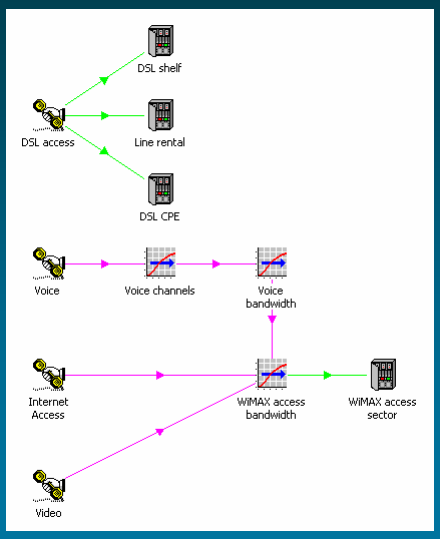


DSL capacities



Connections and bandwidth

- DSL access customers drive DSL ports
- Busy-hour Erlangs drive channel-based voice bandwidth
- Voice, Internet and video bandwidth drive WiMAX capacity
- Voice and Internet plus video-feed bandwidth drives backhaul



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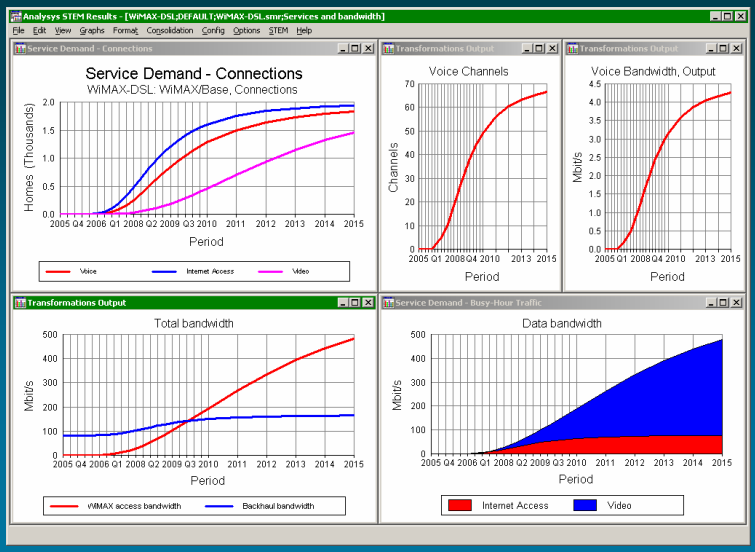
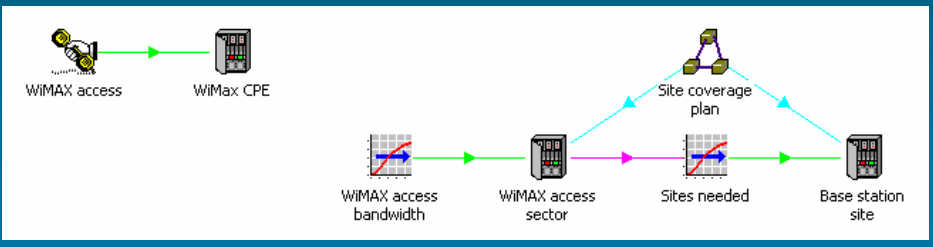
Services and bandwidth

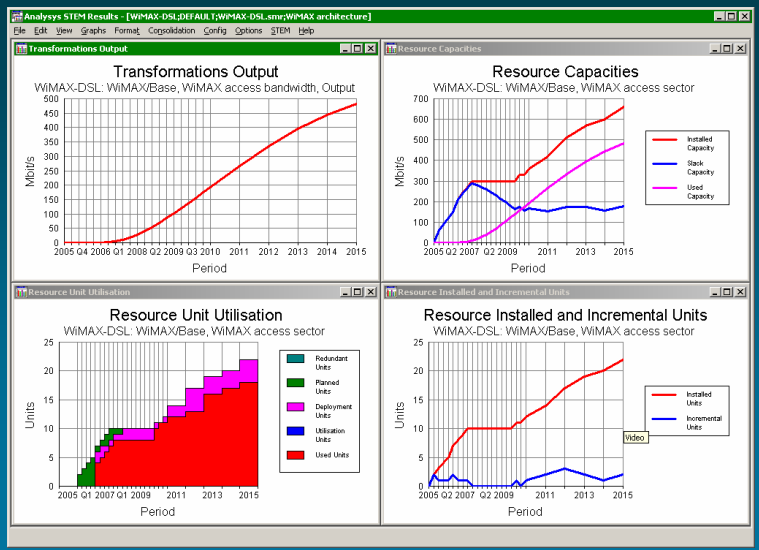


WiMAX architecture

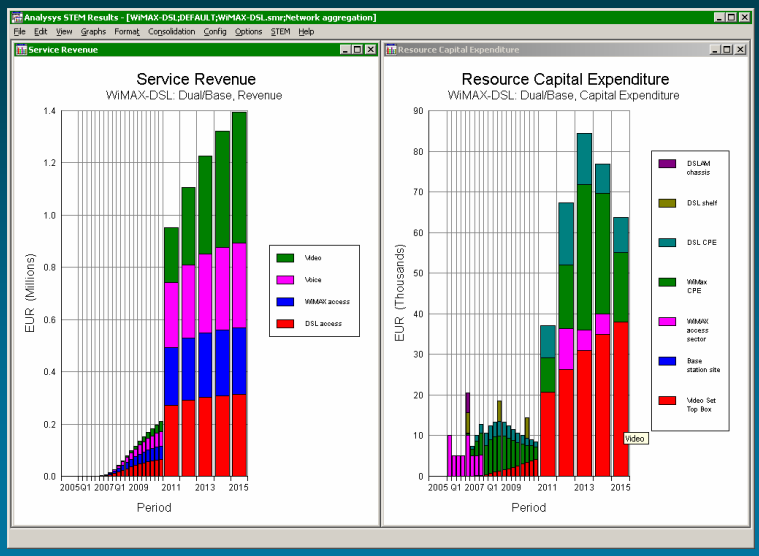
- WiMAX CPE per WiMAX customer
- Calculate WiMAX access sectors per 30Mbit/s capacity
- Max 3 sectors per tower: drives number of towers
- Independent site plan to allow for coverage constraints



WiMAX drivers



Network aggregation



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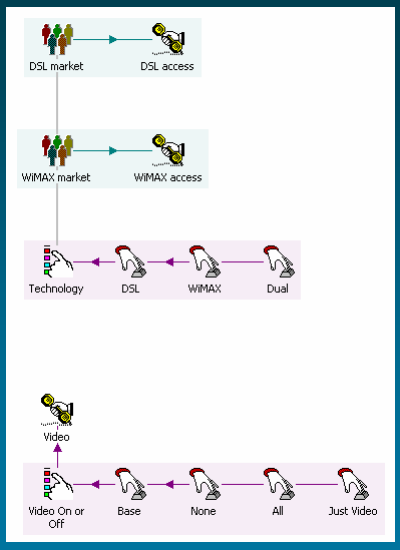
Technology scenarios

- Technology choice drives relative markets:
  - less DSL subscribers if WiMAX is available
- Video on/off choice varies proportion of customers with video:
  - sensitivity of WiMAX case to bandwidth saturation from video



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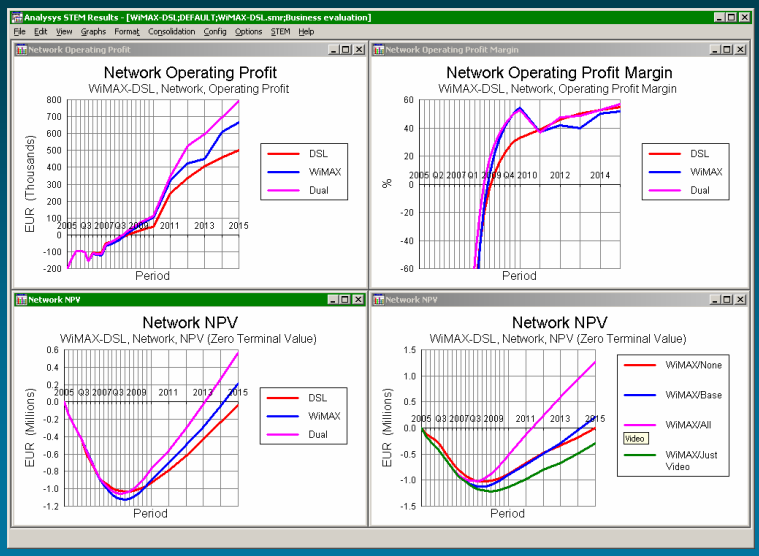
Business evaluation



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Illuminating strategy

See how many different business concepts we can communicate with a professional tool!

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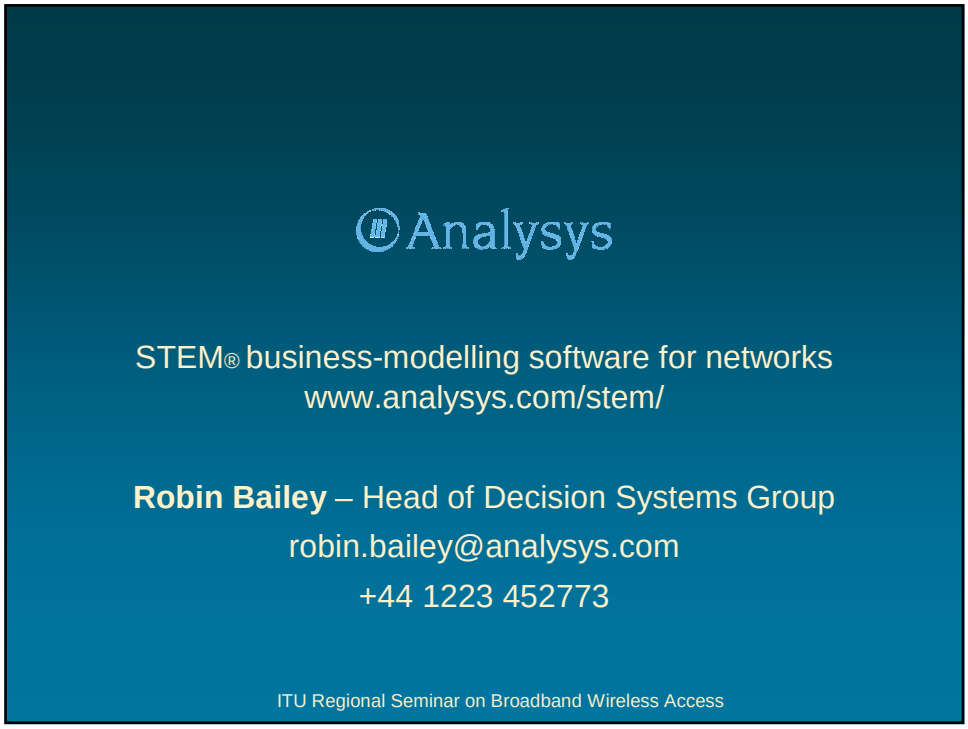
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