Two-way Wireless Media Network with WiMax – Bridging the Digital Divide

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The Structure of the Presentation

- Problem of digital divide
- Introduction to WiMax
- Case: eSavo network in Finland
  - Implementation of a WiMax based eSavo network
  - Performance evaluation of the WiMax network
  - Example of new business potential created with a wireless broadband network
- Conclusions

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Digital Divide (1/2)

- "*In information society everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life*" (WSIS, 2003)
- Digital divide does not exist only between nations but also between different areas of a country.
- Providing broadband connections in areas with low population density is an economical challenge for a network operator even in developed countries.

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Digital Divide (2 / 2)

- Access to information is essential in the information society but it is not enough. For the development of rural areas it is important that content can also be created and not only consumed.
- Most of the access technologies used today offer an asymmetric service with lower uplink capacity. The service offering in addition to the service consumption instead requires symmetric communications.
- Only this way the vision of the Information Society is reality also in developing areas.

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What is WiMax (IEEE 802.16)?

- WiMax is the current IEEE standard for Broadband Wireless MAN networks supported by members of WiMax Forum.
- It provides a wireless alternative to cable, DSL and T1/E1 for last mile broadband access.
- The first 802.16 standard was approved in December 2001 followed by updates –802.16c in 2002, and 802.16a in 2003, 802.16d in 2004
- In the future WiMax will be able to offer also mobility as the 802.16e will enable mobile operation.

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Views of various operators about WiMax

(Based on views of about 50 European operators, Altos Advisors, 2006)

- WiMAX Only: are very positive about WiMax, seeing it as a way to grab market share and generate income with minimal investment.
- Fixed Only: see WiMax as a complement to DSL, serving rural markets and areas not appropriate for DSL.
- Fixed / Mobile or incumbent operators: view WiMax as a DSL extension similar to the fixed only operators
- Mobil Only: are highly sceptical of WiMax listing technical deficiencies for it. Since many have paid a lot of money for UMTS licenses, they are worried about the threats of WiMax which may compete with the long delayed uptake of broadband wireless access.

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Situation in Etelä-Savo

- With a low population density and moderate share of urban population, Etelä-Savo is a challenging area for operators to offer broadband access to their customers.
- Multiple operators are offering broadband services in urban areas of the region, but not in rural areas
- To speed up the development, the regional council decided to create a project for building a broadband network in those areas without broadband services.
- The aim of the network was to ensure regional equality and increase the competitiveness of the sparsely populated area.

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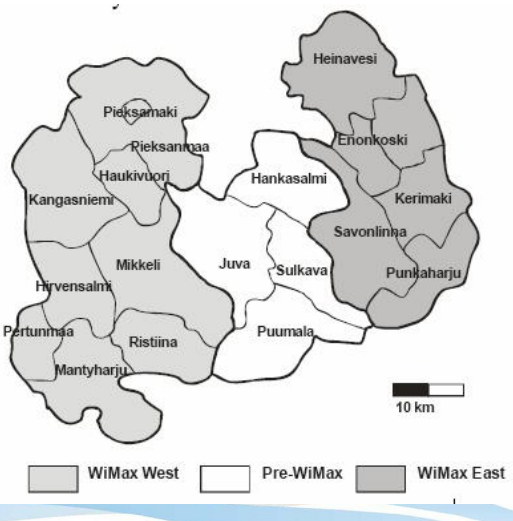
The Area of the eSavo Network



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The Role of the Regional Council

- Regional council requested offers from operators in October 2004 for a broadband network to unserved areas.
  - Technology was not specified.
  - Coverage of the network must be 96 %.
  - Network must be fully operational by 31.7.2006.
  - The public funding was granted only for the initial investment.
  - The operator should then cover all operational costs.
- In January 2005 the network operator was selected.
  - The winning offer was based on WiMax.
  - The total cost of the project was 1.7 M€ and public funding was 497 000 € or 29.2 per cent.
- The network was ready in March 2006.

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Implementation and Pricing

- Economics of scope in implementation
  - WiMax base stations are co-located with existing mobile phone network infrastructure.
- Services and prices
  - Moderate speeds (512 kbps – 2 Mbps).
  - Monthly fee of the WiMax connections are 0 – 20 per cent higher than similar ADSL services.
  - Introduction of the service has been successful and the number of paying customers has met all expectations.

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Our Case: Motor Sport Event

- WiMax was used for two-way media services in a motor sport event with estimated 10 000 spectators.
- WiMax network made it possible to provide media feeds from remote special stages to the event centre, and the remote places can also be served with contents coming from other locations.
- Due the media services, the audience considers the event more valuable and therefore, the event attracts more advertisers and spectators who spend more time and money in it.

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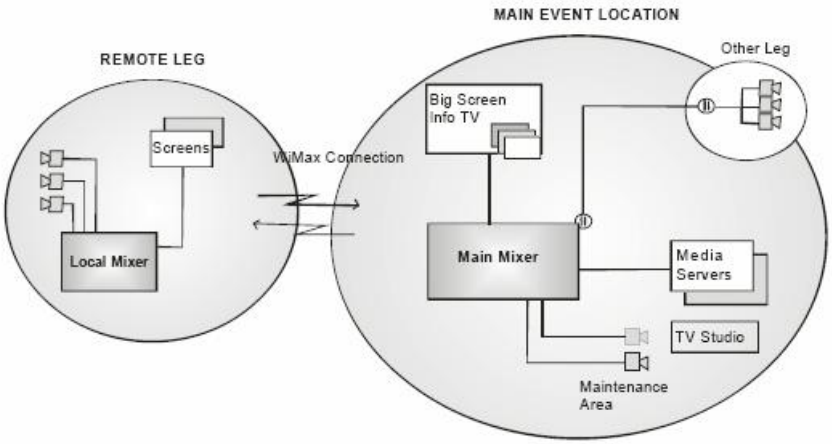
The Structure of the Media Network



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Network Performance Evaluation

- Performance measurements of commercial WiMax networks were not available
- To ensure the suitability of the WiMax for media transmission a small scale network performance evaluation in inter-connected network environment was carried out.
- The results indicated that packet loss and delay characteristics of the network fulfilled the specifications of real time video streams made by the Third Generation Partnership Project (3GPP).

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The Aims of the Media Network

- The aim of the media network was to offer better service to the audiences both in the special stage and in the main location.
- The main motivation for the local organizer is to be competitive compared with other organizers in Finland.
- The media project aimed at pleasing the audience and attracting more spectators who would spend more time and money in the event. Video walls, screens and the internal TV network also served advertisers and thus provided a revenue source for the organizers.

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Results of the Motor Sport Case (1/2)

- From a technical point of view the service level of the media network was good but some quality and reliability issues must still be developed further.
- Spectators were highly satisfied with the media services of the event.

	Not at all	A little	Much	Very much	Cannot say
To what extent did the interviews shown on the screen make the event more enjoyable?	2.9 %	15.0 %	34.7 %	16.2 %	31.2 %
To what extent did the live video feeds from other special stages make the event more enjoyable?	6.8 %	5.7 %	39.0 %	23.2 %	25.4 %

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Results of the Motor Sport Case (2/2)

- Satisfaction survey and discussions with the organizers indicate that the whole concept of experiencing a rally event might change.
  - People expect to see more than just a motor sport event.
  - Already today in a WRC event there are a rally show, a kid's rally park, a rally expo, a rally party and a rally golf in addition to rally.
- The value-added services are likely to attract new audiences and the number of visitors in the service park can increase the total number of spectators.
- The new services may also attract spectators from special stages to main event location. To prevent that the value-added services should be available also in special stages and here a media transmission network has an important role.

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Conclusions

- Preliminary network performance evaluations indicated that WiMax provides an effective and reliable transmission network also for video streaming.
- Wireless broadband networks can be used for value added services in sport events or other occasions for opening new business opportunities and for increasing the competitiveness of the sparsely populated area.
- Public authorities can speed up the development of the network infrastructure.

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Questions?

- Before answering to your questions I would like to ask one from you.
  - Did regional council do the right thing by interfering the operations of the markets?

Thank you !