

[Initial Input for 802.16m project Goals]

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[Response to call for initial input regarding P82.16m Project.]

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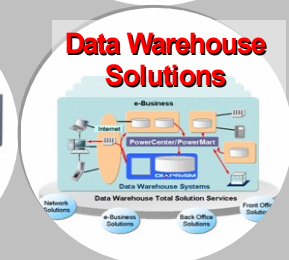
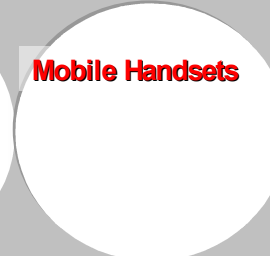
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Outline

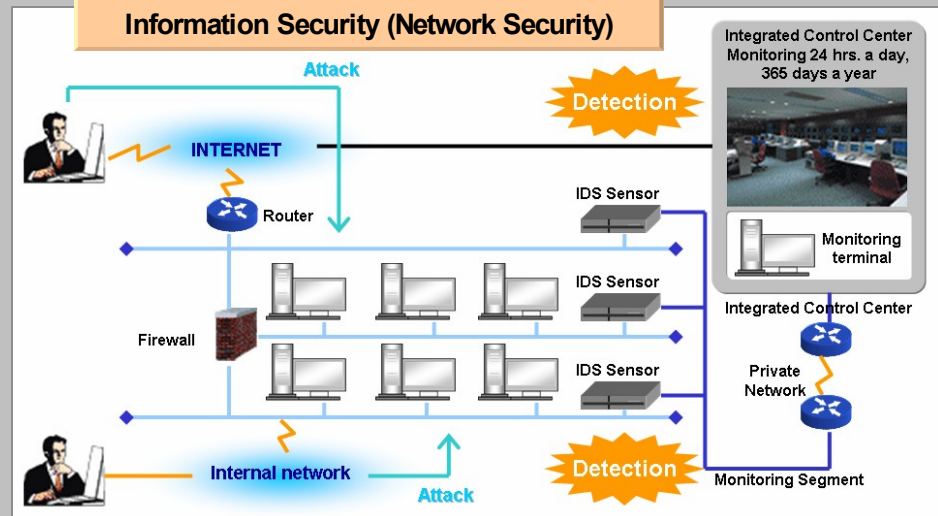
- Mitsubishi Introduction
- Envisioned 16m Usage/Applications
- Envisioned Requirements
 - Rate
 - Coverage

Information and Communication Systems Segment

Location and Time Verification Services



Information Security (Network Security)



Maybe we can find a better slide to show MELCO Telecom business products – this is here as a place holder

* CBB: Connexion by Boeingsm, SCM: Supply Chain Management, ERP: Enterprise Resource Planning, IDS: Intrusion Detection Systems

Goals

- Support existing voice and data services
 - Maintain minimum latency to support conversational type applications (voice)
- Compatibility with OFDMA TDD frame structure
- Improved data rate
- Improved spectral efficiency and reuse
 - 5 - 25 b/s/Hz required to offer new high rate services

802.16m usage

- Personal Use
 - Mobile Internet
 - New high bandwidth content (YouTube, MySpace,...)
 - Mobile entertainment
 - Access to digital content: music, video
 - Mobile Gaming
- Business Use
 - Mobile Office: Video conferencing, collaboration (application sharing)
 - Supply chain management
- Others
 - Telemedicine

It is expected that applications run on 16m will be similar to those on future wired networks (DSL/Cable/FTTH/Office) and therefore users will expect to be able to use existing applications and receive comparable performance from the 16m system

Mobile environment

- Stationary
 - Fixed wireless access
- Pedestrian
 - 5 km/hr
- Vehicular
 - 30 – 300 km/hr

Services

- **Data Rate**
 - Higher is better → support current and future applications
 - 1 Gb/s (peak) for stationary users
 - 100 Mb/s (peak) for highly mobile users
 - Peak data rate should scale linearly with spectrum allocation
- **QoS**
 - Support multiple classes of traffic with widely differing latency, error rate tolerance, ...

802.16m Peak Data rate and QoS considerations

	Mobile Internet	Mobile entertainment	Mobile Gaming	Mobile Office/Video Conferencing
Stationary	•10 – 100 Mb/s •interactive	•10 – 100 Mb/s •Streaming/interactive	•10 - 100 Mb/s •Streaming/interactive	•10 – 100 Mb/s •Conversational
Pedestrian	•10 – 100 Mb/s •interactive	•10 – 100 Mb/s •Streaming/interactive	•10 - 100 Mb/s •Streaming/interactive	•10 – 100 Mb/s •Conversational
Vehicular	•1-10 Mb/s •interactive	•10 Mb/s – 20 Mb/s •Streaming/interactive	•10 Mb/s – 20 Mb/s •Streaming/interactive	•10 Mb/s •Conversational

Coverage

- Subscribers need service regardless of location.
 - ubiquitous coverage 99% of area in specified service areas
 - Rural → Multihop/relay for range extension
 - Urban (high subscriber density) → Greater Spectral efficiency
 - MIMO
 - Beam Forming
 - Interference Management/Avoidance



Geographic Considerations

- Improve cell edge bit rate – rate delivered to subscribers far from the base station

	Cell Size	Aggregate DL/UL
Rural	5-30 km	100 - 500 Mb/s / 50 - 100 Mb/s
Urban	1 – 5 km	100 - 500 Mb/s / 50 - 100 Mb/s
Dense Urban	300m – 1km	100 - 500 Mb/s / 50 - 100 Mb/s