

# WiMAX – Broadband Technology & Services

## Description of the Business Plan Model

**Presentation  
by**

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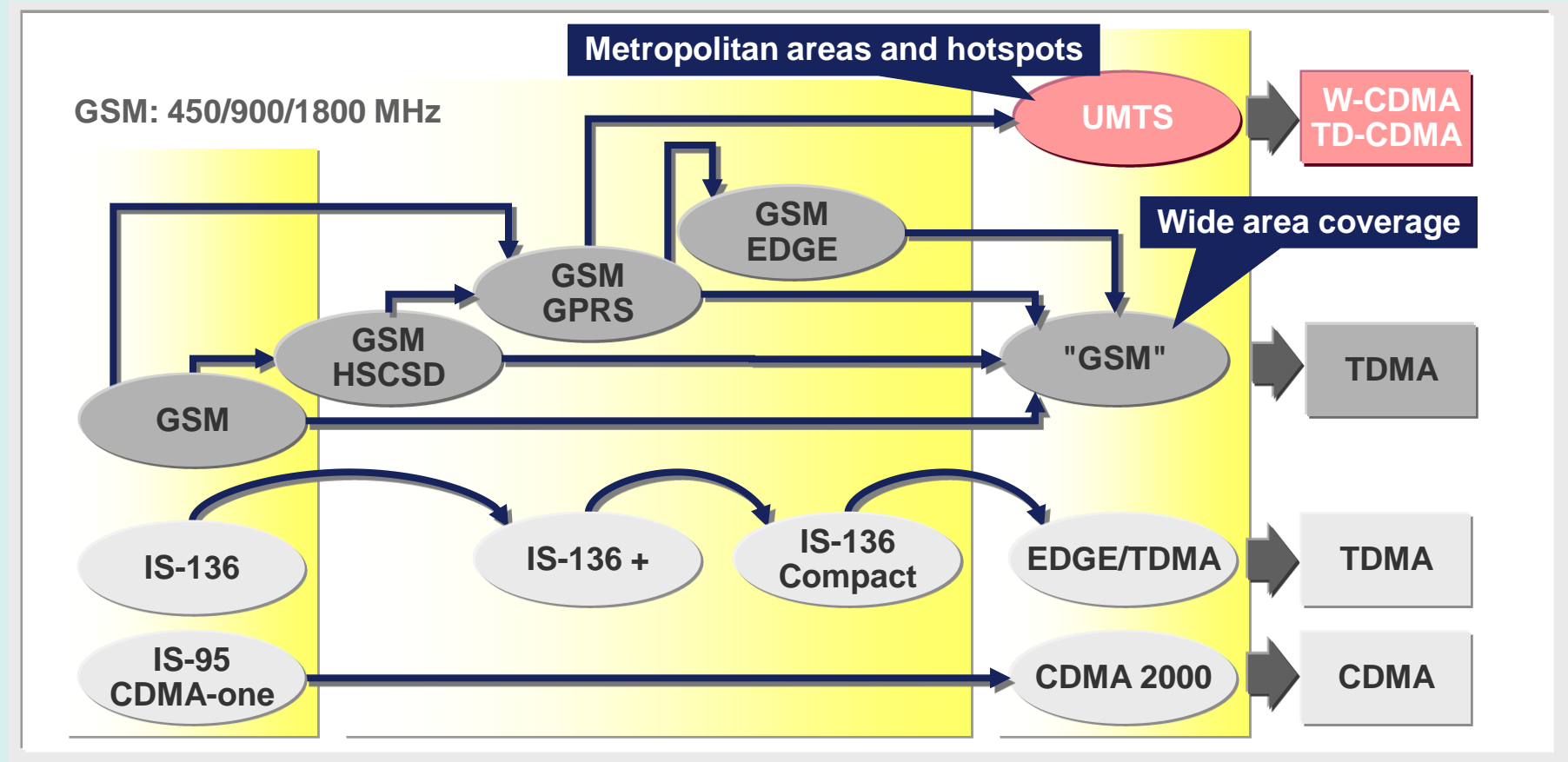
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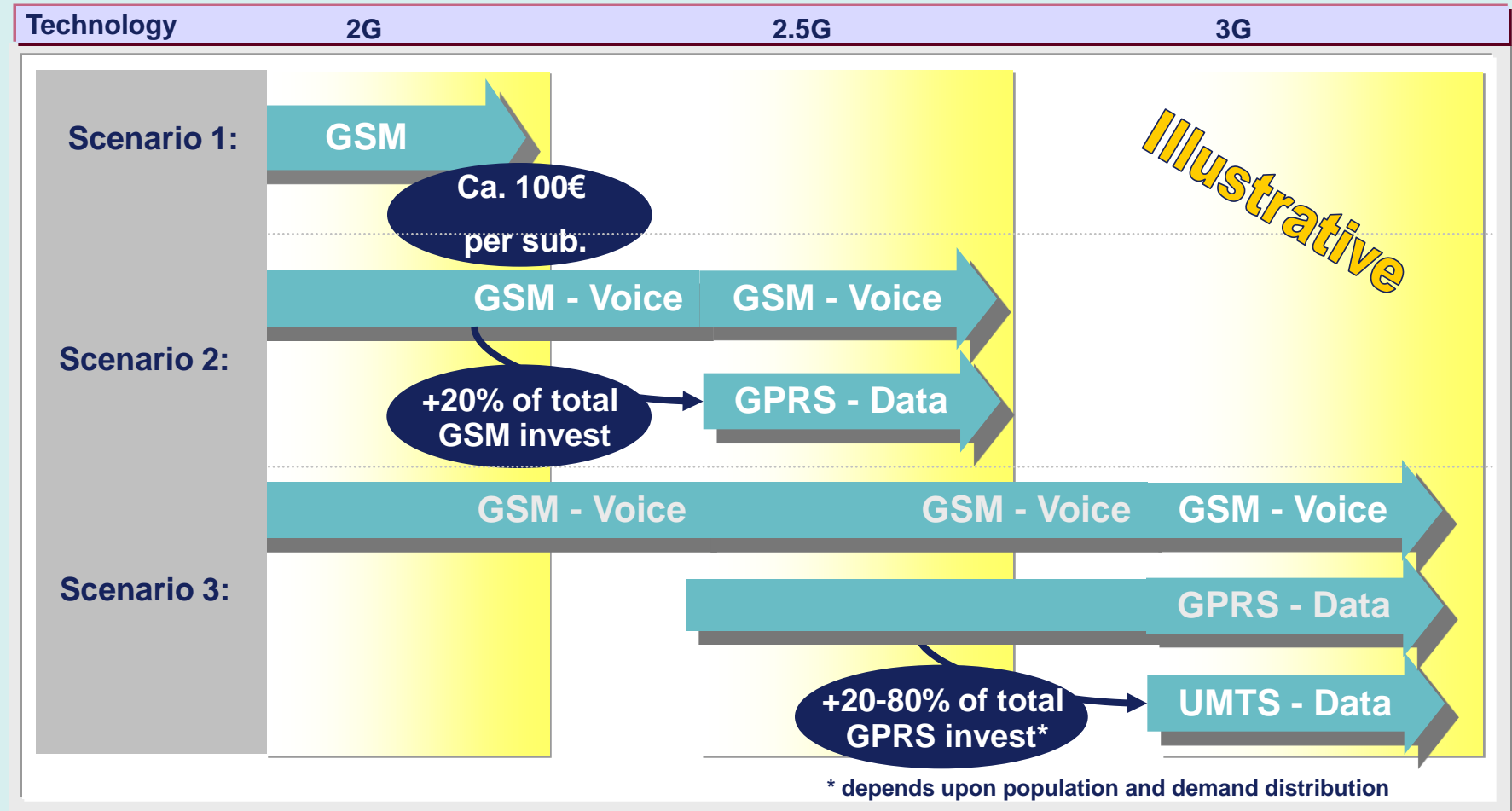
## Mobile Developments – Overall Trends

- ➡ WiMAX offers technological possibilities to occupy the “no-man’s land” of affordable broadband wireless access with increasingly mobility over the next 3-5 years
- ➡ The industry’s major challenging is adding customer value in non-voice applications as current technologies completely fulfill voice requirements
- ➡ Bridge’s Facenet’s senior partners have always taken a realistic and pragmatic approach to next generation mobile development, particularly 3G/UMTS/WLAN/WiMAX technologies

## Mobile Developments - GSM roadmap



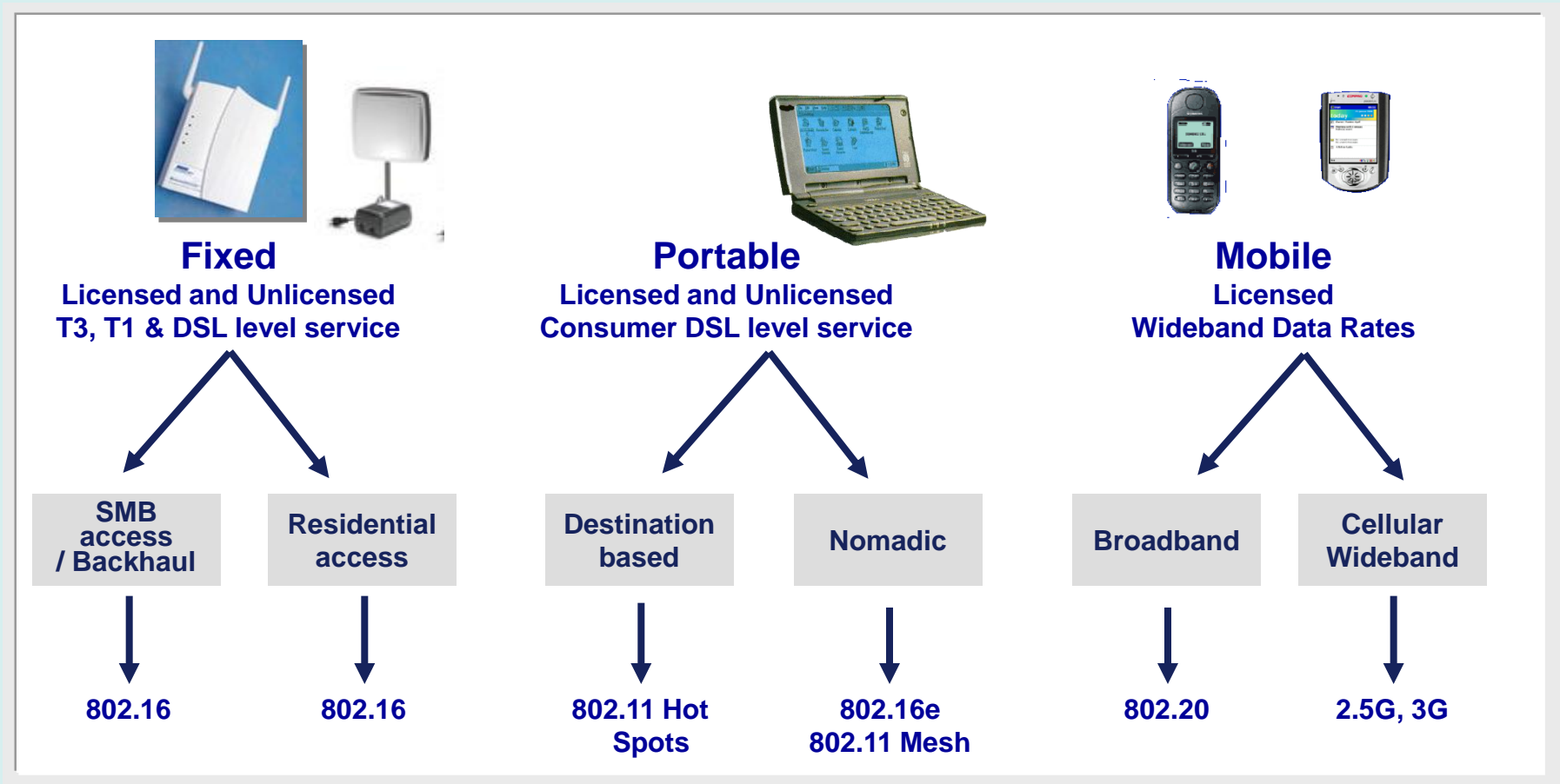
## Complex data centric services need GPRS, EDGE and/or UMTS



## WiMAX – Global Interoperability for Microwave Access for urban and remote areas

- WiMAX provides a wireless alternative to cable and DSL and due to its new and robust modulation technique
- WiMAX promises to fill in the gaps of Wi-Fi access and offer affordable broadband access in rural and metropolitan areas
- Initially, WiMAX is to be used as a backhaul technology to feed emerging Wi-Fi hotspot deployments and, possibly other cellular base stations
- Enhanced WiMAX will additionally offer portability/mobility
- WiMAX's high throughput, scalability and QoS features, provide an alternative “pipe” to reach and support broadband and voice subscribers worldwide

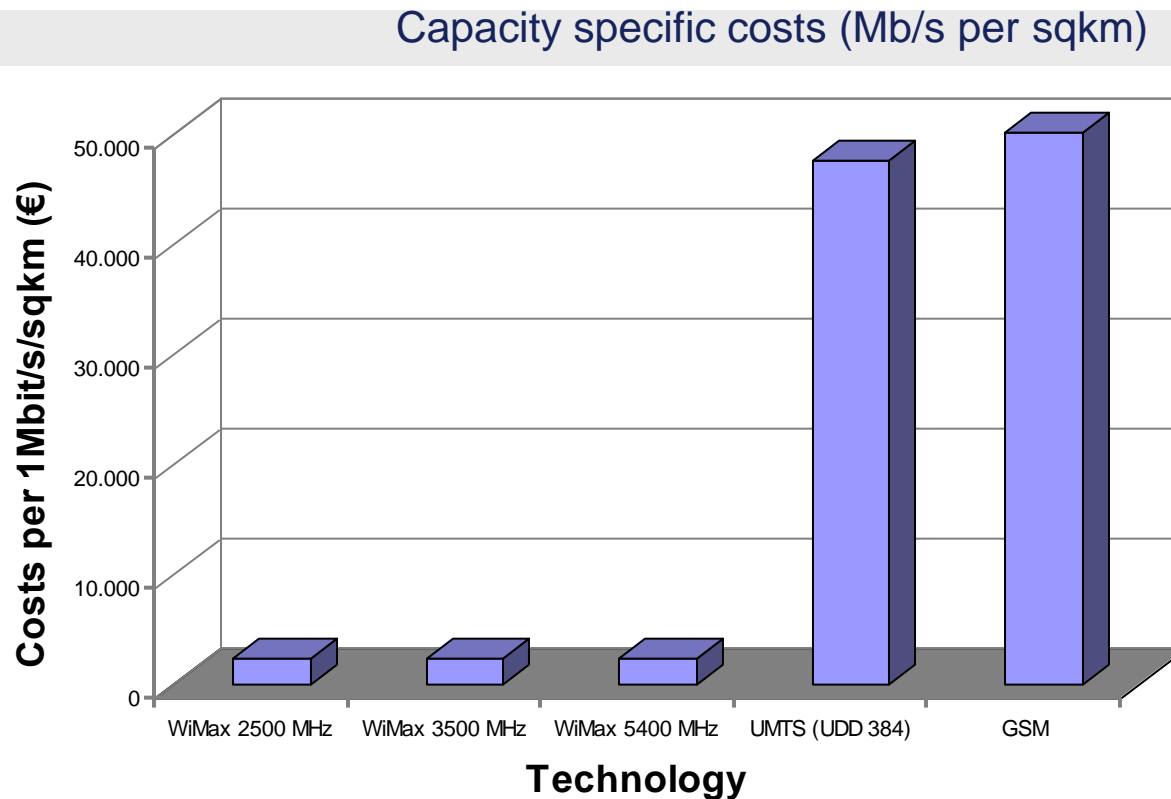
## Broadband Wireless Usage Models - Outdoor, Long Range & Mobile Wireless Data



## WiMAX – a technological option for specific demand

	802.15.1 (Bluetooth1.1)	802.11a/g (WLAN)	802.16a (WiMAX)	802.16e (WiMAX)	802.20	Comments
<b>Frequency</b>	2.4 GHz ISM band	5 GHz 802.11a 2.4 GHz 802.11b,g Unlicensed	2-11 GHz Licensed/ Unlicensed	2-6 GHz Licensed bands ( < 6 GHz)	< 3.5 GHz Licensed	• 802.16e is a mobility adjunct to high-data rate fixed service, symmetric data with local/Regional mobility. Vehicular speeds of 120-150 km/h
<b>Range</b>	Up to 10m Short-range, NLOS Piconet	Sub – 100m	Up to 50km, Avg. cell size: 5-9km, nLOS, NLOS, optional STC	Metropolitan Area Access, NLOS, Local/Regional roaming support and deployable in existing 16a footprint	Metropolitan Area Access, > 15 kms, NLOS, ubiquitous MAN, global mobility and roaming Typical cellular?	• 802.20 fully mobile, 250km/h, high throughput, symmetric data service – suitable for high-speed trains
<b>Bit Rate</b>	Up to 1 Mbit/s	Peak 54 Mb/s	Up to 74.7 Mbit/s in 20 MHz channels	High-data rate fixed wireless user with adjunct mobility service	>4 Mbps (DL peak aggregate/cell) >800 kbps (UL peak aggregate/cell)	
<b>Power</b>	< 30mA	< 350mA	TBD	TBD	TBD	
<b>Scalability</b>	Piconet with master and up to 7 slaves. Uses 79, 1 MHz Channels for frequency hopping	Channel BW is 20 MHz wide and cell planning is constrained	Flexible ch. BW to accommodate license & license- exempt bands Easy cell planning	Channel BW >5 MHz Optimized for and backwards compatible with Fixed Stations	Channel BW is 1.25 MHz (2x1.25 MHz paired FDD, 2.5 MHz unpaired TDD), Typically < 5 MHz	802.16a limited by available spectrum (150 MHz in 2.5 GHz, 12 MHz in 2.1 GHz)
<b>QoS</b>	Uses basic Round- robin Scheduler or custom-built schedulers	No QoS support. 802.11e working to standardize	QoS built into MAC Voice/video, Differentiated services	Channelization and control for multimedia services with QoS	Under Study!	802.16a: grant request MAC 802.11: contention based MAC

## WiMAX – a cheap alternative to GSM in certain areas



### Comments

Using OFDM SS and modulation techniques with high spectral efficiency, (up to ~ 4bit/Hz; comparing with ~ 0,8bit/Hz in case of GSM) the system inherent bandwidth of WiMax (in this case 11Mbps per 5MHz channel) leads to relatively low bandwidth cost compared to GSM and UMTS.



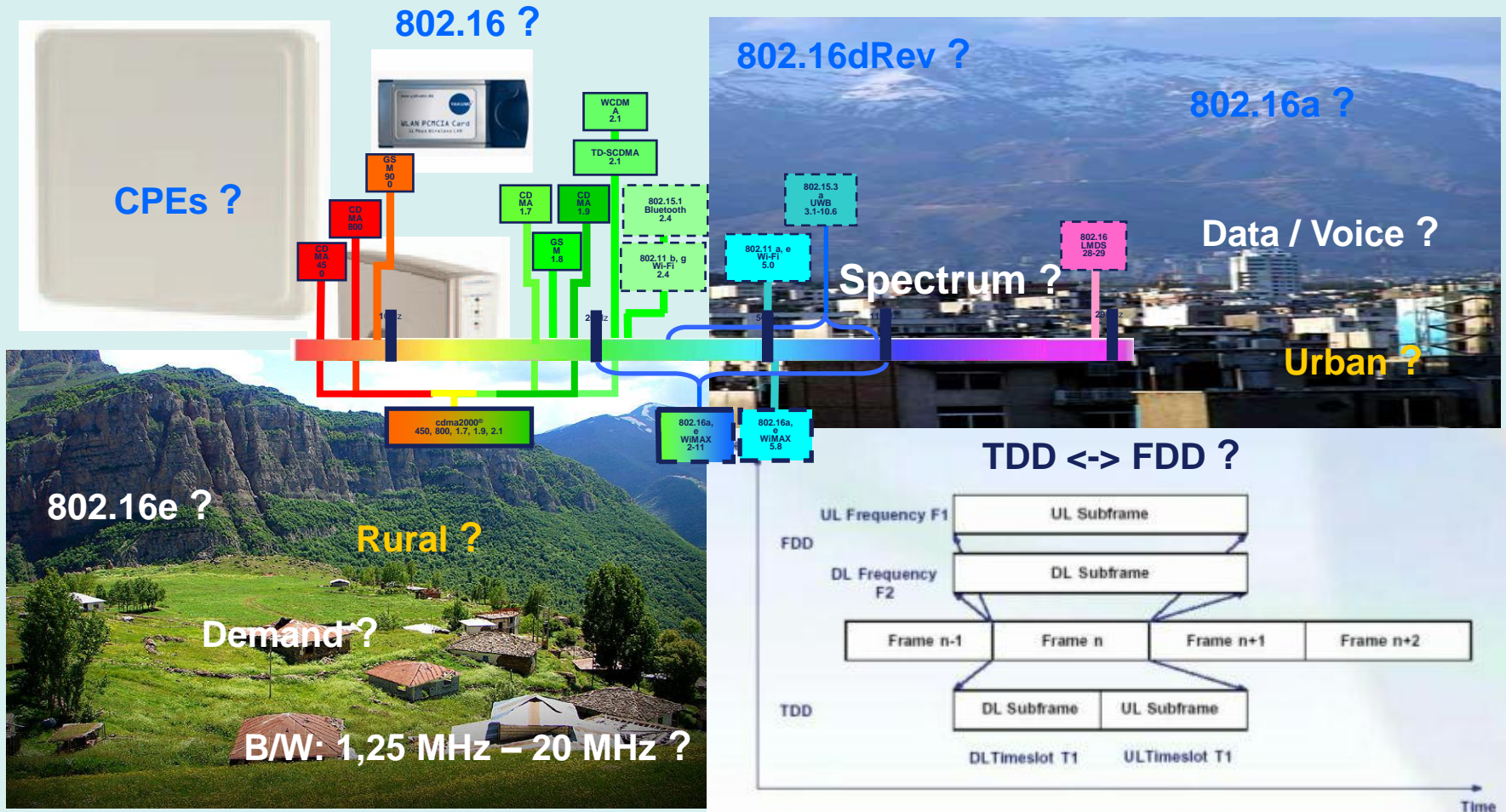
## WiMAX for a wide range of service needs in urban and rural environments

- WiMAX is a fast developing standard for wireless broadband access solutions which can provide voice and data access to rural and urban areas
- WiMAX, different to most other data centric technologies, offers QoS features which also supports real time services (i.e voice and video)
- WiMAX encompasses a variety of technological standards and options, which therefore requires detailed analysis of the specific demand
- There is no worldwide spectrum allocation for WiMax, so each country needs to be evaluated individually (i.e. coexistence with satellites, WLL, WLAN etc.)
- Except for real mobile services, WiMAX can cover most desired usage models in different environments

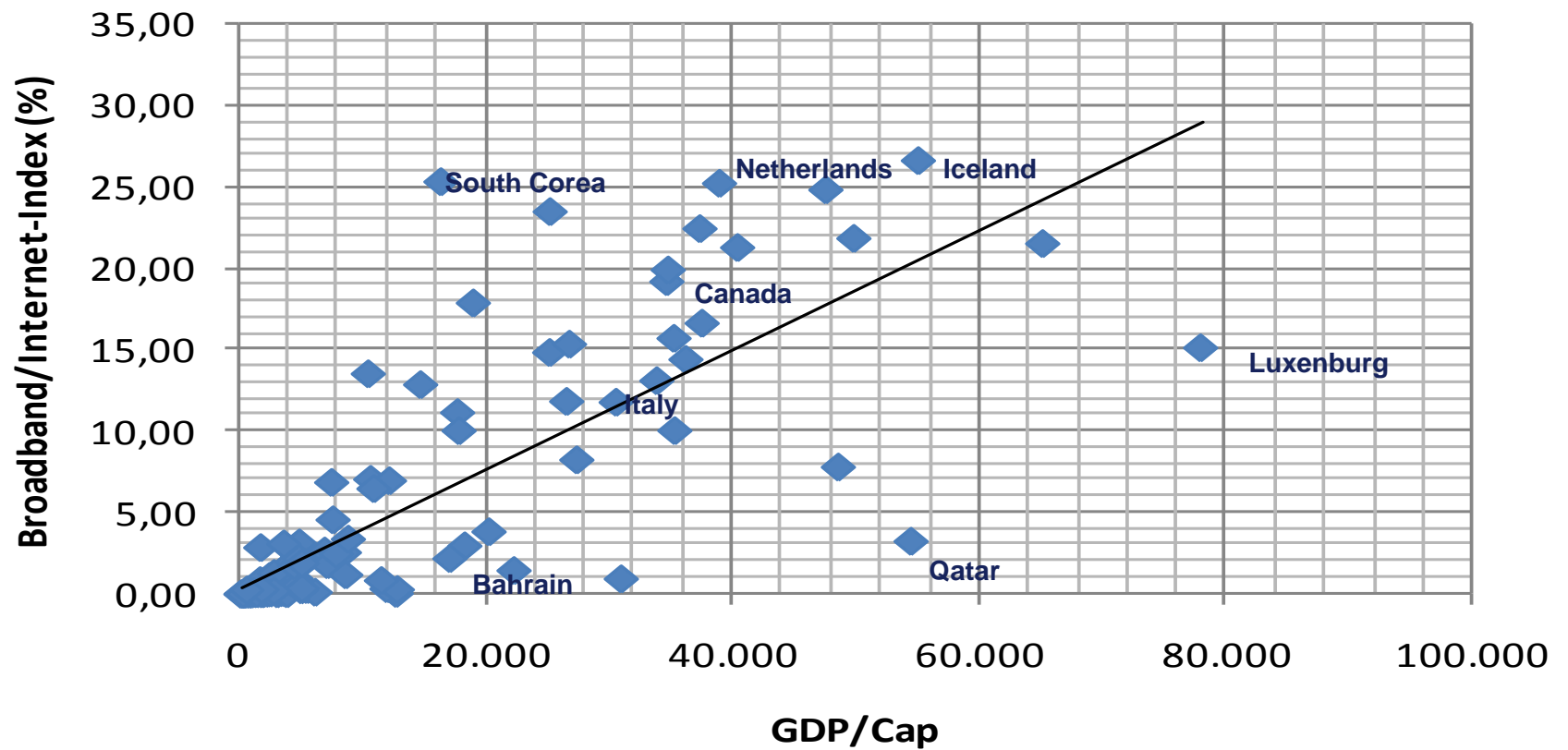
## WiMAX offers highly cost effective access services

- WiMAX cell ranges are highly dependent on type of user equipment which severely impacts operator investment costs
- Operator investment costs in rural areas also strongly dependent on customer terminal costs, if provided by the operator
- The usage of WLAN to provide urban indoor coverage could be an alternative to small WiMAX cells, depending on frequency and user terminals
- Although GSM is cost effective at providing basic coverage, looking at the actual capacity in a certain area, it is expensive compared to WiMAX
- To get real interoperability between different manufacturers, IEEE and the WiMAX Forum need to work on the definition of a set of system options

## WiMax supporting very different needs – in different areas



## Global Broadband Development Part 1



## Global Broadband Development Part 2

	Broadband-Index		
	below average	above average	
GDP/cap < 8000 USD	70 (93,33%)	5(6,67 %)	75
GDP/cap > 8000 USD	12 (22,7%)	33 (73,3%)	45
Sample ( ITU member states)		Total	120

Source: ITU 2007, Bridge FaceNet 2009,

## Broadband Penetration Middle East & North Africa

	Broadband Penetration (%)	Internet user/100 inh.	Broadband/Internet Index
Algeria	71%	0,58	0,41
Bahrain	64%	8,14	5,23
Djibouti	1%	0,50	0,01
Egypt	17%	1,73	0,29
Iran (Islamic Rep. of)	n.a.	9,49	n.a.
Iraq	n.a.	n.a.	n.a.
Israel	75%	27,60	20,75
Jordan	24%	3,52	0,83
Kuwait	9%	10,54	0,93
Lebanon	61%	8,58	5,26
Libya	12%	1,38	0,16
Malta	58%	23,61	13,67
Morocco	98%	1,30	1,27
Oman	28%	2,58	0,72
Palestine	29%	2,38	0,70
Qatar	67%	8,36	5,57
Saudi Arabia	12%	7,14	0,87
Syria	3%	1,58	0,04
Tunisia	25%	1,76	0,45
United Arab Emirates	35%	14,67	5,17
Yemen	n.a.	0,72	n.a.

## Implications for WiMAX - Investors

- Market entry with unlicensed spectrum – no high upfront license fees
- Reduced capital investment – fast break even and reduced risk
- Opportunity to develop brand with premium users (business and residential) – can be used for mobile entry later
- Entry point in future VoIP business
- Business is scalable (in country) and replicable (in other markets)
- WiMAX is a business opportunity of less than ten years – established mobile players will develop legacy technology to offer a competitive service
- A 24 month “window of opportunity” exists, first mover advantages will be critical (unlicensed spectrum)

## Drivers for WiMAX Market Entry

- Pent up demand
- No broadband offering
- Current high Broadband pricing
- Poor fixed network quality
- “Emerging market” type (GDP) growth of 5%+ p.a.
- Current Internet penetration low
- Significant Demand on Data Transmission Facilities



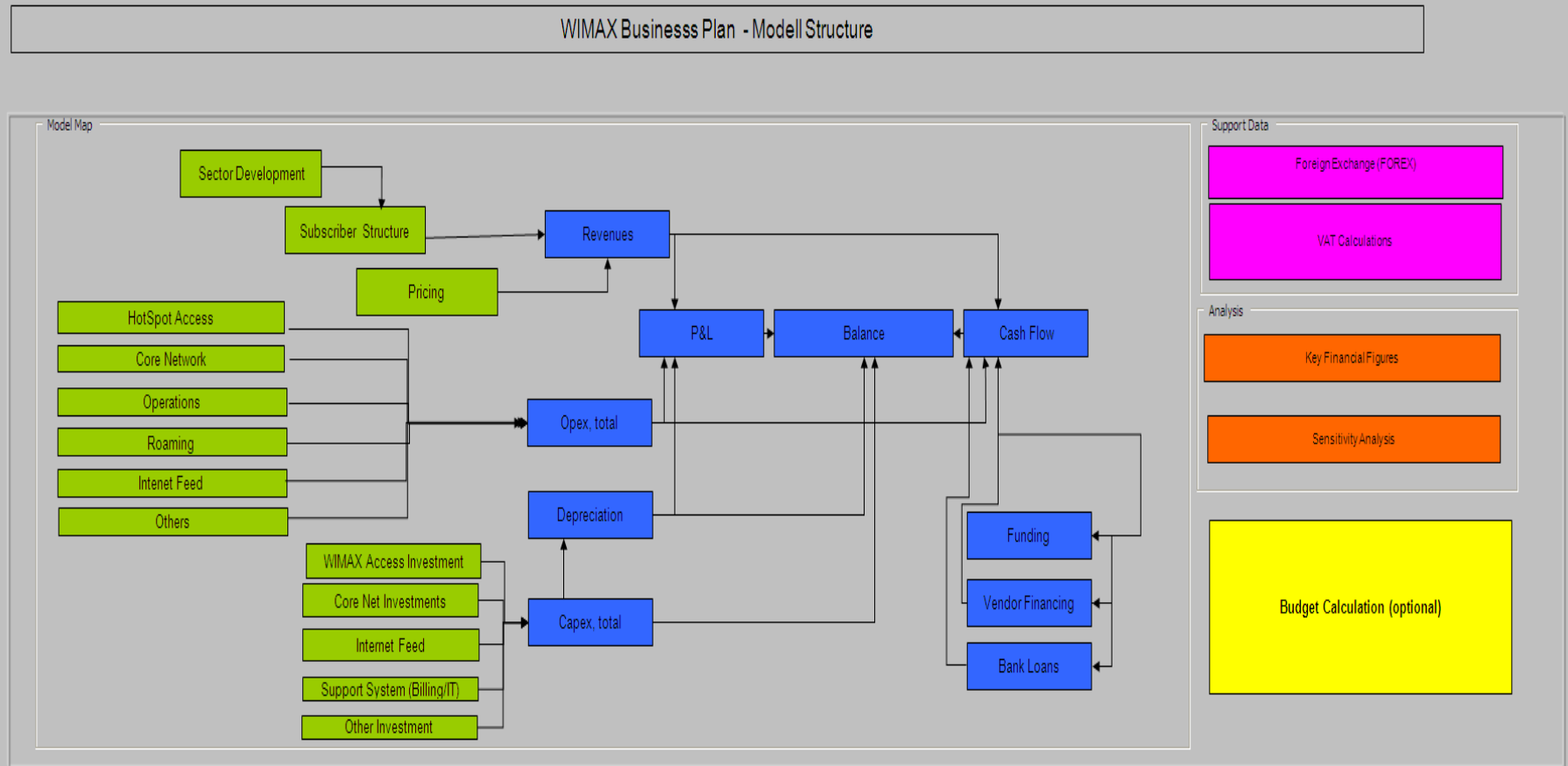
## Barriers to WiMAX Market Entry

- Interconnect difficulties
- Purchasing Power too low to be feasible
- No interconnect partner
- Fixed Broadband supply too high already
- Licensing blocked
- Too much competition
- Interconnect regime not favourable

## The WiMAX Business Plan – **Major Goals**

- Creating business idea, vision or strategy,
- Specifying the environment, the company is working in (market development, legal, economic constraints etc.),
- Design the products and services and their prices, the company is planning to offer,
- Identify the customers segments ,
- Specify the technical and economical goals to be achieved,
- Calculate the resources needed (human resources, tangible, intangible goods, sources of funding, etc.).

## Basic WIMAX Business Plan Structure



Color Coding

Input sheets

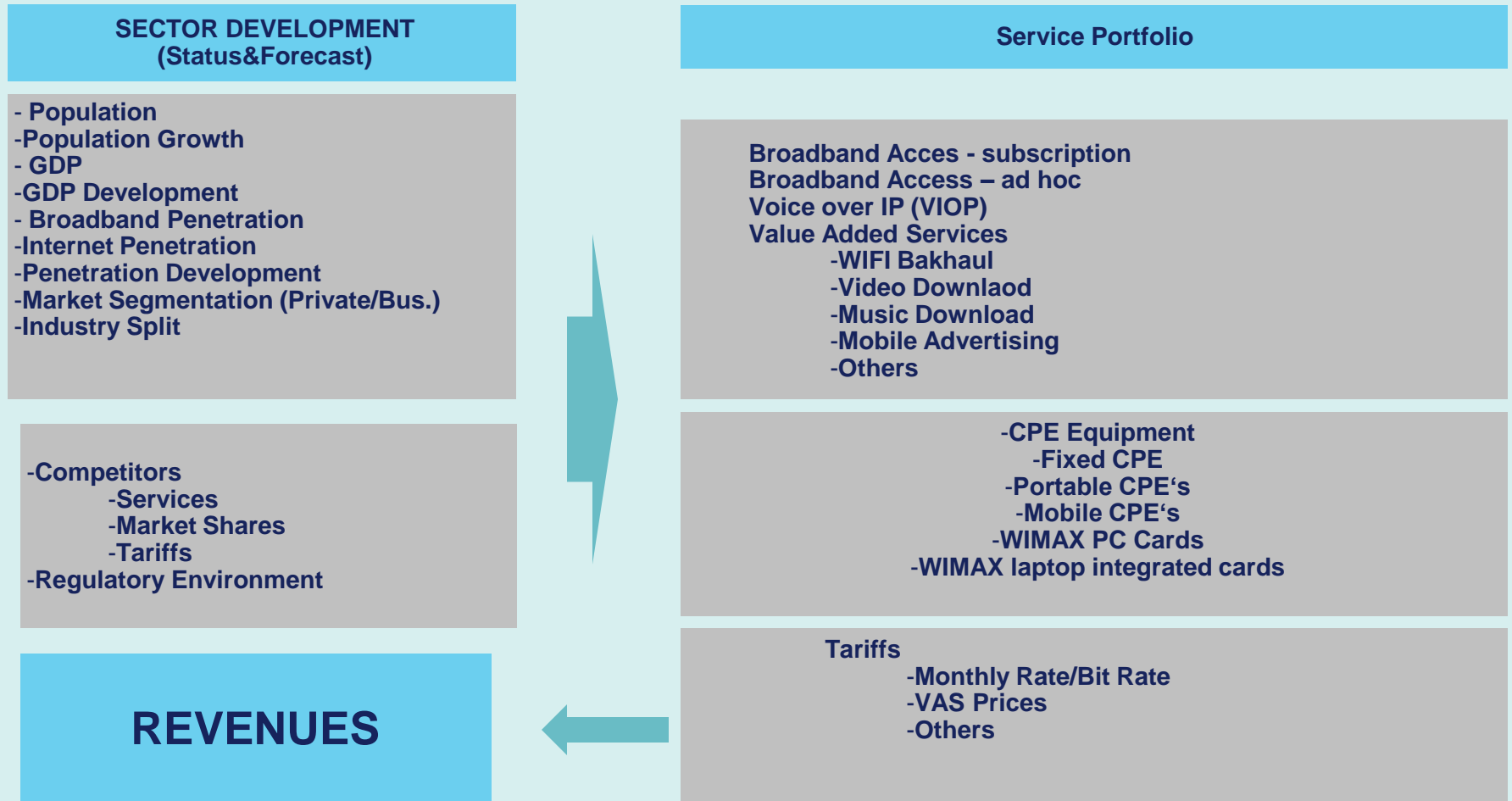
Calculated sheets

Supporting Data sheets

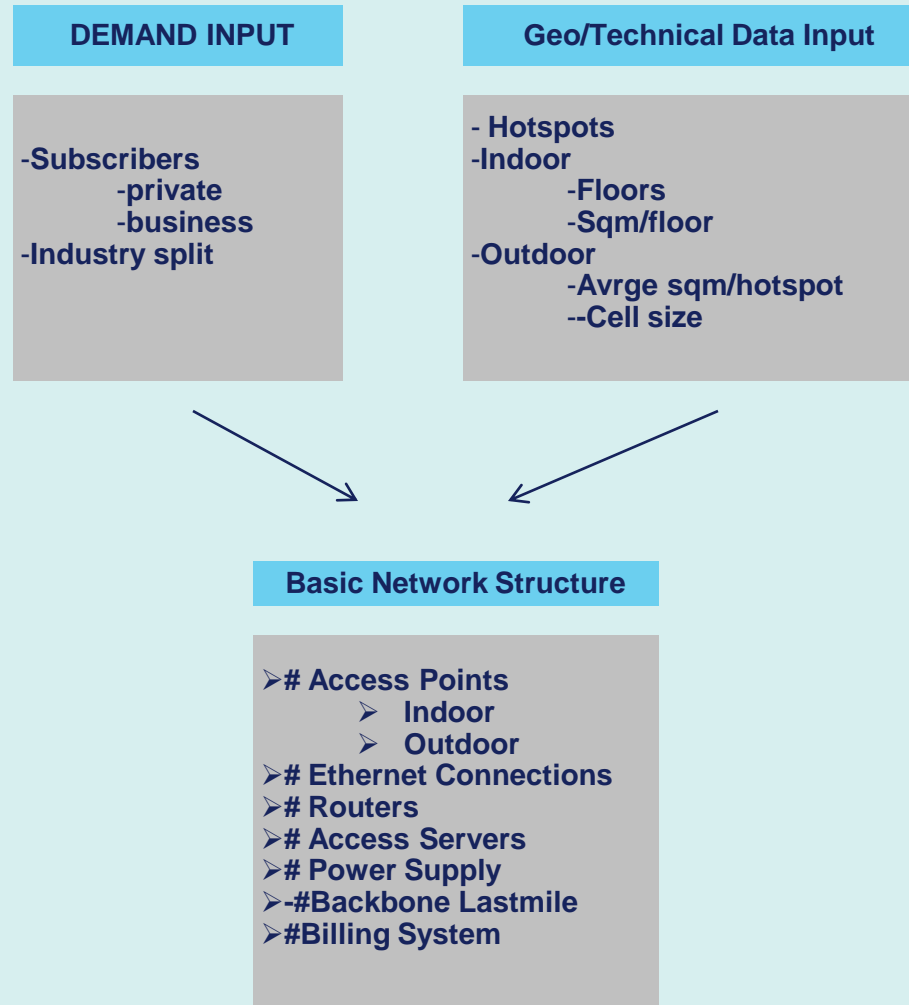
Analysis Sheets

Budget Calculation

## Basic WIMAX Business Plan Structure – Demand & Revenues



## Basic WIMAX Business Plan Structure – **Basic Network Elements**



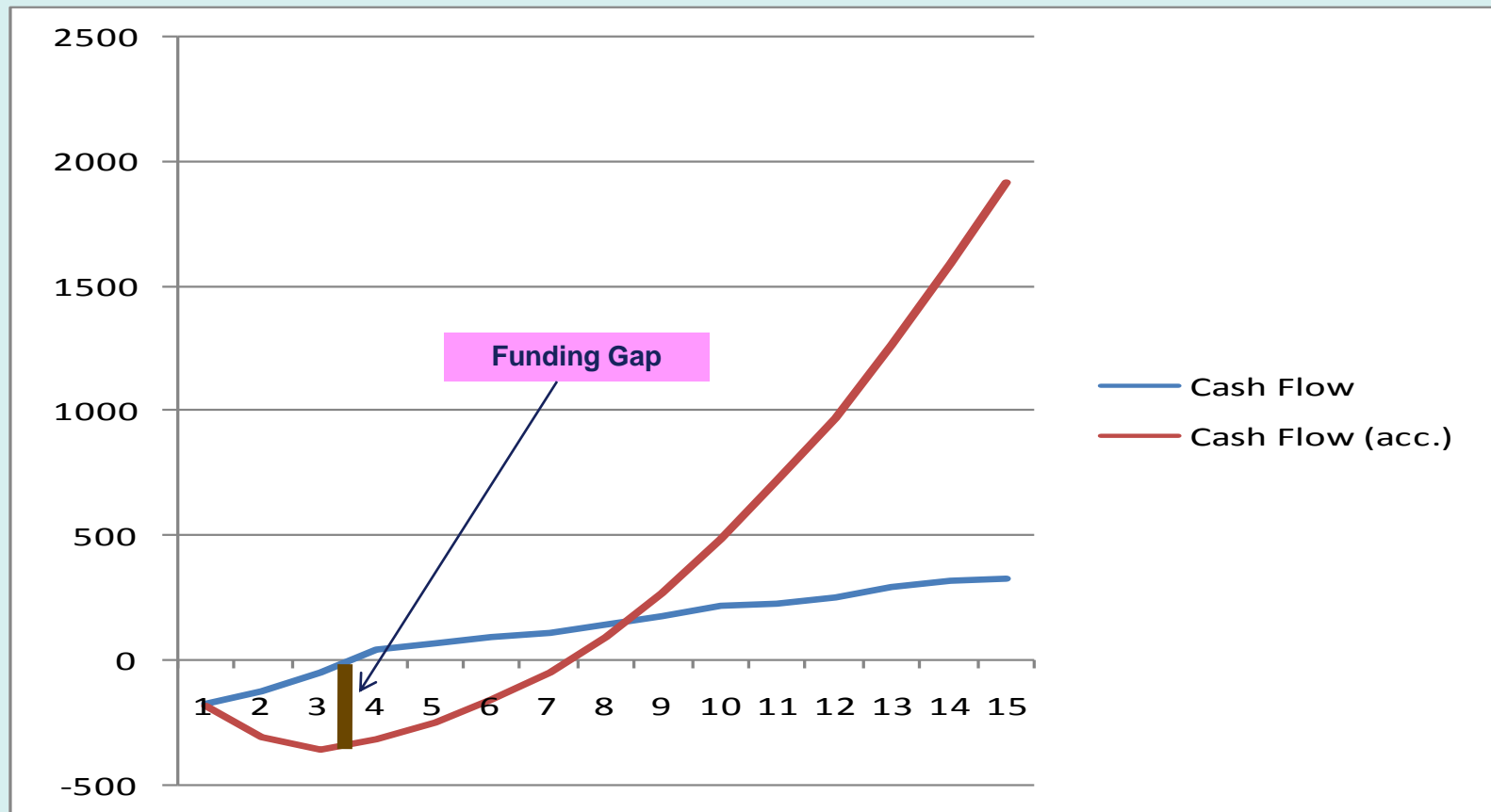
## Basic WIMAX Business Plan Structure – CAPEX Items

<b>CAPEX</b>						
		Unit	EoY	2010	2011	2012
0. Prelaunch Investments		Rial				
Project costs		Rial				
Company set-up		Rial				
1. WIMAX Access		Rial				
1.1 WIMAX Access Points		Rial				
1.1.1 WIMAX Access Points - Indoor		Rial				
1.1.2 WIMAX Access Points - Outdoor		Rial				
1.2 Ethernet (Backbone zw. AP und Local Router)		Rial				
1.3 Local Routers		Rial				
1.4 Local Access Servers		Rial				
1.5 Local Fire Walls		Rial				
1.6 Power Supply		Rial				
1.7 Leased lines one-time fees		Rial				
1.8 Initial interconnect fees		Rial				
2. Core Network		Rial				
2.1 Network Backbone		Rial				
2.2 Network Routers		Rial				
2.3 Access Servers		Rial				
2.4 DHCP Server		Rial				
2.5 DNS Server		Rial				
2.6 Radius Server		Rial				
2.7 Interworking Gateway for Mobility und Roaming		Rial				
2.8 ISP Interworking Gateway		Rial				
3. Support System		Rial				
3.1 WIMAX Network Management System		Rial				
3.2 Billing System for Retail Services		Rial				
3.3 Billing System for Capacity Provider		Rial				
4. Internet feed		Rial				
5. Others		Rial				
5.1 Vehicles		Rial				
5.2 Office Equipments		Rial				
5.3 Others		Rial				

## Basic WIMAX Business Plan Structure – OPEX Items

<b>OPEX</b>					
		<b>Unit</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>1. Hotspot and Access</b>		Rial			
1.1 Site Rental		Rial			
1.2 Site Energy		Rial			
1.3 Transmission		Rial			
1.3.1 Access Leased Lines		Rial			
1.3.2 Core Leased Lines		Rial			
1.4 Site Acquisition and Contracting		Rial			
1.5 MV Licences		Rial			
<b>2. Core Network</b>		Rial			
2.1 Rental incl. Power/AC		Rial			
2.2 Maintenance		Rial			
<b>3. Operation</b>		Rial			
3.1 Billing (non-staff)		Rial			
3.1.1 Billing per Subscriber		Rial			
3.1.2 Billing per Hotspot		Rial			
3.2 O&M and Repair Services (non-staff)		Rial			
3.3 Marketing (non-staff)		Rial			
3.3.1 Commissions		Rial			
3.3.2 Sales Promotion		Rial			
3.3.3 Communication		Rial			
3.3.4 Customer Retention		Rial			
3.3.5 Marketing Research		Rial			
3.4 Staffing		Rial			
3.4.1 Staff Management		Rial			
3.4.2 Staff W-LAN Access and Core Network		Rial			
3.4.3 Staff Marketing		Rial			
3.4.4 Staff Overhead		Rial			
3.5 Training		Rial			
3.6 Headquarter and Facilities Rent		Rial			
3.7 Licences Interworking Gateways for Mobility und Roaming		Rial			
<b>4. Roaming</b>		Rial			
<b>5. Internet feed</b>		Rial			
5.1 Leased lines 2 Mbit/s		Rial			
5.2 Fibre optic		Rial			
<b>6. Others</b>		Rial			
6.1 Vehicle Maintenance/Insurance/Fuel		Rial			
6.2 Financial Services /Auditors		Rial			
6.3 Consultancy		Rial			
6.4 Others		Rial			

## Typical Cash Flow Development





## WiMAX Business Plan – Cash Flow Statement

### CASH FLOW (Rial)

Model Map

EoY 2010

EOY 2011

EOY 2012

#### REVENUES (incl. VAT)

Total connection revenues  
Total subscription revenues  
Total usage revenues  
Others  
Bad Debt

#### Cash In

OPEX (incl. VAT)

CAPEX (incl. VAT)

Working Capital (incl. VAT)

#### Cash Out

#### Operating Cash Flow

Banking Fees  
Taxes on EBT  
Interest Income

#### Cash Flow after tax

(+) Vendor/Bank Loans  
Vendor  
Bank  
(+) Other Loans  
(+) Equity

#### Cash Flow after tax/before amortization

Amortisation Vendor/Bank  
Vendor  
Bank  
Amortisation Other Loans  
Interest Payment  
Vendor  
Bank and others

Interest & Amortisation

#### Cash Flow after tax and amortization

#### Cash Flow before Dividends

Dividends

Cash Flow after Dividends

Cash Flow after Dividends (acc.)

## Basic WIMAX Business Plan Structure – Funding Requirements

Funding (Rial)		Model Map	2010	2011	2012
Cash Flow (operational)					
Financial Requirement					
SUMME EK+FK					
Equity requirment					
EQUITY					
Net Loss/Profit (after tax)					
Acc. Loss = Min. Equity					
New Equity					
Acc. Equity (Loss Covering)					
New Equity (for Financing)			0		
Acc. Equity for Financing					
Acc. Paid In Equity					
Equity Share					
DEBT					
New Loan					
Acc. Loans					
Liabilities (within overdraft)					
Debt Share (incl. Provisions and Other Liabilities)					
Loan Redemption (Bank&Vendor)					
Interest on Loan (incl. Overdraft)					
Cash Reserve			0		
Interest Income		Interest Rate	4.0%		
Overdraft		Interest Rate	15%		
Cash in Hand					

## Basic WIMAX Business Plan Structure – Loans

Loan	Model				
	year	2010	2011	2012	
new loan Total loan interest payments p.a. Total loan redemption p.a. <b>acc. Redemption</b>  loan <b>acc.loan</b> liabilities					
<b>loan 1</b>	01.01.2010				
interest	14%				
redemption					
period to run (max 10)	5 years				
annuity					
<b>loan 2</b>	01.01.2011				
interest	14%				
redemption					
period to run (max 9)	5 years				
annuity					
<b>loan 3</b>	01.01.2012				
interest	14%				
redemption					
period to run (max 8)	5 years				
annuity					

## WiMAX Business Plan – Profit Loss Account

Profit & Loss	Rial	Model Map		
		EoY 2010	EOY 2011	EOY 2012
(+) Revenues (excl. VAT)				
(-) OPEX (excl. VAT)				
<b>EBITDA</b>				
Ebitda Margin				
(-) Depreciation				
<b>EBIT</b>				
Ebit margin				
Interest				
<b>EBT</b>				
acc. EBT				
(-) Tax				
<b>Net profit after tax</b>				
acc. net profit after tax				
<b>Dividends</b>				
Compulsory Reserve				
acc. Comp. Reserve				
Optional Reserve				
acc. Optional Reserve				
Remuneration to BoD				
acc. Remuneration to BoD				
<b>profit after dividends and reserve</b>				

## Basic WIMAX Business Plan Structure – Balance Sheet

Balance Sheet	Rial	EoY 2010	EOY 2011	EOY 2012
<b>ASSETS</b>				
Fixed Assets				
Invest				
Groß Fixed Assets				
Depreciation				
acc. Depreciation				
Property, plants and equipm., net				
Others				
<b>Net Fixed Assets</b>				
Trade Account Receivables				
Advances and Prepayments				
Inventory				
Deferred Tax Payments				
Other Current Assets				
Cash and cash equivalents				
Current Assets				
<b>TOTAL ASSETS</b>				

Balance Sheet	Rial	EoY 2010	EOY 2011	EOY 2012
<b>Liabilities &amp; Equity</b>				
Chartered equity				
Contributed capital				
Accumulated other comprehensive income				
Accumulated deficit(-)/profit(+)				
<b>Owner's Equity</b>				
Longterm Borrowings				
Deferred tax liability, non current				
Longterm portion of debt due to owner				
<b>Total non-current liabilities</b>				
Trade accounts payable				
Accrued Liabilities				
Shortterm borrowings				
Due to owner				
Other current liabilities				
<b>Total current liabilities</b>				
<b>Total liabilities</b>				
<b>TOTAL LIABILITIES&amp; EQUITY</b>				

## Basic WIMAX Business Plan Structure – Sanity Check

### Key Parameters and Sensitivities

Key Variables		2010	2019	
Broadband Penetration	<input type="range"/>	100 %		%
Newco Subscriber	<input type="range"/>	100 %		subs
Newco Churn	<input type="range"/>	100 %		%
Economic Growth Rate	<input type="range"/>	100 %		%
tariff change, private (flate rate)	<input type="range"/>	40 %		Rial
tariff change, business (flate rate)	<input type="range"/>	0 %		Rial
tariff change, VAS services	<input type="range"/>	0 %		Rial
share VAS, revenues	<input type="range"/>	0 %		Rial
State revenue share	<input type="range"/>	20 %		Mio Rial
Interconnect Tariff Cut	<input type="range"/>	50 %		Rial /min
Capex (without license) 1)	<input type="range"/>	100 %		Mio Rial
Opex	<input type="range"/>	100 %		Mio Rial



KPI		
IRR incl. TV		
NPV incl. TV (Mio Rial)		
NPV excl. TV (Mio Rial)		
Break Even (year)		
Pay back (year)		
Peak Funding (Mio Rial)		
Capex per sub (Rial)		
Opex per sub (Rial)		
Average revenue/ subs (Rial)		
Discounted License (Mio Rial)		
EBITDA (%)	2010	2019

## WiMAX Launch and Expansion Decision Process

1

### Process Management

- Define Process
- Standardize Process
- Monitor Process
- Control Process

2

### Value Checklist

- Check: vision, strategy & rationale of opportunity
  - Does this deal support the global/regional goal?
  - Is this a target country?
  - Can this be used as a nucleus for further business?
- A "Due Diligence" of the business opportunity
- Legal & Financial aspects

#### Result

- The business concept is proven, and its value is understood

3

### Synergy Checklist

- Check and identify possible and necessary synergies across the group:
  - functional (tech., ops., sales)
  - cross selling of products
  - knowledge/skills
  - tangible resources (plants)
  - co-ordinated strategies
  - vertical integration
  - pooled negotiating power
  - business creation and value chain extension

- The synergy effects are identified across the Group

4

### Operational Checklist

- Check post acquisition integration issues:
  - Culture & Organisation
  - Human resources
  - Sales & Marketing
  - Purchasing
  - Operations
  - Accounting/Control
  - Finance/Transfer pricing
  - Business/Product development

- Key issues in the integration will be identified

## Successful WiMAX Business Plan – **Key Requirements**

- Consistent Business Plan Model
- Industry Skills & Experience (technical, commercial , legal)
- Different regional footprint
- Communication Network to Operators, Investors, Vendors
- Project Management Skills
- Teamwork with Local Partners



## Worldwide Experience of Bridge Facenet Senior Consultants ( Extract)

### Europe



### Africa



### Middle East/Asia



Thank you for your patience and confidence

