Cisco Intelligent Information Network Foundation for Metropolitan Data Network

- Building Next-Generation Networks
- Developing Innovative Services
- Driving Knowledge-Based Communities for a Sustainable Future and a Good Quality of Life

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Agenda

- Communcation revolution
  - Broadband For All
    - Drivers, Challenges & Benefits
      - From Vision To Implementation
        - Choosing The Right Business Model
          - Creating The Vision

A Communications Revolution

Citizen **Education** **Enterprise** **Government** **Healthcare**

Connecting citizens with services, services with networks, and networks with one another

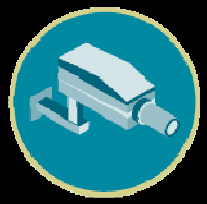
Next-Generation Network

Security **Voice and Video** **Internet** **Mobility** **Content** **Collaboration**

The Connected Home: Supplies an Array of Services

Communication Services

- Internet and communication
- IP Mobile and wireless phones
- Presence
- In-home key systems
- Video chat



Automation and Control Services

- Home surveillance
- Nanny cam
- Heating, ventilation and lighting
- Home appliances
- Fire and burglary alarm

Information Services

- Network security (VPN)
- Home networking
- Parental control
- Firewall
- Back up and storage

Entertainment Services

- Video
- Music
- On-Line Gaming

Broadband For All

What is Broadband?

European Commission Definition:

Broadband refers to a wide range of technologies that have been developed to support the delivery of innovative interactive services, equipped with an always-on functionality, providing local bandwidth and capacity that evolves over time, and allowing the simultaneous use of both voice, video and data services.

Source: eEurope 2005

Broadband Scenarios: Urban, Regional, and Rural

Greater Choice in Deployment Network to Different Population Areas

Metropolitan/Urban Areas: Metro Ethernet and Wireless

Regional Areas: Fibre in Backhaul and Wireless/ DSL Access

Rural Areas: Wireless Wi-Fi, Wi-MAX and Satellite Access

Why Broadband?

i2010: A European Information Society for Growth and Employment

i2010
Information Space
Innovation & Investment in R&D
Inclusion

Broadband Manifesto

EURO CITIES

Broadband Manifesto

Ten building blocks Broadband Manifesto EuroCities

- **No knowledge society without broadband services**
- **No broadband services without fibre optics**
- **Independent fibre optics networks**
- **A fibre optic infrastructure monopoly**
- **A market system**
- **Local initiatives**
- **Interconnected open broadband network throughout the European Union**
- **Platform for public services**
- **The voice of cities; Consulting partner**
- **Collaboration: A call for support**

What is the Market Outlook?

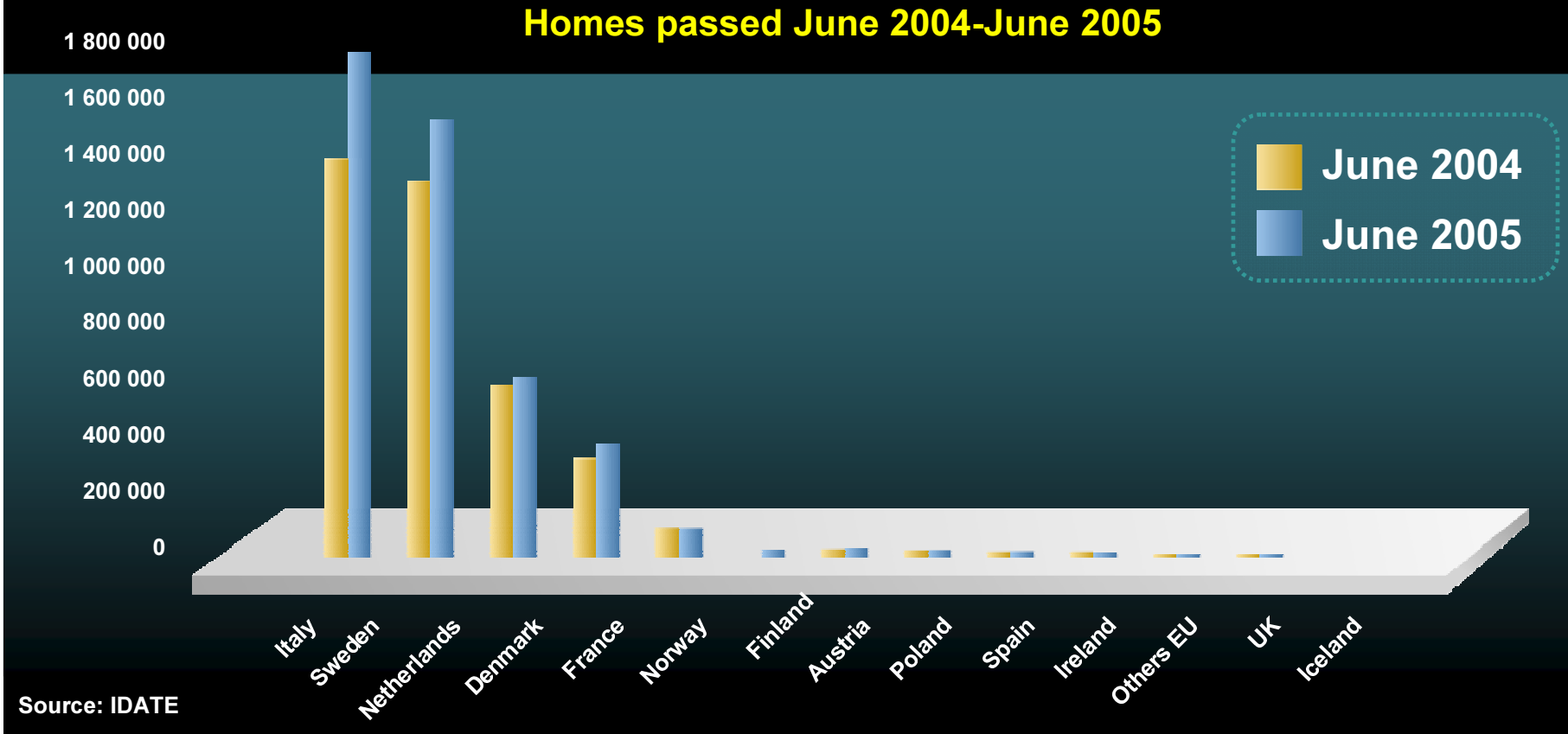
- June 2005: 2.51 million FTTH homes/buildings passed (over 28 percent higher than June 2004) with a global penetration rate of 25.7 percent => **2.51 million homes passed**
- June 2005: 646,570 FTTH subscribers in EU (over 18 percent higher than in June 2004) => **646,570 homes activated**

Players involved in FTTH Segmentation June 2005		
Incumbents	9	7.8%
Municipalities / Power Utilities		
Alternative operators / ISPs	13	11.2%
Housing companies & Other		

What is the Market Outlook?

FTTH Homes/Buildings passed in Europe by country

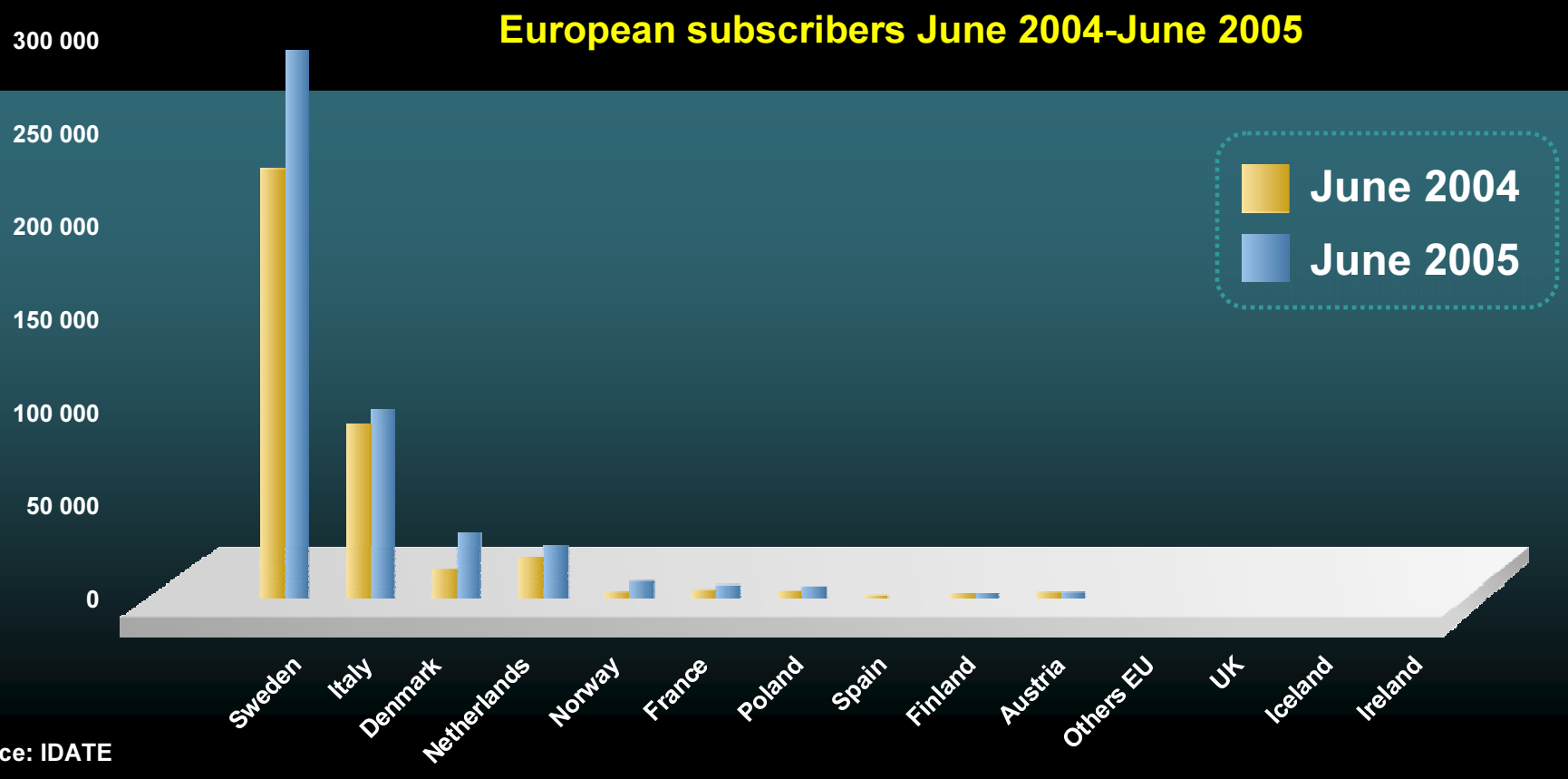
Netherlands : More than 150 percent homes passed compared to June 2004



Source: IDATE

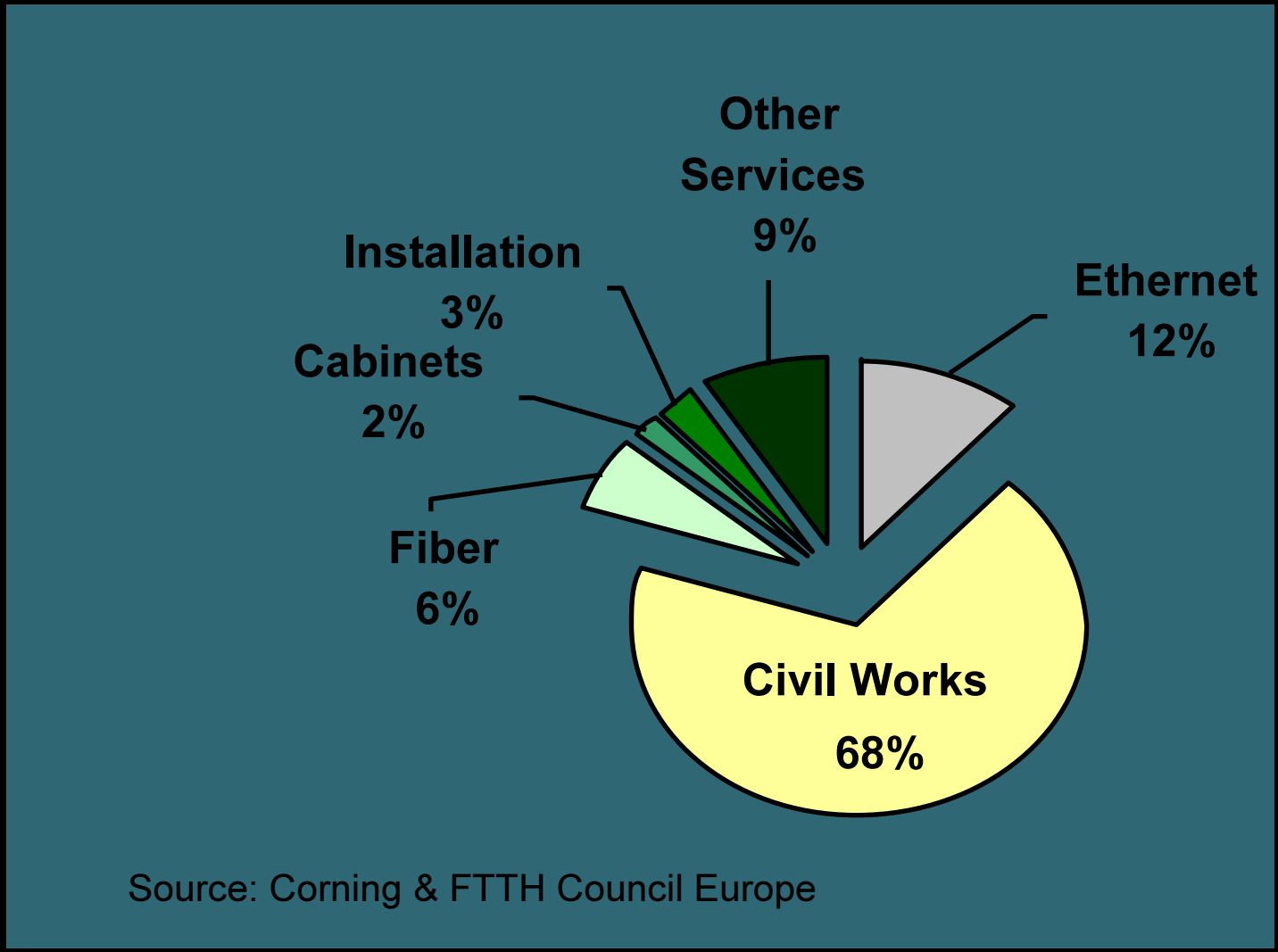
What is the Market Outlook?

FTTH subscribers in Europe by country



Source: IDATE

Fiber to the Home Deployment Costs Initial Year



Source: Corning & FTTH Council Europe

Drivers, Challenges and Benefits

Policy Drivers

Better Educated Communities

Healthier Communities

Prosperous Communities

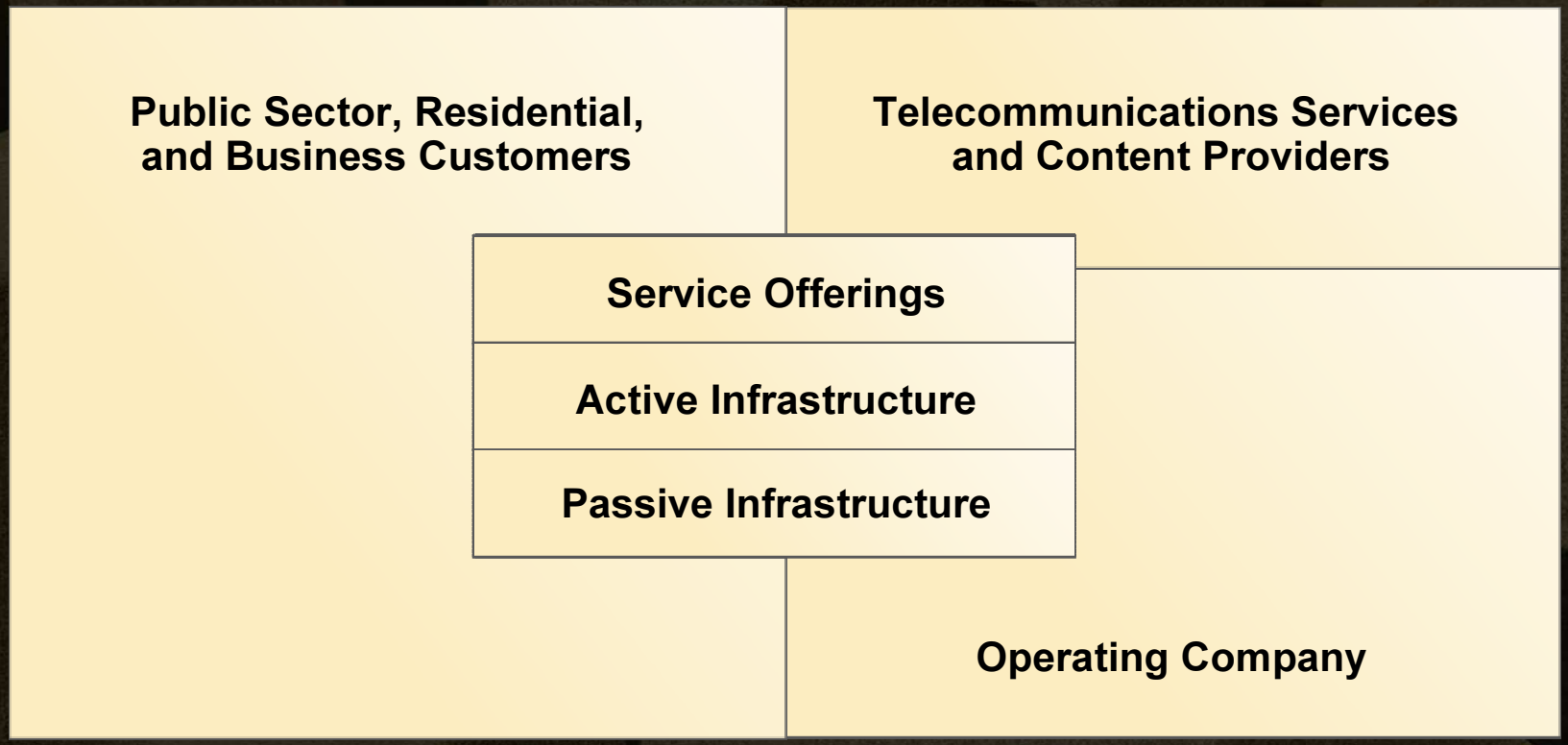
Safer Communities

From Vision To Implementation

Choosing The Right Business Model

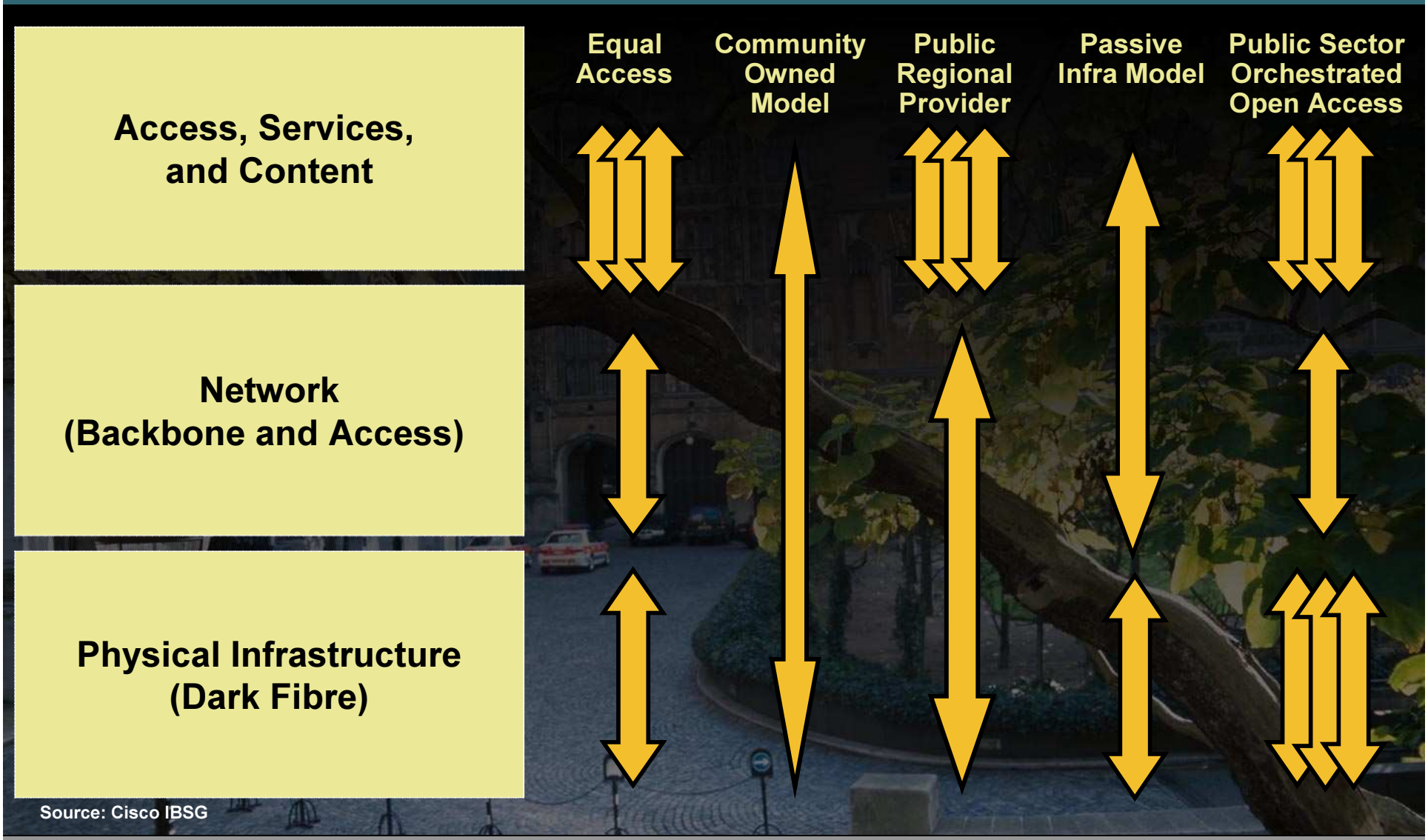
Generic Broadband Business Model

Building Blocks to a Broadband Vision



Source: The Broadband City Roadmap for Local Government Executives, Cisco Systems, Internet Business Solutions Group, Jan 2005

Public Private Partnership Model



Source: Cisco IBSG

Developing the Business Plan

1 2 3 4 5

Finding the right partners

Agreed-upon roles and responsibilities

Case Study

City of Amsterdam

I amsterdam.

Contract framework

Assurances of financing

Final decision to go ahead with project

Citynet City of Amsterdam
Roadmap

- 2002: Study of a Next Generation Broadband Network
  - Study of future proof network: Value & Benefits
  - Interviews with incumbents
- 2003/04: Study of a Public Private Partnership
  - Study of public private partnership (passive layer) with a minority position of the Municipality: Possibilities & Opportunities
- 2004: European tenders
  - One party for building the physical infrastructure
  - One party for operating the network
- 2005: Bringing it all together
- 2005: “On Track With Broadband” (“Goed op weg met breedband”)
  - Dutch Government issues guidelines (non binding) for community broadband to local, regional government and housing corporations, partly based on the Citynet project

Citynet Amsterdam

Fiber-to-the-Home is becoming a reality

Citynet Amsterdam
Fibre-to-the-Home is becoming a reality

- FTTx reality in Europe (Source: Idate June 2005)
  - 650.000 FTTx subcribers
  - 2.5m homes passed
- CityNet: Major FTTH project in Europe
  - 420.000 homes and businesses by 2013
  - Cost: €300m (€714 per connection)
- Shift Market Order – Culture Clash
  - From vertical integrated triple-play services to open-access network multi-play services
- Regulatory Problems Unlikely
  - European Commissions focuses on stimulating competitiveness
  - 32 European countries => deployment independent fiber-optic networks to boost economic development and social inclusion

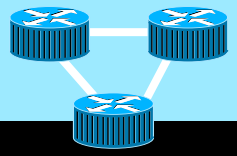
Citynet Amsterdam

- **Potentially the largest in Europe**
  - **420.000 homes and businesses by 2013 at €300m**
- **Open network principles**
- **Promoting services competition**
- **Fair and equal access to high-speed broadband for any service provider**
- **First phase: 40.000 homes by 2007 at €30m**

Public Orchestrated Open Access Model
Citynet

ACCESS, SERVICES AND CONTENT

NETWORK (Backbone and Access)



PHYSICAL INFRASTRUCTURE (Dark Fiber)

Multiple Content & Service Providers

Bbned (Telecom Italia)

Glasvezelnet (Fibernet) Amsterdam BV

5 Housing Corporations (33,3 %)

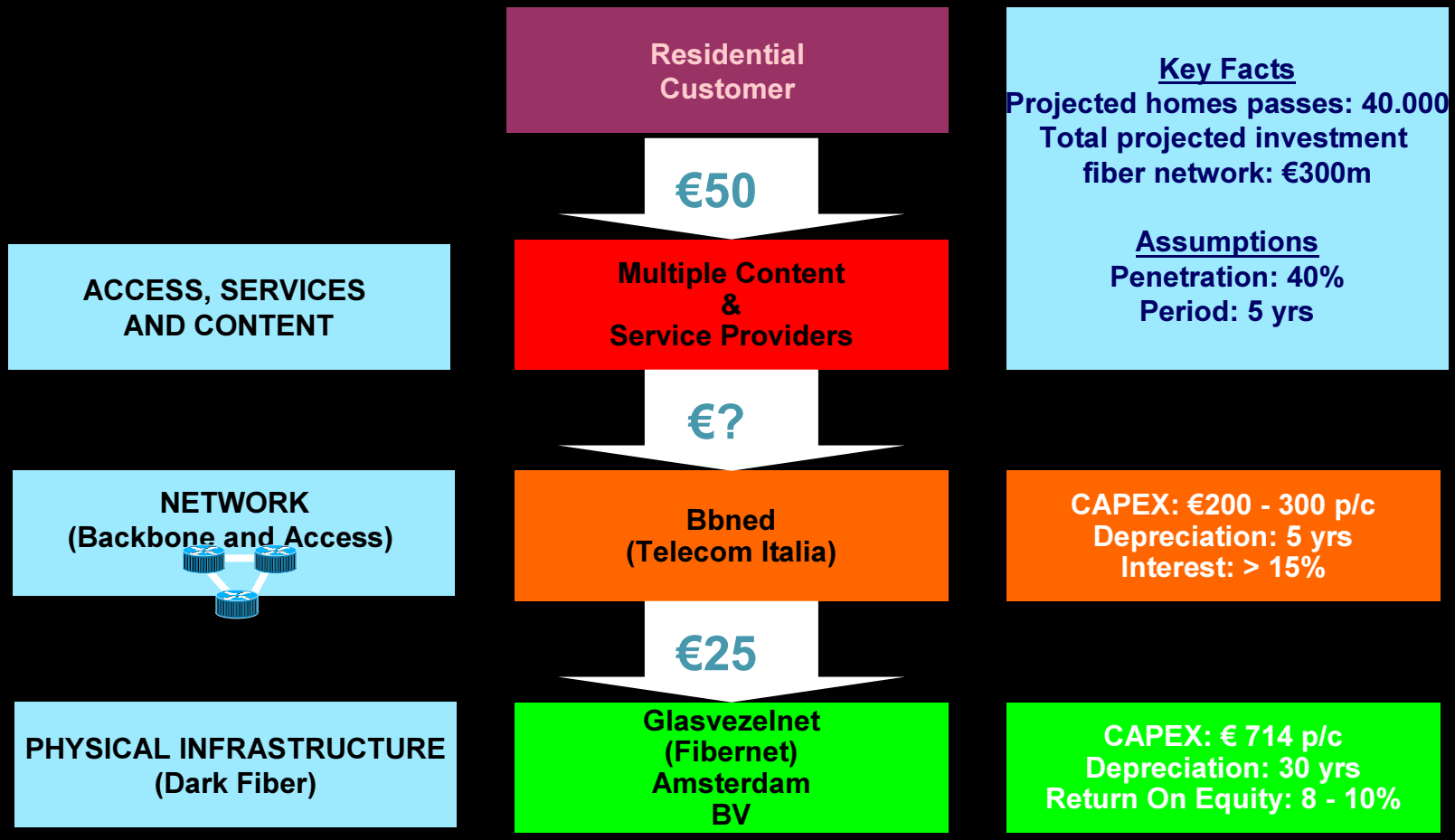
Municipality Amsterdam (33,3 %)

ING Real Estate (33,3 %)

The Rationale Behind CityNet

- Innovative and freely accessible infrastructure
- Support growth in demand next 30 years and beyond
- Open marketplace for innovative service providers
- Increase economic development
- Fast track for smarter & cheaper care, education and other public services
- Encourages content creation and more exchange of information
- Bypass of three major issues
  - Continued demand for faster broadband connectivity
  - The bottleneck in the local loop
  - Overcoming short-term view of current infrastructure owners to invest in network upgrades

Pricing & Investment Model
Citynet: Fiber-to-the-Home (residential)



Community-Owned Provider Model

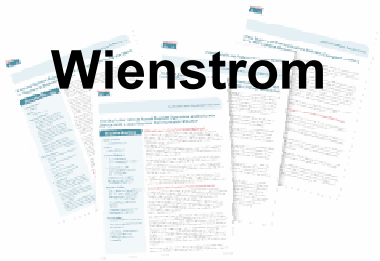
Access, Services, and Content

Several Service Providers Competing

(Dark Fibre)

Case Study

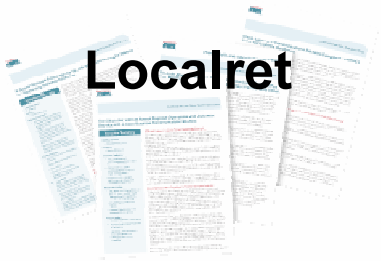
Wienstrom



WIENSTROM

Case Study

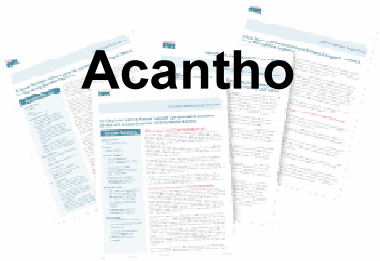
Localret



LOCALRET

Case Study

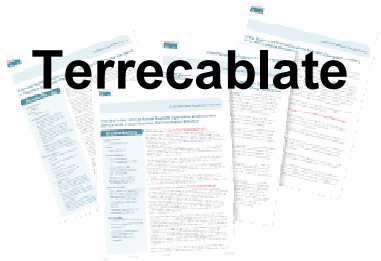
Acantho



ACANTHO
un marchio Casa.web

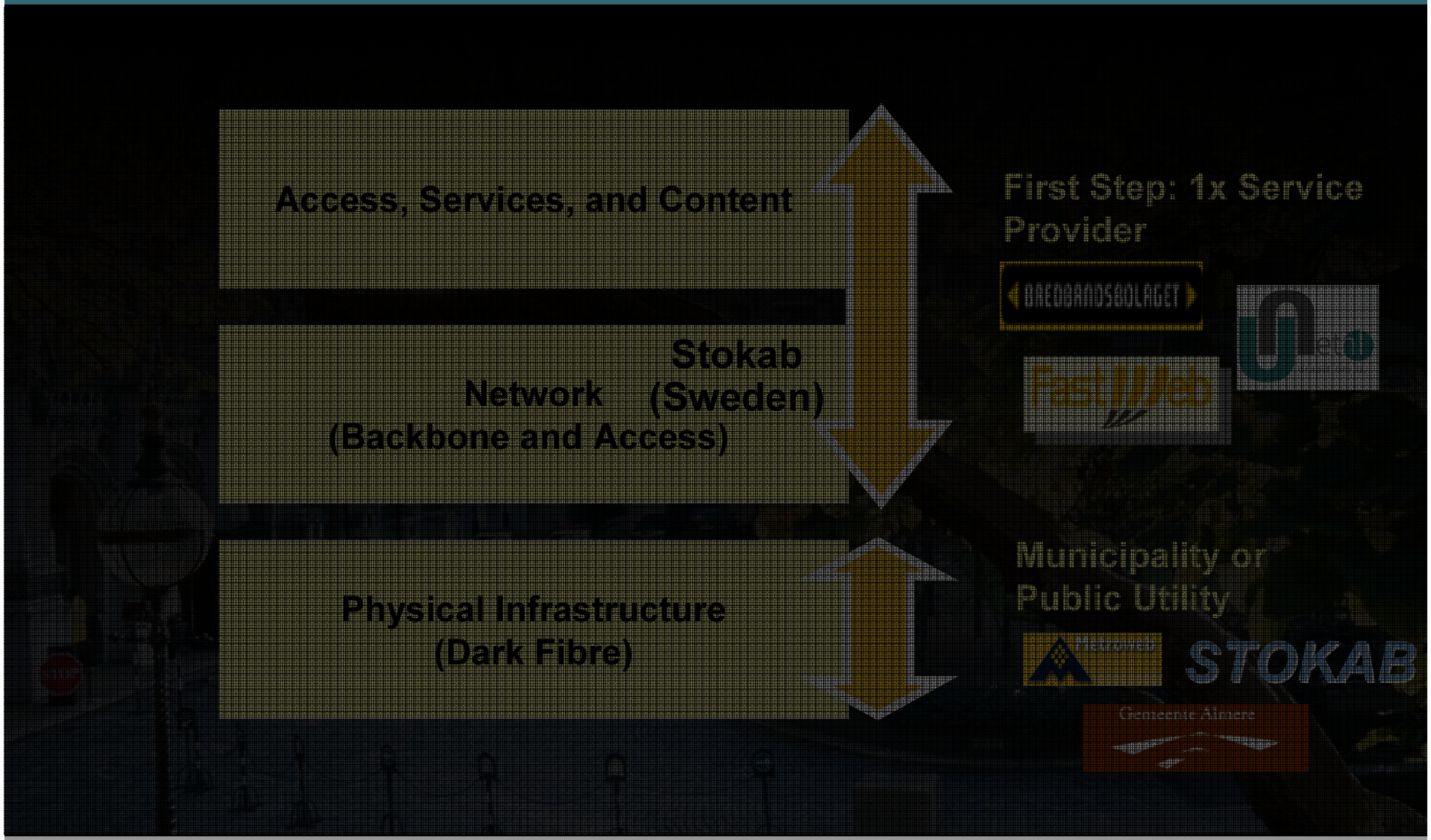
Case Study

Terrecablate

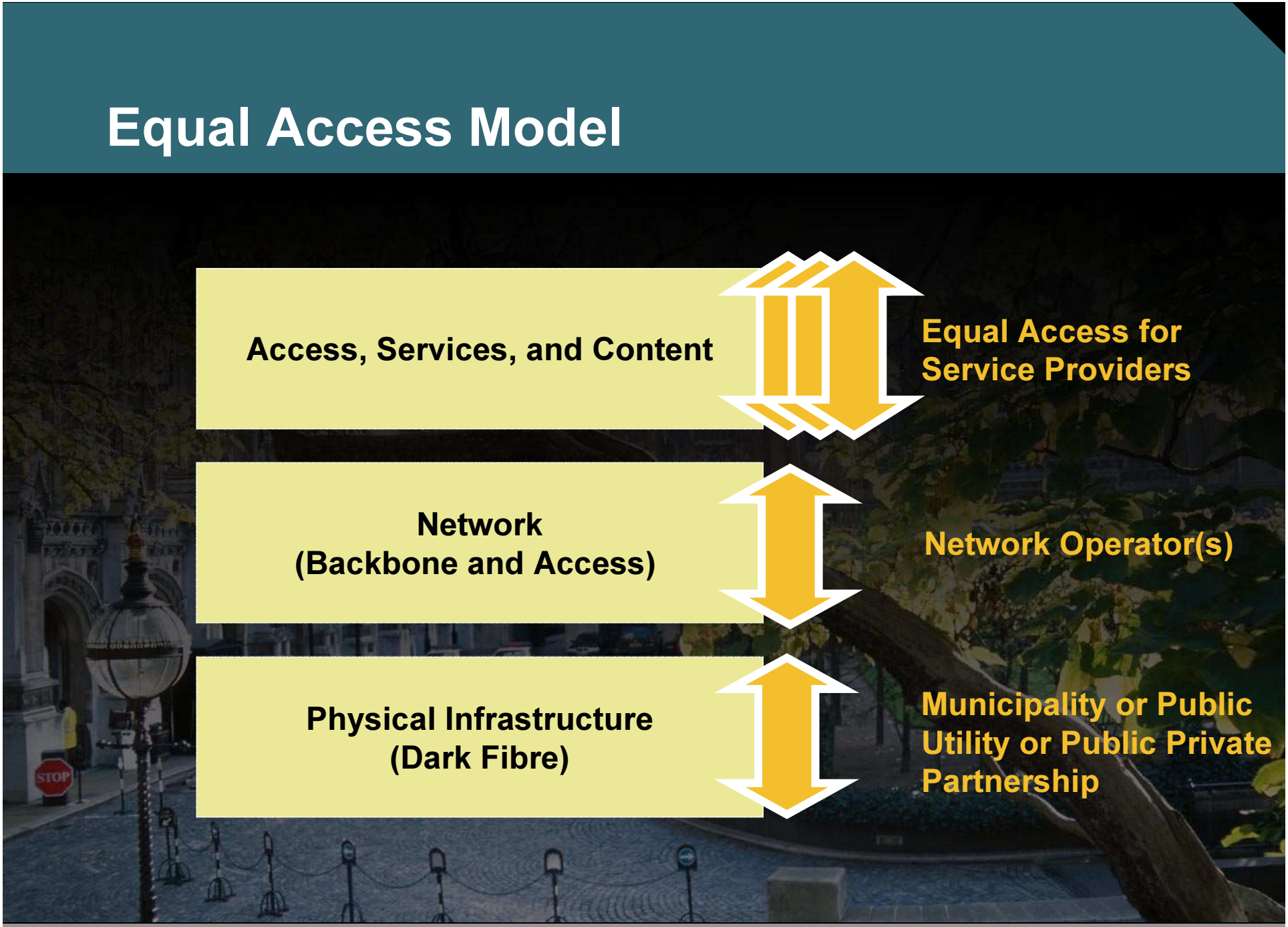


terrecablate
telecomunicazioni

Passive Infrastructure Model



Equal Access Model



Creating The Vision

Key Cisco Solutions Making The Vision Possible

Cisco® Security Foundation Network

Provides future-proof broadband networks and **protection against evolving threats**

Cisco Unified Communications

Provides:

*** Unified Communications**

*** IP Telephony & Video/Audio Conferencing**

*** Customer Contact Center solutions**

Cisco Mobility and Wireless Solutions

Provides foundation of a connected community by allowing governments to deploy a secure, scalable future-proof broadband network

Cisco Data Centre Solutions

Provides secure data and application storage and back-up facilities and enables the next step to shared eGovernment services

Cisco Industry Leadership

- Almost 20-year track record as the industry leaders in networking
- World-class Cisco® certified networking engineers with in-depth networking expertise
- Extensive experience in scalable network design, operations, management, and support
- Broad range of technical experts and engineers
- Unrivaled partnerships
- Industry-leading, standards-based network solutions



Intelligent Information Network Changes the Way We Live, Work, Learn, and Play

Cisco® empowers the vision of connected communities through delivering an intelligent information network to local governments and citizens, transforming communities into thriving sustainable economies.

Intelligent information network (IIN) is an ubiquitous vision of intelligent networking to connect citizens to local government agencies anytime, anywhere and any place.

IIN allows citizens and public agency employees to access, use, and enhance information in an intelligent, secure and user-friendly manner to do things better, faster, and more effectively.

Cisco Solutions for Connected Communities

Connected Communities: What to expect from Cisco®

- Comprehensive, open standards-based intelligent information network
  - IP next generation network
  - Future proof application-enabling network solutions through a service oriented network architecture
  - Smart business communications
- Continuously evolving local government solutions and technology roadmap
- Innovative partner collaboration and eco-systems

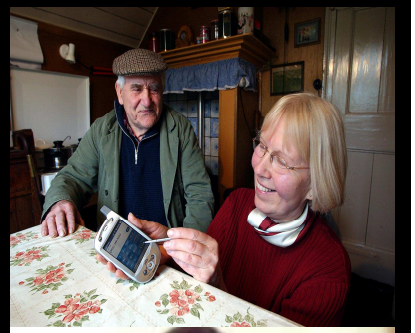
New Technologies and City projects

Existing innovative City projects have delivered tangible benefits in 3 key areas:

1. **IMPROVE SERVICES TO CITIZENS AND ENTERPRISES**

2. **IMPROVE INTERNAL EFFICIENCY AND REDUCE COSTS**

3. **DRIVE ECONOMIC DEVELOPMENT**



Solution

- **Video-surveillance**
  - **Wireless** Cameras, easy to install and move (no street work), using **IP protocol** to enable surveillance and management from anywhere on the IP secure network
  - Helps fight crime, traffic ofenses both by improving detection and providing proofs of evidence
- **Noise, Pollution, Flood detection, Distant Meter reading**
  Wireless sensors provide constant measurement and can send automatic alerts. Wireless meters can be read remotely saving agent's time

Solution

- **PC or PDA with WI-Fi connectivity allowing agents to perform anywhere:**
  - access to agenda and email, fill and send forms, access office applications and data
  - check plans, existing networks, for example when digging a new hole in a street
  - update cases online, route them to collegues, exchange information between agencies

- **Categories of Mobile workers and usages**
  - Managers (agenda, email)
  - Inspectors (forms, case management)
  - Street workers (case management and access to office data)
  - Municipal Police (alerts, quick exchange of information, take control of videosurveillance cameras,…)
  - parking attendants (forms, send picture of offender,..)
  - Social helpers (access to office applications)
  - …

Solution

- **Mobility for municipal transports**
  - **Video surveillance in buses**
    Passengers and driver's safety
  - **Information screens in buses and at bus stops**
    Delivers information about next bus arrival time, connections, traffic perturbations, and broadcasts news for passenger distraction …
  - **Bus position follow-up, load measurement**
    Allows to have interactive information and statistics to optimise bus management

Solution

- **Enables agent mobility and virtual teams**
  - ✓ Dislike traditional telephones, an IP telephony is not related to a telephone number, any IP telephone can be used by anybody, association to a given telephone number is made on the telephone. By entering his userid/password, a user personalises the IP Phone with its telephone number and all his setting (address book, call redirection, etc…)
  - ✓ IP telephones allows advanced call redirection rules according to agenda and/or to caller:
    - If I am in a meeting then go to my mailbox
    - If my boss calls, IP phone rings first, then mobile phone, then home phone…
  - ✓ A PC can become an IP Phone with Cisco IP Communicator software, allowing to call on Voice over IP anywhere you find an Internet access
  - ✓ IP Phones can also be wireless

Solution

- **Supports productivity applications**
  - ✓ Presence and Time management
  - ✓ Information messages broadcast
  - ✓ Display of caller contextual information (from a caller database)
  - ✓ Teleconferences (Meeting Place) to enhance government employees training on new laws, regulations, processes and tools

Examples:

- ✓ Timestamp children entry and departure in a creche to automate bill production and have an up-to-date list of present children
- ✓ IP telephone in a building attendant home allowing better case and requests management

Solution

- **Solutions for Visually Impaired and Blind users**
  - ✓Tactile discernable keys
  - ✓Cisco Unity provides ability to listen to email via Text-to-Speech
  - ✓ IP phone functions can be activated by voice rather than keys or screen menus

- **Solutions for Hearing Impaired and Deaf Users**
  - ✓ Coupling of the handset to a Hearing Aid
  - ✓ Text Telephone can be interface to Cisco IP Communication Solution using any analog gateway
  - ✓ IP Phone can be associated to a web-cam allowing video conferencing

CONCLUSION

- Network as a platform to build e-government projects to link central and local government departments to each other and save costs in the process.
- This same architecture can then be used to provide high bandwidth connections to schools, libraries and other public facilities.
- This same architecture and opening up the network to citizens can have an equally great impact, improving service.
- They are KEY ENABLERS for changing the way we Work, Live, Play and Learn

Q & A

Case Study:
City of Almere (Holland)

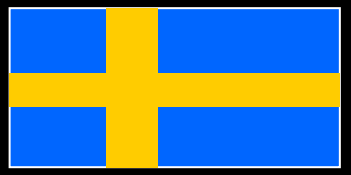
- **Challenge**
  - Increase economic development and innovation
  - Attract new businesses
- **Solution**
  - Created new business and service models through innovative public private partnerships
  - Deployed future-proof broadband network to homes, institutes and businesses
- **Benefits**
  - Created 500 new jobs in the Almere Fibre Pilot area
  - Preservation of SMB and 200 jobs
  - € 5 million new investments in one year
  - Established one of the most advanced Broadband Services Centers in the world

Case Study:
Citynet (Amsterdam, Holland)

- **Challenge**
  - Bridging the digital divide
  - Breaking through existing vertical integrated business model
  - Open access for all service providers
- **Solution**
  - Future-proof open broadband network
  - Connecting 420.000 homes and businesses by 2013
  - First phase starts in 2006: 40.000 homes and 3000 businesses
- **Benefits**
  - Empower innovation and knowledge economy
  - Enhance sustained economic and social benefits
  - Encourages content creation and more exchange of information
  - Fast track for smarter & cheaper care, education and other public services

Best Practice Central Government Swedish Broadband National Program (2000- 2006)

- **Infrastructure funding of 5.25 billion SEK (564 million €):**



Backbone network	€ 43 million
Regional network	€ 220 million
Local network	€ 129 million
Tax relief for connection	€ 118 million

Re-allocated funding to backbone, regional and local networks € 54 million

Structural funds and other regional grants 0.575 billion SEK (€ 62 million)

- **Operationally driven by Local Governments focusing on:**

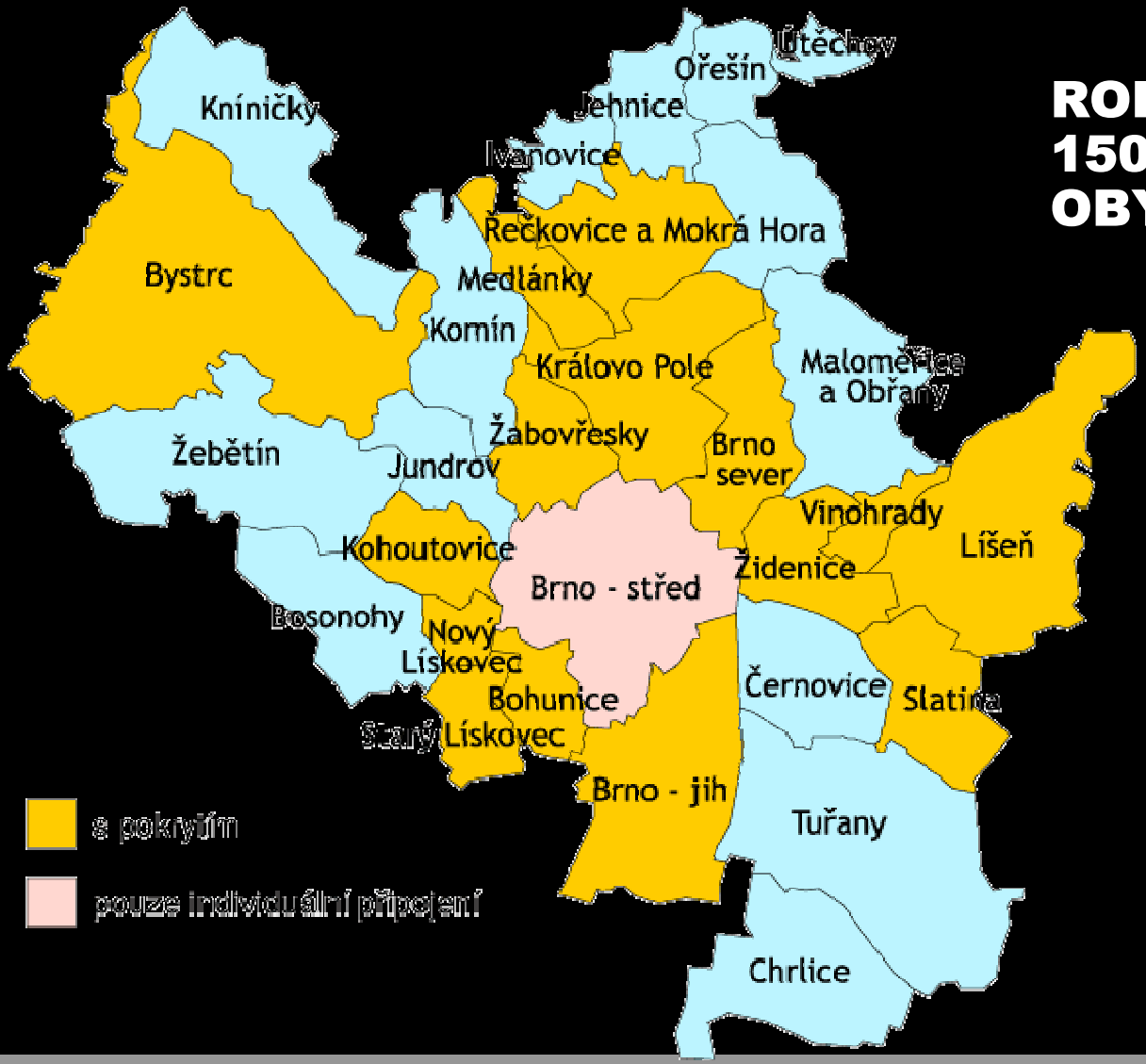
Passive infrastructure

Rural underserved areas

Open procurement procedure to engage market actors

Operator-neutral networks

Brno - pokrytí sítí NETBOX



ROK 2005
150 000
OBYVATEĽOV

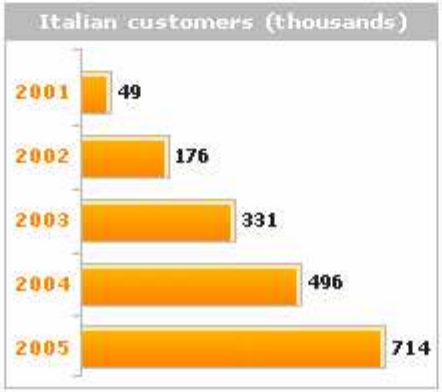
Projekt NETBOX v Brne 2005

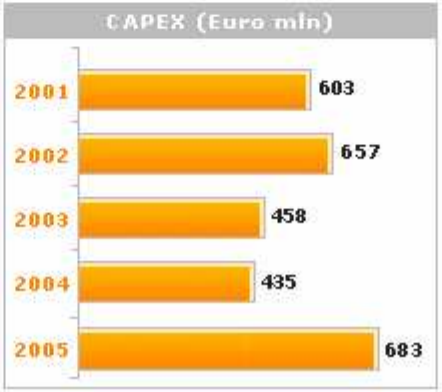
- I. etapa Brno **realizovaná na 85%**
  52tis. Pripojených užívateľov
- II. etapa **Brno +20tis. přípojek - 2006**
- III. etapa **Brno +15tis. Přípojek -2007**
- **celkové pokrytie Brna 70% do roku 2007**

Key data

FASTWEB's financial and operating highlights.
For further details, see also Annual Financial Data or Latest Results

Latest update: March 27th, 2006





INTERACTIVE PLANNER

November 2006

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			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

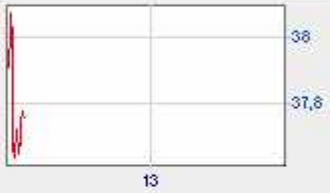
SEARCH THE SITE

GO

FIND IT FAST

Select topic...

STOCK



Last	37.75 (-1.41%)
Time	09:34
Open	37.95
Previous	38.29
Min/Max	37.6 / 38.15

Detailed info

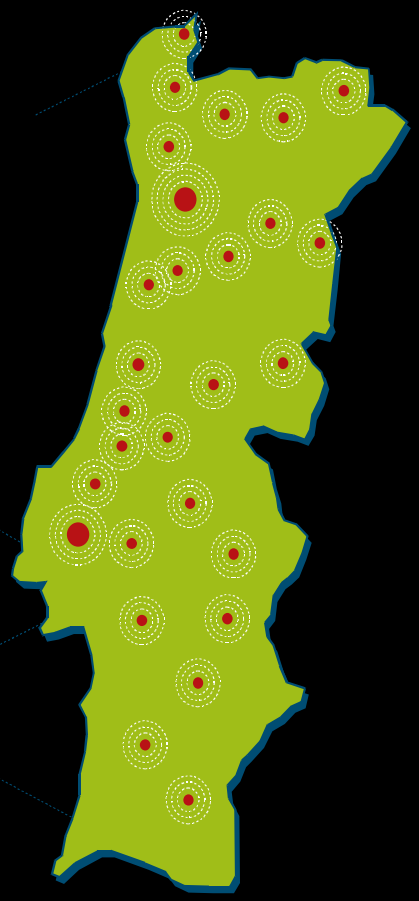
LATEST FROM FINANCIAL MARKETS

Il Sole 24 ORE - Radiocor Breaking news

Best Practice Central Government
Portuguese e-U Broadband

"Creating the Wireless Broadband Nation"

- Biggest University WIFI Telecom Network Worldwide
- National e-Learning Platform
- 400.000 users
- 5.000 Access Points
- 170 Hot Spots
- 100% Portuguese Private and Public Universities



The national backbone is now being open to equal access

Wienstrom – Austria

Fakty:

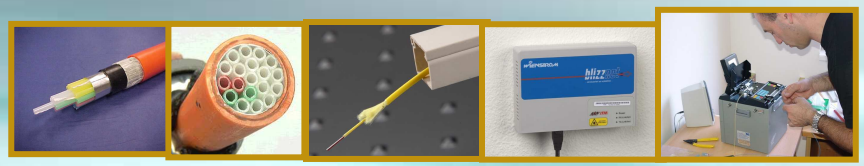
Rozbehnutie projektu : odbor informatiky Wien

- Pôvodne pre 400 škôl
- Pilot pre 500 zákazníkov,
- Potenciál 60‘000 zákazníkov,

Ďalší rozvoj:

- Založenie prevádzkovateľa spoločnosti s Wienerstrom
- Aliancia s tvorcami obsahu : Video, TV, Uni atd.

WIENSTROM	660 km
FERNWÄRME	210 km
WIENER LINIEN	185 km



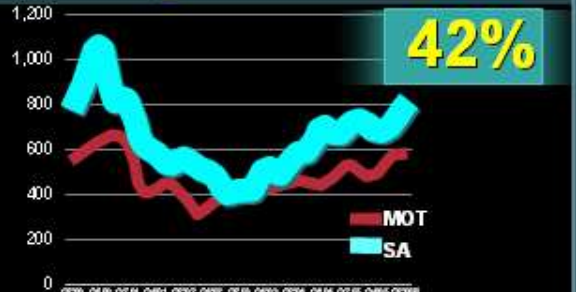
Website

Press

Security

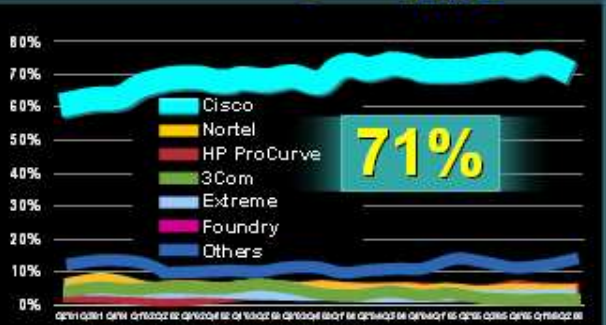
Source: Synergy, Aug 2006, 2QCY06

Digital Video



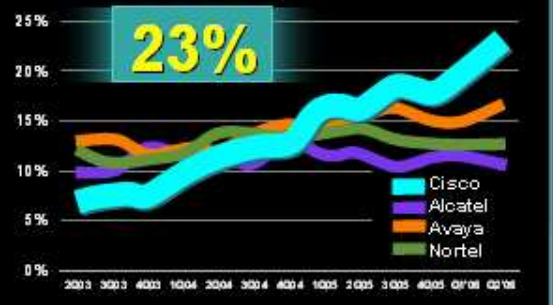
Source: Competitor Financial Statements, SA estimates for 2QCY06

Switching… Modular / Fixed



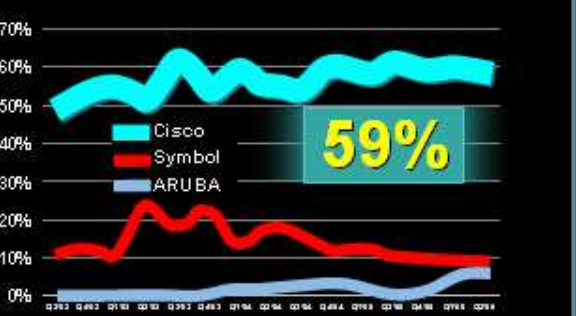
Source: Dell'Oro, Aug 2006; 2QCY06

Enterprise Voice



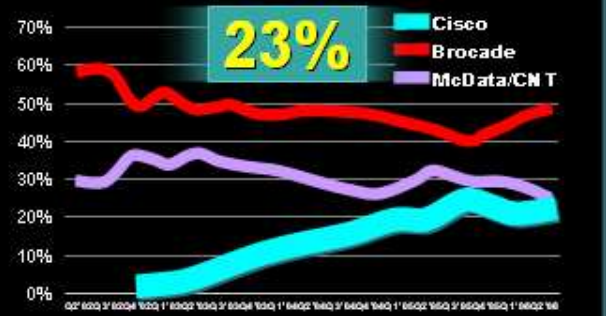
Source: Synergy Research Group, 2006; 2QCY06

Wireless… Local Area Networks



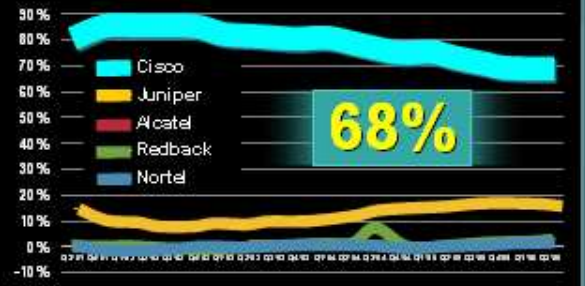
Source: Dell'Oro, Aug 2006; 2QCY06

Storage… Area Networks



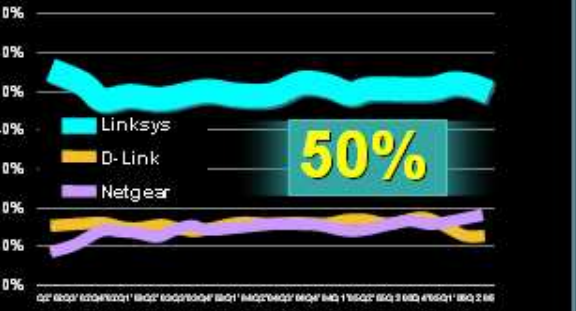
Source: Dell'Oro, Aug 2006; 2QCY06

Routing… Edge / Core / Access



Source: Dell'Oro, Aug 2006; 2QCY06

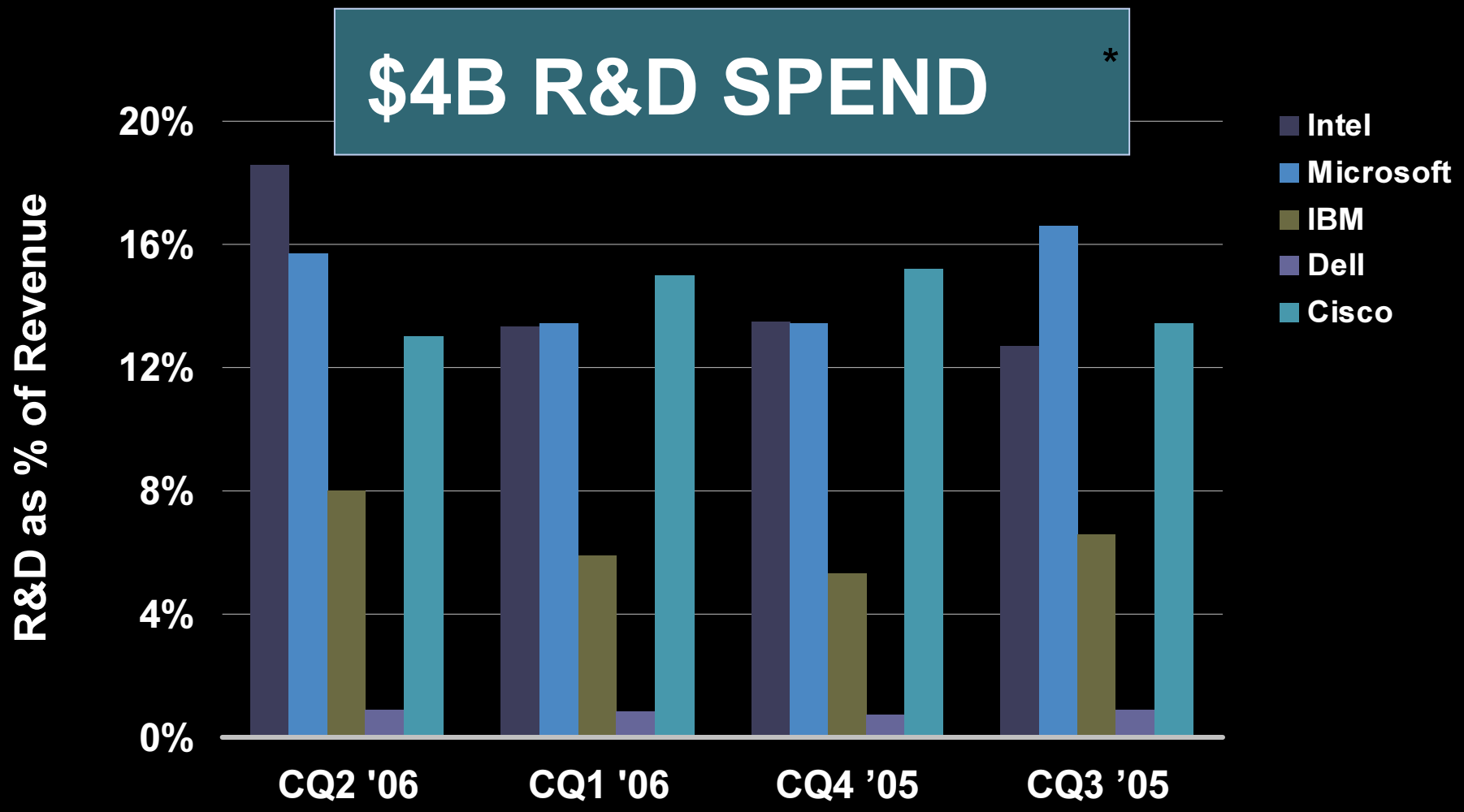
Networked Home



Source: NPD, U.S. Retail, July 2006

Market Share "And" Share of Wallet

R&D Commitment



Source: Yahoo Finance, Company Financial Statements

*Total four quarters ending 7/29/06

Cisco—The Technology Innovator

- $4 billion R&D investment, annually
- Over 16,000 engineers working in more than 1110 labs worldwide
- 110+ acquisitions to quickly enter new markets and add talent
- More than 2000 patents have been issued to Cisco inventors

Recent Innovations

- AON—Application-Oriented Networking
- CRS-1 Carrier Routing System
- IOS XR—self-defending, self-healing operating system software

Development

Acquisitions

Building Connected Communities

POLICE HQ

CITY HALL

TELEWORKER

TRANSPORTATION

CITIZENS

AGENCY (DATA CENTER)

AGENCY (BACKUP DC)

SCHOOL OR LIBRARY

PUBLIC SAFETY

Connected Community