



WiMAX/ Navini



Ratko Slošić, SP AM

CISCO Expo '08



20.03.08.

The Human Network

Gaming

TV

Music

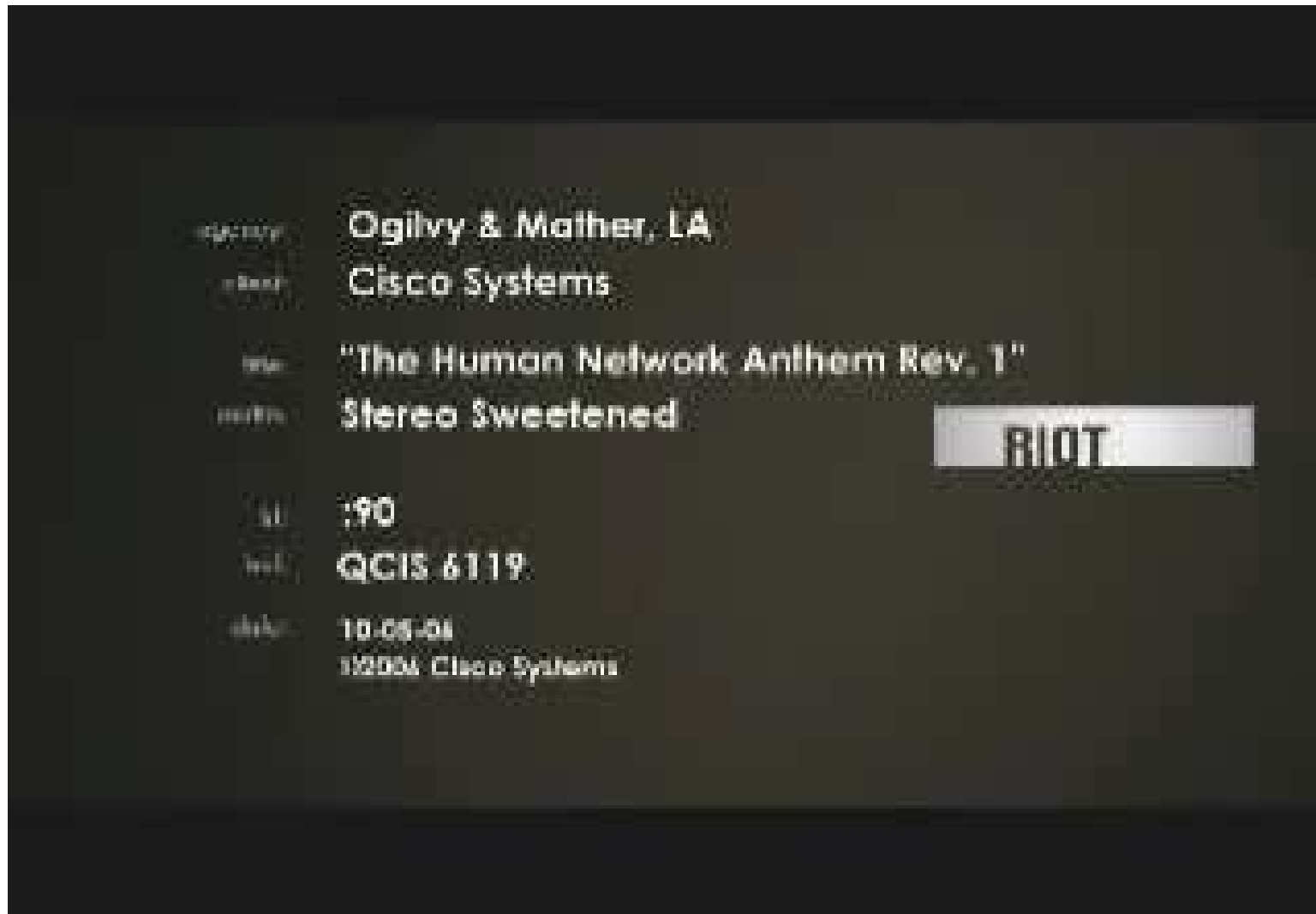


Blogs

Social
Networking

Experience

Welcome to The Human Network



WiMAX:

Worldwide Interoperability for Microwave Access

- MWC '08 (Mobile World Congress), Barcelona
- 1200 exhibitors from 30 countries
- STATISTICS
- 2,5 billion GSM sbsc. Worldwide (2010 – 4 billion mob.sbsc.)
- 0,5 billion CDMA, WCDMA sbsc. worldwide
- Eastern Europe: 378 mill GSM sbsc.
- West Europe: 380 mill GSM sbsc.
- China: 463 mill (China Mobile-347 mill, China Unicom-116 mill, penetration in '08 – 60 mill new sbsc.)
- India: 153 mill (9 operators, penetr. in '08- 80 mill new sbsc.)

WiMAX:

Worldwide Interoperability for Microwave Access

- Vodafone CEO, Arun Sarin:

“We see WiMAX under LTE (Long Term Evolution) umbrella”

- Massimo Migliuolo, VP Service Provider, EM, CISCO

“Today, 70 percent of the population in the emerging market economies doesn't have access to any wired telecommunications services”

Pre - 4G technologies

- Mobile WiMAX (Worldwide Interoperability for Microwave Access)

72 Mb/s, WiMAX Forum, Intel

- LTE (Long Term Evolution) – GSM > UMTS > LTE

100 Mb/s, GSM Association

- UMB (Ultra Mobile Broadband) – CDMA > UMB

288 Mb/s, Qualcomm

Why WiMAX?

- **WiMAX = Broad Band + Wireless**
- GSM – 8 kb/s
- GPRS – 40 kb/s
- EDGE – 175 kb/s
- UMTS – 384 kb/s
- HSDPA (+) – 2-5M b/s
- **WiMAX – 2-10M b/s**

WiMAX Today

- Today, the WiMAX market has **over 275 deployments and trials**, but most of these are still in the early stage of commercial development.
- The WiMAX Counts market newsletter estimated the total worldwide WiMAX **subscriber base at 535,000** as of 3Q2007.
- However, the total WiMAX subscriber base is expected to accelerate and is projected by market research firm Gartner Dataquest to approach **85 million in 2011**

Cisco Acquired Navini on Dec. 21, 2007

The Leader in
IP Networking
Technologies



The Leader in
802.16e WiMAX
Radio Technologies



Vital Statistics

Headquarters	Richardson, Texas (founded January 2000)
Revenue	2006: ~\$46M
Units Shipped	1700 Base Stations / 325,000 CPE
Manufacturing	US (BTS), China (CPE)
Headcount	~215 employees total
Sales	~25 employees – EMEA, ASEAN, GCGI, North America, CALA
R&D	~95 employees – US, India
Patents	~75 (granted; filed; provisional or in process)
Investors	Austin Ventures, Sequoia Capital, Sternhill Partners, Granite Ventures, Lehman Brothers, Investor Growth Capital, Motorola Ventures, Intel Capital (CISCO Systems)

Why Navini?

Best-in-Class Innovation, Experience, Technology

Leading WiMAX Portfolio

- From base stations to modems
- Commercially deployed smart beam-forming technology
- Mobile WiMAX 802.16e-20 compliant



Unmatched Innovation

- Advanced WiMAX RF capabilities
- **Pioneering Smart Beam-Forming with MIMO; 75 patents (granted/pending)**

Strong Value Proposition

- Yields OpEx & CapEx savings requiring up to 50% fewer sites
 - Delivers higher peak data-rates and throughput – out & indoor
- 75 customers in 50 countries on 6 continents**

Cisco Fit

- Shared IP-centric vision on mass market wireless broadband
- Geographically co-located (Richardson & Bangalore)
- Experienced people innovative culture

MX Products



BTS-MX8



BTS-MX2



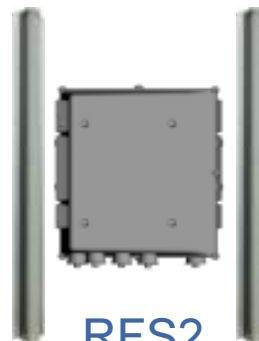
**Combiner
3.5 GHz**



External GPS Unit (EGU-3)



**RFS8
(Antenna System)**



RFS2



**SURFER 3000o
Outdoor**



**SURFER 3000u
USB Mobile card**



SURFER 3000



SURFER 1000



LMX



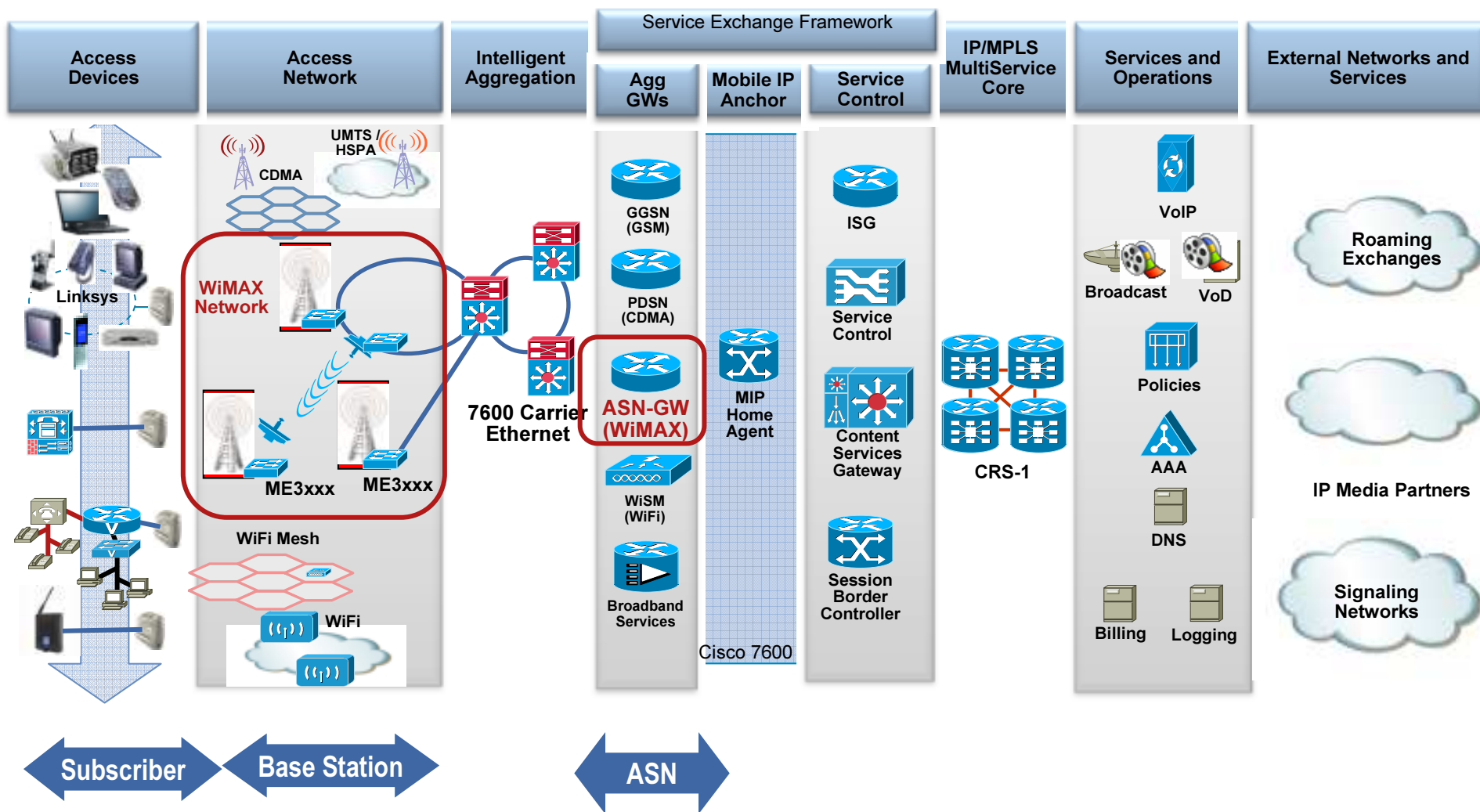
PMX



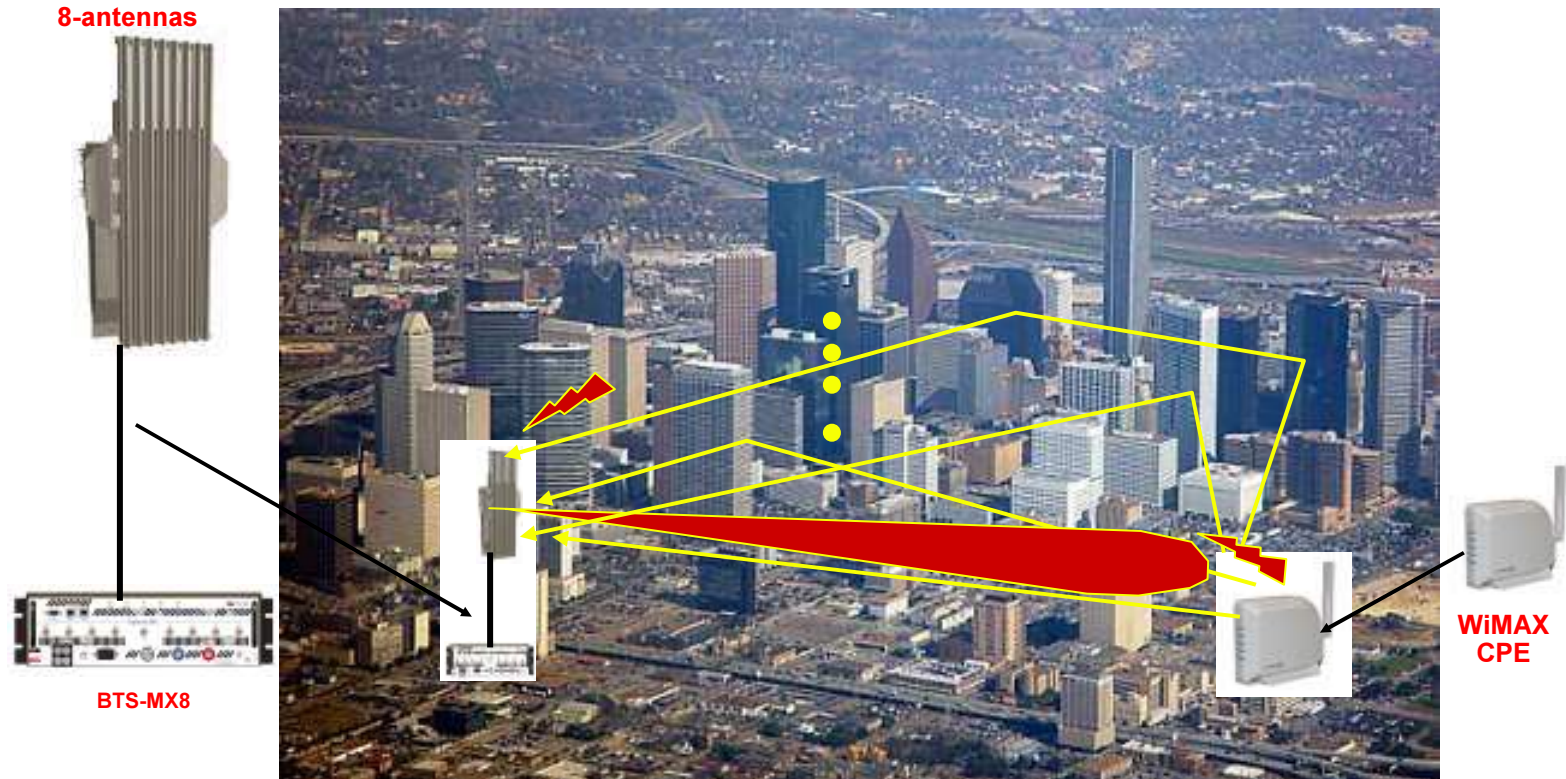
Uninet Australia

Network Fit: Access

Cisco E2E Mobile WiMAX Solution Architecture



How Beamforming Works



- Signal from CPE bounces off of buildings & arrives at the 8-antenna system.
- Each antenna “sees” the signal a bit differently.
- All 8 signals are manipulated to have the equivalent effect of an antenna system with a very narrow beam pointing exclusively at that particular CPE.

Value Proposition

- **CAPEX/OPEX:**

Cisco's 8-antenna solution is 35-50% more economical than 4 & 2-antenna

- 4 & 2-ant solutions are 55-110% more expensive than Cisco's 8-ant
- Cisco cheaper than other WiMAX access product given for FREE

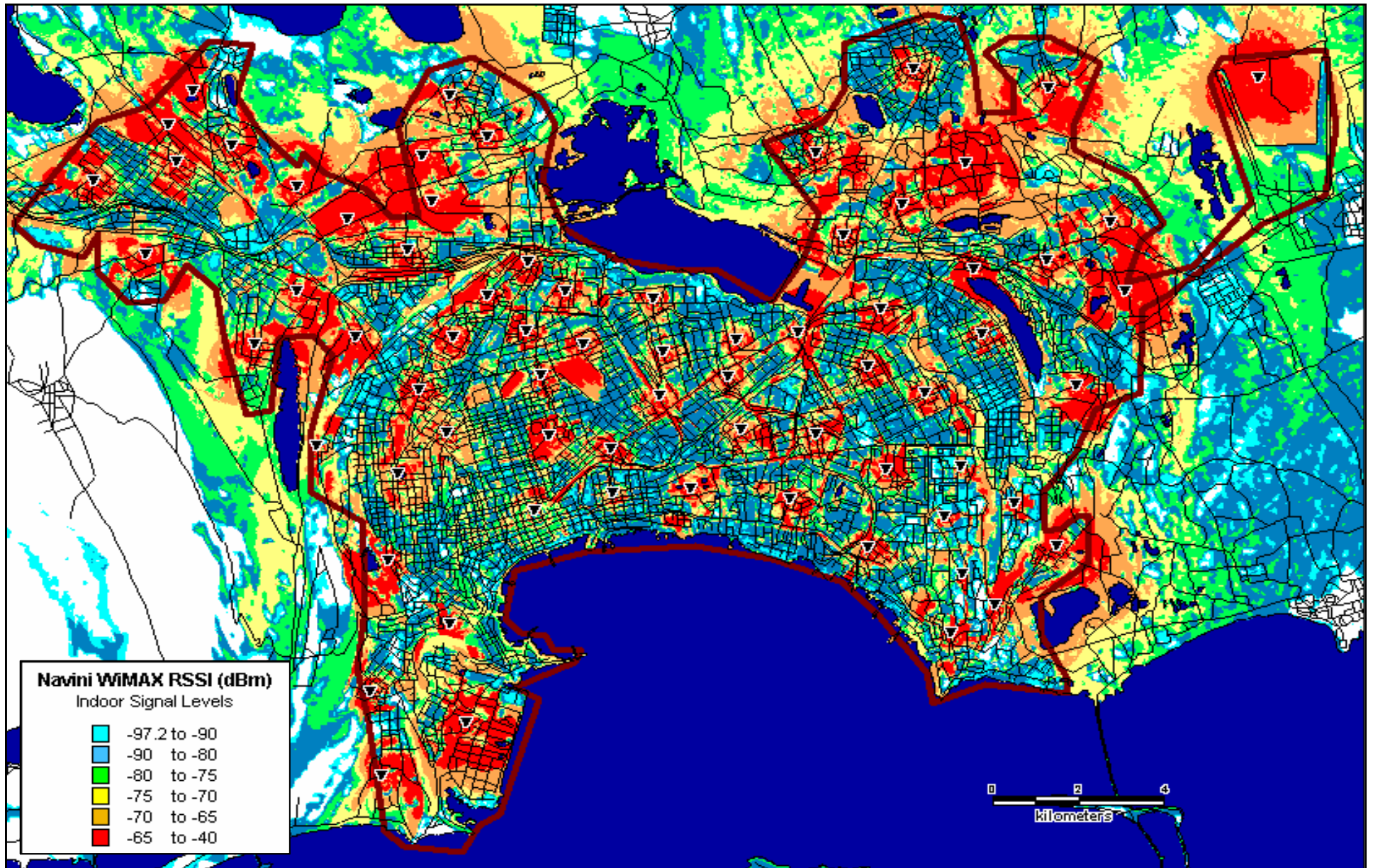
- **Coverage:**

Cisco's 8-antenna coverage is 50-135% > 4 & 2-ant

- **Capacity:**

Cisco's 8-antenna system capacity is 25%-115% > 2-ant

- Cisco BTS w/ BF-only = 2-ant. MIMO-only BTS + (25-75%)
- Cisco BTS w/ (BF+MIMO) = 2-ant. MIMO-only BTS + (55-115%)

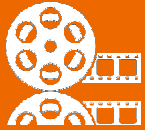


- Cisco indoor coverage

71 sites/213 BTS (120° sectors; 3 BTS/Site)

MOBILITY

VIDEO



VIRTUALIZATION



WEB 3.0

anywhere

**any
media**

**any
device**

WEB 2.0

XML



Wikis, Blogs, Mash-ups

WEB 1.0



Browser/ Email/ IM

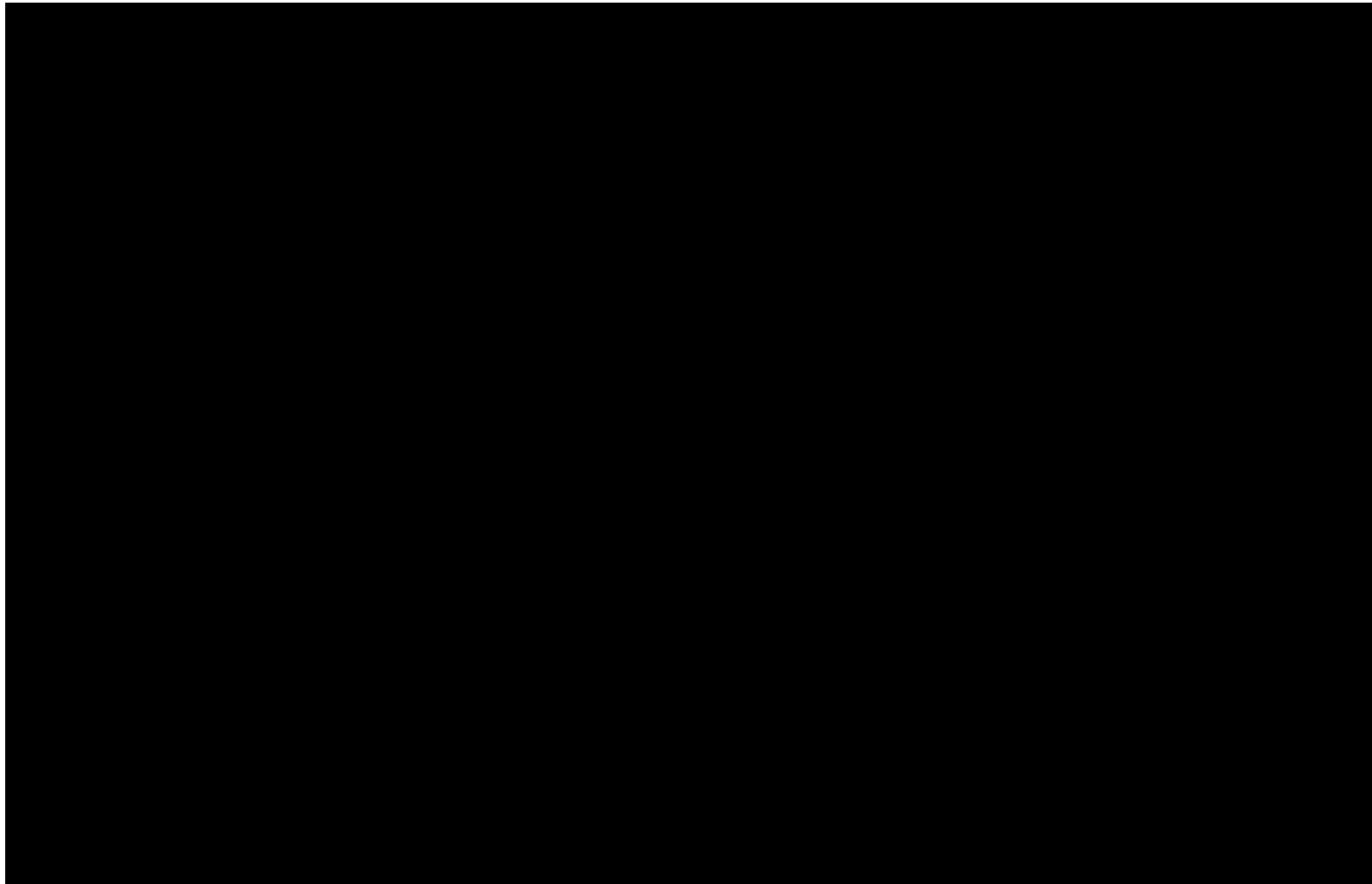
Future applications/ John Chambers in Bangalore



Consumers: Any Content, Anywhere, Any Time



Does everyone like WiMAX?



Over-the-Top Model Progress

Voice

- Skype:
150M+ users
- 2 Years



Video

- YouTube:
200M streams / day
- 14 months



Community

- 60M+ visitors
per month
- 3 years



TV has lost! Web has won!

- Web is fast. Web is merciless.
- Clips are real, unmodified
- West Europe:
 - 40% people watch less TV than few years before
 - 30% people read less books
 - 28% people read less daily newspapers



Severina: “Internet je fuj!”



Severina



Sarkozy
drunk at G8

Eduardo



Putin
drunk at G8

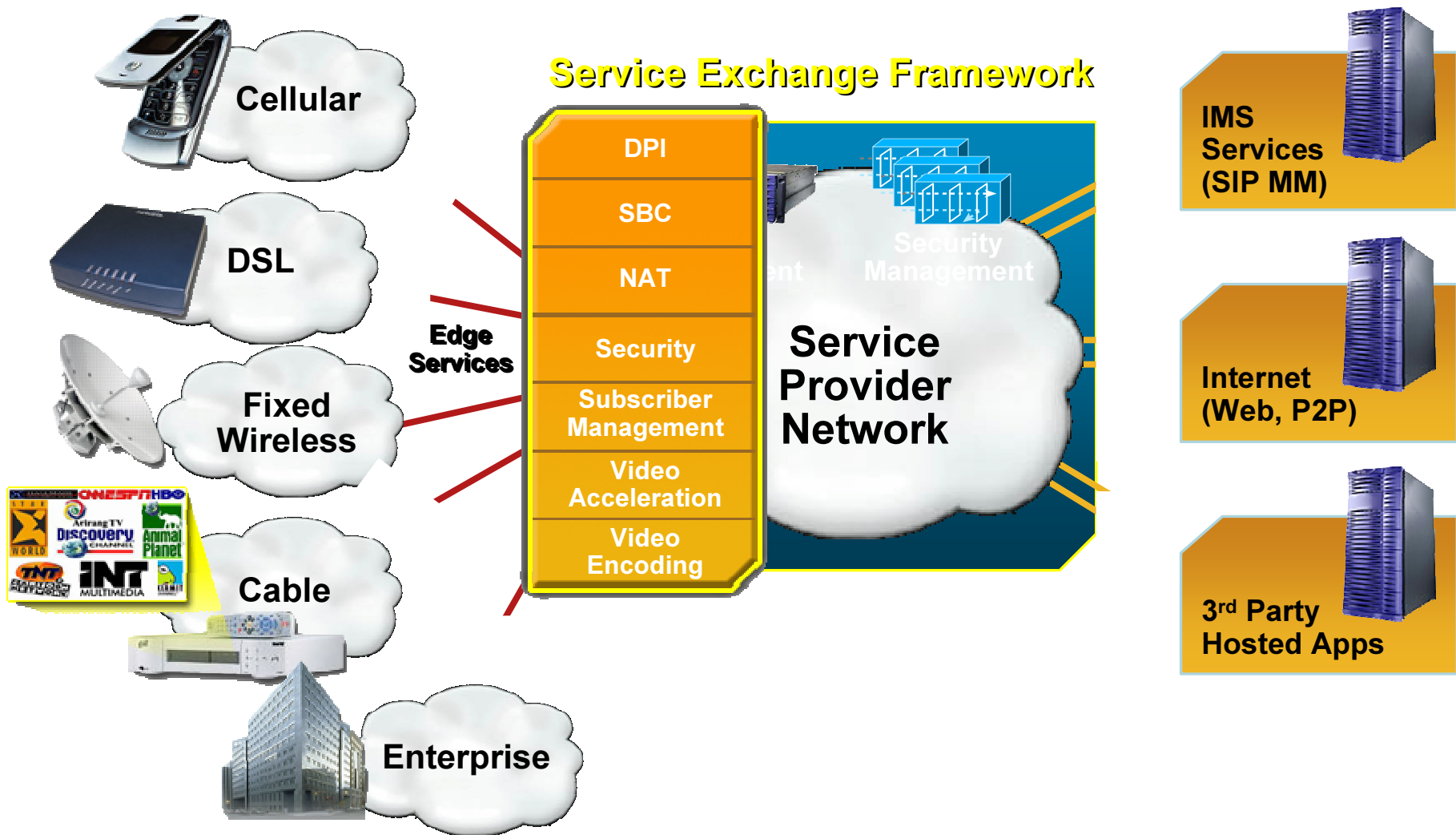


Life's experience

- In 60 living years one man spends:
- 20 years sleeping
- 12 years and 3 months working
- 5 years in the kitchen
- 3,5 years in the traffic
- **3,5 years watching TV**
- 3 years studying
- 6 months in the bathroom
- 6 months shopping
- 3,5 years misc.

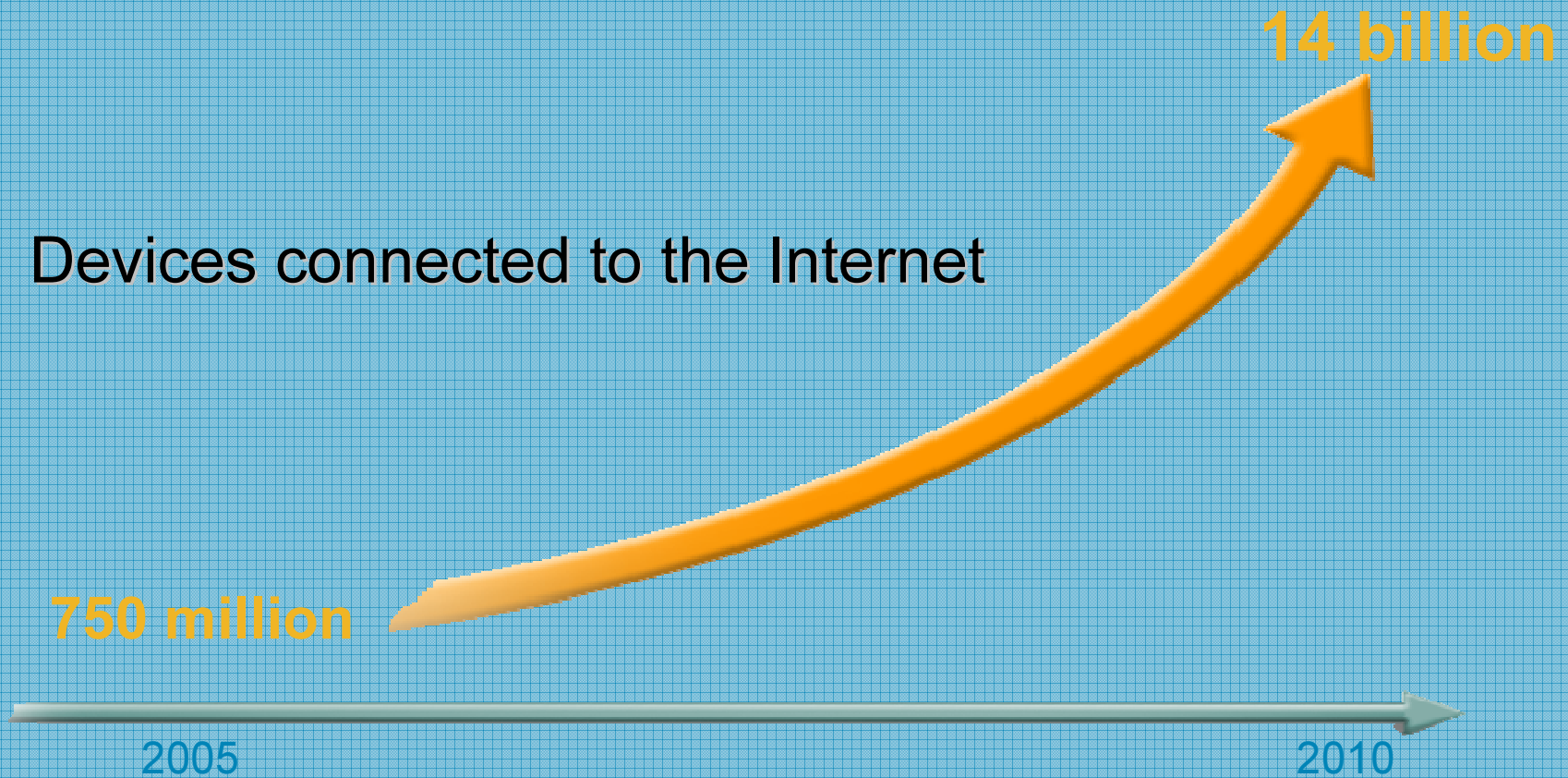
Ken O'Donnell, Living Values Institute, Sao Paulo

Application Architecture of the Future



In the Future Everything Will Be Connected

Devices connected to the Internet

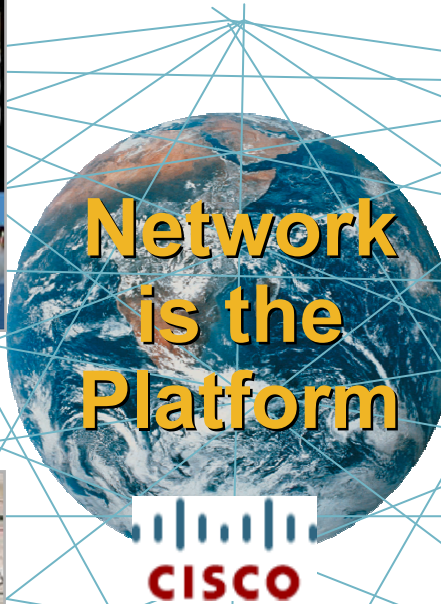


The Network Changes how People, Companies, Countries Experience Life

Work



Live



Learn



Play

