

# The Futute of Wi-FI Market in India

## Opportunities, Challenges

26<sup>th</sup> Feb 2007



**tonse telecom**

Research :: Analysis :: Consulting

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# The Rising Face of Mobile & Wi-Fi in India [www.tonsetelecom.com](http://www.tonsetelecom.com)



# MOBILITY

Means Different Things to Different People

## Loaded train



# Mobility

**Mobility**

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# Mobility

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# Mobility – the New Leveler

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## 2007: Year-of-Broadband

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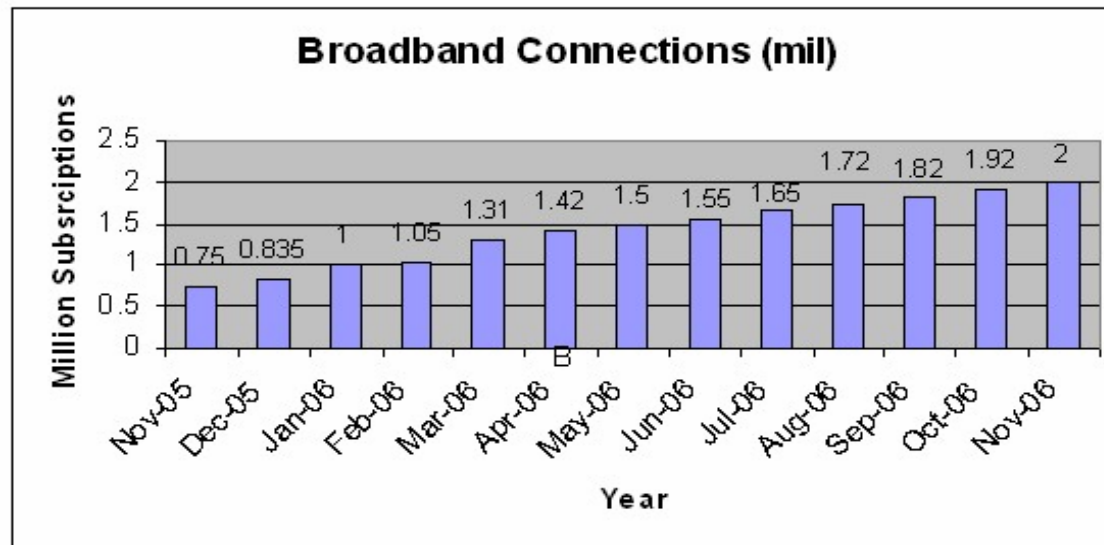
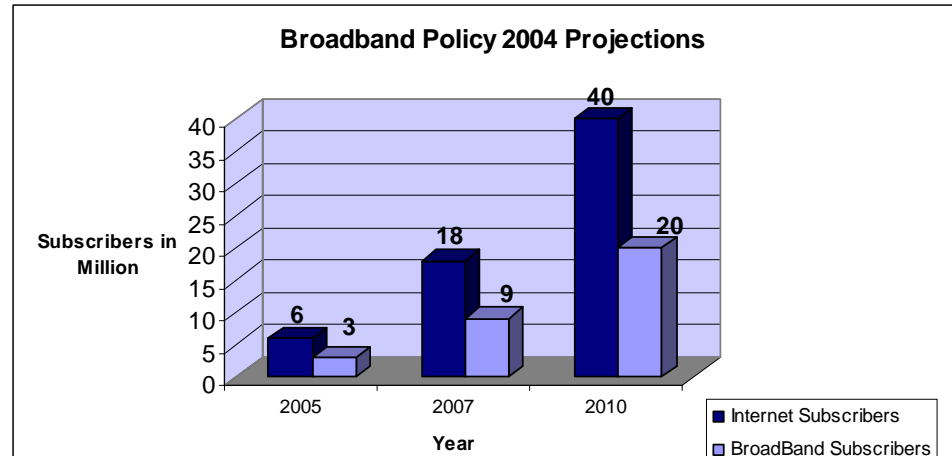


Wireless  
broadband  
is the way  
to go!!



# India Broadband Policy

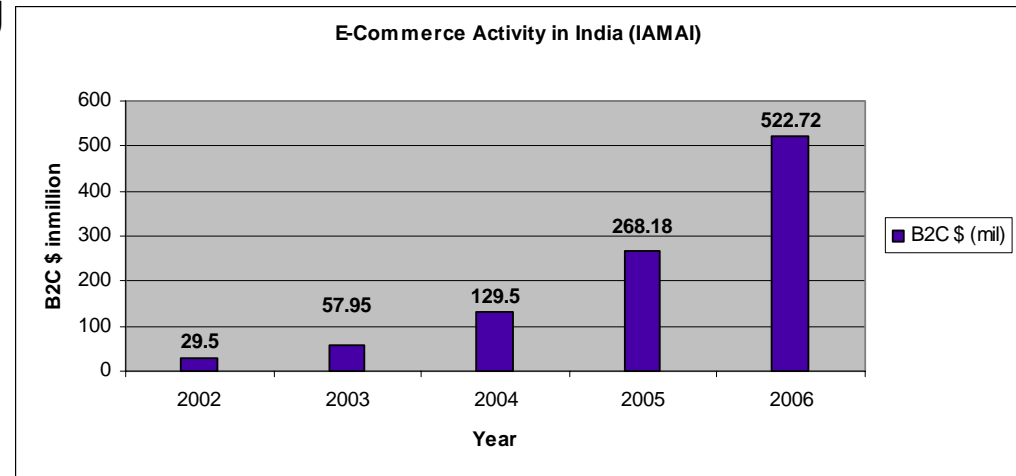
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## Local Content – Driving Internet in India

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- Matrimonial and Social Networking
- E-Governance initiative
- Online Food & Transportation Reservation
- Local Information and blogging
- Online Utility payments
- Online Shopping



- **Commerce In India To Be Rs. 9500 crore By 2007**
- **Commerce In India is around Rs.4000 crore in 2006 up by 120%**
- **This does not include Rs 4000 crores online travel purchases**

## Investment in Internet Space 2006

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**iJive** – ((\$4.5 million from Matrix Partners India)

**TutorVista** – (\$10.75 million from Lightspeed, Sequoia Capital and SV Bank in second round and \$2 million from Sequoia in first round early this year.)

**MakeMyTrip** – (\$13 million from Helion Venture Partners, Sierra Ventures, SAIF Partners)

**Carwale.com** – (Undisclosed amount: Seedfund)

**Travelguru** (Undisclosed amount from Sequoia Capital in the first round in February 2006, and \$15 million in second round from Battery Ventures and Sequoia)

**Picsquare** – (\$75,000 from Angel Investors - Sanjay Swami, CEO of mChq, Shripati Acharya, founder of Snapfish and Vijay Iyer, VP (Marketing), Portal Systems)

**Sulekha.com** – (\$10 million from Norwest Venture Partners)

**Guruji.com** - (\$7 million from Sequoia Capital India)

**Seventymm.com** – (\$7 million from Matrix Partners India)

**BharatMatrimony** – (\$8.6 million from Canaan Partners and Yahoo)

**Cleartrip.com** – (Undisclosed: Kleiner Perkins Caufield & Byers and Sherpalo Ventures)

**Burrrp!** – (Undisclosed: unnamed angel investors)

**BillDesk** – (\$5 million from Clearstone Venture Partners)

**Naukri.com** – (\$4.6 million by Kleiner Perkins and Sherpalo)

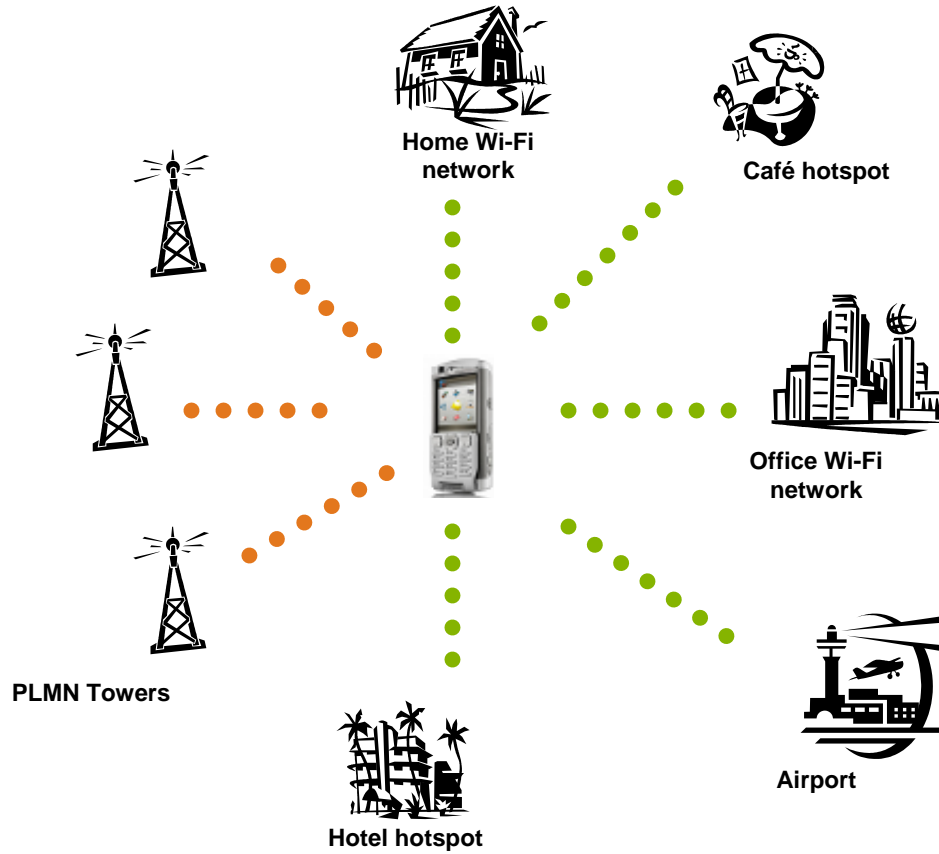
**Sixer.tv** – (Undisclosed: Linus Capital)

**Shaadi.com** – (\$8 million from Sequoia Capital India)

Yatra Online – (\$5 million from Reliance Capital, Norwest Venture and TV18)

# Wi-Fi Mobile Convergence

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## Shape of Things to Come ?

[www.tonsetelecom.com](http://www.tonsetelecom.com)



# Shape of Things to Come ?

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## Why Wi-Fi?

- Human desire to be connected
- Drivers in place to enable Wi-Fi growth in homes, schools, municipalities/rural areas, hotspots, retail and enterprises
- Ecosystem growth: chips, manufacturers, systems integrators, software, testing and gov't support
- Simple, affordable, complementary, easy to deploy

## Wi-Fi market drivers in India

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- Large young generation will demand ubiquitous wireless data services!!
- Mobile Generation
  - Always On
  - Personalization
  - Social Networking





## Wi-Fi: home sector drivers

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- Rising incomes --- dual income families
- Global work force/flex-hours/always-on
- Multiple IP devices in the home
- IT/ITES/tech sector professionals
- Broadband in the home will proliferate



## Wi-Fi: Coming soon to a device near you

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- Music sharing across Wi-Fi devices at home
- Wi-Fi in home audio/video
- Wi-Fi gaming consoles
- Wi-Fi and cellular integration
- Personal portal



**Wi-Fi has become a must-have ingredient  
in the coolest consumer electronics**

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*Microsoft Zune*



*Nikon Coolpix*



*Nintendo Wii*



*Sony mylo*



*Nabaztag*



*T-Mobile MDA*



*Sony PS3*

## Wi-Fi in high growth verticals

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*Rapidly changing face of retail in India – Wi-Fi opportunity*



50M Sq. Ft of retail space to be added by 2010  
(Industry estimates)

## Innovative enterprise Wi-Fi applications

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*Wi-Fi equipped mobile POS*



*Wi-Fi equipped mobile Check-In Agent*

Indian enterprise wireless business applications untapped

## Key challenges for Wi-Fi in India

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- Resolution of PIN, roaming and billing issues at hotspots to drive usage rates
- Education and awareness levels of Wi-Fi standards, security and capabilities
- Deregulation of VoWi-Fi and decision on spectrum release

## The Hotspots, muni deployments and “commuter-fi”

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- 350 municipal deployments underway in 29 countries worldwide (Tropos Networks)
- 132,000+ Hot Spots worldwide (JiWire)
- Commuter-Fi trials in Melbourne, SF Bay Area, Spain, and Santa Fe
- 82% of US hotels offer Wi-Fi (American Hotel & Lodging Assn.)
- ***1000 hotspots in India, and growing***
- ***Success of ‘Unwire-City’ projects necessary for Wi-Fi ubiquity in India!***



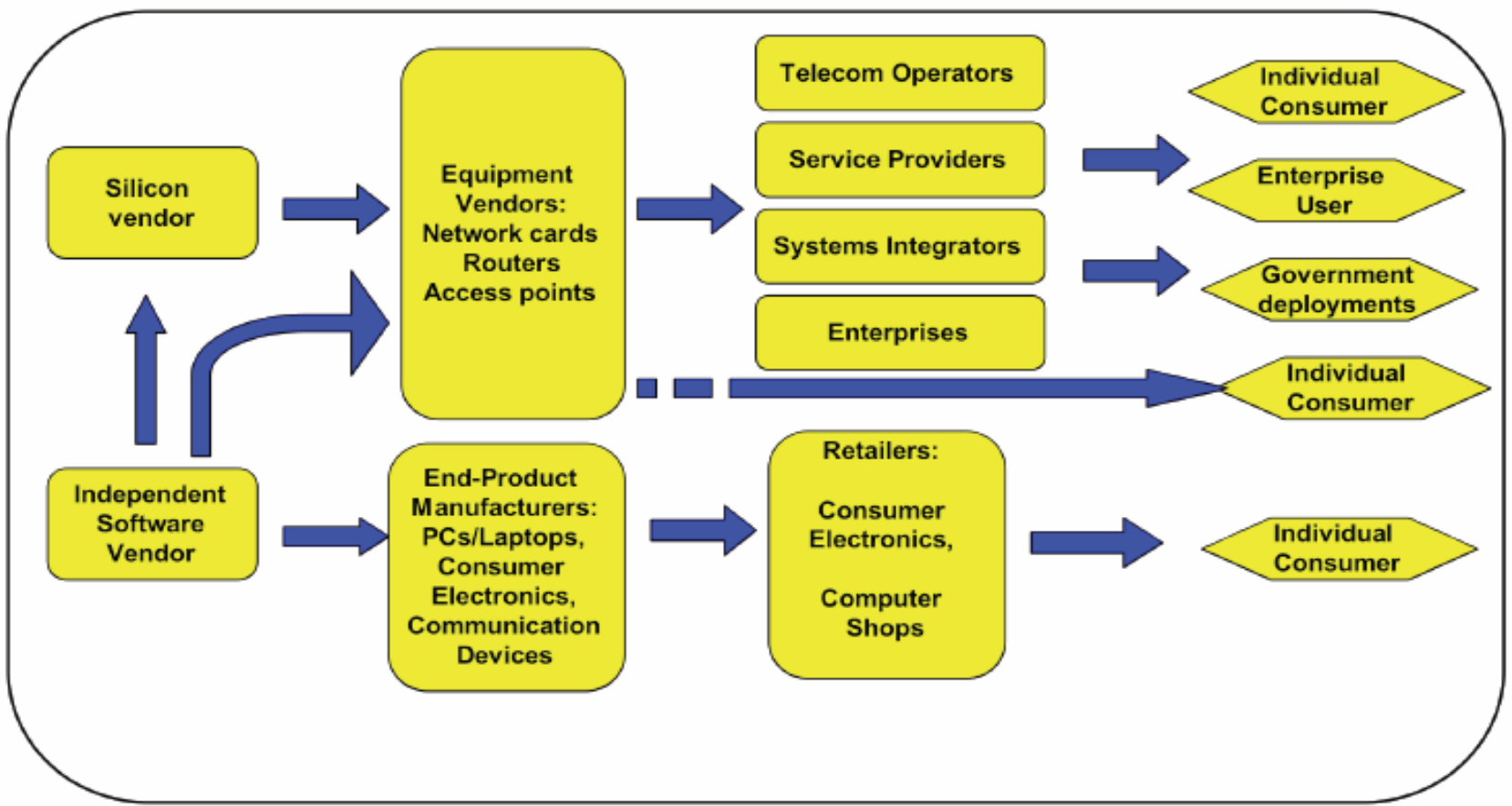
## Indian start-ups joining Wi-Fi ecosystem

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- Wi-Fi industry offers new opportunities for start-up companies in India
  - Intellectual property and products for the Wi-Fi industry



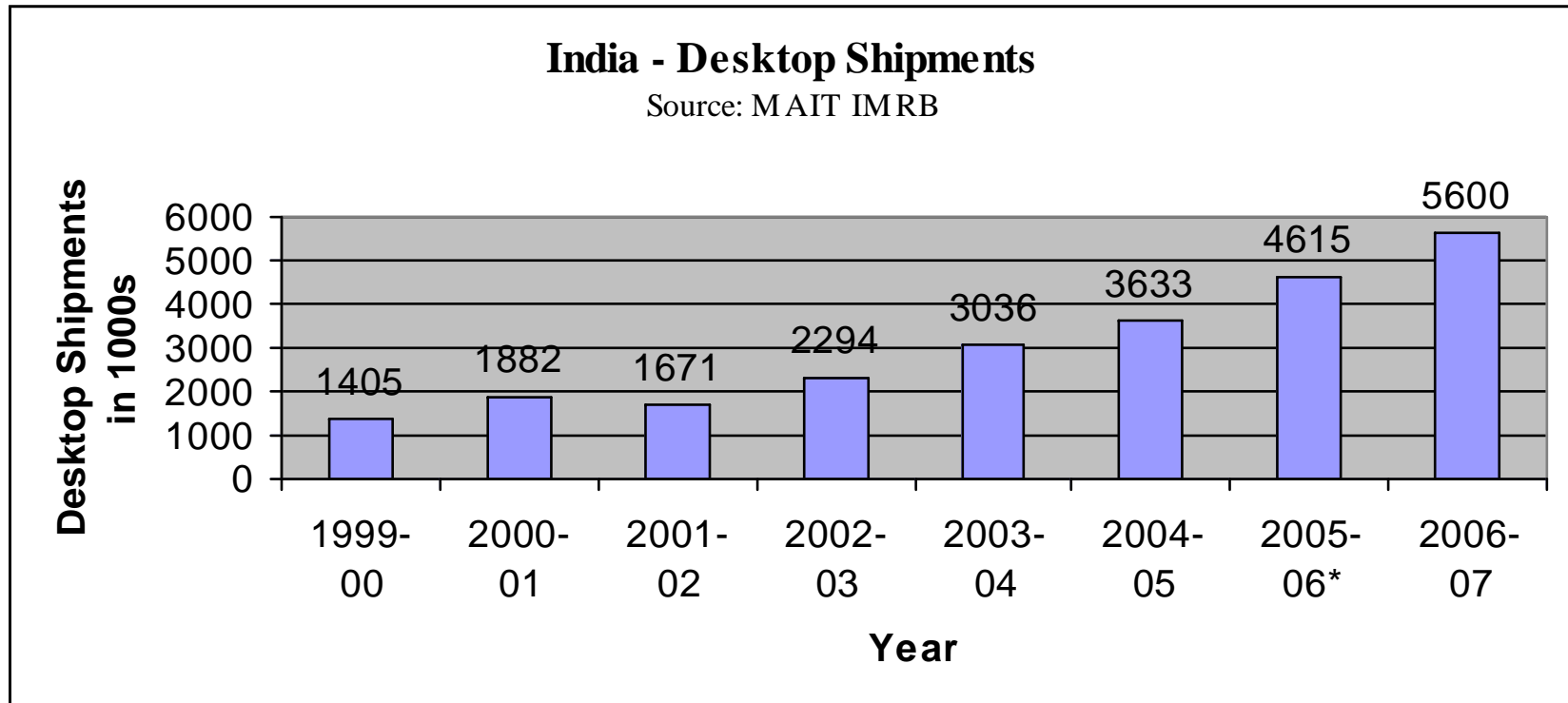
# WiFi - Ecosystem



Wi-Fi Ecosystem Value Chain, Tonse Telecom, 2006

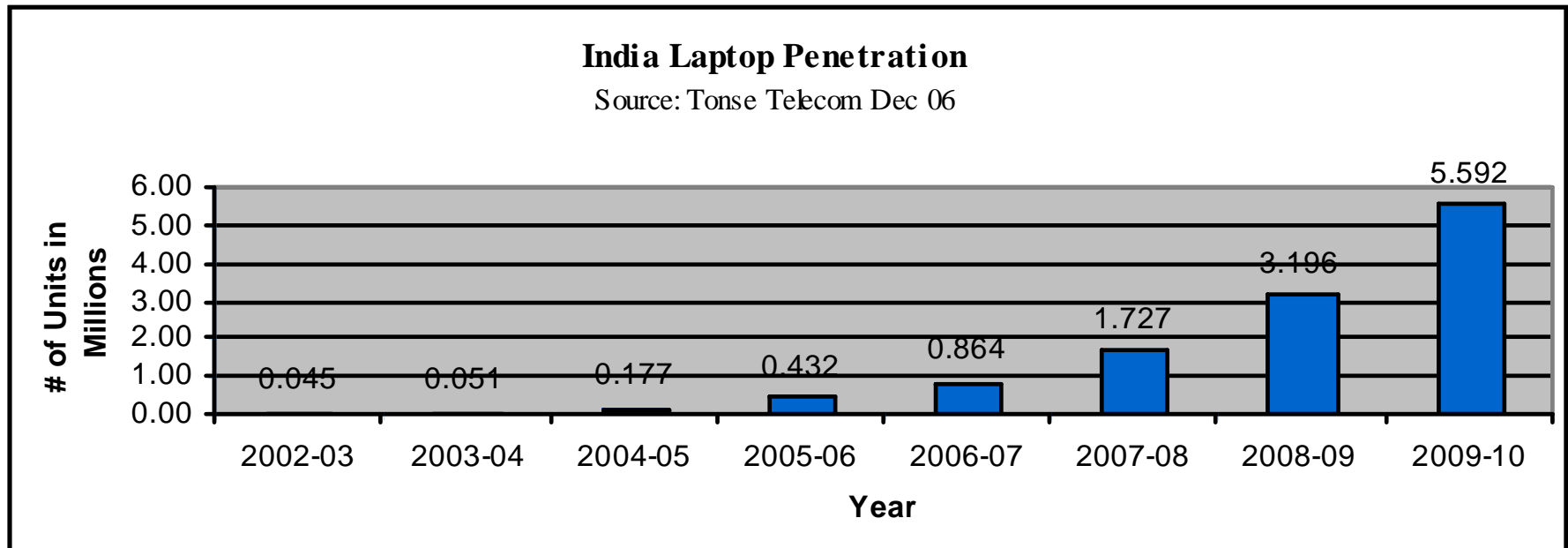
## Enabler: PC penetration, steady growth

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**Enabler: Laptop penetration, first time 2x growth!**

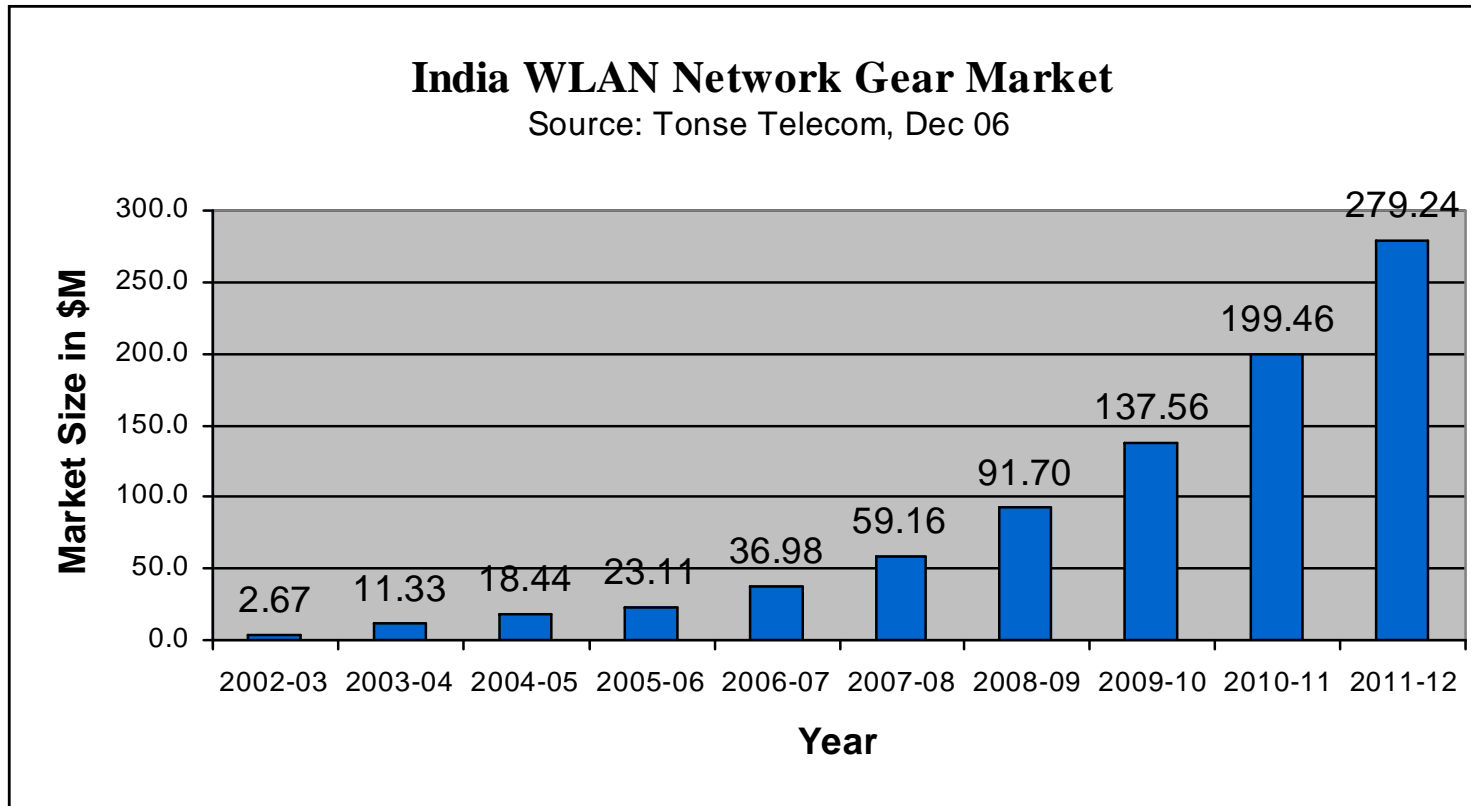
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**Impressive Growth Will Continue! CAGR: 52.96%**

## The Wi-Fi gear in India to reach \$279M in 2011

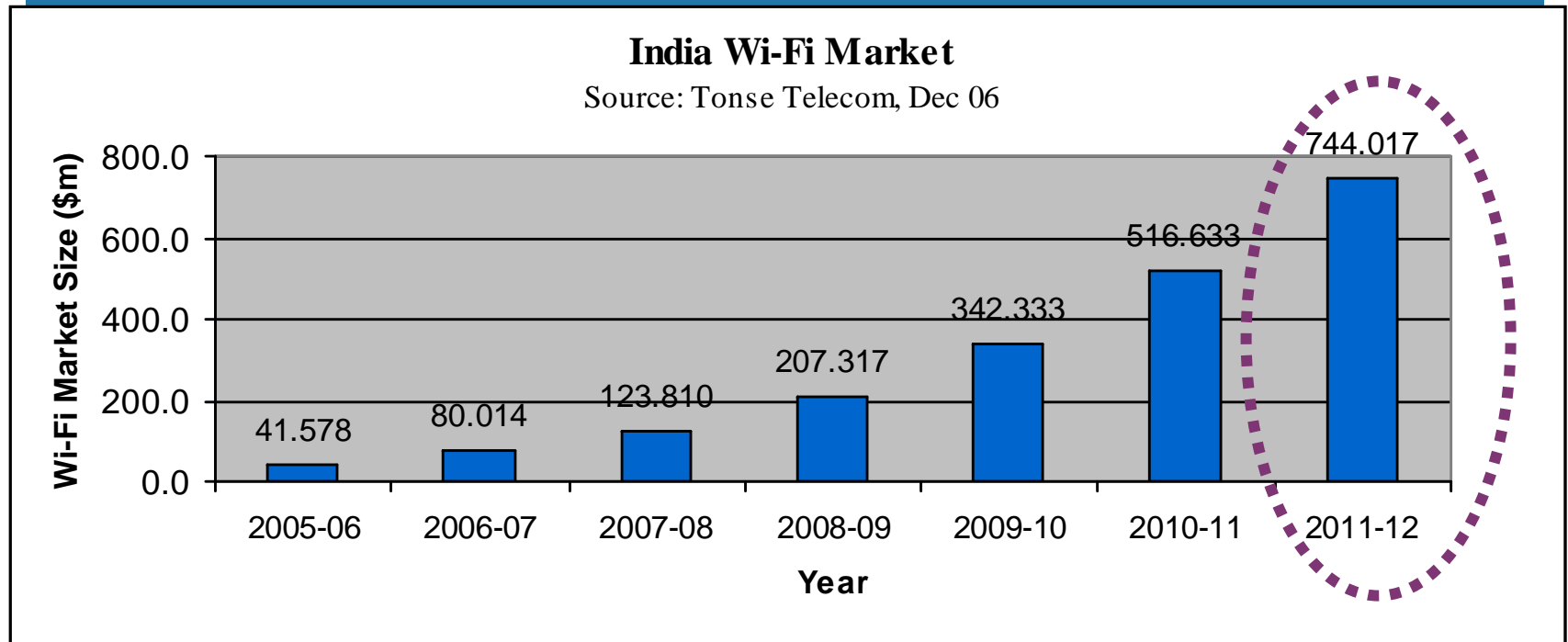
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*Note: Does not Include services or embedded chip sets in laptops/other devices*

## Wi-Fi India market \$744M in 2011

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WLAN Network gear + SI + SI tools + Professional Services (Testing/Certification/IP Licensing/Custom Software Development)

*Note: Does not Include embedded chip sets in laptops/other devices*

## Wi-Fi market-enabler: declining broadband rates

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### Effective per-hour Rates for Internet Access mechanisms in Nov '06 in India

Comparison of Typical Rates in India	Wi-Fi HotSpot Net Access	Cyber-Café Net Access	Dial-Up Peak Rates Pre-Paid	Dial-Up Off Peak Rates Pre-Paid	Dial-Up Peak-Rates Post-Paid	Dial-Up Off peak Rates Post-Paid	Broadband Unlimited Usage Pack
<b>In INR</b>	Varies from free (some hotels) to Rs.150 per hour	Varies from Rs.20 - Rs.60 per hour	Varies from Rs.14.6 - Rs.32 per hour	Varies from Rs.4.8 - Rs.19 per hour	Varies from Rs.15 - Rs.30 per hour	Varies from Rs.7.2 - Rs.18 per hour	Varies from Rs.3.75 - Rs.5.83 per hour
<b>In USD</b>	0 - \$3.33 per hour	\$0.44 - \$1.33 per hour	\$0.32 - \$0.71 per hour	\$0.1 - \$0.42 per hour	\$0.33 - \$0.66 per hour	\$0.16 - \$0.55 per hour	\$0.08 - \$0.13 per hour

Tonse Telecom, Dec '06

Effective Rates from top 5 ISPs' select plans, computed on basis of 8hours/day of usage

Info based on inputs from TRAI, industry, ISPs, hot-spot operators

# Which one will be the Last Mile?

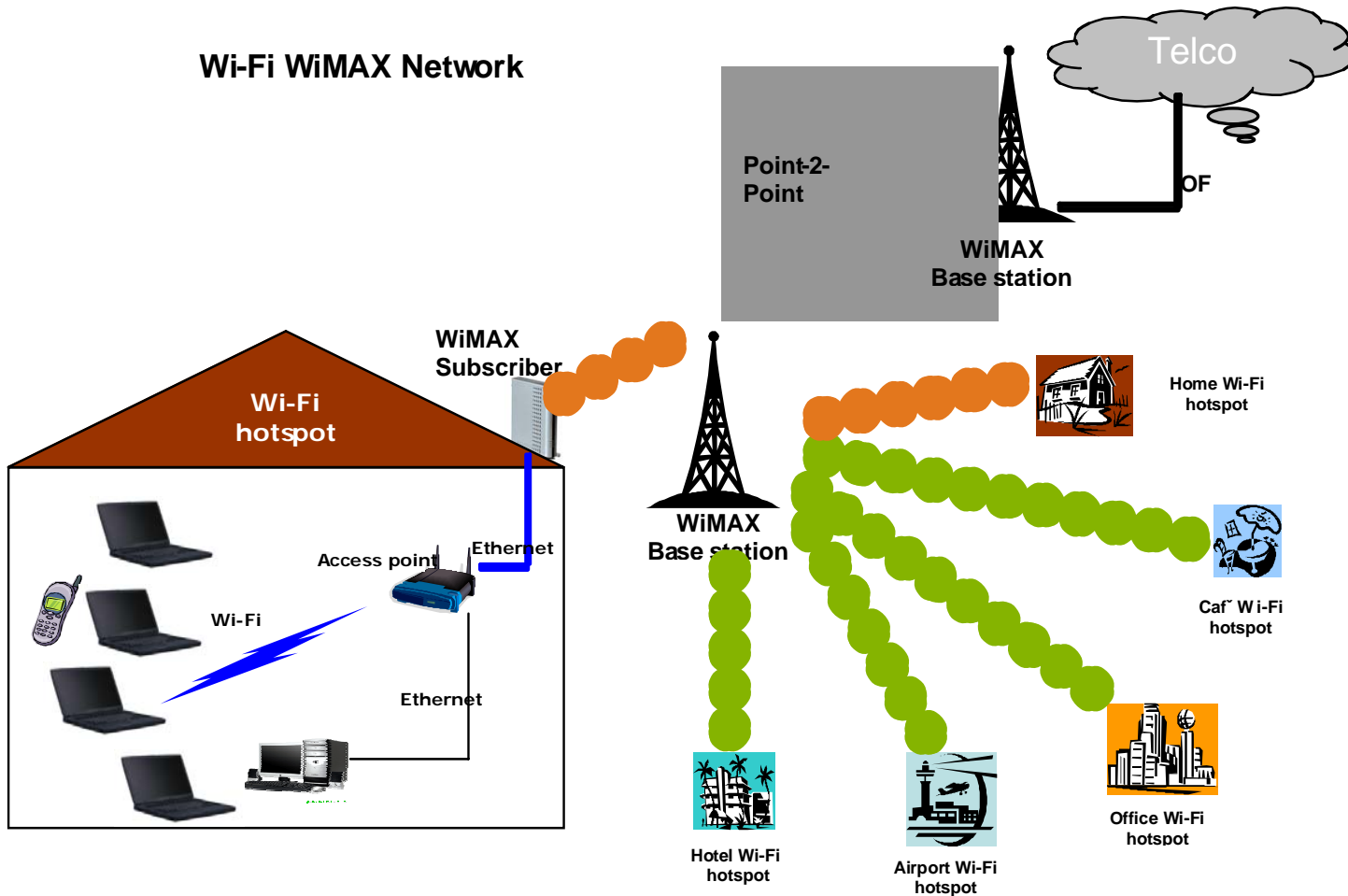
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Standard	Family	Primary Use	Radio Tech	Downlink (Mbps)	Uplink (Mbps)	Notes
<b>802.16e</b>	<b>WiMAX</b>	Mobile Internet	MIMO-SOFDMA	70	70	Quoted speeds only achievable at very short ranges, more practically 10 Mbps at 10 km.
<b>HIPERMAN</b>	HIPERMAN	Mobile Internet	<a href="#">OFDM</a>	56.9	56.9	
<b>WiBro</b>	WiBro	Mobile Internet	<a href="#">OFDMA</a>	50	50	Mobile range (900 m)
<b>iBurst</b>	iBurst 802.20	Mobile Internet	<a href="#">HC-SDMA</a>	64	64	3-12 km
<b>UMTS W-CDMA</b>	UMTS/3GS M	Mobile phone	CDMA/FDD	0.384	0.384	HSDPA widely deployed. Typical downlink rates today 1-2Mbps, ~200kbps uplink; future downlink up to 28.8Mbps.
<b>HSDPA+HSUPA</b>				3.6	5.76	
<b>Wi-Fi 802.11n</b>	<b>Wi-Fi</b>	<b>Stationary</b>		<b>540</b>		<b>Still in development 2.4 GHz or 5 GHz Spectrum</b>
<b>UMTS-TDD</b>	UMTS/3GS M	Mobile Internet	CDMA/TDD	16	16	Reported speeds according to IPWireless using 16QAM modulation similar to HSDPA+HSUPA
<b>LTE UMTS</b>	UMTS/4GS M	General 4G	OFDMA/MIMO/S	>100	>50	Still in development
<b>1xRTT</b>	<a href="#">CDMA2000</a>	Mobile phone	<a href="#">CDMA</a>	0.144	0.144	Obsolete by EV-DO
<b>EV-DO 1x Rev. B</b>	CDMA2000	Mobile Internet	CDMA/FDD			Rev B note: N is the number of 1.25 MHz chunks of spectrum used. Not yet deployed.

# Wi-Fi enabler: WiMAX

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## Wi-Fi WiMAX Network





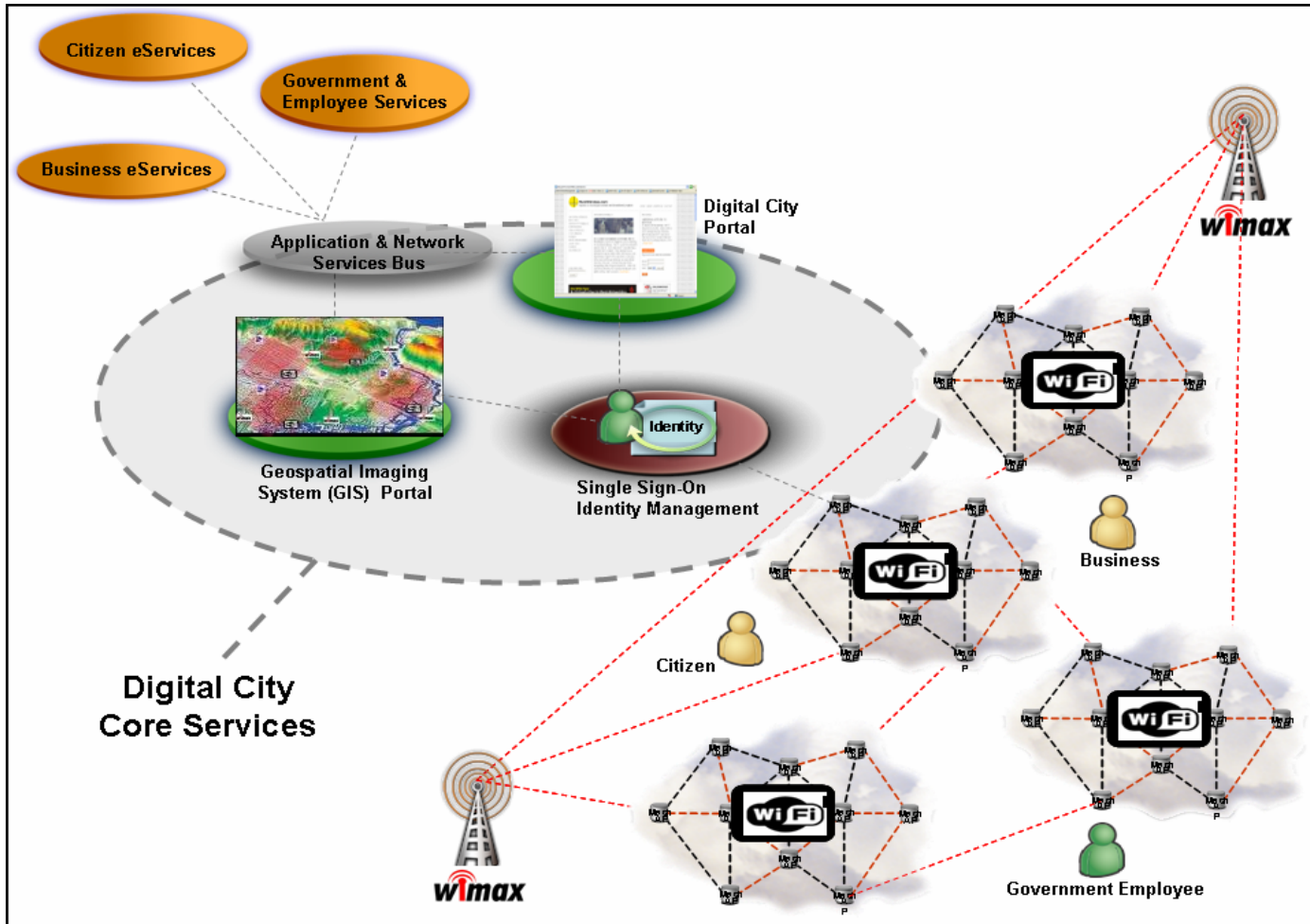


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# Bangalore Unwire Project

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## Long Range Wi-Fi

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Trango Broadband Wireless set the world record for longest Wi-Fi transmission at **137.2 miles**



## Voice over Wireless LAN

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- **In Europe, Wi-Fi as a last mile broadband wireless technology and mobile GSM handsets have started converging.**

### Challenges in India

- **Deregulation of VoWi-Fi and decision on spectrum release**
- **Call rates are already among the lowest in the world**
- **Challenges relating to fluctuating wireless throughput and roaming among APs**
- **Regulation, Business Model and Cost of handsets**

## About Tonse Telecom

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### **Research Reports, Market Updates and Directories**

- India Broadband Wireless Access / WiMAX Study: Forecasts 2006-12 – June 27
- Indian Mobile Game Vendor Directory – March 31,06
- Indian Mobile Game Directory – March 31, 06
- India WiMAX Market Update – Feb 01, 06
- India Wireless Spectrum Update –Nov 20, 06

### **If you are Looking for**

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### **Publication**

- India Telecom Analysis, Monthly Email Newsletter

### **Consulting Services**

- Custom Research, Business Plan Development, Strategy and Market Development

### **Coming Soon**

- INDIA VAS MATRIX
- INDIA Broadband / WiMAX / 3G Newsletter



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Tonse Telecom is a full function end-to-end technology Research and Consulting company focused on the telecom vertical

- Custom Research
- Business Plans
- Investment Advisory
- Market Entry
- Consulting & Independent Publications



## Contact Information

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### **If you are Looking for**

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- For Investing in Indian Telecom Space
- Sourcing Indian Telecom Software / Solutions
- For Market Intelligence in India Telecom

### **We could help**

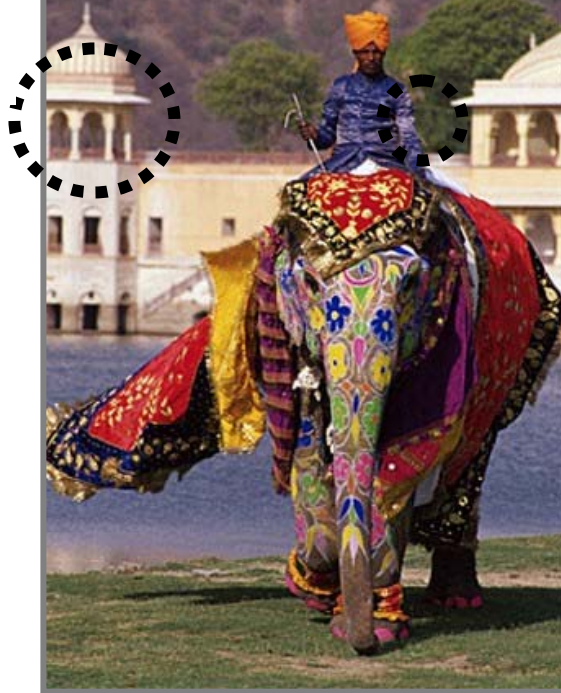
**Tonse Telecom**

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## The Ubiquitous Wi-Fi!

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# Thank you!

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