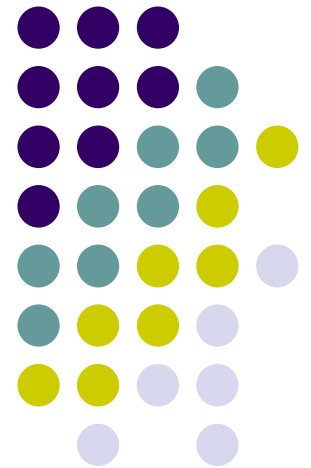
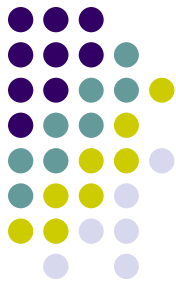


# Mobile Internet for bridging Digital Divide

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Midas Communication Technologies, India



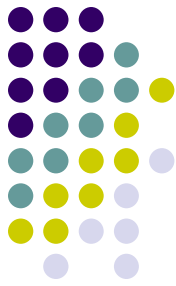
*Midas*



# Outline

- Can Mobile be PC for common man
- The Input / Output bottlenecks of a mobile
- Is there Sufficient Spectrum for Internet on Mobile?

# Why have mobiles grown faster?



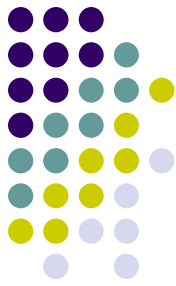
- Number of mobile in the world > 1.5 billion
- Number of PCs in the world < 500 million

## WHY?

- Cost of mobile has stumbled from US\$ 500 to US\$ 50 in the last seven years
  - Driven by Moore's law
  - and competition
- Cost of PC (incl. software) has fallen at a much slower pace
  - Lack of competition

**Handsets are reaching the common man much more rapidly**

# Device of the future for the common man?

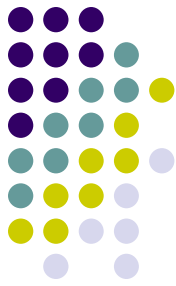


- As processing power of handsets increase, can they deliver communications applications like PCs?
  - Email
  - Information
  - Transactions

**Blackberry** is already replacing laptops for many professionals

- Small size – easy to carry, easy to use
- Connects anywhere, anytime

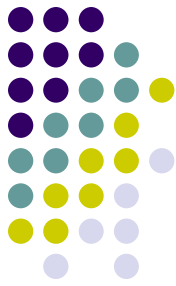
**As prices fall, can these kind of devices reach a large number of underprivileged?**



# The Input / Output bottlenecks

- What hinders a rapid acceptance of applications delivered through mobiles?
  - Size of screen
  - Keyboard
  - Language
- Voice-enabled devices may partially alleviate problems in the future
  - But, handsets may not enable applications like document handling

# New Internet applications on mobiles



- Can one hear music of choice: 30 kbps sustained?
- Can one watch video programs on demand : 100 kbps sustained?

Is there sufficient bandwidth to deliver these streaming services?

- Not in 2G (10 kbps)
- Not in 2.5G (100 kbps shared)
- Barely in 3G (several hundred kbps shared)

**More spectrally efficient mobile technology required for Internet on mobile**

# Will operators allot more spectrum for Internet?

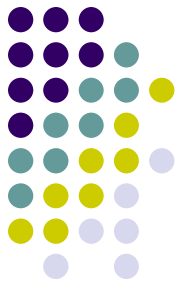


Operators earn from same spectrum use

- **SMS : Voice : Internet = 100 : 5 : 1.2**
  - that too assuming currently high dial-up charges for Internet
- spectrum-starved operator's **priority can not be Internet**

	<b>Voice</b>	<b>SMS</b>	<b>Internet</b>
<i>bitrate</i>	2x10 kbps	300 bits	40 kbps
<i>price</i>	Re 1/min	30 p per msg	50 p per min
<i>revenue per kbit</i>	5 paise	100 paise	1.2 paise

50 paise = 1 cent



## To conclude

- Handsets that can deliver Internet will reach the common man faster than PCs
- Efficient mobile technologies are required to incentivize operators to deliver Internet applications on these handsets

**Fixed Wireless is the best means today to connect and deliver internet applications in rural areas of the developing world**