Health, wellness, and the mobile information society

Michigan State University Summer Programme
Geneva, 5 July 2004

Lara Srivastava
Strategy and Policy Unit, ITU

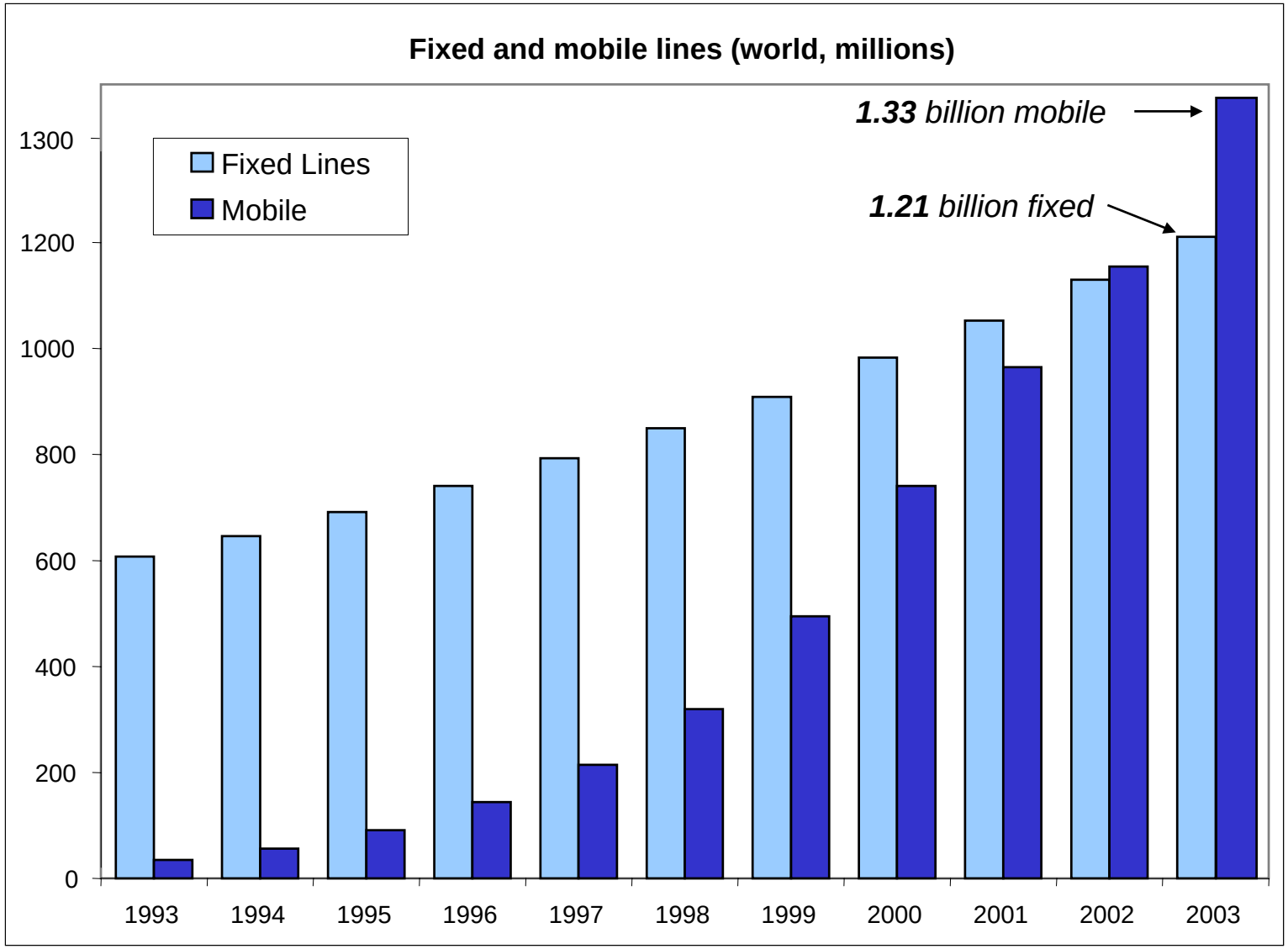
International Telecommunication Union

Note: The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU or its membership. Lara Srivastava can be contacted at lara.srivastava@itu.int

Today's information society…

- Growth of high-speed fixed and wireless broadband infrastructure(fibre, xDSL, W-LAN, WiMax, IMT-200 and systems beyond etc…).
- Popularity of wireless communications in both developed and developing world
- Popularity of the "personal communications device", be that a PDA (personal digital assistant), mobile phone, smart phone etc…
- Emphasis on "always-on" communication technologies
- Shift towards overall "ubiquity of access"

...a more mobile information society



Source: ITU

The personalization of mobile

- **Physical proximity**: users are getting *closer & closer* to their mobiles, all times of the day
- **Emotional Attachment**: many can't leave home without it. Its theft/loss has been described as akin to "bereavement" & often causes *panic* and *disruption* to daily life
- **Fashion**: mobile is quickly becoming an important *daily accessory*

- **Identity:** mobiles are playing an increasingly important role in creating/maintaining identity

The safe and just mobile

- Personal Safety:
  - Safety is one of the main reasons cited for first-time mobile users, particularly children
  - Mobiles can help shield users from unwanted attention
- Public safety:
  - Alerting authorities to accidents/crime etc…
- Facilitating justice:
  - SMS, call records, location information

The ubiquitous mobile for individual and public health

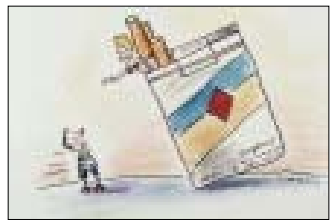
- “Always-ready”, personalized & secure access to medical information/records
- 24-hour patient monitoring & preliminary diagnosis
- Medical analysis and advice
  - Prevention (e.g. obesity “epidemic”; diabetic diets; addiction to tobacco/alcohol)
- Assistance (medical/humanitarian) in disasters/emergencies
- Medical alerts or warnings

Smart mobiles for smart health

- Nutritional and beauty phones

The Samsung T 500

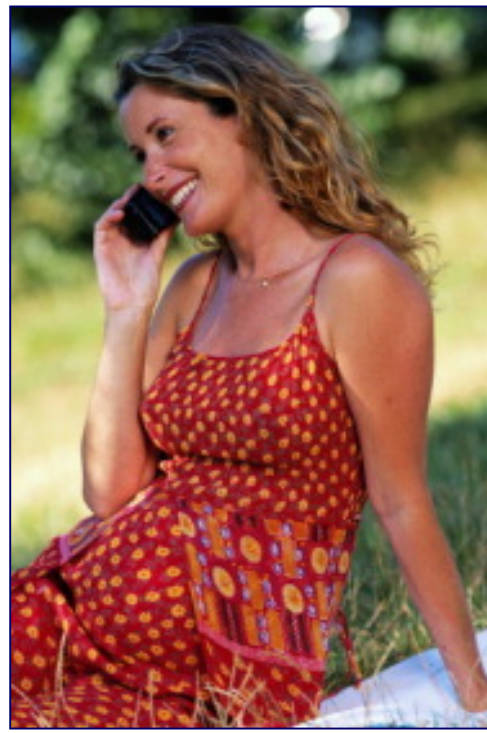
- Mobiles to quit smoking



- Mobile asthma management

- Mobiles and diabetes

The personal mobile for family planning



- Pregnancy aids (Japan)
  - "iLady" mobile Internet service
  - Helps women determine ovulation periods
- The morning after pill (UK)
  - Scheme provides help line to teenagers and SMS text messaging with appointment information

Mobile multimedia for hospitals

- Mobile MMS used to transmit images of X-rays b/w medical professionals
- Excellent tool for training and early diagnosis
- Reduced waiting times for patients

Staff at hospital in Wales (UK) have found their MMS trial successful

- Note: Images sent are <u>not</u> annotated with patients' personal details

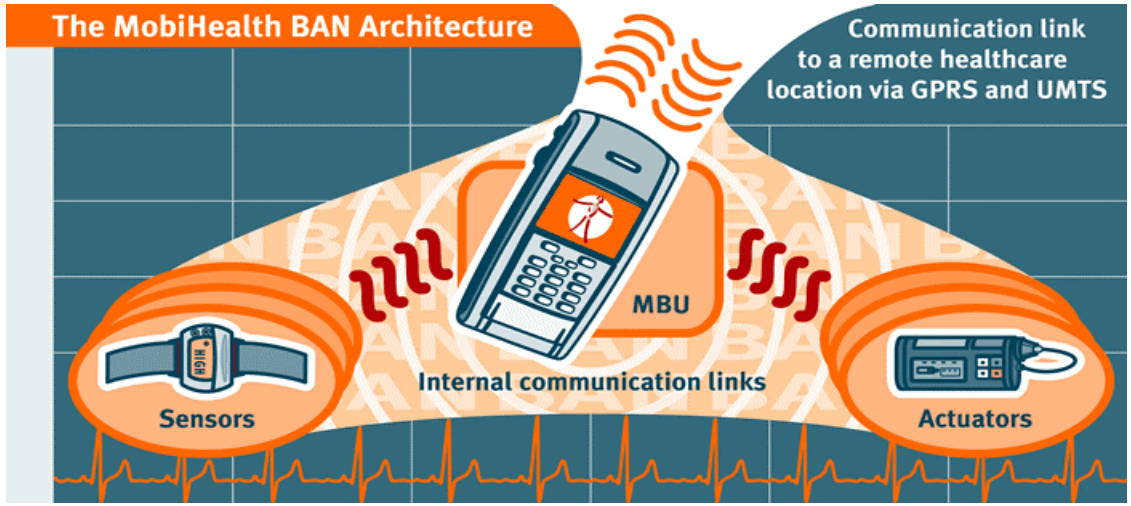
Higher-speed mobile for video

- Personalized and user-controlled “video-conferencing” (e.g. via 3G)
- Patients can consult physicians via live video interaction, and physicians can consult each other
  - e.g: car accident visualizations

- e.g. medically underserved areas (rural, developing countries). Low cost alternative to fixed-line infrastructure deployment and construction of health care facilities.

The Mobile Body Area Network:

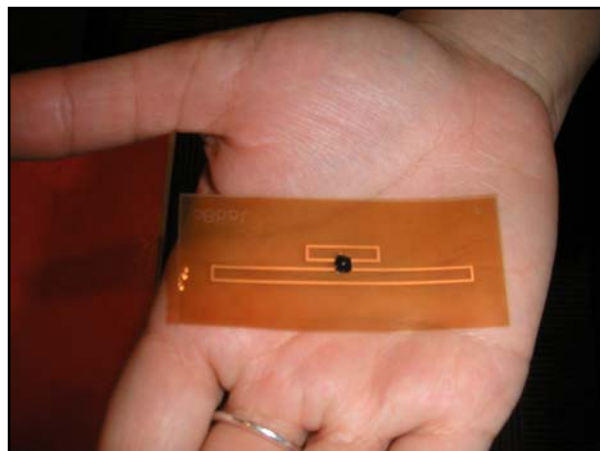
e.g. EU “MobilHealth” project



- 2G/3G networks transmit data collected by sensors/ actuators of a wireless Body Area Network (BAN)
- software & backend system to measure ECG, peak airflow, blood pressure/ glucose, blood pressure…
- Since 05/2003, randomized controlled trials are taking place in Germany, the Netherlands, Spain & Sweden

Wireless RFID and 2D codes

- Radio frequency ID (RFID)
  - Tiny microchips (some only 1/3 mm in diameter) acting as transponders, responding to radio signals
  - Real-time item identification & location status
- 2D information codes (e.g. QR)
  - can be already be read by camera phones
- Health applications:
  - Tracking equipment, medication
  - Monitoring



RFID, 2D & pharmaceuticals

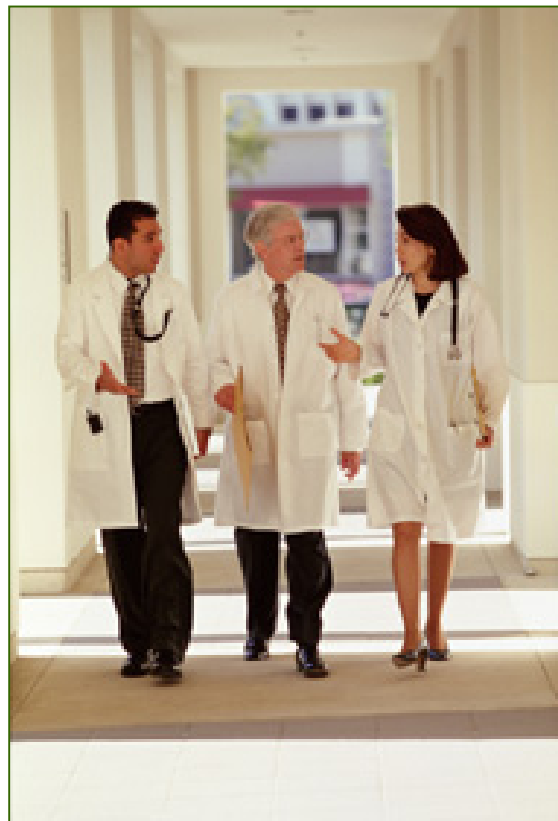
- Tracking medication from laboratory to drug store shelves
- RFID tags and/or 2D codes would contain information on origin, price, chemical composition, expiry date, contra-indications, directions etc…
- Eventually, this info will be readable by pharmacists, check-out staff and consumers
- Reduces risks of counterfeiting theft & product recalls; while facilitating patient drug awareness and safety

RFID & the future of patient care

- “Wearable” RFID tags with important health information can be used by patients
- Location of patients and equipment in hospitals at any given time can be determined through RFID
- Intelligent medical cabinets will remind patients and health care providers of treatment, refills etc…
- Blood/urine samples can be tagged with relevant information. This can also prevent transfusion errors

Market barriers for mobile health

- There are many positive consequences on health infrastructures of mobile phones and wireless technologies such as RFID
- But what are some of the hurdles?
  - Cost of deployment
  - Standards battles & proprietary technologies
  - Lack of conclusive evidence of the effect of electromagnetic waves from wireless
  - Patient acceptance
  - Privacy concerns
    - E.g. access to medical records



Thanks!

lara.srivastava@itu.int