

## **IxD Theory 2: Telecomunicazioni**

*IUAV University of Venice*

*Visual and Multimedia Communication Design  
graduate programme*

***Telecommunications (b): Mobile telephony***

## **How the cellphone works: codes**

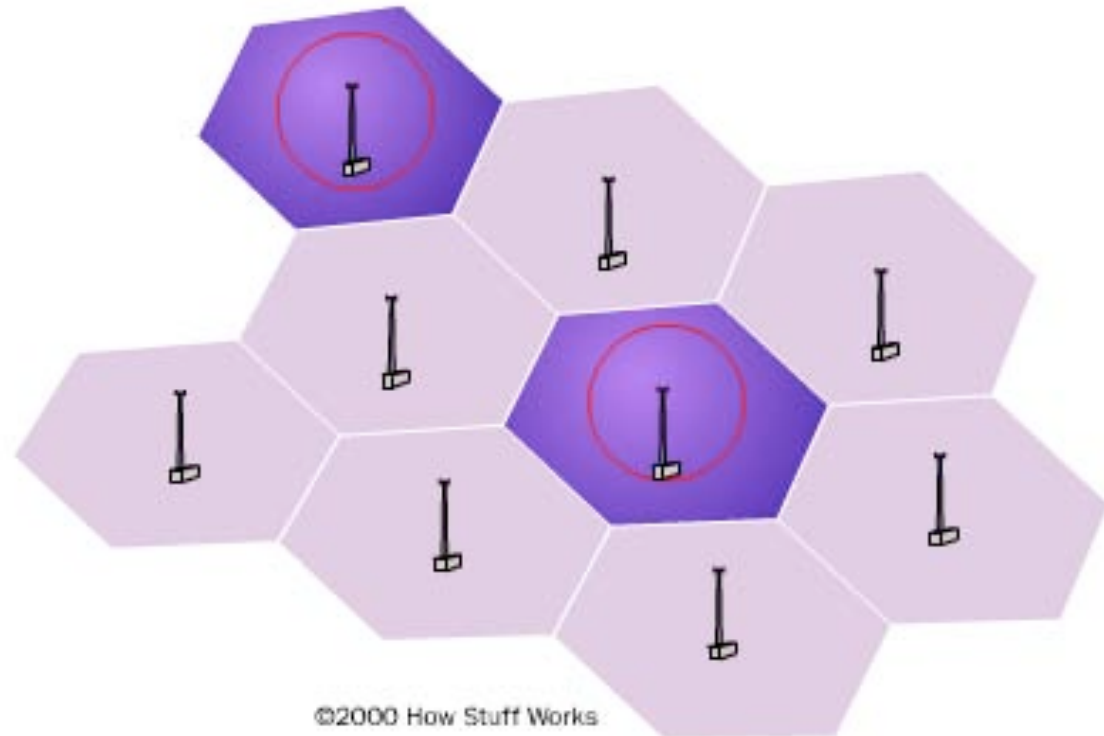
Every phone has its codes

**ESN** electronic serial number--unique 32 bit number programmed into the phone

**MIN** mobile identification number--10 digit number based on your phone number

**SID** system identification code--5 digit number for your mobile phone operator

## Cell structure



Low strength transmitters so cells can be reused

## **Making a call—we know where you are . . .**

Phone listens for a System Identification Code

If it is the same as the one in the phone it knows it is connected to its home system

Phone transmits a registration request; Mobile Telephone Switching Office tracks which cell you are in in its database

When a call comes in, the MTSO finds where you are and allocates you a pair of frequencies for the call

If the signal strength weakens, hands you to another station, and different frequencies

## **Different types of phone system**

2G: FDMA -frequency division multiple access

TDMA -time division multiple access

GSM -global system for mobile comm.

CDMA -code division multiple access

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3G: CDMA 2000 - code division

WCDMA (UMTS) wideband code division

TD-SCDMA - time division

EDGE, GPRS, are data transmission services

## **Other technologies: push to talk**

Half duplex--you can either talk or listen

Immediate connection to a single person or a group--like a chat room

Like a walkie-talkie radio but gives longer range.

## **Other technologies: Instant messenger, Presence**

IM works in the same way as on your computer

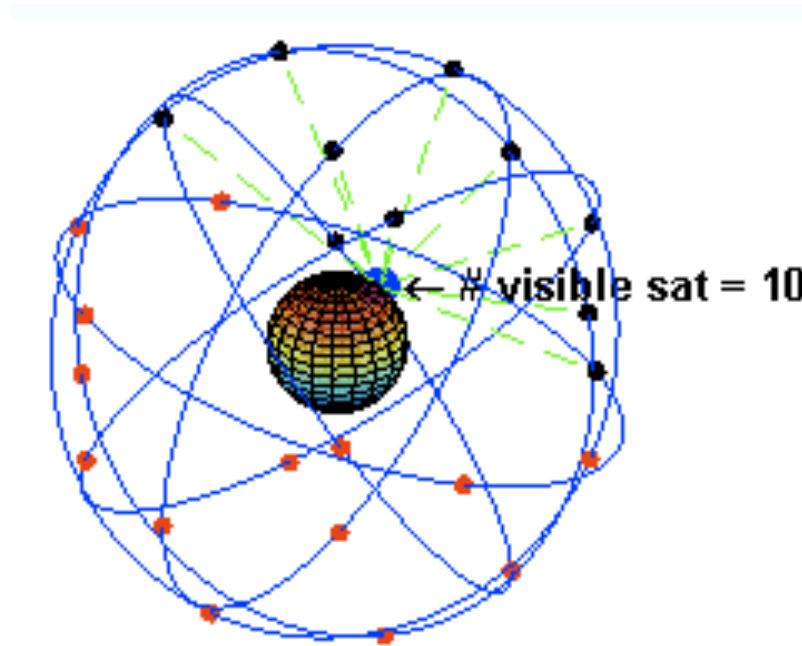
Presence allows you to make your status known (away, or at lunch, for instance)

You can present different status messages for different groups of people



## Other technologies: location identification –Global positioning System (GPS)

Calculates position by the angle from 24-32 different satellites. (Not all visible all the time). European system planned for 2013 called 'Gallileo'.



## **Other technologies: location identification— GSM localisation**

Calculates position by the angle by triangulating the signal strength from at least three antennas.

Not as accurate as GPS—50 m in urban areas, less in the countryside where the antennas are more widely spread.

## Other technologies: location identification— Senseable City project at MIT Media Lab

Sensing the use of the city by tracking mobile phone movement.



<http://senseable.mit.edu/>

## **Other technologies: location identification— Wired's 10 location-base apps**

**Trapster:** users tell where speed traps are

**iNap:** wakes you up before your destination

**JOYity:** location-based tag game

**Cab4me:** finds you a cab in a strange city

**ShopSavvy:** checks prices in stores nearby

**GoogleEarth:** maps on your mobile

**Locale:** location-based phone settings

**GoSkyWatch:** See what stars are above you

**SafetyNet:** for dangerous areas

**SitOrSquat:** find user-rated public toilets

[http://www.wired.com/gadgets/wireless/magazine/17-02/lp\\_10coolapps](http://www.wired.com/gadgets/wireless/magazine/17-02/lp_10coolapps)

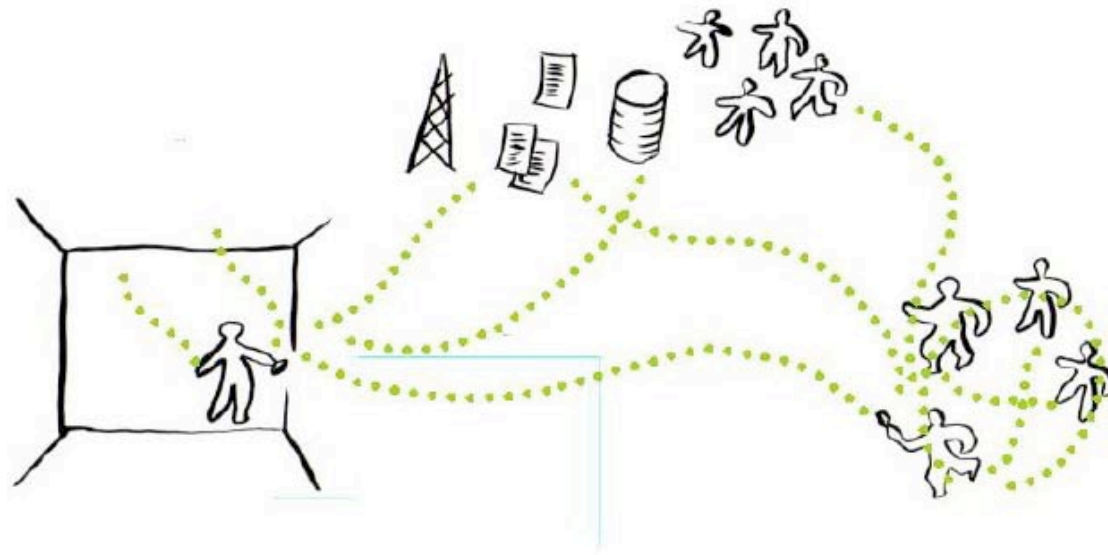
## Other technologies: Near field RFID

Allows you to pay using your mobile phone.



## Marco Susani: Flows of communication

Analysing types of mobile phone conversation



[http://flow.doorsofperception.com/content/presentation\\_img/susani/source/slide008.html](http://flow.doorsofperception.com/content/presentation_img/susani/source/slide008.html)

# Future Scenarios

Circles of availability



Ana Camila Amorim Interaction-Ivrea thesis project

<http://www.ana-lytical.com/projects/projects.html>

## Future Scenarios: Vodafone

<http://www.vodafone.com/flash/future/application/index.html>

*Vodafone international site/innovation/future vision/*  
link: Explore future vision





## Resources

Phone technologies explained

<http://europe.nokia.com/A4170054>

<http://electronics.howstuffworks.com/cell-phone.htm/printable>

[http://www.wired.com/gadgets/wireless/magazine/17-02/lp\\_10coolapps?currentPage=10](http://www.wired.com/gadgets/wireless/magazine/17-02/lp_10coolapps?currentPage=10)

Future scenarios

<http://www.vodafone.com/flash/future/application/index.html>

*Vodafone international site/innovation/future vision/*

link: Explore future vision

## ***Assignment 5***

### **EVALUATE A SOCIAL NETWORK SERVICE**

*Mobile telephony and the Internet have encouraged 'social software': services which aim to organize communication democratically, from the bottom up rather than top down (for an overview, search 'Social software' in the English-language Wikipedia).*

*A subset of social software is 'social network services'. These allow people to find each other for the purposes of work, shared interests or opinions, romance, games etc. This assignment asks you to find an existing social network service, join and participate in it, and assess its design. This assignment, appropriately, can be done by a group.*

## ***Assignment 5***

### **EVALUATE A SOCIAL NETWORK SERVICE**

- 1 Act as a team of 2, 3 or 4 people, or as an individual
- 2 Search the Web for examples of online social network services
- 3 Choose one which interests you (ideally an Italian one?)
- 4 Experience the service. You may need to join in order to participate
- 5 Evaluate its design. Graphic and information design is important, but focus on the service's emotional tone and the quality of how it interacts with you
- 6 Make a poster which briefly outlines the service, and evaluates its design