# Lectures on the Internet and Mobile Computing

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*Ecole SIG at nouvelles Technogies en Democratic Republic Congo, 12-17 Septembre, Organisee par l’Universite de Kinshasa*

1. **The Internet Digital Divide: the emergence of Africa, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/kinshasa.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/kinshasa.pptx)
Saturday 17 September
	* Why does Africa’s Internet performance matter?
	* How do we measure performance?
	* What do we find?
	* What is happening and the impact?
	* Next Steps?
	* Conclusions
2. **Internet History, trends and futures, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/internet-history.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/internet-history.pptx)
Monday 12th September14:00-15:50
	* Brief history
	* Design goals
	* Growth & Success
	* Current challenges
	* Internet NG
	* What is driving the changes
	* What is enabling the improvements
3. **How is the Internet performing, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/perform.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/perform.pptx)Tuesday September 13 11:00-12:30
	* Internet characteristics
	* Users, capacities, satellites, packet sizes, protocols, routing, flows
	* How is it used apps etc.
	* How the Internet worldwide is performing as seen by various measurements and metrics
	* Application requirements
	* Case studies
		+ Digital Divide and Africa (some of this will be covered in the Grid Day presentation)
		+ Cable cuts
		+ Impact of TEIN3
		+ Pakistan
		+ 2011 Arab Spring
4. **Cell Phones, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/cellphone-work.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/cellphone-work.pptx)
*Thursday September 15, 11:00-12;30*
	* Not covering Cordless phones, CB radios, pagers, car phones, Iridium etc.
	* How they work
	* History
	* Cell phone components
	* Power
	* Carriers
	* Coverage
	* Bars
	* Growth
	* Concerns
5. **Smart phones & other Mobile computing, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/smartphones.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/smartphones.pptx)
Thursday September 15 14:00-15:30
	* Wireless
	* What is a smartphone and their growth
	* Why are they important
	* How are they used
	* What’s coming
	* Bandwidth impact
	* Not for everybody yet
	* Laptops & Netbooks
	* Smartbooks
	* Tablets
	* Security
	* WiFi
		+ How it works
		+ Protocols
		+ WiFi and smartphones
6. **Diagnosing network problems for non-networkers, see** [**http://www.slac.stanford.edu/grp/scs/net/talk11/diagnosis.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk11/diagnosis.pptx)
Friday September 16, 11:00-12:30
	* Goal: provide a practical guide to debugging common problems
	* Why is diagnosis difficult yet important?
	* Local host
	* Ping, Traceroute, PingRoute
	* Looking at time series
	* Where is a node
	* Who do you tell, what do you say?

### Others

Probably we will not cover the items below due to lack of time.

1. **Geolocation, see** [**http://www.slac.stanford.edu/grp/scs/net/talk10/geolocation.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk10/geolocation.pptx)
	* Importance
	* How is it done
	* Dynamic method
		+ RTT => distance
		+ Geometrical methods of finding location from circles
	* Application
		+ Management of landmarks
		+ Tiering
	* Challenges
2. **How does the Internet work, see** [**http://www.slac.stanford.edu/grp/scs/net/talk09/ictp-tcpip.ppt**](http://www.slac.stanford.edu/grp/scs/net/talk09/ictp-tcpip.ppt)
3. **Network Measurements, see** [**http://www.slac.stanford.edu/grp/scs/net/talk10/internet-measure.pptx**](http://www.slac.stanford.edu/grp/scs/net/talk09/ictp-measure.ppt)
	* Why is measurement important?
	* LAN vs WAN
	* Passive
		+ SNMP, Netflow
		+ Effects of measurement interval
	* Active
	* Tools various
		+ Ping, traceroute
		+ Available bandwidth, achievable bandwidth
	* PingER
		+ Motion metrics video (5 mins)