
10 years' network research in 10 minutes

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Who, What, How, Why, Where, When

- Who: University, Industry Lab, Commerce- who best?
- What: systems, performance, service, application, mechanism, algorithms, hardware? Hardest?
- How: Analysis, Simulation, Measurement? Pick 'n mix?
- Why: Scale: Performance/Price; Novelty: Feasibility; Trial: Usefulness; Correctness? Why not?
- Where: In Vivo, In Vitro, Gedanken? Learn most?
- When: Last year, this year, next year, or next 100 years?

In Theory – from citeseer, number of papers in network topics in last 10 years!

- QoS 7132
- Multicast 5926
- Routing >10000
- MPLS 411
- Wireless Mac 74!
- LEO Satellites: 98
- Ad Hoc 115!
- Peer2peer 4678
- Overlay Networks: 137!
- CDN 1000
- Grid ?
- TCP 8440
- Pricing Networks: 84
- Security >10000
- Interplanetary Networks: 2✍

In Practice, didn't we do well

- From 92 til 2002, we saw introduction of
 1. GSM, GPRS, 3G
 2. DSL, Cable Modem, Community 802.11
 3. 100BaseT, GigE, 10GigE
 4. DWDM up to 128 lamdas
 5. WWW, Grid
 6. Email->SMS, SSH, PGP, CAs
 7. Internet Banks
- Success, success, success!

What Didn't We See

- Single Technology, pervasive Multiservice Network
- Instead, more and more diverse networks, many not even linked to each other...maybe this is the real lesson – the alleged gain of unifying services on a single network is not high enough compared with the economic reasons people want to own a vertical cut through all the applications down to the wire (e.g. digital TV, mobile telephony, IP, etc etc)

Moore Lessons

- Sturgeon's Law of Sci Fi for networks- 98% of everything is crap
- Corrollary: negative research results are useful in that they inform you what **not** to do, and universities are “safe” places to do this compared with industry ✍
- Deployment is not a metric of success – esp.in a *mature* network – it takes > 10 years to change anything ✍
- Don't just follow the curve, or spot a hot trajectory – thinking outside the box is more useful in the long run, but being in early in a new network is also a great experience...