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# The Internet development Process

Stockholm October 2010

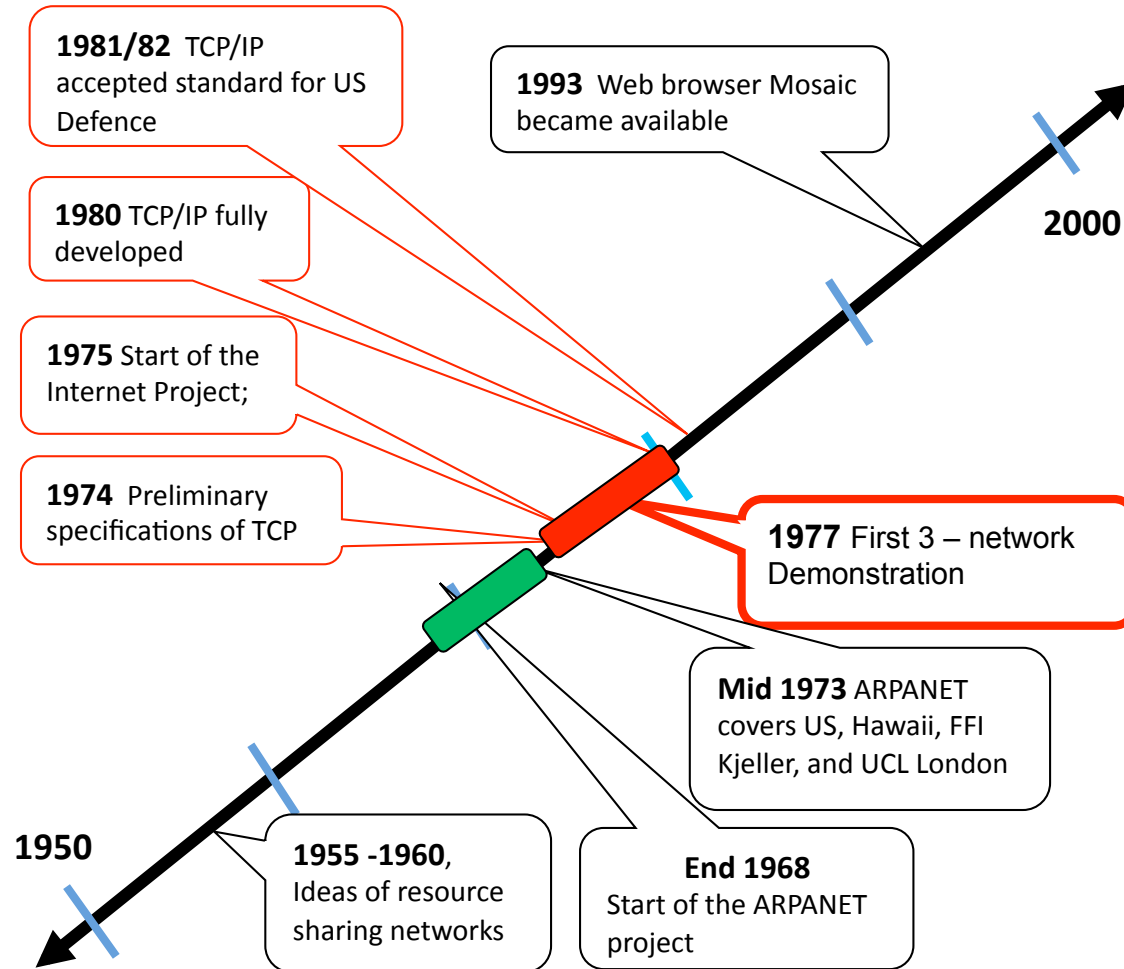
Pål Spilling

# What I would talk about?

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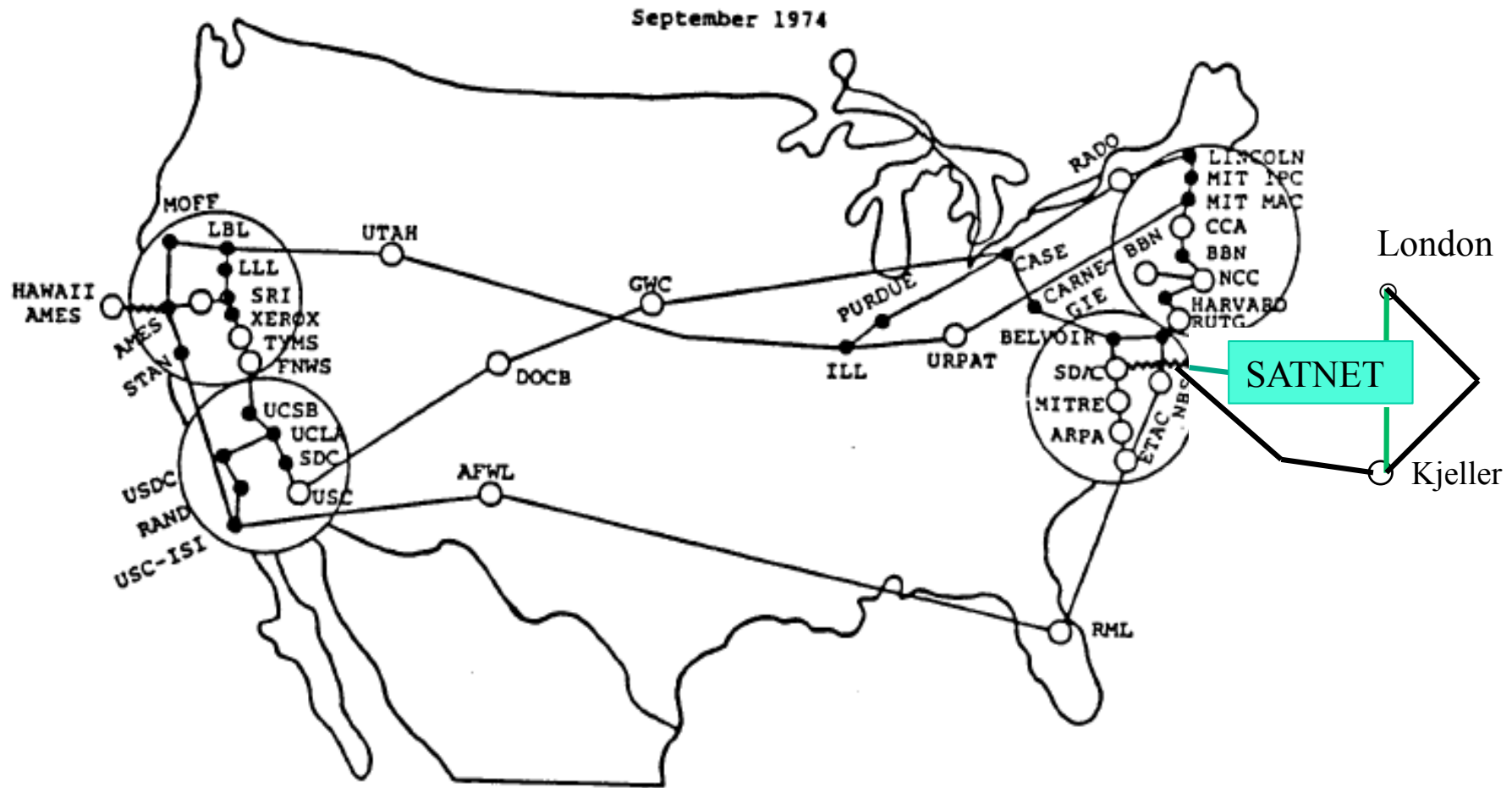
- The main Norwegian contributions
- Competitions between alternatives
- Did Norway benefit from its participation?
- Some observations and reflections
- Conclusion

# A historical timeline



# Norway and UK on ARPANET 1973

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# Norwegian Contributions

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- SATNET development
  - Simulations
  - Performance measurements
- Internet performance measurements
- Packet speech experiments over the Internet
- Improved PRNET protocol architecture

# Competitions between alternatives

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- X.25 (ITU)
- ISO standards (committee work)
- DECNET (proprietary)
- IBM (proprietary)
- TCP/IP demonstrated its usefulness in 1977  
accepted as a standard for US defence

# Norwegian benefits

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- Enabled me to create a small Norwegian internet
- Got access to UNIX, with TCP/IP and user services integrated
- Gave research scientists early exposure to internet and its services
- Early curriculum in computer communications; Oslo University

# Observations and reflections

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- Norwegian Arpanet Committee; dissolved itself due to lack of interest
- IP address space too small for today's use
- TCP split in two parts; TCP and IP (speech)
- Lack of manpower, greatly reduced our contributions



# Conclusions

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- TCP/IP: 10 – 15 years ahead of market
- US – Europe (ISO, X.25);  
very different approaches to create standards
- MOSAIC browser available in 1993,  
Then the internet traffic exploded

# One of the fathers of Internet and me



# Why was Norway invited?

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- Nuclear Test-Ban Treaty;  
NORSAR at Kjeller; established in 1970
- Nordic Satellite station at Tanum Sweden
- DARPA wanted to cooperate with Donald Davies; blocked due to UK's EU application
- Prof. Peter Kirstein, UCL, had agreed to participate
- Turned to Norway; satellite communication

# Worm attack in 1988

**NORGES STØRSTE MORGENAVIS**

**Aftenposten**

Morgenutgave. Tirsdag 8. november 1988. Uke 45. Nr. 518. 129. årg. Kr. 6,00. Fly/ekspr.: Vest-/Midt-Norge kr. 7,00. Nord-Norge kr.

**ROLEX**  
*Bjerke*  
Karl Johansgt. 31 Oslo 02-42 20 44  
Prinsensgate 21 Oslo 02-42 60 50  
edre Torggt. 11 Drammen 03-89 30 77

## Forhindret norsk data-katastrofe

● Han trakk ut kontakten og sparte norske forskningsmiljøer for svarte dataskjermer og millioner i ekstraavgifter. Forskningsleder Pål Spilling i Teledirektoratet (bildet) var derfra Spilling fikk beskjeden: — Trekk ut kontakten!

● «Viruset» er et innsmuglet program som bruker opp maskinenes datakraft slik at de går i stå. Det har lammet 6000 maskiner i USA. Og det var derfra Spilling fikk beskjeden: — Trekk ut kontakten!

Side 4



FOTO: JON HAUGE