

NITRD and the Internet

Vint Cerf

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STAY DOWNWIND
AND BACK AWAY
SLOWLY.

THE LAST TIME
A HERD OF
THESE THINGS
GOT SPOOKED,
THE INTERNET
GOT CREATED

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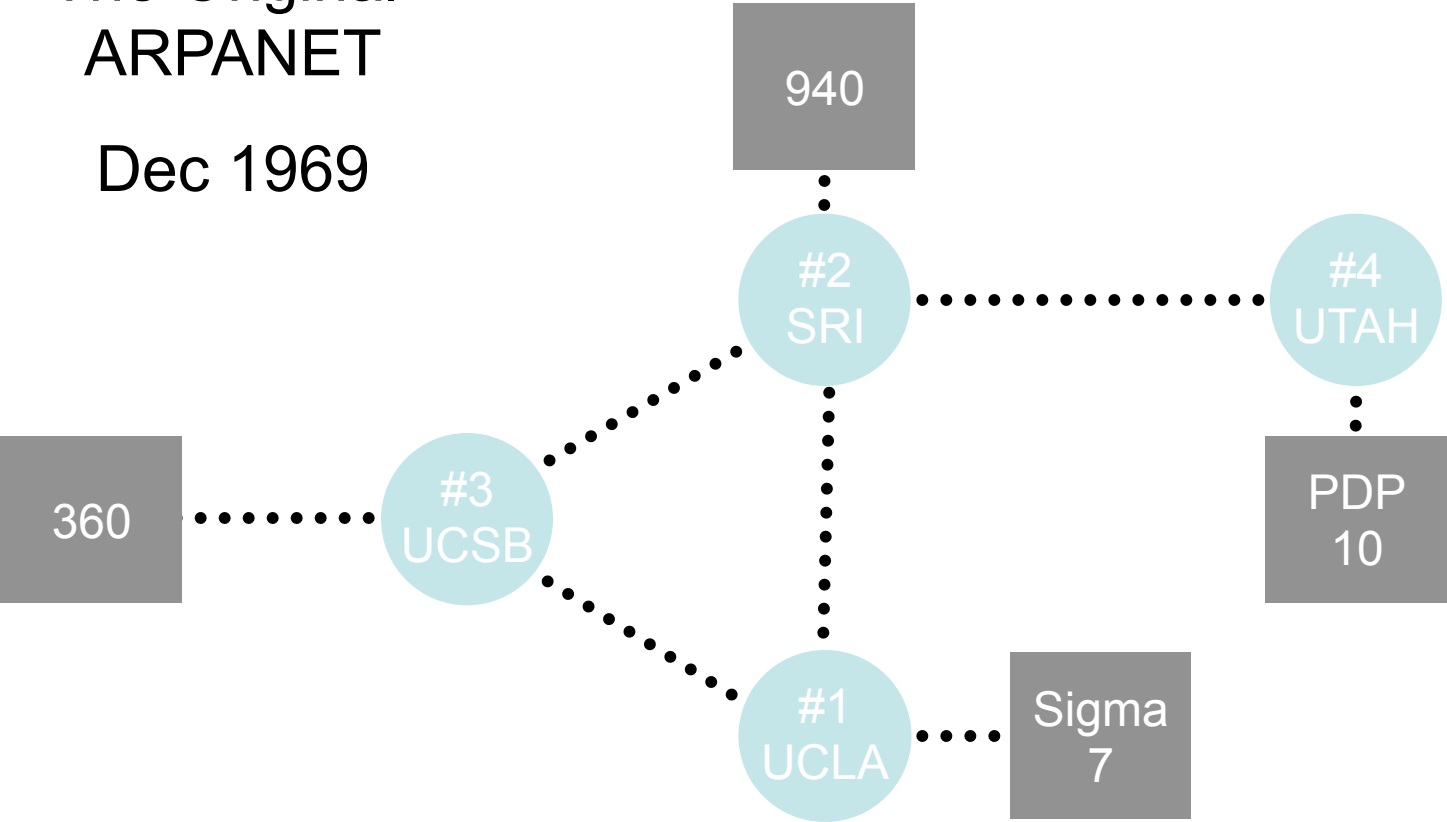






The Original ARPANET

Dec 1969






First published paper on the design of the Internet.

By Bob Kahn and Vint Cerf

May 1974

DH


IEEE TRANSACTIONS ON
COMMUNICATIONS

MAY 1974 **VOLUME COM-22** **NUMBER 5**
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PAPERS

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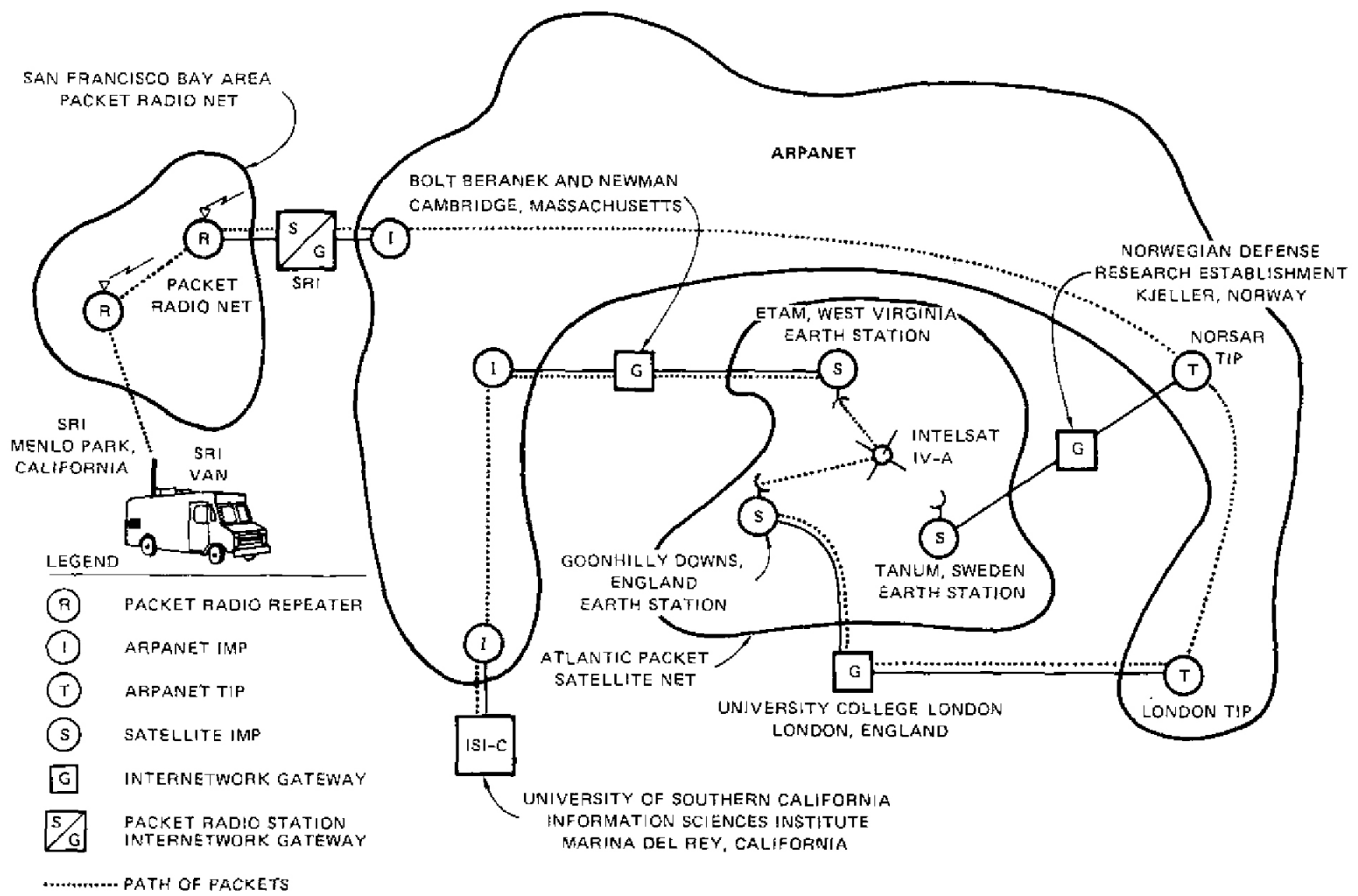
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SAN FRANCISCO BAY AREA
PACKET RADIO NET

PACKET
RADIO
NET

PACKET
RADIO
NET

SRI
MENLO PARK,
CALIFORNIA

SRI
VAN



LEGEND

- (R) PACKET RADIO REPEATER
- (I) ARPANET IMP
- (T) ARPANET TIP
- (S) SATELLITE IMP
- (G) INTERNETWORK GATEWAY
- (S/G) PACKET RADIO STATION INTERNETWORK GATEWAY

..... PATH OF PACKETS

ARPANET

**BOLT BERANEK AND NEWMAN
CAMBRIDGE, MASSACHUSETTS**

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EARTH STATION**

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IV-A**

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**NORSAR
TIP**

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SATELLITE NET**

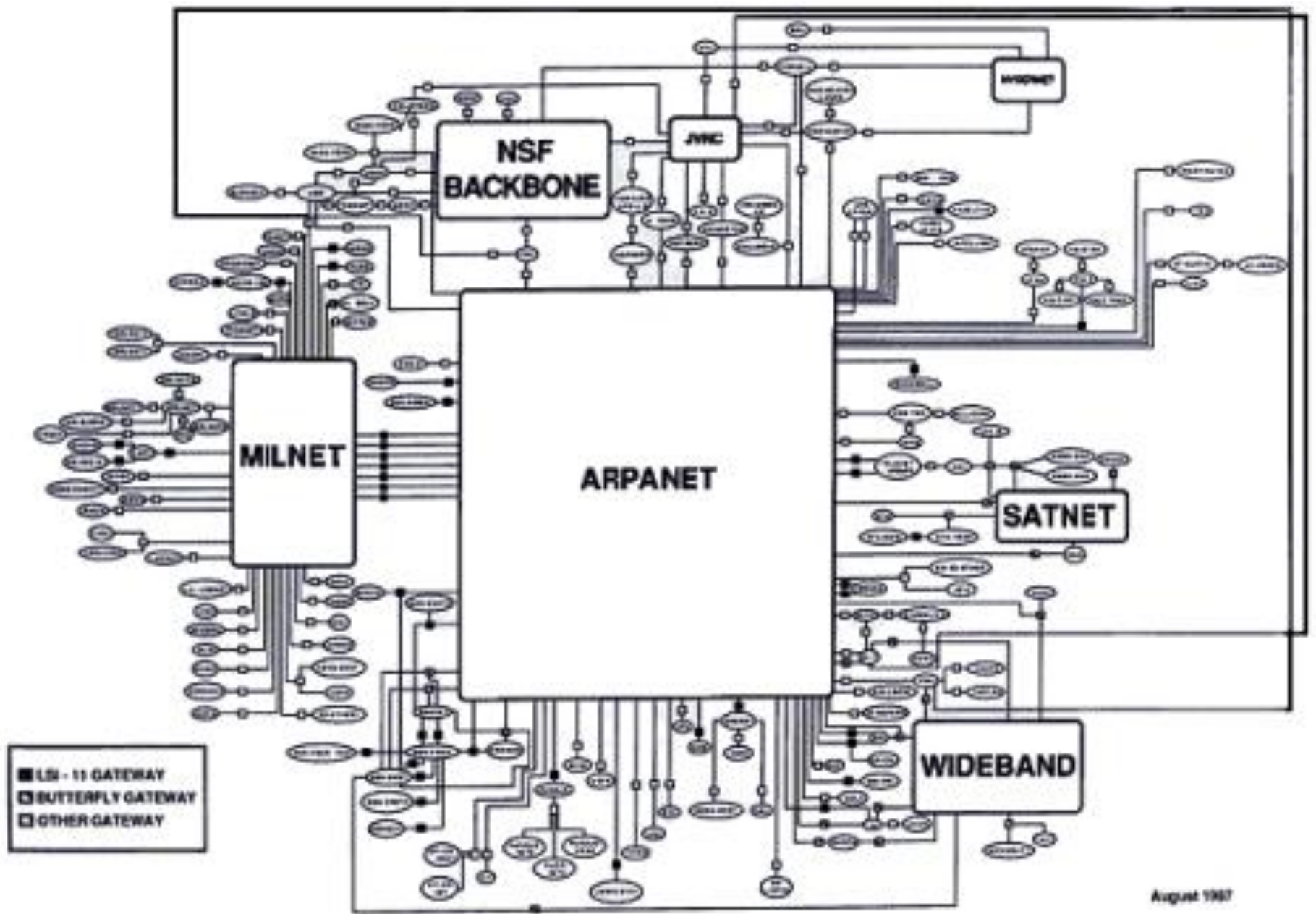
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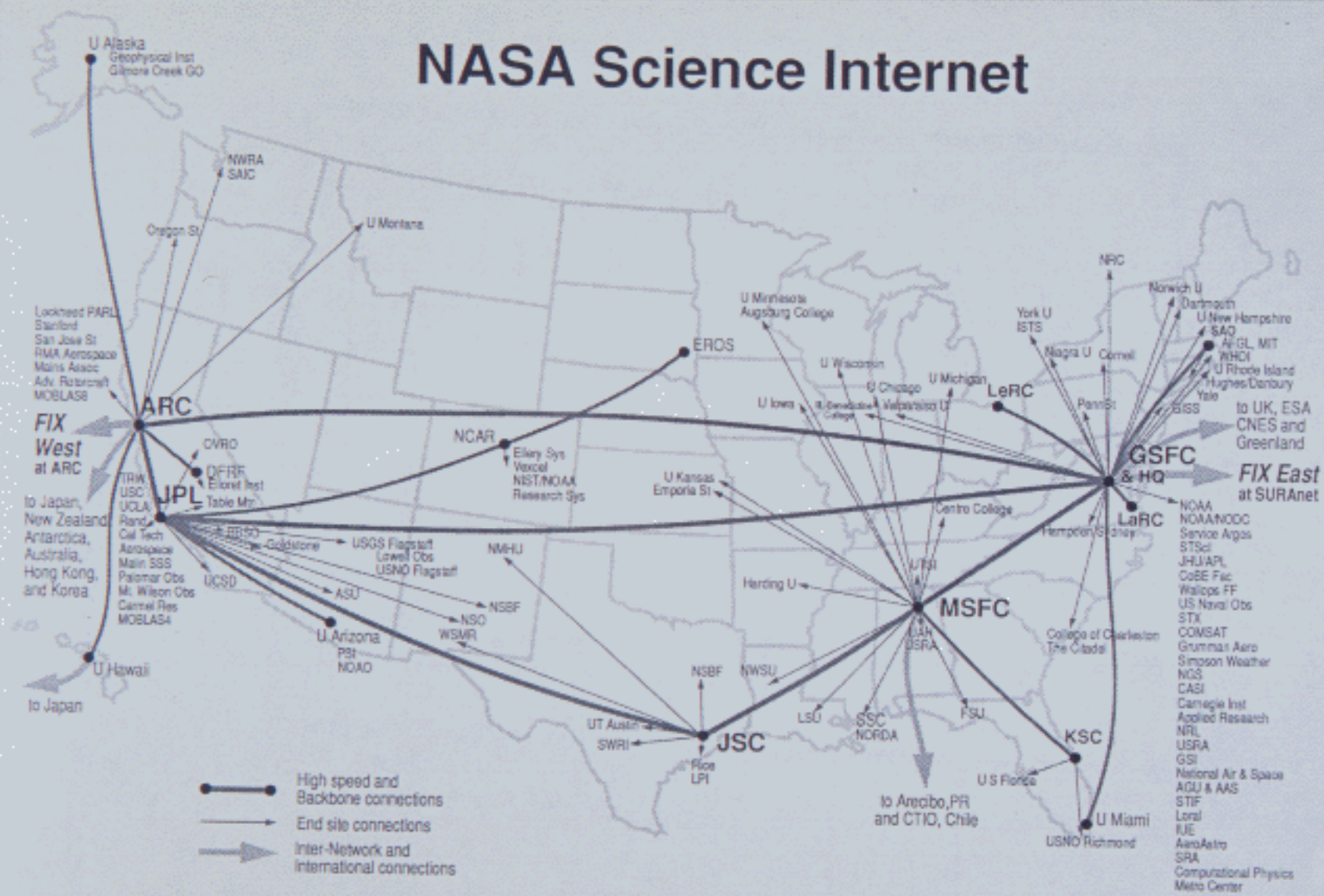
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LONDON TIP





NASA Science Internet



ESNET



the subcommittee drafted legislation, becoming law on October 23, 1992, which authorized the National Science Foundation

... to foster and support access by the research and education communities to computer networks which may be used substantially for purposes in addition to research and education in the sciences and engineering, if the additional uses will tend to increase the overall capabilities of the networks to support such research and education activities (that is to say, commercial traffic).[32]

Milestones

- 1968 ARPANET RFQ
- 1969 First IMP Installed
- 1972 ICCC ARPANET Demonstration
- 1973 Ethernet invention
- 1974 IEEE Internetworking paper
- 1977 Three network demonstration (Internet)
- 1982 CSNET (NSF Initiative)
- 1983 FCCSET committees (and SCI)
 - Supercomputing, Adv Computer Research

Milestones

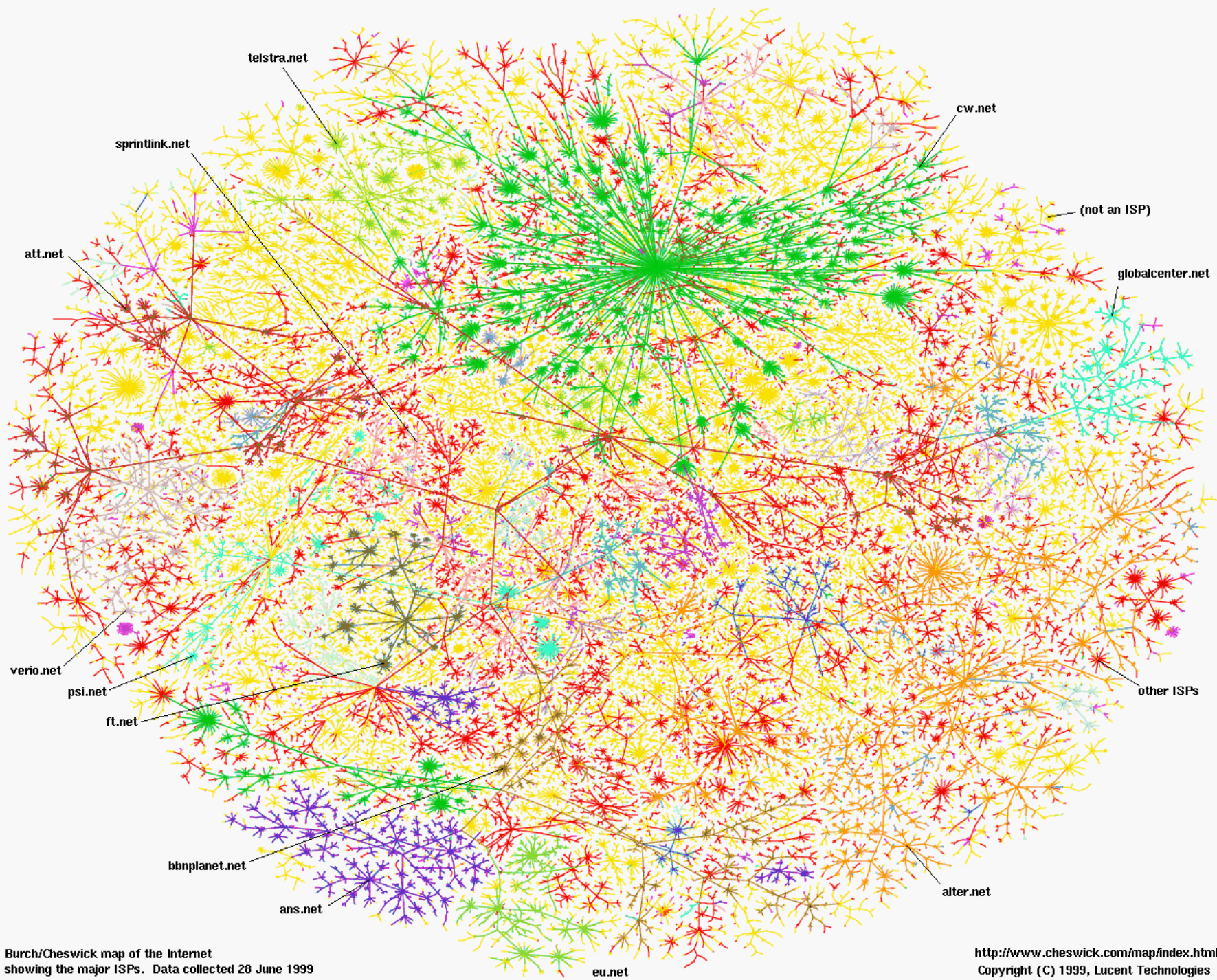
- 1985 NSF chooses TCP/IP for NSFNET
- 1986 T1 NSFNET begins operation
- Federal Research Internet Coordinating Committee (DARPA, NSF, DOE, NASA)
- Mid-1988 NASA Science Internet (SPAN successor)
- Mid-1988 ESnet (combined HEPNET and MFENET converted to TCP/IP)

Milestones

- 1987-1995 Gigabit Networking (DARPA, NSF, DOE, NASA, CNRI...)
- 1989 MCI Mail connects to NSFNET
- 1990 FCCSET networking subcommittee forms Federal Networking Council
- 1990 ARPANET Retired
- 1990 WWW Prototype
- 1990 NSF International Connections Program

Milestones

- 1991 WWW initial operation
- 1991 HPCA(“Gore Bill”), NII, NREN
- 1992 NSF, NASA, DARPA “Fat Pipe” to UK
- 1993 “Boucher Bill” (H.R. 1757) permits commercial traffic on NSFNET backbone
- 1995 Netscape Communications IPO
- 1995 NSFNET Retires, NAPs created
- Dot-Boom begins



Burch/Cheswick map of the Internet
showing the major ISPs. Data collected 28 June 1999