Networking in Europe
(EU Policies and the Greek contribution)

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Erasmus+ BE OPEN project
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Presenter’s experience

- Research background “computing paradigms”
- Participant in Network Working Groups 1986-94 (EU-US RARE, RIPE, CERN-CHEOPS, EBONE)
- 2nd PI of Greek NREN (wikipedia entry ARIADNET)
- First-hand experience of “protocol wars” OSI (org ISO) vs TCP (US DoD)
- Co-founder of 1st ISP in Greece , “Internet: Getting Started” SRI report92
- IXI, EMPB, EUROPANET, DANTE Access Point Manager for Greece (1988 – 1994)
- Contributed to “Know Your Enemy” Addison-Wesley 2004

  (Learning security threats with Honeynet Research Alliance 2001-2007)
- EELLAK member since 2008

Réseaux Associés pour la Recherche Européenne

TECHNICAL REPORT 1

User Support and Information Services in the RARE Community

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RCCN, Portugal

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SUNET , Sweden

Shirley Wood
JANET , UK

Tim Berners-Lee
CERN

1st Edition, March 1992

RARE Working Group 3

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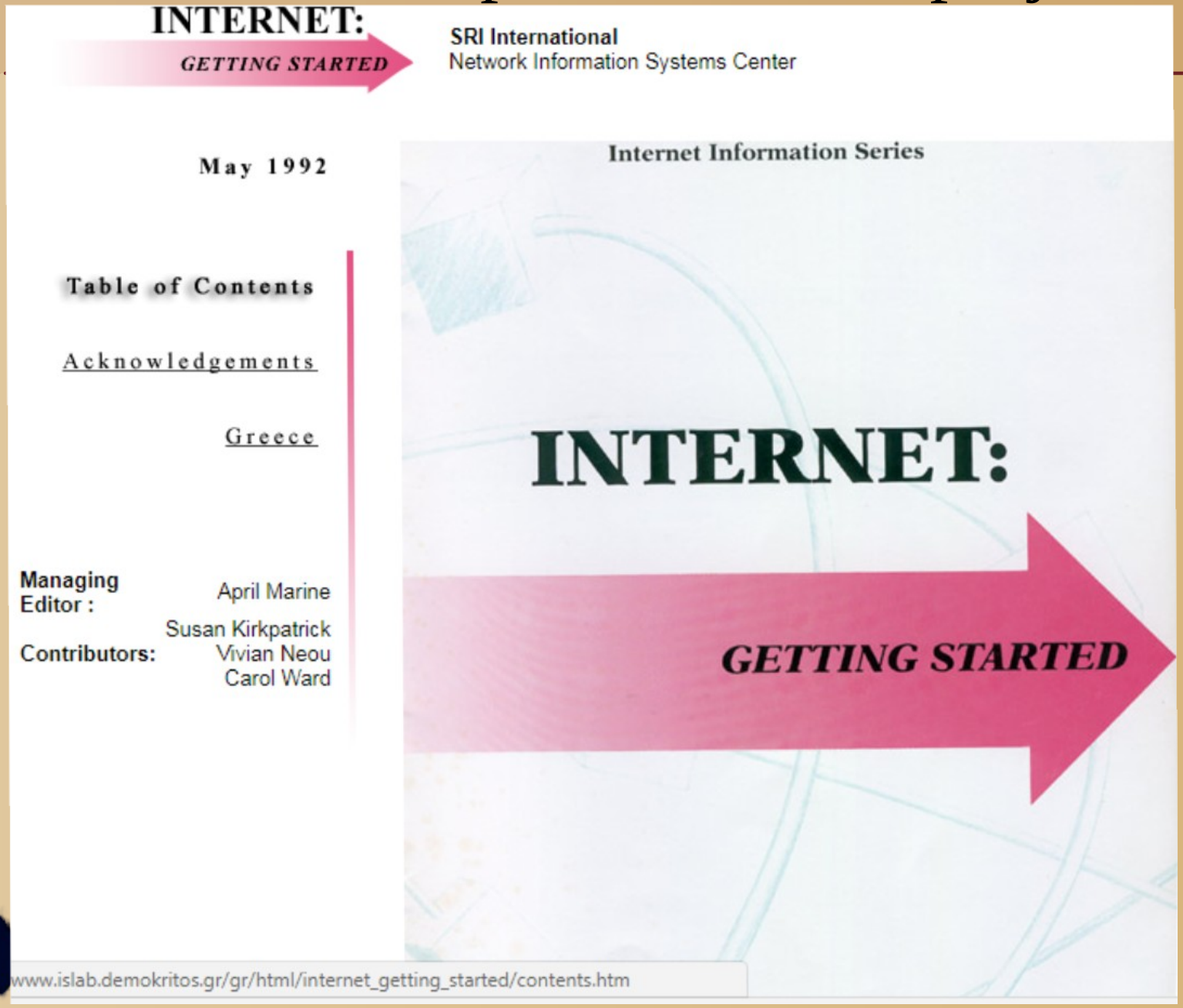
Greece

RARE Techinical Reports are published by the RARE Secretariat, Singel 466-468 NL-1017 AW AMSTERDAM

Internet development via OSI project



INTERNET:

GETTING STARTED

SRI International
Network Information Systems Center

May 1992

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Acknowledgements

Greece

Managing Editor : April Marine

Contributors: Susan Kirkpatrick
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Carol Ward

Internet Information Series

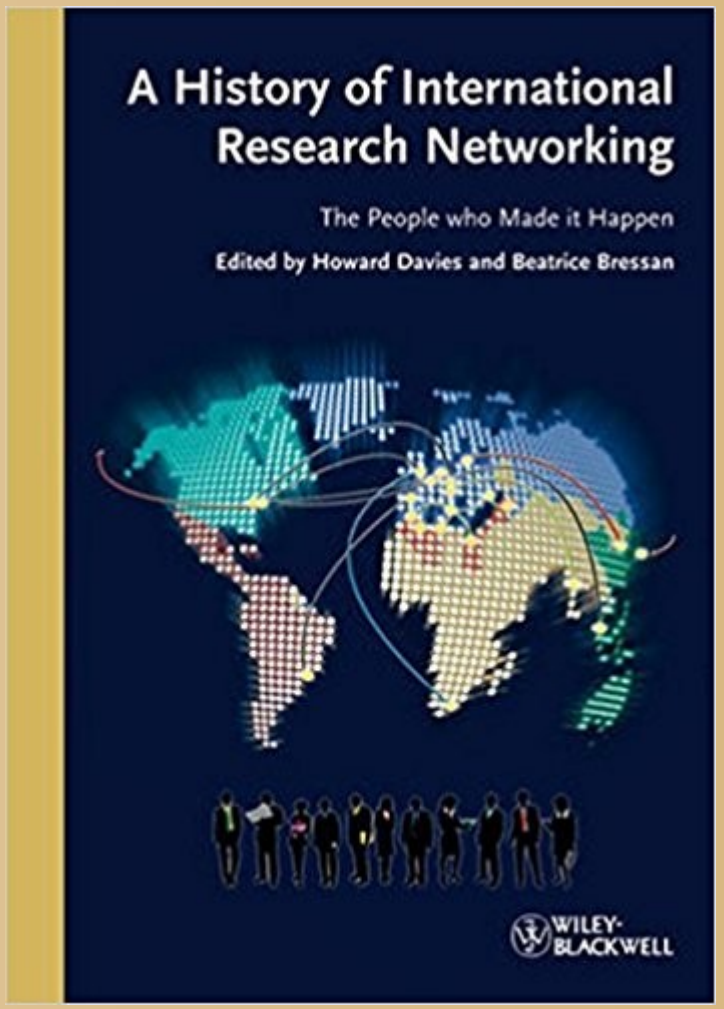
INTERNET:

GETTING STARTED

www.islab.demokritos.gr/gr/html/internet_getting_started/contents.htm

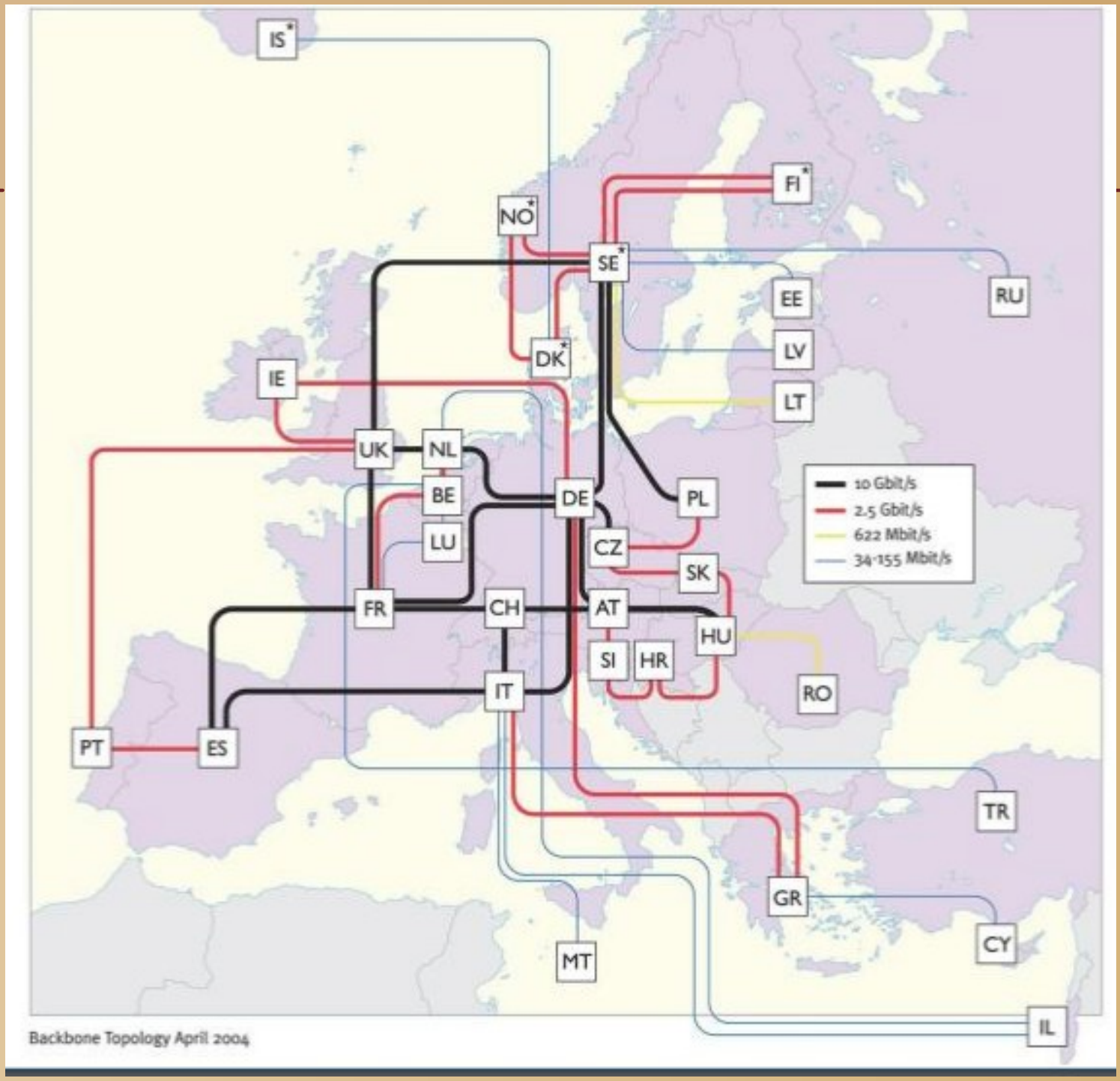
How Networking developed documented in two books

- Howard Davies and Beatrice Bressan , 2010



Editorial Reviews

- Editorial Reviews
- From the Back Cover
- As the first book about the internet to be written and edited by engineers who developed it, this book deals with the history of defining universal protocols and of building a series of global data transfer networks of ever increasing reach and capacity. The result is THE authoritative source on the topic, providing a vast amount of insider knowledge unavailable elsewhere. It is of interest to every scientist and a must-have for all network developers as well as agencies dealing with the Net
- Contributions from GRNET people.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MT
IL
10 Gbit/s
2.5 Gbit/s
622 Mbit/s
34-155 Mbit/s
Backbone Topology April 2004

Criticism of Leaders and Policies

- Olivier Martin

  2012

  Trafford

  Publishing
- CV at

  ictconsulting.ch

Book Overview

The main purpose of this book, which mostly covers the period 1984–1993, is about the history of European research networking. In particular, it strives to throw some light on some lesser known, sometimes forgotten, aspects of the European research networking history, as the EARN and EASInet initiatives from IBM but also DEC (EARN/OSI), thanks to operational pan-European networks, which were built during the period 1984–1990 thus allowing the start of operational European academic and research networking services in a very effective and swift manner. A secondary purpose of this article is to make a critical assessment of the political and technical achievements of the European NRENs and especially those of DANTE, the company set up by these same NRENs to build and operate a pan-European backbone interconnecting their national networking infrastructures as well as establishing international connections to other NRENs worldwide.

EU enters Networking 1984

- In the middle of the Protocol Wars = Internet protocols vs CCIT protocols vs proprietary protocols by Vendors (IBM vs all others)
- PTT monopolies for Telecommunications
- Difficult to go against their policies (high cost)
- Development of OSI standards together EDU+PTT
- The concept of NREN for Europe arises (needed shared communication lines, permission from PTT)

Internationational networks

- ARPANET, SATNET, CSNET, SPAN, HEPNET, STELLA, X.25
- IBM sponsors BITNET (EARN)
- CERN major node of DECNET by DEC
- EUNET part of the UUNET (based on UNIX and telephone lines, leased lines)
- EIN, European Informatics Network linking only a Computer center in FR, DE, IT, CH, UK (response to ARPANET) not Universities, main application is information retrieval (70s)

Majour milestones

1) June 1989: RIPE (Réseaux IP Européens)
2) February 1990: IBM's EASInet initiative links between IBM supercomputer sites ; T1 connection to NSFNET (CERN-Cornell University)
3) June 1990: Official end of the protocol war (OSI vs. TCP/IP) on the occasion of the Joint European Networking conference in Killarney.
4) Creation of the IEPG (Intercontinental Engineering Planning Group) under the auspices of CCIRN (Coordination Committee for Intercontinental Research Networks).
5) 1991, Creation of the ad-hoc Ebone (European Backbone) consortium and deployment of a 2Mbps infrastructure.
6) 1993-1994, Creation of DANTE [346]
7) Deployment of various backbones co-funded by the European Union and National Research Networks [585]:

Majour milestones (2)

a. Mid-1989 through June 1990, 64 Kb/s IXI[364] pilot
b. July 1990- September 1992, 64 Kb/s IXI backbone (COSINE project outcome)
c. EMPP (exemplifies DANTE's way of working, i.e. pilot, production production cycle)
d. October 1992-1997, EMPB (European Multi-Protocol Backbone), a 2Mbps backbone, in parallel with Ebone
e. Europanet (same as EMPB) [586][365], marked the end of Ebone for most NRENs but the start of Ebone as a commercial ISP (1993-1997)
f. 1997-1998, TEN-34, a 34 Mbps backbone
g. 1998-2001, TEN-155, a 155Mbps backbone
h. 2001-2004, GEANT[366], a 10Gbps backbone
i. 2005-2009 GEANT2 (large scale acquisition of dark fibers (12,000 km) and introduction of, so called, *lambda* services)
j. 1/4/2009-31/3/2013 GEANT3 (93M€ EC, same amount by European NRENs, i.e. an "astronomic cost of nearly 50M€/year)
k. Will 2013 mark the end of GEANT or the advent of GEANT4?

Policy after 2012

- Under 7th Framework Programme
- Project “Towards an Open and Sustainable ICT Research Infrastructure Strategy (OSIRIS)
- Examines the Scene of NRENs, DANTE (UK), TERENA (NL)
- On issues of GOVERNANCE, SUSTAINABILITY, ACCESS POLICY, OPERATING PRINCIPLES
- New legal structure GEANT ASSOCIATION, one legal entity based in Amsterdam NL with a UK branch in Cambridge

Greek Policies and contributions

- During the period 1984 – 1994

  http://wikipedia.org/wiki/ariadnet
- During 1995 – 1997 migration period to grnet
- During 1998 – today,

  http://wikipedia.org/wiki/grnet

Key points

- U of Crete nodes link to EARN/BITNET/EUNET
- Minister G.Lianis (PASOK) in 1993 recruits N.Malagardis from INRIA to so Greece is signatory of COSINE and RARE with its own NREN
- ARIADNE Joins RIPE, Dial-up Service is offered to public
- Commercial ISPs established (HOL, FORTHNET, OTENET)
- Gen.Secretary of Ministry N.Christodulakis (PASOK) agrees to the proposal of Prof.V.Maglaris of NTUA to set up the legal entity GRNET
- GRNET develops dark fiber nationwide network and cloud infrastructure
- Greece is member of EU Networking policy Fora
- GRNET participates in many EU regional networks