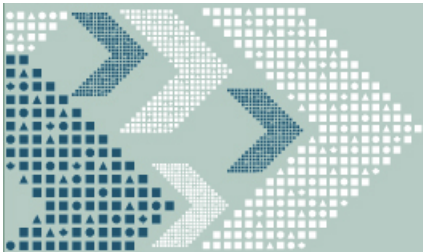


CANARIE

Ontario R&E Summit: *The Promise of Technology*

**Toronto
June 4, 2007**

**Andrew K. Bjerring
President and CEO**



CANARIE History

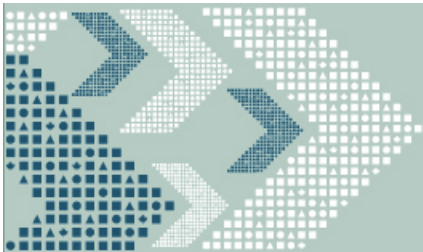
1993-2007

- > Primary sponsorship by Industry Canada
 - \$400 m in funding
 - matched by several \$100 m from other sources

- > Program Mandate
 - Development/Diffusion of Next-Generation Applications
 - 270+ R&D projects
 - e-learning, e-health, e-business, etc., as well as research applications
 - Mandate ended March, 2004

- > Network Mandate
 - 4 generations of CAnet
 - Innovative networking technology and promotion of collaboration
 - Mandate ended March, 2007

- > Since 2003 have been working towards renewal of mandate



New Mandate

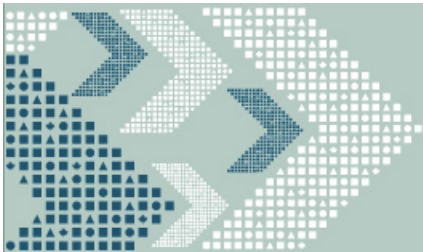
2007-2012

- > Five-year funding of \$120 m announced in federal budget
 - \$24 m for 2007-08; additional \$96 m to be “drawn down” as needed
 - Minister Bernier announced new commitment May 31 in Ottawa

- > Two Objectives:
 - Maintain, extend and upgrade the communications infrastructure
 - Develop innovative research tools and next-generation architectures

- > Initial RFPs to address mandate:
 - Backbone RFP closed; results being implemented
 - Planned RFPs: (i) Network-Enabled Platforms and (ii) Infrastructure Extensions*

*Probable issue dates: July, 2007



CANARIE's Network

- > National Communications Infrastructure for R&E:
 - Traditional layer 3 network connects ORANs
 - However, most of capacity allocated as end-to-end lightpaths
 - NRC and other federal labs operate their own networks

- > UCLP was the major innovation during the CAnet 4 era
 - Concatenates cross connects from various links, routers and switches
 - Enables users to build their own wide area networks (APNs, VPNs)
 - Built around Service-Oriented-Architecture (SOA)
 - Workflow tools integrate network elements with other web services

CANARIE

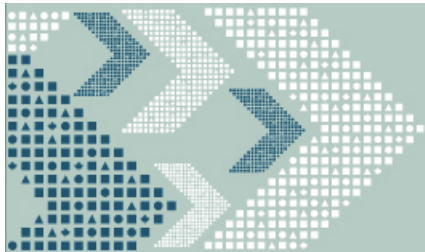
Canada's Advanced Network  Le réseau évolué du Canada





Lambda RFP: Elements of Plan

- Build new network around ROADM capability in East and West
- Extend current lambda contracts for a few months as necessary
- Cutover from extended to new lambdas on a priority basis
- Develop new contract for St. John's to Halifax over new fibre link
- Negotiate lambda swaps with NLR



Some Trends:

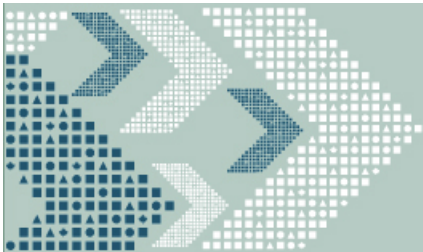
The Global Context for CANARIE's Work

- > **Explosion of research data**
 - Need for advanced techniques to manipulate, visualize and interpret data
 - Growth in distributed research communities using distributed resources
- > **Globalization of research**
 - Development of global partnerships and platforms
 - Emphasis on internationally competitive research
- > **Trend towards multidisciplinary projects**
 - More complex sets of data and more complex questions being asked
 - Increasing need for tools and infrastructure to support this work
- > **Pressure for accountability**
 - Debate about relationship between research and innovation
 - Collaborative partnerships and platforms with industry



Other Important Context in Canada

- > New federal S&T strategy
- > Context ready for addressing some fundamental issues:
 - Funding of operating costs for research infrastructure
 - Funding of indirect costs for research
 - CFI mandate and funding
 - E-science “friendliness” of Canada’s funding mechanisms



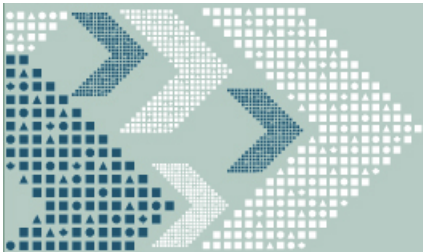
Within this context: New Network-Enabled Platforms Program

- > New metaphor (to replace grids/cyberinfrastructure)
 - focus is on the infrastructure needs of each research community
 - most important common features are data volumes, remote equipment and distributed VO

- > Scope includes data repositories, sensor grids and remote equipment control etc.
 - Much middleware will be common

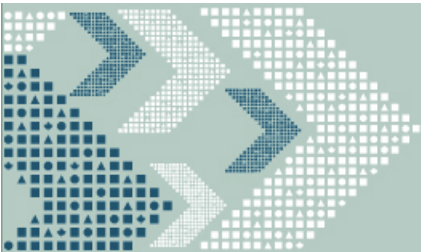
- > International collaboration
 - ultimately, most platforms will serve international communities

- > Most platforms will either already have or will require significant funding from other sources
 - Required servers, equipment, software etc. are funded from other sources (e.g. CFI)
 - Platforms in new areas (e.g. social sciences) present a special challenge



Examples of Emerging Platforms in Canada

- > ATLAS: Tier 1 site for LHC data
- > NRC Herzberg: Part of evolving global repository of telescope data
- > Project Neptune: Oceanographic and related data resource
- > Canadian Light Source: Remote beamline control
- > Compute Canada: Seven regional HPC consortia
- > Genome Canada: Bioinformatics
- > Montreal Neurological Institute: Brain image database
- > SAFORAH: Forestry/Environmental Monitoring Grid
- > Eucalyptus: Design Grid
- > Space Science Institute Platform: Including FDAM; SSDP; ULTIMA; etc.
- > CineGrid
- > OptIPuter
- > Phosphorus



Looking to the Future: Issues at the national level

- > Will the network initiative remain viable on a stand-alone basis?
- > How should a network initiative be aligned with....
 - Broader initiatives to support *systemic* research infrastructure?
 - Research initiatives focusing on *end-to-end* cyberinfrastructure?
- > How can a network (or broader) initiative support ...
 - International collaborative mechanisms for research platforms?
 - Standards development for middleware?
 - Facilitation of research-industry platform collaborations?



Looking to the Future:

Issues for campus CIOs, ORANs, researchers and CANARIE

> Collective Support Roles

- How should we collectively help the early adopters (i.e. TRIUMF, Neptune, etc.)?
- How should we support the *next* generation of e-research communities?
- How should we collectively organize ourselves to support network-enabled platforms?
- How should we leverage each others' activities?

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Thank you !