



## Applying Digital Power to Understand Brain Power

### Helping Researchers Understand Neurological Disorders

**Project Name:** Canadian Brain Imaging Research Network (CBRAIN)

**Project Lead:** ACE Lab, Montreal Neurological Institute, McGill University

**CANARIE Contribution:** \$ 2.4 M

#### Participants:

- Rotman Research Institute, Baycrest Hospital, Toronto, Ontario
- University of Western Ontario, London, Ontario
- Université de Montréal, Quebec
- University of British Columbia

#### What is CBRAIN?

CBRAIN is a research platform that provides scientists with unprecedented and immediate access to vast volumes of three- and four-dimensional brain-imaging data that is stored or being created across the country. These data are available to a broad range of researchers via CANARIE's high-speed network.

CBRAIN allows researchers to access brain-related information and to visualize, manipulate, and exchange images of the human brain throughout various stages of development, and during progression of neurological disorders such as autism, Parkinson's and Alzheimer's disease.

#### Value to Research and to Canada:

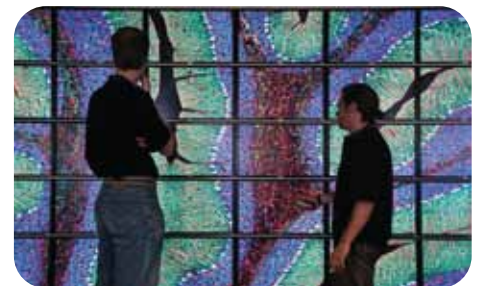
- Is vital to helping Canada cope with the increasing challenge of neurological disorders in a growing and aging population
- Accelerates mapping of the human brain and related research discoveries in fields including psychiatry, neurology, cognitive neuroscience and human development
- Provides a training environment for highly-qualified personnel in computer science, biotechnology, image processing and informatics
- Positions Canada as a scientific and technical leader in brain-imaging research

#### Did you know?

The human brain has been estimated to have 50 -100 billion ( $10^{11}$ ) neurons. Neurons pass signals to each other via as many as 1,000 trillion ( $10^{15}$ , 1 quadrillion) synaptic connections.



Brain imaging shows details of activity and pathology.



Ultra-high-resolution images allow in-depth understanding of brain structures.