



We connect BIG data and BIG ideas to power the future of collaboration and innovation in Ontario and help ensure its place as a leader on the global stage.

orion

Ontario's backbone of innovation

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www.orion.on.ca

Ontario's Innovation Backbone



Thunder Bay

Timmins

Kirkland Lake

New Liskeard

Sudbury

Sault Ste. Marie

North Bay

Quebec

Ottawa

Gravenhurst

Orillia

Peterborough

Kingston

Belleville

Barrie

Oshawa

Guelph

Toronto

Waterloo

Oakville

St. Catharines

CANARIE &
international connections

New York

Sarnia

London

Hamilton

Welland

Michigan

Windsor

Chatham



By the numbers

- **Self-sustaining not-for-profit**
- **Nearly 6000km of optical fibre** connecting over 30 PoPs
- **Over 2 million** researchers, scientists, faculty, teachers, students and innovative organizations every day
- **Contribute over \$140M annually** to Ontario's GDP
- **100Gb/second and testing for 400**
equivalent to 100,000 iTunes downloaded in 1 minute
- **> 50% annual growth** in network usage
with **< 5% cost increase passed on to our members**

Challenges



What are the REAL user requirements?

High speed bandwidth with low latency

Last Mile availability

Flexible implementation of public/private compute & storage

Standards for big data collection, storage, sharing

Tools, expertise, support for research & admin

Security, confidentiality and privacy – reducing risk

Linking Research with Commercial Innovation

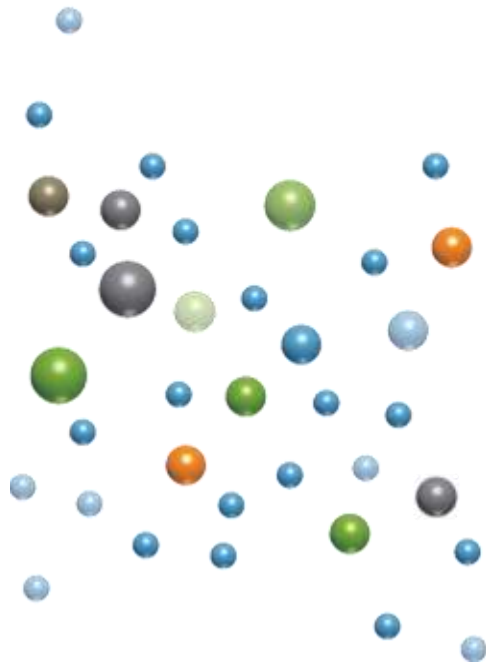
Cost and timing of implementation

Legacy systems and transition to future

Intra- & Inter-region connectivity

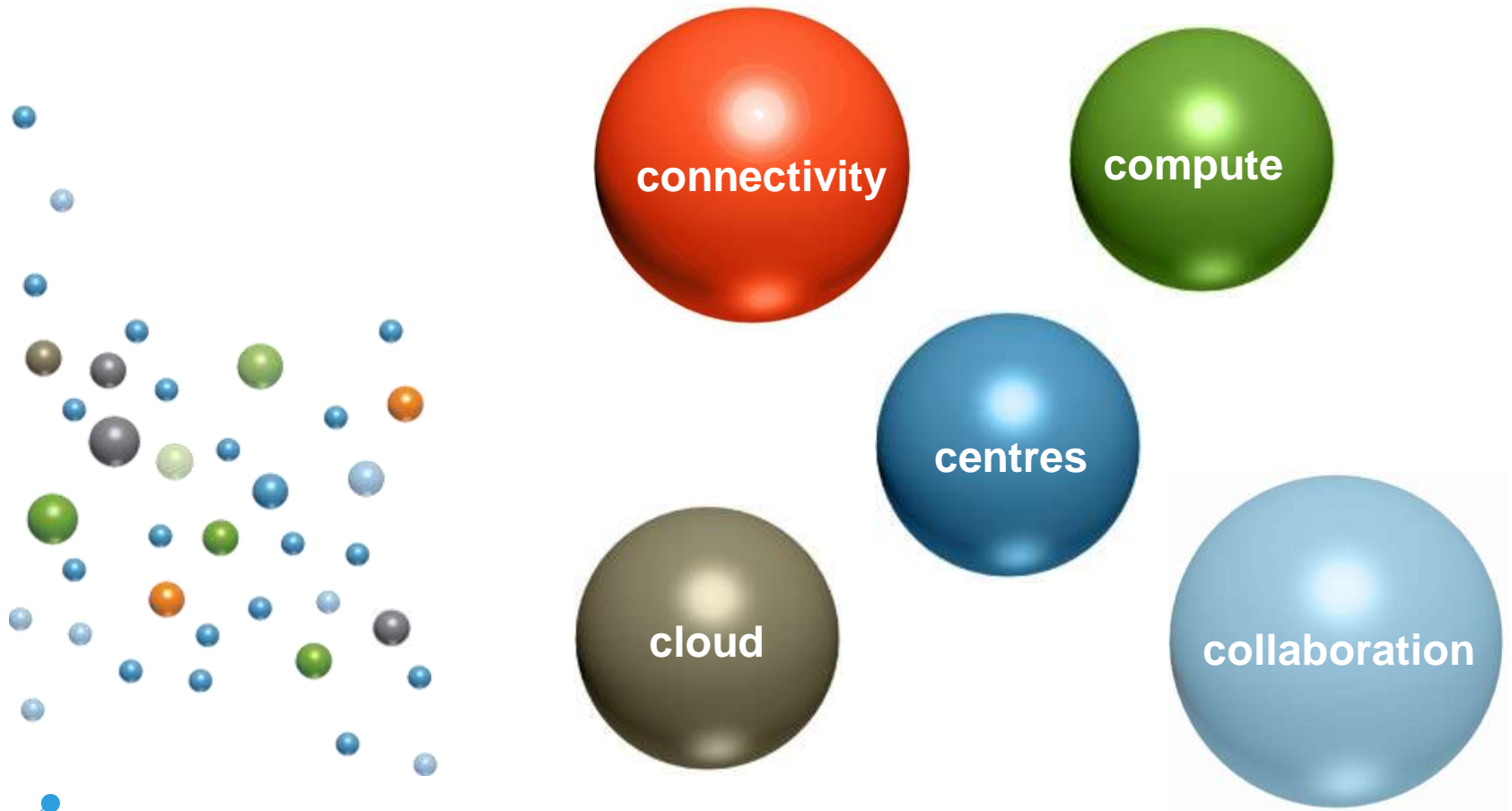


What do people want from a network?



everything!

Convergence of Needs



Connectivity

● **500Gb**

● **and 1Tbps**

● **> Regional Footprint**

● **Reliability and Redundancy**

● **> 99.99%**

**The LAST
MILE**

working with
local providers

“New”
technologies
WIRELESS

**Deciding
base needs
with
flexibility
to scale**

Computing

Planning ahead to build the infrastructure to support anticipated plans for computing



Changing the world of Advanced Computing/HPC
Diversifying access to more users
Distributed – Centralized – Hybrid

Centres

Exponential growth in data

Centralized efficiencies

GOING GREEN

**Improved data accessibility,
storage and recovery**

CLOUD STORAGE



Cloud

**The world is
reaching
for the cloud**

- More efficient
- Shared resources
- Less cost
- Faster implementation
- Adjust resources dynamically
- Correct mistakes easier



Typical Services

Data & Computing
Administrative
Support
Government



**A fast, reliable,
redundant
network is
critical**

Collaboration



Working
together
for
Ontario's
future

Avoid Re-inventing the Wheel

Increasing Accessibility for everyone

Technical and administrative support

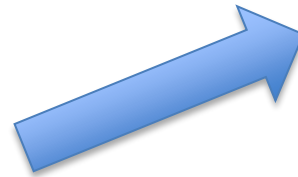
Building broader partnerships – P3

Government support

Leverage what you've got in novel ways

EXTREME DATA

Energy & Power
Environmental
Cancer Research
Genomics
Brain Research
Weather Modeling
Geospatial
Theoretical Physics
Quantum Computing
Digital Media
Bring Your Own Device
Social Media
Online Services
Business Modeling
YouTube & Skype
Online Education
Cloud Administration



Infrastructure
Access
Reliability
Redundancy
Security
Sharing
Cost
Speed
Power
Mining
Integration
Visualization
Curation

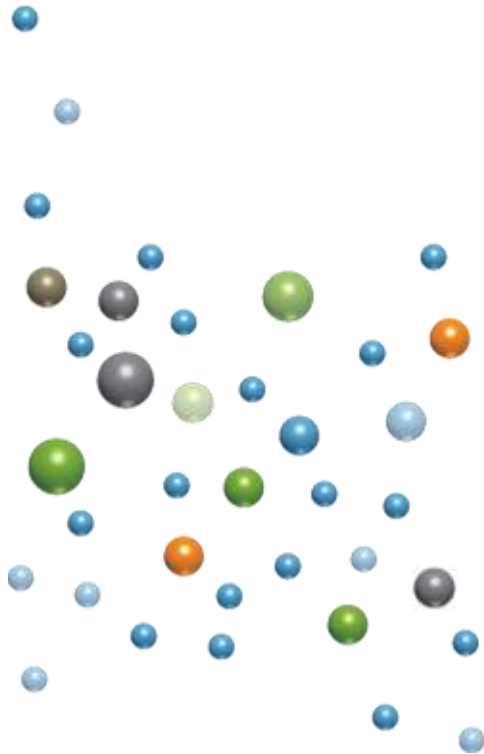
70!



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We are at a cross-roads....



Which path are you going to take?



With vision,
collaboration
and creativity,
the possibilities
are infinite.