

---

canarie



# International Networking Initiatives

Mark Wolff | GLIF Americas WG | Sept 28, 2016



canarie.ca | @canarie\_inc

---

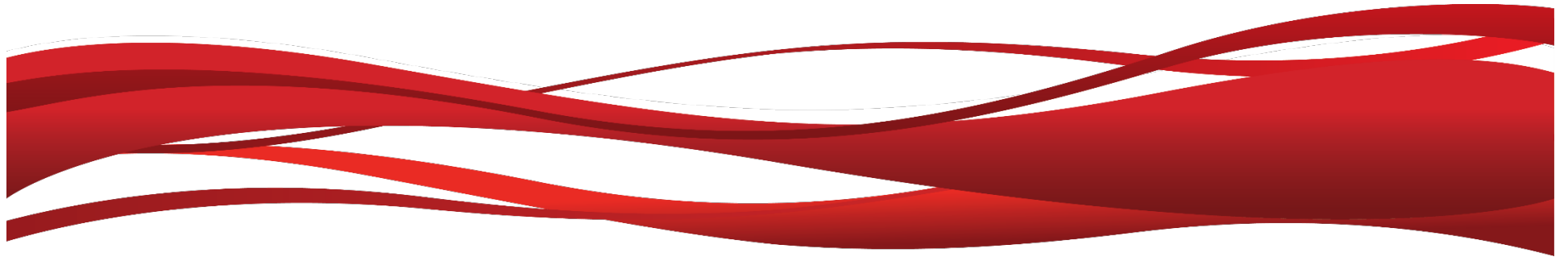
---

# Initiatives

1. Montréal Open Lightpath (R&E) Exchange
2. Connecting to the Inuvik Satellite Station Facility

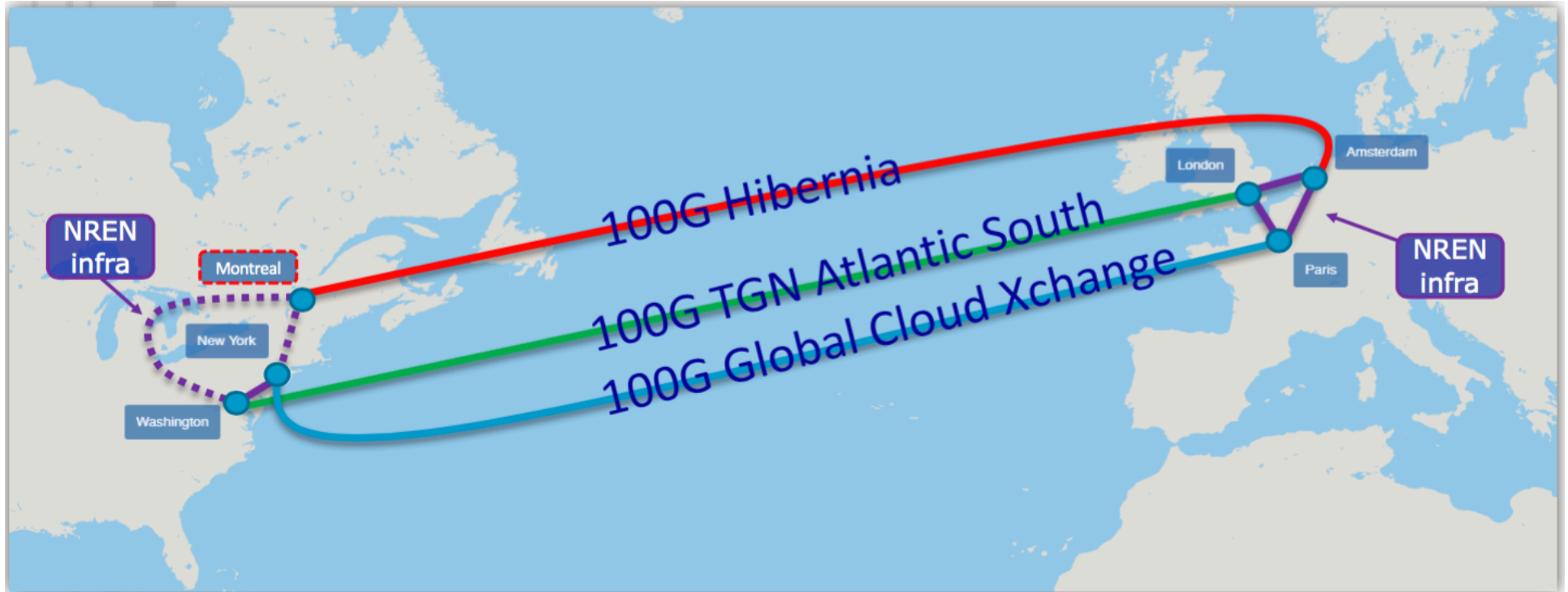
---

# Montréal Open Exchange



# ANA 200 becomes ANA 300

- Addition of GÉANT Paris – New York link increases capacity, resiliency but duplicates the landing site of an existing link at MAN LAN



Graphic: NORDUnet

---

# Relocate landing of a North American link

- > Northern link (NYC-AMS) selected best relocation choice
  - NORDUnet, SURFnet managed
- > Montréal selected as best landing location
  - Value of a Canadian landing point
  - Good fibre access (same site as QIX Montréal IX)
  - Good CANARIE connectivity from Montréal
- > ANA connections use Open Lightpath Exchanges
- > Therefore, CANARIE is launching a Montréal Lightpath Exchange
  - Exchange name to be determined
  - NORDUnet collaboration for 24x7 support

---

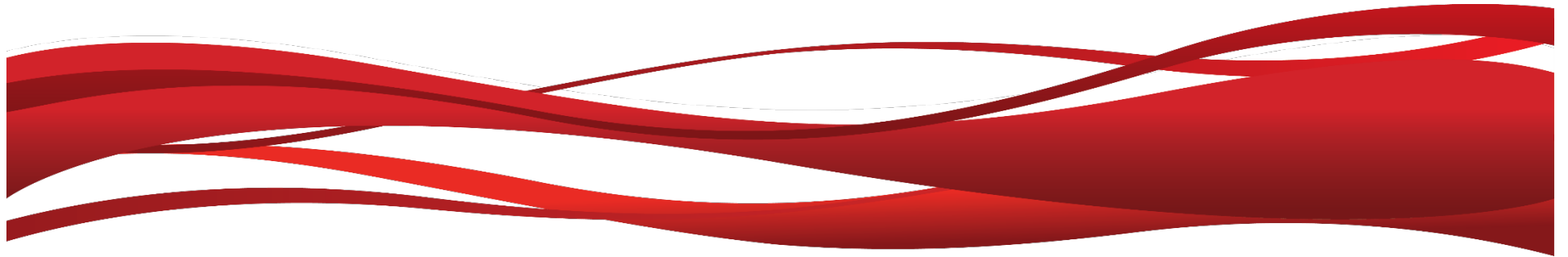
# Montréal Open R&E Exchange

## > Timeline

- End of 2016 for relocation of ANA link, and connection of Montréal to MANLAN for ANA 300
- Early 2017 for launch of Montréal exchange

---

# Connecting the Inuvik Satellite Station Facility



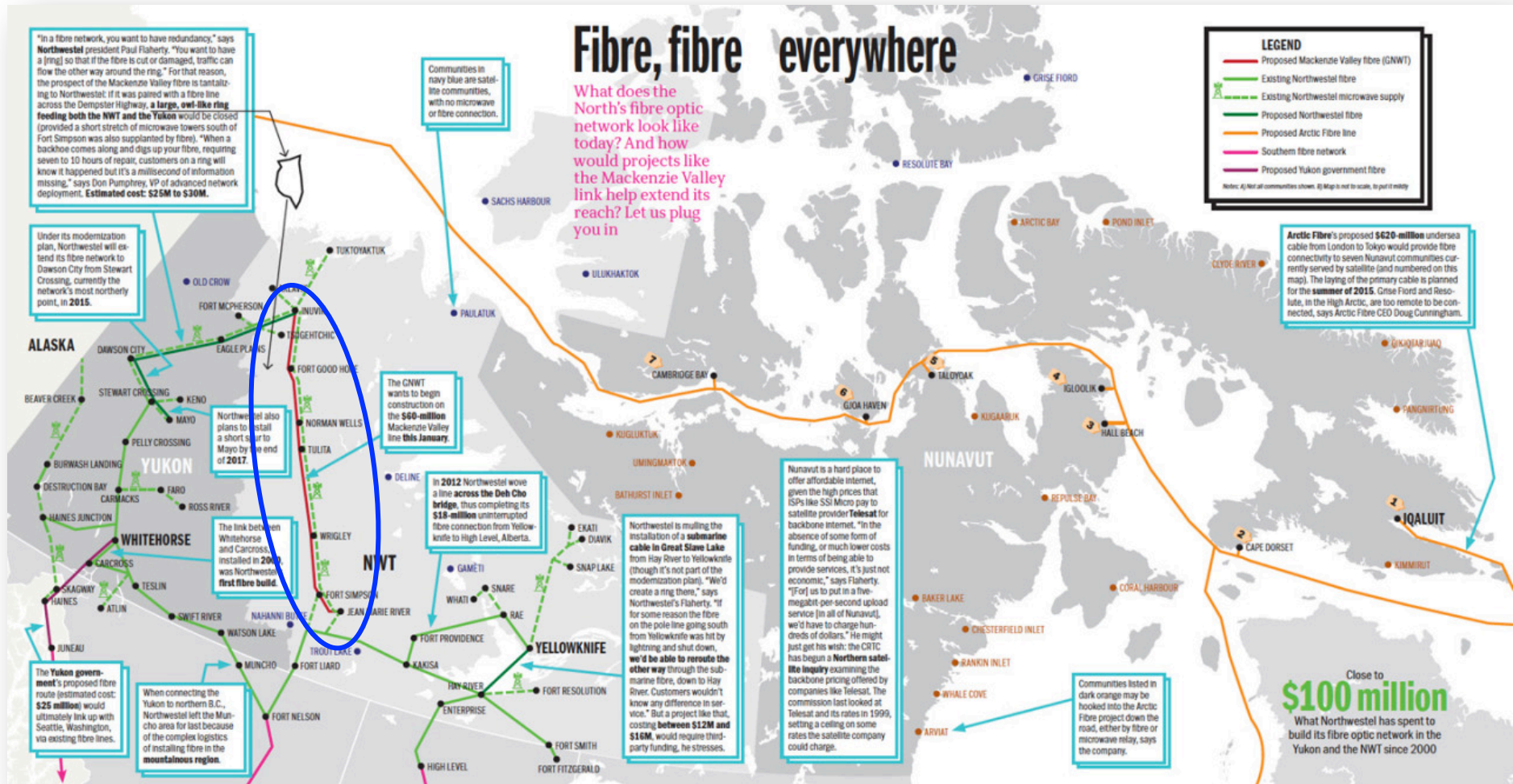
# Inuvik Satellite Station Facility (ISSF)



<http://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/satellite-facilities/ISSF/10953>



# I,400 KM route of the Mackenzie Valley Fibre



<http://upherebusiness.ca/post/89772418117>



# Mackenzie Valley Fibre



Image sources: CBC.ca

---

# The Project

- > **NORDUnet and Swedish Space Corporation (SSC)**
  - Projects may include multiple satellite downlink stations
  - Example: Inuvik, Canada; Kiruna, Sweden; Fairbanks, USA
  - Here, research data from Inuvik to be sent to Germany
  
- > **Mackenzie Valley Fibre construction delayed**
  - Subsea optical system used over land
  - Some problems with fibre not staying buried
    - Permafrost, rock strewn soil
  - August 2016 has become June 2017

# Conditions at the middle of the fibre

- Norman Wells, Northwest Territories



Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Record high humidex</b>	11.8	6.3	9.4	20.0	29.1	36.2	37.2	36.0	27.2	19.8	12.2	4.8	37.2
<b>Record high °C (°F)</b>	12.4 (54.3)	7.9 (46.2)	11.1 (52)	20.0 (68)	31.3 (88.3)	33.5 (92.3)	35.0 (95)	32.4 (90.3)	27.1 (80.8)	21.0 (69.8)	13.3 (55.9)	5.7 (42.3)	35.0 (95)
<b>Average high °C (°F)</b>	-22.2 (-8)	-19.5 (-3.1)	-12.5 (9.5)	1.0 (33.8)	12.1 (53.8)	20.7 (69.3)	22.5 (72.5)	19.0 (66.2)	11.0 (51.8)	-1.6 (29.1)	-15.2 (4.6)	-19.6 (-3.3)	-0.4 (31.3)
<b>Daily mean °C (°F)</b>	-26.1 (-15)	-24.0 (-11.2)	-18.4 (-1.1)	-5.1 (22.8)	6.4 (43.5)	15.0 (59)	17.1 (62.8)	13.8 (56.8)	6.6 (43.9)	-4.7 (23.5)	-18.7 (-1.7)	-23.4 (-10.1)	-5.1 (22.8)
<b>Average low °C (°F)</b>	-29.9 (-21.8)	-28.4 (-19.1)	-24.2 (-11.6)	-11.1 (12)	0.6 (33.1)	9.3 (48.7)	11.5 (52.7)	8.4 (47.1)	2.0 (35.6)	-7.7 (18.1)	-22.2 (-8)	-27.1 (-16.8)	-9.9 (14.2)
<b>Record low °C (°F)</b>	-52.2 (-62)	-54.4 (-65.9)	-46.1 (-51)	-37.2 (-35)	-17.8 (0)	-2.8 (27)	-1.1 (30)	-6.1 (21)	-15.7 (3.7)	-31.7 (-25.1)	-42.8 (-45)	-47.8 (-54)	-54.4 (-65.9)
<b>Record low wind chill</b>	-61.7	-60.2	-57.5	-43.8	-25.1	-6.9	0.0	-9.6	-17.7	-39.9	-52.4	-62.4	-62.4

[https://en.wikipedia.org/wiki/Norman\\_Wells](https://en.wikipedia.org/wiki/Norman_Wells)



canarie



canarie.ca | @canarie\_inc

---