Link Oregon - Update
High-speed Fiber Broadband for Oregon's Public & Non-profit Sectors

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NITRD Joint Engineering Team

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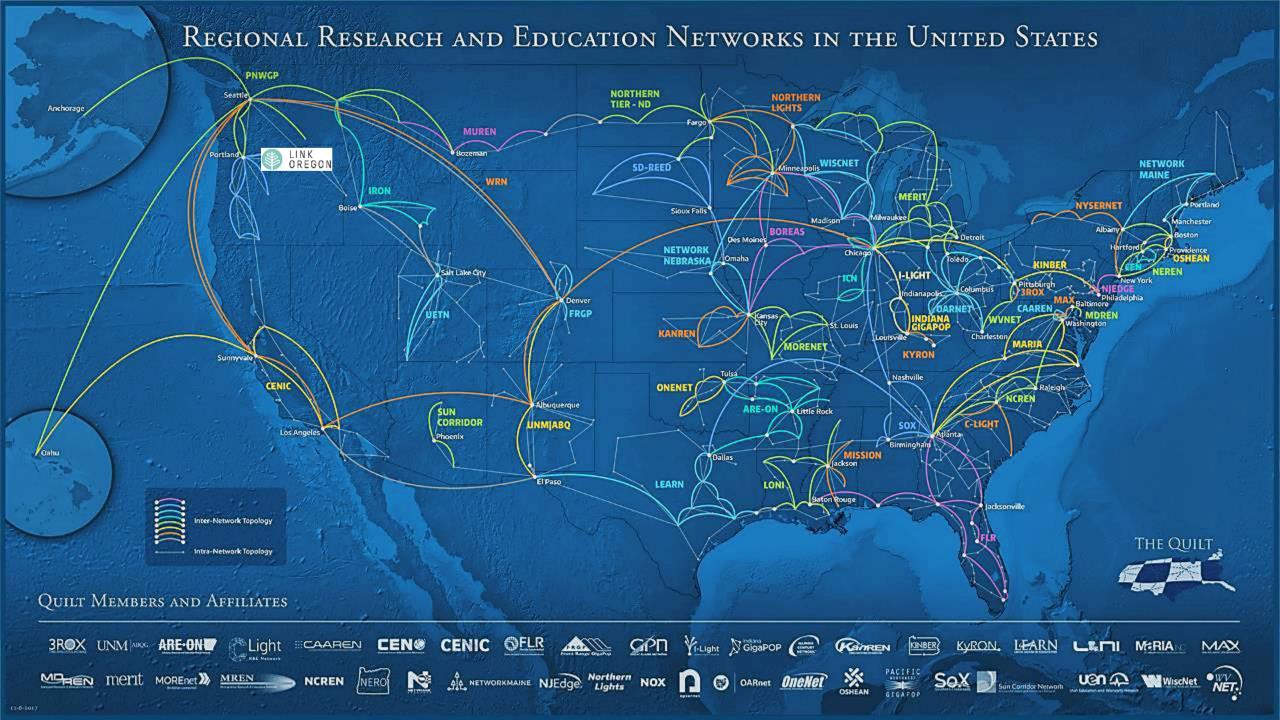# Themes for Today

Cutting-Edge Technology and Access

- We are building an advanced 'fourth-wave' middle-mile network for Oregon.
- We have acquired 2,700 route-miles of dark fiber statewide and into adjacent states, which allows us to add capacity and offer new services more flexibly and cost-effectively.

Broad Partnership Strategy

- We know that broad partnerships are critical to success:
  - Core: State of Oregon EIS and the four public research universities
  - (Pre)K-12 Education (P/K-12)
  - Higher Education
  - State Agencies: Oregon Broadband Office, State Library, ODOT
- We seek to partner with telecommunications providers that are investing in their communities' connectivity
- **We are partnering with campus researchers to support field science, including wildfire and seismic detection (UO: AlertWildfire and ShakeAlert)**

Visionary Approach and Support

- We are working with partners to envision and develop a roadmap for an *Oregon Learning and Telehealth Network (OLTN)*.
- We endeavor to stimulate broadband deployment statewide
- **We received State Federal CARES Act funding for network expansion to expedite deployment of network to underserved areas across the state**

REGIONAL RESEARCH AND EDUCATION NETWORKS IN THE UNITED STATES

LINK OREGON

Anchorage

PNWGP
Seattle
Portland

MUREN
Bozeman

NORTHERN TIER - ND
Fargo

NORTHERN LIGHTS

NETWORK MAINE

IRON
Boise

WRN

SD-REED

Sioux Falls

WISCNET
Minneapolis
Madison
Milwaukee

MERIT
Detroit

NYSERNET
Albany
Portland
Manchester
Boston
Hartford
Providence

Salt Lake City

UETN

Denver
FRGP

NETWORK NEBRASKA
Des Moines
Omaha

BOREAS

Chicago

ICN
I-LIGHT
Indianapolis
Columbus
Toledo

KINBER
Pittsburgh
3ROX
OARNET

CEN
NEREN
OSHEAN

New York
NJEDGE
Philadelphia

MAX
Baltimore

MDREN
Washington

Sunnyvale

CENIC

Los Angeles

SUN CORRIDOR
Phoenix

Albuquerque
UNM|ABQ

KANREN

Kansas City
St. Louis

MORENET

Louisville

KYRON

INDIANA GIGAPOP

WVNET
Charleston

CAAREN

MARIA

Nashville

Raleigh

ONENET
Tulsa

ARE-ON
Little Rock

SOX

NCREN

C-LIGHT

El Paso

LEARN

Dallas

LONI

MISSION
Jackson

Birmingham

Atlanta

Baton Rouge

Jacksonville

Oahu

FLR

Inter-Network Topology

Intra-Network Topology

THE QUILT

QUILT MEMBERS AND AFFILIATES

3ROX UNM|ABQ ARE-ON I-Light CAAREN CEN CENIC FLR Front Range GigaPop GPN I-Light Indiana GigaPOP Illinois Century Network KanREN KINBER KyRON LEARN LONI MARIA MAX

MDREN merit MOREnet MREN NCREN NERO Network NETWORKMAINE NJEdge Northern Lights NOX nysernet OARnet OneNet OSHEAN PACIFIC NORTHWEST GIGAPOP SoX Sun Corridor Network UEN WiscNet WVNET

11-6-2017

What is Link Oregon?

- Link Oregon is a non-profit consortium of Oregon's four state research universities and the state government (EIS)
- Link Oregon is an R&E network developing a facilities-based optical network
  - Statewide fiber footprint: 2,700+ route miles, 6 providers
  - Individual statewide WANs will converge onto this platform
- Link Oregon serves public and non-profit sectors – *not* a common carrier
- Link Oregon assumed responsibility for the previous R&E Network
- Link Oregon offers two core services:
  - Statewide, Ethernet-based transport
  - Enhanced Internet transit (250 Gbps) (Internet2, CENIC, commercial Internet)
- Link Oregon engages in local peering
  - NWAX (metro Portland), WIX (Eugene), SIX (Seattle)
- Link Oregon is engaged in last-mile partnerships with commercial and municipal providers

Strategic Governance

Non-profit organization with strategic & sustainable governance

- Oregon non-profit with **federal 501(c)(3) tax-exempt status**
- Asset vessel and operational entity
- Vehicle for collaborative IT projects

Board of Directors

- State government
  - Terrence Woods, State CIO (Chair – FY21)
  - Kurtis Danka, State CTO
  - **Kristen Sheeran, Governor's Office**
  - Peter Tamayo, Department of Education CIO

- Research universities
  - Andrea Ballinger, OSU (Vice Chair – FY21)
  - Bridget Barnes, OHSU
  - Kirk Kelly, PSU
  - Jessie Minton, UO (Treasurer)

- Additional board members
  - Steve Corbató (Link Oregon)
  - Bylaws provide for up to two more board seats

Network Status

Phase 1

- Network implementation early fall
- Includes Rings A, B, and E in Willamette Valley, Newport and central Oregon)
- Equipment partners: Fujitsu (optronics) and Arista (routers)

Phase 2

- Network project underway concurrently
- Includes Rings C and D in southern and eastern Oregon
- Legislative Emergency Board approved $8.39M in funding of Phase 2 capital expenses from federal CARES Act Coronavirus Relief Fund
- Strong bipartisan, urban/rural support
- Partnership with State Broadband Office, Department of Education, and Enterprise Information Services
- Extensive optical add/drop capability in eastern Oregon

Phase 3

- Planning for fiber network extensions on Coast and to remote locations in eastern Oregon – John Day and Lakeview

Organizing Team

State Government

- **EIS:** *Terrence Woods (CIO)*, Jennifer Bjerke (Deputy CIO), *Kurtis Danka (CTO),* Ann Andrews, Paul Deike, Mike Gromek, Jeremy Lyon, Kris Walker, Sandy Wheeler
- **ODE**: *Peter Tamayo (CIO),* Rick Crager, Carla Wade
- **HECC**: Robel Tadesse
- **Business Oregon / State Broadband Office**: Chris Tamarin

Research Universities

- **OHSU**: *Bridget Barnes (CIO),* Abhijit Pandit (CTO), Don Westlight, Andy Payne, Joe Voje, Danna Blattman, Harvey Clawson, Bob Cesaro
- **OSU**: *Andrea Ballinger (CIO),* Jon Dolan, David Barber, Suzanne Lucke, Johan Reinalda, Terry Meehan, Ben Baggett
- **PSU**: *Kirk Kelly (CIO),* Ryan Bass, Tamarack Birch-Wheeles
- **UO**: *Jessie Minton (CIO),* Matt Riley (CTO), Steve Huter (NSRC), Cindy Hetrick, Andy Vaughn

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- Kevin Bohan, *Steve Corbató*, Stephen Fromm, Rick Hicks, Tina Kirk, Ann Marcus, Katy Molloy-Brady, Molly Thurston

Italics denotes Members of the Board of Directors

THANK YOU

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"Any opinions, findings, conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Networking and Information Technology Research and Development Program."

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