

# From Local to Global: Collaborations for Research and Education



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Encuentro Reuna, Valdivia, Chile, 11 de abril de 2002

## From Local to Global

- **University of Washington**
- **Pacific Northwest Gigapop**
- **Pacific Wave**
- **The Quilt**
- **EDUCAUSE**
- **APRU**
- **ResearchChannel**



## University of Washington

- **One of the best research universities in the U.S.**
- **The only true research university north of San Francisco and Berkeley**
- **Computer science, bioengineering, medicine among its top disciplines**
- **“Learning @ the Leading Edge”**
- **Located in Seattle, in the northwest corner of the U.S.**



## Support for Teaching

- **A robust campus infrastructure**
- **A robust administrative infrastructure fronted by a highly customizable portal, MyUW**
  - Views for faculty/staff, researchers, students (MyClass), alumni, parents
- **Catalyst: Generic web teaching tools (somewhat like WebCT, Blackboard) but especially designed for UW faculty at their request**
- **Allows disciplines to concentrate on discipline-specific software needs**



# University of Washington Online Learning

	<b>1997</b>	<b>2001</b>
• <b>Courses</b>	<b>0</b>	<b>306</b>
• <b>Enrollment</b>	<b>0</b>	<b>10,000</b>
• <b>Degrees and Certificate Programs</b>	<b>0</b>	<b>32</b>



# Types of Programs

- **Free Courses**
  - 1,000 enrollments in 2 months
  - Learning Network, UW Homepage, others
- **Courses**
  - Credit
  - Noncredit
- **Certificate Programs**
  - 29 Programs
  - LAAP (Learning Anywhere Anytime Partnerships) Program
- **Degrees**
  - CSS (Computer and Software Systems)
  - Construction Engineering
  - Library and Information Science
  - PHARM. D



# UW Resources for Online Programs

- **Marketing**
  - Market Research
  - Web Marketing
- **Program Development**
  - 15-person Instructional Design Team
  - Budgeting Templates for Online Programs
  - Top-rate Instructors
  - Faculty/Community Advisory Boards
  - Catalyst Tools



# Partnership Model

- **Types of Partnerships**
  - Joint Program Development Efforts
  - Licensing Agreements
  - Marketing Relationships
  - Benchmarking Activities





## Partnership Model (continued)

- **Corporate Partners**
  - Pearson/Prentice Hall
    - 20-person sales force
    - LAAP partner
    - Joint video projects
  - APEX
    - version UW courses for the high school market



# Partnership Model (continued)

## Educational Partners

- R1edu ([www.R1edu.org](http://www.R1edu.org))
  - 34 major research universities
- Alliance of 4
  - Berkeley, Wisconsin, Penn State, Washington
- Hong Kong University of Science & Technology
- WUN (Worldwide University Network)
  - 5 American and 6 British universities



## Public Health Practice Certificate

- **Partners**
  - Emory
  - Johns Hopkins
  - Tulane
- **Funding**
  - Centers for Disease Control (CDC)
- **Format**
  - credit graduate-level certificate program (33 credits)
  - Completed in 15 months
- **Tracks**
  - Administrative and Management
  - Community Development
  - Epidemiology and Information
  - Policy Development and Program Planning

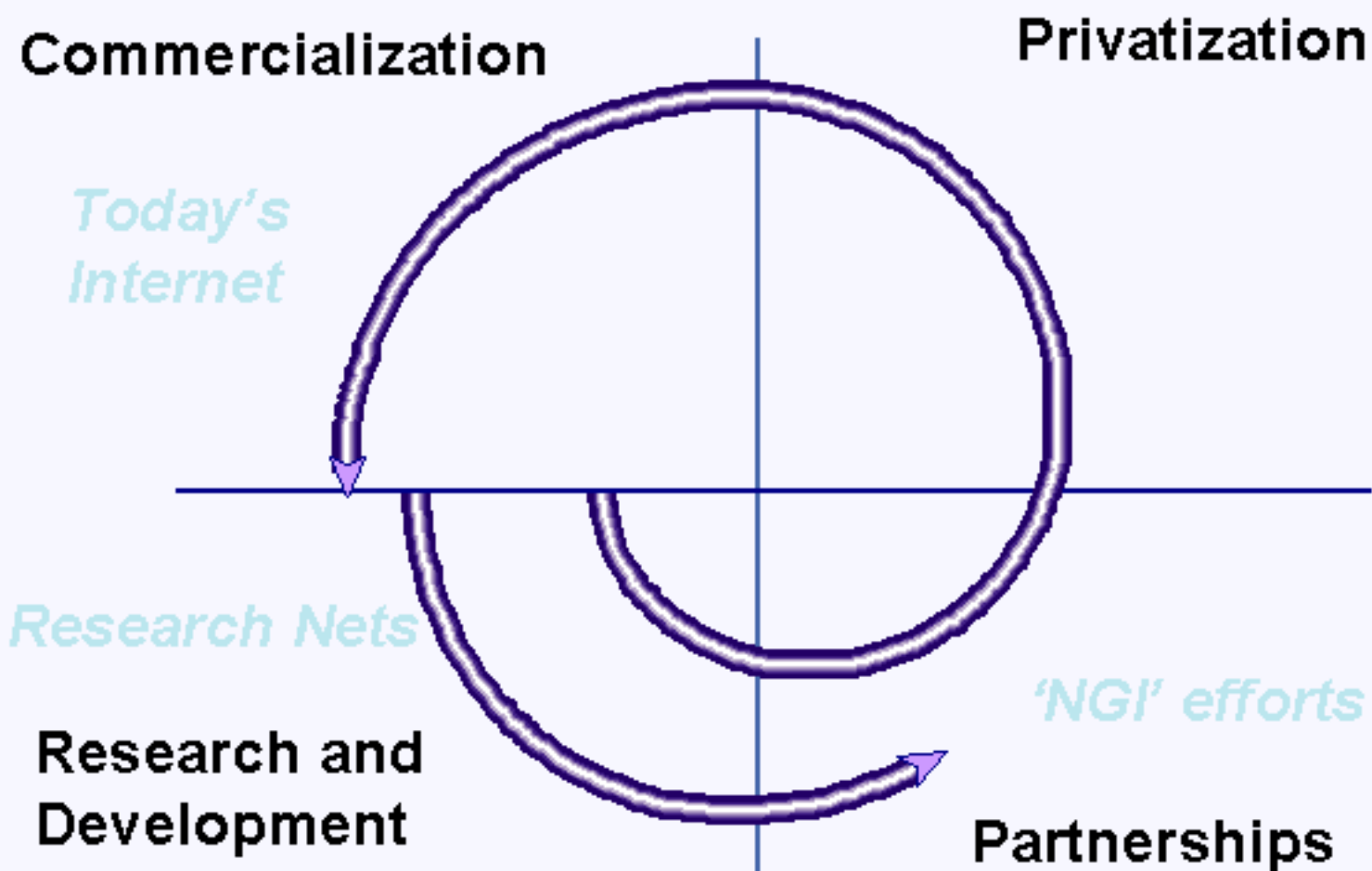


## **Public Health Practice Certificate (continued)**

- **Content**
  - **Health Care and Public Health Services**
  - **Epidemiology and Biostatistics**
  - **Management**
  - **Informatics**
  - **Strategic Planning**
  - **Financial Management**
  - **Community Health and Needs Assessment**



## The network development 'Spiral'



Source: Ivan Moura Campos

## Pacific Northwest Gigapop

**The Pacific Northwest Gigapop is the PNW's access point to Internet2, to high performance U.S. Federal Networks, and to high speed commodity Internet**

**R&D testbed inviting national and international experimentation with advanced Internet-based applications**

PACIFIC  
  
WAVE



## **Pacific Northwest Gigapop**

**Serves the schools in Washington State (Kindergarten-postdoctoral)**

**An AUP (acceptable use policy) free zone**

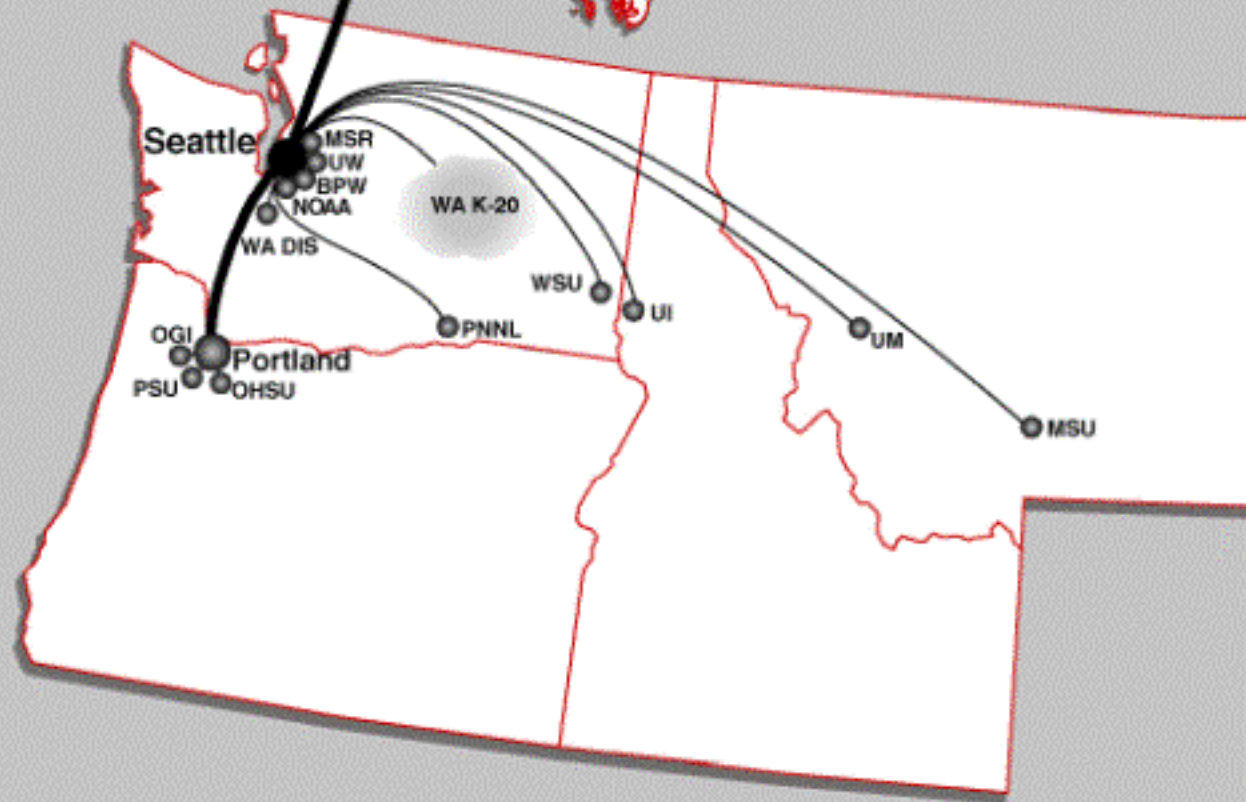
**Located in Seattle, Washington USA**





# PACIFIC NORTHWEST GIGAPOP

[www.pnw-gigapop.net](http://www.pnw-gigapop.net)



- BPW** Boeing Phantom Works
- MSR** Microsoft Research
- MSU** Montana State University
- NOAA** National Oceanographic & Atmospheric Administration
- PNNL** Pacific Northwest National Laboratory
- PSU** Portland State University
- OHSU** Oregon Health Sciences University
- OGI** Oregon Graduate Institute
- UA** University of Alaska
- UI** University of Idaho
- UM** University of Montana
- UW** University of Washington
- WA DIS** Washington Dept of Information Services
- WA K-20** Washington State K-20 Educational Telecommunication Network
- WSU** Washington State University

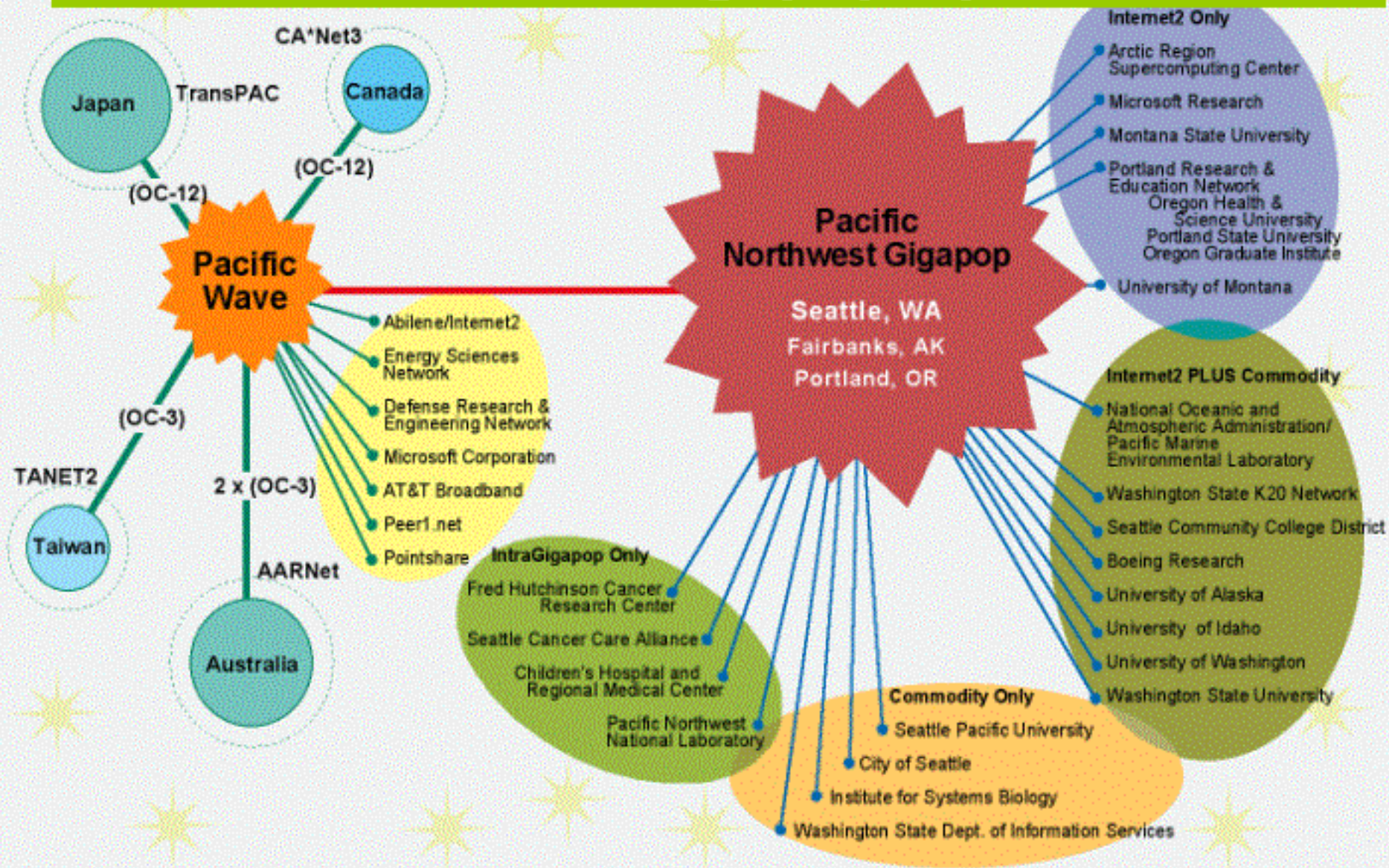


## Support of Advanced Applications

- **Microsoft Land Speed Record**
- **UW Internet HDTV**
- **Measurement projects (GigaTCP, AMP, Surveyor...)**
- **ISiE/Tektronix Uncompressed HDTV**
- **ResearchChannel**
- ...



# Pacific Northwest Gigapop System



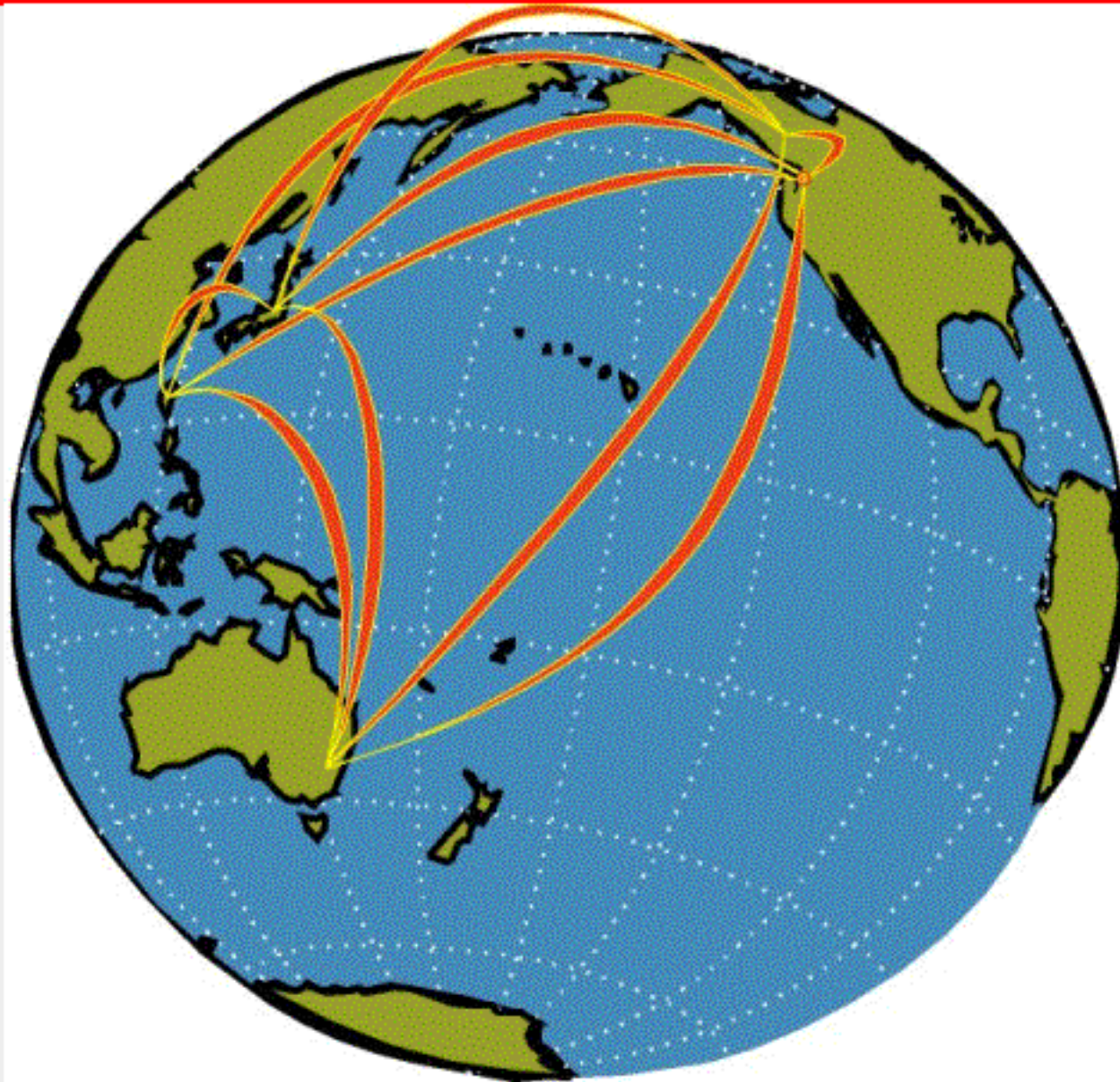
## Pacific Wave

### **Pacific Wave is a service of the Pacific Northwest Gigapop.**

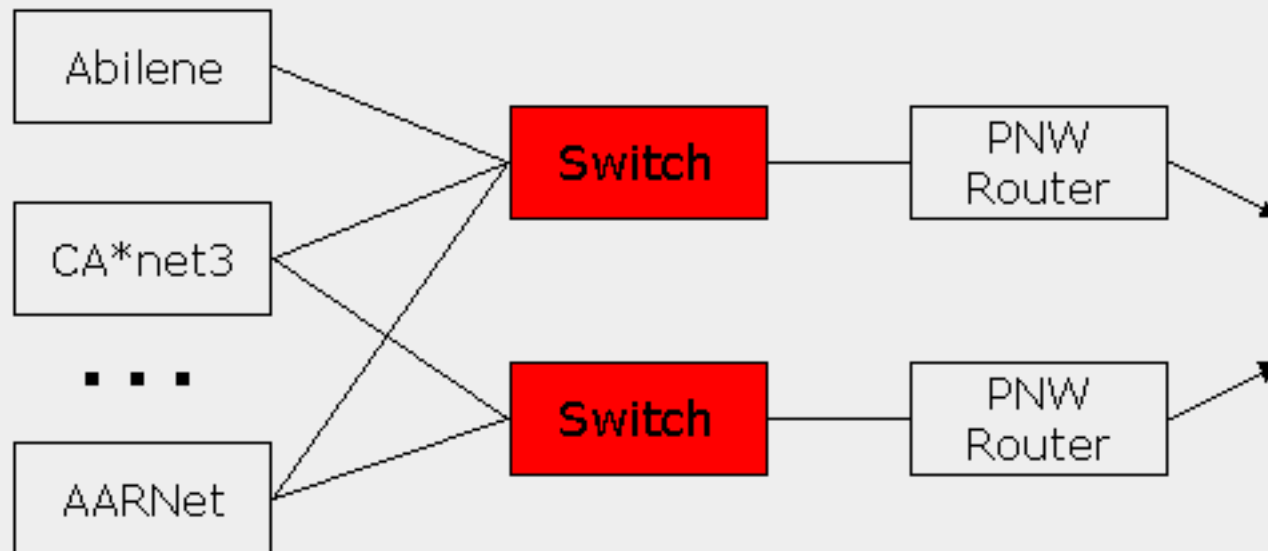
- High speed peering point for regional and international networks
- Complement of Abilene and CA\*net3 International Transit Network services
- Open peering point for participant-managed bilateral peerings



# Pacific Wave Emphasis so far



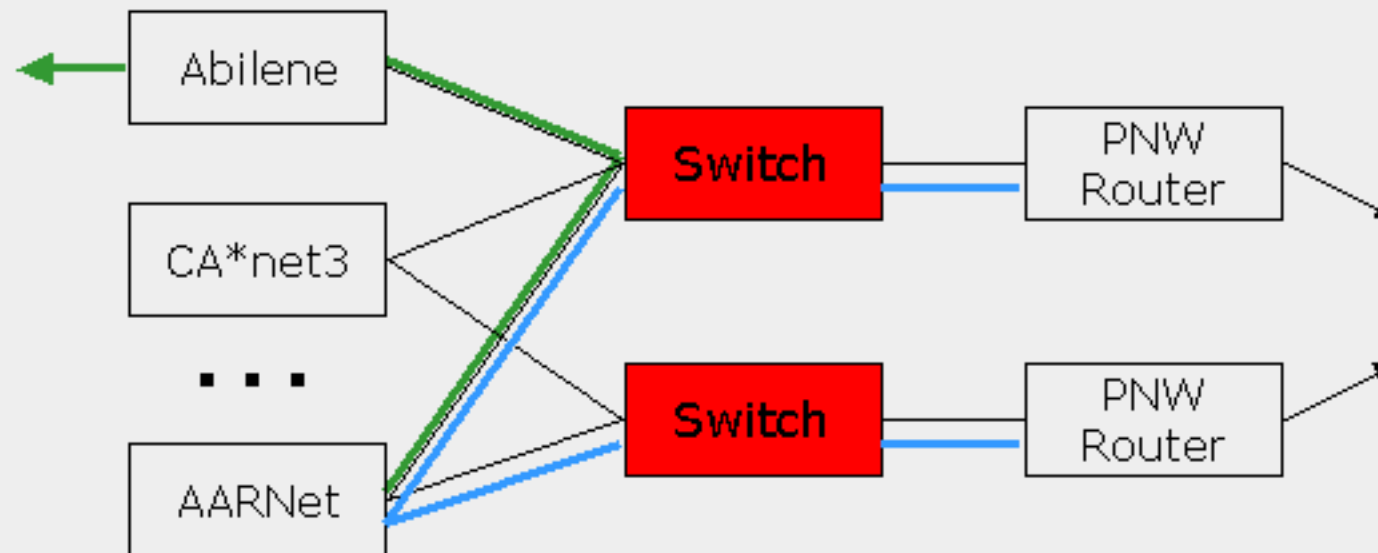
# Pacific Wave Architecture



- An ATM free zone! Based on a pair of Gigabit Ethernet switches providing two subnets



## Peering at Pacific Wave



- 1. Peer with the Pacific Northwest Gigapop**
- 2. Peer with Abilene, CA\*net3 and receive their ITN service to reach other networks**
- 3. Peer with other Pacific Wave participants**



## Features of Pacific Wave

- **Close to major Pacific cable landing sites**
- **Located in incumbent telecommunications carrier grade hotel**
  - easy access to co-lo services
  - easy access to fiber-meet-me-room
  - easy access to full West Coast fiber grid
- **Gigabit Ethernet is high speed, low cost, low maintenance**
  - No PNWGP staff involvement required to setup your peerings; no ATM PVC's or mandated routing policy
- **Switches implement PIM-SM snooping for increased multicast efficiency**



## Features of Pacific Wave (cont.)

- **24 x 7 Network Operations Center**
- **Redundant environmentals (DC, HVAC)**
- **PNWGP Commodity Internet Services**
  - Engineered and delivered via four diverse tier-one vendors
  - Vendors chosen after exhaustive review of capacity, support, peering, etc.
  - Diverse geographic connectivity for commodity services
  - 1.45Gbps throughput (under expansion)





## Networks at Pacific Wave: April 2002

- **AARNet** – Australian Academic & Research Network
- **Abilene Network/Internet2**
- **ATT Broadband Internet**
- **CA\*net3/CANARIE**
- **DREN** – Defense Research and Engineering Network
- **ESNet** – Energy Sciences Network
- **Microsoft Corporation**
- **Pacific Northwest Gigapop**
- **Siemens Medical** – Pointshare
- **TANET2** – Taiwan Research Network
- **TransPAC** – Asia Pacific Academic Networks (APAN)

PACIFIC



WAVE

## The Quilt

- **Collaboration of 17 leading advanced non-profit advanced regional networking organizations in the U.S.**
- **Aim is to promote *consistent, reliable, interoperable* and efficient advanced networking services that extends to the broadest possible community.**
- **A Project of UCAID, under the leadership of Wendy Huntoon, Pittsburgh Gigapop**



## Goals

- **Assist participants in providing a broad range of networking services to constituents.**
- **Facilitate innovative and successful technical projects.**
- **Promote end-to-end continuity and delivery of advanced network services.**



# Initial Participants

- **CENIC** Corporation for Education Network Initiative in California
- FRGP Front Range Gigapop
- GPN Great Plains Network
- MAX Mid-Atlantic Crossroads
- Merit Merit Network, Inc.
- MREN Metropolitan Research and Education Network
- North Carolina Gigapop North Carolina Gigapop
- NetWork Virginia NetWork Virginia
- NoX Northern Crossroads
- NYSERNet NYSERNet
- OARnet OARnet
- **PNWGP** Pacific Northwest Gigapop
- Pittsburgh Gigapop Pittsburgh Gigapop
- SoX Southern Crossroads
- Texas Gigapop Texas Gigapop
- SURA Southeastern Research Universities Association
- EDUCAUSE EDUCAUSE



## Quilt Current Projects

- **Commodity Internet Services**
- **Regional Fiber Infrastructure Project**
- **Collaboration with Public Broadcasting Stations**



# EDUCAUSE/Net@EDU/BPG

- **EDUCAUSE**
  - Advance higher education by promoting the intelligent use of information technology
  - Over 1,800 institutions
- **Net@EDU**
  - Over 60 institutions
  - Advance the evolution of global networking
- **Bandwidth Pricing Group**
  - Create disruptive models of bandwidth pricing
  - International committee
    - Assist other economies in developing those models



## Association of Pacific Rim Universities

- **Association of 34 research universities on the Pacific Rim**
- **Stimulate cooperation in teaching and research on issues of major importance to the Pacific Rim Communities**



# Association of Pacific Rim Universities

- **Australia**
  - Australia National University
  - University of Sydney
- **Canada**
  - University of British Columbia
- **Chile**
  - **Universidad de Chile**
- **China**
  - Fudan University
  - Peking University
  - Tsinghua University
  - U of Science and Technology
  - Hong Kong U of Sci and Tech
- **Chinese Taipei**
  - National Taiwan University
- **Indonesia**
  - University of Indonesia
- **Japan**
  - Kyoto University
  - Osaka University
  - University of Tokyo
  - Waseda University
- **Korea**
  - Seoul National University
- **Malaysia**
  - University of Malaya
- **Mexico**
  - Nat. Autonoma U de Mexico
- **New Zealand**
  - University of Auckland
- **Philippines**
  - University of the Philippines
- **Russia**
  - Far East National University
- **Singapore**
  - National University of Singapore
- **Thailand**
  - Chulalongkorn University
- **USA**
  - CalTech
  - Stanford University
  - University of California
    - Berkeley, Davis, Irvine, Los Angeles, San Diego, Santa Barbara
  - University of Oregon
  - University of Southern California
  - **University of Washington**





# Association of Pacific Rim Universities

- **Yearly distance learning conference**
- **APRUnet**
  - While APRU membership is closed, APRUnet is NOT
  - First formal meeting in Australia next month
  - Future possible activity: enabling better infectious diseases surveillance and warning
    - Outbreak from South East Asia—how does it travel and where?
    - Health surveillance for 2002 World Cup in Japan and Korea



# ResearchChannel



ResearchChannel.com

One bright idea after another

# Participants

Baylor College of Medicine

Carnegie Mellon University

Duke University

George Mason University

Georgia Institute of Technology

Johns Hopkins University

Massachusetts Institute of Technology

National University of Singapore

Oregon Health and Science University

Princeton University

Rice University

Stanford University

Tufts University

University of Alaska-Fairbanks

University of Chicago

University of Colorado

University of Hawaii

University of Houston

University of Maryland-College Park

University of North Carolina

University of Pennsylvania

University of Southern California

University of Texas -Austin

University of Virginia

University of Washington

University of Wisconsin-Milwaukee

Vanderbilt University

Virginia Tech

Yale University

CENIC

Internet2

National Academies

National Academy of Engineering

National Academy of Sciences

National Institutes of Health

National Institute of Standards and  
Technology

National Sea Grant College Program

R1edu.org

Research Centers:

IBM Corporation

Sony Electronics Inc.



ResearchChannel.com

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# ResearchChannel Goals

**Create a recognized global media presence for research activity.**

**Provide a high-quality and accessible resource for research information.**

**Encourage collaboration and experiments among ResearchChannel participants to develop new methods of distribution.**



**ResearchChannel.com**

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# Viewership

**Satellite delivery to 10 million television viewers in United States**

**35,000 requests for web pages, webcast, and Video-On-Demand files per month**

**World-wide Internet access**



**ResearchChannel.com**

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# Participation

## 4 Advisory Councils

Programming, Technology, Fundraising,  
International Partnerships

**Annual Meetings, Conferences, Seminars**

**Projects, Experiments, Internet2 Working Group**



**ResearchChannel.com**

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# Benefits

**Broadcast & Webcast of Submitted Programming**

**Inclusion of Programming in Digital Media Archive  
for Video-On-Demand**

**Access to Expert Resources**

**Downlink for Local Cable Distribution**

**Server-to-Server Webcast**

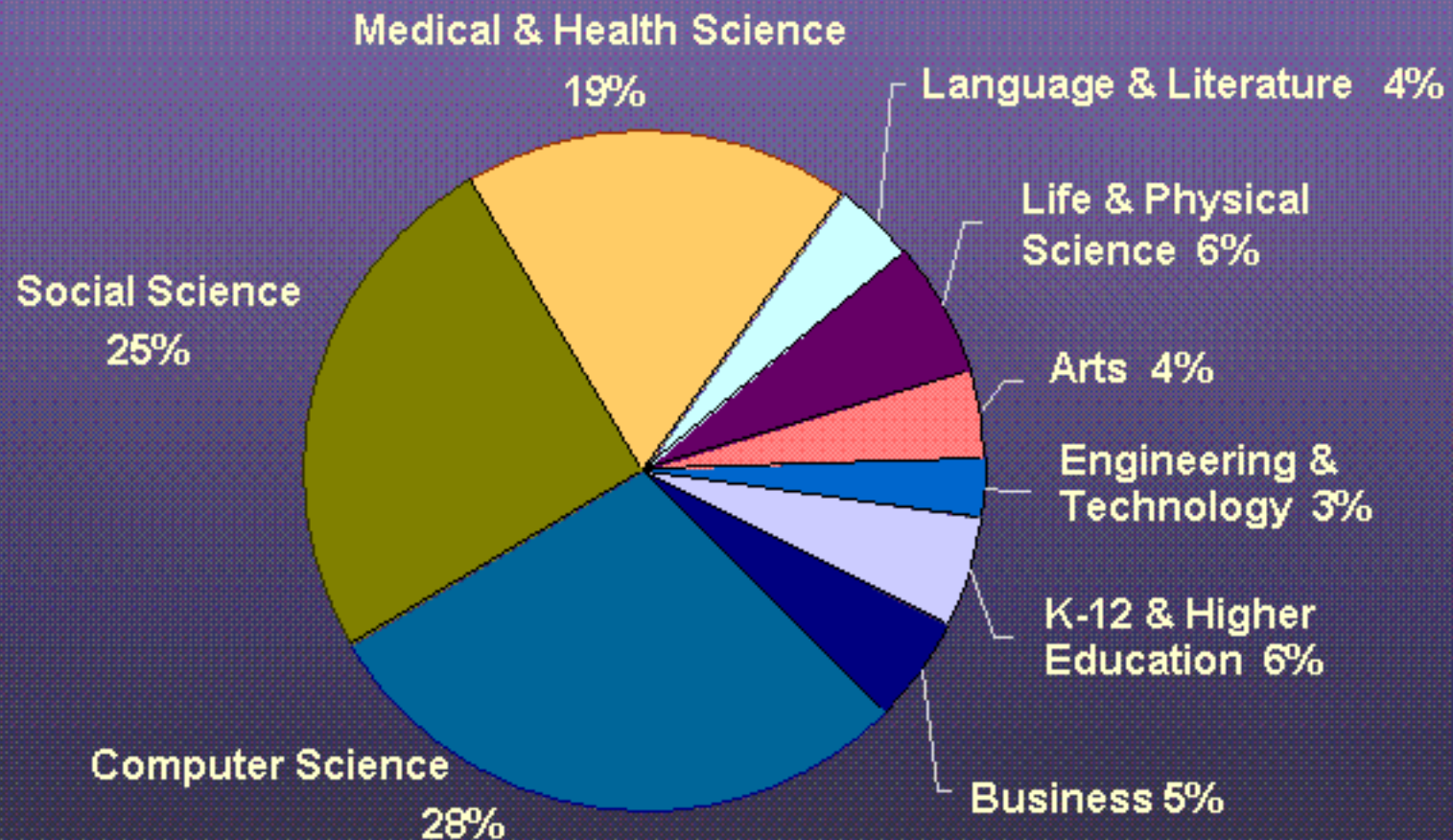


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# Programs by Subject



ResearchChannel.com

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# ResearchChannel Programming

40 New Programs Premiere Each Month



ResearchChannel.com

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# Digital Media Archive

**For more information:**

**[Info@researchchannel.com](mailto:Info@researchchannel.com)**

**<http://www.researchchannel.com>**



**ResearchChannel.com**

One bright idea after another

# **Digital Media Archive (con't)**

**KEXP radio station**

**Creating an archive of its audio library  
(where allowed by copyright)**

**Uncompressed audio on the web**

**[www.kexp.org](http://www.kexp.org)**



**ResearchChannel.com**

One bright idea after another

**iMuchas gracias por su  
hospitalidad!**



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