

RESEARCHCHANNEL

Questnet, July 12, 2007

Jim DeRoest

Director, Streaming Video Technologies



RESEARCHCHANNEL :: A DECADE OF SUCCESS

ResearchChannel :: Founding Goals



- To bring the work of distinguished thinkers and scholars to a global audience.
- To be a global media destination.
- To create video resources for academic communities.
- To lead in the development of media technologies.

- 
- RESEARCH
CHANNEL

RESEARCH
CHANNEL

Advanced Digital Literacy	National Academy of Sciences
Georgia Institute of Technology	National Institute of Health
Idaho National Engineering and Technology Center	National Institute of Standards and Technology
Johns Hopkins University	National Institute of Mental Health
Massachusetts Institute of Technology	National Institute of Child Health and Human Development
North Carolina State University	National Library of Medicine
New York University	National Science Foundation
Pennsylvania State University	Naval Research Laboratory
Rice University	Naval Surface Warfare Center
Rutgers, The State University of New Jersey	Naval Weapons Center
Stanford University	Naval Weapons Research and Development Center
Texas A&M University	Naval Weapons Research and Development Center
Tulane University	Naval Weapons Research and Development Center
National Academy of Engineering	Naval Weapons Research and Development Center

New Partnerships:: Microsoft “Behind the Code”, MSR Lecture Series



- Important relationship with Microsoft corporate
- Leveraging opportunity for media coverage about ResearchChannel
- Microsoft engaged to promote series to press and “blogosphere”
- “GeekWeek” on RC to coincide with premiere

New Partnerships:: Museums and Libraries



The screenshot shows the WebWise 2006 website. At the top, it says "WebWise 2006" with logos for OCLC, IFLA, and the Museum Library. A navigation menu on the left includes Home, Agenda, Committee, Hotel & Travel, Los Angeles, and FAQ, with a "register online >" link. The main content area is titled "Inspiring Discovery: Unlocking Collections" and features a graphic of palm trees. It lists the dates "February 15-17, 2006" and the location "Los Angeles, CA, OMNI Hotel at California Plaza". A paragraph describes the conference theme as "Inspiring Discovery: Unlocking Collections" and mentions that it will explore current and emerging practices for information discovery. A larger paragraph at the bottom provides more details about the conference, including the dates, location, and the topics to be discussed, such as innovative approaches to discovery, traditional approaches used by libraries, museums and archives, and how cultural heritage institutions learn from one another and adapt behaviors of the different curatorial traditions to improve discovery and open up our collections.

WebWise 2006

presented by OCLC IFLA Museum Library

Home
Agenda
Committee
Hotel & Travel
Los Angeles
FAQ
[register online >](#)

Inspiring Discovery: Unlocking Collections

February 15-17, 2006
Los Angeles, CA, OMNI Hotel at California Plaza

The conference theme is *Inspiring Discovery: Unlocking Collections*, and will explore current and emerging practices for information discovery as well as promising innovations that could revolutionize the ways in which information seekers find digital content.

The 2006 WebWise Conference on Inspiring Discovery: Unlocking Collections will be held in Los Angeles, California, February 15th-17th at the Omni Hotel at California Plaza.

Sessions and demonstrations will explore innovative approaches to discovery, as well as traditional approaches used by libraries, museums and archives. What approaches do cultural heritage institutions use to support collection discovery? How can cultural heritage institutions learn from one another and adapt behaviors of the different curatorial traditions to improve discovery and open up our collections? These questions and more will be addressed and answered over the three-day conference. For the first time, the conference will introduce table-talk sessions during day 2 lunch on a broad range of topical subjects.

National Science Foundation :: Partnership



- NSF-produced programming highlighting NSF research
- Non-exclusive distribution of broadcast programs and Internet distribution
- Exploring a pilot program “YouTube” for research



Diverse Programming



Is Arab-Israeli Peace Possible?

Public policy scholar Aaron David Miller discusses his views on whether a lasting peace is achievable.

A Few Drops in Cambodia: Stories from a Relief Effort

How has Cambodia's tragic history of genocide impacted the country's health care infrastructure to this day, and who can help those in need of treatment?

Depression, Delirium & Dementia: What We Be Doing?

Mental health can be improved through early diagnosis, and treatment.

Microbes: Friend or Foe

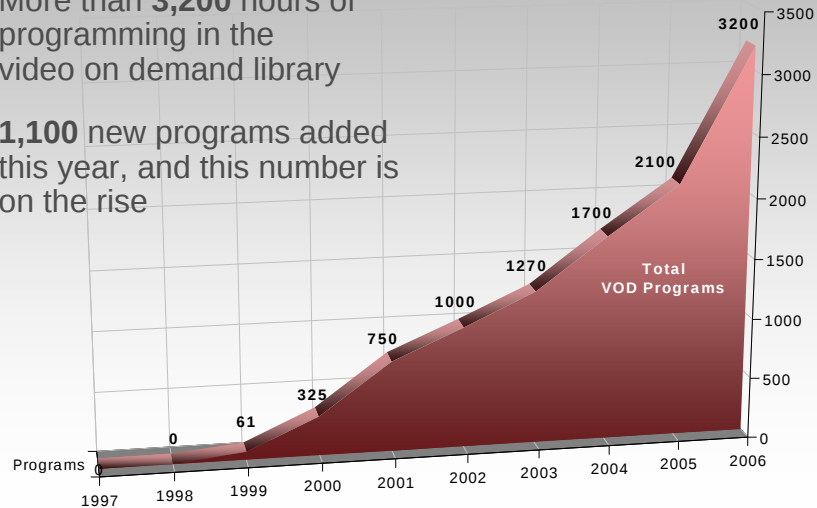
You've probably heard about the dangers of microbes such as anthrax, but what about other microbes — the ones that play a critical role in sustaining life?



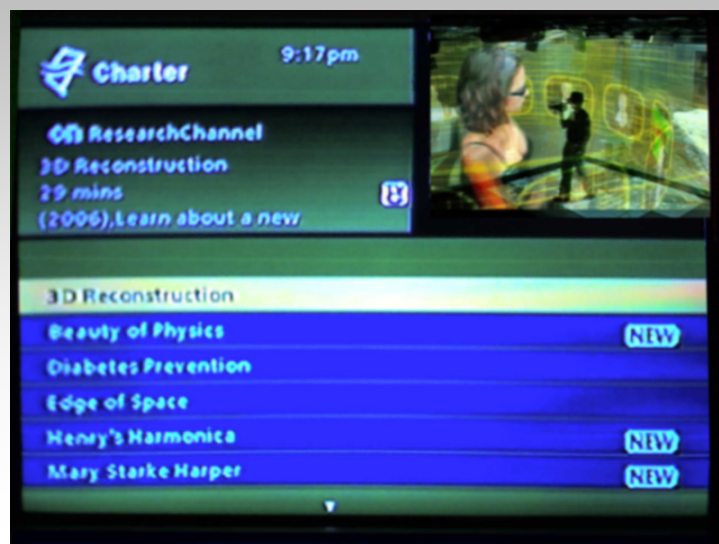
ResearchChannel:: Programs



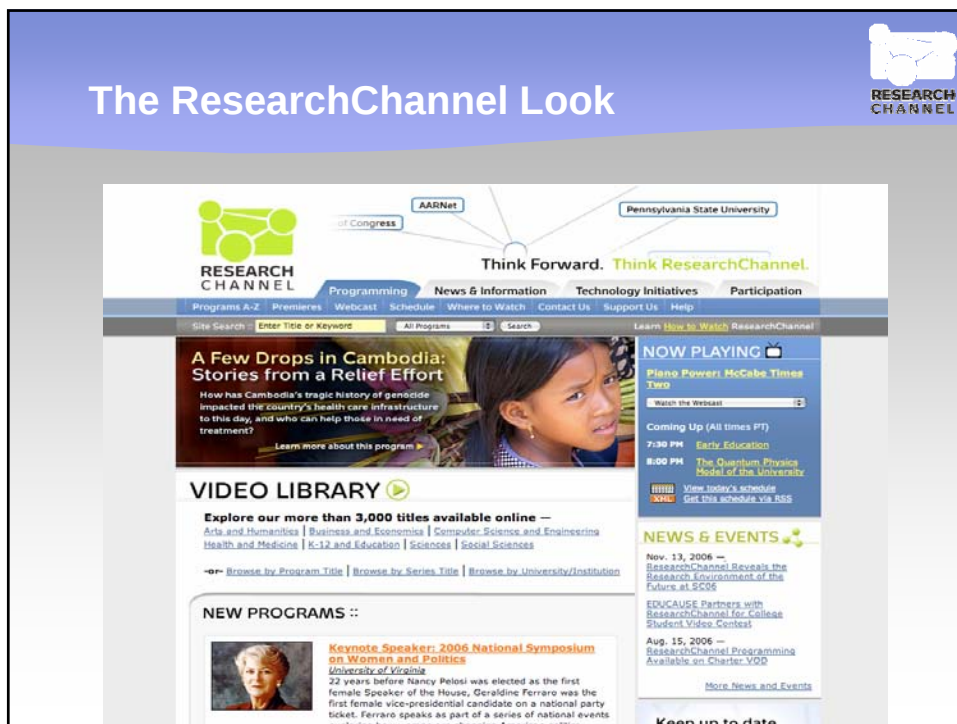
- More than **3,200** hours of programming in the video on demand library
- **1,100** new programs added this year, and this number is on the rise



ResearchChannel :: Charter Cable Video on Demand



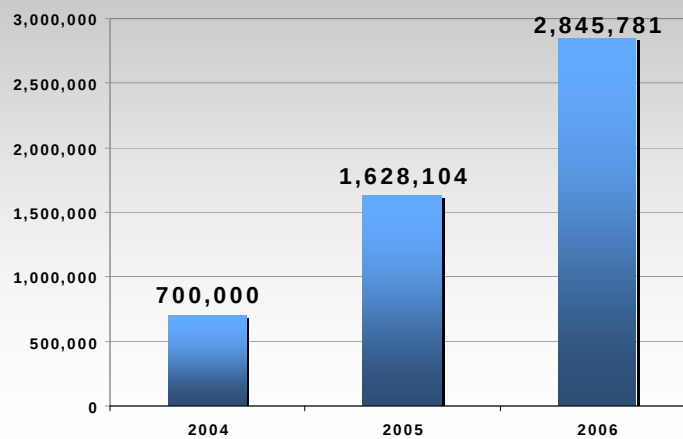
The ResearchChannel Look



Web Trends and Feedback



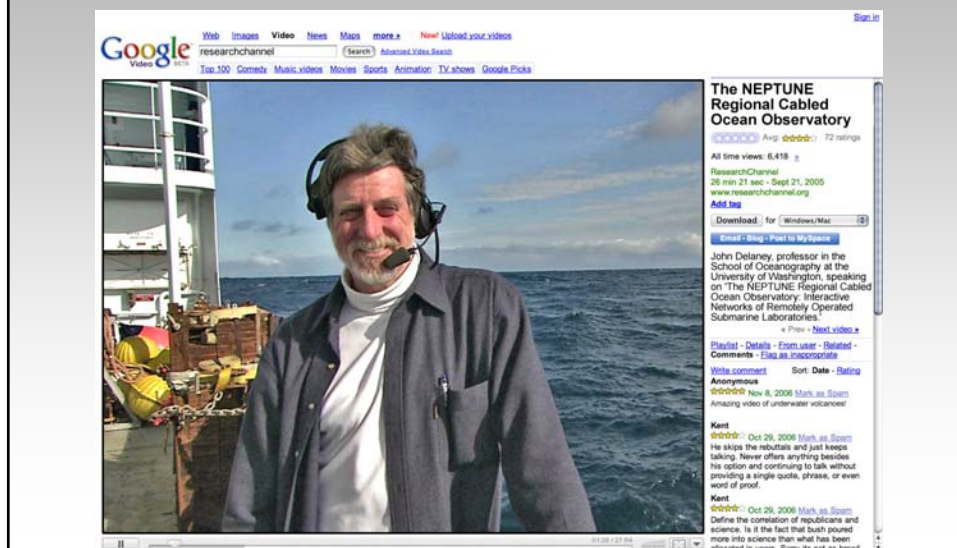
Total Website Visits per Year



Internet Distribution :: Charter.net



Internet Distribution:: Google Video, YouTube



Internet Audio Video Research:Technology Milestones



October 1999

First-Ever Streaming of High-Definition Television over the Internet

November 1999

Network Sets Record Speed

April 2000

First Live HDTV Over Internet Newscast

July 2004

First Transmission of Full Bandwidth HD Video Between Computers

September 2005

First-Ever Live HD Images from Seafloor to Land Available as IP-Based Feed

November 2005

Interactive Multipoint HD Videoconference Demonstrated

November 2006

Worldwide Partner in ConferenceXP Testing



overview

iHDTV™ is a software suite consisting of software modules that work with commercially available components to capture, packetize and transport high-definition video in various formats over Internet Protocol networks, spanning the range of HDTV quality levels, with the goal of providing wider access to high-definition content. Developed by ResearchChannel along with the University of Washington, iHDTV™ was first demonstrated in 1999.

Since that time, the software suite been expanded to enable and expedite efficient streaming with data at rates of up to 1.5Gbps, which is sufficient to transfer uncompressed 1080i high-definition video. The iHDTV™ code is designed to require minimum overhead to achieve low latency. Its modular design can easily support new devices and flexible modes of operation, and the code is highly configurable.

The iHDTV™ project is designed to explore how research and academic endeavors — and the world in general — would change if studio-quality HD video could be sent over a general-purpose Internet. More fundamentally, the project explores the intersection of network, video and server technologies where near real-time distribution of extremely high-quality images is required.

» Read the full [iHDTV Background](#)



iHDTV™ links

- [ResearchChannel iHDTV™ page](#)
Summary of the iHDTV project
- [iHDTV™ @ SourceForge.net](#)
Project Page

Contact Information

For more information about iHDTV email
info@researchchannel.org.



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[executive summary](#)
[technical overview](#)
[collections](#)
[open source](#)
[contact us](#)

overview

DigitalWell™ is a grid-enabled asset management system that provides an easy way to acquire, collect, classify, store and deliver large collections of digital media over IP-based networks.

Media assets are too often created and collected by disparate organizations and departments both within and among institutions. As a result, many broadcast stations, colleges, schools and departments have a difficult time retaining and sharing digital resources in a way that is flexible and enables repurposing of resources for research over the long term.

DigitalWell™ addresses these problems by streamlining and simplifying the acquisition, aggregation, cataloging, storage, discovery and delivery processes associated with managing digital content. In particular, DigitalWell™ enables access to high-quality, high-definition video and audio assets via next generation IP networks.

» Read the full [Executive Summary](#)

news and events

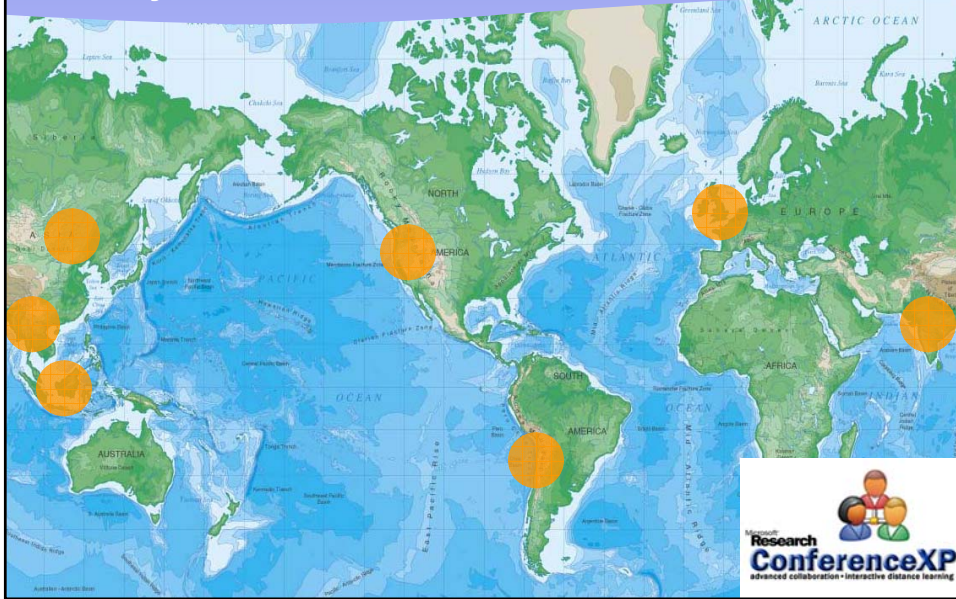
- **QUESTNet 2007** — [AARNet](#) and [ResearchChannel](#) will announce a development partnership to create a ResearchChannel presence in Australia that includes local web portal and content mirror under DigitalWell federation architecture. In addition AARNET will discuss plans to engage Australian institutions in local program development.
- DigitalWell systems architect Nate McQueen spoke at the [WebWise 2007 Conference](#) in Washington, D.C. His presentation, "The Challenges of Media Management and Content Delivery," can be found [here](#) (PDF).

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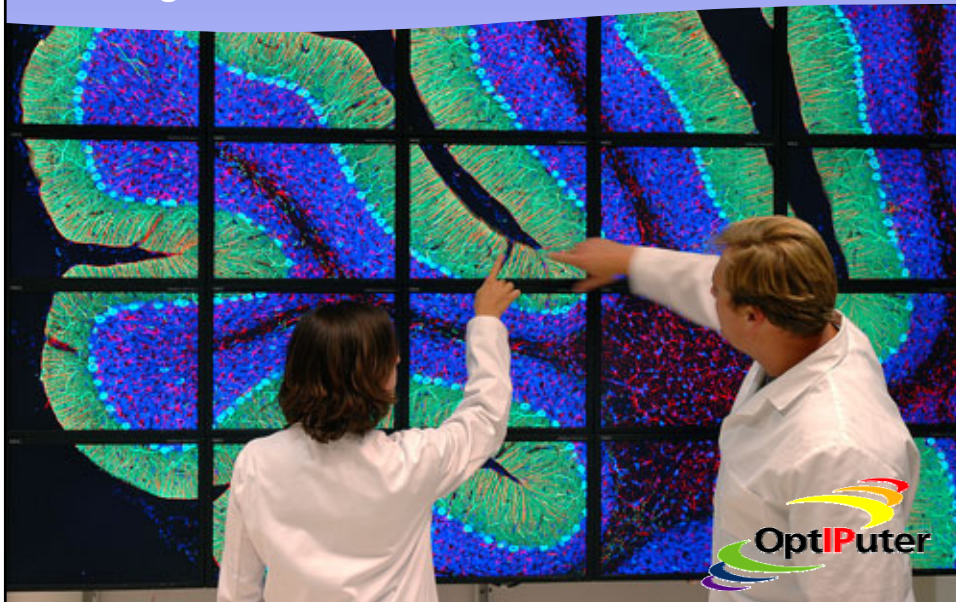
iHDTV:: Continuous Ocean Observing

The diagram illustrates the iHDTV system for continuous ocean observing. It shows the RV Thompson on the surface, connected via Ku-Band to the Galaxy 10R Satellite. The satellite is linked to the Endeavour Vent Fields, which are monitored by UW TV. The system also includes Cal-IT and F-Grid 2003. A Jason ROV is shown at the bottom, connected to the system. A High Definition Imaging inset shows a detailed view of the vent fields. The diagram is credited to John Deasey and Deborah Kelley, Univ. of Washington.

Research:: Pacific Rim ConferenceXP Project



Research:: iHDTV Optiportal Integration



RESEARCH TM

Digital Media Community

Discover. Collaborate. Interact.

Discover. Collaborate. Interact.

Research1 is an online community that allows researchers to **collaborate** with peers, and **share** information and digital media with the general public.

Discover. Collaborate. Interact.

Primary Functions

- **Serve as a premier outlet** for researchers to fulfill their public outreach requirements
- **Foster interaction and communication** between members of the public and researchers
- **Provide a collaborative platform** to teams who could potentially be geographically (globally) dispersed

Discover. Collaborate. Interact.

Key Benefits for the Public

- **Greater access to the fruits of government-funded research**, even while it is in progress
- **Direct interaction with experts** at the leading edge of their respective disciplines
- **Participation in a community that encourages and supports a level of discourse that is not commonly available to those outside of academia.**

- Concept emerged from conversations with NSF public affairs
 - Capitalize on ResearchChannel expertise in large high bandwidth VoD services, consortia, e-Science work
 - Multi-institution, Multi-discipline
- Phased development effort
 - Public facing space – *nearer term*
Publication, learning, interaction, highlight portals
 - Private e-Science collaboration space – *longer term*
Authenticated, Grid toolkit, Video conferencing

RESEARCH 1
Digital Media Community

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The NEPTUNE Project

The goal of the NEPTUNE project is to establish a regional cabled observatory in the northeast Pacific Ocean. The Project's 2,500-km network of fiber-optic/power cables will encircle and cross the Juan de Fuca tectonic plate in the northeast Pacific Ocean, an area roughly 500 kilometers by 1,000 kilometers in size.

Principal Investigator: [John Delaney](#)
Organization: [University of Washington](#)
Award Information: National Science Foundation, Grant #0428483
Project Team Members: [John Delaney](#), [Deborah Kelley](#), [Mark Stoermer](#), [Nancy Penrose](#)

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Published 26 March 2007 1:52 PM by [John Delaney](#)
 Tags: [Science](#), [Oceanography](#)



The repairs to Jason's tether have gone smoothly. The problem that ended dive 176 was a kinked fiber in the cable that links Jason to Medea. The tether has three fibers running through the fiber optic cable. On this cruise one is dedicated to the High Definition camera, one to Jason and one to Medea. As luck, or good planning, would have it the Jason engineers were in the process of building a new cable and were able to finish it in time to put Jason in the water around 5 pm for the start of dive 177.

The plan for this dive is for a continuation of yesterday's interrupted work and additional goals. The dive will start in the Main Endeavour field for water sampling and the placement and recovery of instruments. The ROV will then move over the axial valley ridge wall to change a battery/data logger package on a broadband seismometer. This seismometer was visited earlier in the cruise. The seismologists discovered that it was not sending data at a rate that was compatible with its data logger.

Featured Video



PLAY VIDEO

Title:
[An Overview of NEPTUNE](#)

Description:
John Delaney introduces the NEPTUNE Project and describes the unique aquatic environment of the Juan de Fuca Ridge from onboard the R/V Thomas G. Thompson.

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Project Media [\(Full Page View\)](#)

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Graceful Octopus
 Format: Video (.mov)
 Added: 24 March 07



Seismic Sensor has
 Format: Video (.mov)

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[Seismic Sensor has](#)
an Prickly Visitor
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[Retrieving ROV Jason](#)
After a Dive
Format: Video (.mov)
Added: 23 March 07

Active Discussions [\(View Project Forum\)](#)

Underwater Volcanos - What is their mineral composition?

Posted by [Roberta Everett](#), 03-26-2007 2:23 PM | [3 Replies](#)

What is the current schedule for laying fiber?

Posted by [Jean-Michel Cousteau](#), 03-26-2007 1:15 PM | [5 Replies](#)

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Project Media Browser

1

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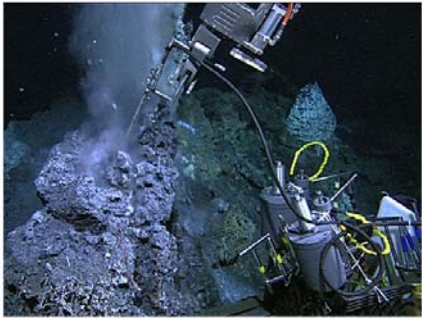
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Media Viewer

ROV Probing an Underwater Thermal Vent

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01:24 / 09:56

Media Information

Owner: [The Neptune Project](#)

Description:

The Jason ROV's robotic arm inserts sensors into an active thermal vent 3000 feet underwater at the Juan de Fuca Ridge.

Tags:

[Science](#)
[Oceanography](#)

Runtime: 09:56

Native File: [ROV at Vent 032607.mov](#)

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Native File:

[ROV at Vent 032607.mov](#)

QuickTime Movie (.mov)

640x480 Resolution @ 5 Mbps

23203903 Bytes

Published: 27 March 2007

Usage Restrictions:

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Comments

This is the kind of thing that made me become a teacher!

[Caren Harmon](#)

27 March 2007 at 9:43 PM

Thank you for sharing your video with the public. I am a high school science teacher in Fairbanks, Alaska and I have been dedicating a full period a week to following this project with my students.

Fascinating glimpse into the application of robotics

[Kim Rodriguez](#)

27 March 2007 at 9:49 PM

It is very interesting to see the Jason's capabilities in action. I'm pursuing my PhD at the Carnegie Mellon Robotics Institute and plan to use portions of this footage in a multimedia presentation supporting my dissertation. Many thanks!

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Description/Metadata

01:24 / 09:56

[Science: Sensors test an icy hydro vent](#)
Format: Image (.jpg)
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Medicine	Subforum(s) Epidemiology, Oncology, Orthopaedics	HPV Vaccine - Should it be... by Tania Blatch Today, 1:12 PM	425	947
Social Sciences	Subforum(s) Anthropology	Peruvian Archaeology by Kendall Campbell Today, 1:46 PM	356	654
Engineering	Subforum(s) Aerospace Engineering, Materials Engineering	How can I build a Robotic... by David Lutzon Today, 1:46 PM	545	1043
Computer Science	Subforum(s) Artificial Intelligence, Virtual Reality / Visualization	Algorithms for Sorting It... by Zhang Li Today, 2:21 PM	689	1121
Physical Sciences	Subforum(s) Biology, Chemistry	Testing Protocols for Hy... by Zhang Li Today, 2:52 PM	372	875
Economics	Subforum(s) Macroeconomics	Game Theory Applied to... by Vikram Vignamurendran Today, 2:24 PM	234	589

Research1 General Topics

Forums	Last Post	Threads	Posts
General Discussion Discussions regarding using Research1	Sharing Video with... by Jacques Levy Today, 2:24 PM	634	1189
Public Outreach Share how you use Research1 to fulfil public outreach requirements	Government Resou... by Kiran Chetty Today, 2:25 PM	349	745
K-12 Education A forum for K-12 educators to share ideas and tips regarding using Research1 in the classroom	Do students study... by Kerry Roberts Today, 2:26 PM	296	564

Shortcuts

- [View all users](#)
- [Posts you have not read](#)
- [Forum Subscriptions](#)

Popular Tags

[cancer](#)
[medical ethics](#)
[medicine](#)
[science](#)
[vacines](#)

Active

- [HPV Vaccine - Should I...](#)

Unanswered

- [HPV Vaccine - Should I...](#)

Most Active Users

- 1) [Tania Blatch](#) (1)
- 2) [John Delaney](#) (0)

The screenshot displays the Research1 forum interface. On the left, a sidebar lists various categories: Medicine, Social Sciences, Engineering, Computer Science, Subforum(s) Artificial Intelligence, Virtual Reality / Visualisation, Physical Sciences, Subforum(s) Biology, Chemistry, Economics, and Subforum(s) Macroeconomics. The main content area features a table of recent posts with columns for Forum, Last Post, Threads, and Posts. A yellow box labeled 'Project-specific Forums' highlights a section titled 'Project Forums' which includes 'Neptune' and 'Something Else'. The right sidebar contains sections for 'Popular Topics', 'Active', 'Unanswered', and 'Most Active Users'.

Forum	Last Post	Threads	Posts
Medicine	HPV Vaccine - Should it b... by Tavis Blach Today, 1:12 PM	425	947
Subforum(s) Epidemiology, Oncology, Orthopaedics			
Social Sciences	Peruvian Archaeology by Kendall Campbell Today, 1:46 PM	366	654
Engineering	How can I build a Robotic... by David Erikson Today, 1:45 PM	645	1043
Subforum(s) Aerospace Engineering, Materials Engineering			
Computer Science	Algorithms for Sorting H... by Zhang Li Today, 2:21 PM	609	1121
Subforum(s) Artificial Intelligence, Virtual Reality / Visualisation			
Physical Sciences	Testing Protocols for Hy... by Zheng Li Today, 2:22 PM	372	875
Subforum(s) Biology, Chemistry			
Economics	Game Theory Applied to... by Vivian Westmonland Today, 2:21 PM	234	580
Subforum(s) Macroeconomics			

Forums	Last Post	Threads	Posts
General Discussion Discussions regarding using Research1	Sharing Video with... by Jacques Levy Today, 2:24 PM	634	1160
Public Outreach Share how you use Research1 to fulfil public outreach requirements	Government Resou... by Kevin Chong Today, 2:25 PM	349	745
Project-specific Forums For members and educators to share ideas and tips regarding using Research1 in the classroom	Do students study... by Barry Roberts Today, 2:24 PM	296	564

Forums	Last Post	Threads	Posts
Neptune	Underwater Volcano... by Roberta Lverett Today, 2:23 PM	112	320
Something Else	Features of Neptune... by Roberta Lverett Today, 2:22 PM	92	254

Who is Online
There are 0 guest(s) online. There are 2 of 4 member(s) online - admin, John Delaney.

Forum Statistics
4 users have contributed to 2 threads and 2 posts.

Popular Topics
cancer medical ethics medicine
science vaccine
[Browse All Tags](#)

Active
■ HPV Vaccine - Should I...

Unanswered
■ HPV Vaccine - Should I...

Most Active Users
■ 1) Tavis Blach (1)
■ 2) John Delaney (0)

- Architecture
 - .Net software platform
 - Federated Authentication/Authorization
 - Social web services – Blogs, forums, Wikis, ...
 - Digital asset management and delivery
 - Automated encoding for lower bandwidth public streaming
Flash and/or Silverlight
 - Input formats: DV, 2K-4K HD, JPEG2000, et al
 - Collaborative application interface
 - Survey e-Science workflows

■ Auth Services – Shibboleth

- Leverage existing shib federations
- Unaffiliated - ProtectNetworks
- Keep project space instantiation “simple”



■ Affiliation/Project Assurance

- NSDL model - Self policing
- May add grant/institution requirements later

■ Social Services – Community Server

- Enterprise level collaboration services

Forums, blogs, portal tools, reporting, ...

Large commercial and public install base

National Geographic, Microsoft Game Studios, Intel, NFL, ...

<http://communityserver.org>



■ Content Services – DigitalWell

- Grid enabled digital asset management

Extensible metadata, Search

High bandwidth-Large footprint content

WSAPI – portal development

<http://digitalwell.org>



- e-Science Collaboration Services
 - o GridShib for Globus tool integration
 - o Exploring Service Oriented Knowledge Utilities (SOKU) Framework
 - o Architecture emerging from Open Grid Forum Semantic Web working group
 - o Framework for dynamically instantiating and assembling services in grid space
 - o Momentum in EU grid communities
 - o Integrated video conferencing tools
 - o AG, ConferenceXP, iHD270, iHD1500, UltraGrid

- **Timeline ...**
 - o **Current: Prototype with selected early adopter PI's**
 - o **Fall '07: Phase 1 public services and admin tools**
 - Announce availability:**
APAN, Internet2, Open Grid Forum, Educause, APAC
 - o **Summer '08: Phase 2 research peer collaboration services**

- o Participation

- o Working with AARNET to extend early invitation to Australian R&E institutions and develop support framework.

- Pilot Research1 partner portal - regional highlight page

- o Additional global partner solicitation at upcoming APAN meeting.

- o Ongoing Cost and Support

- o Investigating options – expect model will emerge from experiences as we formalize pilot projects.

- o Proposals in process to funding agencies.

RESEARCHCHANNEL

THANK YOU

Information:

info@researchchannel.org

Website:

www.researchchannel.org