

IEEE DySPAN Demonstrations 2008

Demonstrations Summary by Co-Chairs
Keith Nolan (CTVR, Ireland) and Thomas
Rondeau (CCR, USA)

keithnolan@mee.tcd.ie

trondeau@vt.edu


www.ieee-dyspan.org/2008

twitter.com/dyspan

pownce.com/dyspan

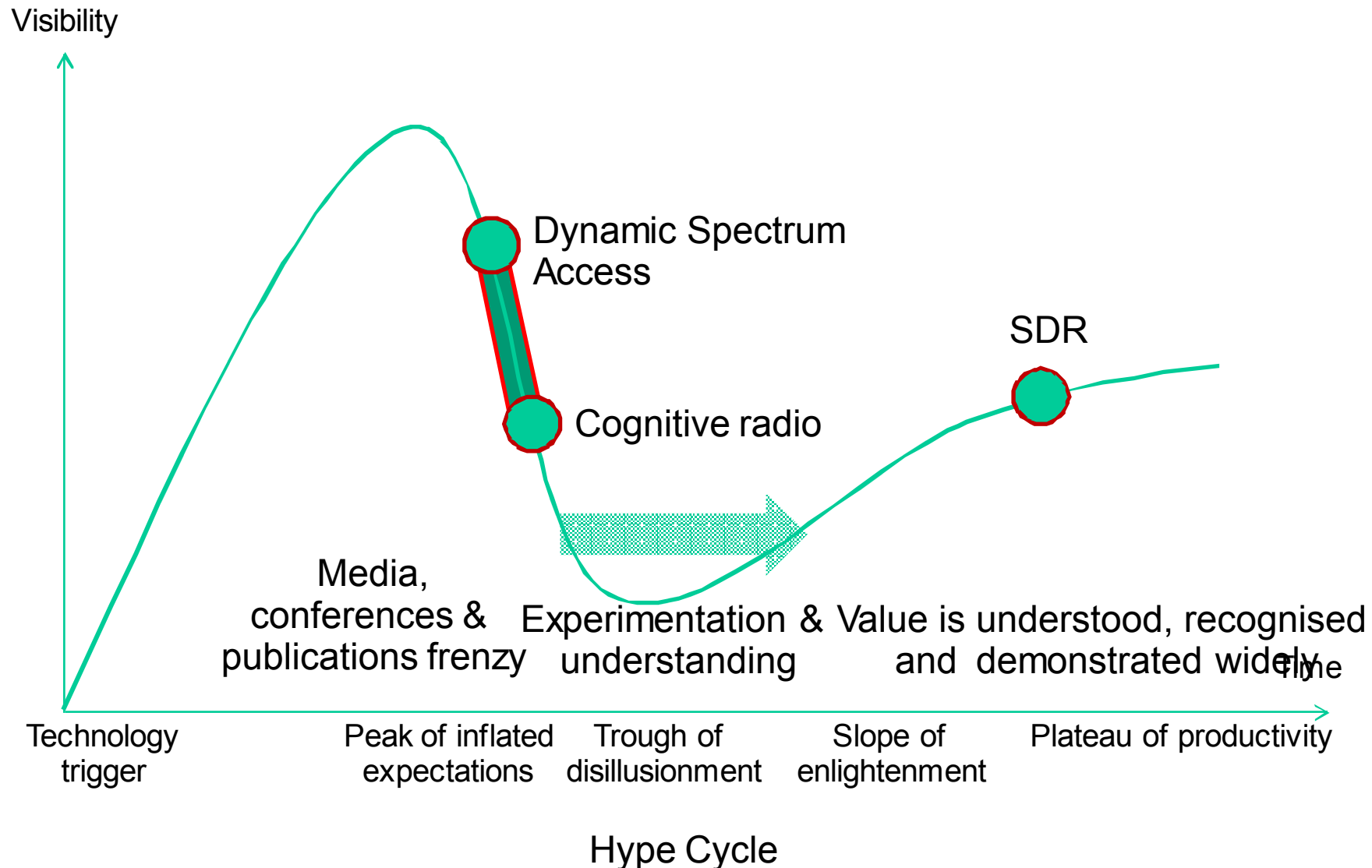


IEEE DySPAN 2008

- Demonstrations have been a key part of the conference
 - These included groups involved in the FCC white-space spectrum tests.
- We had a special temporary authority licence from the FCC
 - Using part of the TV band
 -  was the licensee
 - All the demonstrators could avail of it

Demonstrations and experimentation
are crucial to understanding the real
value proposition in cognitive radio
and dynamic spectrum access
networks

Motivation: push through the hype



A big thanks to all of the demonstrators

Motorola

OMESH

I²R

Stevens Institute

Shared Spectrum Company

Philips

CTVR at Trinity College Dublin

University of South Florida

University of Utah

CWT at Virginia Tech

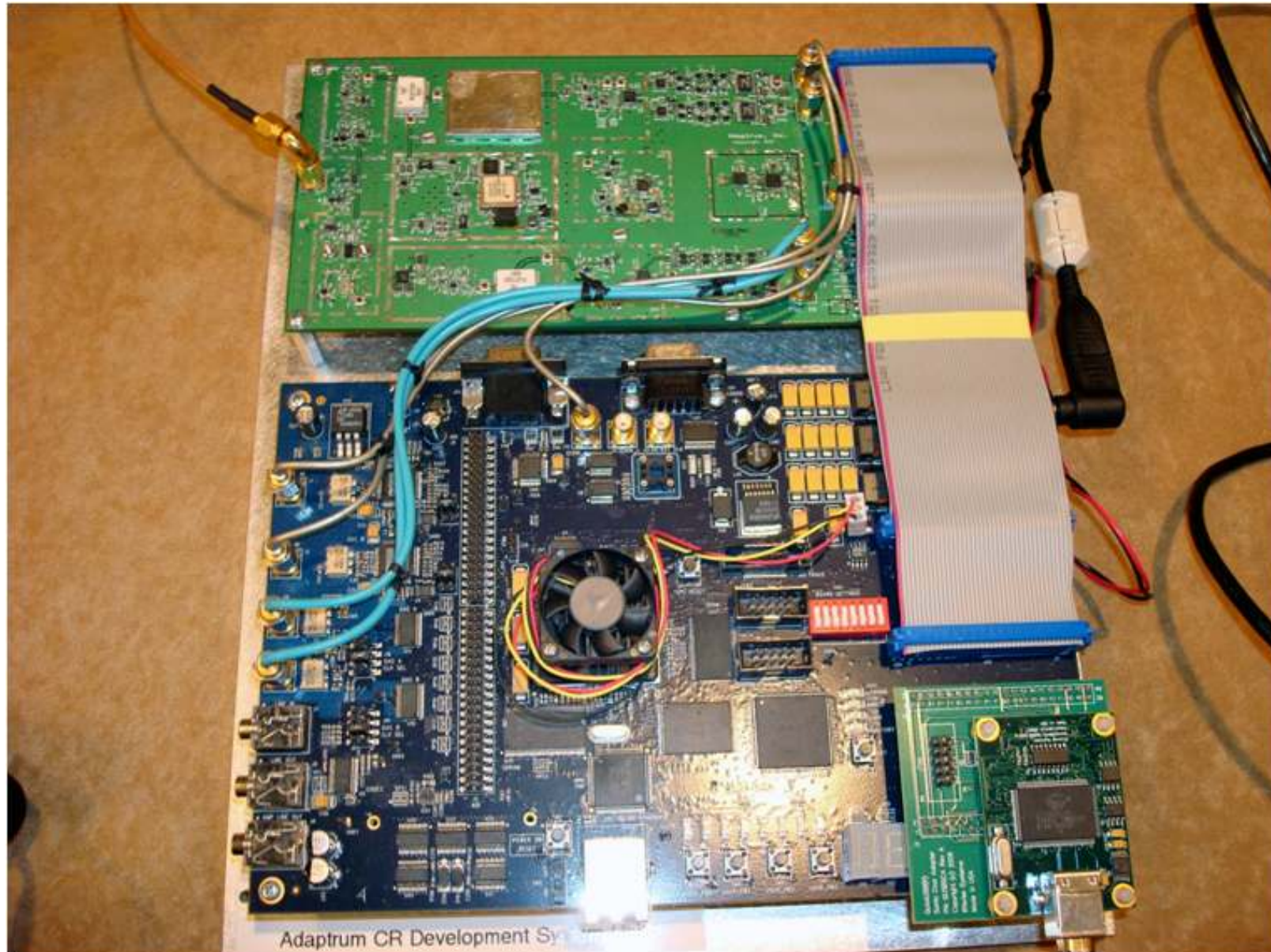
Adaptrum

Rockwell-Collins

TU Delft and University of Twente

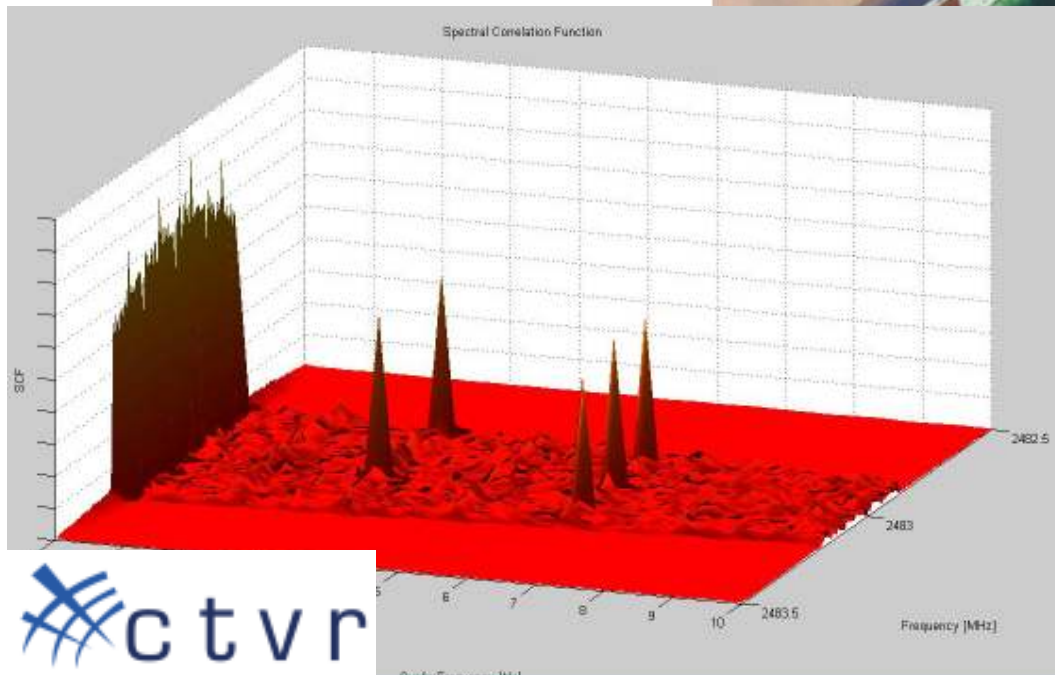
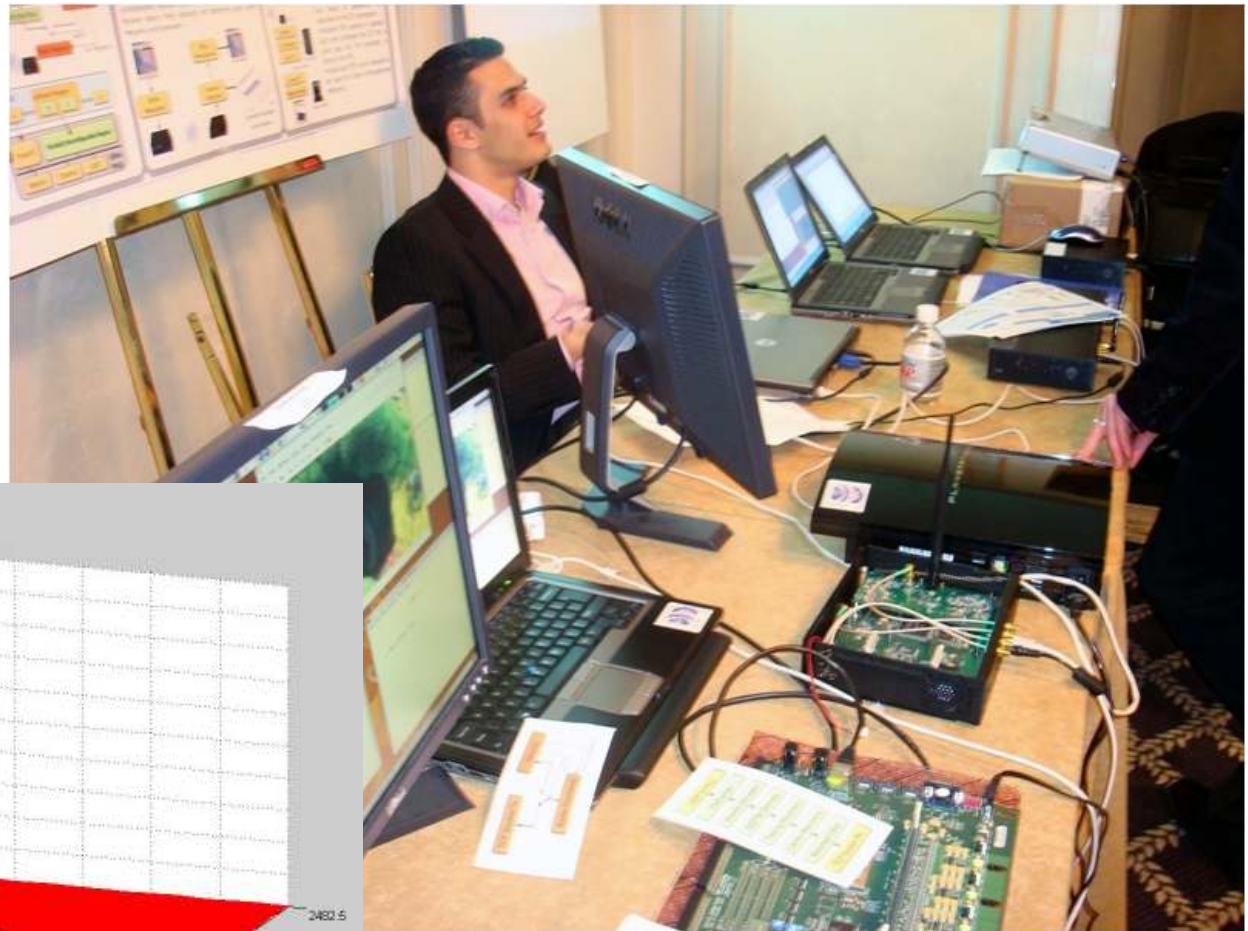
Adaptrum (USA)

Real-time TV white space detection



Centre for Telecommunications Value-Chain Research (Ireland)

Reconfigurable radio on GPP,. FPGA, Cell BE, cyclostationary feature detection and dynamic frequency bandwidth estimation



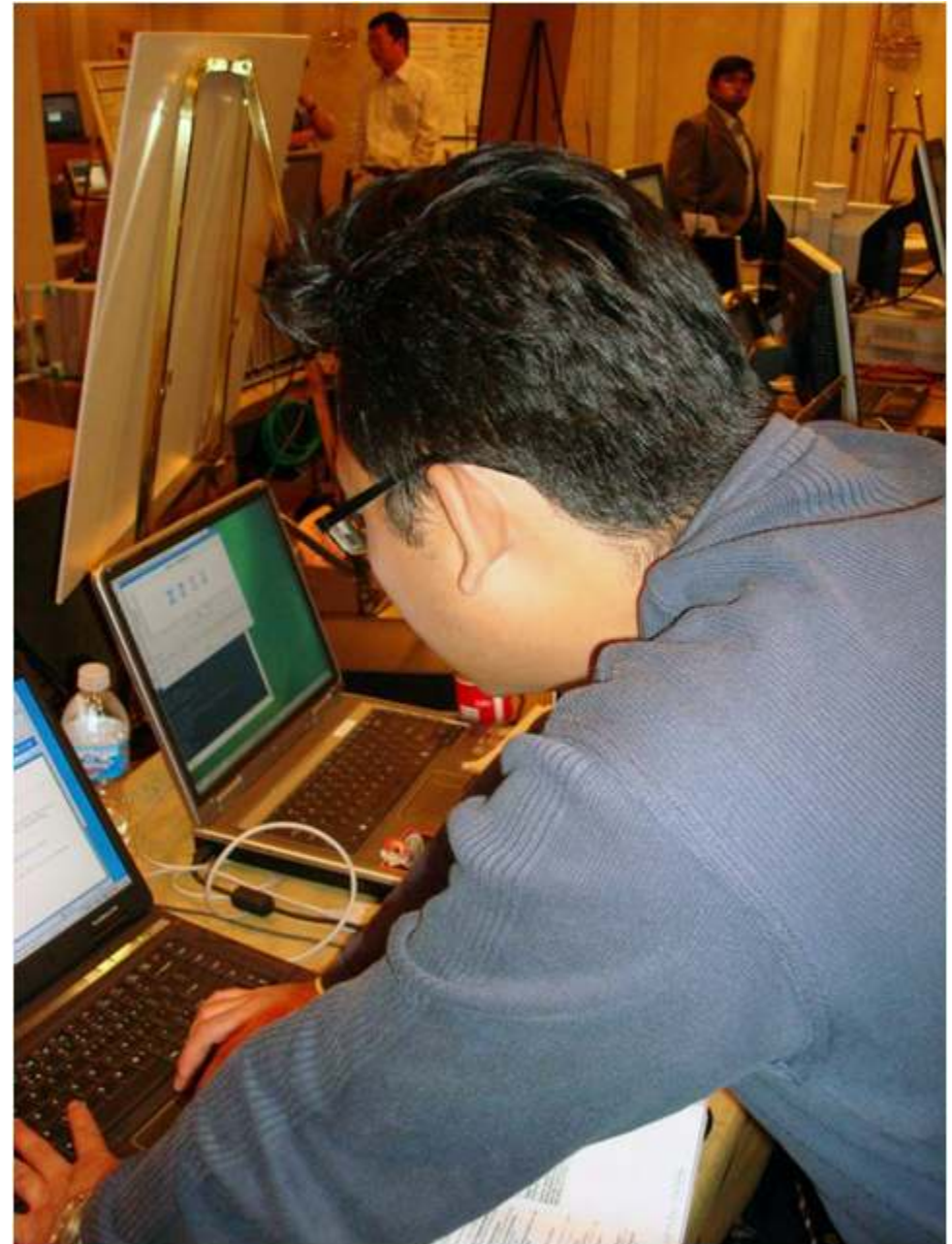
Centre for Wireless Telecommunications, Virginia Tech (USA)

- .A heterogeneous cognitive radio network, cooperative spectrum sensing, dynamic spectrum access and interoperability,
- .A dynamic cellular cognitive system



Delft University of Technology (The Netherlands)

A dynamic spectrum access system employing adaptive carrier selection and intelligent spectrum sensing techniques on multiple platforms.



Institute for Infocomm Research (I2R) (Singapore)

A white-space device prototype using a covariance-based signal detection method, which is signal independent and applicable to any signal waveform or system.



Motorola (USA)

A cognitive radio system operating in TV white space UHF spectrum, utilizing geolocation functionality and supporting dynamic channel selection for the avoidance of incumbent (e.g. DTV) users.





OMESH Networks (Canada)

A large-scale cognitive wireless network that opportunistically utilizes network resources including spectrum bandwidth and radio availability to realize reliable wireless communications.

Philips Research (USA)

A prototype dynamic spectrum access system that can quickly and robustly sense spectrum availability, use medium access control (MAC) protocols that allow seamless and autonomous multichannel operation, and provide quality of service (QoS) guarantees in the face of channels becoming unavailable due to the appearance of incumbents.



Rockwell Collins (USA)

A low-power, small-form-factor spectral sensor and robust maximum likelihood classifier algorithm to detect and classify real world signals.



Shared Spectrum Company (USA)

A high-level policy language, policy-based radio control, operation using a small, low cost general purpose processor, and improved building penetration using multi-band operation.



University of South Florida/Anritsu (USA)

Using a tree-based
algorithm to detect,
evaluate, and identify
signals, including
information such as
bandwidth, centre
frequency, and power
level



Stevens Institute of Technology (USA)

A cognitive radio IEEE 802.11 MAC air-interface called *SpiderRadio* that can perform spectrum sensing to detect any unused frequency channel in the allowable spectrum bands.

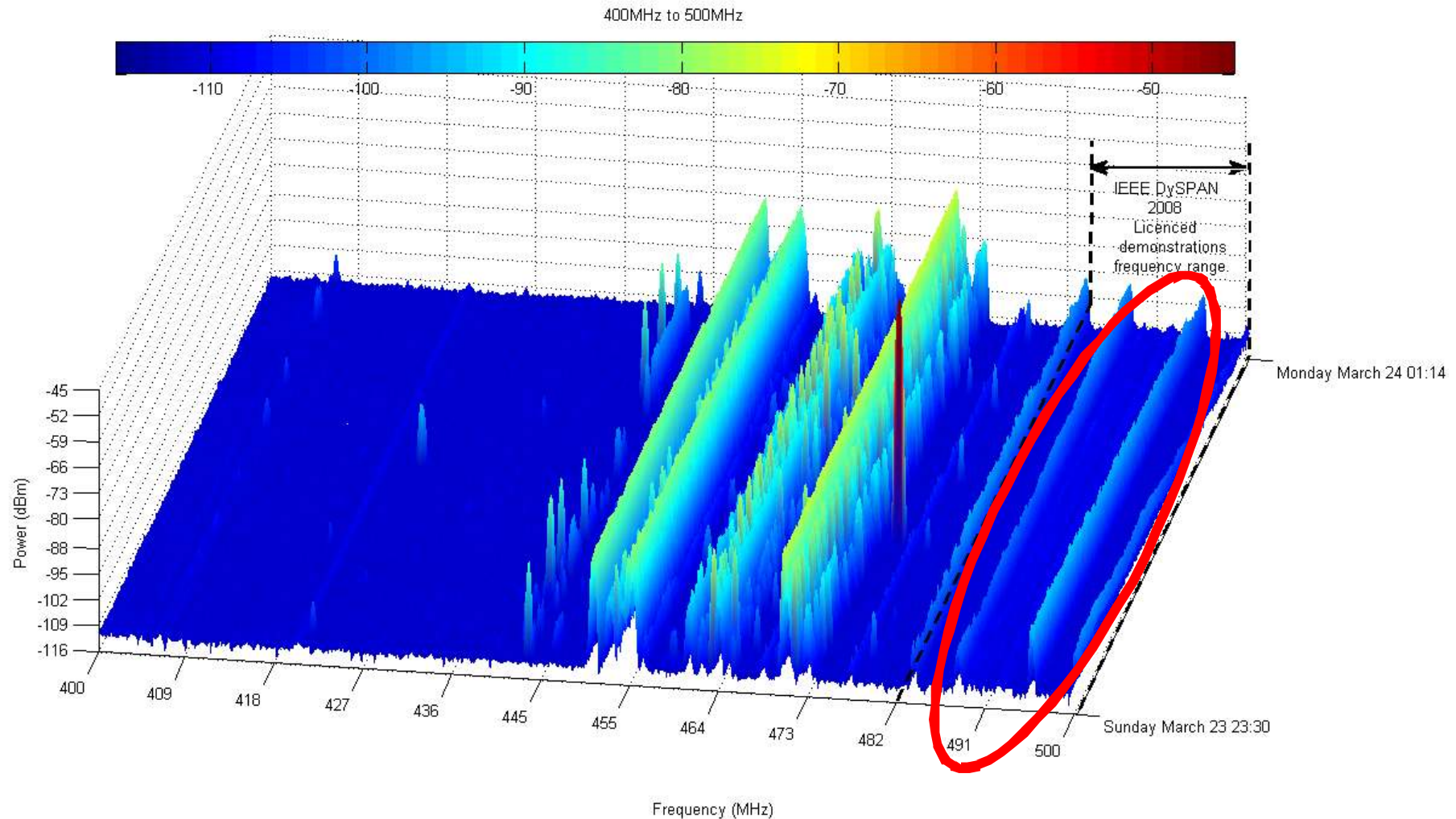


University of Utah (USA)

Reliable detection of white space spectrum using a sensing mechanism with a high spectral dynamic range using embedded, real-time cognition algorithms.



Spectral Occupancy (400-500MHz)



Measured during March 2007 in the DySPAN 2008 venue. A measurements pack including a Matlab plot generation script is available for free download from the demonstrations webpage at www.ieee-dyspan.org/2008

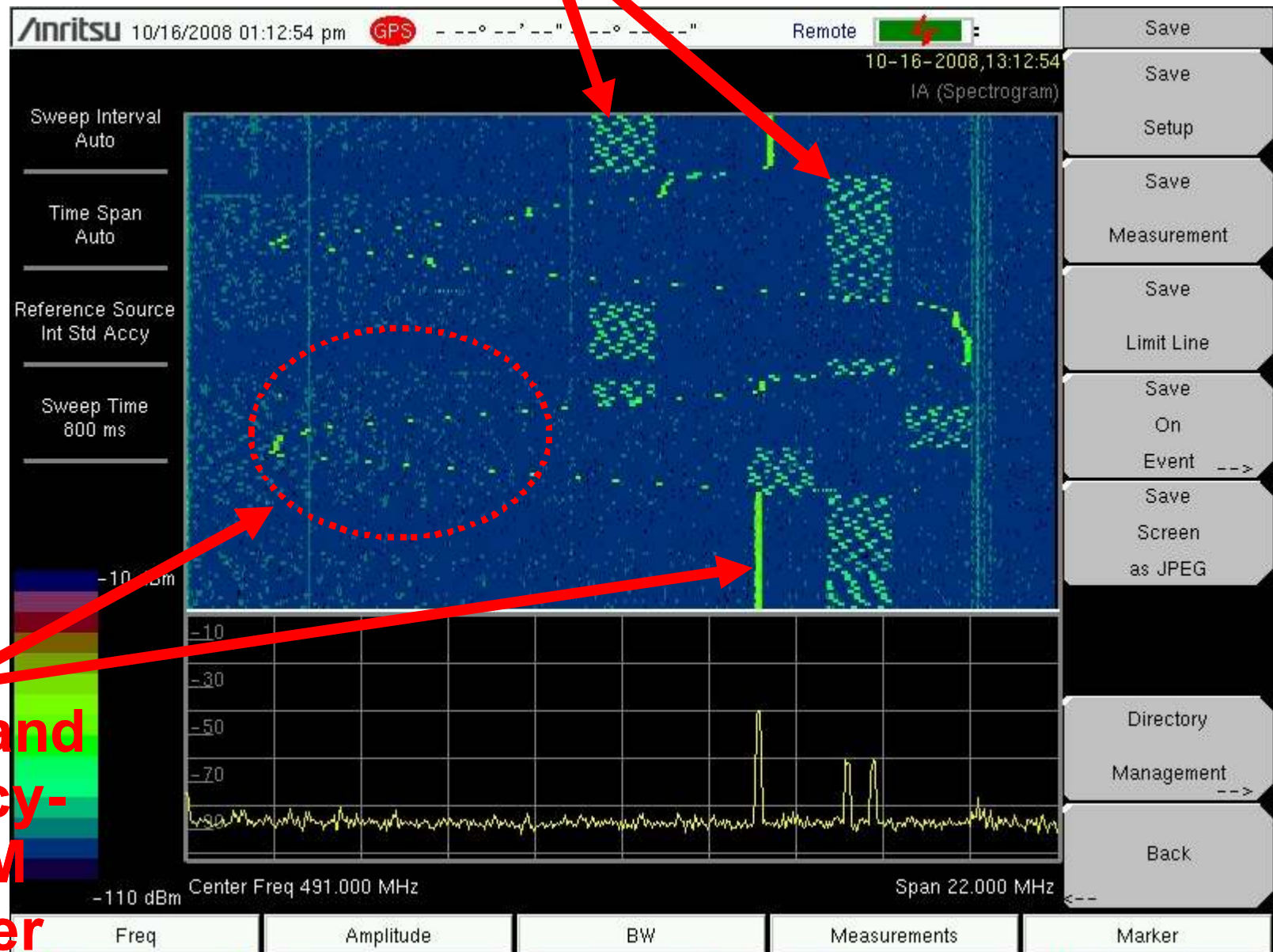
DySPAN 2008 STA Details

Frequency (MHz)	Emission Designator	Authorized Power	Location	Effective Dates
482-500	6M00D7W 6M00D7W 6M00D7W 25K0F3E 12K5F3E 1K00NON	500mW	Chicago, IL NL 41-53-59; WL 87-37-24	Oct. 11 to Oct. 18, 2008 (0300 EST)



Shared Spectrum

Narrowband
frequency-
agile FM
interferer





This video is available at
www.youtube.com/emergingnetworks



Bringing Web2.0 to DySPAN

- Keep up with everything going on by signing up and following twitter.com/dyspan and [.Pownce.com/dyspan](https://pownce.com/dyspan)
- Join the DySPAN [facebook](#) group to see and post notes and images.
- News, announcements, and other happenings were posted here all week long
- See everything at the demonstrations screen and on [YouTube](#)

IEEE DySPAN 2008 on **twitter** (twitter.com/dyspan)

The screenshot shows the Twitter interface from 2008. At the top, the Twitter logo is on the left, and navigation links (Home, Profile, Find People, Settings, Help, Sign out) are on the right. The main content area is divided into two columns. The left column contains a tweet composition box with the placeholder text "What are you doing?" and a character count of "140". Below this is a tweet from the user "przemyslawp" who is "chatting to @keithnolan" "about 1 hour ago from web". The right column shows the profile of the user "dyspan", which includes a blue star icon, 7 following, 21 followers, and 74 updates. Below the profile is a section titled "Home" with links to "@Replies", "Direct Messages" (2), "Favorites", "Everyone", "Following" (with an "add" link and a row of profile pictures), and "Device Updates" (with a link to "Set up SMS updates"). The main feed on the left contains several tweets from "dyspan": a tweet about DySPAN in Chicago, a tweet about the reception in the crystal ballroom, a tweet about the young professionals reception in the Prince of Wales room, a tweet about the IEEE SCC41 plenary meeting, and a tweet about the demonstrations.

twitter

Home Profile Find People Settings Help Sign out

What are you doing? 140

Latest: Don't delay.....DySPAN is going strong here in Chicago. Please follow along throughout the week on all the great things happening here!! *about 2 hours ago* update

o_o przemyslawp chatting to @keithnolan *about 1 hour ago from web*

keithnolan at the reception in the crystal ballroom *about 1 hour ago from mobile web*

dyspan Don't delay.....DySPAN is going strong here in Chicago. Please follow along throughout the week on all the great things happening here!! *about 2 hours ago from web*

dyspan The young professionals reception is now on in the Prince of Wales room *about 2 hours ago from web*

dyspan dyspan: At the IEEE SCC41 plenary meeting yesterday in the Knickerbocker... <http://tinyurl.com/3nbywf> *about 2 hours ago from twitterfeed*

dyspan dyspan: The demonstrations are in full swing <http://tinyurl.com/4ynk9s> *about 3 hours ago from twitterfeed*

dyspan

7 following 21 followers 74 updates

Get Some Perspective
Watch Hack the Debate

Home

@Replies

Direct Messages 2

Favorites


Everyone


Following add

Device Updates
Set up SMS updates

IEEE DySPAN 2008 on **Pownce** (pownce.com/dyspan)





Pownce home find friends settings public Logout



DySPAN .
from Knickerbocker
Hotel, Chicago 

IEEE Symposium on New
Frontiers in Dynamic
Spectrum Access
Networks - Oct 14-17,
2008 - Knickerbocker
Hotel, Chicago, IL, USA.

Friends Add Friends


-  James O.
-  Keith N.
-  Filip P.
-  Paul S.
-  Tom R.


View all 5 Friends


Group your friends in sets?


Message Link File Event


post a note...


Send to: the public  **Post It!**


Show: all notes & replies  **Refresh**


 At the IEEE SCC41 plenary meeting yesterday in the Knickerbocker Hotel Public



 IEEE SCC41.png 854.8 KB (1 download)

2 hours ago | DySPAN | Reply! | Forward | 

 The demonstrations are in full swing Public






Pownce News

Show your location on Pownce with **Fire Eagle!**

Go Pro!

- ✓ Send files up to 250 MB
- ✓ Design a custom theme
- ✓ No advertisements
- ✓ Only 20 bucks a year
- ✓ [Go Pro Today!](#)

Other Profiles [Edit](#)

-  [Twitter Profile](#)
-  [Facebook Profile](#)
-  [IEEE DySPAN 2008](#)


Public Profile

Only notes you send to 'the public' can be seen by the world at large. See your [public profile](#).

IEEE DySPAN 2008 on **facebook** (<http://tinyurl.com/3j3w2q>)

An open Facebook group called DySPAN

facebook Home Profile Friends Inbox Keith Nolan Settings Logout

 **IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN)**
Global

Basic Info
Type: Organizations - Non-Profit Organizations
Description: 14-17 October 2008
Chicago, Illinois, USA


View 2008 program details at <http://www.ieee-dyspan.org/2008/>

About the DySPAN Symposium
After the success of DySPAN 2005 in Baltimore and DySPAN 2007 in Dublin, the IEEE DySPAN Conference has firmly established itself as the premier forum for discussion of all aspects of devices and networks that utilize spectrum on a dynamic basis. DySPAN 2008 aims to further build on this success and bring to fore new cutting-edge research in the technology, policy, economic and legal dimensions of dynamic, decentralized access to the radio spectrum both on a consensual and non-consensual basis. In the near future two complementary trends are emerging. First, the networks and devices will operate in wider bands, process large amounts of information to make intelligent decisions, and become reconfigurable via software defined capabilities. Second, the regulators around the world can exploit these technology advances to foster increased and more effective spectrum utilization. These trends are making dynamic spectrum access critically important to the future for wireless communications and networks.

DySPAN Vision
The vision of DySPAN 2008 is to expand collective understanding of complex next-generation wireless systems focused on using RF spectrum more efficiently and dynamically. This includes advancing both cutting edge technical and multidisciplinary research as well as practical experience related to building a healthy industry/regulatory ecosystem for the commercialization of smart radio system technologies.

The IEEE DySPAN-05 conference provided an outstanding forum for a discussion of all aspects of devices and networks that utilized spectrum on a dynamic basis, rather than under central control. DySPAN-07 built on this success and extended the established global forum for dynamic spectrum access.

As networks and devices increasingly gain intelligence and "cognitive" capabilities,


Dynamic Spectrum Access Networks

[View Discussion Board](#)
[Message All Members](#)
[Edit Group](#)
[Edit Members](#)
[Edit Group Officers](#)
[Invite People to Join](#)
[Create Related Event](#)
[Leave Group](#)

[Share](#) +

Group Type

This is an open group. Anyone can join and invite others to join.

Admins

- Phyllis Curran O'Neill (creator)
- Tom Rondeau (Virginia Tech)
- Keith Nolan

Events

There are no events.
[Create Events.](#)

IEEE DySPAN 2008 on YouTube™

(www.youtube.com/emergingnetworks)




English ▼
[Videos](#) | [Channels](#) | [Community](#) | [Upload](#)


[Sign Up](#) | [QuickList](#) | [Help](#) | [Sign In](#)

[Videos](#) | [Playlists](#) | [Groups](#) | [Subscriptions](#)

Emerging Networks @ CTVR



EmergingNetworks
Joined: 21 May 2007
Last Sign In: 1 day ago
Videos Watched: 86
Subscribers: 18
Channel Views: 1,837

 DIRECTOR

The Emerging Networks (EN) strand is one of the five research strands in the CTVR, the Centre for Telecommunications Value-Chain Research. CTVR was established in July 2004 and is funded by the Science Foundation of Ireland.

This channel highlights some of the work that the Emerging Networks strand is involved in. This includes dynamic spectrum access technologies, software-defined and cognitive radio projects, reconfigurability in communications networks, collaboration and teamwork in cognitive networks, spectrum market mechanisms, spectrum policy, and value-creation and migration in communications networks.

For more information about the Emerging Networks strand, go to <http://www.ctvr.ie/en>

Name: Emerging Networks @ CTVR

CTVR was established in July 2004 and is funded by the Science Foundation of Ireland. The CTVR brings together a multi-disciplinary group of researchers, drawn from eight Irish Universities to work on industry-guided engineering and scientific challenges that will redefine key elements of telecommunications systems, architectures and networks and the value chains used to design, build, market, and service them.

Emerging Networks (EN) is based in Trinity College, University of Dublin, Ireland. Dr. Linda Doyle from



0:00 / 1:15

DySPAN demonstrations 2008 - being set up
From: [EmergingNetworks](#)
Views: 14

Videos (21)

Subscribe to EmergingNetworks's videos


[Videos](#) | [Most Viewed](#) | [Most Discussed](#)



Overview of IEEE DySPAN 2007 in Dublin,
Added: 1 year ago



Motorola @ IEEE DySPAN 2007
Added: 1 year ago



CTVR and Virginia Tech at IEEE DySPAN 2007
Added: 1 year ago

Sincere thanks to:

- All of the demonstrators and participants
- IEEE DySPAN committee
- IEEE Comsoc
- FCC and NTIA
- Anritsu
- WINCOM at IIT
- Knickerbocker Hotel
- Mike Piercefield

DySPAN '08 Demonstrations Co-Chairs



Keith E. Nolan Ph.D.
CTVR, Ireland

keithnolan@mee.tcd.ie



Thomas W. Rondeau Ph.D.
CCR, USA

trondeau@vt.edu