An Overview of the Institute for Telecommunication Sciences (ITS)

ISART 2010 • Boulder, CO • July 2010

Alan W. Vincent
Director, ITS
U.S. Department of Commerce, NTIA/ITS
avincent@its.bldrdoc.gov • 303.497.7600
ITS Mission

• Work with US Government agencies and private industry to

  ▪ Explore, understand and improve the use of telecommunications technologies and principles
  ▪ Investigate and invent new technologies
  ▪ Overcome telecommunications challenges
## ITS Contributions to NTIA Strategic Objectives

<table>
<thead>
<tr>
<th>ITS Contribution</th>
<th>DOC Strategic Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectrum and propagation measurements</td>
<td>Promote U.S. telecom and information infrastructure development</td>
</tr>
<tr>
<td>Standards development</td>
<td>Improve foreign trade opportunities for U.S. telecom firms</td>
</tr>
<tr>
<td>Joint research with industry</td>
<td>Enhance domestic competitiveness</td>
</tr>
<tr>
<td>Testing and assessment of new technologies</td>
<td>Facilitate more efficient and effective use of radio spectrum</td>
</tr>
<tr>
<td>Audio, video and multimedia quality research</td>
<td></td>
</tr>
<tr>
<td>Spectrum sharing research</td>
<td></td>
</tr>
</tbody>
</table>
ITS Funding

Total: $16.1 million

Cooperative Research and Development Agreements (CRADA) — $100K

$8 million
Reimbursable
Funding from
Federal Agencies

$7 million
Direct
Funding from
Congress
(S&E)

$1 million
Office of Spectrum Management (OSM)

• 50% Direct Funding
• 50% Reimbursable

July 2010
Major Research Programs

- Spectrum Sharing Research
- Spectrum Measurement Research
- Radio Propagation Research
- ITU-T and ITU-R studies
- Public Safety Communications Research
- Audio, Video and Multimedia Quality Research
Spectrum Measurement Research

- Spectrum Measurements
  - Occupancy
  - Individual Transmitters
  - Noise
- Field measurement efforts to resolve and prevent interference
  - Radars
  - Communication Systems
  - Radio-Jamming Systems in Prisons

- Spectrum-Sharing R&D
  - Dynamic Frequency Sharing (DFS) Research in Radar Bands
  - Dynamic Spectrum Access (DSA) Testbed for LMR bands
  - Interference Protection Criteria (IPC) for Spectrum-Sharing

Effects of increasing levels of interference on a safety-of-life weather radar
Radio Propagation Research

• Development and Maintenance of Propagation Models
• On-Line Propagation Models and Data via TA Services
• Geographic Information System (GIS) Applications
  • Recent Development of Short-Range (<1 km) Propagation Model
  • Ultra-Low Antenna Height Modeling and Measurements
  • Development of a Ground-Conductivity Measurement System
ITU-T and ITU-R Studies

- Leadership of ITU and U.S. Telecommunications Standards Committees and Contributions
  - U.S. Standards Proposals
  - ITU Recommendations and Associated Industry Standards
  - ITU-R U.S. Chair of Study Group 3
  - ITU-T U.S. Chair of Study Group 9
  - ITU-T International Chair of Study Group 9
Public Safety

• Joint effort between ITS and NIST Office of Law Enforcement Standards (NIST/OLES)
• One of the longest-running Other Agency-funded efforts (≈14 yrs)
• Supports DOJ and DHS interoperable public safety communications efforts
• Areas of research
  ▪ Land Mobile Radio Standards
  ▪ Broadband Standards
  ▪ Interoperability device testing
  ▪ Emerging standards and technologies

www.pscr.gov
Audio, Video and Multimedia Quality Research

- Measurements of speech, audio, video, and multimedia quality
- Assessments of algorithms for encoding audio, video, and multimedia
- Development of better algorithms for encoding audio, video, and multimedia
- Improve competitiveness of U.S. Industry
- Technical inputs to U.S. policies on advanced media technologies
- Contributions supporting the U.S. Administration’s goals in ITU-T, VQEG and other national and international forums
RSMS Van
Table Mountain “Quiet Zone”
Questions?

Visit the ITS website and download publications at www.its.bldrdoc.gov

ITS Director’s Office
325 Broadway
Boulder, CO 80305
(303) 497-3500