• Founded in 2000
• TVWS comments in 2000
• Cognitive radio & spectrum management experts
• Pioneering/leading developer of Dynamic Spectrum Access (DSA)
• Developed DoD DSA solution (DARPA XG)
• DoD and commercial focus
SSC Products

- DSA software/technology licensing
- Research & development
- Spectrum strategy and technical consulting
- Software development
- Cognitive radios
# DSA Radio Prototypes & Development Kits

## DSA 1000 / DSA 2000 /DSA 2100

<table>
<thead>
<tr>
<th>DoD RF Board (MHz)</th>
<th>Public Safety RF Board (MHz)</th>
<th>Wireless (TV) RF Board (MHz)</th>
<th>Commercial RF Board (MHz)</th>
<th>Small Form Factor RF Board (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1215 – 1390</td>
<td>220 – 512</td>
<td>516 – 806</td>
<td>1390 – 1435</td>
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<tr>
<td>1435 – 1525</td>
<td>764 – 869</td>
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<td>1670 – 2680</td>
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<td>1755 – 1850</td>
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<td>2200 – 2290</td>
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</tbody>
</table>

**DSA 1000 – Transceiver**
- 10 W (1 dB compression)
- 20-1000 MHz
- Antenna diversity

**DSA 2100 – High Power, Long Range**

**DSA 3000 – Small Form Factor**
- 1 lb
- 3” x 5”
DoD Activities

• DSA transition to tactical radios
  – Several projects underway
• Goal: Field DSA in 2012
• Other projects: LTE, spectrum management, RF encroachment, etc.
Commercial Activities

• Working with various companies to commercialize DSA technology
• Technical consulting (e.g., analysis to support FCC filings)
• Spectrum monitoring station
• TVWS demo development
• Silicon
Microsoft White Space Network

First White Space Network in the World

- White Space Network Setup
- Shuttle Deployment
- WS Antenna on Bldg 42
- WS Antenna on MS Shuttle
- Subcarrier Suppression demo
- Microphone testing in Anechoic Chamber
- Data packets over UHF

Oct. 16, 2009
CTB Networks

- Broadcast content delivery network
- “Cellular” architecture
- Optimal multicast/unicast combination
- SSC DSA technology used for
  - In-band return path
  - Additional downlink capacity
  - Assuring no harm
- ATSC receivers (Valups Tivizen)
Business & Service Perspective

• SSC has proven that DSA works
• Countless applications for sharing
• TVWS is the tip of the sharing iceberg
• The killer app is unknown
• Multiple profitable business cases likely to emerge once regulatory dust settles and standards are adopted/implemented
Next Steps

• Final FCC rules
• Standards
• Business cases
• Vendor investment
  – Hardware components
    ▪ Wideband power-efficient PAs
    ▪ Wideband antennas
  – Silicon
Role of Coexistence

• Coexistence importance depends on:
  – Regulation
    ▪ Clear and unambiguous rules for TV/Mic/LMR sharing
    ▪ Amount of bandwidth
  – Variety of devices
  – Demand for interoperability
  – TVWS success