Goals of this Meeting

- Background on Regional CASA WX Project
- Explain the capabilities, structure of the Radar Network
- Present the CASA WX DFW Test Bed will be rolled out
- Describe the Community Benefits of CASA WX
- Describe Large Scale Public / Private Partnership Model
What is CASA?
Collaborative Adaptive Sensing of the Atmosphere

- National Science Foundation Engineering Research Center, 10 year, $40 million grant
  - Academic, Government and Private Sector Partners
- Research to operations.
- Year 10 of a 10-year research project
- Test beds in Oklahoma and Puerto Rico
Oklahoma Test Bed – Quasi-Operational
Test bed: 2007 - 2011
Cutting edge radar system being deployed in DFW region

- New hazard warning system: weather, low flying targets.
- Increases public safety and economic benefits
- More accurate warnings
- DFW as a national model for future urban safety infrastructure

Low power, multi-Doppler, Dual Pol, X-band radars
What are the gaps in the current radar system, NEXRAD (88D)?

NEXRAD coverage at 3 km (10,000 ft).

NEXRAD coverage at 1 km (~3200 ft) AGL.
CASAs Solution: dense, X-band radar networks

<table>
<thead>
<tr>
<th></th>
<th>CASA</th>
<th>NEXRAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low level sensing</td>
<td>Coverage below 3200 ft</td>
<td>30% coverage below 3200ft</td>
</tr>
<tr>
<td>Radar Resolution</td>
<td>1- 2.5 football fields</td>
<td>10 – 40 football fields</td>
</tr>
<tr>
<td>Update rate</td>
<td>1 minute</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Radar Scanning</td>
<td>Smart Scans at ground level, optimized</td>
<td>360 degree multi-level scans, changed</td>
</tr>
<tr>
<td></td>
<td>each minute automatically</td>
<td>manually</td>
</tr>
</tbody>
</table>
Current
NEXRAD Radar Technology

NEXRAD = 5-6 min between updates
CASA Radar
Smart Scan Technology

CASA = 1 min between updates

- Rapid, High Res. “smart” scans
  - Balance competing user needs for data
  - Adapt to changing weather
  - Dual Polarization
  - Automated sector scans

- Improved resolution, sensitivity, accuracy, timeliness and ability to support multiple users and multiple applications.
Benefits of low-level, fine-scale weather information
Benefits of low-level, fine-scale weather information

Comparison – Haslet, October 2013
Benefits of Smart Scans: True Wind Data
North Texas Weather Threats

- Flash Floods/River Floods
- Tornadoes
- Damaging Winds
- Hail
- Lightning
- Winter Storms
- Fire Weather
- Inland Tropical Cyclone Effects
DFW Economic Losses – April-June 2012

April 2-4, 2012
- At least 21 tornadoes touched down
- More than 1,100 homes damaged
- 110 planes damaged by hail at DFW Airport
- Total economic losses estimated at $1 billion

June 11-13, 2012
- Up to baseball sized hail reported in Dallas and Grand Prairie
- Golf ball sized hail reported throughout the region
- More than 100,000 insurance claims were filed
- Insured losses estimated to exceed $1 billion in Texas

Source: AON Benfield (Reinsurance broker), April 2012 Global Catastrophe Recap
Source: AON Benfield (Reinsurance broker), June 2012 Global Catastrophe Recap
Fine grained, lower, faster: CASA used for life saving decisions by Newcastle EM

User-centered, Multidisciplinary approach
Real-time high resolution forecasts and nowcasts

Predicted

NEXRAD

NEXRAD & CASA

Actual

80 minute tornado forecast
Fine scale rainfall totals:
Like a rain gauge every 800 feet
Benefits for Winter Weather (research stage) water ice transition
CASA data integrated into decision support platforms

Mock-up of CASA data on WeBEOC Platform
PROPOSED RADAR LAYOUT
Plan for Covering the Whole COG Area
TOTAL NETWORK SIZE = 16-22 RADARS
Become A Partner

- Network Operations $600K per year

- Partnership includes:
  - Access to CASA WX radar data on a secure website
  - Access to archived radar data
  - Training on how to read and interpret data
  - And more!
Public / Private Partnership Model

- Create model for public/private partnerships
  - Operational funding model to be replicated nationally
  - Customization of data presentation based on user needs
- Not entirely dependent on governmental development priorities
  - Infuse governmental research and development with private sector solutions
Potential Funding Models

- Application Developers
- Private Sector Partnerships
- Research and Academic Data Use
- NWS Research
- Private Grants
- Endowments or Fellowships
- Public Entities
CASA WX Executive Council

- Addison
- Dallas
- Fort Worth
- Grapevine
- McKinney
- Midlothian
- Collin County
- Johnson County
- Tarrant County
- National Weather Service
- DFW Airport
- Local Broadcast Meteorologists
- University of Texas Arlington
- University of North Texas
- North Central Texas Council of Governments
More Information:

- [http://nctcog.org/CASAWX](http://nctcog.org/CASAWX)

Amanda Everly
Technical Specialist
Emergency Preparedness
North Central Texas Council of Governments
aeverly@nctcog.org
817.695.9214