



# BUILDING A 4-D WEATHER DATA CUBE FOR 2013 IOC



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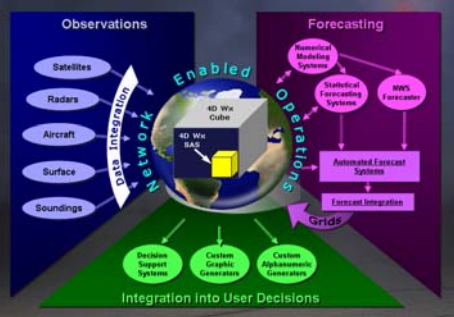
### Today

- Not integrated into aviation decision support systems (DSS)
- Inconsistent/conflicting on a national scale
- Low temporal resolution (for aviation decision making purposes)
- Disseminated in minutes
- Updated by schedule
- Fixed product formats (graphic or text)

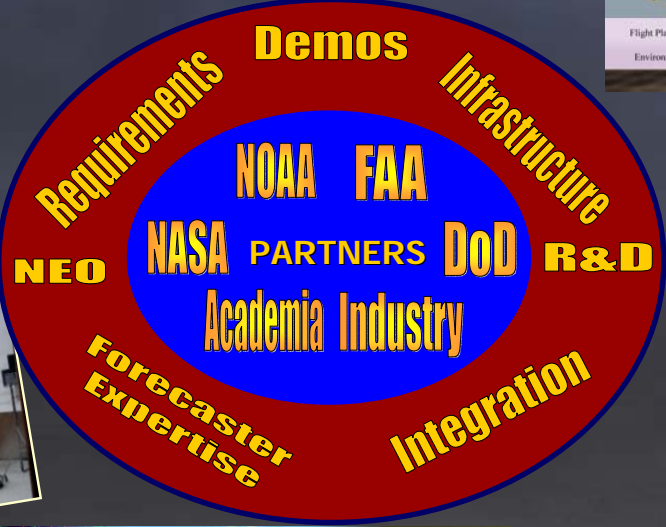
### NextGen (new requirements)

- Totally integrated into DSS
- Nationally consistent
- High temporal resolution
- Disseminated in seconds
- Updated by events
- Flexible formats

## The 4-D Cube: A Conceptual Model



Flight	Gate	Remarks
FR3916	42	Canceled
FR2372	41	Delayed
FR3002	54	Canceled
FR232	53	Canceled
FR901	58	Canceled
FR434	45	Delayed
FR034	55	Delayed
FR2314	48	Canceled
FR203	44	Canceled
FR584	56	



Flight Plan	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Environ																		
Align Agency Policy and Resources																		
Build Initial 4D Weather Systems																		
Optimize and Integrate																		
Manage and Enable																		

Align Agency Policy and Resources	Build Initial 4D Weather Systems	Optimize and Integrate	Manage and Enable
<ul style="list-style-type: none"> <li>Identify, align, or eliminate duplicate weather research and acquisition programs (FAA, NASA, DOD, DOD)</li> <li>Redirect existing research programs towards implementation of a national weather information collection and dissemination capability (FAA, NASA, DOD, DOD)</li> <li>Revisit and update decades old weather operational policies (FAA)</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement weather information protocols and standards (FAA, DOD, DOD)</li> <li>Design and acquire 4D weather infrastructure (FAA, DOD, DOD)</li> <li>Migrate legacy weather systems towards 4D ConOps (FAA)</li> <li>Develop and implement technologies to populate weather information system under Single Authoritative Source concept (FAA, DOD, DOD)</li> </ul>	<ul style="list-style-type: none"> <li>Integrate common weather information with decision support tools to enable a layered, risk-based operations approach (FAA, NASA)</li> <li>Ensure weather event information is well characterized and consistently passed across organizational and agency boundaries (FAA, NASA, DOD, DOD)</li> <li>Enable 4D trajectories that are routinely updated to incorporate the latest weather information (FAA, NASA)</li> </ul>	<ul style="list-style-type: none"> <li>Ensure common weather situation awareness for all users of the NextGen System, promoting improved system capacity and safety (FAA, DOD, DOD)</li> <li>Streamline weather information architecture to reduce operations and maintenance cost for government and users (FAA, DOD, DOD)</li> <li>Ensure direct integration of weather information into NextGen decision support tools to enable "weather savvy" decision support automation (FAA, NASA, DOD)</li> <li>Inform decision makers of options, assist in the automated identification of potential decision risks, and propose suggested operational solutions along with projections of NextGen impacts (FAA, NASA, DOD)</li> </ul>

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 AMS Aviation, Range and Aerospace Meteorology Special Symposium on Weather—Air Traffic Management Integration, January 2009



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