Performance/Capability Assessment of Technologies used for Avian Hazard Management

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The Airport Safety Management (ASM) efforts in CEAT celebrates a 10th anniversary in 2009!

In addition to FAA sponsored activities CEAT is also conducting wildlife related R&D in the O'Hare Modernization Project.

ASM Project Areas in CEAT:

- analysis and management of wildlife issues at airports,
- risk/hazard assessments,
- avian radar performance/capability assessments,
- FOD detection system performance assessments, and
- visual guidance research support.

The ***purpose*** of the overall CEAT Performance/Capability Assessment Program is the examination of technologies and technology systems using science-based assessment procedures to assure the FAA, and the public, that the use of technology at airports is:

1. justified based on proven performance,

2. that use does not compromise safety,

3. use is compatible with all aspects of airport operations.

Further, the assessments gather needed information to develop standards and requirements supporting the development of Advisory Circulars that will guide large scale deployment and operational use of technologies at civil airports.

The first of these advisory circulars on FOD detection systems has just been published!

The CEAT led assessment is a cooperative effort among the FAA, other federal agencies, airports, and vendors.

The CEAT team includes a range of highly qualified experts and depends on expertise from technology developers and systems integrators in the process.

The performance assessment is not a comparison of products, nor is it intended to produce a stamp of approval for any “brand” by the FAA!

In the CEAT Performance/Capability Assessment Program, both FOD detection and avian radar assessments are underway.

The FOD detection assessments include four technology types, three of which use radar sensors.

The avian hazard assessments seek to include an array of sensors and systems.

Presently the program focus is on radar sensor types, although thermal, and other, sensors, may be evaluated.

Present performance/capability assessments include marine radars and avian radar systems that use S, or X-band radars with integrated processing, display, and data management elements

The CEAT Performance/Capability Assessment Program operates in three stages:

Stage #1 &2 conducts a preliminary analysis of new technologies to assess application potential to ASM problems and level of commercialization.

Stage #3 involves development of an assessment program, deployment and use at civil airports, and reporting.

The CEAT Performance/Capability Assessment Program for avian radars includes:

- sensor/system deployment,
- operational assessments,
- data/ information validation and management, and
- consideration of information use in airport wildlife management and airport safety management programs.

HISTORY

The CEAT program began in 1999 with the assessment of radar-based hazard assessment approaches (AHAS)

In 2001 the USAF and FAA joined in a DUST program to develop an avain radar sensor. The 94 GHz sensor was developed and tested in 2004-05.

In 2006 emphasis was shifted to deployment and testing of avian radar systems.

In 2009 new sensors and systems are being evaluated

The program focus shift in 2006 was to commercial systems. Initial deployments were made in March 2007.

The general plan is to operate avian radar systems at airports for two or more years.

Analysis, assessment, and reporting are a continuing activity.

Following the events on1/15/2009 there has been a number of developments in avian hazard assessment. New sensors and systems for avian hazard management are presented to the FAA with increasing frequency and the CEAT program has been adjusted to accommodate new assessment activities.

The CEAT performance/capability assessments for these technlogies include:

A focus on the ***technology*** – addressing issues such as sensor physics, calibration, sensitivity, interference management, area/volume of coverage, radio frequency issues, limiting environmental conditions, and reliability.

A focus on the ***birdstrike problem*** addressing questions such as: can the technology actually detect birds and then differentiate birds from other biological targets; can the system do more than simply detect - can it track, can it provide a sense of mass/size, can it help in identifying species?

A focus on ***strategic wildlife management*** assessing if the technology actually add capabilities to existing wildlife management programs at airports – capabilities such as 24/7 surveillance, better movement pattern recognition, understanding variability in presence and movement, etc.

A focus on ***tactical information management*** assessing if the technology actually add capabilities to sense and alert, find integration in airport CONOPS, and meet stringent requirements for validity, reliability, and timeliness in situations where action by air crew or controllers is required.

Finally, a focus on ***airport safety management*** assessing how new technologies meet the requirements of multiple stakeholders in modern safety management systems.

Through the initial radar testing, and now from the recent deployments, we have come to understand:

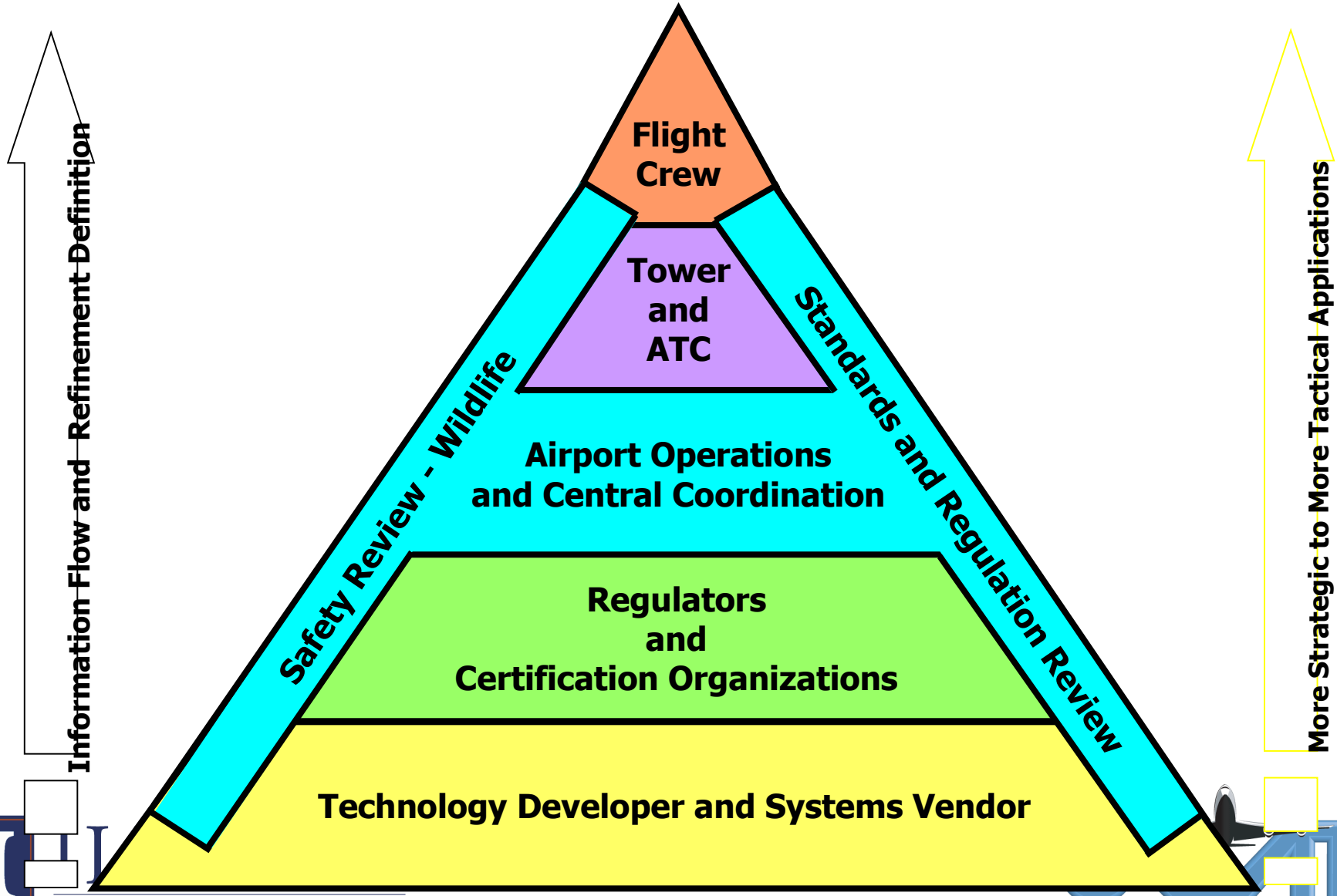
1. Radar is an important tool in our toolbox of technologies and practices intended to improve aerospace system safety.
2. Even after several years we still don't know full capabilities, or limitations, of avian radars.
3. We need to complete performance evaluations in different settings to answer critical questions that are site specific.
4. We need to have operating radars in the hands of airport folks to see how they will be used.

There are some practical issues associated with putting radars into the hands of airport personnel:

1. What is involved in the deployment of an avian radar system?
2. To maximize utility, how do we synthesize what we know about wildlife at an airport to maximize the potential application of an avian radar?
3. What are possible concepts of operation (CONOPS) for avian radars at civil airports?
4. How can we assure airport users about data/information reliability and then provide the information needed in two critical areas, wildlife management and airport safety management?

We are making progress in defining concepts of operations in the civil airport environment. This progress in understanding needs is directing the performance/capability assessments of hazard management technologies.

The Airport Operational Environment



Questions?