Technology – Improve Accuracy & Speed of NOTAM Submission
&
Areas where industry can partner with FAA to improve the US NOTAMs

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Topics

- Submission of NOTAMs - Evolution of the process
- Distribution of NOTAMs - Making information available to users
- What can be improved? - Thoughts on taking it to the next level
- FAA & Industry Collaboration - How together we can enhance safety!

Evolution of NOTAM Submission

- NOTAM Submission process has significantly improved with FNS
- Airports could NOT submit their own NOTAMs directly
  - They had to call Flight Service (FSS) to issue NOTAMs
  - Took more than **15 minutes** on an average
- With FNS-NOTAM Manager, Airports can manage their own NOTAMs
  - NOTAMs can be issued, cancelled or replaced in **seconds**
- NOTAM Manager has increased the quality & accuracy of NOTAMs
  - By the use of scenario templates you no longer need to type the NOTAM text
  - Business rules validates NOTAM before publication
  - Policy changes are automatically handled by the system
- More than 1200 airports use NOTAM Manager today

FNS NOTAM Manager

Built for the Future - Digital Age

- Scenario templates were developed after reviewing 1000's of NOTAMs
- All scenario/template based NOTAMs are **digital NOTAMs**
  - Before it was just a text string →Analog
  - Enables capture of geometry →Graphical display
  - Enables validation →Improved accuracy
  - Transform to any form →NOTAM Text
  - Ready for Machine Interpretation!

ACY RWY 13/31 CLSD   **VS.**

Digital NOTAM – AIXM 5.1 encoding
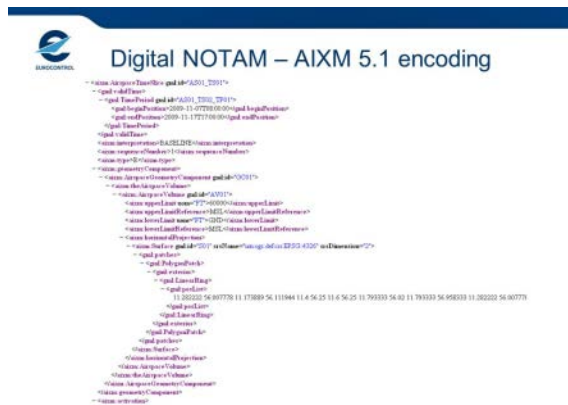
Distribution of NOTAMs

- Published NOTAMs (once numbered) are available both via Web and SWIM
- Where can you get them?
  - NOTAM Search (https://notams.aim.faa.gov/notamSearch/)
  - NOTAM Distribution Service (NDS) via SWIM
  - Subscribing to this service will push you NOTAMs the moment it is published
- NOTAM Search supports
  - Sorting
  - Filtering
  - Flight Path Search
  - Free-text search
  - Few others

What can be done better?

General Reported Issues on NOTAMs

- NOTAMs are unreadable
- Information Overload
- Hard to parse through to find relevant information
- UPPER case is unreadable
- Use plain english instead of acronyms
- Categorize information

   The near miss incident on July 7, 2017 at SFO is a an example

Graphical Visualization of NOTAMs

- Graphical representation of the NOTAM eliminates ambiguity
- Easy to follow the information than reading the text
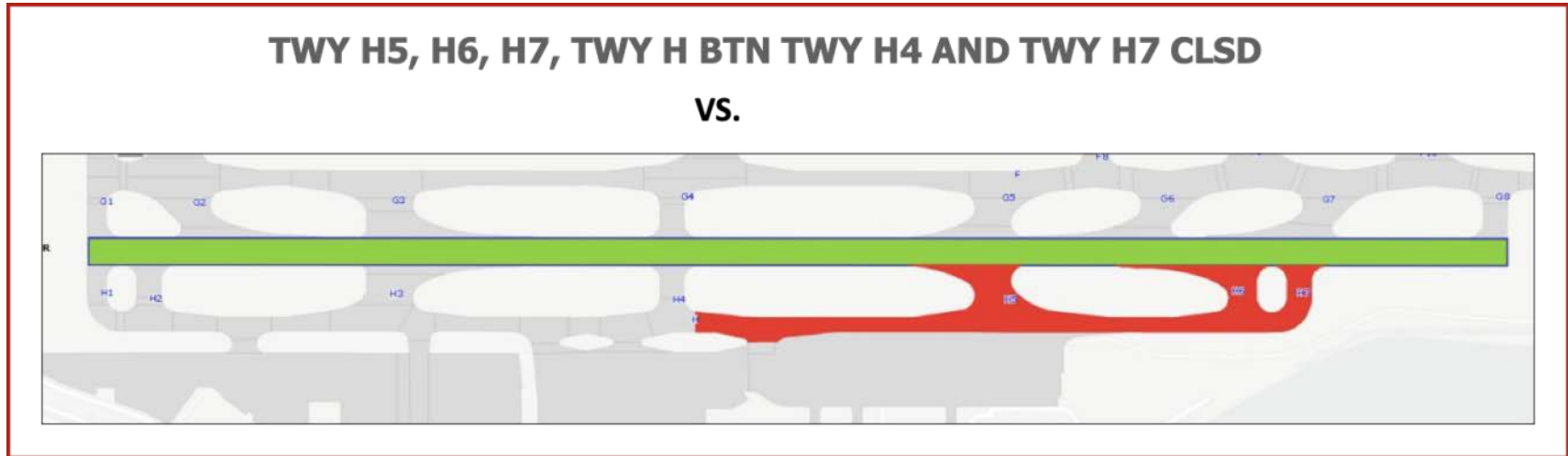- Compare the example below – which is better?

TWY H5, H6, H7, TWY H BTN TWY H4 AND TWY H7 CLSD

VS.

Figure is a mockup not real

Create NOTAMs Visually

- Accurate output needs precise input
- Use underlying map to identify the impacted area rather than text
  - Eliminates ambiguity as they are selected precisely by viewing the map
  - Today the process is cumbersome and originator doesn't know how the user is going to interpret the NOTAM
- Providing end-to-end visualization of NOTAM enhances safety!

TWY H5, H6, H7, TWY H BTN TWY H4 AND TWY H7

Figure is a mockup not real

Other Thoughts

- Metrics, Analytics and Dashboard
  - Measure impact of NOTAMs on operations
  - Use information to improve operational efficiency
  - A real-time dashboard showing the current NOTAMs visually
- Eliminate NOTAM distribution delays
  - Enabling real-time distribution has many benefits
  - Make the information available the moment it is published
  - Technology exists today to make this happen - Twitter good example
- Automatic NOTAM creation
  - There is opportunity in some areas to automatically create NOTAMs
  - Obstacle Tower Light is a good example
- Good airport map with standardization is key
  - Accurate visualization needs good maps
 - Update as required to reflect current condition

Where can Airports/Industry Help?

- Use of scenario templates instead of Free-Text NOTAMs
  - Allows you to publish directly without going through Flight Service
  - Consistent NOTAM and enables visualization and machine interpretation
  - Convey to the FAA missing templates for NOTAMs that are commonly issued
- Standardization of maps and consistency
  - Good maps key for visualization
- Accuracy and timeliness of NOTAMs are very important
  - Issue and cancel them when the condition changes
  - Account for the small delay in communicating the information today
  - Use NOTAM Manager to your advantage!

Final Departing Thought...
Real Time Situational Awareness

- NOTAM - A Means to an End
  - Ideally Pilots and Others shouldn't need all these papers and NOTAMs
  - Information should be updated as they happen and should be communicated/integrated
  - Automatic interpretation, so no need to read NOTAMs
- Example - how do you get alerted on traffic conditions?
  - Maps automatically get updated
  - Even systems are smart to reroute to get you quickly to the destination
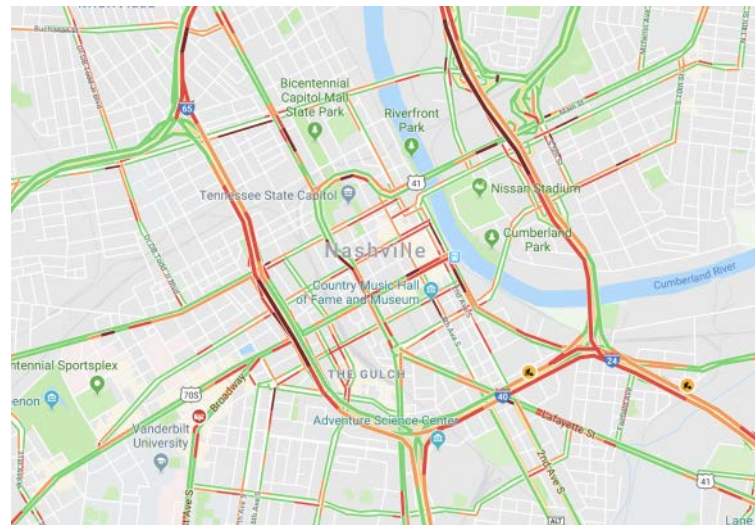
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