

# Boston Logan International Airport Noise Study



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## Noise Analysis Tools Demonstration

Given By:  
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October 25, 2007

# Expectations for this Meeting

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## ■ PC to:

- Describe the overall noise modeling process
- Identify noise models and other software tools used in each step of the process
- Identify those software tools which are not publicly available
- Demonstrate how the PC's proprietary tools will be used for this project

## ■ IC to:

- Demonstrate how Metron's Airspace Design Tool (ADT) will be used for this project

## ■ CAC to:

- Submit questions to the web-meeting Moderator
- Participate in discussions at specific "Pauses" in the presentation

# Outline of Presentation

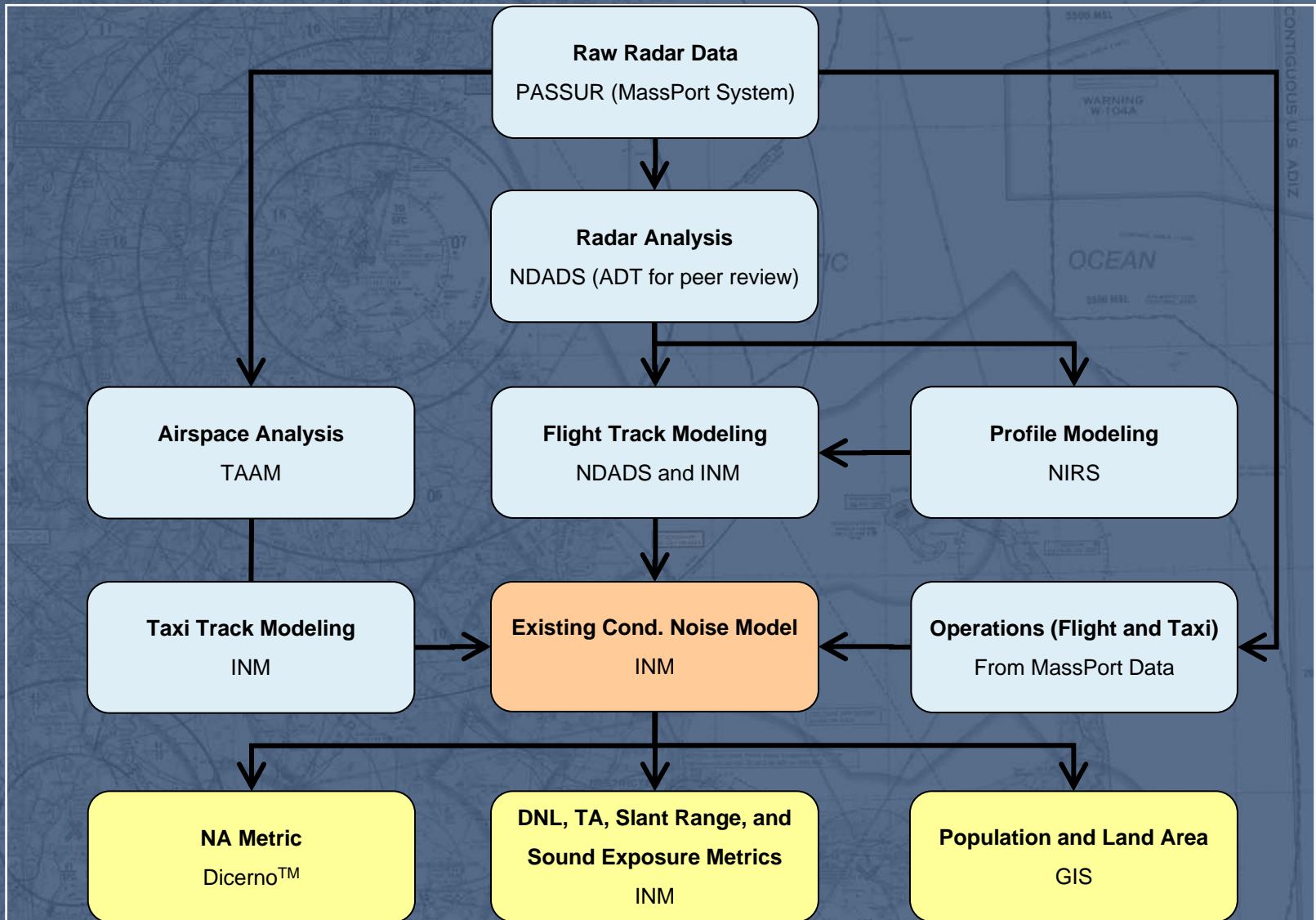
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- Overview of the noise modeling process
- Identification of software programs to be used
  - Some are publicly available (i.e., FAA noise models)
  - Others are proprietary to the consultants
- Live demonstration of consultant-proprietary tools
  - Noise Data and Display System (NDADS) [Wyle]
  - Airspace Design Tool (ADT) [Metron]
  - Dicerno™ [Wyle]



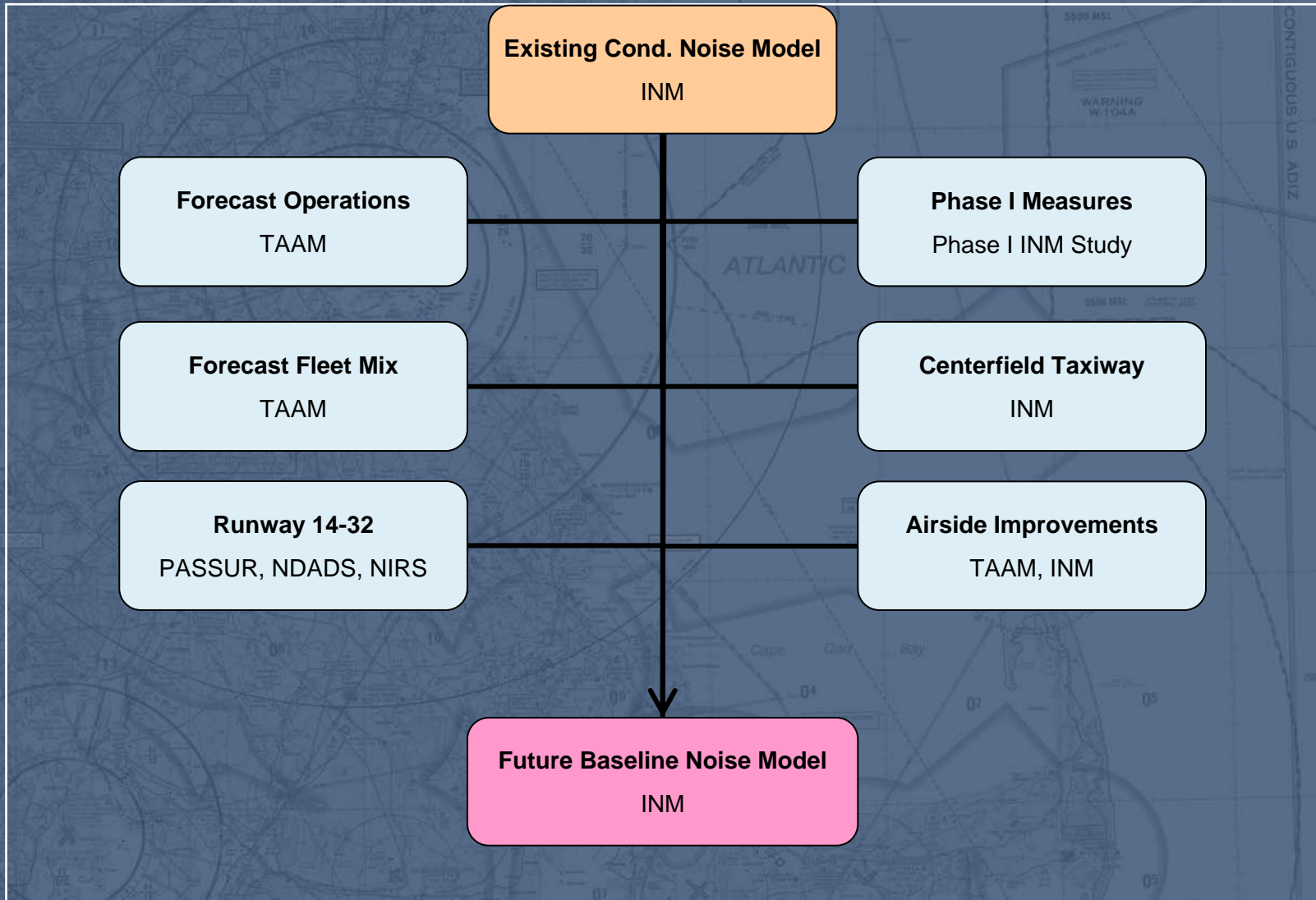
# Existing Conditions Noise Modeling

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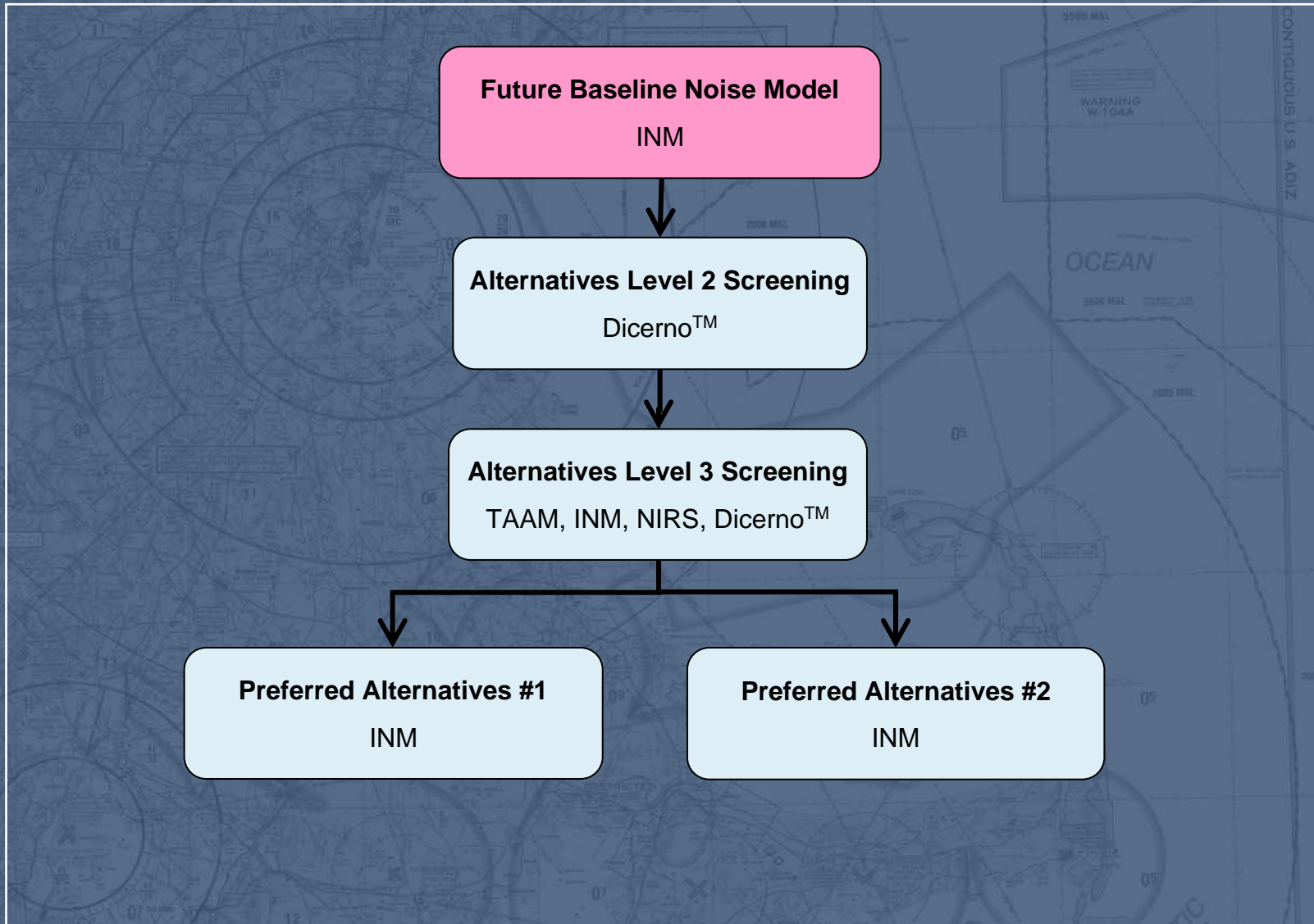
# Future Baseline Noise Modeling

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# Alternatives Noise Modeling

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# Step 1: Radar data analysis

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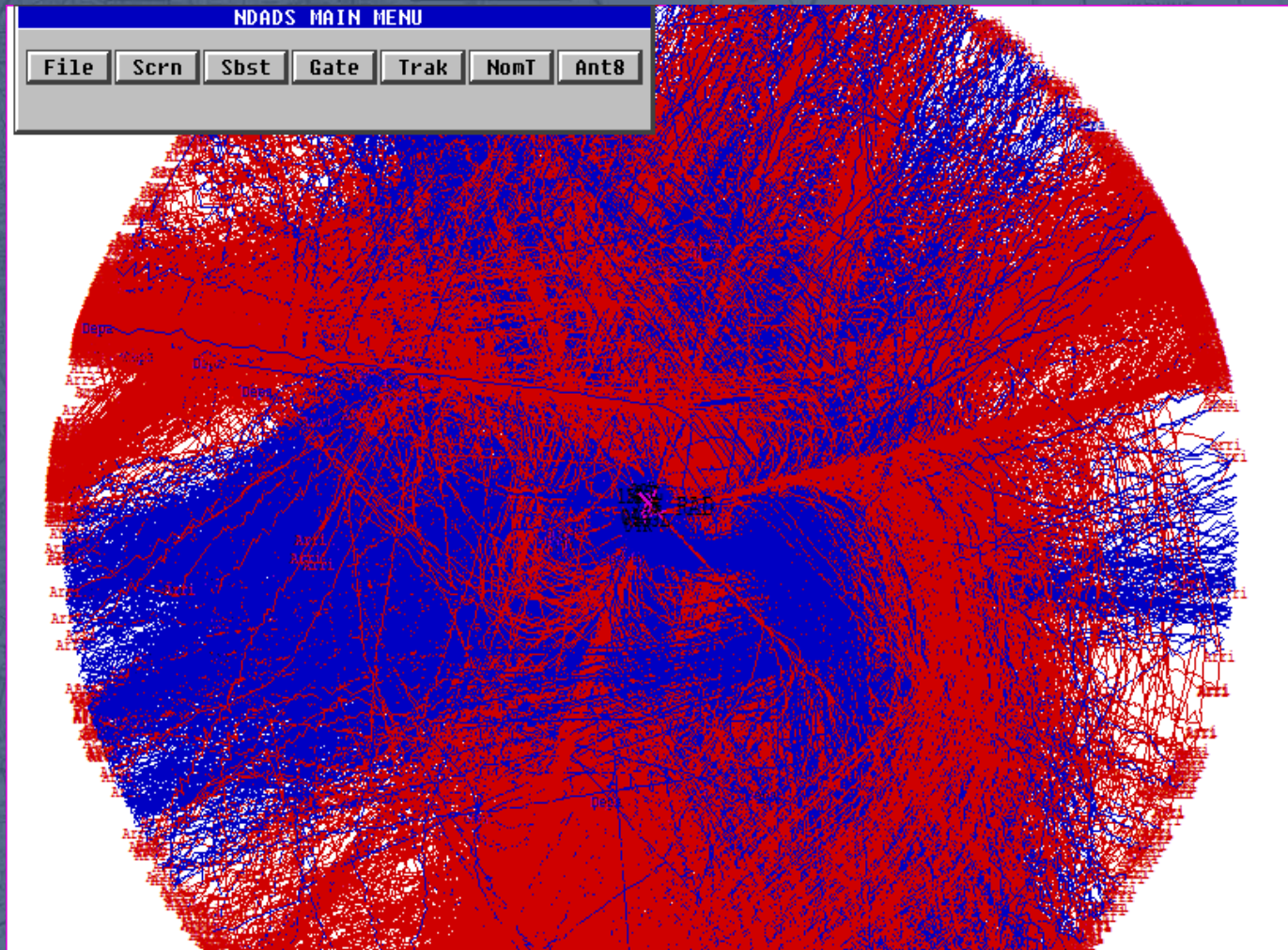


- NDADS is used to graphically evaluate radar data
- All radar tracks go through a “bundling” process using the NDADS software
- A bundle refers to a grouping of radar flight trajectories that have been sorted based on common characteristics
- The bundling process begins with each “airport operating configuration” and breaks up the radar tracks into progressively smaller groups in this order:
  - Level 1: Operation Type & Runway
  - Level 2: Aircraft Type Category
  - Level 3: Ground Track Location

# Sample of All Radar Tracks

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Airport at center of figure; radar coverage radius of 30 NM



# Airport Operating Configurations

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✈ Primary Departure  
 ✈ Secondary Departure  
 ✈ Prop Departure  
 ✈ Primary Arrival  
 ✈ Prop Arrival  
 ✈ Departure by Request

Alternative Configuration	Weather	Flow	Runway Configurations	Runway Diagram	Percent Use - not weighted
4/9	VMC	East	Arr 4R, 4L Dep 9, 4R, 15R, 4L		20.6
4/9	IMC	East	Arr 4R Dep 9, 4R		14.6
22/22	VMC	West	Arr 22L Dep 22L, 22R, 15R		7.3
22/22	IMC	West	Arr 22L Dep 22L, 22R		1.2
33/27	VMC	West	Arr 33L Dep 27, 33L		17.5
27/22	VMC	West	Arr 27, 22L Dep 22R, 22L		23.2

Source: Based on MASSPORT Log for 2005

# Level 1: Configuration/Operation Type/Runway

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- The following data will be shown in the live demonstration:
  - Configuration 2
  - Arrivals to 4R
  - Departures from 9 and 4R



# Pause

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- Live Demonstration
- Pause for Questions



# Level 2: Aircraft Type Category

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- Four Categories:
  - Air Carriers weighing > 255,000 pounds → “Heavy Jets”
  - Air Carriers weighing < 255,000 pounds → “Medium Jets”
  - Regional/Business Jets → “Light Jets”
  - Propeller Airplanes → “Propeller”
- NDADS used to filter the radar tracks into smaller bundles according to category



# Level 3: Ground Track Location

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Level 2 bundle is grouped into smaller bundles according to ground track locations

A Level 3 bundle is created for each grouping



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- Pause for Questions



# Next Steps

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- Numerous Level 3 bundles are created
- For each Level 3 bundle a backbone track and sub-tracks are created for input to INM
- **LIVE DEMONSTRATION**
- Profile analysis of the tracks in each bundle



# Pause

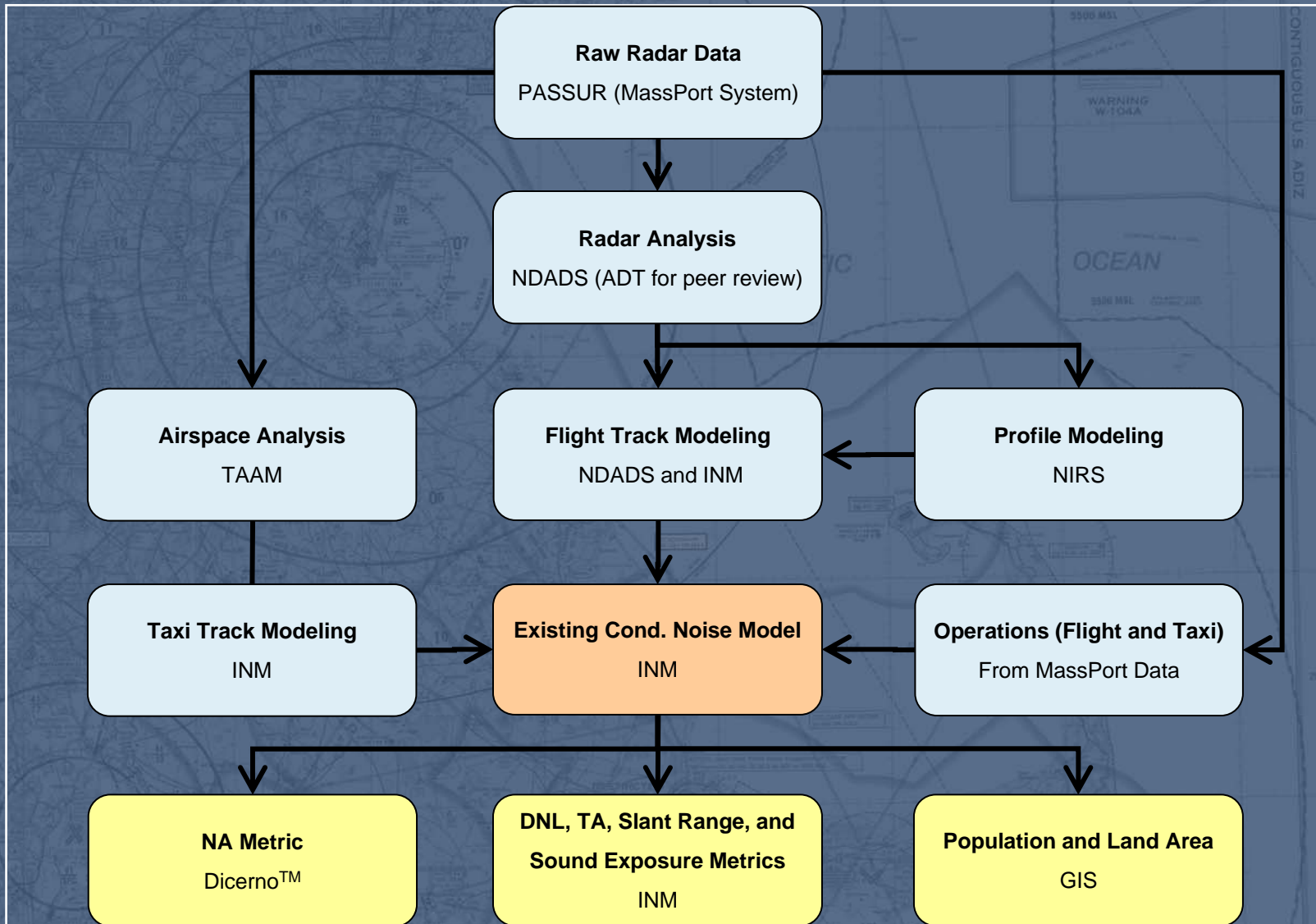
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- Live Demonstration
- Pause for Questions



# Recall: Existing Conditions Noise Modeling

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# Peer Review of Radar Analysis

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- Presentation by IC (Metron), Airspace Design Tool (ADT)



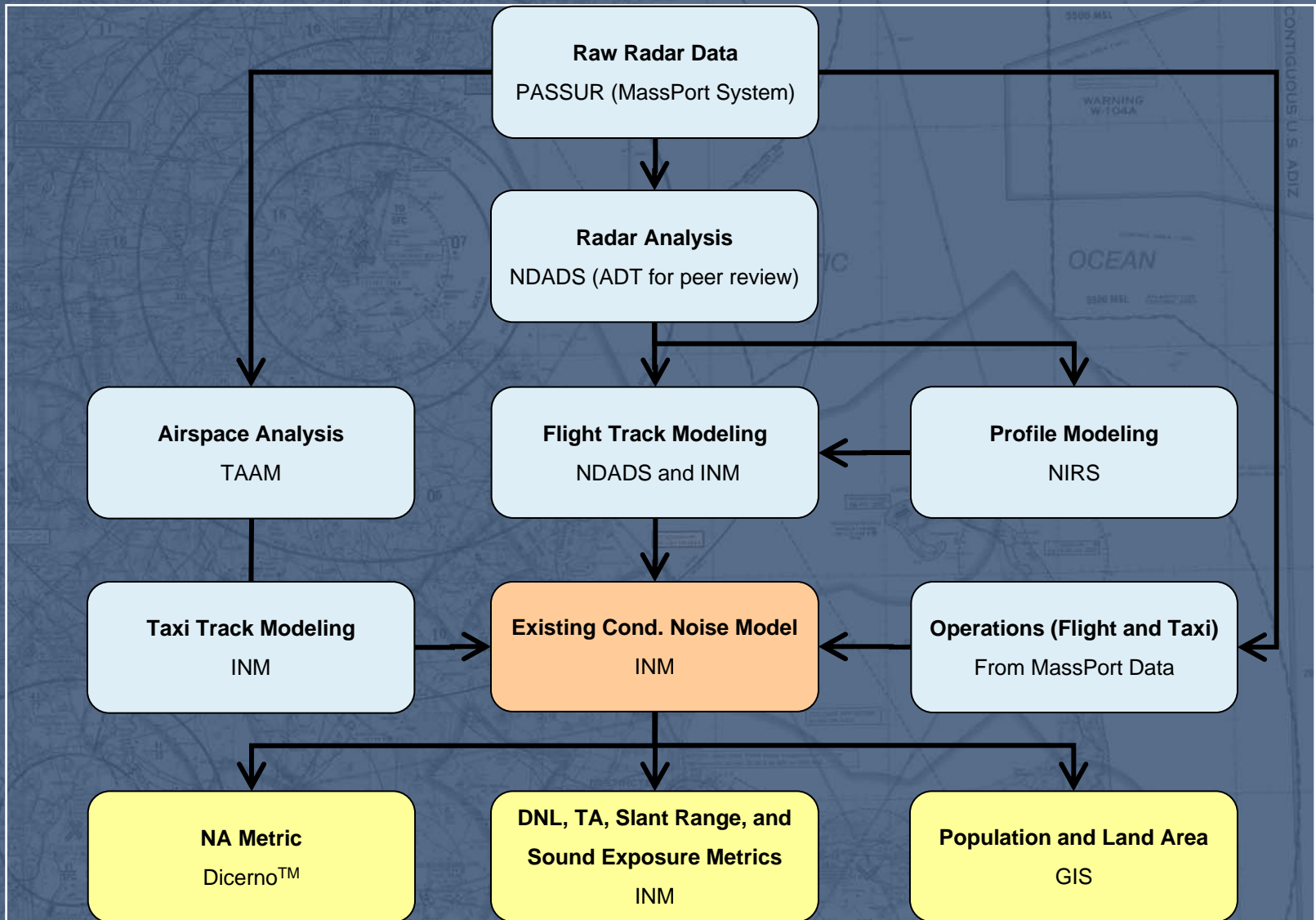
# Presentation and Questions for Metron

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# Recall: Existing Conditions Noise Modeling

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# Existing Conditions: Dicterno™

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- Dicterno™ will be used by the PC to conduct post-processing of the INM Existing Conditions model
- The Number-of-Events Above (NA) metric will be computed by Dicterno™ because the INM does not output NA
- This same process was used in Phase 1
- Live Demonstration



# Pause

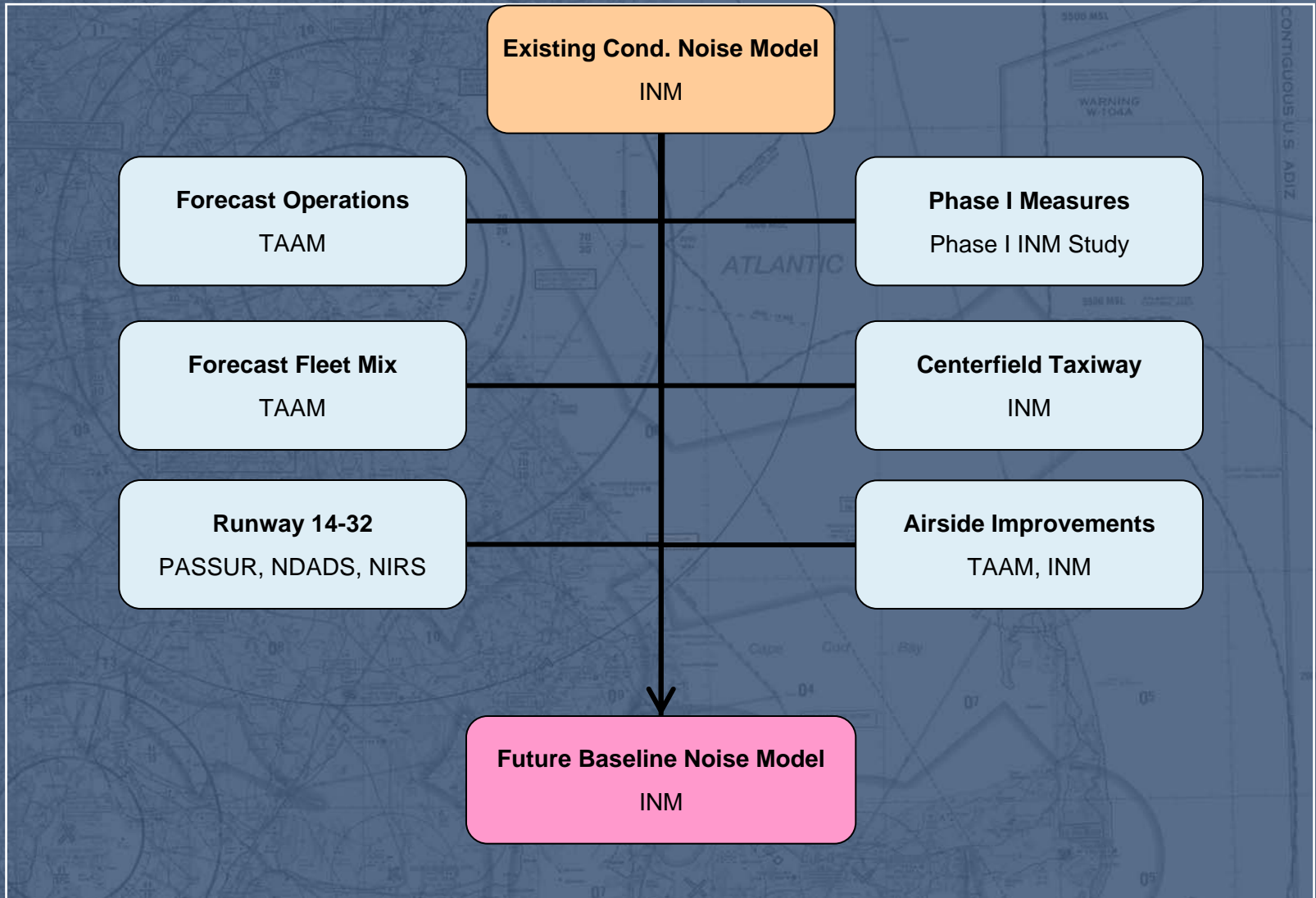
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- Live Demonstration
- Pause for Questions



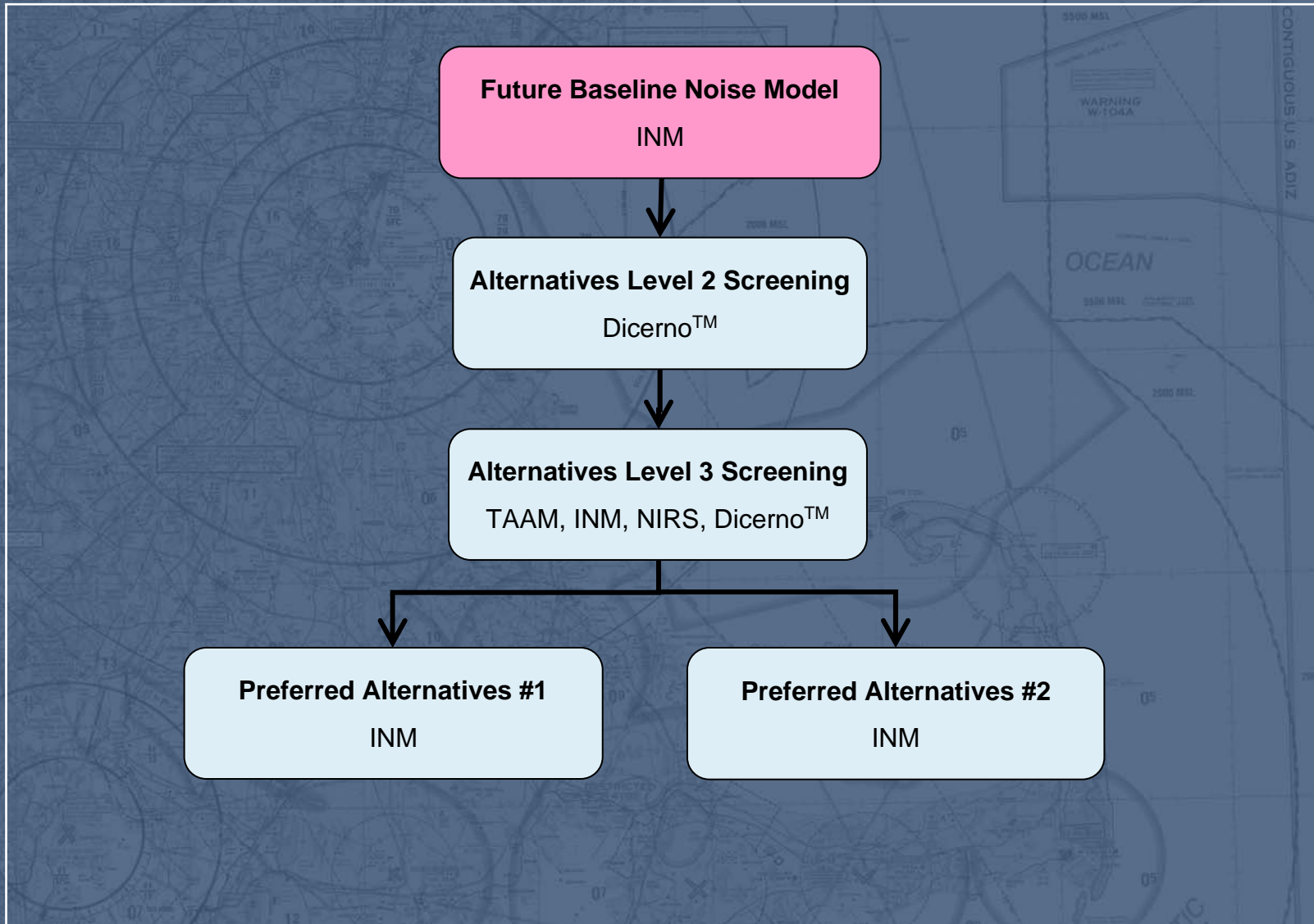
# Recall: Future Baseline Noise Modeling

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# Recall: Alternatives Noise Modeling

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# Level 2 Screening: Dicterno™

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- Dicterno™ will be used to assess the potential for noise mitigation for each identified measure
- It will provide a quick way to estimate if a measure will provide a noticeable change in noise exposure
- Options include: increasing/decreasing operations, moving operations, changing subtrack distributions, new tracks/procedures
- Dicterno™ can handle flight and ground noise measures
- Outputs will include DNL and NA, for contours and location points
- Measures which pass this level of screening will be further analyzed under Level 3 Screening

# Pause

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- Live Demonstration
- Pause for Questions



# Conclusion

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- Additional questions
- Closing comments from the PC

