ATFM in 2030 and Beyond
--- Challenges and Opportunities

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Future Fleet, Different Demand

- New airspace users with different flight characteristics
- New and revised requirements for service

What Does That Mean to ATFM

- Different types of demand to predict and manage
- New entities to coordinate (e.g., UAV service providers, commercial launch services)
- New types of uncertainties to consider in demand and capacity prediction

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Connected System

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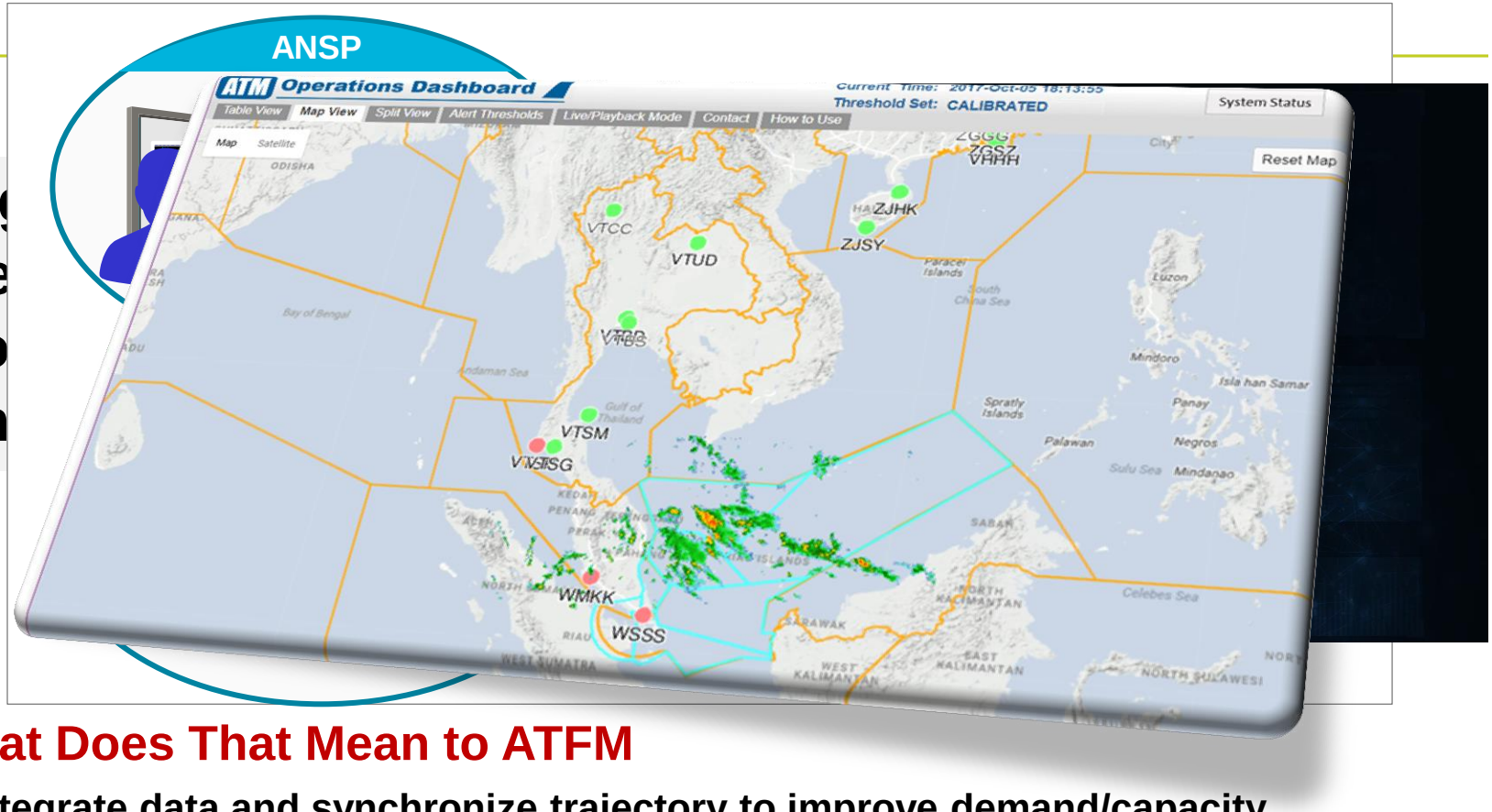

What Does That Mean to ATFM

- Integrate data and synchronize trajectory to improve demand/capacity prediction
- Provide right information to the right people at the right time
- Advance collaboration through data sharing
- New roles and responsibilities distribution among ANSPs and airspace users

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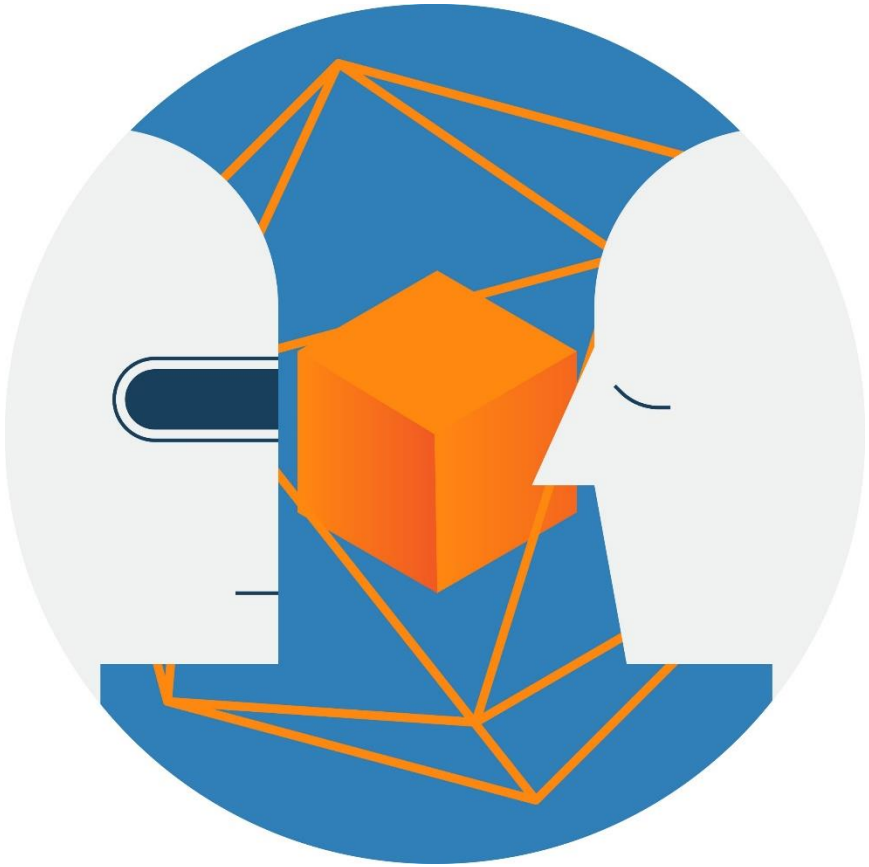
Artificial Intelligence for ATFM

- **Working on tasks best suited to automation as a trusted member of the human-machine team for ATFM:**
  - **Historical analysis**
  - **Real-time simulation**
  - **Probabilistic decision analysis in a multi-stakeholder space**

- **Challenges for ATFM**
  - **Difficult to interpret**
  - **Lack of model transparency**
  - **Justification for a recommendation?**
  - **When the system is wrong/right—why?**



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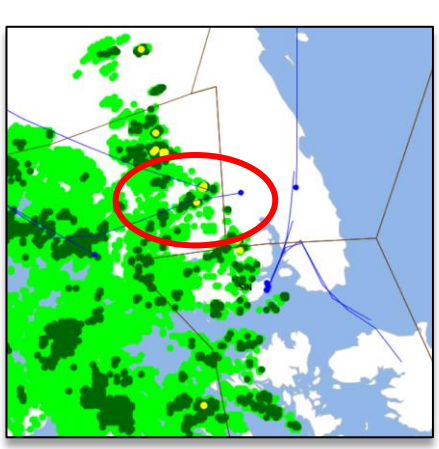
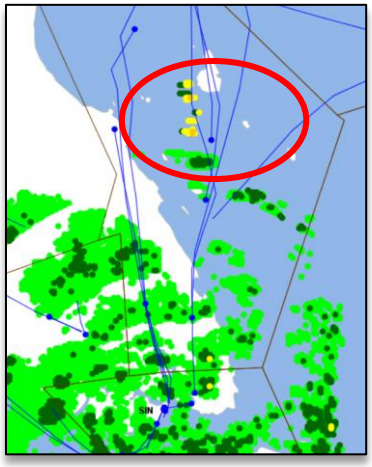
The Future ATFM Role is Still Balancing Demand with Capacity

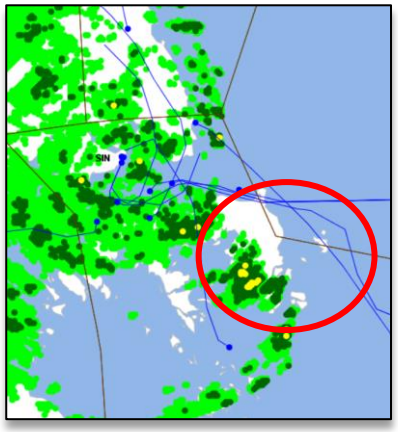
- **Managing *uncertainty* is still the biggest challenge for future ATFM**



Go through Weather



Local Deviation



Wide-Area Deviation

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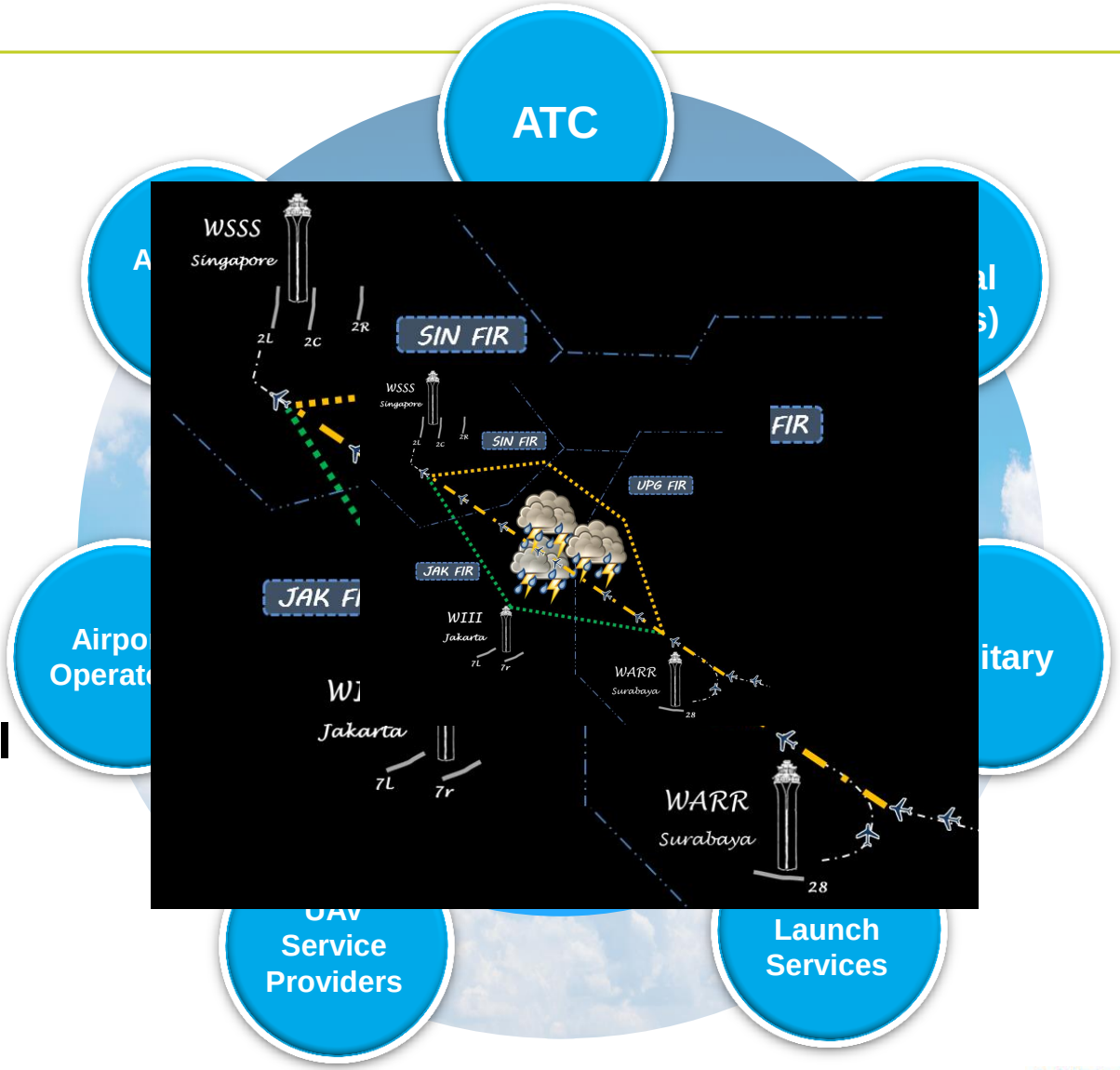
The Future ATFM Role is Still Balancing Demand with Capacity

- **Data driven *dynamic collaboration* is the key to make ATFM successful**



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