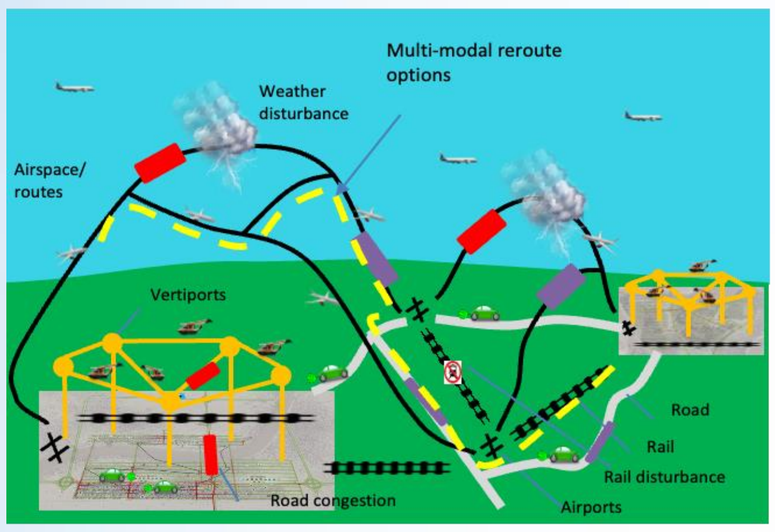
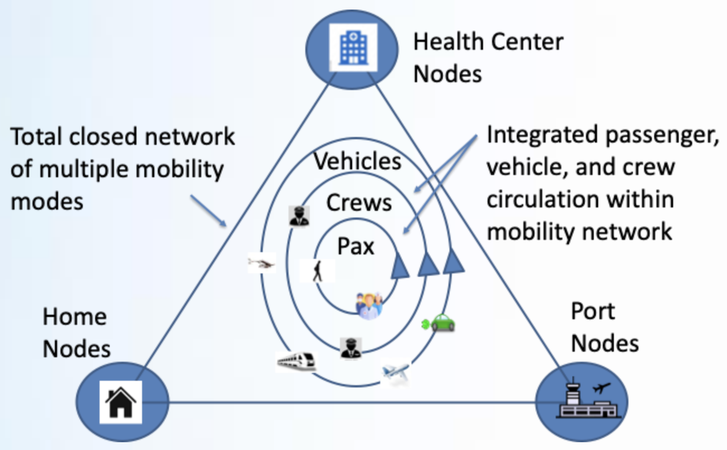
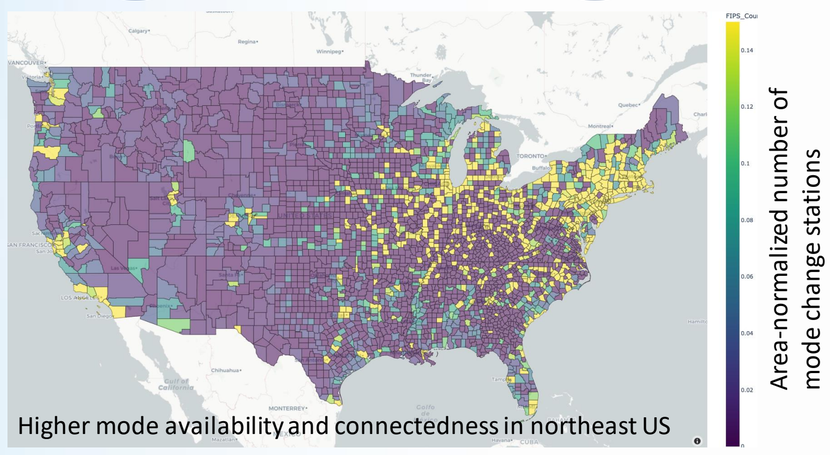
National Aeronautics and Space Administration

PAX Mobility

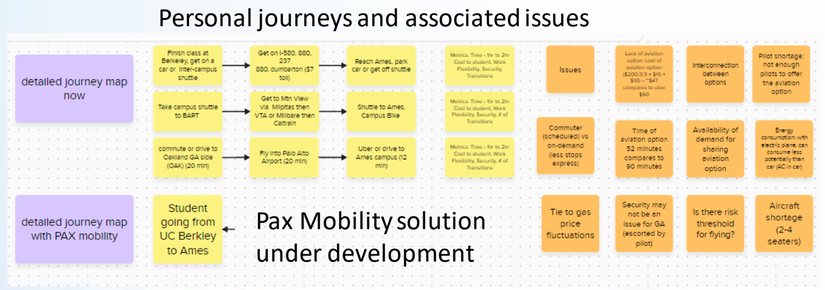
Wicked Wild Discovery







Personal journeys and associated issues



CHALLENGE

Cut down the end-to-end travel time and friction for people and goods (referred to as *passengers*) through:

- A **passenger-oriented paradigm** to enable faster mobility that is accessible by all people, end to end (rather than port to port), and that is also safer, more efficient, and sustainable
- A **total mobility paradigm** that integrates modes of mobility to achieve end-to-end passenger objectives
- **Digital transformation** that establishes an agile research and development process to reduce the time to reach end-to-end mobility solutions

EXPECTED IMPACTS

Passenger-Oriented Mobility: moving people & goods **end to end faster**, safer, and more efficiently

- Achieve **interoperable mobility** among modes to increase the options available to passengers
- Optimize options across modes for a **robust and resilient mobility** to disruptions and disasters
- Achieve **seamless mobility** for the passenger, and along the way for the operator, the vehicle, and support services, overcoming barriers such as security choke points and public-private heterogeneity
- Achieve **cost-effective and equitable mobility**, even free or subsidized, to improve mobility in underserved areas and connect economies through more mobility
- Achieve **scalable mobility** through integrated solutions, leveraging autonomy and AI
- Achieve **sustainable mobility** by removing inefficiencies due to sluggish mode transitions
- **Agile R&D approach** to ensure total mobility converges before the problem diverges

PROPOSED SOLUTION

Solutions will be identified based on outreach and workshops. Potential solutions include:

- Architecture and data fabric to connect passengers, operators, and services across aviation and other modes
- Models and algorithms for seamless integration of passenger, crew, and vehicle/fleet/traffic management end to end across aviation and other modes
- Operational + economic + regulatory models and algorithms to assess and optimize total mobility impacts end to end
- Mitigation of transition barriers across modes including security, payments, etc.

Strategy: start with a particular use case, such as delivery of health services, and conduct research-to-implementation to cut down end-to-end travel time for passengers by a predefined target ratio

RESULTS

- Conducting interviews with key stakeholders to identify intra-urban, regional urban-rural, and long-haul urban-urban use cases, for example:
  - Los Angeles use of air taxi for Olympics (very limited or no use of air taxi is considered)
  - California Bay Area medical access from underserved communities to UCSF and Stanford hospitals
  - Activities for integration of regional cargo operations in the Dallas-Fort Worth metroplex
  - Washington state integration of electric ferry, e-VTOL operations, and energy use of small airports
- Some current insights from interviews:
  1. Developing and utilizing small airports for remote community access and disaster readiness
  2. Forming networks of multiple airports with other modes for optimized traffic distribution and connecting economies
  3. Consolidating electric/hydrogen charging offers opportunities for multi-modal hubs
  4. Innovating security processes to reduce traveler time sinks, integrating new transport modes to airport airside
  5. Using multiple tickets and payment methods along multi-modal journeys adds friction and hinders integration
  6. Transporting cargo by air versus ground conserves sensitive products
- Planning a series of mini-workshops around use cases - First workshop in April/May 2024 focused on the California Bay Area
- Generating personas and journeys and identifying issues in preparation for the mini workshops
- Initial analysis of connectedness of regions across the US using different modes of transportation (see map for number of modal stations per county)

For more information, CONTACT

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