



Scalable Traffic Management for Emergency Response Operations (STEReO)

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The background of the slide is a photograph of an air traffic control room. In the upper portion, a large wall-mounted display shows a map of the United States with numerous blue and green dots representing aircraft, alongside several smaller panels displaying green waveform graphs. In the lower portion, several people are seated at desks with multiple computer monitors. One person in the foreground is looking at a monitor displaying a map with various flight paths and data. A digital clock in the background shows "10:50 48".

roots in air traffic control research

traditional air traffic control
research and simulation



future of aviation

advancing technologies enable new aircraft types, increased demand for airspace, and need to safely manage the airspace

UAS traffic management (UTM) project



new paradigm of air traffic
management using a
distributed network of service
providers



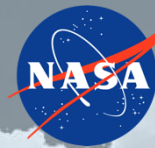
clear path forward for
multiple areas of research,
often overlapping

STEReO

Scalable Traffic Management

NASA's UAS Traffic Management (UTM) System

- access the airspace and coordinate use
- standardized platform for sharing operation information & data

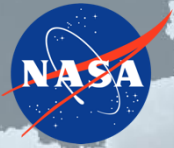


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Emergency Response Operations

existing challenges include...

- limited communication and infrastructure
- manual coordination to deconflict airspace
- large number low altitude aerial missions (e.g. search and rescue)
- remote sensing data can't be received in a timely manner



To what extent can a STEReO ecosystem



Reduce response times

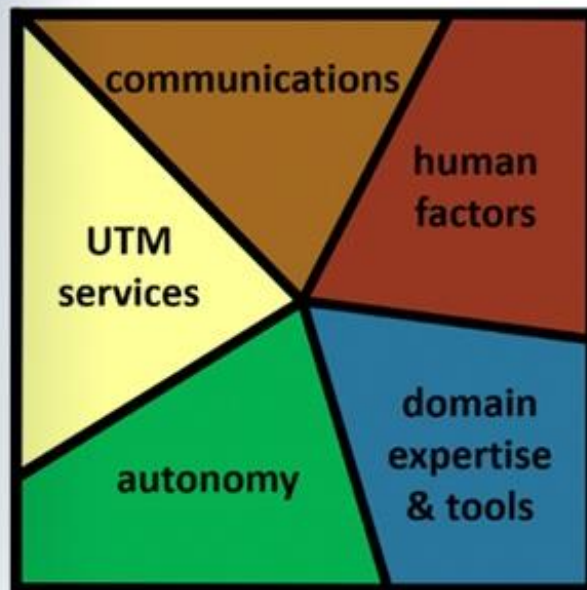


Provide operational
resiliency to dynamic
changes during a disaster
event

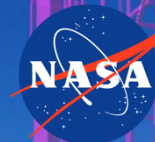


Scale aircraft operations



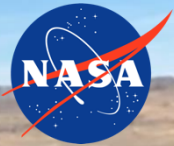


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Safe2Ditch

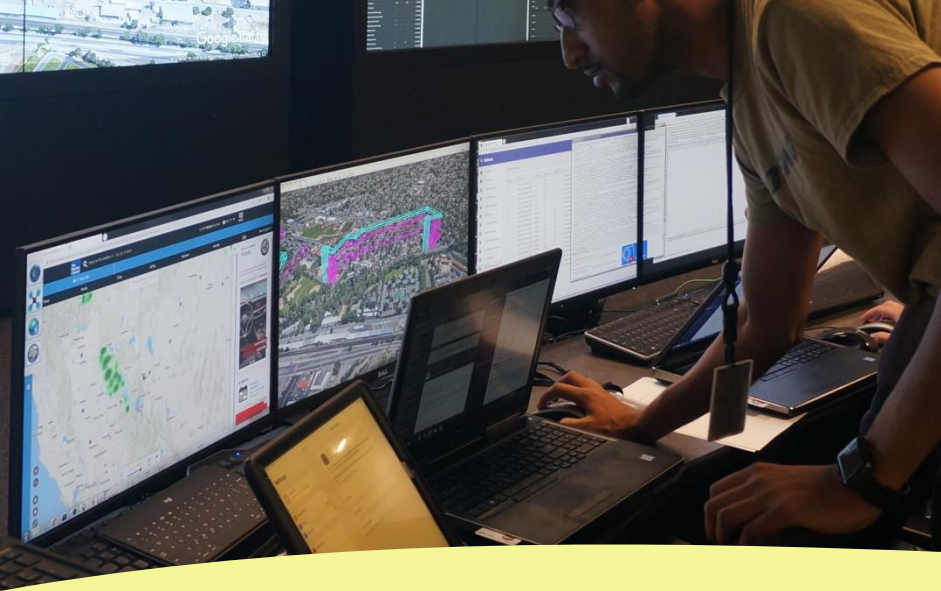
STEReO



Communications

persistent, interoperable,
and expanded

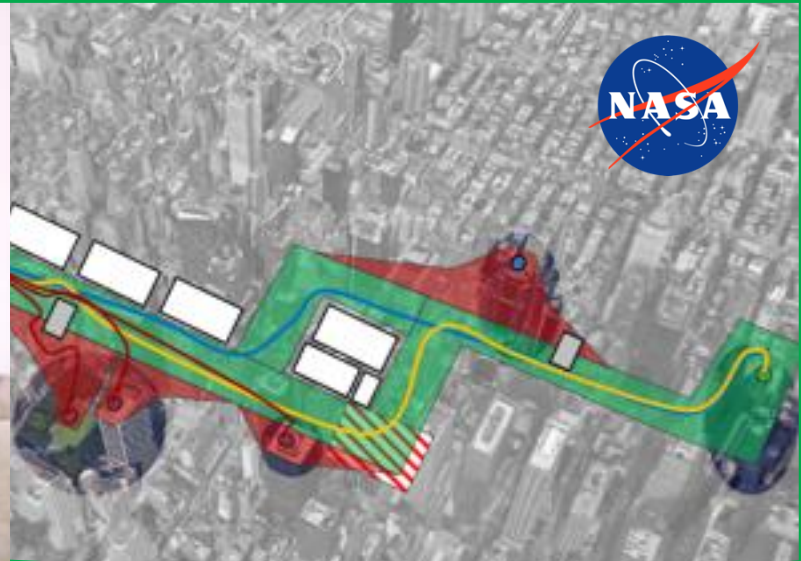
supports critical data exchanges, with
a new allocation of spectrum for
tracking UAS operations without
burdening existing networks



UTM Services

airspace coordination and management

alleviates workload associated with incorporation of UAS operations



Autonomy
mission driven on-board
decision making

supports the safety, performance,
efficiency, and remote-sensing aspects
of UAS missions



Domain Expertise & Tools

subject matter experts and
stakeholders

collaboration on problem definitions,
barriers, and solutions, as well as
integration with existing workflows



Human Factors

concept and information requirements

explore new tools and interfaces to demonstrate distributed and virtual collaborations

Targeted use-cases

California wildland fire field demonstration

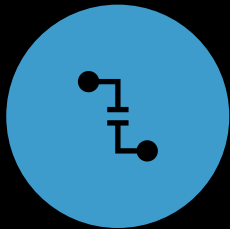


Florida post-hurricane response simulation

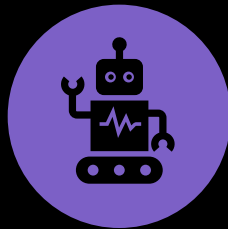




Why is STEReO transformational?



ADDRESSES
RESILIENCY
GAP FOR
UTM/UAM
ECOSYSTEM



ADVANCES
STATE-OF-THE
ART IN
AUTONOMY



SAFELY
ENABLES
NEW
OPTIONS FOR
EMERGENCY
RESPONDERS

Why Is STEReO “Transformational?”



Who cares?

FAA, UAS industry,
First Responder
Agencies, and
General Public



Community benefits

- faster response and recovery
- more situation awareness during disaster



System level benefits

- increases capacity of aerial operations during an incident response

