



Virtual Air Traffic Simulation Capability

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MSR

Problem

- **MITRE has an Air Traffic Management (ATM) laboratory supporting interactive, real-time aviation research**
 - Capabilities are not accessible outside of MITRE
 - Participants generally must come into the lab or have their own interoperable lab environment
 - Only a limited number of participants can be accommodated

- **Online aviation gaming communities are realistic, have aviation expertise, are international, and support a large number of users**
 - Is there a role for such a community in aviation research?

Background

- **VATSIM is the Virtual Air Traffic SIMulation network**
 - **An internet-based simulation of the global aviation environment with > 100,000 registered users**
 - **Controllers and pilots communicate with Voice-over-IP (VoIP)**
 - **High level of realism**
 - **Pilots use realistic off-the-shelf flight simulators**
 - **Controllers use custom, multi-purpose display software**
 - **Models today's "as-is" aviation environment (internationally)**
 - **There is a sophisticated governance model**
- **What could *you* do with 1,000 subjects?**

Objectives

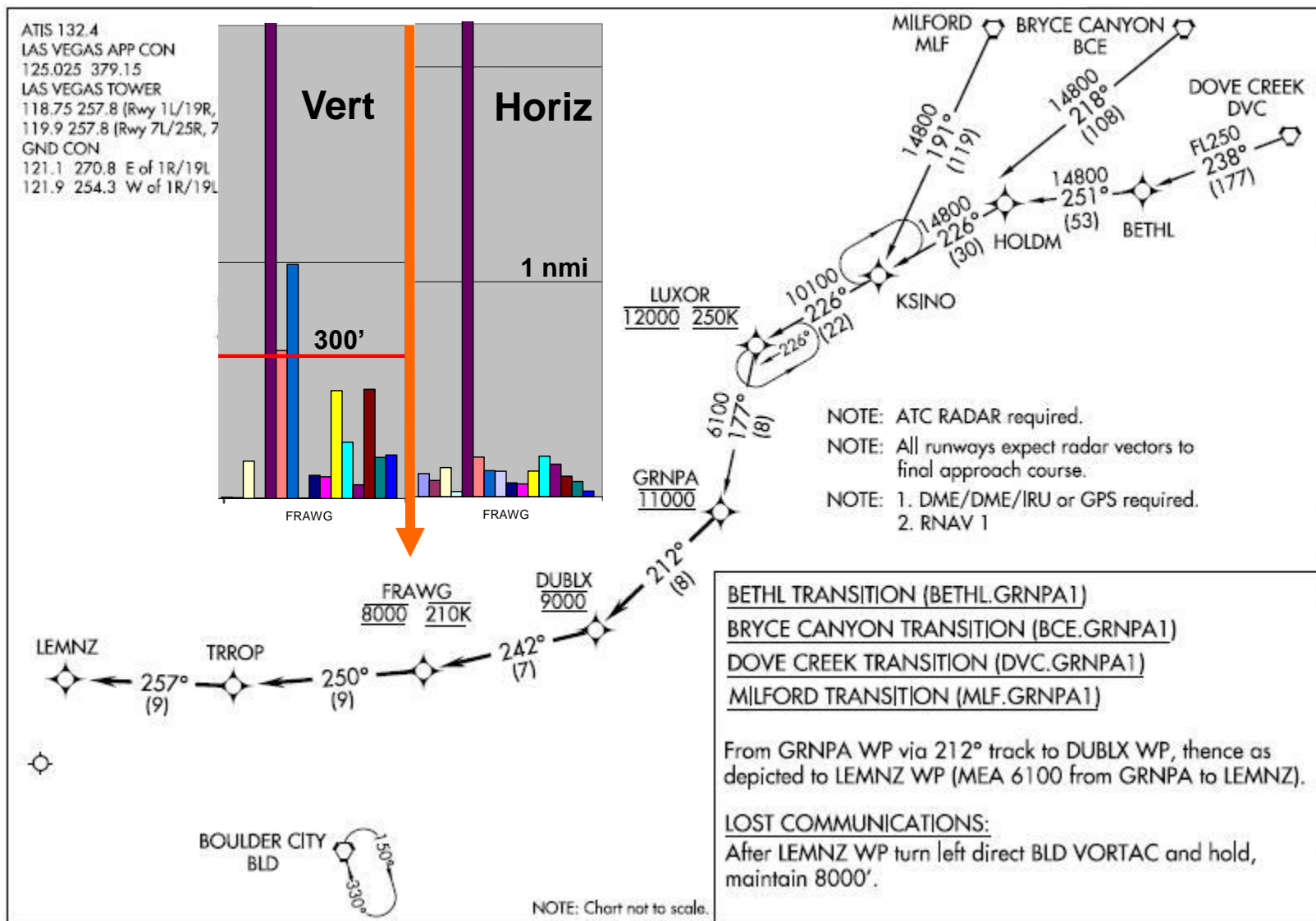
- **Learn**
 - **Work with VATSIM leadership and community**
 - **Determine software capabilities, advantages, and limitations**
- **Plan, execute, and analyze several VATSIM events**
 - **Understand issues with managing this loosely-knit community**
 - **Understand capabilities for human-in-the-loop experimentation**
 - **Establish positive MITRE presence on VATSIM**
- **Develop interoperability between VATSIM and MITRE laboratories**

Activities

- **Scope and define the VATSIM/MITRE collaboration**
 - Memorandum of Understanding
 - Non-disclosure and license agreements for MITRE use of proprietary VATSIM software products (ongoing)
- **Bridge VATSIM with MITRE's laboratories**
- **Experiments and analyses**
 - How good are pilots? Should “credentials” be required?
 - How good is flight deck automation?
 - Examine issues
 - Distributing information to the community (new concepts, definitions, etc.)
 - Training

Highlight

Compliance With Procedure



(GRNPA.GRNPA1) 07298
 GRNPA ONE ARRIVAL (RNAV)
 ST-662 (FAA)
 MCCARRAN INTL LAS VEGAS, NEVADA

Demonstration



- **Pilot and controller on VATSIM**

- **VATSIM worldview**

- **Videos of VATSIM on:**
 - **Display System Replacement (DSR)**
 - **Terminal Area Route Generation Evaluation and Traffic Simulation (TARGETS)**

Impacts

- **Potentially extend MITRE experimentation capability beyond the boundaries of physical laboratories**
- **Enhance the realism of some types of experiments**
- **Bring international talent & input to bear**
- **Gain broader exposure/feedback to new concepts and capabilities**
- **Rapidly execute simple experiments**
- **Enhance MITRE's on-line presence & reputation**

Future Plans

- **Develop the “MITRE” VATSIM node**
 - Develop full ATM lab/AviationSimNet™ interoperability
 - Complete a demonstration with a non-CAASD AviationSimNet stakeholder
- **Data communications (“CPDLC”) capability**
 - Develop standards and deploy framework
- **Advanced weather data products**
 - Develop distribution framework
- **Make off-the-shelf flight simulators a “lab capability”**
- **Possibly expose MITRE assets as network services**
 - Problem detection and resolution (weather and aircraft)
 - Complete some simple experiments with data communications