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## **Enhancing STK Capabilities to Model and Simulate Radar Power and Beam Pattern: The SCAN SIMULATOR Software Tool**

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Technical SIGINT Airborne Program (TSAP)

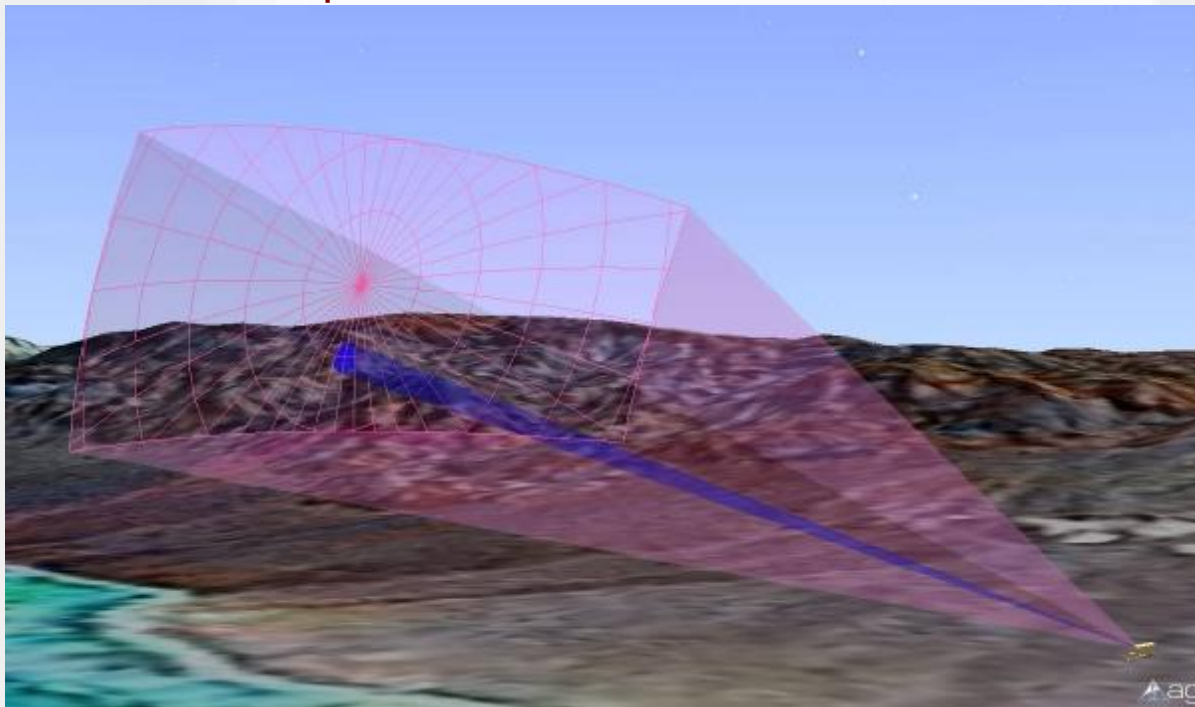
# Overview

- Introduction
- TSAP Software Development
- SCAN SIMULATOR Demo
- Conclusions
- P.O.C. Information



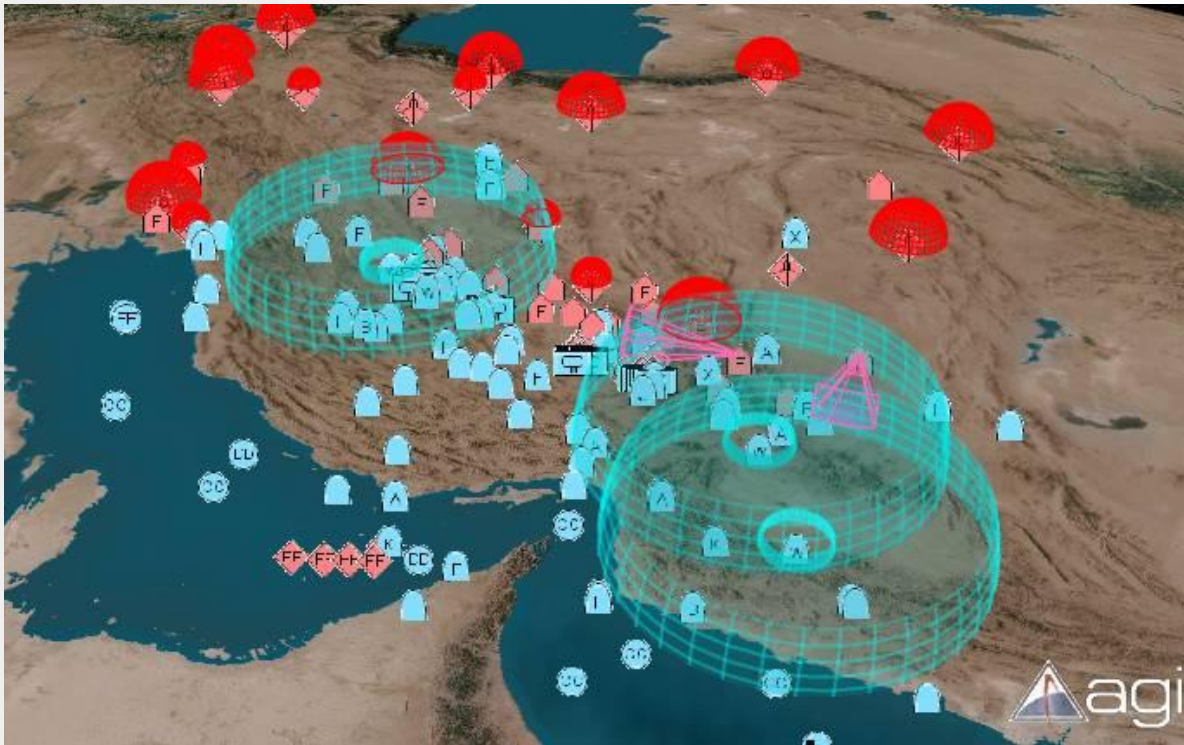
# Introduction

- Technical Electronic Intelligence (Tech. ELINT)
  - Signal Analysis (SA) of non-communication emitters
  - We care about
    - Radar signal characteristics, operational modes, behavioral functions, capabilities and limitation



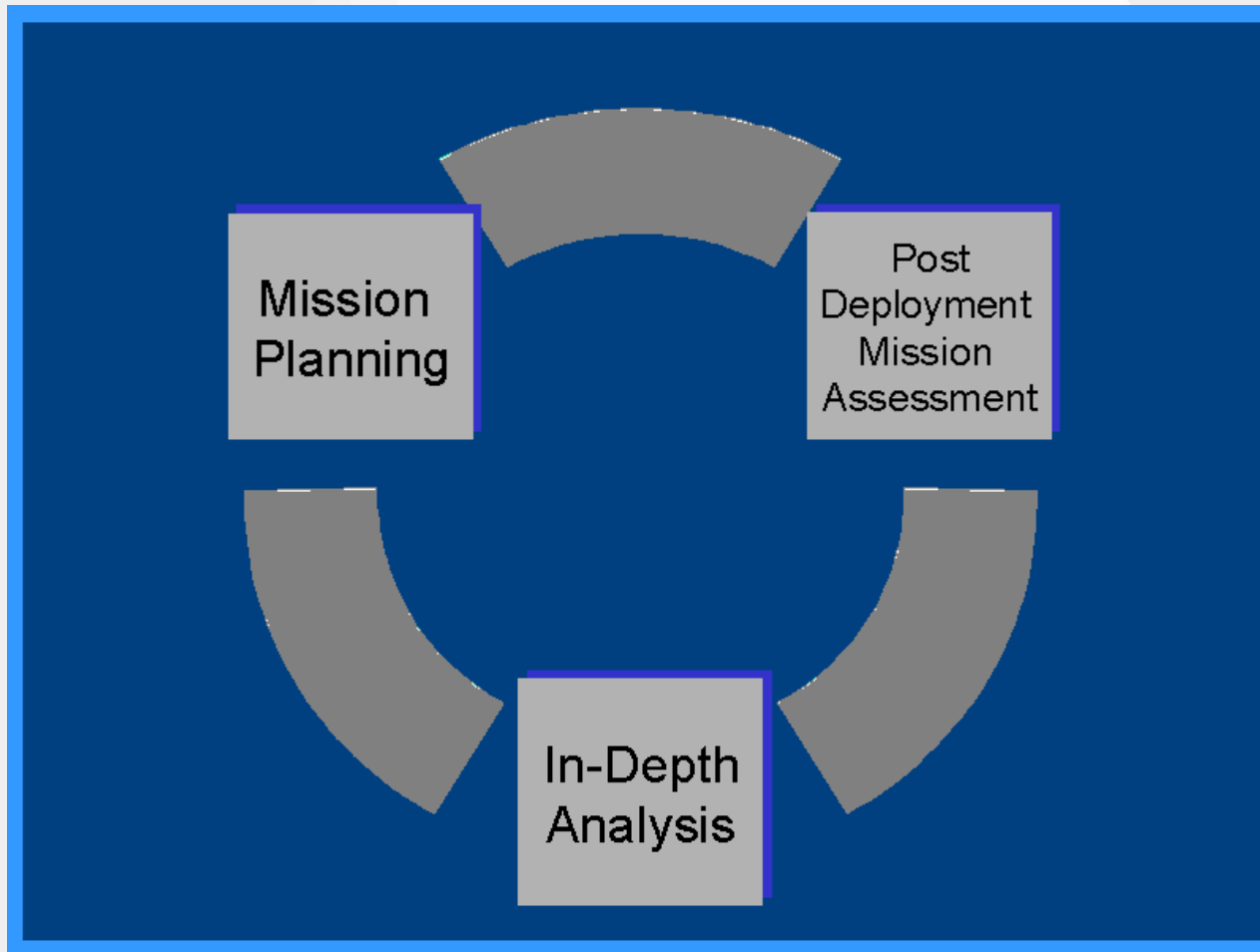
# Introduction (Cont.)

- Challenges
  - “Quality and Quantity” of data
  - Allocation of aircraft resources and manpower before/during/after each mission



# TSAP Software Development

- TSAP Product Cycle



# TSAP Software Development (Cont.)



- SCAN SIMULATOR
  - Java-based software tool that provide means to model and simulate radar power distribution. Create a 3D profile of the Power and Pattern behavior of the EOI
- Provides the full control of capabilities for modeling and simulation
  - Automatically import data to downstream applications (i.e. STK, Excel, MATLAB, etc...)
  - It automatically creates an interface with STK, avoiding the analyst to interface directly with STK



# TSAP Software Development (Cont.)

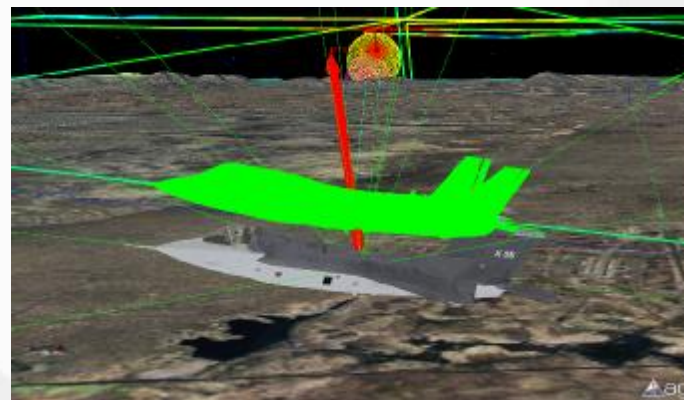
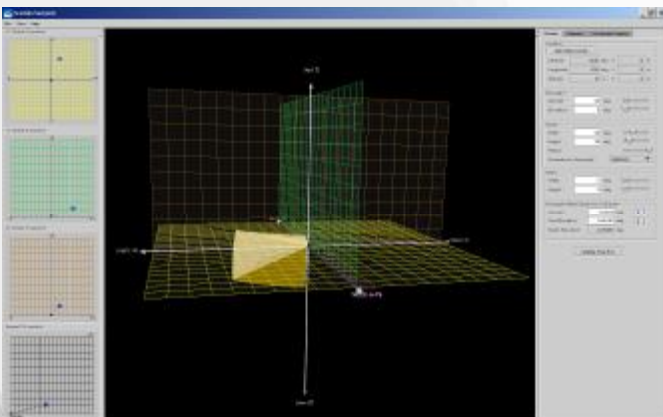
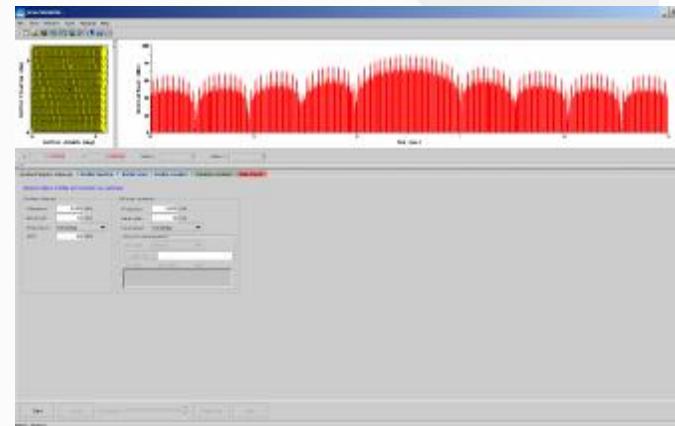
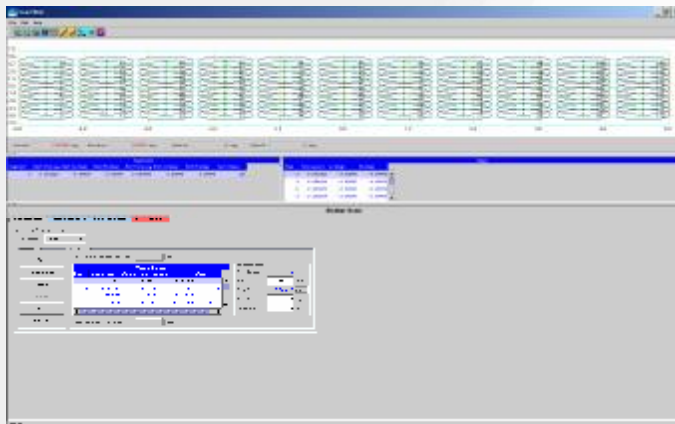


- Provides the Signal Analyst means to model data based on analysis and other sources
- This tool models an exact beam and power pattern using mathematical approach
- The data generated on this tool has been used to complement reports and to resolve data anomalies due to geometry of flight path and anomalies in radar operational parameters
- “Fill-the-Blanks” when actual data is missing or unreliable to analyze



# TSAP Software Development (Cont.)

- SCAN SIMULATOR Demo



# Conclusions



- STK/SCAN SIMULATOR proves to be the most powerful analysis tools available to TSAP
- Implementing STK/SCAN SIMULATOR as part of the TSAP Program will put the asset as a model for the USAF and the IC to follow
- Exploiting STK/SCAN SIMULATOR data accuracy and reliability, will prove the asset as the foremost technical/tactical platform available to the IC



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