Sensor Networking for Enhanced Airspace Monitoring

Scott. A, Remillard
Sensis Corporation
5793 Widewaters Parkway
DeWitt, New York 13214
Tel: 315-445-5056 Fax: 315-445-9401
Internet: www.sensis.com Email: scottr@sensis.com

Sensis CORPORATION

Detect the Difference

Who we are .. Company Profile

- **Founded 1985**
- **Grown at an annual average of 30%**
- **~$50 Million in Fiscal 2002**
- **At present ~250 employees**
- **Facilities**
  - Headquarters - Dewitt, New York
  - Branch Office - Long Island, New York
  - Branch Office - Atlantic City, New Jersey
  - Field Office - Washington DC

- **Key Programs**
  - Prime Contractor on FAA ASDE-X
  - Sensor Data Sub System Lead on the USMCC CAC2S Program
  - Key Interface roles on STARS, DASR, BI-6 programs
  - Partnered with Harris on FTI

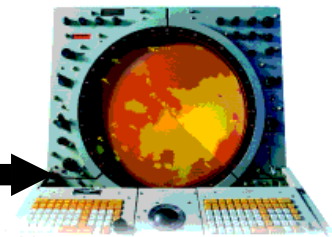
What we do - 30,000ft High Level Overview

RADAR

Sensis Capabilities

- Improve Surveillance Performance

- Convert Data into useful information



Air Traffic Control Consoles

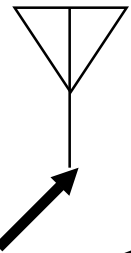
Generally Speaking, we don't make radars nor do we make Air Traffic Control Consoles, we provide hardware and software to improve surveillance coverage as well as systems to convert data into useful information

What we do - 10,000ft High Level Overview

Existing Sensors of Opportunity

Multilateration and ADS-B

Wireless Link



CMC

Gateways

- Fusion
- Data Processing

High Performance Situational Awareness Display

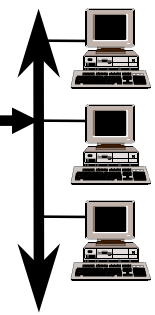
Customer Furnished Format

Inputs into Existing Systems

Non-Real Time Data

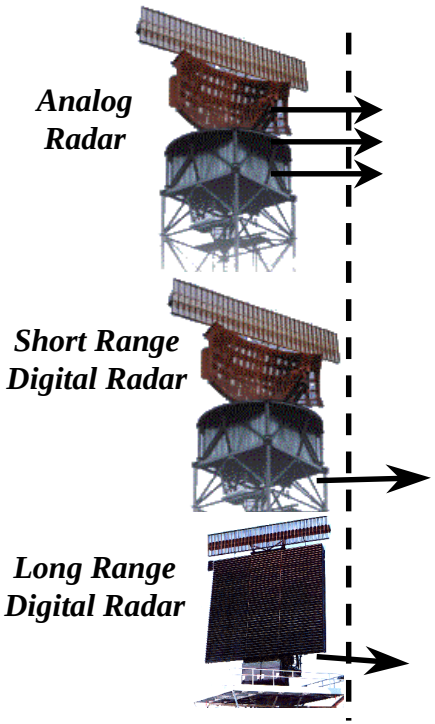
- Flight Plans
- Weather
- Geography
- Approach Plans

Web Based Decision Support Server



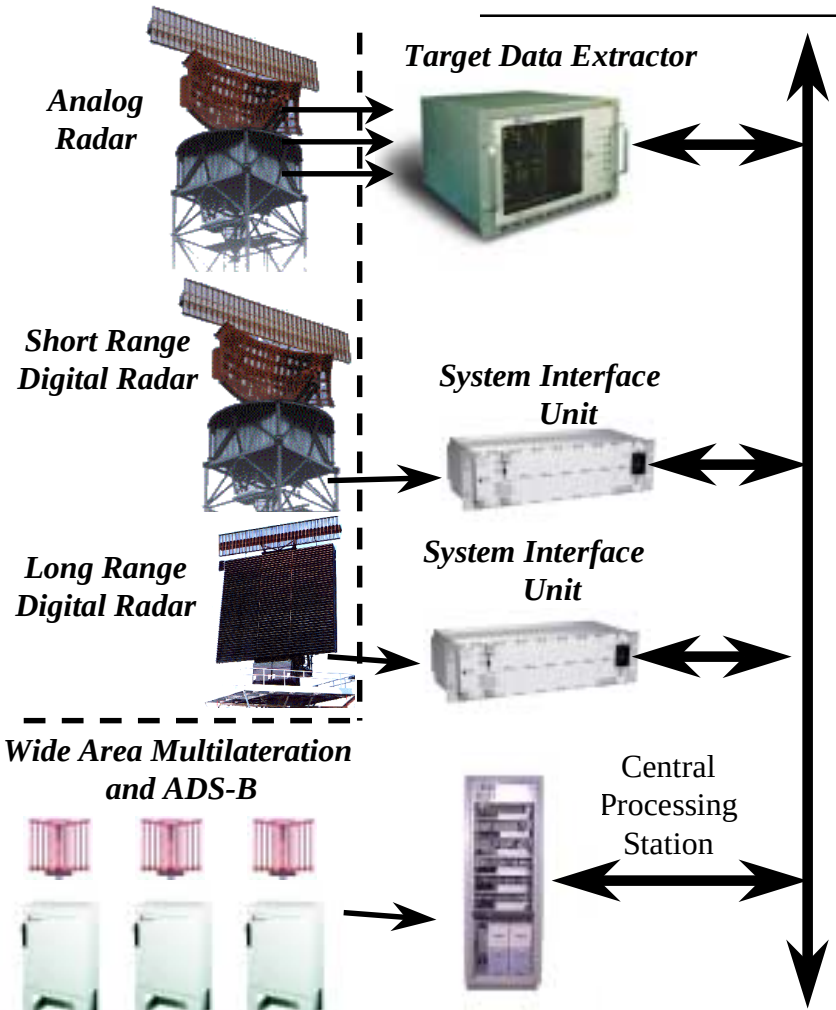
Clients

What we do - Capabilities



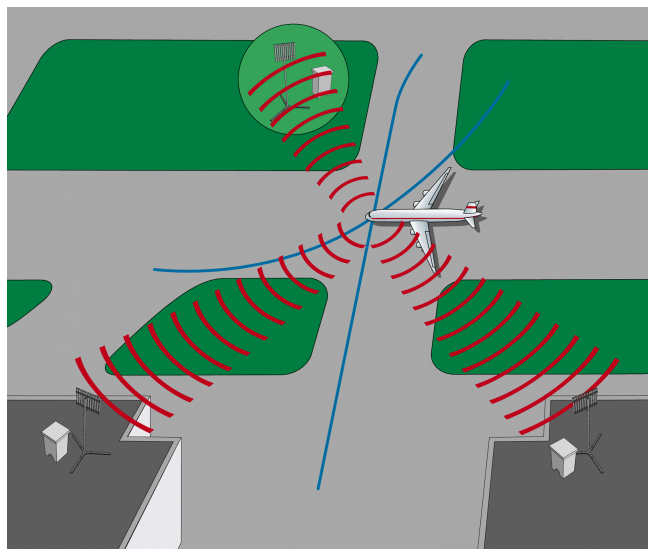
Start with Available Sensors

What we do - Capabilities



Step 1 - Distributed Message Processing

- ✈ Convert Digital Radars to IP Formats
- ✈ Convert Analog Radars to IP Formats
- ✈ Multilaterate Beacon Returns to a High Precision IP Radar Format

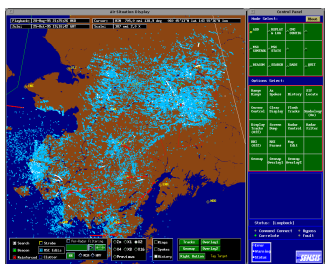


Detect the Difference

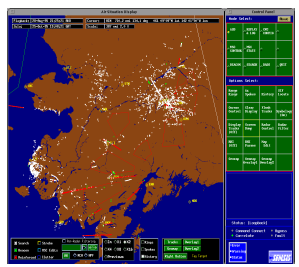
What we do - Capabilities

Step 2 - Sensor Optimization and Communication Gateways

- **Management of All Sensor Sources**
- **All radars have different characteristics**
  - Clutter Reduction, Geo Filtering
  - Optimizing each sensor to the requirements of the application



Before



After

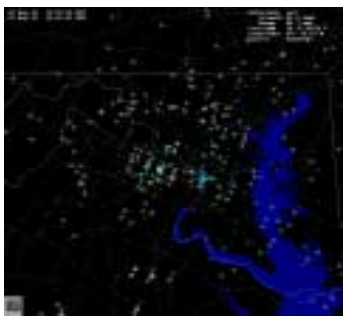
CGW and SSDP

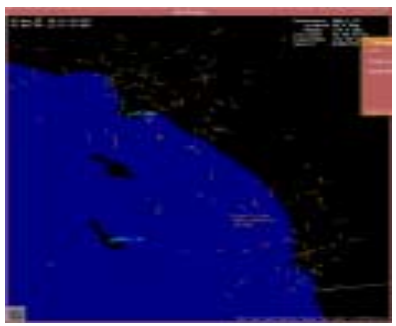
Step 1 - Distributed Message Processing

What we do - Capabilities

Step 3- Multi-Sensor Fusion

- Taking the information from ALL relevant sensors to produce the best possible air picture
- Better accuracies
- Higher Update rates

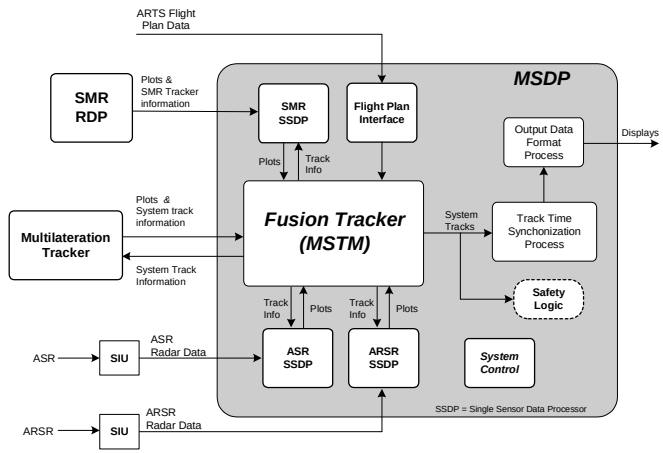




Command and Maintenance Console
Plus Advisory Display

Multi-Sensor Fusion

Step 2 - Clutter Reduction and Sensor Management

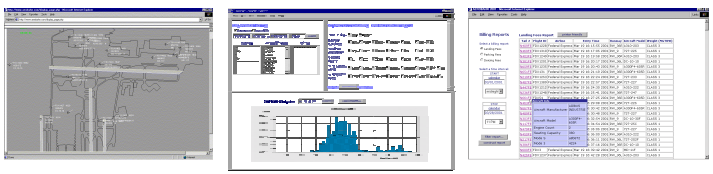


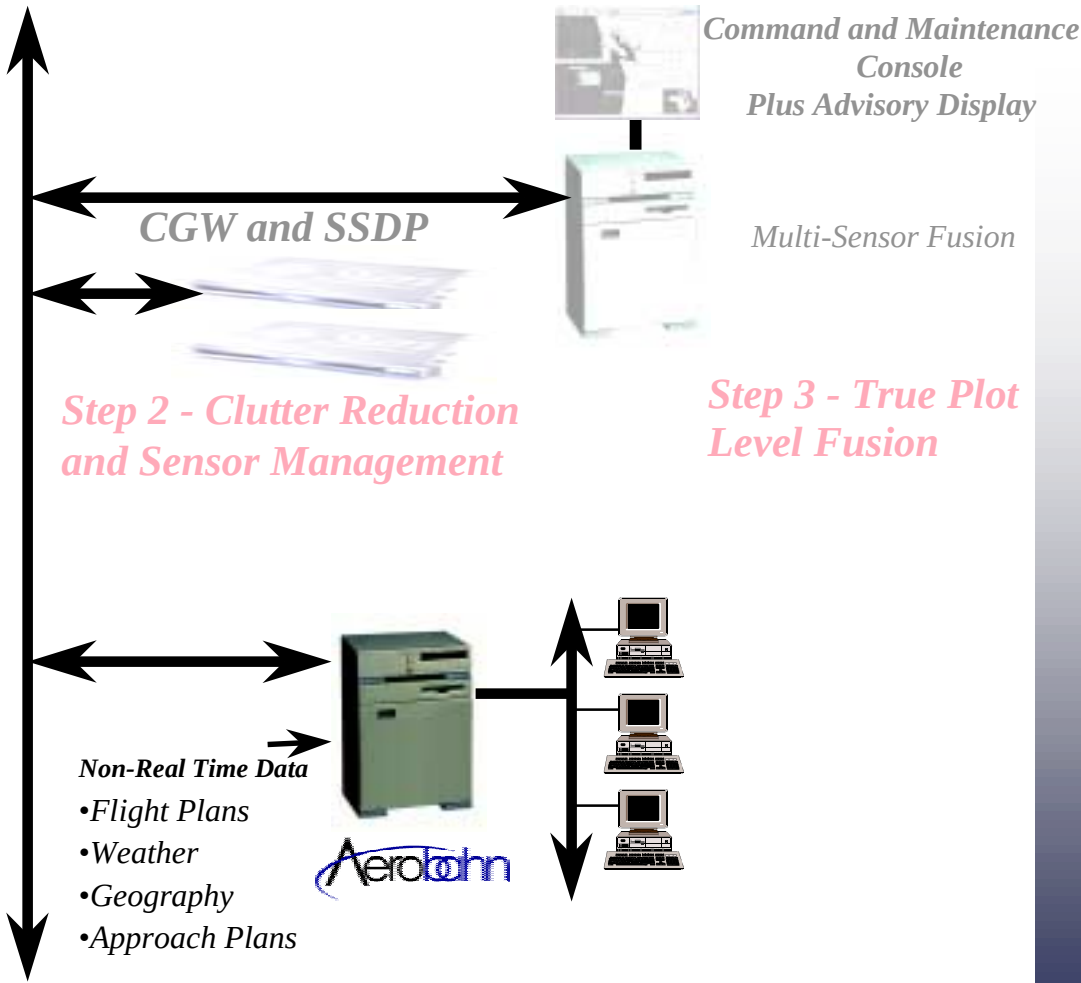
Step 1 - Distributed Message Processing

What we do - Capabilities

Step 4- Data Processing

- Putting real-time and non-realtime data in a modern database
- Producing web pages of distilled information for decision support
- Can be used to create usage reports and analysis for air space usage

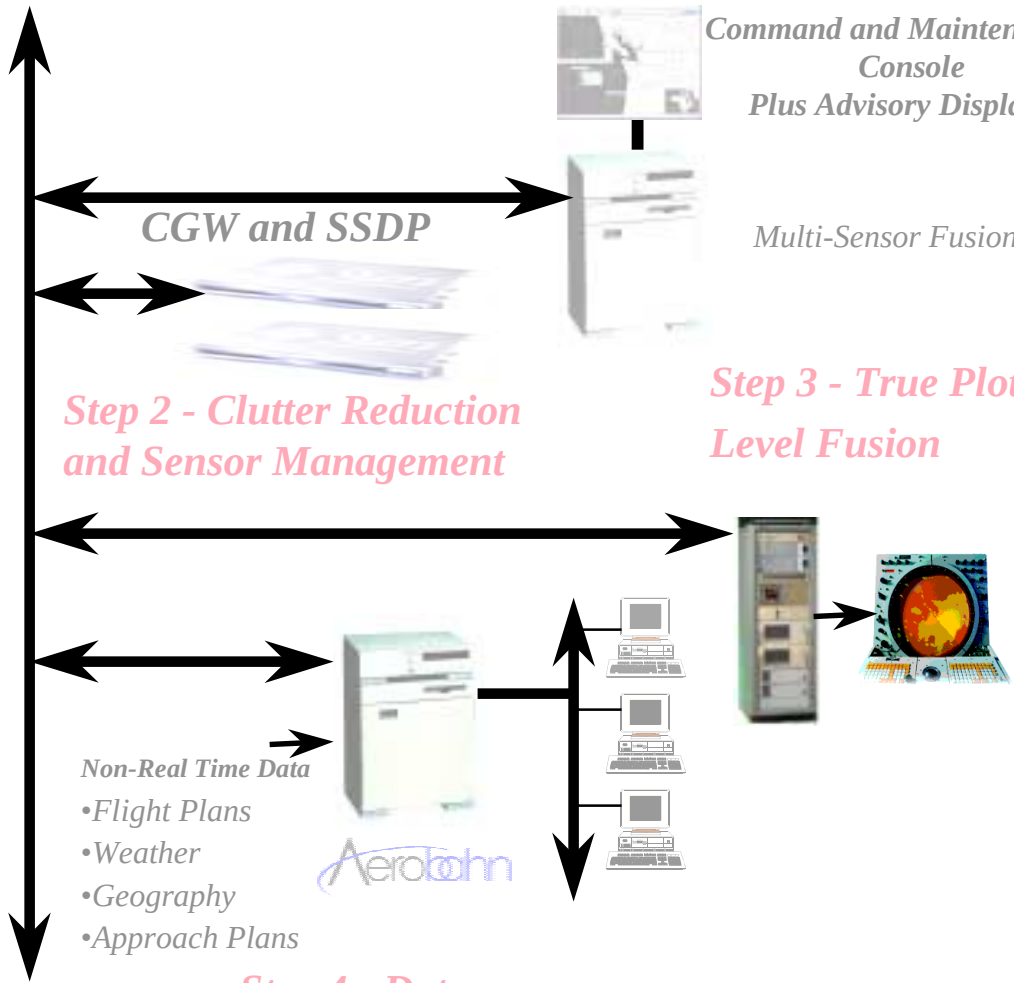




What we do - Capabilities

Step 5 - Interfacing into existing systems

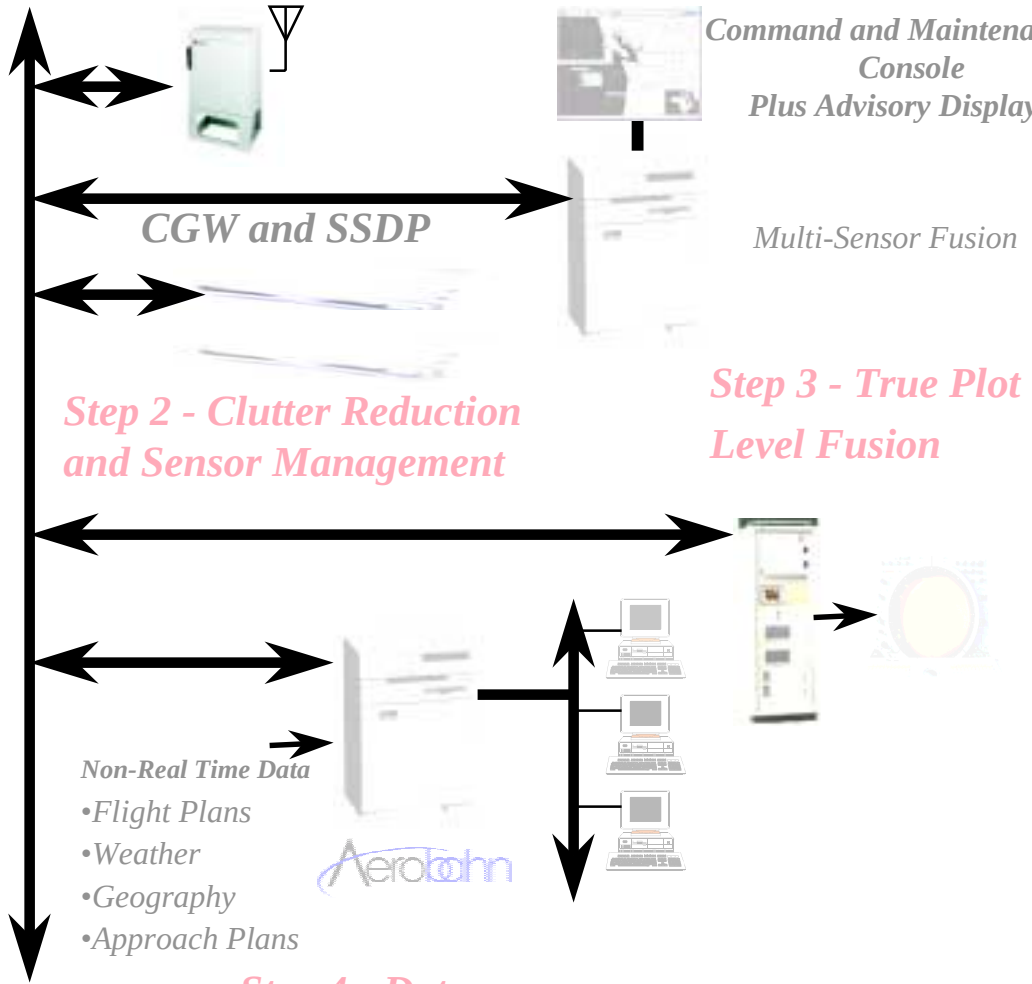
- ✈ **Translating Digital Data to existing digital systems**
- ✈ **Synthesizing Analog Video for analog displays**



What we do - Capabilities

Step 6 - Wireless Links

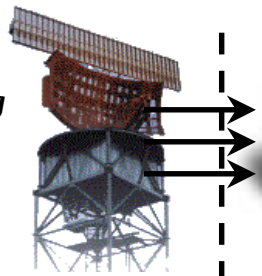
- TIS-B Broadcast of an Air Picture to planes in the sky and ships at sea
- Experience in Mode S, UAT, Link 16, CEC, and TCN



Step 1 - Distributed Message Processing

Step 4 - Data Processing and Web Based Distributed Decision Support Tools

What we do - Product Level Overview



Analog Radar

Target Data Extractor

Step 6 - Wireless Link

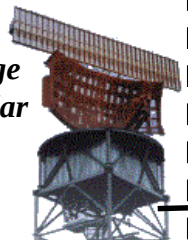
Command and Maintenance Console Plus Advisory Display

Multi-Sensor Fusion

CGW and SSDP

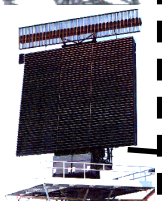
Step 2 - Clutter Reduction and Sensor Management

Step 3 - True Plot Level Fusion



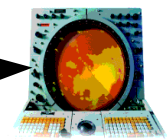
Short Range Digital Radar

System Interface Unit



Long Range Digital Radar

System Interface Unit

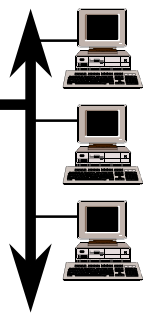


Wide Area Multilateration and ADS-B

Central Processing Station

Non-Real Time Data

- Flight Plans
- Weather
- Geography
- Approach Plans



Step 5 - Optional Video Generation for Legacy Displays

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Step 1 - Distributed Message Processing

Step 4 - Data Processing and Web Based Distributed Decision Support Tools

Detect the Difference

How we can help

- **Fuse Local FAA Sensors of Opportunity to provide better surveillance over the desired coverage area.**
- **Use Wide-Area Multilateration to enhance sensors to provide GPS like accuracy at a 1 second update rate without any additional aircraft equipage**
- **Distill and present a broad set of data products to many interested parties via a web enabled decision support tool**
- **Uplink the air picture via a number of data links**