# ARINC 830 AGIE (Air-to-Ground Information Exchange) Overview & Status

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# What is AGIE? Air / Ground Information Exchange

- **ARINC 830**
  - Grey schedule for grey cover release 2012 (originally 2nd qtr)
  - Layer 7 Application as central messaging system for message transmission air-to-ground
  - AGIE is a set of protocols & interfaces for application-to-application information exchange between aircraft applications and the airline ground infrastructure
- **Key objectives**
  - Provide industry interface and functions to support secure message exchange of IP based traffic
  - Reduce ground-side and on-board server count
  - Allow airline management of communications links
- Schedule & status
  - Currently in almost complete/draft status
  - Final draft complete 4th quarter 2013
  - Set for approval at AEEC general session 2nd quarter 2014

# AGIE Technical Overview/AAtS Relationship

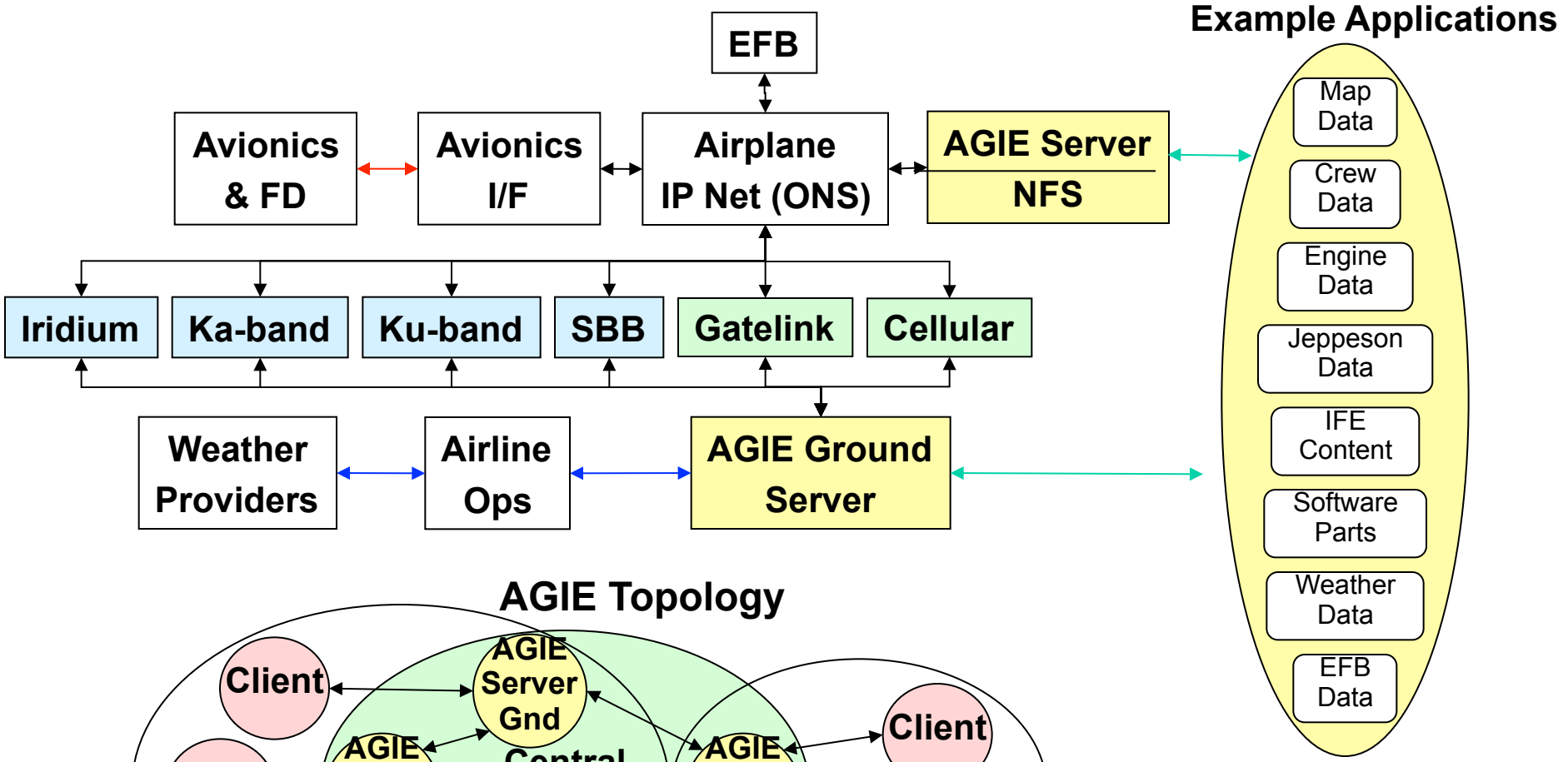
**AGIE is a message broker network that securely and reliably delivers messages between AGIE clients.**

**AGIE provides industry standard air-ground (and air-air via IP) messaging services for systems such as AAtS, SC-206 messaging**

**AGIE capabilities**

- **Delivers messages between ground & air applications under airline control via airline selectable methods and routes (also ground-ground, air-air)**
- **Supports modern messaging services (store-&-forward, priority queues, publish-subscribe, one-to-one, one-to-many, auto-re-transmissions)**
- **Provides security in depth using separate enclaves 1) airplane, 2) AGIE network, 3) Airline network, 4) Networked data sources**
- **Performs ground side prioritization for all air-ground communication links**
- **Most of AGIE system is on the ground**
- **Clients attach to AGIE server & send messages to other clients**
- **Messages can be large files (attachments) or small, high or low priority ACARS-like messages**
- **Delivery may take seconds (near real-time) or days**
- **Clients fixed or mobile**
- **Servers on airplane and ground**
- **Supports airplane domains (ACD, AIS, PIES)**

# ATM IP Data Flow with AGIE & Topology



# AGIE Benefits and Values Expected

- Reduces ground-side equipment footprint (air also)
- Allows adding/prioritizing comm links without application mods
- Single point for airline airplane/fleet-wide management of data traffic and central prioritization of communication links (ground-to-air)
- Allows efficient use of expensive communication links
- Provides secure & well defined interface between airplane IP network and Internet based data sources through airline operations network
- Provides security in depth by separation of Internet from airplane applications (like EFB) with trusted AGIE system in the middle
- Handle security once, not for every application or supplier solution
- Only a SINGLE server for ALL airline messaging applications
- Allows airlines to build up efficient, secure ground-side to airplane networks
- Reduce airplane interface variability across airline fleet
- Simplifies implementation & evolution
- Provides broadband IP comm standardized certification basis

# AGIE Major Topics

1. AGIE overview & benefits
2. AGIE servers & message storage
3. AGIE terminology
4. AGIE topologies
5. AGIE priorities & flow control
6. AGIE message services
7. AGIE paths & routing
8. AGIE naming & addressing
    a) AGIE client architecture
    b) AGIE server access
9. AGIE partitioning & certification
10. AGIE security
11. AGIE CONOP overview
    a) AGIE operation threads
    b) AGIE functions & interfaces
12. AGIE administration
13. Protocols & swim lanes

# Spec Top Level Section Outline

1. Introduction
2. Purpose & Objectives
   - All business and level discussions
   - Introduction oriented not technical
   - No shalls
3. AGIE Overview
   - Overview capabilities & user perspective
   - User oriented not technically oriented
   - Describe operational concepts, approach
   - No shalls
4. Functional specification
   - All technical discussions & functional view
   - Developer focus
   - All functional shalls
5. AGIE Operations
   - Operators perspective
   - All operational shalls
   - No functions
   - How to use AGIE
6. AGIE Interfaces
   - Functional interfaces between components
   - Functional interfaces to external components
   - XML interfaces for messages
   - Data structure descriptions
   - No shalls
7. Attachments
   1. Interface Fields
   2. Coordination Message Tables
   3. Data Structure Tables
8. Appendices
   A. Glossary
   B. Threads

Papers references

1. Considerations for AGIE Certification and Approval
2. AGIE DNS Use
3. Deferred AGIE Features
4. AGIE Demonstration and Testing Scenarios
5. AGIE Topologies
6. AGIE Use Cases

# Section Status

1. Introduction
   1. Purpose
   2. Scope
   3. Overview
   4. Related documents
   5. Regulatory
   6. Compliance

2. Purpose & Objectives
   1. Objectives
   2. Benefits
   3. Approach
      1. Data exchange
      2. Concept of operations approach
      3. Development & validation
      4. Interoperability
   4. Policy considerations
      - Operational (cost, performance, QoS)
      - Certification & approval
   5. Security approach

3. AGIE Overview
   1. General description
      - Client-server
      - Service oriented
      - Priorities, paths, naming concepts
   2. Terminology
   3. Architecture & topologies
      - Components, functions, interfaces
   4. Admin concepts
   5. Messaging operations
   6. Principles of operation
      1. AGIE organization
      2. Connection management
      3. Protocol binding
      4. Addressing
      5. Data delivery
      6. Prioritization
      7. Message management
   7. List of operations

**Key**

Placeholder – no or limited text

Partially complete – some text, more work needed

Draft - all text ready for review

Final Review – completed waiting for final review

Complete – updated only as required

# Section Status

4. Functional specification
    1. Top-level capabilities
    2. Architecture
        1. Clients
        2. Servers
        3. Topologies
        4. Cross domain
        5. AGIE-AMQP
        6. Architectural security
    3. Paths & routing
        1. IP routes
        2. Connections
        3. Paths & selection
    4. Messaging & delivery
        1. Interface
        2. Attributes
        3. Services
        4. Flow control & priorities
    5. Naming & addressing processing
        1. Name space
        2. Considerations
        3. AGIE descriptor
        4. Parsing
        5. Name resolution
        6. Address resolution
        7. AGIE name service
    6. AGIE functions
        1. Client functions
        2. Server functions
        3. System and Primary functions
        4. AMQP functions
    7. Security requirements

5. AGIE Operations
    1. System setup
    2. Configuration management
    3. Naming
    4. Priorities
    5. Paths
    6. Security & partitioning
    7. Use case overview

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Complete – updated only as required

NOTE: implies final review of all text. Does NOT Imply final review of requirements

Will review requirements in Seville

# Section Status

6. AGIE Interfaces
   - Overview
   1. Application interface
   2. Client interface
   3. Server interface
   3. Coordination data structure
      1. Clients
      2. Servers
      3. Current associations
      4. Connection profiles
      5. Current paths
      6. Message types
      7. Best Path selection Table

7. Attachments
   1. Interface Fields
   2. Coordination Message Tables
   3. Data Structure Tables

8. Appendices
   A. Glossary
   B. AGIE Threads

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# Specification Overview

# For More Information

**Contact information** (http://www.arinc.com)
**Sub-committee 830/830 AGIE/MAGIC**
**Current standard is 830**

# Agenda

- Introduction – Nadine Alameh, OGC
- AAtS Context – Lockett Yee, North Star Group (on behalf of FAA)
- SC 206 Overview – Matt de Ris, Panasonic/SC-206 representative
- AGIE Overview – Rick Wilber, Boeing/ARINC 830/839 AGIE/ MAGIC Co-Chair
- OGC Standards Overview – Johannes Echterhoff, Interactive Instruments/OGC
- Recap – Nadine Alameh, OGC
- Q&A