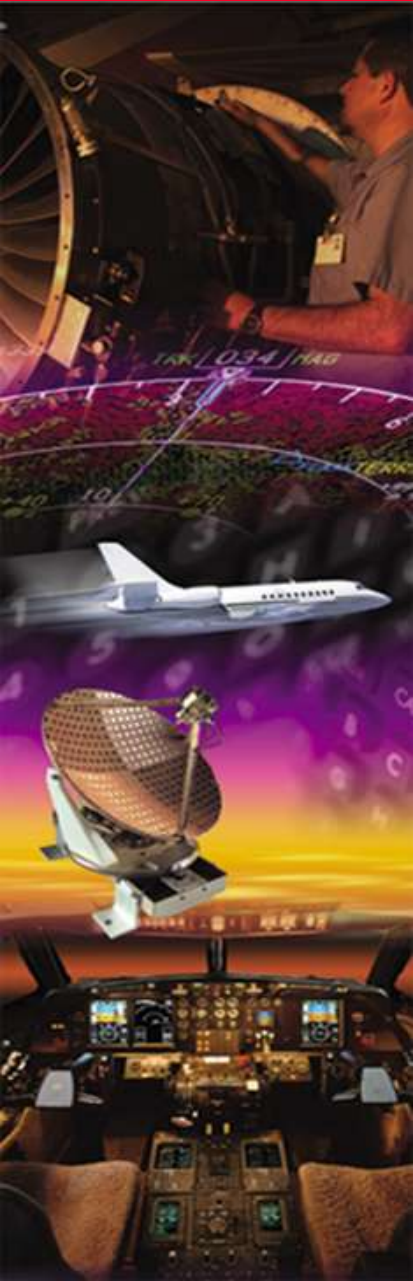


ATN 2005

The ATC Datalink Conference

Honeywell

Ed Anderson
21 September 2005



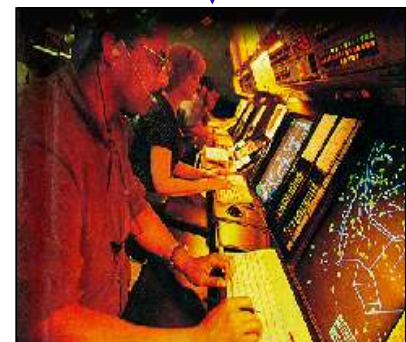
Honeywell Overview

• Background

- Long time advocate for CPDLC to improve ATM
- Started with FANS development and testing in the 1990s
- Significant Decision in 1997 to invest in developing (versus purchasing) ATN software
 - ◆ Large seven year development program
 - ◆ Decision taken in-light of uncertainty of the ATC community's commitment to pursue
- We Applaud Eurocontrol's Leadership and Vision



ATC Datalink



Honeywell Overview

- **Honeywell General Approach:**
 - Six current datalink systems planned to support ATN/CPDLC (Link 2000+ / Future FAA CPDLC program)
 - ◆ Includes family of CMU products
 - ◆ Includes 4 different integrated Platform products (including Boeing's new 7E7, and our new EPIC system)
 - Honeywell proceeding to validate & deploy initially on our Mark II CMU first
 - ◆ Expected Highest customer demand - Over 2,500 Mark II CMUs in the field / 90 customers and growing
 - other platforms to follow



Communication Management Units (CMUs)



**Integrated Platforms
Honeywell**

Honeywell Overview

- **Honeywell Participating In Link 2000+**

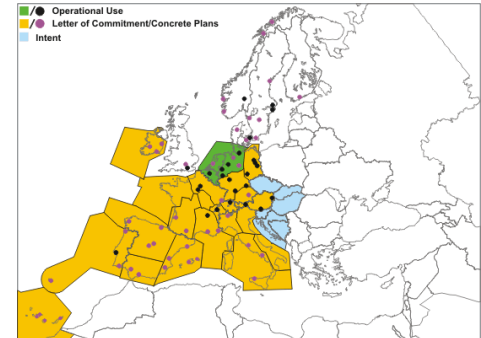
- **Early adopter program**

- ◆ First deployments will be with Lufthansa and Hapag Lloyd
- ◆ Installing on Both Airbus and Boeing A/C
- ◆ In discussion with other airlines

- **Started connectivity testing with Eurocontrol over 6 months Ago**

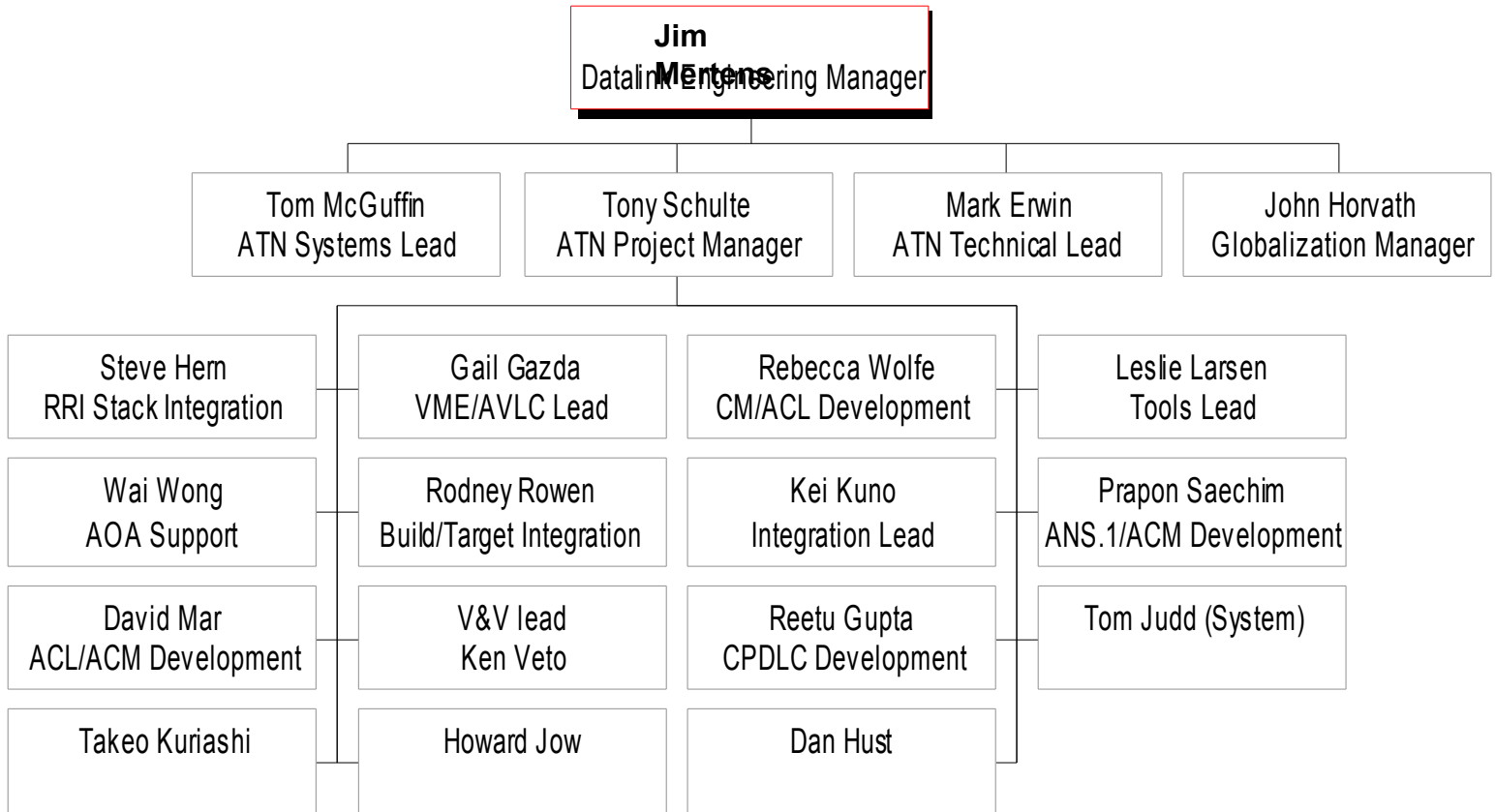
- **Flight Test this month on Eurocontrol A/C**

- ◆ Followed by Airline installation and Operation



ATN/CPDLC Engineering Organization

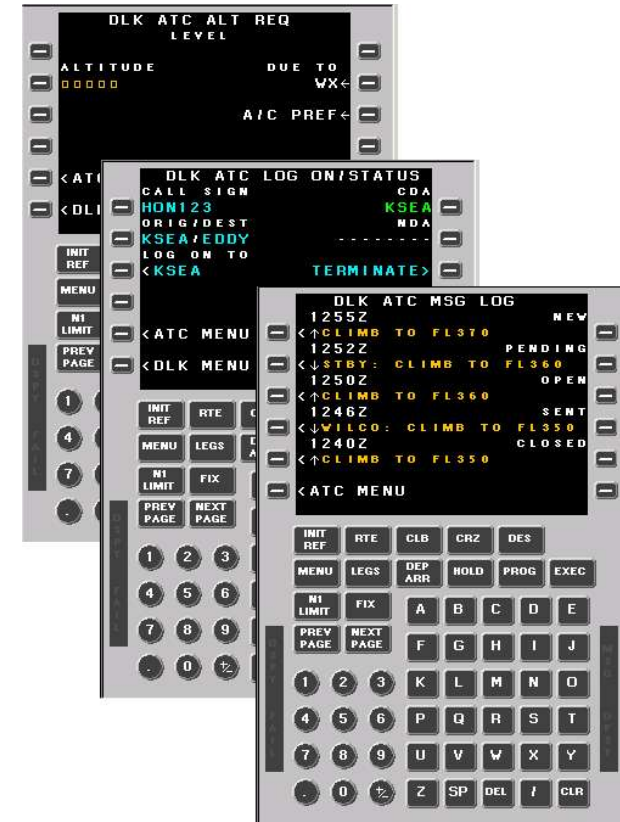
- **Over 40+ Engineers Working the Link 2000 ATN Program within Honeywell's CommNav Organization**



- **Excludes subcontractors**
- **Excludes Honeywell's Columbia, MD R&D Staff working on the Program**

Honeywell ATN Development

- **Special Emphasis Placed on HMI**
 - **Similar to our FANS HMI**
 - ◆ Reduces learning curve for flight crews with FANS experience
 - **(Configurable & Dynamic) Menu for Selecting ATC centers**
 - ◆ Designed to support ATC centers coming on-line at different times
 - **Message Log for CPDLC**
 - **Designed up front to support future ED-110 upgrades (110,111,112) without change to Existing Menu structure**
 - **Special Processing for Report / Confirmation Request Uplinks**
 - **Pilot review committee used during development of HMI**



Honeywell ATN Development

- **Design Supports both 724B and 758 wired aircraft**
 - Misconception that only 758 wired aircraft can support ATN
- **Honeywell Investing in Future activities – ATN Related Examples:**
 - Dual stack operation (FANS / ATN)
 - ICAO Security
 - ◆ 3+ year R&D program at Honeywell
 - ◆ Provides Message Authentication / Confidentiality / Integrity
 - ◆ Recent test flight using ACARS network
 - ◆ Will be ready to provide once States adopt
 - And non-ATN Related:
 - ◆ Integrating in High Speed Wireless Communication (WiFi, Cellular) with current ACARS communication

What A/C Changes are Needed (1/2)

- **VDL Mode 2 Capability**

- **CMU Mode 2 software upgrade.**
- **Radio supporting Mode 2 (upgrade or replace depending on radio)**
- **Digital interface between CMU and Radio (Replaces current audio I/F)**
- **Digital interface between Mode S transponder(s) and CMU**
 - ◆ **to obtain ICAO address (addressing used by Mode 2 network).**
- **Some airlines proceeding with this change (i.e. Mode 2) independent of Link 2000+**
 - ◆ **To obtain improved AOC VHF communication,**
 - ◆ **Complete A/C wiring to support easy / fast upgrade to Link 2000**
- **Can Be Performed to Both 724B wired Aircraft as well as ARINC 758 wired Aircraft**
- **Have over 400 Aircraft today operating Mode 2**

Upgrade to VDL Mode 2 Provides Improved Performance for Today, and Provisioning for Link 2000

What A/C Changes are Needed (2/2)

- **CMU (or CMF in Integrated platform)**
 - Upgraded to include ATN software & Link 2000+ ATC applications
 - ◆ ATN software developed by ACI (Honeywell, Thales, Sofreavia)
 - In addition to ARINC 758 wired A/C, 724B wired A/C can be supported
- **Addition of ATC annunciation indicator**
 - Solution will vary from aircraft to aircraft (indicator alerting pilot of ATC message)
 - ◆ Honeywell solution can support operation without CDS upgrade on 737

Summary

- **Honeywell participating in Link 2000+.**
 - Have been investing in the Technology to support Link 2000 since the 1990s
 - Honeywell will integrate technology into at least 6 different platforms (includes new Boeing 7E7, as well as our New EPIC integrated platform) to meet customer needs.
 - Change to aircraft wiring typically not major.
 - ◆ Can support both 724B or 758 wired aircraft
- **Honeywell views Link 2000+ as significant benefit for ATM in Europe**
 - View Link 2000 as an aid to other regions (US and others) as they (re-)engage in the deployment of CPDLC.

Thank You!