



CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)



Future Communications Study: Roadmap Status

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NASA I-CNS Conference

May 2006



Notice

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Future Communications Study Action Plan (AP) 17



FAA/EUROCONTROL COOPERATIVE R&D

ACTION PLAN 17: FUTURE COMMUNICATIONS STUDY AP17-04-Wp04-v1.0 Annual Research Work Plan

1. RESEARCH PLAN

1.1. Exchange of information/ Coordination efforts:

The participants of this study plan to meet on a quarterly basis to exchange pertinent information and provide status of activities within their respective task areas. Two of these meetings would coincide with the occurrence of the International Civil Aviation Organization (ICAO) Aeronautical Communications Panel (ACP) Working Group C (WG-C) meetings. Additionally, two other meetings would be planned in the intervening quarters between the ACP.

In addition, study participants will have access to a protected website to facilitate and progress work. This website will provide access to pertinent information, as well as having the ability to review and provide comments to documents. Other tools to utilize on this website include a calendar of events, a discussion board, teleconference capability, links to other sites, etc.

1.2. Research Tasks – Technical / Business Themes

The proposed action plan considers several Technical Themes to be progressed. The plan also considers non-technical actions, which are felt essential to ensure a successful end for such a long-term process by creating "dynamics" and maintaining commitment. These tasks are at the level of Communication / Business / Institutional are referred to as "Business Themes" in the remainder of this document.

Technical Theme 1: Improvements to Current Systems

Objective: Improve the spectrum efficiency of the VHF analogue systems (25 and 8.33 kHz DSB-AM systems) currently used for voice services to push the spectrum congestion "wall" as far as possible.

Activity:

Task 1.1 Frequency Management of Current System: Exchange of operational and technical methods used for assigning frequencies for VHF systems with the view of identifying ways of improvement in both regions

Task 1.2 Based on the outcome of this activity, additional activities could be identified as required.

AP17-04-WP04-V1.0

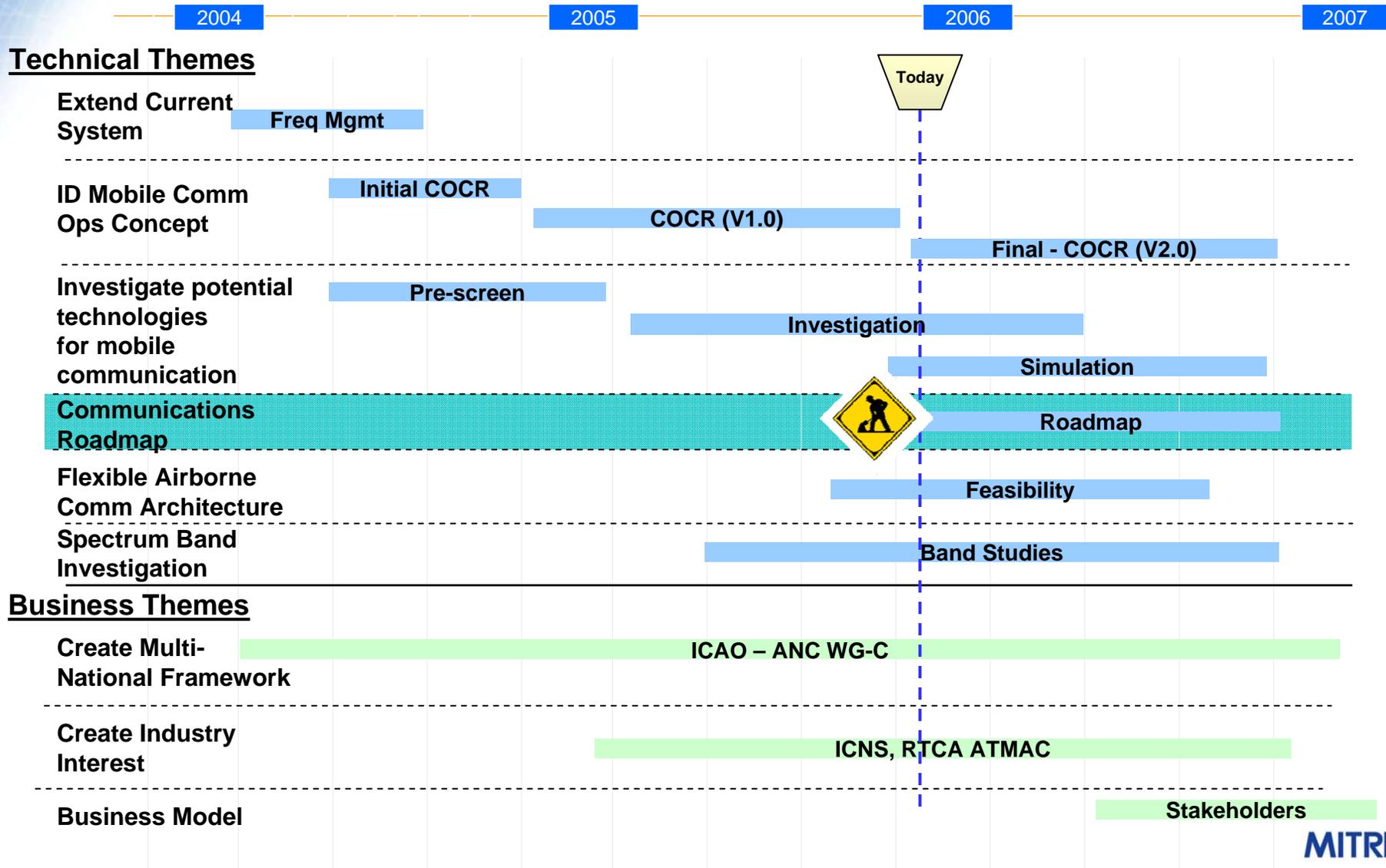
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Technical Theme 4: Identify the communication roadmap

Objective: Create a roadmap describing the communication infrastructure evolution

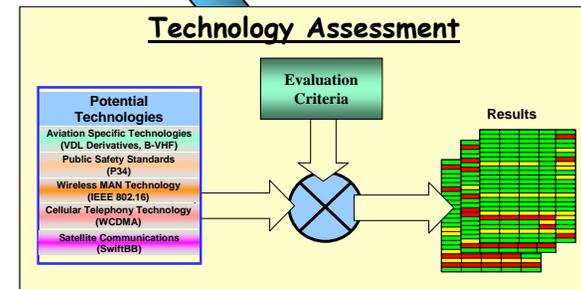
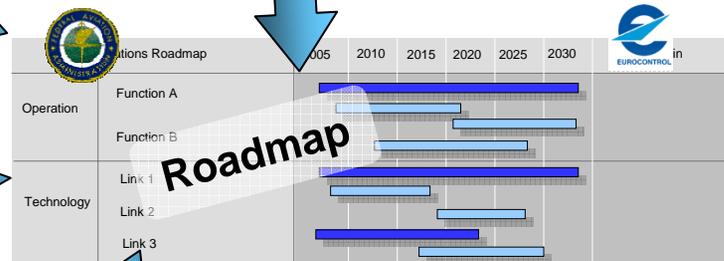
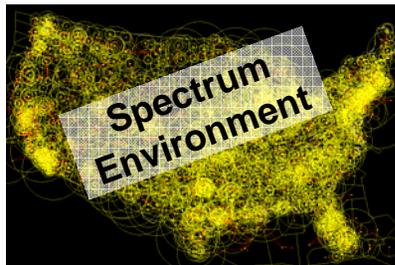
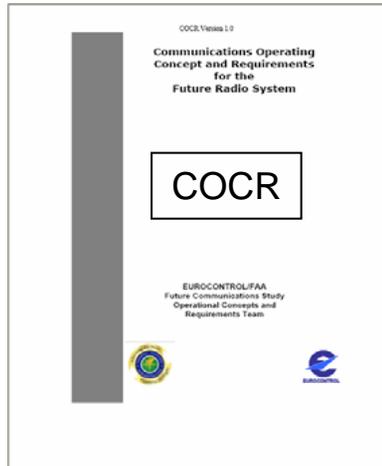
Task 4.1 Communication Roadmap: In support of the communications operating concept, create a roadmap for the evolution of the communication infrastructure, specifically focusing on the introduction of the potential new technologies, and identifying the applicable airspace, phases of flight, and services supported

Future Communications Study AP 17 – Communications Roadmap





FCS Roadmap Considerations





User Input



U.S. ATMAC

- Sustain voice communications in VHF Band as long as possible

- Use VHF band and existing technologies and equipment as long as possible
- Prepare digital communications capabilities to support anticipated operational paradigm shift
- Ensure solid business case for new technologies
- Ensure timely technology decisions
- Ensure solutions resolve local issues, and are globally applicable

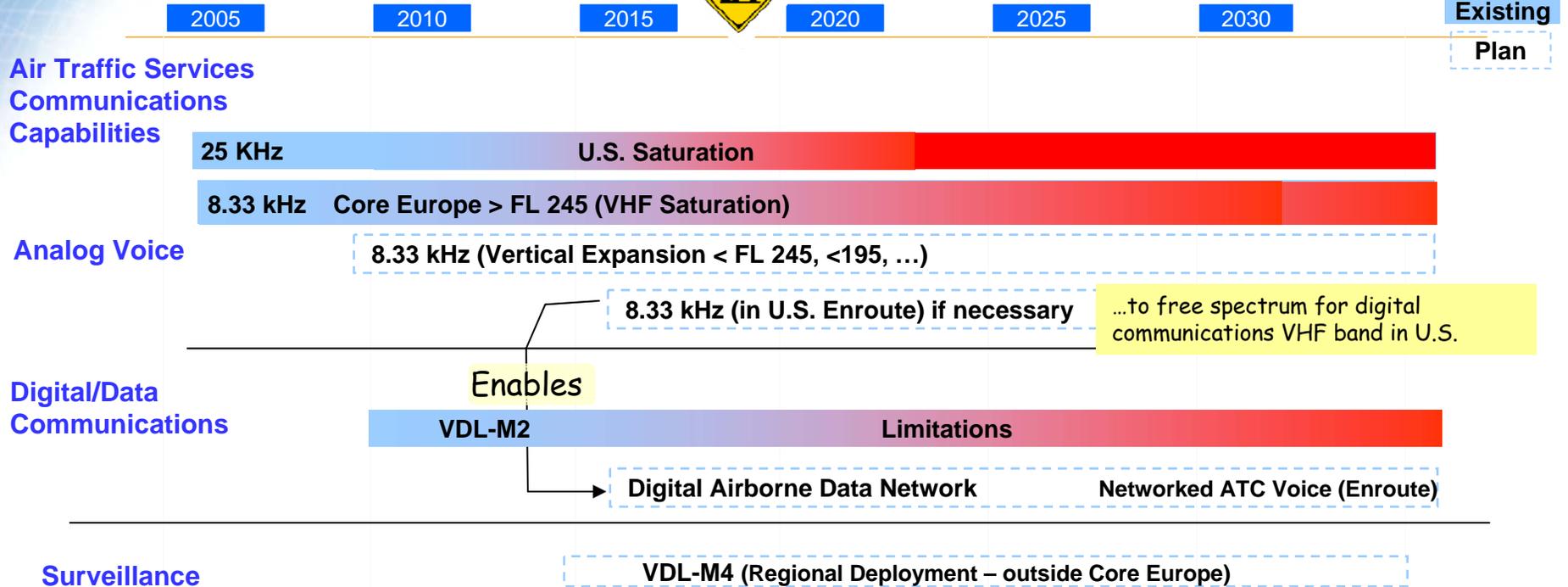
- Commit to a data link technology, schedule, and funding by 2007.
- AOC should remain separate from ATS communication

European States

- Sustain operation of voice communications in the VHF band into the future for as long as possible

- other services.
- Facilitate the transition to a new system by considering the introduction of a digital voice service. This is a desirable step but not critical.

VHF Band Evolution



- VHF Band Use
- Extends use of VHF band as long as possible
 - Maintains Legacy Communications
 - Voice (ATS, Unicom)
 - AOC
 - Provides Digital Communications for Safety Related ATS Applications



L-Band Evolution



2005

2010

2015



2020

2025

2030

Existing
Plan

Air Traffic Services
Communications
Capabilities

L-Band
Digital Broadcast

1090 Extended Squitter

Limitations

UAT (initially GA)

Digital/Data
Communications

EUR: L-Band Data Link

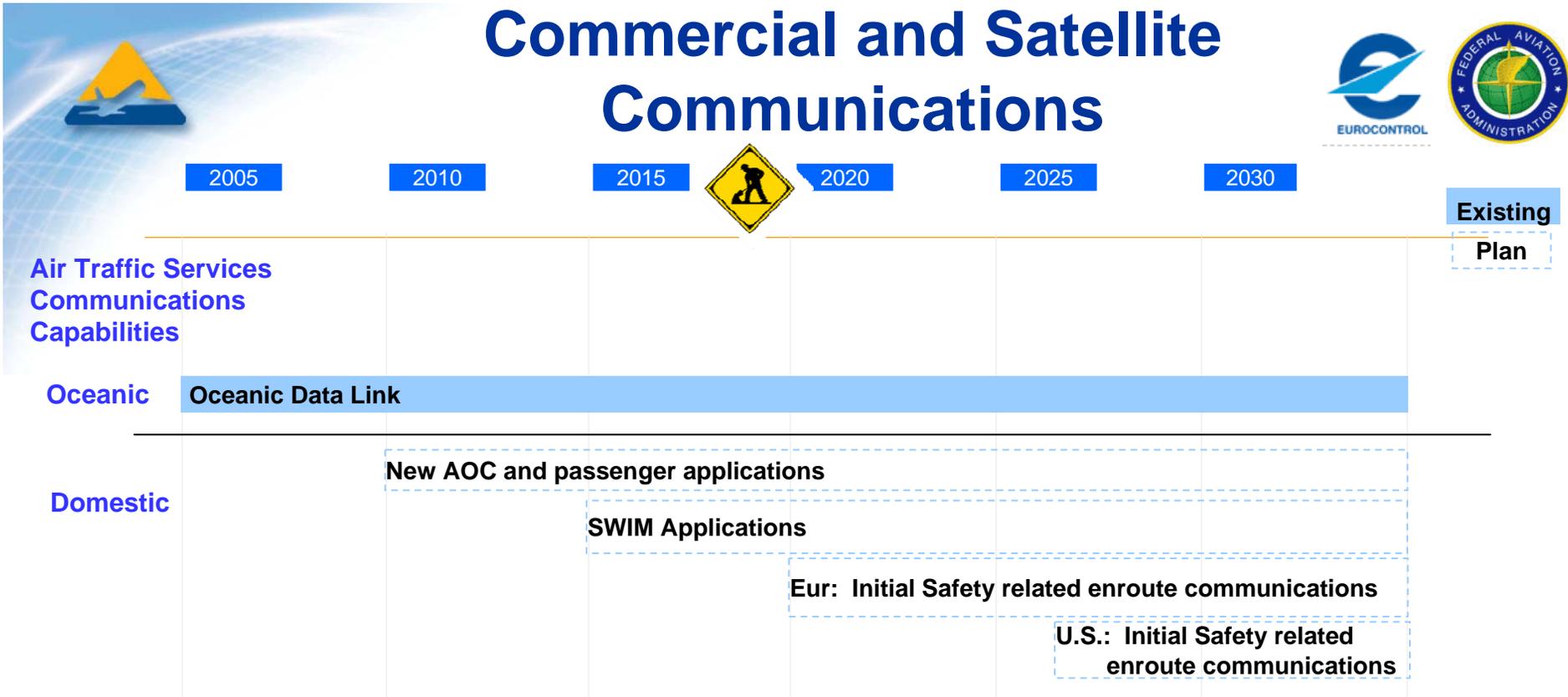
U.S. L-Band Data Link (if needed)

L-Band Use

- Maintains Surveillance Functions
 - Provision for ADS-B (1090 ES and UAT) and related broadcast applications
- Provide new spectrum for Digital Communications for Safety Related ATS Applications where and when VHF band exhausted
 - Addressed Data Link
- Must not interfere with other systems operating in the band

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Commercial and Satellite Communications



- Satellite and Commercial
- Continue/Expand use of Satellite Communications in Oceanic airspace
 - Follow new commercial offerings for aeronautical mobile applications, and consider as potential distribution outlets for aeronautical information
 - Consider how satellite services can be applied in high density traffic environments
 - Phased approach



Next Steps



- **Elicit feedback from stakeholders**
- **Determine access to other spectrum bands (i.e. L-Band and C-Band)**
- **Integrate specific technology choices compatible with those bands**
- **Explore dedicated and commercial satellite communications**
- **Integrate Flexible Airborne Architecture as element of roadmap**
- **Integrate operational and policy aspects**
- **Explore C-Band communications approach**



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