

# **World Radio Conference 2007**

**Increased Broadcaster  
Allocation and  
Adaptive Techniques**

**February 2007**

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**David A. Pierce  
DoD Agenda Item 1.13 Lead  
ITT Supporting  
Defense Spectrum Organization (DISA)**

# OVERVIEW

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- **International Telecommunication Union (ITU)**
- **WRC-07 HF Agenda Item (AI) 1.13**
- **ITU Preparation**
- **Other Nation and Regional Status**
- **US Status**
- **What's Next**

**World  
Radio  
Conference**

- 189 UN mbrs
- WRC 2003  
- Geneva, Sw

## UN's International Telecommunication Union

→ **Review & Revise** ←

**Regulations**

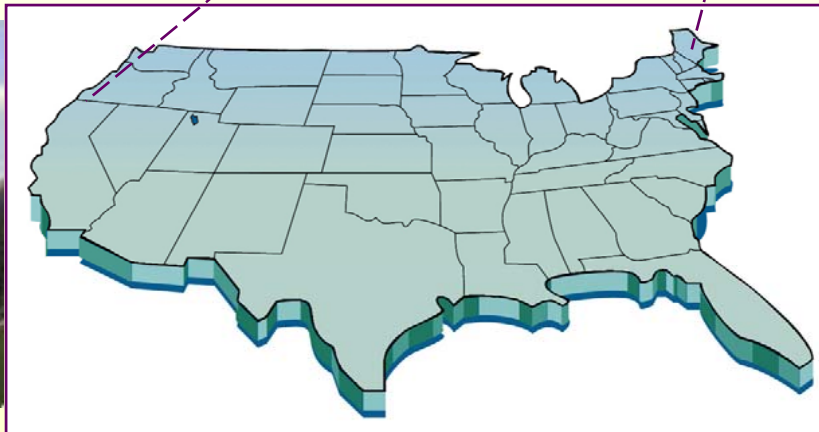
**Regional  
Blocks**

- Europe
- Asia
- Africa
- Americas
- Mid-East



## Legislative Branch National Spectrum Management

**Executive Branch**



**Federal Communications  
Commission**  
(Public & Non-Fed Govt  
Spectrum)

**Inter-department  
Radio Advisory Committee**  
(22 Federal Agencies)

**National Telecommunications  
and Info Administration**  
(Federal Govt Spectrum)

# International and Regional Spectrum Management Fora

## International Telecommunication Union (ITU)

(189 Voting Member States; 650 Sector Non-Voting Members)



**Each Nation has Sovereignty Over the Use of its Spectrum**

# International Telecommunication Union (ITU)

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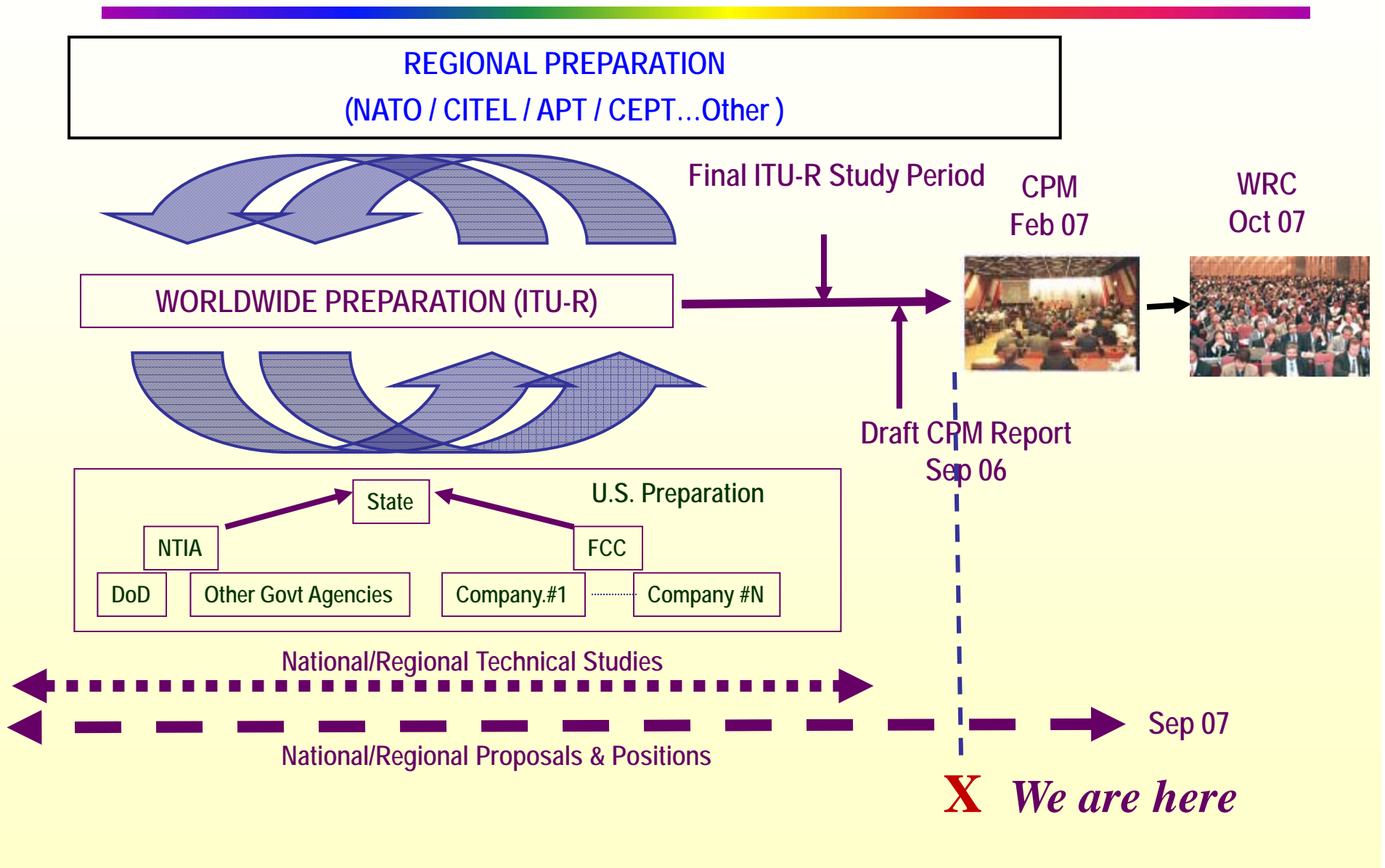
- **What is it?**
  - International governing body for Spectrum Management
  - Under United Nations auspices
- **Why be concerned?**
  - Radio Regulations are binding - international treaty status
  - Spectrum use within a nation is a matter sovereignty
  - DoD follows ITU Radio Regulation Allotment Plans
- **How does it work?**
  - Negotiation across nations and special interests

# World Radiocommunication Conference (WRC)

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- **WRC's are Conducted Every 2-4 Years**
  - Next: 22 Oct- 16 Nov 2007
- **WRC Objective:**
  - Review and, if Necessary, Revise the Radio Regulations
  - Radio Regulations Have International Treaty Status for Spectrum Use And Satellite Orbits
- **Continuous, Consistent Involvement Key to Success**
  - Bilateral/Multi-lateral - mil to mil and state department
  - Strong Presence at ITU Study Groups and Working parties
  - Participation in Regional Activities (CITEL, CEPT, APT, etc)
    - US member of CITEL and participates in APT
    - US has observers at CEPT

# ITU WRC-07 Process



# WRC Agenda Item 1.13

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taking into account Resolutions **729 (WRC-97)**, **351 (WRC-03)** and **544 (WRC-03)**, to *review the allocations* to all services in the HF bands *between 4 MHz and 10 MHz*, excluding those allocations to services in the frequency range 7 000-7 200 kHz and those bands whose allotment plans are in Appendices **25**, **26** and **27** and whose channelling arrangements are in Appendix **17**, taking account of the impact of new modulation techniques, adaptive control techniques and the *spectrum requirements for HF broadcasting*;



0-130 kHz (VLF/LF)

International Table			United States Table		FCC Rule Part(s)
Region 1	Region 2	Region 3	Federal Government	Non-Federal Government	
Below 9 (Not Allocated)			Below 9 (Not Allocated)		
5.53 5.54			5.53 5.54		
9-14 RADIONAVIGATION			9-14 RADIONAVIGATION US18  US294		
14-19.95 FIXED MARITIME MOBILE 5.57			14-19.95 FIXED MARITIME MOBILE 5.57	14-19.95 Fixed	
5.55 5.56			US294	US294	
19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)			19.95-20.05 STANDARD FREQUENCY AND TIME SIGNAL (20 kHz)		
			US294		
20.05-70 FIXED MARITIME MOBILE 5.57			20.05-59 FIXED MARITIME MOBILE 5.57	20.05-59 FIXED	International Fixed (23)
			US294	US294	
5.56 5.58			59-61 STANDARD FREQUENCY AND TIME SIGNAL (60 kHz)		
			US294		
			61-70 FIXED MARITIME MOBILE 5.57	61-70 FIXED	
			US294	US294	
70-72 RADIONAVIGATION 5.60	70-90 FIXED MARITIME MOBILE 5.57 MARITIME RADIO- NAVIGATION 5.60 Radiolocation	70-72 RADIONAVIGATION 5.60 Fixed Maritime mobile 5.57 5.59	70-90 FIXED MARITIME MOBILE 5.57 Radiolocation	70-90 FIXED Radiolocation	Private Land Mobile (90)
72-84 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60		72-84 FIXED MARITIME MOBILE 5.57 RADIONAVIGATION 5.60			
5.56					

6685-6765 AERONAUTICAL MOBILE (OR)			6685-6765 AERONAUTICAL MOBILE (OR)		
			US340		
6765-7000 FIXED Land mobile 5.139			6765-7000 FIXED Mobile		ISM Equipment (18)
5.138			5.138 US340		
7000-7100 AMATEUR 5.120 AMATEUR-SATELLITE			7000-7100	7000-7100 AMATEUR AMATEUR-SATELLITE	Amateur (97)
5.140 5.141			US340	US340	
7100-7300 BROADCASTING	7100-7300 AMATEUR 5.120	7100-7300 BROADCASTING	7100-7300	7100-7300 AMATEUR	
	5.142		US340	5.142 US340	
7300-7350 BROADCASTING 5.134			7300-7350 BROADCASTING FIXED Mobile		Radio Broadcast (HF) (73) Maritime (80) Private Land Mobile (90)
5.143			US340 US366		
7350-8100 FIXED Land mobile			7350-8100 FIXED Mobile		Maritime (80) Aviation (87) Private Land Mobile (90)
5.144			US340		
8100-8195 FIXED MARITIME MOBILE			8100-8195 MARITIME MOBILE		Maritime (80)
			US340		
8195-8815 MARITIME MOBILE 5.109 5.110 5.132 5.145			8195-8815 MARITIME MOBILE 5.109 5.110 5.132 5.145 US82		Maritime (80) Aviation (87)
5.111			5.111 US296 US340		
8815-8965 AERONAUTICAL MOBILE (R)			8815-8965 AERONAUTICAL MOBILE (R)		Aviation (87)
			US340		
8965-9040 AERONAUTICAL MOBILE (OR)			8965-9040 AERONAUTICAL MOBILE (OR)		
			US340		

# AI 1.13 Background

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- **History**
  - WARC 79/92 broadcaster gains (1979 = 125 kHz; 1992 = 690 kHz)
  - WRC 03: additional 100 KHz to amateurs in Regions 1 and 3 (Europe, Africa, Asia)
- **Broadcaster concern**
  - Desire for assured access
  - Eliminate dependence on host governments to provide spectrum
  - Sufficient spectrum for ITU Radio Regulations Article 12

# ITU Preparation

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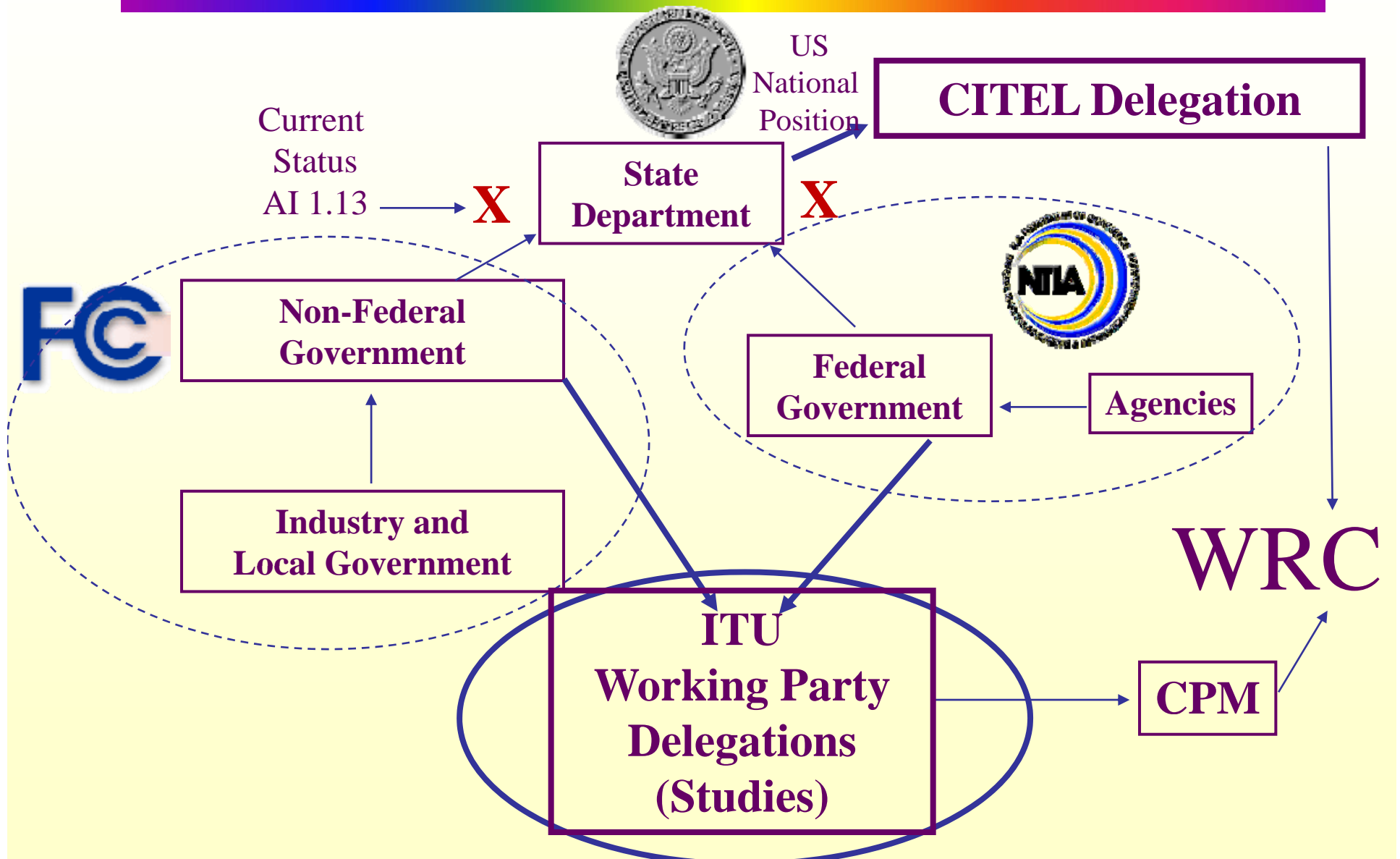
- **ITU Study Period closed in Sep 06**
  - ITU study work is neutral and balanced
- **Study points of view placed in WRC decision options known as Conference Preparatory Meeting (CPM) Text**
  - No change view opposes new broadcasting spectrum as well as any other service including the amateurs and fixed and mobile
  - Allocate 250-800 kHz to broadcasting
  - Implement integrated allocation
  - Share Maritime Channels with all Fixed and Mobile Users
  - Clear disagreement on the viability of increased sharing between the mobiles services as well as introducing Fixed service to mobile
    - Some nations (UK) press adaptive techniques to increase sharing
    - Other nations (US, RU) brought in sharing studies showing interference risk between fixed and maritime mobile; also limitations on channel availability as the number of adaptive systems in an environment increases

# National and Regional Status

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- **CITEL (Americas)**
  - One vote away from adopting No Change (opposes broadcasting)
  - Canada and Brazil are the leading voices
- **CEPT (Europe)**
  - Support 350 kHz for broadcasting; some bands shared with Fixed & Mobile
  - Support integrated allocation
  - Allow “compensation by allowing fixed and land mobile to share with maritime
  - France, Netherlands, Spain, Sweden, Germany support (UK likely will agree)
- **RCC (Russia and bordering states)**
  - Support no change – loud voice opposing new broadcast allocations
- **Asia has no position**
  - Australia and New Zealand support No Change
- **Arab Group has no position**
  - Could advocate delay of decision to a future WRC
  - Likely oppose European idea to allow fixed and land mobile share with maritime

# U.S. WRC-07 PREPARATION

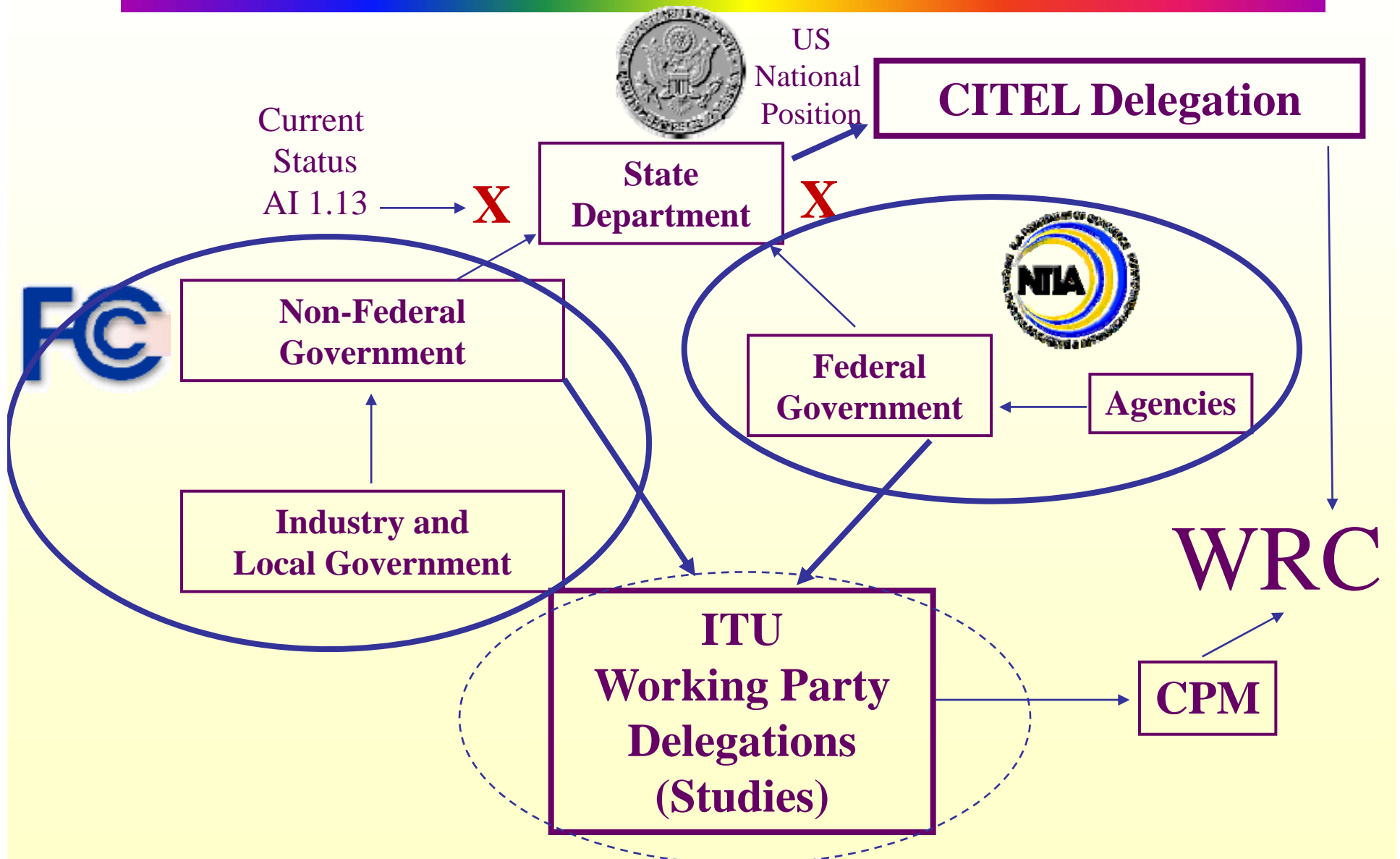


# US Status: ITU Study Period

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- **US input is visible throughout CPM text**
  - **Requirements: Indian Ocean Tsunami Relief**
  - **Sharing Studies between types of users**
    - **NTIA using VOACAP and DoD provided equipment characteristics**
    - **Dr Johnson provided study on potential for low channel availability under saturation of adaptive systems in an environment**
  - **Technology info provided by Dr Johnson - also adopted as ITU Recommendations and Reports**
    - **Adaptive Systems to 3G**
    - **IPoHF, E-Mail, File Transfer**
    - **Token Passing and Wideband channel banding**

# U.S. WRC-07 PREPARATION





# U.S. WRC-07 PREPARATION

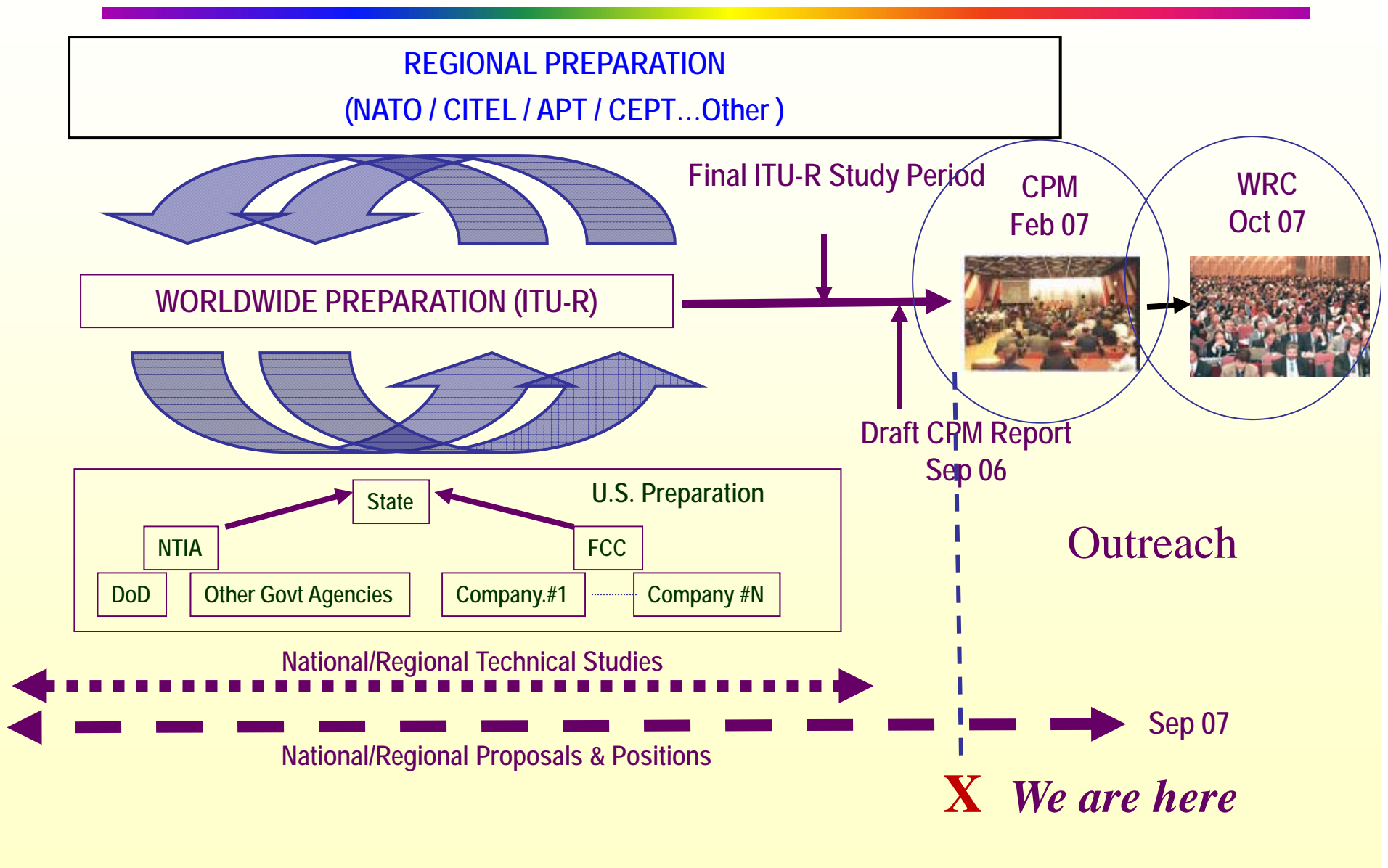
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- **NTIA and FCC are independent**
- **NTIA (DoD, DHS, DoJ and Coast Guard)**
  - **No Change Position (opposed to new broadcasting spectrum)**
    - **Government broadcasters support NTIA**
- **FCC has split constituency**
  - **WRC Advisory Committee (WAC) is the public comment forum**
    - **HFIA letter submitted – states industry is developing advanced fixed and mobile technologies; expresses caution concerning changing allocations**
  - **Commercial Maritime interests and state first responders submitted no change proposal**
  - **Private broadcasters submitted 350 kHz reallocation proposal**
- **State Department overseeing final decision**
  - **WRC Ambassador (Richard Russell) designee involved**

# What's Next?



# ITU WRC-07 Process



# Points of Contact

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- **Charles Glass, NTIA**

- Head of US Delegation, Working Party 9C

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- **Dave Pierce, DoD**

- Member of WP-9C (US Military representative for WRC 07 HF issues)

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