Digital HDTV Chronology

- **1987 - Advisory Committee on Advanced Television Service**

- **1990 - Simulcast principle advocated by the FCC**

- **1990 - Four competing digital HDTV systems announced**

- **1992 - Systems tested at Advanced Television Test Center**

- **1992 - All competitors announce planned improvements**

- **1993 - ACATS Special Panel recommends retesting**

- **1993 - Grand Alliance forms, "collaborative" phase begins**

- **1994 - GA system scheduled for verification testing**

Grand Alliance Status

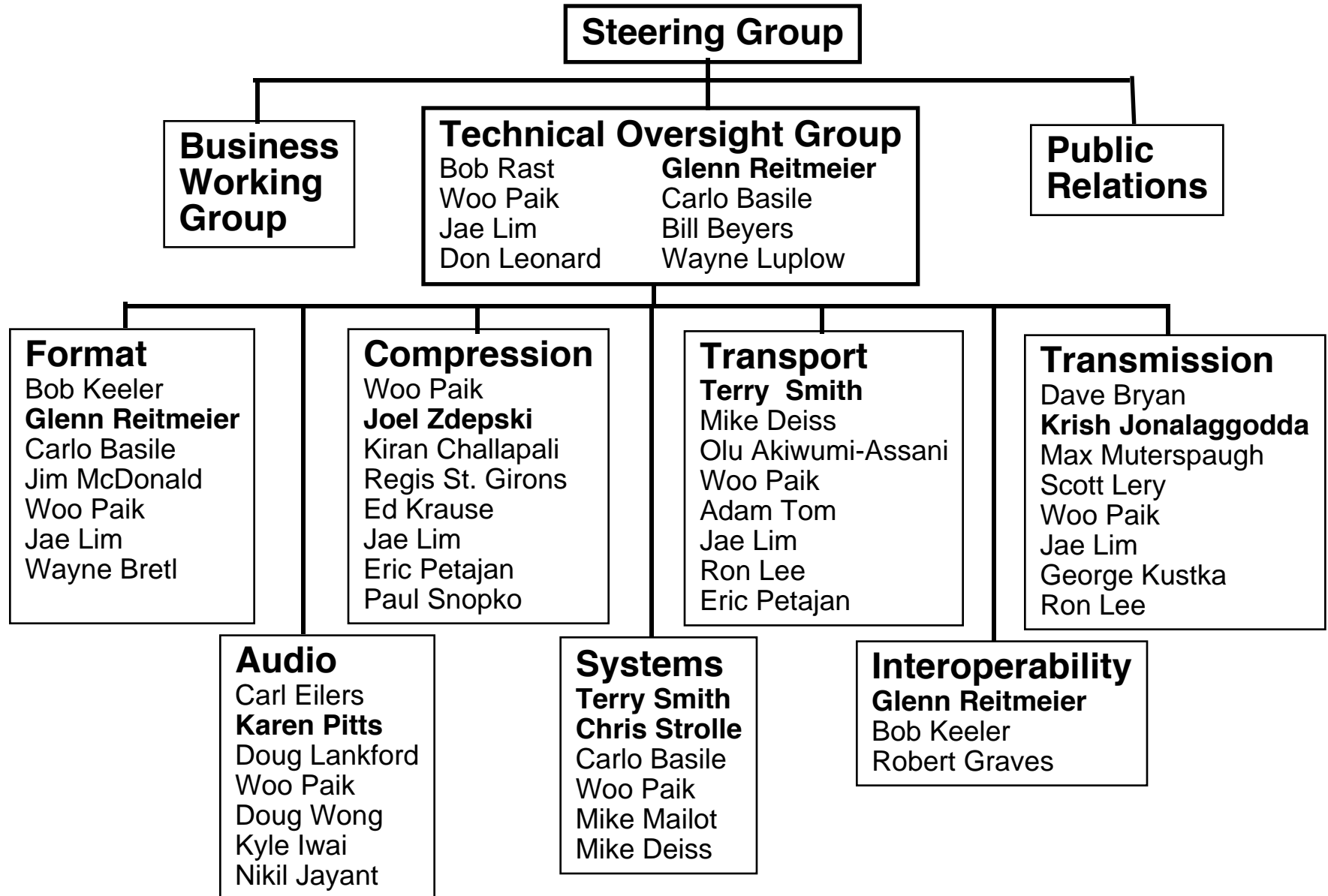***...the GA received unanimous approval of the ACATS technical group...***

- **Layered digital architecture with header/descriptors**

- **Multiple video formats and frame rates**

- **MPEG-2 video compression (with B-frames)**

- **Dolby AC-3 surround-sound audio compression**

- **Packetized Data Transport based on MPEG-2**

- **Modulation technique for $\approx$19 Mbps in the 6 MHz terrestrial simulcast channel is the only remaining issue**

GA Picture Formats

Spatial	Temporal	
1920 x 1080	**23.97 / 24**	**progressive**
	29.97 / 30	**progressive**
(1920/1440)	**59.94 / 60**	**interlaced**
	23.97 / 24	**progressive**
1280 x 720	**29.97 / 30**	**progressive**
	59.94 / 60	**progressive**

- **Every GA HDTV receiver must decode and display a picture for *all* of these transmitted formats**

- **The display itself is a receiver implementation option**

Grand Alliance Organization

Steering Group

Business Working Group

Technical Oversight Group
Bob Rast	**Glenn Reitmeier**
Woo Paik	Carlo Basile
Jae Lim	Bill Beyers
Don Leonard	Wayne Luplow

Public Relations

Format
Bob Keeler
Glenn Reitmeier
Carlo Basile
Jim McDonald
Woo Paik
Jae Lim
Wayne Bretl

Compression
Woo Paik
Joel Zdepski
Kiran Challapali
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Ed Krause
Jae Lim
Eric Petajan
Paul Snopko

Transport
Terry Smith
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Adam Tom
Jae Lim
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Transmission
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Max Muterspaugh
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George Kustka
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Audio
Carl Eilers
Karen Pitts
Doug Lankford
Woo Paik
Doug Wong
Kyle Iwai
Nikil Jayant

Systems
Terry Smith
Chris Strolle
Carlo Basile
Woo Paik
Mike Mailot
Mike Deiss

Interoperability
Glenn Reitmeier
Bob Keeler
Robert Graves

Collaborative GA/ACATS Activities

- **Liason established between the Advisory Committee and the Grand Alliance on a technical specialist basis**
  - **Format and Compression**
  - **Audio**
  - **Transport**
  - **Transmission**
  - **Interoperability**

- **ACATS Technical Subgroup**
  - **authorizes ATTC verification tests**
  - **must analyze results**

GA-ACATS-FCC Timetable

- **Specifications complete and approved by ACATS**   **Oct. 21, 1993**
  - **Format**
  - **Compression**
  - **Audio**
  - **Transport**

- **Transmission approach approved by ACATS**   **Feb. 1994**

- **Integration (start dates)**
  - **video encoder/decoder**   **May 1994**
  - **video encoder/decoder**   **June 1994**
  - **complete system**   **Sept. 1994**

- **Start ATTC verification tests**   **Oct. 1994**

- **ACATS analysis of verification test results**   **Jan. 1995**

- **ACATS recommendation to FCC**   **March 1995 ??**

- **FCC NPRM**   **Mid 1995 ??**

- **Approved standard**   **Late 1995 ??**

Other Timetables

- **Start of digital DBS service - mid 1994**

- **Cable and Telco trials of compressed digital VOD - now**

- **Cable and Telco deployment of digital systems - very soon**

- **National Information Infrastructure - coming soon**