



**NOV 29 1993**FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

September 19, 1993

To: FCC ACATS Joint Expert Group on Interoperability  
Robert Sanderson, Chairman

From Mike Liebhold

Subject Location Alternatives  
Draft meeting plan and for Interoperability Review**Location alternatives**Library of Congress (pending)  
Ramada Renaissance (Reserved)**Interoperability Review Agenda**Day one: 10/6

- 8:00 Coffee-Continental Breakfast
- 8:30- 9:00 Introductory Remarks
  - R. Sanderson, Chair                      R. Wiley *TBD*
  - M. Liebhold, Vice Chair                J. Flaherty *TBD*
  - Members of Joint Experts Group
- 9:00-9:30 Introduction of Process

**Instructions to Interoperability ReviewBoard:**

This process is designed as a collaboration between the GA and 'Stakeholder Communities' to gather best technical contributions on Interoperability for the US ATV standard. In order to facilitate the final report. We request comments and contributions be as detailed as possible and structured within the following framework:

Each Review board member is supplied with a 'Contribution Matrix mapped directly to the structured presentation of the GA ( G. Reitmeir's proposed table of contents) Please comment on Interoperability , section by section of the GA design proposal - as appropriate to your community, industry, or constituency:

Near-Term    Long-Term

Technical Suggestions

Economic Cost/Benefits

Social/Community Tradeoffs

## **Interoperability Review Agenda (continued)**

### **Day one: 10/6 (continued)**

- 9:30-12:00 GA presentation (Break 10:15-10:30)
  - Including Brief Q&A after each presentation section
- 12:00-1:00 Lunch
- 1:00-5:00 Formal Statements and Questions (Break 2:45-3:00)
  - Interopability Review Board and Joint Experts (5 min. each):

### **Day two : 10/6**

- 8:00 Coffee-Continental Breakfast
- 8:30 - 12:00 Open Discussion - section by section GA Report
- 12:00 -1:00 Lunch
- 1:00 - Open Discussions - Report process and Calender of deliverables

#### **need dates**

Collect Contributions

Draft Report

- Majority/Minority positions for each section

IOB Review/Comment of Draft

Final Report to ACATS

- 3:00 adjourn

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**NBC TECHNOLOGY  
TELEFAX MESSAGE**

Number of pages including this one: 5

**TO:** ACATS Joint Experts Group on Interoperability (JEGI)

R.Sanderson (Chair)	Eastman-Kodak	Fax: 716-253-6284
M.Liebhold (Vice-Chair)	Apple	Fax: 408-974-3548
J.Bellisio	Bellcore	Fax: 908-758-4371
T.DeYoung	ARPA	Fax: 703-696-2202
B.Gerovac	Digital	Fax: 617-489-5917
M.Haley	IBM	Fax: 914-892-6799
P.Hearty	ATEL	Fax: 613-592-4398
R.Hopkins	ATSC	Fax: 202-828-3131
C.Tanner	CableLabs	Fax: 303-939-9189

**Grand Alliance Representatives**

R.Keeler	AT&T	Fax: 908-949-5775
G.Reitmeier	DSRC	Fax: 609-734-2421
R.N.Hurst	DSRC	Fax: 609-734-2901

**cc:**

J.Flaherty	CBS	Fax: 212-975-3646
I.Dorris		Fax: 201-285-0679
P.Misener	WR&F	Fax: 202-429-7049

**FM:** S. Baron  
 Phone: +1-212-664-7557  
 Fax: +1-212-664-5219

**DT:** 23 Sep 93

**RE:** JEGI Teleconference, 22 September 1993

Attached are the draft teleconference notes.

## ACATS Joint Experts Group on Interoperability (JEGI)

Summary Notes - Teleconference, 22 September 1993

Those participating:

## ACATS Joint Experts Group on Interoperability

R.Sanderson (Chair)	Eastman-Kodak
M.Liebhold (Vice-Chair)	Apple
S.Baron (Sec.)	NBC
R.Lau (J.Bellisio)	Bellcore
T.DeYoung	ARPA
B.Gerovac	Digital
P.Hearty	ATEL
R.Hopkins	ATSC

## Grand Alliance Representatives

R.N.Hurst	DSRC
R.Keeler	AT&T
G.Reitmeier	DSRC

The teleconference was called to order by the Chair at approximately 16:30 hrs. to review the Action Items from the meeting of 20 September.

**1. Demonstration at ATTC:** R.Sanderson reported that the ATTC has agreed to conduct demonstrations on 5 October, and Peter Fannon is preparing a detailed proposal.

**2. Site Selection:** is not finalized. There are several sites for which confirmation is still being sought. M.Liebhold expects to finalize the site selection process by 24 September.

**3. Revised Agenda:** was faxed by M.Liebhold (see Attachment 1). The following comments and further improvements were suggested:

## DAY 1:

- Sanderson reported that Wiley has agreed to keynote the meeting with a 10 minute presentation on 6 Oct.
- The 08:30-09:00 and 09:00-09:30 sessions with comments by Wiley, Sanderson and Liebhold will be condensed to 08:30-09:00. Flaherty will not be present. Dorros will be invited to speak.
- The GA presentation will run from 09:00-12:00. Reitmeier to break the presentation into sections and assign a time slot for each. Questions for

clarification from the floor will be allowed until the time slot is filled.

**DAY 2:**

- Will show that the "Draft Report" will be "prepared by the members of the Joint Experts Group."
- "Final Report to FCC Advisory Commission on Advanced Television Systems" will be shown as "Preliminary Report to FCC Advisory Committee on Advanced Television Service".
- The Joint Expert Group will meet from 15:00-17:00 to review the work and plan the next steps.

**4. Draft GA Presentation:** Reitmeier reported that it will be out to Sanderson by overnight delivery as scheduled.

**5. Letter to Panelists:** M.Liebhold provided a draft letter (see Attachment 2). It was suggested that: the third paragraph be more specific as to what the panelists presentations would be used for; the panelists be asked to provide copies for at least the Experts Group members (12) and preferably for all participants (60); the executive summary be a maximum of one page (rather than a minimum of one page); "Near-term" implies "Before 2000", "Long-term" implies "After 2000"; "Technical Suggestions" and "Testing/Verification Needed" should be shown as bottom line issues; and "Contribution Matrix" instructions must be clarified.

**6. Mailing List:** M.Liebhold reported that the list is nearly complete and will be forwarded on 23 September.

**7. Final mailing:** is on schedule for 24 September.

Teleconference was adjourned at approximately 17:30 hrs.

**Draft Agenda 9/22**

**To:** FCC ACATS Joint Expert Group on Interoperability  
Robert Sanderson, Chairman

**From** Mike Liebhold

**Subject** Revised Agenda for Interoperability Review Panel

**Interoperability Review Agenda**

**Day one: 10/6**

- 8:00 Coffee-Continental Breakfast
- 8:30- 9:00 Introductory Remarks
  - R. Wiley TBD
  - J. Flaherty TBD
  - I. Dorros TBD
- 9:00-9:30 Introduction of Process and " Mission Statement"
  - R. Sanderson, Chair - Summary of previous PS WP/4 process
  - M. Liebhold, Vice Chair - Instructions to Interoperability Review Panel
- 9:30-12:00 GA presentation (Break 10:15-10:30)
  - Including Brief Q&A after each presentation section ( for clarification only)
- 12:00-1:00 Lunch
- 1:00-5:00 Formal Statements and Questions (Break 2:45-3:00)
  - Interoperability Review Board and Joint Experts (5 min. each):

**Day two : 10/7**

- 8:00 Coffee-Continental Breakfast
- 8:30 - 12:00 Structered Discussion - section by section - GA Interoperability Report
- 12:00 -1:00 Lunch
- 1:00 - Open Discussions - Report process and Calender of deliverables
  - Collect Contributions
  - Draft Report
    - Majority/Minority positions for each section
  - Review/Comment of Draft
  - Final Report to FCC Advisory Commission on Advanced Television Systems
- 3:00 adjoun

Draft letter to panelists 9/22

To: FCC ACATS Interoperability Review Panel

From: Robert Sanderson, Chairman  
Mike Liebhold, Vice Chairman

Subject: Meeting Agenda and overview

This process is designed as a collaboration between the Grand Alliance and 'Stakeholder Communities' to gather the best technical contributions on Interoperability for the US terrestrial advanced television standard (ATV).

We are enclosing, for your preliminary review, the near-final copy of the Grand Alliance presentation slides.

After the Grand Alliance presentation on the first day, each member of the Interoperability Review Panel will have an opportunity to make a preliminary presentation. Presentations will be limited to 5 minutes each, there are 37 expert panelists. We encourage all panel members to prepare, at a minimum, a one page executive summary of expectations, concerns, questions, issues, and reactions to the Grand Alliance presentation. Wherever possible, please include any letters and/or position statements from your industry and any related organizations.

After the two day discussion you are asked to submit a final contribution. In order to facilitate the final report. We request that final comments and contributions be as detailed as possible and refer directly to each section of presentation of the Grand Alliance. (Attached)

All contributions are requested to be as technical as reasonably possible. At the meeting you will be supplied with a contribution matrix. For each section of the presentation appropriate to your community, industry, or constituency: For each section, please use the following outline for your final comments on Interoperability of the Grand Alliance proposal:

Near-Term    Long-Term

- Your Application Requirements,  
(User assumptions, Service model or product requirements)
- Technical Suggestions
- Economic Cost/Benefits
- Social/Community Tradeoffs
- Testing/ Verification Requirements

JEGI Doc.-023

**ACATS- Joint Experts Group on Interoperability**  
**FACSIMILE MESSAGE FROM**  
**ROBERT SANDERSON, EKC**  
**PHONE: 716-726-7763 FAX: 716-253-6284**

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September 23, 1993

1 Pages Including This Cover

## Distribution List

<u>Member</u>		<u>Phone</u>	<u>Fax</u>
R. Sanderson	Eastmank Kodak	716-726-7763	716-253-6284
M. Liebhold	Apple	408-974-6025	408-974-3548
S. Baron	NBC	212-664-7557	212-664-5219
M. Haley	IBM	914-894-4723	914-892-6799
B. Gerovac	Digital	617-253-0669	617-258-6264
R. Hopkins	ATSC	202-828-3130	202-828-3131
C. Tanner	CableLabs	303-939-8500	303-939-9189
P. Hearty	ATEL	613-592-1727	613-592-4398
T. DeYoung	ARPA	703-696-2261	703-696-2202
J. Bellisio	Bellcore	908-758-2959	908-758-4371
D. LeGall	C-Cube Microsystems	408-944-6353	408-944-6314
<u>Grand Alliance</u>			
R. Keeler	AT&T	908-949-7982	908-949-6689
G. Reitmeler	Dave Sarnoff	609-734-2523	609-734-2124
<u>cc:</u>			
J. Flaherty	CBS	212-975-2213	212-975-3646
I. Dorros	Home	201-285-1266	201-285-0679

## Message

This is to inform you that Dr. Didier LeGall has accepted our invitation to participate on the Joint Experts Group on Interoperability. As you may know Dr. LeGall is chairman of the MPEG Video Compression Subgroup.

Dr. LeGall's affiliation and address are as follows:

Dr. Didier LeGall  
 Vice President, Research and Development  
 C-Cube Microsystems  
 1778 McCarthy Boulevard  
 Milpitas, CA 95035  
 408-944-6353 (phone)  
 408-944-6314 (fax)



**Advisory Committee on  
Advanced Television (ATV) Service**

JEGI Doc.-024

Doc. No. \_\_\_\_\_

September 23, 1993

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TO: Interoperability Panel Members  
Joint Experts Group on Interoperability

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

SUBJECT: Meeting Details ACATS Interoperability Review October (5) 6&7

As promised in our earlier communication, we provide in this communication, details for the Interoperability Review of the Grand Alliance System Proposal.

Enclosed are the following items for this event:

- Agenda for the October 6/7 meeting.  
**Georgetown University Conference Center  
Washington, DC**
- Draft (briefing chart format) of the "Grand Alliance Report on Interoperability"
- Map for the Advanced Television Test Center location for the optional October 5, 1993 presentation and demonstration.

Additional details for the meeting are as follows:

**October 5** (Optional) ATTC (Advanced Television Test Center) presentation and demonstration.

This event will provide basic information on image quality performance and issues relevant to digital advanced television, illustrate performance artifacts, provide progressive/interlace comparisons, etc., as a precursor to the Interoperability Review. This event will be particularly valuable to those that are not fully familiar with the ACATS and ATTC evaluation results. This event will occur at the ATTC in Alexandria, Virginia **October 5, 1993 from 3:00 to 6:00 PM - PLEASE RSVP** as requested if you will participate -- we will need two or three one hour sessions for a comfortable and effective event.

**October 5**

Informal dinner with those available. (Dutch treat)

Time: 7:30 PM  
Location: (to be announced)

Please RSVP if you can attend.

**October 6 & 7**

Following Introductions, Meeting Expectations and Process, the Grand Alliance will elaborate on their "Interoperability Report" (9:00 AM - 12:00 PM). A written form of this report should also be available at the meeting. The briefing form (enclosed) is provided **FOR YOUR REVIEW PRIOR TO THE MEETING** and so that you can prepare and document your comments for the meeting (see PREPARATION REQUEST below).

**PREPARATION REQUEST**

The meeting agenda provides time (October 6, 1:00-5:00 PM) for Statements and Questions from the Interoperability Panel and Joint Experts Group. This will be accomplished by providing (approximately) five minute time slices for comments from those that come prepared with a documented input. Please prepare your input as a single page summary indicating the interest/organization you represent, a summary of your comments, concerns recommendations, etc. Feel free to attach as much additional relevant material to your single page summary as you wish. Bring an overhead cell for projection during your oral comment time and also bring at least enough copies (15) of your comment and support documents for the Expert Group. Your inputs are important as is the format since the Experts Group will use these to structure the "discussion" agenda portion of the October 7 agenda (8:30-12:00).

At the end of the two-day meeting you will be asked to submit a final contribution in order to facilitate preparation of a summary report that the Joint Experts Group will prepare. We, and the Grand Alliance, ask that your comments and contributions be as technically detailed as possible and reference sections of the Grand Alliance system. Further, please put your inputs in as actionable form as possible (what specifically would you like to see changed or added to the GA system and for what reason and judged benefit). With respect to non-television-broadcast applications it will be desirable to receive technical definitions of the nature and requirements posed by any new services in the public interest.

We will provide guidance and possibly an instrument at the meeting for gathering your concluding inputs --- it will likely ask for input in the following areas (so that you can begin to formulate your thoughts before the meeting along these lines):

Your Application Requirements/Recommendations  
(user assumptions, service model, product requirements)

Timing of your requirements  
(Near-Term -- pre-2000 Long-Term post-2000)

Economic Cost/Benefits

Social/Community Tradeoffs

Technical Suggestions

Testing/Verification Needed

We look forward to your participation in this important event and to receiving your inputs which can help shape the definition of the US HDTV system. We've tried to design the process as a collaboration between the Grand Alliance and 'Stakeholder Communities' in order to gather the best technical contributions on Interoperability to guide the US terrestrial advanced television standard decision.

**Please RSVP as soon as possible and before October 1 to: Ms. Julie Hall (phone: 716-726-7776 or FAX: 716-253-6284) so that we can complete planning for an effective event.**

Sincerely,

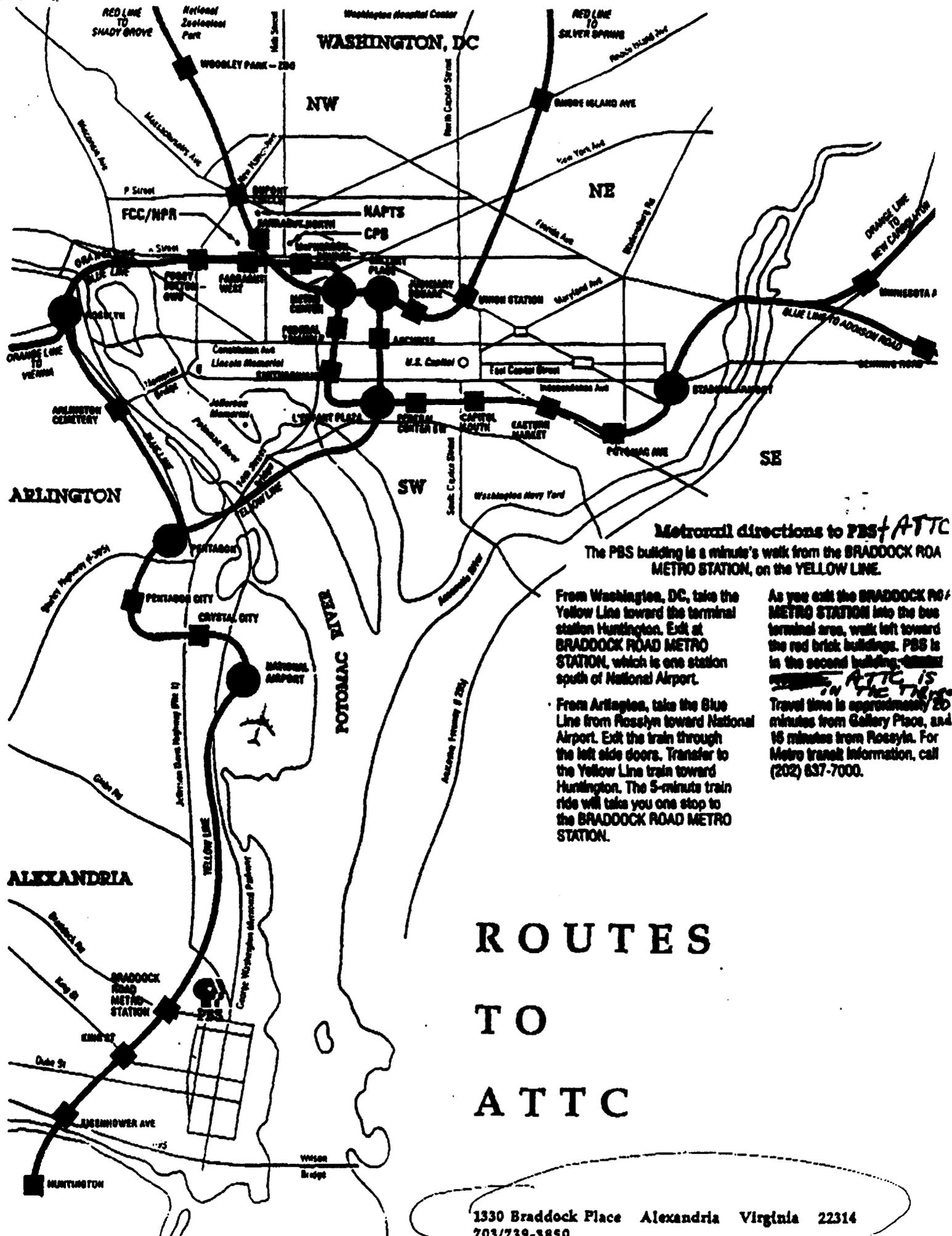
Dr. Robert L. Sanderson, Chairman  
Mr. Michael Liebhold, Vice Chairman  
Joint Experts Group on Interoperability

RLS/jh

cc: J Flaherty  
I Dorros  
The Honorable Richard Wiley

**NB: While you are being specifically invited and will be given preference in participating in this meeting, it will be conducted as an open meeting --- others that attend by your invitation or otherwise will be provided opportunity to contribute, time permitting.**





**Metro rail directions to PBS + ATTC**

The PBS building is a minute's walk from the BRADDOCK ROAD METRO STATION, on the YELLOW LINE.

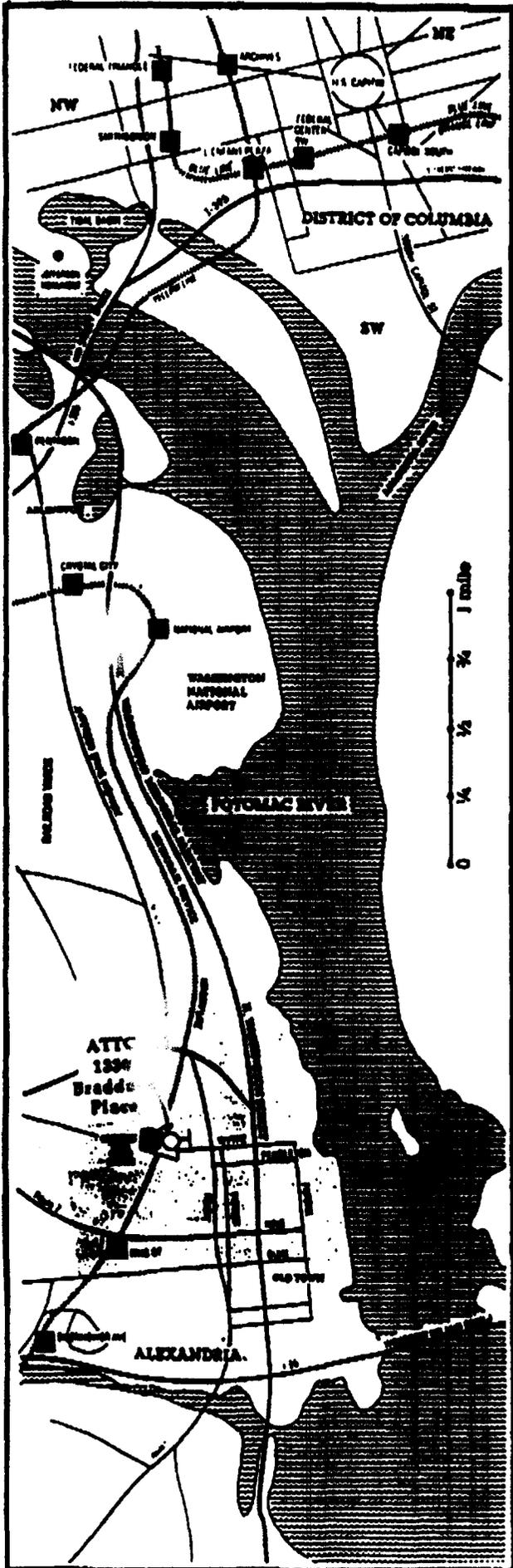
From Washington, DC, take the Yellow Line toward the terminal station Huntington. Exit at BRADDOCK ROAD METRO STATION, which is one station south of National Airport.

As you exit the BRADDOCK ROAD METRO STATION into the bus terminal area, walk left toward the red brick buildings. PBS is in the second building. ~~ATTC IS~~ **ATTC IS** IN THE THIRD. Travel time is approximately 20 minutes from Gallery Place, and 15 minutes from Rosslyn. For Metro transit information, call (202) 637-7000.

From Arlington, take the Blue Line from Rosslyn toward National Airport. Exit the train through the left side doors. Transfer to the Yellow Line train toward Huntington. The 5-minute train ride will take you one stop to the BRADDOCK ROAD METRO STATION.

**ROUTES TO ATTC**

1330 Braddock Place Alexandria Virginia 22314  
703/739-3850



**Automobile directions to ATTC**

From Richmond Highway, Route 1  
Route 1 northbound becomes N. Patrick Street  
in Old Town, Alexandria

Left on Wythe Street  
Two blocks and right on N. Fayette Street  
Two blocks and left on Braddock Place

From Beltway, I-495/I-95  
Exit Telegraph Road north  
Right on Duke Street (Route 238), east to  
Old Town, Alexandria

One mile and left on S. Fayette Street  
Ten blocks and left on Braddock Place

From Shirley Highway, I-395  
Exit King Street (Route 7), east to Old Town,  
Alexandria

2 1/2 miles and left on N. Fayette Street  
Ten blocks and left on Braddock Place

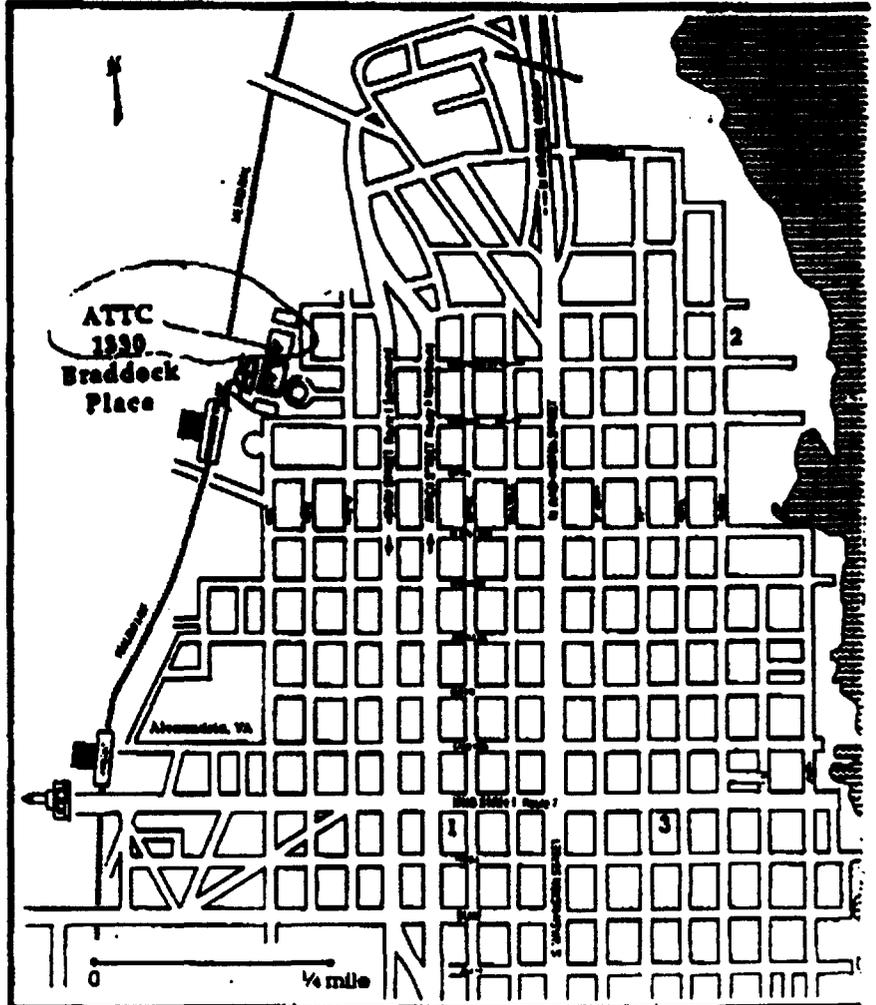
From National Airport  
G.W. Parkway southbound becomes N.  
Washington Street in Old Town, Alexandria  
Right on Wythe Street

Two blocks and right on N. Fayette Street  
Two blocks and left on Braddock Place

**Parking**

Pay parking is available at the building. The  
garage entrance is to the right as you enter the  
Braddock Place circle. The streets in the  
neighborhood of the building allow two-hour free  
parking.

Enlargement of boxed area at left.



**Nearby Hotels**

Numbers refer to numbers showing hotel  
location on enlarged map of Alexandria.

1 Morrison House  
118 S. Alfred Street  
703/638-8000

South of King Street

2 Ramada Hotel — Old Town Alexandria  
901 N. Fairfax Street  
703/663-8000

Between First and Montgomery Street  
on the river.

National Airport shuttle every 30 min

3 Holiday Inn — Old Town Alexandria  
480 King Street  
703/548-8080

On the south side of King Street at  
Royal Street.

Call for shuttle from National Airport.

**Alexandria Taxi Cabs**

Diamond Cab	548-62
King Cab	548-35
Red Top Cab	622-33
Yellow Cab	548-25

(Specify Fayette Street side of  
1320 Braddock Place.)

**Grand Alliance**

**DRAFT**

JEGI Doc.-025

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**DRAFT -- For Preliminary  
Interoperability Review Panel Use ONLY**

**Grand Alliance HDTV**

**Interoperability**

**Presentation to  
Interoperability Review Panel  
October 6, 1993**

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# Today's Objectives

- **Present Interoperability characteristics of the Grand Alliance HDTV system**
- **Identify conflicting goals and explain the rationale for certain choices that the Grand Alliance made**
- **Answer questions and engage in a constructive dialog**

# **Outline**

- **Introduction**
- **System overview**
- **Transmission layer interoperability**
- **Transport layer interoperability**
- **Video Compression layer interoperability**
- **Audio Compression layer interoperability**
- **Picture layer interoperability**
- **Low Cost Considerations**
- **Extensibility and Migration plan**
- **Summary**

# Introduction

## An FCC Standard

- **The Grand Alliance system is the candidate HDTV *transmission* standard under consideration by the FCC through its ACATS**
- **The Grand Alliance system is NOT:**
  - a production standard
  - a display standard
  - a consumer interface standard
- **Digital systems decouple these standards**

# FCC Standard Impact

Broadcaster

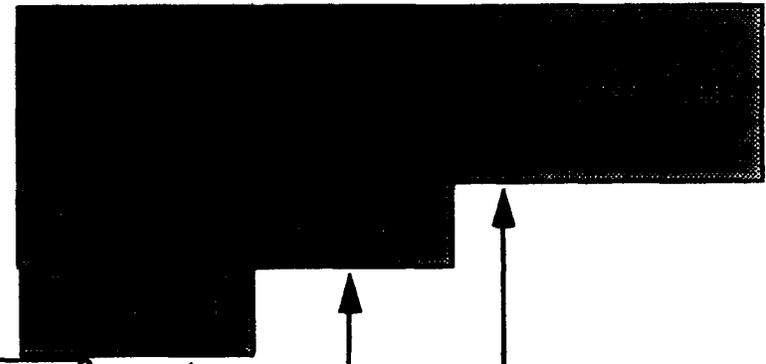
Consumer Receiver

Production Standards

*Decoupled*

Display

Video and Audio Encoder



6 MHz Simulcast Channel

Define

Requires certain minimum functionality

IMPACT

*We are standardizing the meaning of a bit stream and a technique for transmitting it in a 6 MHz RF channel; Receivers must be able to demodulate the signal and interpret the bitstream to recreate picture & sound*

# Grand Alliance Goals

*...essential criteria for a successful HDTV transmission standard...*

↑  
*Must  
achieve  
to create  
an HDTV  
industry*

- High quality HDTV pictures and sound
- Wide service area for terrestrial broadcast
- Avoid unacceptable interference to existing NTSC service during its lifespan

↓ ↑  
*Must  
achieve  
for long  
term  
success*

- Cost effective solution for consumers and users at the time of introduction *and* over the long term
- Interoperability with other media (e.g., cable, satellite, computers, telecom) and applications
- Potential for worldwide standard



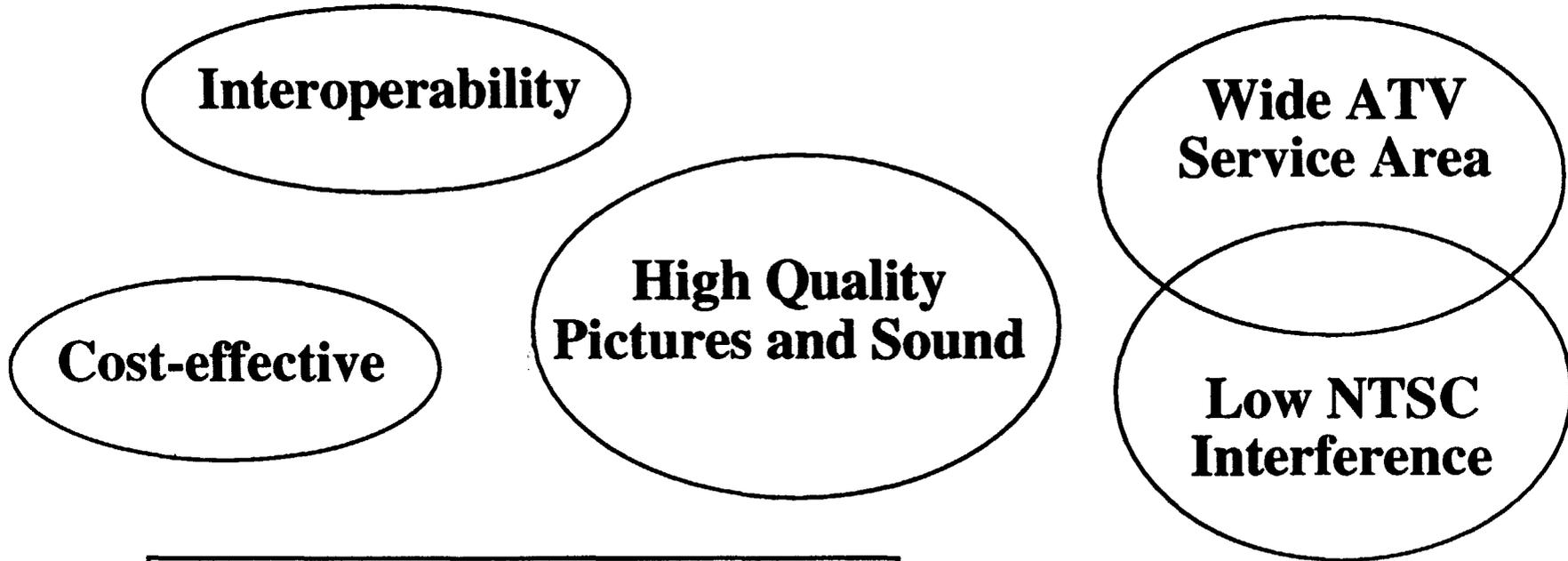
# Interoperability

***PS-WP4 Definition of Interoperability: "The capability of providing useful and cost-effective interchange of electronic image, audio and associated data: among different signal formats, among different transmission media, among different applications, among different industries, among different performance levels."***

- **Interoperability is an issue of degree**
- **Must be evaluated in a complex multidimensional space that considers established standards and practices of various industries, and the technical feasibility and cost impact of providing interfaces at different operational boundaries between applications or industries**
- **In the design of the GA system, we are often faced with *conflicting* goals!**

# The Juggling Act

*...we must resolve conflicting goals to achieve the best standard for the U.S. ...*



**Potential worldwide standard**



**GA**



**ACATS**

## **PS-WP4 Recommendations**

**"PS/WP4 has identified a number of characteristics that contribute significantly to Interoperability, Scope of Services and Features, and Extensibility ... In relative order of importance, these characteristics are:"**

- 1. An all-digital implementation based on a layered architecture model**
- 2. The use of universal headers and descriptors (as agreed by industry standards group)**
- 3. Transmission of the signal in progressive scan format**
- 4. Use of a flexible, packet data transport structure**
- 5. Viewer transparent channel re-allocation (limited picture and sound while most of the channel capacity is devoted to data transmission for conditional access addressing or other purposes)**