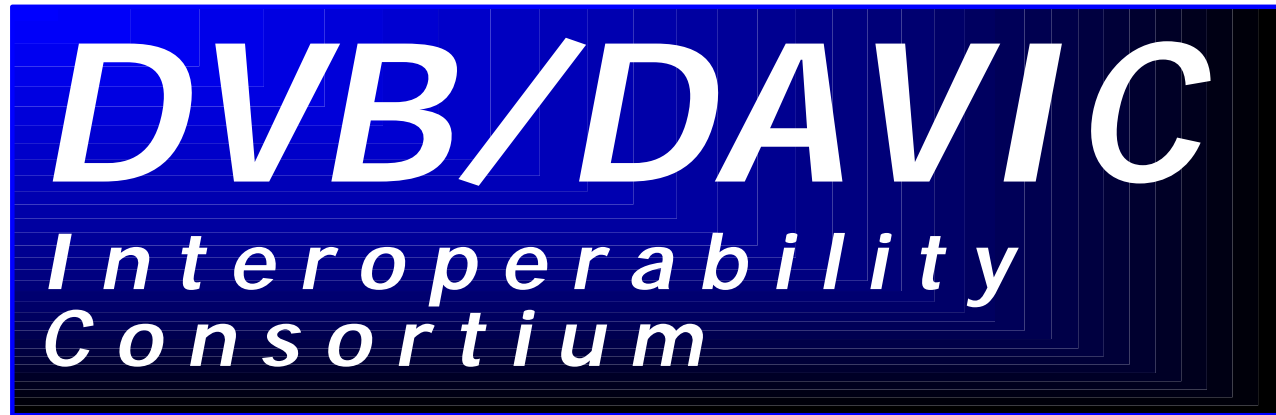


Presentation

DVB/DAVIC Interoperability Consortium



Agenda

- **Customers' Requirements**
- **Objectives of the Consortium**
- **Consortium Members**
- **DVB and DAVIC Standards**
- **Multiservice and Multivendor Benefits**
- **Approach to Interoperability**

Customers' Requirements

- On 8 June 1998, EuroCableLabs (ECL), the technical research and development branch of the European Cable Communications Association sent out a RFP to manufacturers of cable modems and interactive set top boxes.
- The European cable operators ... have, after an in-depth study of the different systems that are available, **decided to choose for the DVB/DAVIC system** for the RFP. In their opinion this system best suits the needs of the cable operators in Europe. The **main advantages** ... are the **flexibility** of the system on the one hand and the **optimal system design** with regard to the DVB environment on the other hand. **One single system being able to provide all services** such as video and audio broadcasting, data communication as well as telephony, is a better solution than different, individual systems operating in parallel. This is valid both from a technical point of view as well as from an economic point of view with regard to long-term cost efficiency.
- **Multivendor Interoperability** and **Multiservice Platform** is a Requirement

Objectives of the Consortium

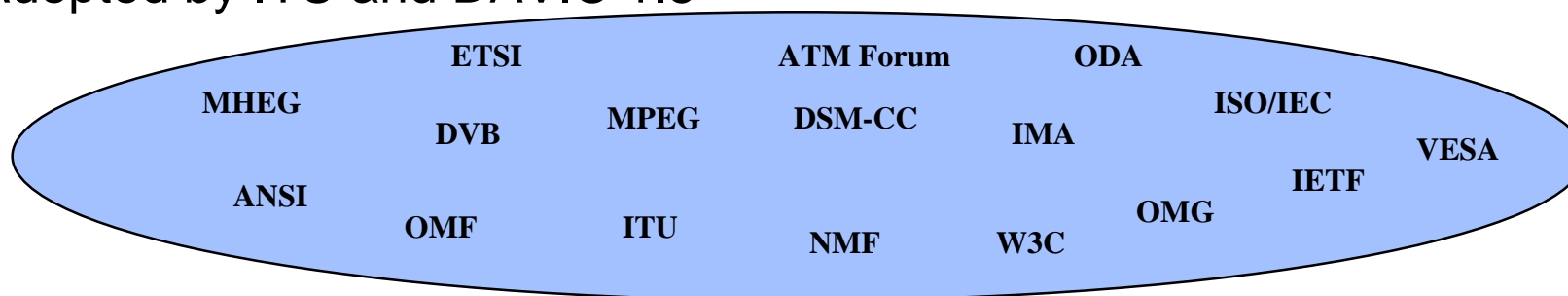
- Provide for multilateral interoperability of products based on the DVB-RC Cable & LMDS and DAVIC 1.5 for broadband video, audio, data and voice services:
 - Headend transmission equipment
 - Set-top-boxes (two-way broadband)
 - Cable data modems
- Market the interoperability, advantages and benefits of the products
- For the benefit of:
 - Cable Operators
 - Residential and business end users
 - Consortium member companies

The Consortium Members

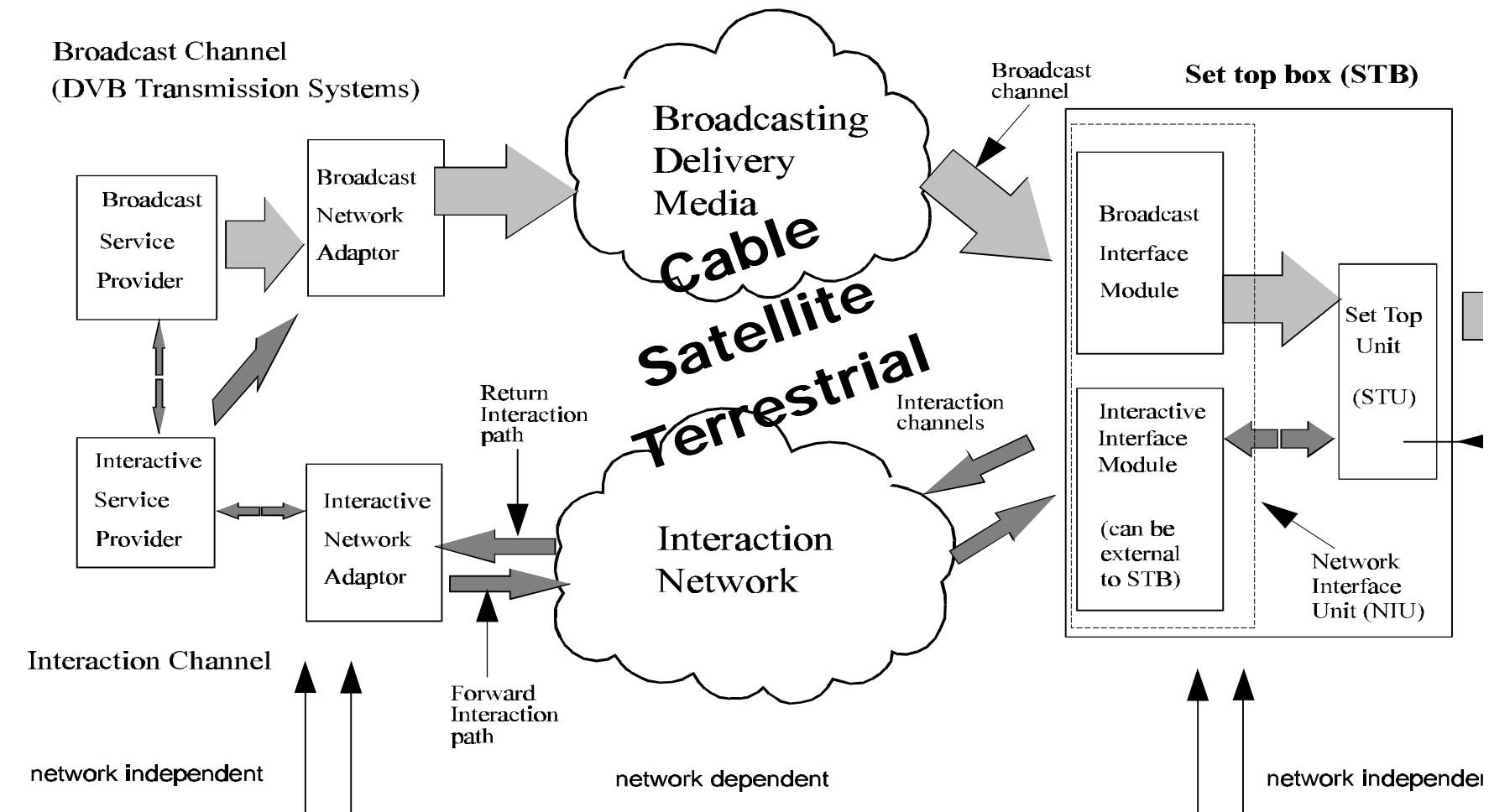
- Alcatel
- COCOM
- DiviCom
- Hughes Network Systems
- Nokia
- Sagem
- SIMAC
- Thomson Multimedia
- Thomson broadcast system
- ... more will join

The Complete DVB Standards Edition

- Downstream transmission using MPEG transport stream:
 - Satellite: **ETS 300 421**: Digital satellite transmission systems
 - HFC Networks: **ETS 300 429**: Digital cable delivery systems
- Return channel
 - HFC networks: **ETS 300 800** Return channels in CATV systems alias **DVB-RCC**
 - Telephone: **ETS 300 802** Return channels in PSTN/ISDN systems
- Generic: **ETS 300 801** Network-independent interactive protocols
- Adopted by ITU and DAVIC 1.5



DVB/DAVIC Interactive Reference Model

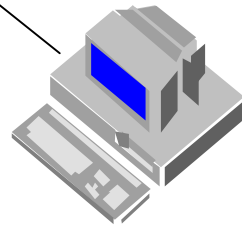


Multivendor Interoperability

HFC Head-End (INA), STB, Cable Modem (& Cable Phone)



TBS
DiviCom
Alcatel
HNS
COCOM



Management Station (MS):

- monitoring
- network management
- authentication, accounting & billing



Nokia
Sagem
TMM



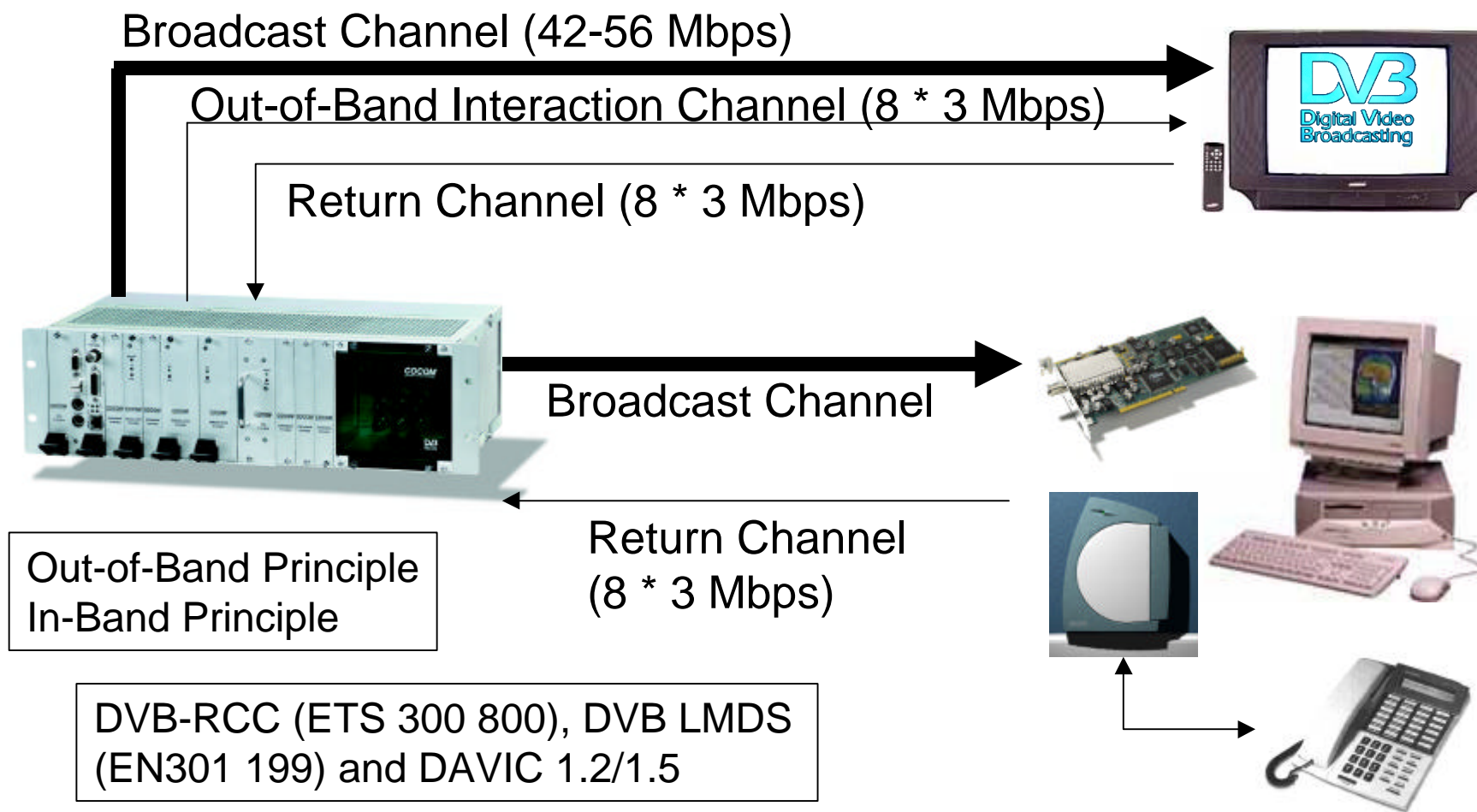
SIMAC
HNS
COCOM



Cable
Telephone

The Multiservice Platform

Video, Audio, Data, Voice



The Multiservice Platform Concept

- Multiservice platform (video, audio, data and voice):
 - One headend can deliver all services
 - A set-top-box can deliver data and voice (Web on the TV)
 - A cable modem can deliver video, audio, voice (TV on PC)
 - Integrated network and billing management
 - A mix of service types can be embedded in the same transport stream
- Key Features
 - 1 downstream broadcast channel 42-56 Mbps in 8 MHz Carrier
 - 8 downstream Out-of-Band Channels of 3 Mbps in 2 MHz
 - 8 upstream Channels of 3 Mbps in 2 MHz (10 Mbps in 4 MHz !)
 - IP or ATM in Downstream MPEG TS - ATM cells in Upstream
 - 5-65 MHz Frequency Range in Upstream

Cable Operator's Benefits of Platform

- All services embedded in the digital video infrastructure
- Optimal bandwidth utilization; flexibility and scalability across all services
- Equipment flexibility, reusability and redundancy
- Technicians need only one education
- Only one family of measuring equipment
- Only one network and billing management system
- All services to TV subscribers, incl. web
- All services to PC subscribers, incl. digital video and audio
- Cost-effectiveness, affordability and billing ability
- Future proof in terms of convergence and interoperability
- Compliance with EU regulation

Benefits of the Multiservice Platform

- Residential and business user's benefits:
 - Each terminal equipment investment provides access to multiple services
 - Affordable products
 - Future proof in terms of convergence and evolution
 - Service differentiation
- Manufacturer's benefits:
 - Larger market
 - Optimal competitiveness in terms of functionality, features and volume
 - Reduced overall R&D effort

Approach to Interoperability

- Consortium builds upon “DVB Interoperability Test Specification”
- Lean mechanism for verification:
 - Bi-lateral interoperability implementation and verification
 - Multi-lateral implementation and verification by Consortium verification partner
 - Responsibility rests with Consortium member
- Consortium logo for verified interoperable products
- Roadmap:
 - First bi-laterally interoperable products are being deployed
 - First multi-lateral interoperable products expected in 1Q99