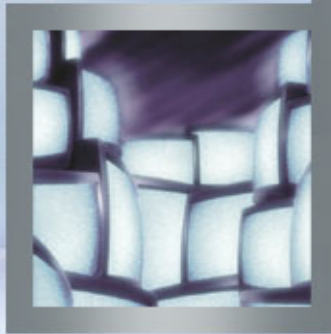


**VISION OF THE FUTURE**  
**NGN@HOME workshop**  
**April 7, 2005**



**Session III:**  
**Adding value in a multi-access network  
and multi-service provider environment**

**Jim Beveridge**  
**Thomas Kleesch**  
**Peter MacAvock**  
**John Tinsman**

**Microsoft**  
**IBM Europe**  
**DVB Project**  
**OpenTV**

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## Some Ingredients for Adding Value

- **Content**
  - Content drives interest
- **Services**
  - Services “wrap” content with navigation, interaction, and business models.
- **Access**
  - Making services available when and where they are needed, including discovery of what is available.
- **Security**
  - Protecting investments and maintaining value
- **Understanding**
  - Use patterns, consumer preferences

## **Ingredients Should be Compatible with Multiple ...**

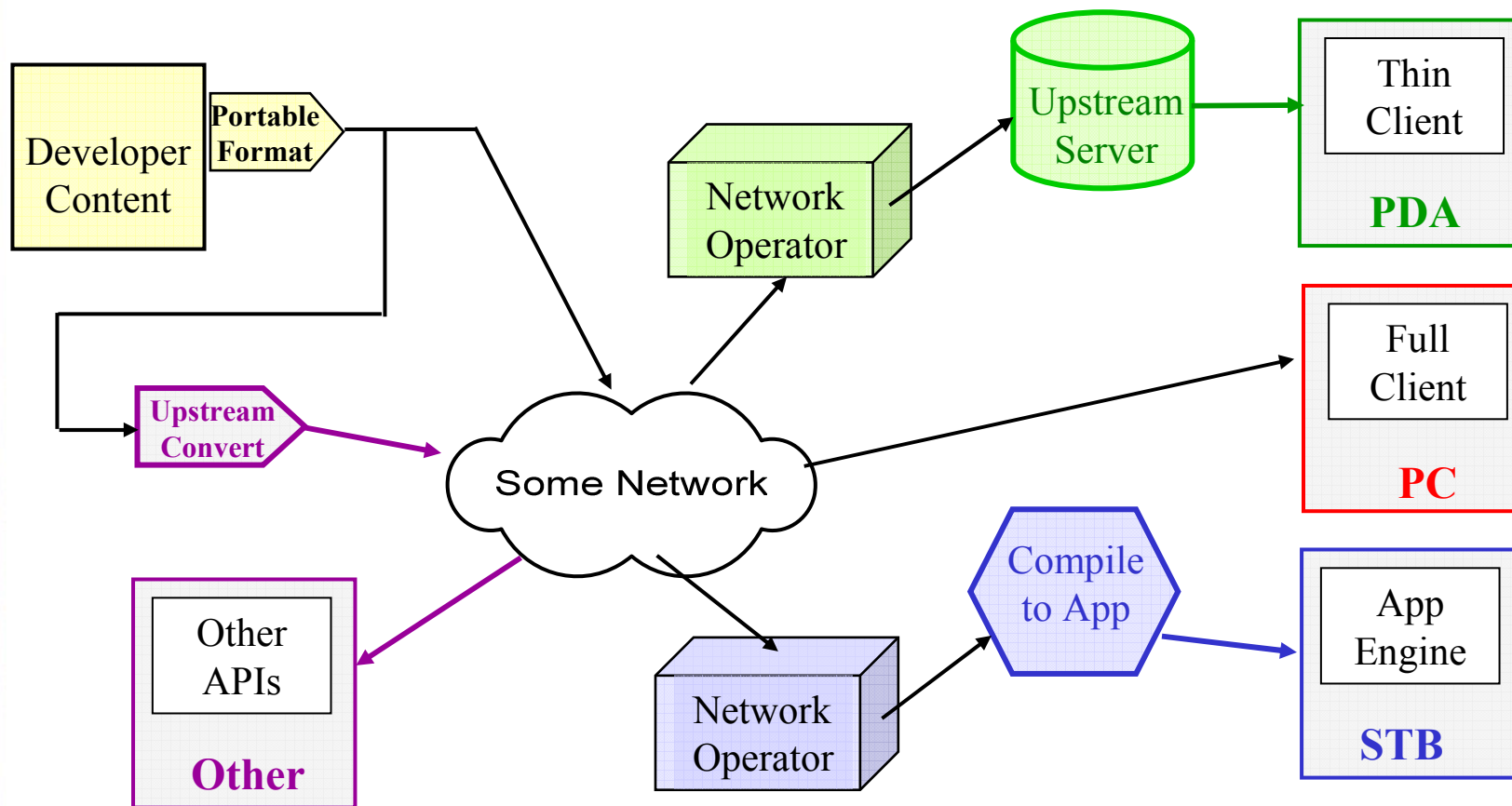
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- **Service providers**
- **Network operators**
- **Content formats**
- **Delivery technologies**
- **Device characteristics**

## What Does This Mean for Interoperability?

- **Convergence brings different “cultures” into the home network**
  - Advantages, limitations, and assumptions for each.
  - Simple interoperability is a poor model for evolving “ecosystems”
  - Convergence doesn’t mean agreement
  
- **Given the incremental nature of consumer adoption, one cannot assume a “fresh start”**
  - Greater reliance on layered systems using well defined interfaces and plug-able elements
  - Standards can play a critical role in defining boundaries
  
- **Protocols, metadata and other techniques for expressing “intent” will play a significant role**
  - In diverse environments, it’s better for standardized interfaces to specify the result and not the method.

## An Example: Content Delivery Based on a Portable Format



The format should not dictate the conversion model



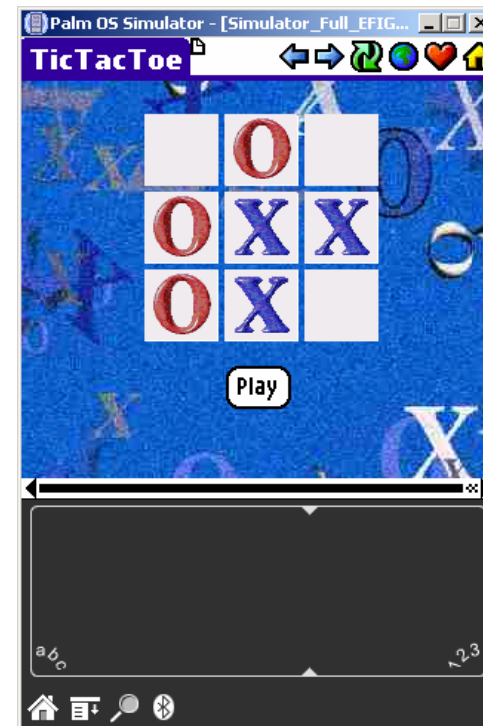
# Tic Tac Toe on an STB, a PDA, and a mobile \*

Set top box



Also works on PCs!

PDA



3G mobile



\* Using TS 102 330

## One Domain: Digital TV

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### Drivers Include:

#### Personal/Digital Video Recorders (PVR)

- Niche to must have
- Single tuner to multiple tuners
- Standalone to multi-room to home network

#### High Definition and/or constrained bandwidth

- MPEG2 to AVC and/or VC1

#### IPTV

- Trial to Deployments
- Telco driven to Cable/MSO driven

#### Interactive Services

- Novelty to common place
- Cost center to profit center
- Hand crafted to rapid development
- More powerful STBs make advanced applications possible

## **Use Case: Multi-room PVR**

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### **New delivery and consumption models**

- Viewers can choose what to watch and when
- Live pause and time shifting
- Push and trickle modes for content, metadata and applications
- Interactive ads with telescoping

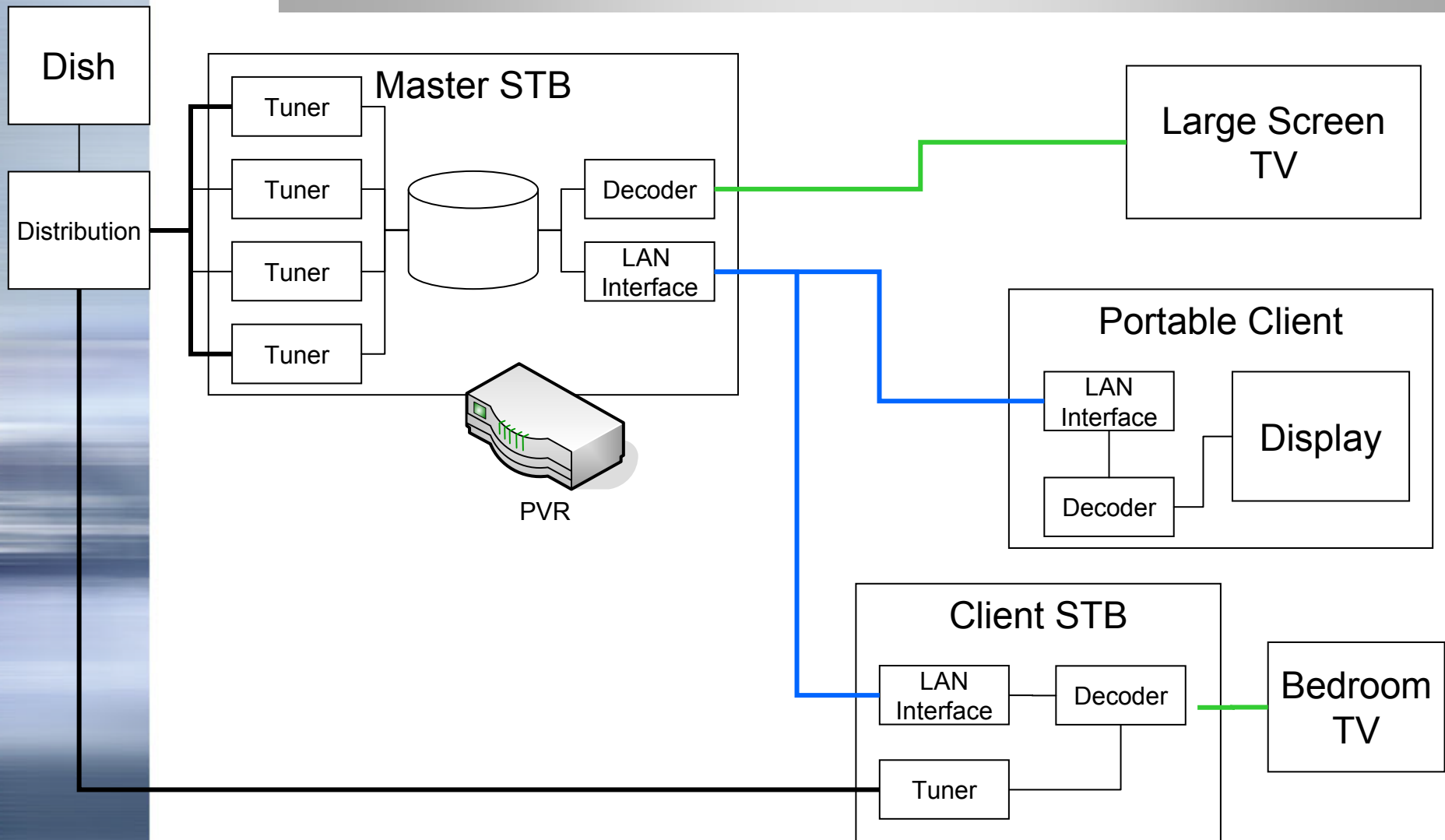
### **Ease of Use**

- Metadata facilitates navigation, selection and recording
- Features like series linking, recommendation engines supported
- Enhanced programming and interactive services easily supported on reasonable PVR box

**Networked devices allow for content sharing and content serving between multiple devices**



## Example of Multi-room PVR



## Use Case: Technologies for Multi-room PVR

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### Realizing the full potential requires

- Real time streaming
- Remote device control
- Rights management consistent with requirements of content providers
- Metadata
- Device discovery
- Multiple networking technologies
  - Both to the home and within the home
- Interactive engine

### Mixed device environments require more:

- Scalable delivery and content transcoding
- Portable content formats
- Negotiation protocols
- Synchronization for portable devices

## About the Speakers ...

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### **Jim Beveridge:**

Microsoft's Director, Broadband Policy and Standards EMEA.

### **Thomas Kleesch:**

IBM's Business Development Executive for Digital Media in EMEA.

### **Peter MacAvock:**

Executive Director of the DVB Project Office.

### **John Tinsman:**

Director in the Office of the CTO for OpenTV.

## About OpenTV ...

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OpenTV is one of the world's leading interactive television companies, with deployments in more than 50 million digital set-top-boxes in 96 countries.

OpenTV solutions enable a wide array of functionality, including:

- enhanced television
- interactive shopping
- interactive and addressable advertising
- games and gaming
- personal video recording
- consumer care
- communication applications



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