New Requirements from Entertainment, Media and Digital Content for Optical Networks and Control Planes

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Agenda

- Digital Content Types & BW Requirements
- UGC & Interaction Society
- Mobile & Internet Content
- Digital Content Control
- Media Market Trends
- Converged NGN Requirements

Digital Content Types & BW Requirements

Digital Decade Predictions

- Music sales online: >80%
- Video sales online: >50%
- TV Personalization/Interactivity
  - Advertising: >50%
  - Content: >40%
- U.S. students with tablet devices: >50%
- Reading done onscreen: >50%

DTV Bit Rates

- SDTV - Standard Definition TV
  - First DTV format of 480i/30
  - Interlaced video output of DVD in 4:3
  - Low BW, but low picture quality
- EDTV - Enhanced Definition TV
  - 11 formats with 480 lines vertical
  - 4:3 and 16:9
  - Still low BW, better picture quality
- HDTV - High Definition TV
  - All formats at 16:9
  - Highest resolution offers 2.1 MP
  - BW less concern, utmost picture quality

4 - 7 Mbps

8 - 16 Mbps

25 -27 Mbps

Which Format Will Win ?

- Blue Ray Disc Founders

  Hitachi, LG, Matsushita, Pioneer, Philips, Samsung, Sharp, Sony, Thomson

- Manufacturers

  Hitachi, LG, Matsushita, Panasonic, Pioneer, Philips, Samsung, Sharp, Sony, Thomson, Mitsubishi, Denon, Apple, Dell, HP

- Movie Studios

  Sony Pictures, 20th Century Fox, MGM, Disney/Buena Vista, Lions Gate Films, Warner Brothers, Paramount Pictures

- HD DVD Disc Founders

  Toshiba in conjunction with NEC

- Manufacturers

  Toshiba, Sanyo, NEC, RCA, LG, HP, Acer, Microsoft

- Movie Studios

  Universal, Paramount Pictures, Warner Brothers

Who can offer more content?
Who has more capacity?

UGC & Interaction Society

Pre Internet Content Monopoly

Before internet → ‘monopoly’ for media companies

1. Create content
   - Radio
   - Television

2. Aggregate content
   - Programme
   - Via brands

Content Today

Everyone can create content

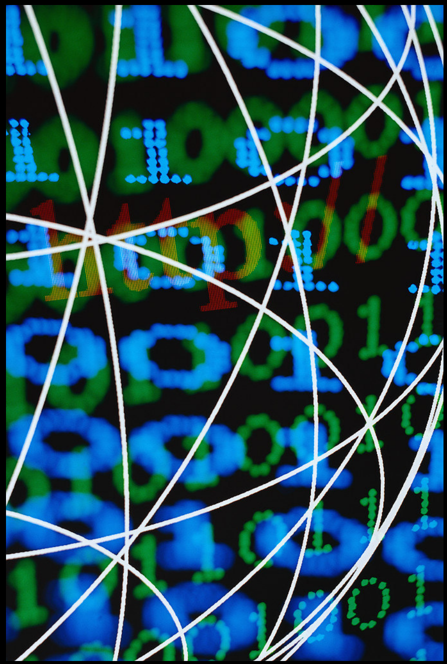
Different players aggregate content

- Internet sites
- Providers

Impacts of UGC

Social Impact

- Information production with increased user autonomy and participation
- Cultural impacts
- Citizenship engagement and politics
- Educational and informative impact



Economic Impacts

- Consumer electronics
- Software producers
- ISPs and web portals
- UGC platforms and sites
- Users & creators
- Advertising, marketing and brands

Business and Policy Impact

- Enhancing R&D, innovation and technology in content, networks, software and new technologies
- Developing a competitive, non-discriminatory framework
- Enhancing the infrastructure
- Regulatory environment
- Conceptualisation, classification and measurement

Mobile & Internet Content

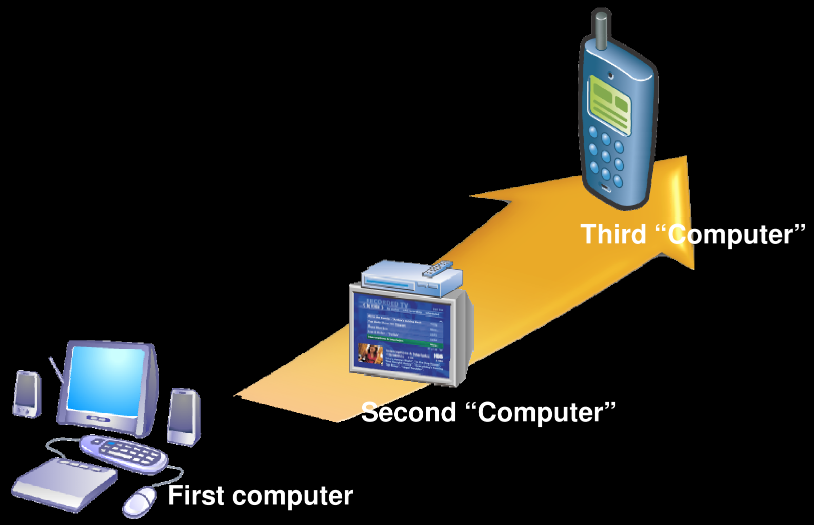
The State of Mobile Entertainment

- Mobile Music is 40% of the Digital Music business
- Mobile Games is a $3B industry
- Mobile Video is now available in most major markets over many bearers and many handsets
- Still driven by communication and personalization (there are more SMS's sent on a given day in the UK than Google searches are performed worldwide)
- Mobile Entertainment is 100% user paid

Source: MEF / www.m-e-f.org

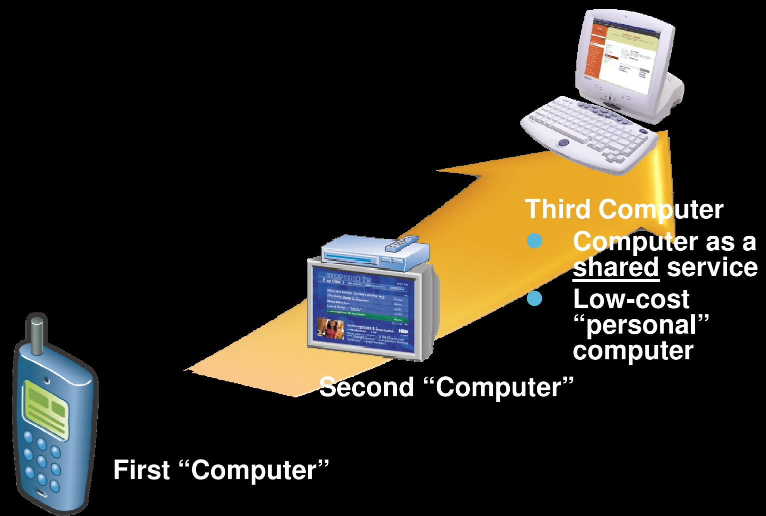
Convergence

Developed Countries



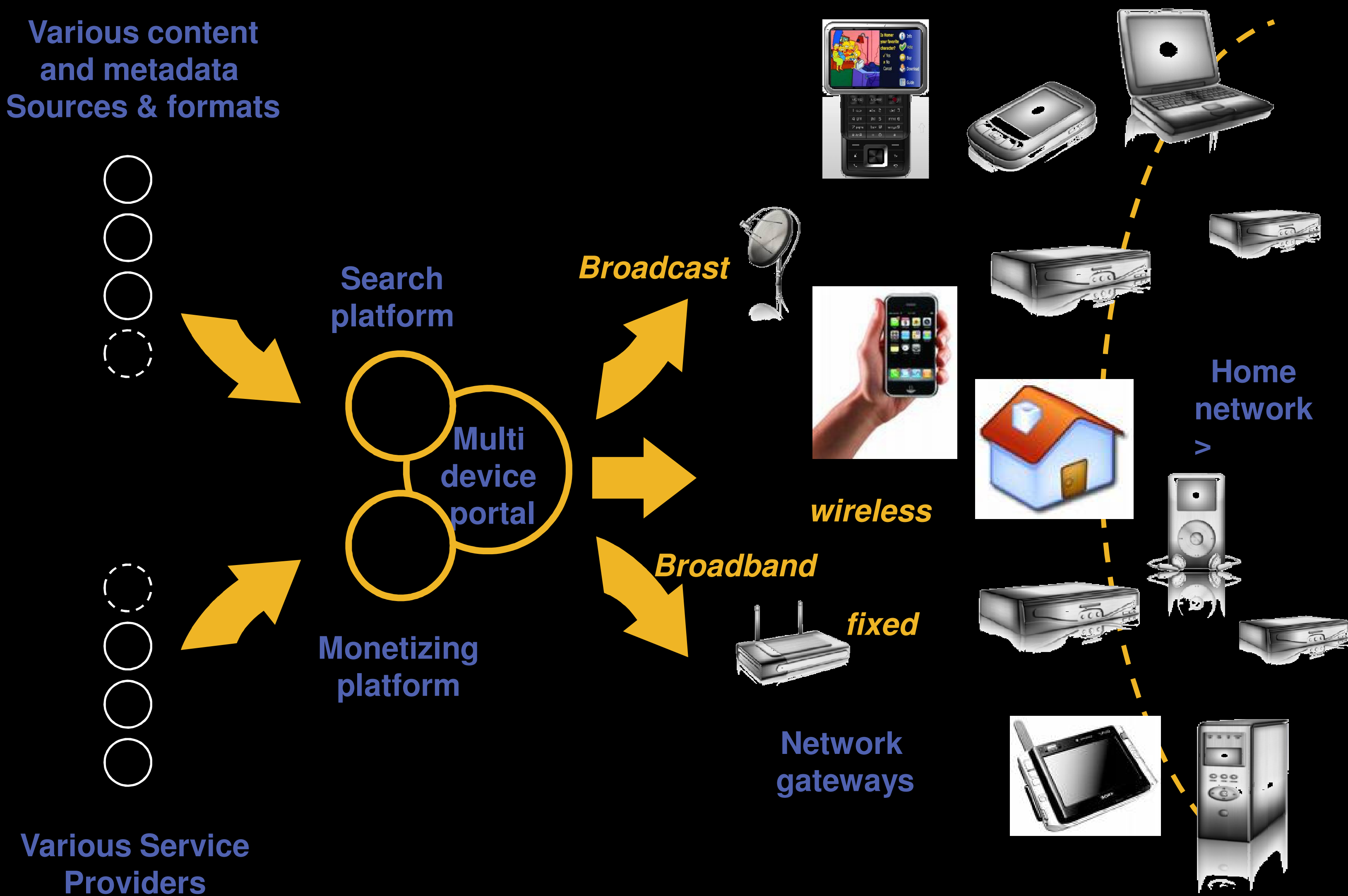
- Evolved from the computer
- Pay upfront
- Little shared access
- Broadcast is a "feature"

Developing Countries



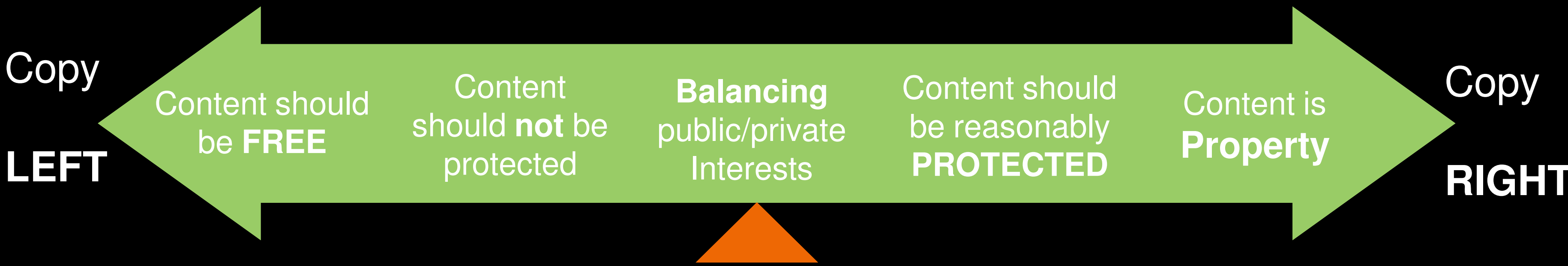
- Cell Phone as a computing & media platform
- Broadcast data services
- Pay-as-you-go
- Shared access

Technology Challenge for Connectivity
The Digital TV View



Digital Content Control

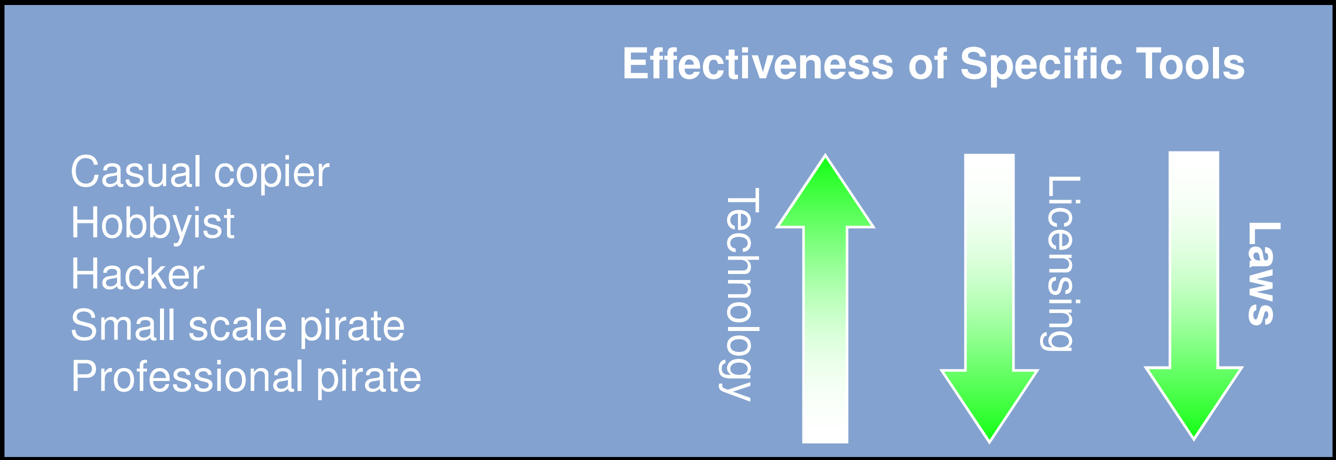
Digital Content Policy Perspective



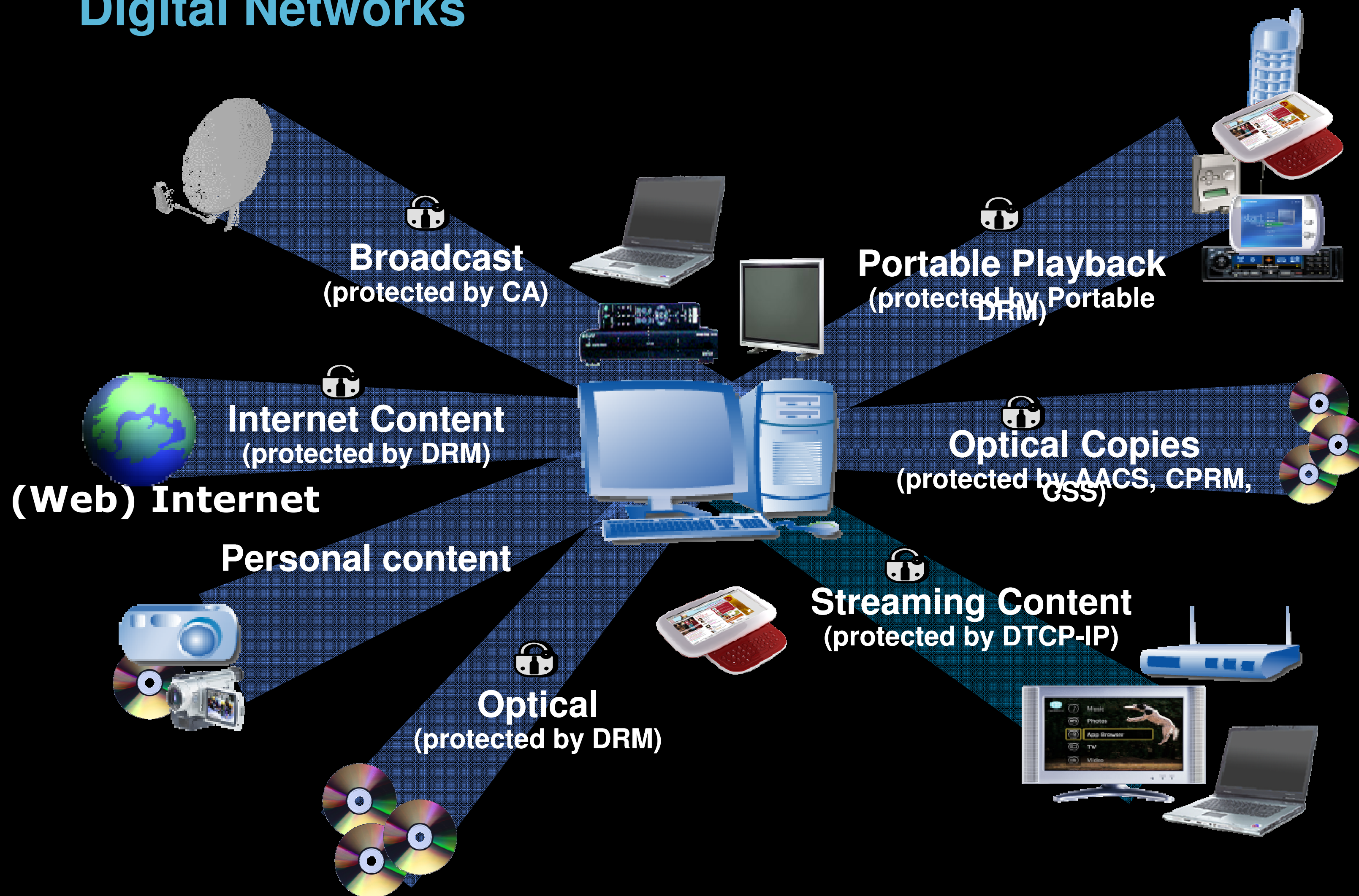
- Content Policy – a *Balancing* act
- Respect for Intellectual Property, Rights Holders and Consumers
- Reasonably protected Digital Environment is necessary infrastructure for Digital Future
- Protected Digital Environment should provide consumers flexibility, portability and choice
- Markets - NOT Mandates stimulate innovation and deliver consumer value

Basic Content Protection Security Tools

- Technology is Basic Tool
  - Content distributed in encrypted form
  - Technology and “keys” are licensing “hook”
- License Agreements create Root of Trust and govern Products
  - Decryption keys subject to license
  - License sets out rules for products/manufacturers
- Copyright Laws (DMCA, EUCD) target Pirates
  - Neither License Nor Technology works against Pirates



Seamless Exchange of Voice, Video Data Streams on All Digital Networks



Vision assumes consumer choice, flexibility and portability based on interoperability

Media Market Trends

Media Market Evolution

As experts and observers say, media industry is changing in fundamental ways...

	"Traditional" characteristics		"Future" characteristics
Technology related characteristics	Platform owners as gatekeepers	→	Ubiquitous IP networks for cross platform delivery
	Barriers to content creation	→	Ease of content production & management
	Channel centric devices	→	Convergence capable devices
Consumer media experience	Content for the masses	→	Niche and personalized content
	Mass marketing	→	Targeted and personalized marketing
	Content push	→	Content push, pull and interact
	Limited consumer generated content and sharing	→	Widely shared user generated content

What we are living now? What we are regulating?

IPTV vs Internet TV

	IPTV	Internet TV
Users	Customers & IP-address known, closed network	Any users (gen. unknown)
Video Quality	Controlled QoS	Best effort
Video format	MPEG-2,-4, MS VC1	Windows Media, Real-Networks, QuickTime etc
Receiver dev.	Set-top box w/ TV; PC	PC
Resolution	Full TV display	QCIF/CIF
Reliability	Stable	Subject to contention
Security	Users authenticated	Unsafe
Copyright	Content protected	Often unprotected
Customer rel.	Onsite installation & customer support	Generally no

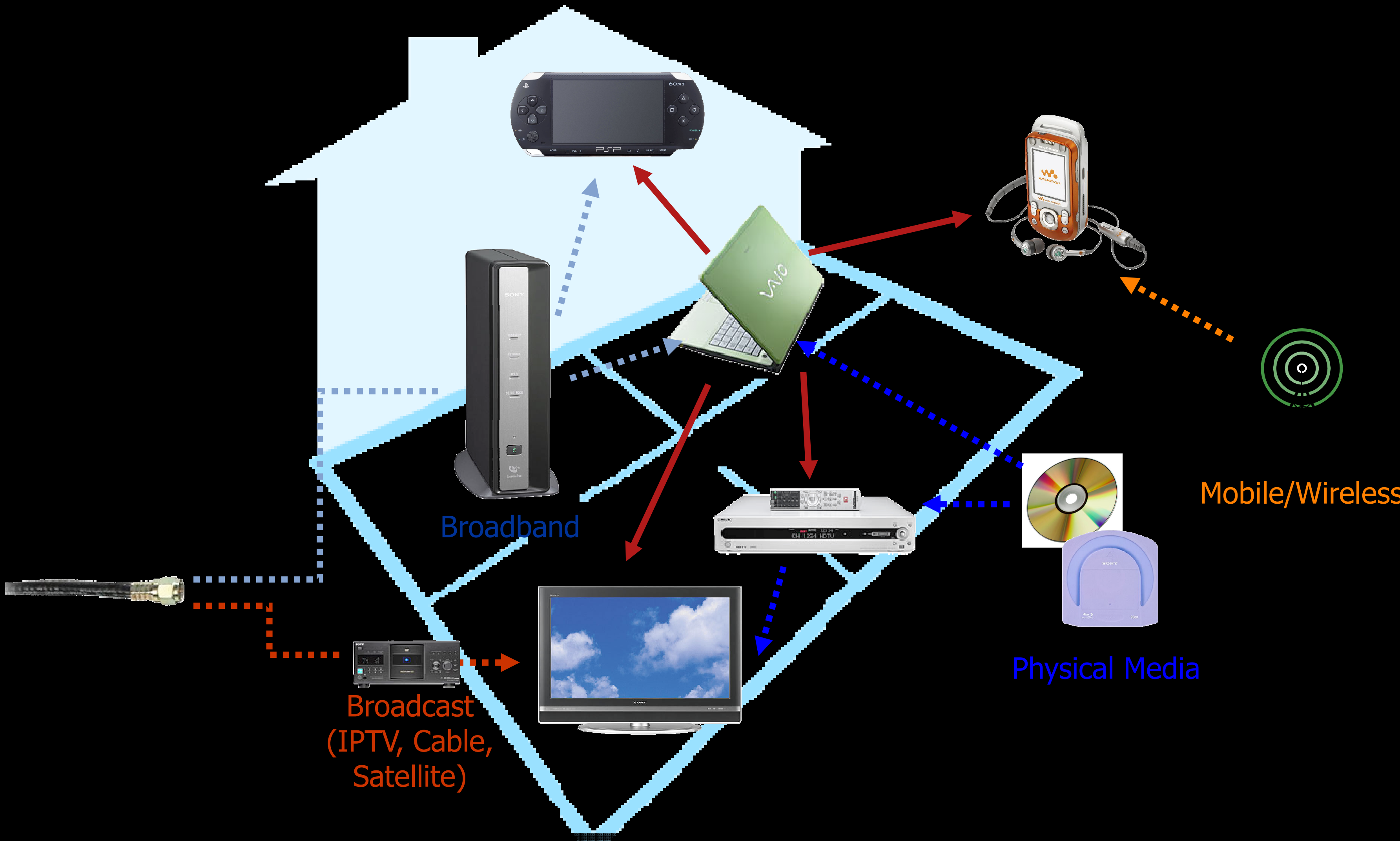
Based on James Thompson, Cullen Int'l, ITU Global IPTV Workshop, who adapted from EBU Technical Review, April 2005

The Flexible Personal Network

- My Content
- On My Device
- On My Schedule

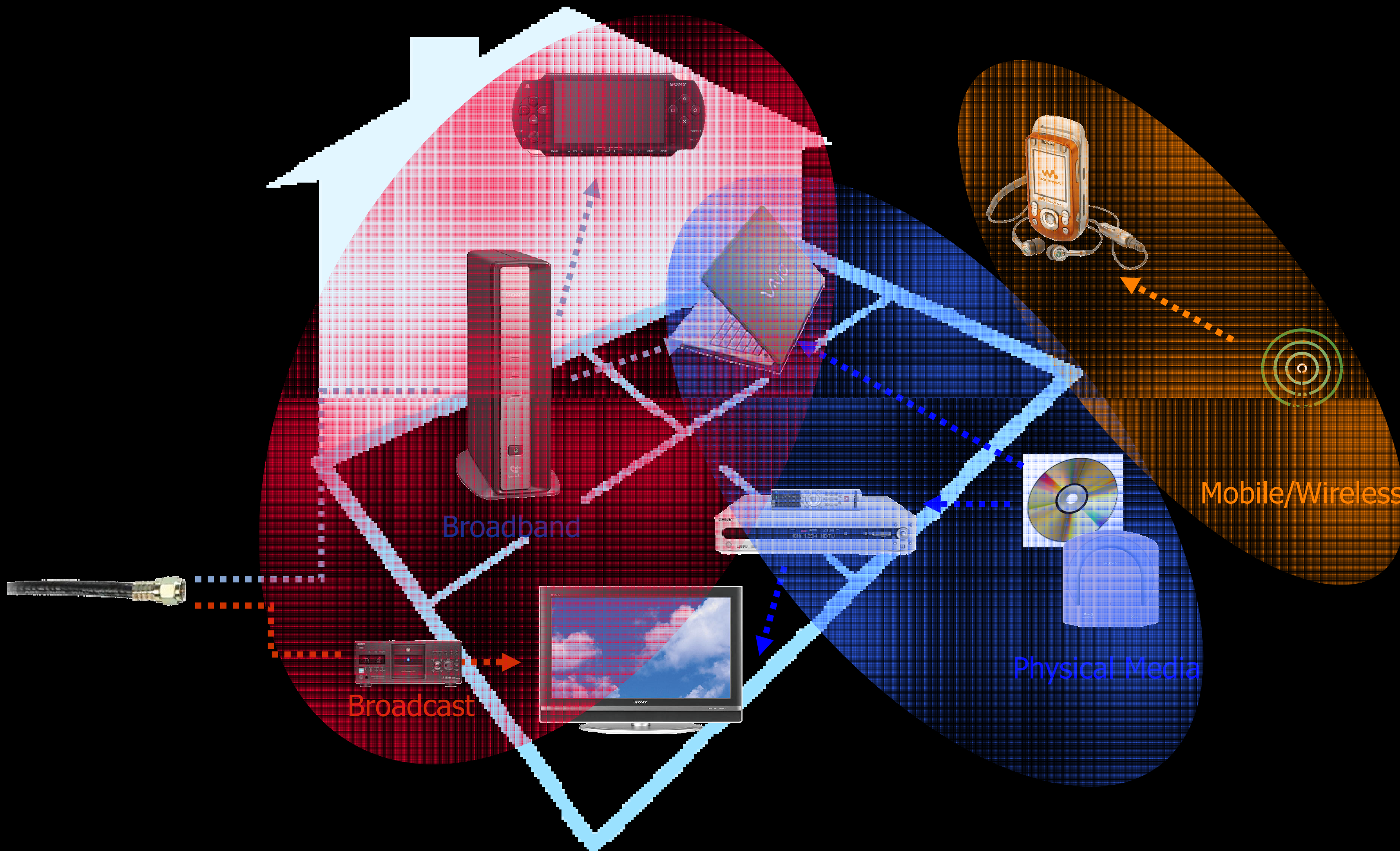
More Convenient
More Durable and
More Flexible

The Connected Home



Content should work across all devices and channels

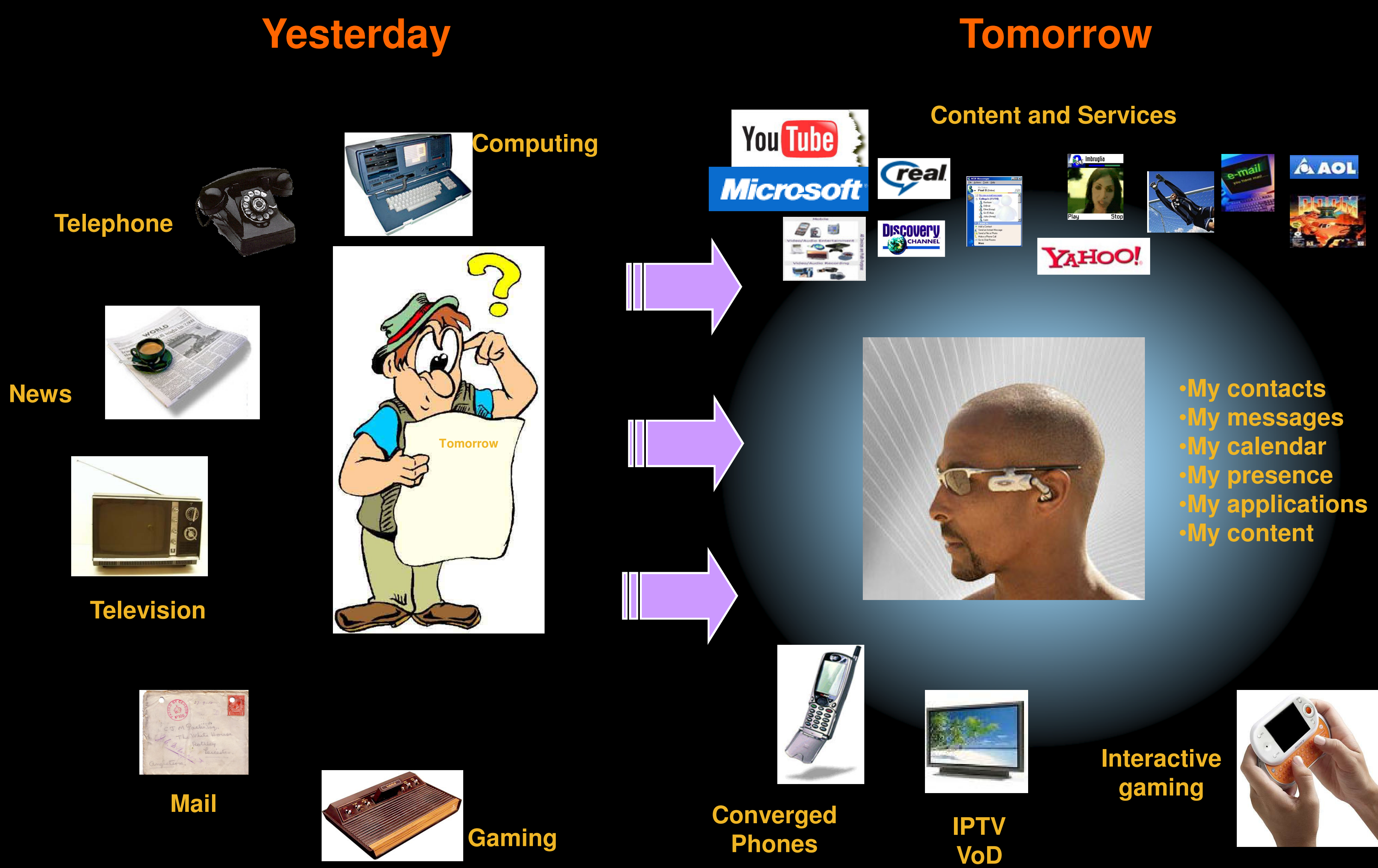
Today They Don't Interoperate



They are all islands

Converged NGN Requirements

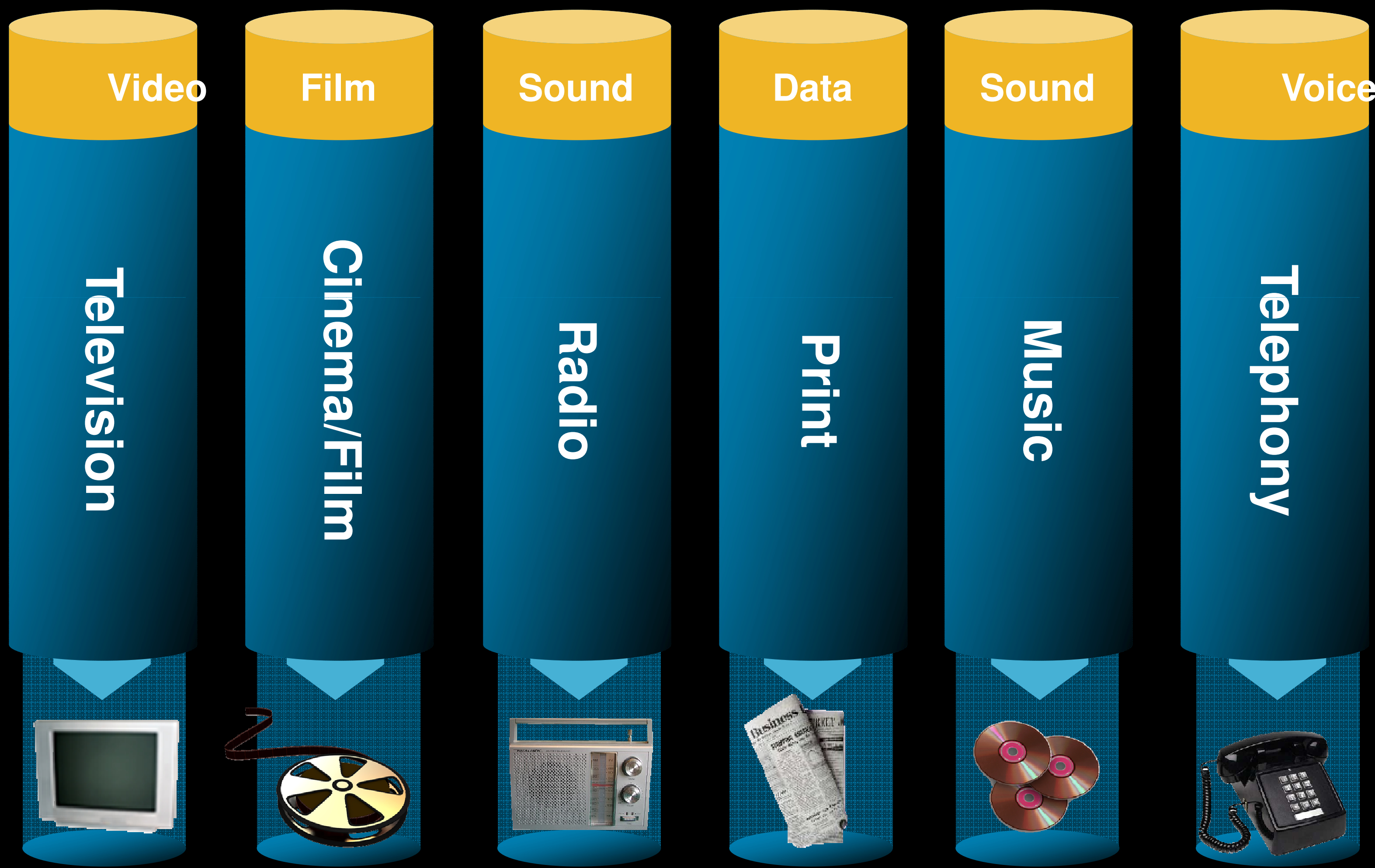
Customer Expectations Are Evolving



Network Platform
New Creators, New Consumers, New Services

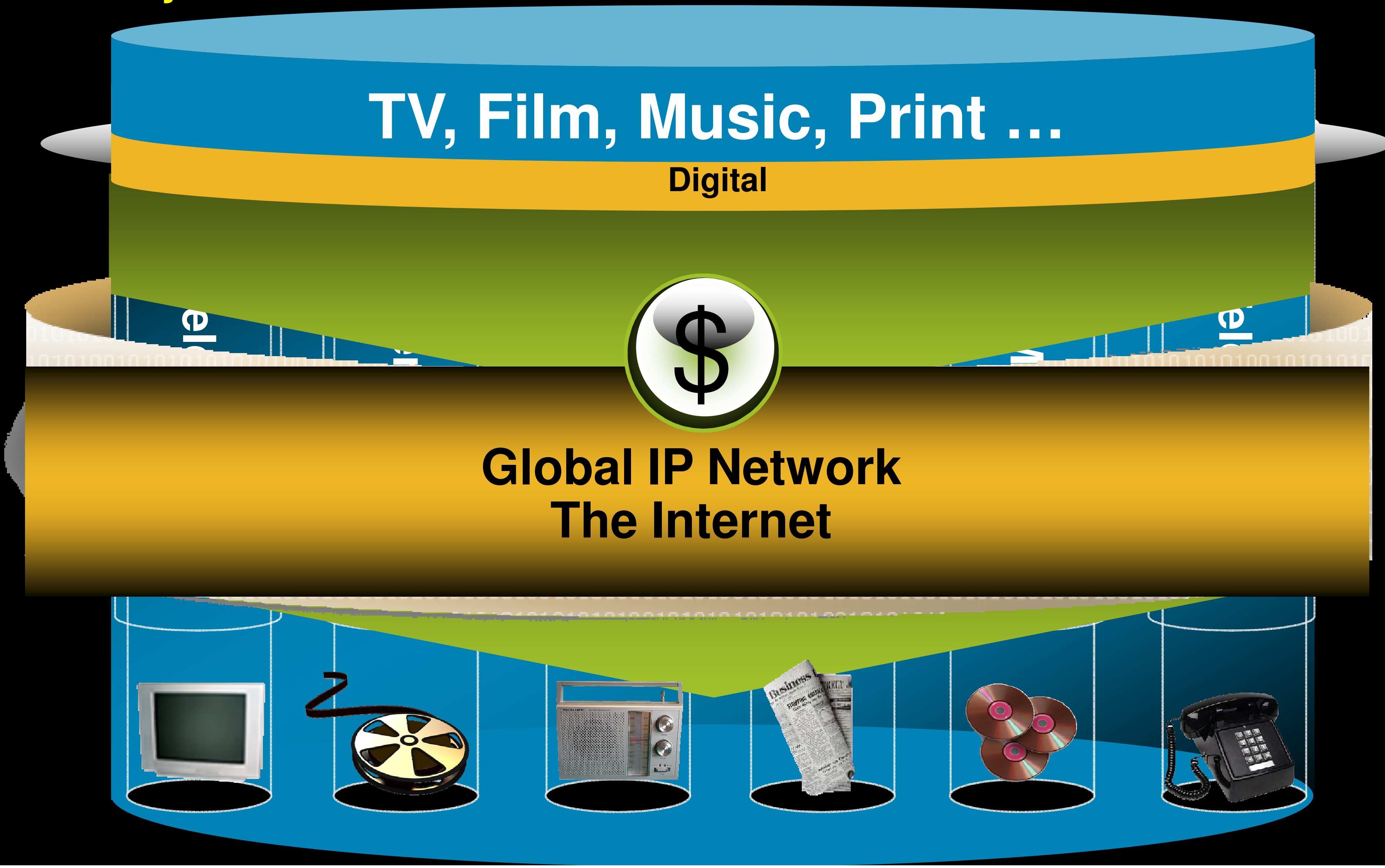
The Digital Revolution in Entertainment

Yesterday

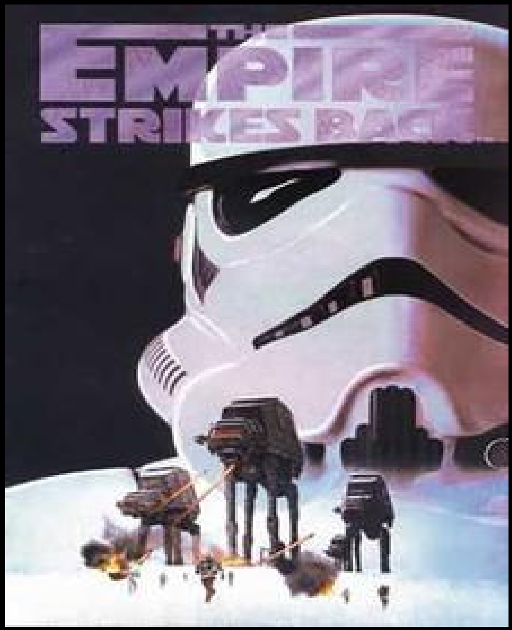


The Digital Revolution in Entertainment

Today



Fight Back with Converged NGN



- Need high BW and scalability in aggregation and core - optical is key
- Migration path for new routing paradigms (service layer - IP & optical layer
- Reduce CAPEX and OPEX, better ROI
- Common foundation for fixed, mobile and enterprise services
- Quick creation and deployment of innovative new blended services on demand
- Flexible dimensioning, easily scaleable
- Advanced centralized network control, for charging, O&M and more
- Attract third party service providers without loosing control of the network
- Open interfaces for vendor independence, the best equipment can be chosen for each layer

NGN Convergence Platform

- Combination IP with Broadband accelerating intrinsic convergence
  - Service convergence: Web based service provisioning
  - Network convergence: IP over any broadband transport networks
- Advanced Mobile and Wireless technology initiate business convergence such as Fixed-Mobile convergence
- Broadband Fixed, Wireless and Mobile technology boost another business convergence, called “Multiple Play: Tele-Broadcasting”