Future of Television
Sweeping Change at Breakneck Speed

Cisco Internet Business Solutions Group (IBSG)
March 2011
Background & Approach

Goal: Predict the Future of TV in 5, 10, 15, 20 Years

BACKGROUND
Change is happening at breakneck speed, driven by:
- Technology
- Consumer behavior
- Business-model disruptions

How will the industry evolve?

APPROACH
1. Interviewed 50+ industry executives
2. Synthesized interview findings
3. Validated predictions through survey of interviewees
4. Described results in white paper; developing prototype

Source: Cisco IBSG, 2011
The Future of TV Is Already Upon Us

Three Key Drivers Will Permanently Alter the Entertainment Landscape

- Ubiquitous broadband
- Advances in screens, interfaces, and AI
- Content explosion
- Business-model pressure
- Time-shifting
- On-the-go content consumption

Source: Cisco IBSG, 2011
## Technology Drivers Accelerate Pace of Disruption in Delivery of TV Experience

### Cloud Computing
- Centralized resources enable efficient, flexible computing
- Ubiquitous networks make power of Internet available all over the world

### nScreen Delivery
- Content management enables efficient video delivery in appropriate formats
- Streaming trick plays: time shifting, pause/resume, session shifting

### Content Engineering
- Computer-generated imaging enables enriched visual production
- Artificial intelligence enables storytelling automation via profiling of likely responses and probable actions

### New Devices
- Capture: higher-quality personal video, bigger angles, and 3D for professionals
- Display: high-def in smaller forms, 2D moving to 3D, holograms on horizon

Source: Cisco IBSG, 2011
Shifting Business Models Will Directly Influence Consumer Behavior

TV’s Traditional Business Models Are Under Pressure

- Traditional players move into new positions in value chain
- Content owners pursue diverse monetization opportunities and seek to lower costs

Disruption in Value Chain + Efforts To Optimize Existing Revenue Streams

Content availability on Internet changing fast
Internet-based business models still unproven:
- Advertising
- Subscription
- Transaction

New release windows

Source: Cisco IBSG, 2011
TV’s Core Benefits May Be Fixed, but Consumer Behavior Constantly Evolves

TV’s Core Benefits Remain, but How Consumers Define Them Will Change

Consumers’ definition of what is entertaining and relaxing, and how to connect, will change over time

- In reaction to new technology and business models
- In keeping with larger demographic trends
- In pursuit of experiences that are easier, cheaper, or better

Source: Cisco IBSG, 2011
Coming Soon to a TV Near You: Television Experience Transformation

And There Are Opportunities for Industry Players Today

- Creation goes viral
- Ads get personal
- TVs give way to screens anywhere
- "Regular Joes" go Hollywood
- Watch together virtually
- Is it real, or is it television?
- Don’t just watch, get involved
- Your TV follows you
- Kiss the remote goodbye
- Channels go away
- "Regular Joes" go Hollywood
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Source: Cisco IBSG, 2011
Channels Go Away

We’ll Watch Personal TV Streams, or Access Content Through Search

- On-demand, personalized, but branded content (Pandora-like TV)
- Recommendations based on past behaviors and social networks
- Combined on-demand / real-time, UGC / professional, OTT / walled garden

Today
- DVRs mainstream
- Netflix UI
- Recommendation engine
- UI incorporates friends’ favorites
- Integrated media interface

Future
- Personalized linear TV
- “Mood TV”

Source: Cisco IBSG, 2011
Kiss the Remote Goodbye

Words, Gestures, and Gadgets Will Control TV of the Future

• Smartphones, tablets replace remote controls
• Viewers use speech, gestures, eye movements to navigate content
• TV follows you from room to room and screen to screen

Today
• Free TV control apps for mobile
• Kinect, Wii interfaces

Gesture-sensing interface Voice controls Remotes stop shipping with TVs

Future

Eye-tracking technology Mind interface

94% Experts Agree
Faster (39%)
By 2030 (35%)
Slower (19%)

Source: Cisco IBSG, 2011
Tech Advances Will Bring New Sensory Elements to Programs

- Viewers not only watch shows, but smell, feel, and taste them, too.
- More lifelike program images ("Super HD," life-size holograms)
- Viewers choose their perspective (via 360-degree camera angles)

Source: Cisco IBSG, 2011

Today
- 3D
- Sensory feedback in games
- 3D without glasses
- 8K displays
- 360-degree camera angles
- Smell reproduction

Future
- Life-size, full-motion holograms

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Faster (17%)
By 2030 (33%)
Slower (40%)
90% Experts
Agree
TVs Give Way to Screens Anywhere

Before Long, We’ll Watch on Any Flat Surface

- Everyday objects double as viewing screens
- Content can be resized and placed anywhere (bathroom mirror, living-room wall)
- Integrated entertainment, home monitoring/control, email, social media

Source: Cisco IBSG, 2011
Don’t Just Watch, Get Involved

Characters Will Step Off the Screen into Viewers’ Lives

- Fan involvement grows from simple to immersive
- Viewers shown additional scenes based on profile, preferences
- Characters engage with fans outside of the storyline

Today
- TV linked to social network fan groups
- Fan "rewards" built into participation

Personalized viewing based on parental controls
Consumer involvement impacts plots
Interact with characters in Second Life

Future
- TV "friends" involved in your life through AI, AR
- TV "friends" are lifelike

Source: Cisco IBSG, 2011
“Regular Joes” Go Hollywood

TV Content from Aspiring Semi-Professionals & Amateurs Will Compete with Hollywood Fare

- New methods to create, fund, and deliver content to the mass market are democratized
- Semi-professionals and amateurs use low-cost, high-end production tools
- Online agents mine and edit UGC to create quality long-form content

Today
- YouTube phenomenon
- Independent low-budget productions go mainstream

Future
- Free library of video scenes for any use
- Collaborative funding models
- High-quality local content sits next to Hollywood shows
- Programmatic storytelling based on personal input
- Using AI, filmmakers no longer need to shoot new scenes to create films

Source: Cisco IBSG, 2011
Ads Get Personal

Contextual, Highly Interactive, and Laser-Targeted

- 30-second spot replaced by dynamic, personalized product placement
- Placement based on individual preferences & behaviors
- Zero-in for more information; push product details to nearby tablets or smartphones

Today
- Goggle Adwords—targeted ads on search
- Some interactivity (BBC red button)
- "High-resolution," location-specific ads and promotions
- Telescoping ads

Future
- Individually targeted advertising
- Dynamic product placement
- Facial recognition feedback tracks viewer reaction to ad

Source: Cisco IBSG, 2011
Creation Goes Viral

Crowdsourcing and Game Capture Will Be Used To Create New Storylines

- Social networks enable fans to participate in plot development
- CGI makes games lifelike, and "machinima" emerges as mainstream entertainment
- Consumers allow their everyday lives to be used in character development

Today
- Machinima via YouTube
- Crowdsourcing Second Life structures
- In Facebook, fans easily participate in plot development
- Movies use machinima for special effects
- Tools mine social networks for characters and storylines

Future
- Agents monitor gameplay and capture compelling machinima
- Life recorders capture consumers' everyday lives

Source: Cisco IBSG, 2011
Watch Together, Virtually

TV Will Help You Engage with Remote Friends and Family from Your Living Room and Beyond

- Viewers use TV buddy list to invite remote friends to watch TV with them
- HD screens and audio are dynamically customized to convey individuals’ in-room virtual presence
- Synthesized feedback from social networks and communities of interest

Today
- Consumer telepresence
- Facebook TV widgets
- TV buddy list
- Integrate telepresence or behavioral cues with TV

Future
- 360-degree dynamically split telepresence
- Virtual viewing venues at home or in Second Life
- Holographic friends/avatars on sofa

Source: Cisco IBSG, 2011
Your TV Follows You

Wherever You Go, Watch Your Own Personal TV Content on Any Screen at Hand

- Pay only one time and view your personal content anytime, anywhere
- Use any available screen to watch—your home TV, a hotel TV, or the seatback on the bus
- Shift content seamlessly across devices (e.g., from smartphone to a TV at friend’s house)

Source: Cisco IBSG, 2011
What Does It Mean for You?

Implications Span the TV Value Chain

- Content Creation
- Advertising
- Content Aggregation
- Service Delivery
- Devices

- Data & Analytics, Metadata
- Viewer Relationship
- Digital Rights Management
- Standards
- Bandwidth
- Computing
- Sensory Technologies
- Production Techniques
- New Business Models

Source: Cisco IBSG, 2011
Call to Action: Accelerate the Vision, Improve Your Position

Production in the Cloud
- Develop web/cloud ecosystem to facilitate flexible content creation/monetization. Include funding, pre- and post-production, marketing, publishing, and training.

Virtual Fan
- Develop immersive home entertainment experience that brings excitement of live events into living room. Include multiple camera angles, social inclusion, stats, fantasy updates, expert discussions, and commerce.

Social TV
- Add new audio, visual and social inputs, and common controls to make TV more interactive, independent of location. Create virtual environments for viewers to interact with each other and with characters.

TV-as-a-Service
- Accelerate cloud-based technology for production and transmission. Virtualize and move to the cloud processes such as publishing, advertising, and CGI capabilities, as well as home hardware such as STBs and game consoles.

Next-Gen User Interface
- Create open, flexible interface that integrates voice, text, point-and-click. Provide hierarchical and semantic data structure and presentation/search topology for use by SPs, media companies, and device manufacturers.

Mobile Video Optimization
- Team up mobile SPs, content distributors, and device manufacturers to create better mobile video solution. Requires new architectures and regulations to make mobile experience match fixed video networks.

Source: Cisco IBSG, 2011