Smart TV Unleashed: Engagement through Cognition

A Parks Associates Whitepaper Developed for Cognitive NETWORKS

PARKS ASSOCIATES

Executive Summary

This research paper provides a contextual review of the evolution of interactive TV (ITV). It examines the transformation the TV industry is experiencing as a result of rising Internet-connected device penetration and consumer demand for multiscreen video access.

The whitepaper observes the up-and-coming industry trends transpiring to enable a truly intelligent multiscreen video experience.

Key Takeaways

- The original concept of ITV is undergoing a transformation—one that offers new video distribution and monetization channels.
- Smart TV automatic content recognition (ACR) enables seamless and meaningful connections with TV viewers—it is an "always-on" technology and consumers are not required to install or opt-in to an app or service in order to obtain enhanced TV features.
- The addressable market for this new form of enhanced TV is built on the accelerated growth of smart TV households. Of the 118.5 million U.S. TV households in 2013, smart TVs are present in 26% of TV homes, with ownership rates rising to 64% by 2018.
- At year-end 2013, the number of U.S. households with an ACR-enabled smart TV will reach 3 million, or 10% of smart TV households, with sharp growth projected through 2018 to reach 62% of smart TV households.
- The prime opportunities offered by smart TV ACR include improved content discovery, increased viewer engagement, and enhanced ad messaging.
- Content owners and producers can now take their video discovery, promotion, and advertising outside the bounds of traditional channels using ACR technology embedded in a smart TV, creating new portals to interact with video consumers.

The Evolution of Interactive TV

Despite the growth of over-the-top (OTT) video viewing via alternative devices computers, smartphones, and tablets, the television set remains the primary video-viewing device.

With the advent of interactive TV (ITV), investments to enhance traditional video viewing and advertising are stronger than ever. However, the original concept of ITV is undergoing something of a revolution—one that brings with it innovative distribution and monetization paths beyond traditional channels.

The early days of ITV consisted of platforms that enabled onscreen pop-up messages, allowing the viewer to obtain supplementary information or interact with a TV show via polls and quizzes. A few technologists led the way in developing ITV middleware and software to enable interactivity on the TV set. Many of these solution providers also offered advertising integration so that pay-TV service providers and TV networks could enhance traditional TV ad campaigns.

History of ITV 1956-2000

- ITV Platforms and Services
- Advanced TV Advertising
- OTT
- ACR

1956	First TV remote controller
1975	VCR hits consumer market
1977	Warner Cable debuts ITV service Qube
1978	Teletext available in the U.S.
1989	ActiveVideo Networks, an interactive TV service, is founded
1994 thru 1996	OpenTV, an interactive TV middleware provider, is founded
	Interactive TV trials begin, led by AT&T, Viacom, IBM, Hearst, and Time Warner
1997	Microsoft purchases WebTV Networks, giving consumers access to the Internet via TV set
1998	NDS, pay-TV technical software provider, is established
	TiVo's DVR hits the consumer market
1999	Netflix rolls out subscription-based digital distribution
2000	Advanced TV ad platforms Visible World & INVIDI are established

History of ITV 2003-2009

- ITV Platforms and Services
- Advanced TV Advertising
- OTT
- ACR

2003
- WPP invests in Visible World

2004
- EBIF developed under the OpenCable project of CableLabs

2005
- YouTube launched
- TiVo sells interactive TV ads
- OpenTV supports interactive ads
- DIRECTV ACTIVE™ deploys with ads

2006
- Apple TV released
- ABC releases TV programs online
- Comcast and Starcom MediaVest conduct first TV addressability ad trials

2007
- iPhone debuts
- Samsung & LG deploy smart TVs
- WPP invests in INVIDI
- Nielsen licenses Digimarc's digital watermarking technology

2008
- SCTE-130 1 standard developed
- CableLabs tru2way launches
- Boxee released
- Roku released
- NBCU, FOX, and Disney launch Hulu
- Top six cable TV operators invest $150 million to form Canoe Ventures LLC

2009
- U.S. Gov. mandates all full-power U.S. TV stations broadcast exclusively in digital
- ActiveVideo Networks' CloudTV deploys in ~5 million homes
- TWC launches Promotions On Demand (POD), supports Samsung tru2way-enabled STB, and deploys EBIF to 5 million STBs
- Canoe Ventures trials national addressable ad product Community Addressable Messaging (CAM)
- Canoe Ventures discontinues CAM product
- DISH Network, WPP's GroupM, & INVIDI launch addressable TV advertising experiments
- DISH Network offers interactive advertising on its ITV Showcase product
- DIRECTV uses INVIDI to enable local ads on DVRs and deploys NDS DAI technology
- Cablevision rolls out iO Platform, an advanced TV platform and advertising service

At the beginning of the millennium, industry investment and deployments accelerated. ITV evolved from a novelty to a meaningful tool to reach and engage the growing digital consumer base. However, by mid-decade, interest waned.

As smartphone apps became a popular content source, the limited capabilities of set-top box (STB) apps running on heterogeneous platforms, constrained by pay-TV operator controls, weakened interest among content providers and advertisers. Before long, Internet-enabled mobile phones filled the gap.

Later in the decade, focus on ITV in the U.S. market experienced a resurgence, stimulated largely by the formation of Canoe Ventures, a consortium of the major U.S. pay-TV service providers. Canoe laid out multiple objectives for ITV, but the initial goal was to build a scalable, nationwide TV addressability system to strengthen the value of TV advertising. This strategy was in direct response to ad budgets shifting to online.

ITV platforms promised to assemble a national advertising platform with serious scale and reach for enhanced TV advertising—a basic function that had been missing up to this point.

Following numerous starts and stops, these collaborative efforts stalled due to severe technical limitations as well as the considerable corporate investment required to upgrade legacy cable TV systems. A great many companies, specifically ad agencies, were optimistic about the efficiencies of this new form of TV advertising, but in the end, Canoe's full-scale advanced TV advertising initiative was unsuccessful. The technical unification objective collapsed as the pursuit of a common platform led to a common denominator that was just too limited to overcome. However, the effort did reinvigorate interest in TV interactivity.

The Emerging TV Reengagement Model

Enter Second-Screen ACR…

The rapid adoption of Internet-connected devices and consumer demand for OTT content quickly captured the attention of the TV community as content producers and advertisers sought new ways to enhance TV.

While pay-TV service providers continued to build out EBIF at the local level, national media shifted focus to support multiscreen video experiences.

In 2011, the industry centered attention around the synchronization of TV content with second-screen devices using ACR technology. While a great deal of attention has been given to second-screen ACR and experiments have fostered the development of content and apps, the early results have been lackluster, with audience engagement levels unacceptably low. Most attribute the problem to the excessive number of steps (e.g., download, install, launch, and sync) a consumer must take to obtain companion content via a mobile app.

History of ITV 2010-2013

- ITV Platforms and Services
- Advanced TV Advertising
- OTT
- ACR

2010

- OpenTV acquired by NAGRA Kudelski Group
- BlackArrow & SeaChange launch dynamic VOD ad insertion (DAI)
- Google TV created and commercialized by Sony & Logitech
- Verizon FiOS TV deploys INVIDI & integrates with Google TV Ads
- HBO GO & Hulu Plus launch

2011

- NAGRA acquires Sigma Systems' SCTE-130 Subscriber Information Service (SIS)
- NDS VideoGuard CA & DRM deployed in 125 million pay-TV HHs
- Shazam for TV launches
- DISH Network actively deploys INVIDI
- AT&T offers interactive and VOD ads
- Charter introduces Charter OnDemand and licenses FourthWall Media's EBIF technology

2012

- NDS acquired by Cisco Systems
- Audible Magic's second-screen ACR technology debuts at CES
- DIRECTV & Starcom Mediavest launch addressable TV ad service, reaching 11 million households
- DIRECTV partners with TV loyalty vendor Viggle
- Comcast reveals DAI enabled in 17 million U.S. TV households & has administered 2,500 interactive TV ad campaigns to date
- Comcast partners with zeebox to enable second-screen interactivity and advertising
- Cablevision's advanced ad platform delivers 4 billion ad impressions since inception
- zeebox introduces second-screen ad platform SpotSynch
- DIRECTV signs deal with GetGlue allowing subscribers to check into TV programs
- Powered by Cognitive Networks, Visible World's Smart TV Program Remind App debuts
- Smart TVs begin to ship with ACR

2013

- Canoe license BlackArrow Affiliate for DAI across 28 million U.S. TV households
- LG launches PayPal on its smart TV sets
- DIRECTV expands DIRECTV Everywhere app using video ad insertion tech FreeWheel
- DISH Network and GroupM deliver Household addressable ads to 7 million subscribers
- Comcast plans to install INVIDI across U.S. footprint by end of 2014
- Gracenote & INVIDI plan to offer TV addressability based on Gracenote's first-screen ACR technology
- ACR is a standard feature in smart TVs
- Cognitive Networks announces ACR deployment with LG
- LG announces smart TV ACR platform LivePlus, in partnership with Showtime

Enter First-Screen ACR…

Today, the use of ACR to create meaningful connections with TV viewers is now arriving on the first screen using sync-to-broadcast technology, i.e., ACR embedded directly into a smart TV (referred to as first-screen ACR).

ACR ON THE FIRST SCREEN HAS A COUPLE OF KEY ADVANTAGES.

First, it is an "always on" technology. The consumer does not need to opt-in to an app or service in order to interact with enhanced TV features.

Second, ACR-enabled apps do not need to be installed. The apps automatically display, inviting the viewer to interact with the TV program or ad. When the consumer engages, the TV fetches the associated assets in real time over a broadband connection (Figure 1). One click of the remote replaces the multiple, and often complex, steps required in second-screen implementations.

Engagement rates are, as a result, much higher.

How smart TV ACR works…

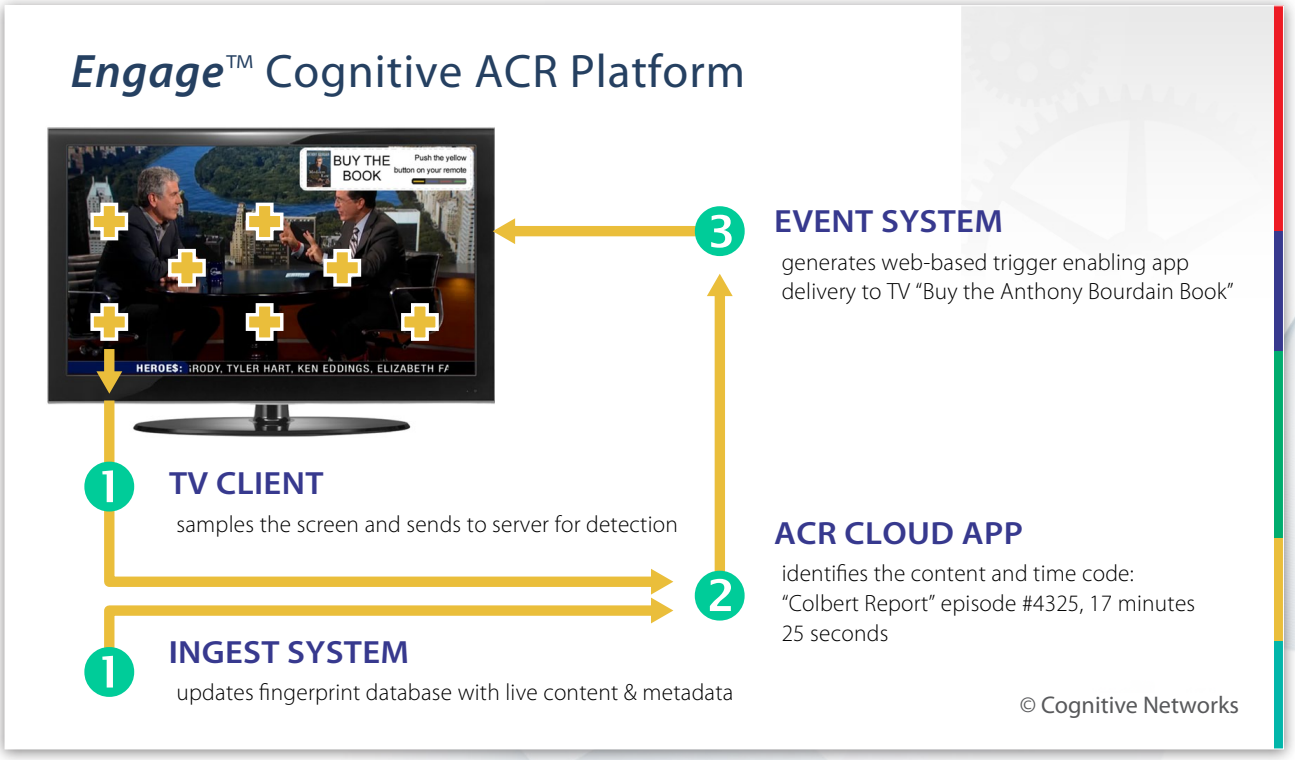


Figure 1

Smart TV adoption and the path to scale for enhanced TV…

Smart TV deployments and ownership rates have increased steadily since the first smart TV sets hit the market in 2007. Of the 118.5 million TV households in the U.S. in 2013, smart TV ownership is expected to reach close to 31 million households, accounting for 26% of total TV households (Figure 2). This figure will rise to 64% of all TV households by 2018.

Beginning in 2012, smart TV sets began to ship with ACR as a standard software feature. Moving forward, nearly 100% of smart TVs shipped and sold will include ACR to enable a true interactive viewing experience as well as enhanced advertising placement opportunities. At year-end 2013, the number of U.S. households with an *ACR-enabled* smart TV will reach 3 million, or 10% of smart TV households. By 2018, the market will experience sharp growth, reaching 48.5 million, or 62% of smart TV households in the U.S.

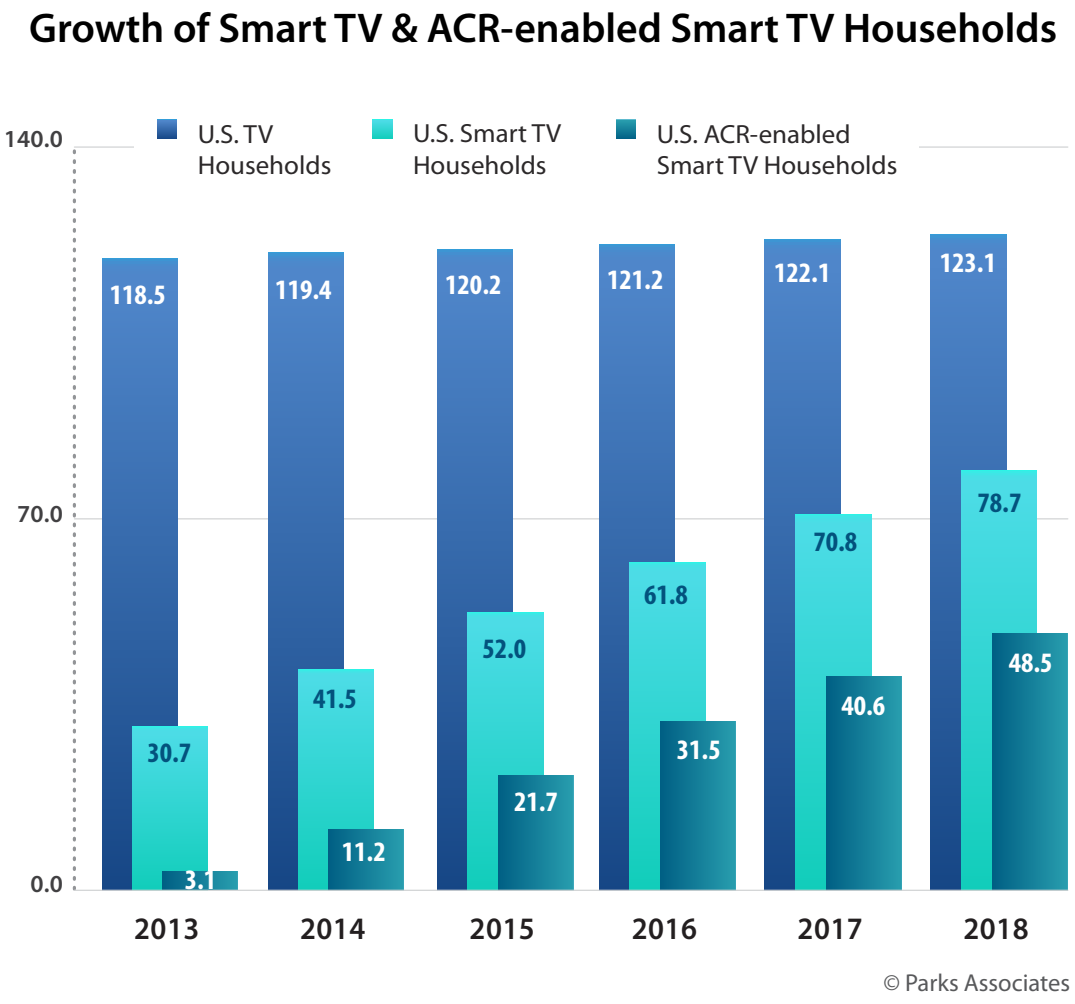


Figure 2

Personalizing Viewing Experiences with Smart TV ACR

There is a distinct difference in the underlying technologies that power smart TV ACR and ACR on a smartphone or tablet device. Simply put, smart TV ACR detects the video-based digital fingerprints of the live or time-shifted broadcast or OTT stream and is constantly monitoring (or aware of) the content being displayed.

Popularized by the music identification service Shazam, second-screen ACR identifies content using audio signals and requires the end user to launch an app to activate the feature.

Video-fingerprinting technology works in multiple connected device environments (e.g., on a smart TV, smartphone, or tablet) without having to engage the broadcaster or cable TV provider because it is built on open web technologies that are cloud-driven—a true multiscreen experience. Figure 3 presents the differentiating factors of first-screen versus second-screen ACR.

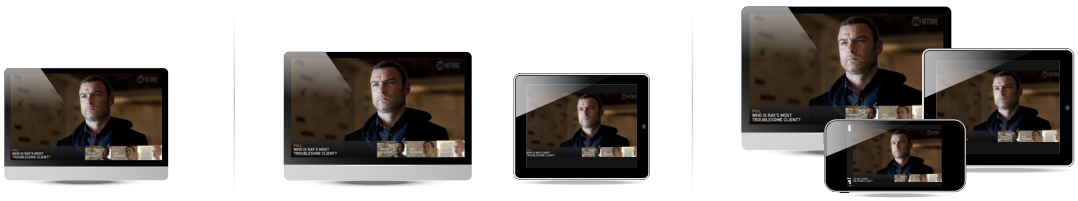
COMPARING FIRST-SCREEN & SECOND-SCREEN ACR FUNCTIONALITY		
ATTRIBUTE	**FIRST SCREEN**	**SECOND SCREEN**
Continuous Monitoring	Yes	No
Engagement Rate	HIGH – 8-22%	LOW – 0.1%
Device Integration	Embedded in smart TV	Incorporated into the app
Error Rate	LOW – 0.005%	HIGH – 5-10%
Detection Scope	Any video regardless of source	Show by show

Figure 3

Future Forward: First-Screen ACR Powers 'Hybrid TV'

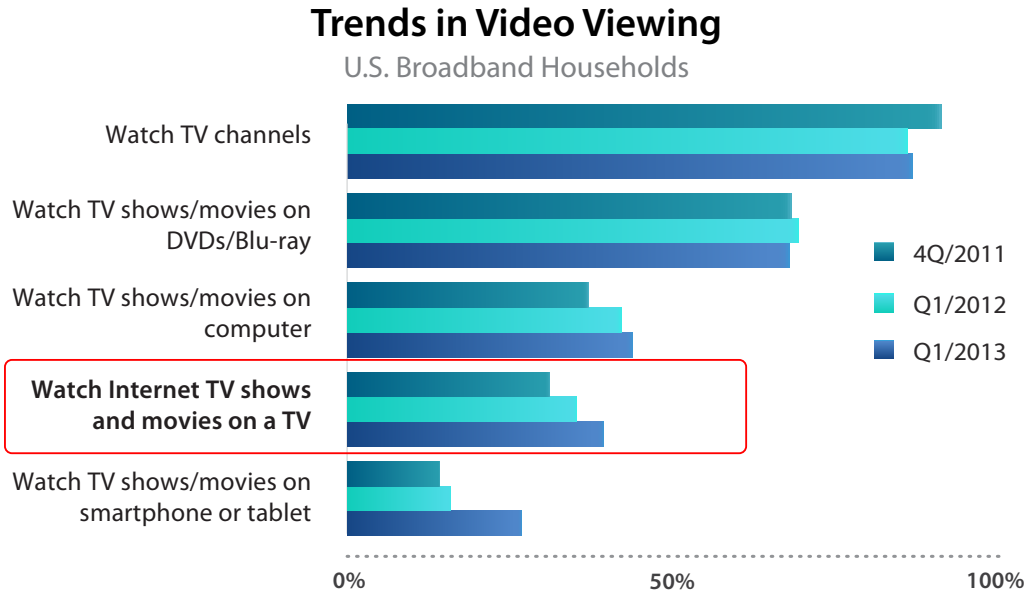
The rise of OTT video viewing on smart TV sets presents a new channel for content owners to sustain and grow their viewing audience by extending broadcast TV with IP-based video distribution channels. While the proliferation of connected devices and alternative media distribution challenges the core mission of mass media—to effectively reach and engage large swaths of video viewers—the fact is the large screen is the preferred video viewing channel.

A growing number of video consumers, nearly 40%, regularly watch online TV shows and movies on a TV set.



FIRST SCREEN? SECOND SCREEN? IT'S MULTISCREEN!

Content awareness technologies, like smart TV ACR, allow content providers to modify and adapt programming to the viewer's preference, fulfilling consumer desire to interact with a variety of video sources. The emergence of "hybrid TV" components is a game changer for content producers and owners because it allows them to leverage existing OTT assets to extend viewership options outside of traditional methods—capturing and engaging viewers no matter how they chose to access their favorite video programs.



Source: **Parks Associates**, ***Video on Demand: The Road to Revenues*** | © Parks Associates

Figure 4

PARKS ASSOCIATES

Breaking the Bounds of Traditional Video Discovery, Promotion, and Monetization

The reengagement of TV viewers back to the primary video screen, the TV set, is unfolding, driven by the proliferation of smart TV ownership and ACR technologies embedded therein.

For content owners, the prime opportunities offered by smart TV ACR platforms and services are as follows:

1. **CONTENT DISCOVERY:** The promotion or recommendation of a video asset regardless of the distribution source
2. **VIEWER ENGAGEMENT:** The ability to augment and increase viewership and time spent watching a TV show by providing complementary story lines, which drives deeper engagement levels with TV series
3. **ADVERTISING:** The enablement of enhanced ad messages to augment existing ad campaigns, connecting advertisers to targeted audiences no matter how or when the video is viewed

There are many innovative ways to expand video strategies beyond traditional distribution channels. Figure 5 lists the primary smart TV ACR use cases to support content discovery, build viewership, and heighten ad engagement.

Reengaging Viewers with Smart TV ACR

FUNCTION	USE CASE	BENEFIT
Hybrid TV	» Link from Live to OTT Content » TV Everywhere » IP Video on Demand (VOD) » Program Alerts » Missed Episode Notification » Start-Over Feature » Contextual VOD	• Leverage existing OTT assets to expand viewership and increase time spent • Offer alternative viewing options • Heighten content discovery to capture new viewers
Multiscreen TV	» Multiscreen App Integration » Notifications to Second-Screen Apps	• Leverage historically high ITV user engagement rates • Capitalize on rising demand for connected apps • Redirect smartphone and tablet user attention back to the first screen
Enhanced TV Content	» Supplementary TV Program Information » Social TV Engagement » Real-time Audience Polling or Quizzes	• Augment content by adding dynamic and personalized dimension to TV viewing experience • Socialize TV viewing by providing a venue where fans can gather, chat, share, and interact with TV series and movies
Enhanced Advertising	» Customized Ad Messaging » Dynamic Ad Insertion » Custom Map of Store Locations » Request for Product or Service Information	• Customize ads to match consumer preferences • Establish new ad inventory to grow revenues free of ad inventory share with TV service providers • Create branded content destinations providing supplementary product or service details • Complement existing TV and digital ad campaigns • Increase ad engagement & strengthen brand loyalty
T-commerce	» DRTV: Purchase by Remote » Contextual-based Commerce	• Establish path to purchase for consumers and brand advertisers • Support transactional revenues of paid video

Figure 5

"While interactive TV has been previously done in many forms, this is the first time that standards such as HTML5 have been used, enabling high-quality graphics using standard authoring tools. With SHO Sync, Showtime Networks has developed a sophisticated app that maximizes what is possible with high-end, premium interactive experiences."

David Preisman, *Vice President, Interactive Television,* **Showtime**

This time is different…

While many past technology advances have held great promise for ITV in its traditional form, this time is different.

Content owners are optimistic that video viewers will reengage with the first screen as a smart TV. ACR enables a truly viable multiscreen video discovery, viewer engagement, and advanced TV advertising strategy.

Smart TV ACR enables stakeholders to leverage the following:

- Path to wide adoption and scale
- Historically high ITV engagement rates
- Open web technologies to achieve multiplatform scale and user reach
- Effortless user initiation; no app downloads or app enablement required

Content owners and producers now have the option to take their video discovery, promotion, and advertising outside the bounds of traditional channels using open web technologies and cloud-based infrastructures.

The use of ACR technology embedded in a smart TV opens a new, and incredibly innovative, portal to interact with video consumers.

Content owners, producers, and distributors must proactively invest in discovering new outlets to sustain and grow their viewing audience and subsequent video-based revenues. Using solutions like smart TV ACR enables them to gain a competitive foothold in the pursuit to advance corporate strategy in line with the ever-changing video-viewing behaviors of consumers.

Glossary of Industry Terms

TERM	DEFINITION
Ad Impressions	Method of evaluating media efficiency and payment. Ad impressions are a measurement of responses from an ad distribution system to an ad request from the user's browser. Each time an ad is shown to a user, an ad impression is counted.
Ad Inventory	Ad space (time or display) available on broadcast and cable TV networks, local TV channels, online, or via connected applications.
Addressable advertisement	Advertisement delivered to an anonymous group of individuals based on demographic information, viewing interests, or geographic region (zone).
Advanced Television (TV) Advertising	TV advertising solutions designed to leverage the interactive nature of digital set-top boxes and enhance the value of TV by offering, for example, request for information, polling and trivia, telescoping, ad addressability, dynamic ad insertion, and t-commerce applications.
Automatic Content Recognition (ACR)	Technology that analyzes the video or audio generated from a TV program. Digital fingerprinting data is matched to a reference database to identify the content or ad while it is viewed. The data is then matched to a reference set to determine what is being displayed by the target device.
Digital fingerprinting	Identification of large data files or structures using truncated information. A fingerprinting algorithm is one that reduces a larger data set to a very small data set, sometimes called a bit string, to promote efficient identification and search protocols.
Dynamic ad insertion	Addressable ads swapped in and out of the TV programming on a near real time basis—generally refers to dynamic video-on-demand (VOD) ad insertion, or DAI.
Enhanced TV Binary Interchange Format (EBIF)	Multimedia content format defined by a specification developed under the OpenCable project of CableLabs. EBIF is a subset of tru2way, and as such, tru2way STBs will run ETV applications.
Interactive Television (ITV)	Interactive TV programs, web-based content, or advertising delivered to a television set. ITV includes a return path—there is a two-way flow of information from the viewer to content owner or service provider.
Reach	Number of unduplicated users/viewers exposed to a program, app, or an advertiser's schedule over a specific time. Formula: Reach = Unique Target Audience ÷ Target Universe Size
Request for Information (RFI)	Interactive TV enhancement that allows viewers to request and receive additional product or service information.
SCTE 130	Technical standard that defines the mechanisms for integrating advanced TV systems. The standard provides specifications that cover the following advertising solutions: VOD-based advertising, linear advertising, subscriber-based addressing, and extension points for developing advanced TV advertising.
T-commerce	The buying and selling of products or services using interactive television.

Reference Guide

2ND Screen Society, *Lexicon for the 2nd Screen Society*, 2013. Available at http://www.2ndscreensociety.com/lexicon

Cable Television Laboratories Inc., *OpenCable™ Specifications*, 2013.
Available at http://www.cablelabs.com/opencable/specifications

Cable Television Laboratories Inc., *Advertising & Interactive Services*, 2013.
Available at http://www.cablelabs.com/advancedadvertising

The Coalition for Innovative Media Measurement (CIMM), *CIMM Lexicon 2.0 Terms and Definitions*, 2013. Available at http://cimmusorg.startlogic.com/wp-content/uploads/2012/08/CIMM-LEXICON-2.0_June-2012.pdf

FreeWheel, *Video Monetization Report*, 1Q 2013, 2013

mPortal, *Enabling Connected Media Experiences: Mastering Video Delivery, User Engagement, and Monetization Strategies*, 2013, Research by Parks Associates

The Nielsen Company, *Free to Move Between Screens: The Cross Platform Report*, March 2013

Rovi Corporation, *Connected TV Environments: The Next Iteration of TV Advertising*, 2012, Research by Parks Associates

Visible World Inc., *Big Data Insights Reveal MSO Marketing Effectiveness*, 2013

YuMe and IPG Media Lab, *Are All Screen Created Equally?*, 2013

The Association for National Advertisers (ANA) and Canoe Ventures, CEE MEE: *An Advanced Television Research Initiative*, February 2012

Canoe Ventures, *Understanding the Brand Efficacy of RFI*, 2012

Cable Television Laboratories Inc., *A Decade of Innovation, The History of CableLabs 1988-1998*, 1998

Parks Associates Research

Parks Associates, *Global Digital Living Forecast Workbook September 2013 Edition*

Parks Associates, *Video on Demand: The Road to Revenues*, 1st quarter 2013, an online survey of 10,000 U.S. broadband households (18+)

About The Author

Heather Way, *Senior Analyst,* Parks Associates

As an analyst at Parks Associates, Heather's core research focus includes evaluating and providing strategic assessments of advanced advertising technology, platforms, management systems, buying/selling services, and data analytics. Heather also covers the connected device application ecosystem.

INDUSTRY EXPERTISE: Advanced Advertising (TV, Internet, mobile, gaming, social media), Consumer Advertising Effectiveness and Preference, Advertising Metrics and Reporting, Connected Apps, TV Companion Apps and Second-screen Advertisingthe telecom industry.

About Cognitive Networks

Cognitive Networks partners with TV set manufacturers to enable content providers, advertisers, and others to provide greater engagement and interactivity to TV programming. Cognitive Networks' automatic content recognition platform for Smart TVs identifies content displaying on Smart TVs and makes that information available to licensed third parties to allow them to send synchronized, targetable applications to enhance their content and advertising.

More information can be found at **www.cognitivenetworks.com**

About Parks Associates

Parks Associates is an internationally recognized market research and consulting company specializing in emerging consumer technology products and services. Founded in 1986, Parks Associates creates research capital for companies ranging from Fortune 500 to small start-ups through market reports, primary studies, consumer research, custom research, workshops, executive conferences, and annual service subscriptions.

The company's expertise includes new media, digital entertainment and gaming, home networks, Internet and television services, digital health, mobile applications and services, consumer electronics, energy management, and home control systems and security.

For more information, please visit **www.parksassociates.com** or contact Parks Associates at **972.490.1113** | **info@parksassociates.com**

PARKS ASSOCIATES

BACK YOUR VENTURE WITH SOLID DATA

Advance strategic business planning with *up-to-date consumer research and analysis.*

- Access and Entertainment Services
- Advertising
- Connected CE and Platforms
- Connected Home Systems and Services
- Digital Gaming
- Digital Health
- Digital Home Support Services
- Digital Living Overview
- Digital Media
- Home Energy Management
- Mobile and Portable
- App Ecosystem
- SMB Market
- European and Worldwide Consumer Research

Understand the Connected Home and Mobile Industries.

Discover Parks Associates today at **www.parksassociates.com**