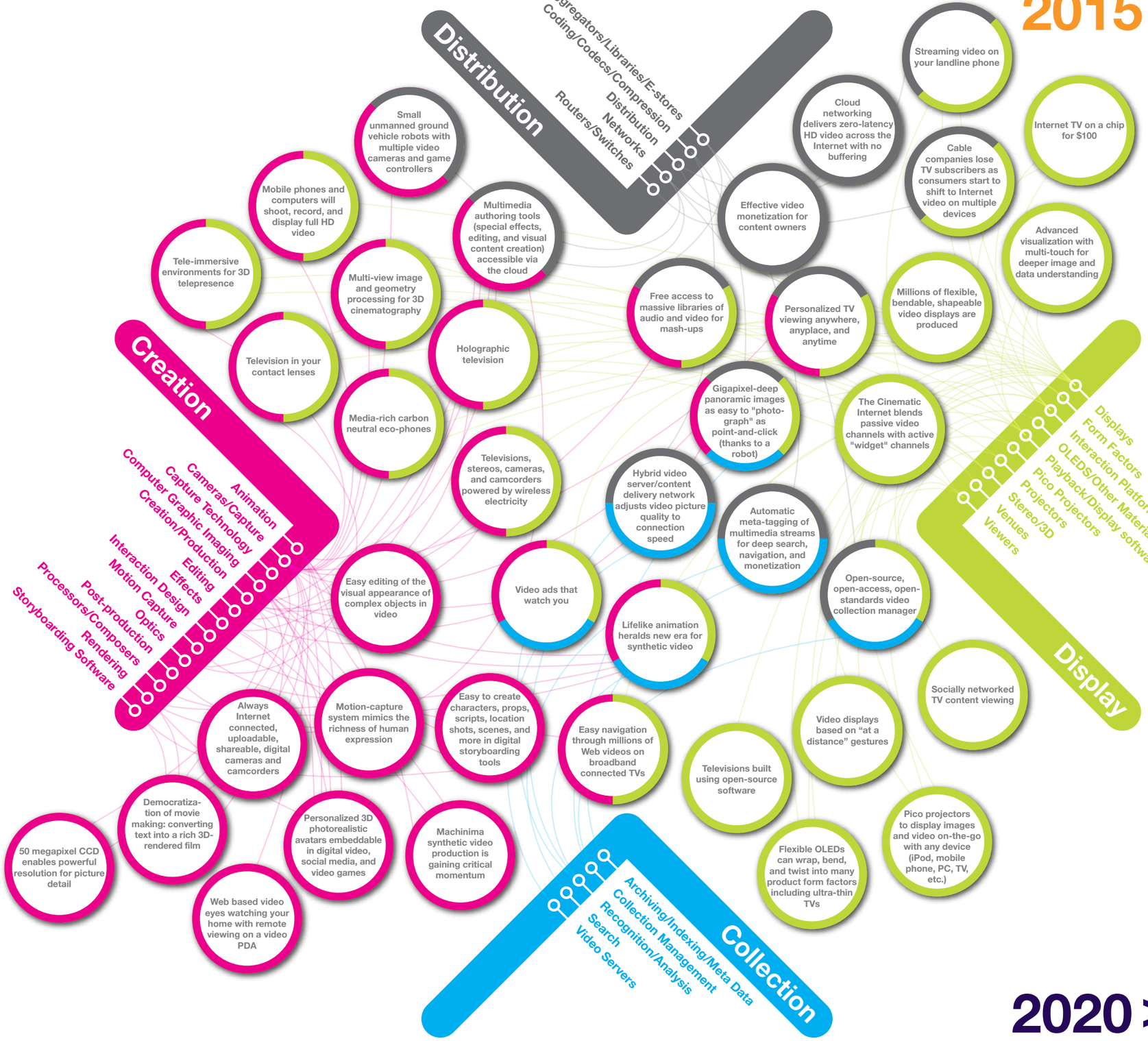


Low-cost digital cameras and camcorders will be connected to the Internet for instant sharing.

All broadband Internet TVs will use primary interface for browsing video content.

We will interact with screens using gestural game controllers and motion-aware smart phones.

Machinima videos will be generated and produced by video game engines.

Labs and artists will be producing realistic synthetic-video humans and special-effects physics.

Multimedia authoring tools will become available via the cloud over broadband networks.

Video wristwatches, ultra-thin newspaper, magazine, and book readers, and easy to hang super-thin video wall displays will be everywhere.

Media libraries will move online rapidly, using automated meta-tagging platforms with intelligent content processing supporting deep search and contextual advertising.

100+ megapixel CCD image sensors will be in all consumer digital cameras.

There will be a specialized professional holographic television for 3D-centric medical training and scientific visualization.

Personal video collections will be managed for end-users via open-architecture platforms on home systems with thousands of applications.

Multi-core computers, and network-served cloud computers will model computer-generated imagery in realistic, high definition.

High-resolution view-point independent 3D video recording and playback will be demonstrated in a number of university and industry labs.

Major Hollywood movies and video games will use motion-capture systems to create realistic synthetic characters.

Tiny embedded and mobile pico projectors will be deployed for new media applications.

Traditional filmmakers will widely embrace digital story-boarding software tools.

High-end business applications and special venue-based entertainment experiences will include tele-immersive experiences.

High-end mobile devices will be capable of recording and playing HD video.

Television will move to the “Cinematic Internet” blending video channels, widget channels, and passive streams of content with highly interactive information services.

Social media networks will be an integral element of TV viewing experiences.

Small, unmanned security ground vehicles will inspect remote and dangerous areas via video over Internet Protocol (IP) networks.

Video advertising systems that watch their audience and deliver targeted content to consumers in malls, airports, trains, stores, etc.

Portions of the Internet will support burstable, on-demand network capacity for massively scalable and high-bandwidth media applications.

Digital and programmable contact lenses will be available for specialized business and industrial applications.

Specialized video delivery networks with an ability to dynamically adapt video quality to connection speed will be for web, IPTV, and mobile applications.

Many televisions will come equipped with a small video camera for face recognition and broadband Internet-based video teleconferencing

Consumers will view streaming video content on their landline phones.

Media-rich carbon neutral eco-phones will be sold to consumers.

Amateur users will create and publish homemade 3D animated movies.

Cable TV subscribers will move to less costly and more flexible Internet video, consuming content for free or modest fees per content item.

Users will create and publish gigapixel images, creating large libraries of user-generated gigapixel and panoramic images.

TV manufacturers will support Internet video browsing, web browsing, TV widgets, or combinations of these.

Consumers will create digital selves and publish throughout social media networks.

Homes will be sold with built-in web-based video cameras and video PDA viewing devices for remote monitoring.

Video that flows freely across the Internet will be monetized according to embedded business rules defined by content owners.

Personalized and customized open-source televisions will be supported by a broad array of extensibility tools.

An alternative media commerce model will empower creative expressions through flexible mash-ups of popular and niche content.

Users will interact with video displays, both opaque and transparent, at a distance using hand gestures.

Millions of flexible, bendable, shapeable video displays will be produced for mass market consumer and enterprise applications.

Casual video users will be able to edit the visual appearance of complex objects in video.

Synthetic video created with machinima and related tools will be indistinguishable from camera-captured high-definition video.

Many common devices such as televisions, cameras, camcorders, and smartphones will be powered and/or recharged by wireless electricity.

Professional high-quality multimedia authoring (special effects, editing, and visual content creation) will be globally available via the cloud to any content creator.

500 megapixel CCDs will be common for consumer digital cameras.

There will be a mass market for holographic television for movies, films, and video games.

Software and computing power will enable creation and production of synthetic, computer-generated actors, indistinguishable from human actors.

High-resolution view-point independent 3D video programming will become popularly available for homes and public spaces.

Tiny, affordable pico projectors will be used for dynamic for mobile and embedded displays.

Digital storyboarding tools will go mainstream for consumers who will use them to support their user-generated content productions.

People will experience tele-immersive experiences with family and friends from the comfort of their living rooms.

Medium-to low-end mobile devices will commonly include high-definition recording and playback.

Contextually aware video streams will deliver information and advertising based on user preferences and interactions.

Consumers will have access to vast storehouses of rich and dynamic data used in advanced visualizations.

Consumers will have video-equipped robots to patrol their own homes with streams.

Cloud networking will be pervasive across the Internet, enabling zero latency, non-buffered, ultra high-quality, high-definition video.

Digital contact lenses will become available, overlaying digital information on real world views.

Video cameras will be standard for television sets, with integrated face recognition for personalized TV programming and advertising.

Broadband enabled landline phones will be integrated with cameras, supporting two way broadband video.

Media-rich carbon neutral eco-phones for consumers, where the decision to buy a “green” phone will be a prominent facet of decision making for a purchase.

“UGA” (user-generated animation) will come into its own, with an ability to animate highly realistic 3D characters and scenes.

Cable companies face collapse as users massively shift to Internet video on multiple devices.

Resolution of user-created still images may advance to terapixel images (trillions of pixels), allowing for extraordinary levels of details for panoramic images.

All major TV manufacturers will support Internet video browsing, and web browsing.

Consumers will have digital personas/@actors which will frequently be inserted into commercial TV shows and video games.

Human avatars will interact with others as a proxy for the real person, powering a new class of “visual voice mail” and other auto-attendant systems.

Web-based video cameras for home safety, with multiple viewing points in and outside the home, will become a standard feature.

# FORECASTS

**1 From scarcity to abundance of digital video**

The proliferation of video recording capability in personal electronics like cameras, phones, and computers; in built environments like security stations, elevators, and offices; in public spaces and infrastructures; and in toys and games, will produce an explosion of raw digital video. At the same time, cloud computing and online video services will permit easier storage, retrieval, and redistribution of even the most trivial events. Of course, this abundance is likely to cause its own problems.

**2 From passive to hyperlinked, interactive video**

Today, video encourages passive viewing; but hyperlinked video will give rise to new kinds of more interactive viewing experiences. Rather than being self-contained experiences, each video will connect to multiple views of an event and alternate takes of a scene; to participants' earlier works; and to video responses, remixes, and mashups. Just as the World Wide Web changed reading and texts by introducing hyperlinks to writing, so too will linking challenge the traditional coherence and linearity of video, undermine ideas of artistic wholeness and single perspective, and offer viewers something closer to the rich but fractured quality of dream.

**3 From keypad to gestural and tangible interfaces**

The spread of haptic interfaces and interactive screens will further enable a more user-centered, user-driven video experience. Just as the Internet's migration from desktops to laptops and cellphones has created new use contexts that make geolocation services and context-aware services more compelling, gestural, and tangible interaction will encourage viewers to treat video more like sculpture or physical objects: as a medium to be touched and manipulated, not just observed.

**4 From camera-captured to synthetic CG video**

In the last two decades, computer animation of environments and objects has become astonishingly realistic: think of the difference between *Tron* and *The Matrix.* We're on the cusp of a similar leap with human (or "human") characters. Today, the construction of cutting-edge computer-generated (CG) characters begins with motion capture, then layers digital features atop them. Characters like Gollum in *Lord of the Rings* or the cast of the new, CG-only *Beowulf* are true cyborgs, equal parts blood and bits. With the development of increasingly sophisticated simulations of human anatomy and expression, and a better understanding of the physics of human-environment interactions, we're moving closer to the era of pure "synthesipans," characters that are completely computer-generated.

**5 From limited to ubiquitous video interactions**

If video recording is becoming pervasive, the growth of screens everywhere is making interaction with video more commonplace. The days of only seeing moving pictures in movie theaters and living rooms are long gone; today interactions can happen on mobile devices and netbooks. The commercialization of flexible OLEDs, and software that allows accurate projection of images on complex and irregular surfaces, will turn virtually any surface into a screen. This doesn't necessarily mean that people will play movies on their refrigerators: these screens could be programmed to mimic the appearance of materials, project landscapes, or control the pervasive computer networks surrounding users. Users will interact with video everywhere, but not always be aware that they're doing so. Video interaction will thus become like other information technologies, ubiquitous but ambient.

**6 From 2D to immersive HD, 4KHD, and 3D video**

Abundant, hyperlinked digital video, accessible through tangible interfaces in multiple contexts, will generate user experiences that emphasize immediacy, ubiquity, and interactivity over passivity and distance. HD and 4KHD high-definition formats, and increasingly sophisticated 3D, will bring a greater sense of detail and reality to video. Already 3D video is making inroads into cinema, and simple but compelling programs allow iPhones and other smartphones to "project" 3D images atop movie posters or magazine covers. These early experiments show how in the near future these technologies could be unimagined realism to even the most ordinary video interaction.

# HOW TO USE THIS MAP

**EXPLORE THE FOUR ZONES** of emerging, game-changing technologies. The word "video" is really a shorthand for an amazingly rich ecology of technologies, ranging from motion-capture cameras to editing software to servers living in the "cloud." This is an ecology that is changing rapidly, and the map helps you make sense of the big evolutionary drivers and important emerging technologies. It consists of four major overlapping zones:

**CREATION**
Start at the beginning, with cameras, animation software, editing, and storytelling technologies. In the hands of professionals and amateurs alike, these tools are helping people tell stories in new ways, document everyday experiences, and advance the frontiers of science and art.

**COLLECTION**
Video is perhaps the most powerful medium of popular expression; it's also one of the most data-intensive and difficult to manage. The next generation of search, automated indexing, and data management technologies are being developed to deal with video.

**DISTRIBUTION**
Moving video from creator to consumer requires syncing collection and display technologies through complex "middleware," of businesses and technical services. At this level, commerce and creativity influence who will manage massive video libraries; how consumers will view and reuse video; and what competing technologies will survive in the video ecosystem.

**DISPLAY**
The silver screen is disappearing; or rather, display technologies including OLEDs, pico projectors, stereo and 3D projectors, and software that allows sharp and undistorted projection on spheres or building facades, give us the means to cast a silver screen anywhere we want.

We've populated this ecology with **SIGNALS** highlighting new technologies, emerging use cases, and interaction models. The signals are color-coded to indicate the zone or zones they'll affect most powerfully. Some cross all four zones, while others' influence will be confined more narrowly to one zone.

2015

Beside the map you'll see **MICRO-FORECASTS** highlighting major milestones or innovations likely to appear by **2015** and **2020.** Based on interviews with experts, workshops, and our own forecasting, the micro-forecasts are not a set of point predictions, but a description of the likely overall state of the video ecology in the coming decade.

Six **FORECASTS** look across the signals and zones. If the signals indicate what specific new technologies are on the horizon, and the micro-forecasts give you a sense of when these technologies will begin to affect us, the forecasts explain what these changes will mean, and highlight some of the key changes in the experience of making, sharing, and consuming video.

For IFTF, maps are more than merely a format for presenting information. The process of creating maps, and the maps themselves, reflect our belief that the future is made by people, not driven by anonymous forces, and that people make better decisions when they develop and possess shared visions of the future.

To give you access to the full scope of our Future of Video research, we are presenting this high-level, static map of the technology foundations of the future of video landscape as well as an online digital map, developed using Prezi Labs Zooming Presentation tool (http://prezi.com). This online companion map lets users view the complete signals database along with visual examples and more detail in text, video, and imagery. Think of the physical map before you as an executive summary of our research, but for a more in-depth view, dive into the *Future of Video* map powered by Prezi at http://prezi.com/51261/.

# THE FUTURE OF VIDEO
## a map of opportunities

**Remember the feeling of going into a darkened theater and losing yourself in another world. The overhead lights darken; you settle into your seat; the projector begins to whirr; and on the screen, a new reality flickers to life. For the next hours, the theater, the seats, the rest of the world disappears. All you're aware of is the world on the screen, the world of the screen. Finally, the credits roll. The lights come up. The world ebbs back into your consciousness.**

**Now imagine that alternate reality being part of everyday life. This map charts the landscape of technologies that can make it possible—and in doing so, transform both the place of video in our daily lives and imaginations, and the ways we can interact with the world.**

**That ability to enter another world is usually credited to the artistic vision of great directors; but really it's a collaboration between ourselves, our media, and content. It's a powerful sensation because we help make it so. As a result, we shouldn't be surprised if the proliferation of video-creation technologies, along with the growth of networks for managing and distributing content, both spreads and changes that sensation. Traditionally, creating that alternate world was possible only in theaters or with expensive home entertainment systems. It required us to disengage our bodies as fully as we engaged our imaginations. And for all its imaginative richness, it was a relentlessly linear and two-dimensional world in which stories were presented from a single point of view. A new generation of display technologies, gestural and tangible interfaces, and hyperlinking will let video break free of its old constraints of place, passivity, and perspective.**

**In the last few years we've already witnessed what seem to be major changes in the way we produce, consume, and share video: webcams let us record everything from the mundane to the dramatic, digital video recorders change the experience of watching television, and life (and the Web) before YouTube is but a distant memory for its fans. But for all that, it's clear that we're just at the beginning of this revolution. The coming years will move video—and the experience of being in another world—into the physical world, and put the power to make and mash-up those alternate worlds in everyone's hands. We will all become people of the screen.**

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