



# 3D

## Animations: Power Tools for the ROW Professional

Can you expect a ranch owner, hair dresser or plastic surgeon to understand topo maps? At times, even seasoned right-of-way (ROW) professionals admit to having a difficult time picturing how a parcel is affected by rail spurs, creeks and erosion; or appraising the value of a foothill from a topo map. A 70-foot hill to a person raised on the prairie is huge, yet to someone raised in the Canadian Rockies, it may seem a small bump in the road. How then, can you accurately illustrate a project and demonstrate its functionality to an audience or jury, creating one common perception? With 3D animations!

### Yesterday's Toys, Today's ROW Tools

For most of us, our first exposure to animation were the Saturday morning cartoons on television. Whether it was Mickey Mouse, Bullwinkle, or Speed Racer, there were three things we all had in common: fascination, anticipation and identification. We had a mutual perception of events, actions and places. We experienced the power, credibility and joys of animation—even though we knew cartoons were make-believe.

Today, we interact with friends, business partners and even strangers, using computerized animation. We play games with animated characters, and we work with virtual planning tools on our home and workplace computers. We race cars in tight competition with others located across the country, learn our “A, B, Cs,” telecommute, and plan the trip or house of our dreams using computerized animation. The emotions we feel can range from anticipatory excitement to pleasant and dreamlike thoughts of wonderful times to come. The power of animation captures and holds our attention, and we remember the created experience.

As technology and software programs become more sophisticated, so do the applications of animation for individuals, organizations, businesses and the legal industry. The major benefit of animation to the ROW professional is its ability to compress lengthy and confusing technical presentations into a few minutes of simple moving images which the lay person can understand and remember.

With the advances in mathematically accurate modeling, we can now 1) recreate animations of past times, places and actions, 2) simulate today's topical issues, and 3) generate a vision of future roadways, building projects as well as gas, fluid and energy transmissions. This article will review three important types of animations for the ROW professional:



- **3D Animations:** Meticulous recreations of past events, logistical information, and tasks.
- **3D Simulations:** Precise demonstrations of current operations, geography, and actions.
- **3D Visualizations:** Accurate illustrations of future roadways, projects and events.

### From Cartoons in the Living Room to Graphics in the Courtroom

Since prehistoric time, graphics have augmented and documented oral storytelling, providing knowledge and preservation of historical life, and special events. The evolution of written paper documents provided portability and widespread communication of that accurately shared knowledge. The addition of photos enhanced comprehension and helped facilitate the desired perception by a diverse audience.

The development of motion pictures was a monumental step in entertainment, communication and global awareness. Silent films touched us emotionally as we experienced the story, often resulting in group expressions of emotion—“hiss, boo,” “ohh, aww,” or “chuckle, chuckle.” This was true for both fictional films and documentaries, whether live action or animated. Integrating sound extended the shared communal experience; we popped corn and were spoon fed by the medium. End result? The audience had one common perception of events, and all remembered the key story components.

### The Who, Why, What, How, Where, and When

#### The Who

Who uses 3D animation? In the legal world 3D animation is frequently used for vehicular, air, sports, personal and workplace accident reconstruction claims. For the purposes of this article, we will stay within the world of the ROW profession. Project designers and architects use animation to ensure the operational aspects of their designs are functional, and as a marketing tool to sell the project to their clients. Appraisers, engineers, contractors, geologists, hydrologists and attorneys use 3D animation to illustrate and understand the fee takes, easements, rail spurs and other aspects of a condemned or predeveloped property. Also important are the relationships of existing singular parcels, communities, wetlands, natural parks and businesses to the property in question.

In the event of legal action, the attorney has the most impactful visual presentation tool available with 3D animation. The jury can experience virtual terrain modeling, and view properties from the sides, the sky and underground. To understand better how or why properties may be at risk for potential natural disasters, environmental damage, or the cost of land removal or fill, 3D animation goes where the human eye cannot. Many astute attorneys view the project animation early in a case to help establish their strategy and identify the key issues that are critical to the success of the litigation.

### The Why

Why has the use of professional 3D animation increased over the past decade? Because it is an accurate and effective visual demonstration of factual information. How often have you read a book, then viewed a movie based on that book and thought, “That’s not what I thought he’d would look like?” Or have you ever presented an idea or a project plan knowing inside, “They just don’t get it?”

With 3D animations, they will “get it.”

As in the leap from print and photos to surround-sound movies, 3D animations bring life and vitality to your work, creating a single perception for your audience by presenting a measured and tested animated reality.

If you were asked to evaluate Figure 1 and describe how the final garment will appear, what would be your reaction?

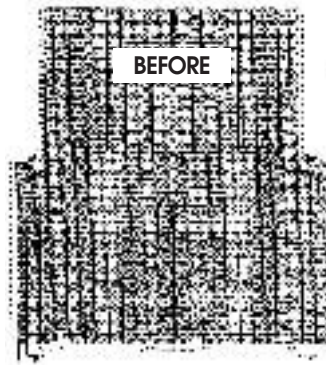
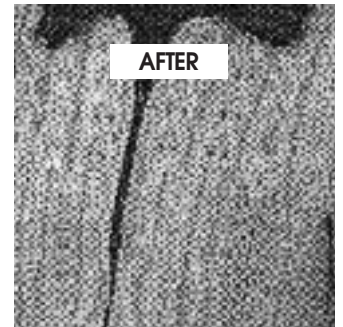


FIGURE 1

Disbelief? Frustration? Annoyance? Complete confusion? If you were to sit in a courtroom and use Figure 1 to decide the worth and value of the completed garment based on the words of two opposing attorneys (and expert witnesses), would you feel competent? On what or whom would you rely? Even seasoned professionals would find this task daunting.

Considerations: Ply of yarn (thickness), cost of yarn and tools, length of time to produce, market demand, ancillary products such as the zipper and collar, distribution, saleable season, etc. [A. Gentry note: and this is only a sweater!]

Only too often our opinions are shaped by the media and other sources who present information in short, clear segments which we can understand and retain. What we don’t see has no relevance; we base our opinions on what we comprehend. Why place the fate of your project in the hands of people who do not understand it? Whether a project designer, attorney, jury member, contractor or property owner, without the whole picture, they cannot determine value, plausibility and successful solutions. Professional animations demonstrate accurate reality in a short, simple and enlightening format.



### The What

What exactly are 3D animations? Animations are a dynamic description of your project or case facts. Animations may contain: 1) virtual terrain portrayals to orient the viewer pre- and post-construction, 2) integration of written factual information

such as: property comps, area maps, dirt removal or landfill costs, 3) elevation and 4) weather or environmental issues interspersed or overlaid at intervals.

Photos, video segments, maps and empirical data may be integrated to provide a more complete and accurate descriptive presentation. The end product may be presented in CD or VHS format, either as a stand-alone product or integrated into a multi-media presentation program. You, as the customer, specify which delivery medium is more appropriate for your target audience, and the technical ability of the person running the presentation.

### **The How**

Collection of satellite, site, and area photos—sometimes hundreds to achieve a documented 360 degree visual perspective—topo maps, geological, weather and hydrologist reports, building or project plans, appraisal information, legal

descriptions and any other empirical data, comprise the first step. Thorough mathematical analysis of the calculations, overlays and other site information is next.

*Photos, video segments, maps and empirical data may be integrated to provide a more complete and accurate descriptive presentation.*

The key to a scientifically valid 3D animation is adherence to the laws of physics. Even the earliest animated cartoons gave lip service to the laws of physics, albeit not very realistically.

When airplane doors opened, characters fell to the ground; what went up, came down (usually with a bump). Early animations were not mathematically and physically precise, but they met the goal of entertaining the audience; realism was neither a requirement nor an expectation.

Not so with professional 3D animations! Stringent mathematical analyses provide the numerical basis from which formulas are created, to replicate the exact physical situation. If the numerical equations are not calculated from every direction and angle, and without strict adherence to the laws of physics, the animation will not integrate the images and achieve the seamless flow of activity which is essential for a realistic presentation.

One secondary benefit in this step of animation development is the assurance of correct data from project contractors. If the overlays do not mesh, it may

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identify faulty data. This identification has allowed many errors to be corrected and preclude their being seized upon by the opposing counsel in the courtroom, or the client who hired the contractor.

### The When and Where

When and where are 3D animations used? In every phase of project design, evaluation, approval, and implementation, as well as legal disputes, 3D animations provide value and benefit.

- **3D Visualizations:** When designing roadways, building or housing projects, workplace facilities, transmission towers or underground pipelines, 3D animations not only illustrate how things will appear, but also how they will connect and function. Animations can follow liquids or gases through pipelines, evaluate worker/machinery traffic patterns in new workplace facilities, demonstrate roadway alternatives to alleviate traffic congestion, or put the viewer in a car that's moving on highways yet to leave the drawing board.

Visualizations are beneficial for workplace safety analyses, planning and zoning approval, community and environmental group presentations, property owner compensation negotiations, and architectural or design considerations.

- **3D Simulations:** When there is a need to demonstrate the current status of project construction, underground environmental damage, geographical risk factors (potential landslides, water holding capacity, and disaster plan operations in flood zones etc.), airport runway landing capacity or other existing situation, 3D simulations present the whole picture.

Just as important as a physical illustration of a property is the ability to demonstrate potential risk factors, all owing proactive solutions.

How often have animators heard ROW professionals exclaim, "I didn't realize the creek went down to the fee take area?"; "Did we leave that little property out?"; or "We should have acquired it and used it for maintenance vehicle storage." Even if the ROW professional has walked or flown over

the property in question, how can familiarity, perspective and qualified representation be communicated to a jury?

In the courtroom you may well face an opponent who, in most cases, is intimately familiar with the property in question and feels great emotion about the forced loss of ownership. Numerical appraisal comps, measurements and photos are not adequate to evoke personal connection and identification

with your audience. While analysis and reason are a part of decision making, concern for "the little guy" often plays a significant role in jury decisions. With 3D animation, your audience can experience the property from the top down, every side, angle, and even under the surface! They will be confident that they understand the value of the property in question.

- **3D Animations:** When there is a



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(legal) dispute over property compensation, the proceedings usually do not begin until after construction is in progress. How do you demonstrate the property's original condition when it no longer exists in that form? Photos? Oral descriptions? Topo maps? [A. Gentry note: How fast do you want to induce sleep in the audience or jury members? Too often you can measure the complexity of the testimony by the glassy eyes, snoring decibels, frustrated faces, or squirming in an audience or jury.]

Using the original description and empirical data, 3D animations can replicate a property's original state and dynamically recreate its transformation.

The audience will comprehend the evolution from the original condition, to today's (construction) status and beyond, to experience how the completed project will appear and function. Reasonable judgment can only result with an understanding of the past, current and future conditions, so that one perception is

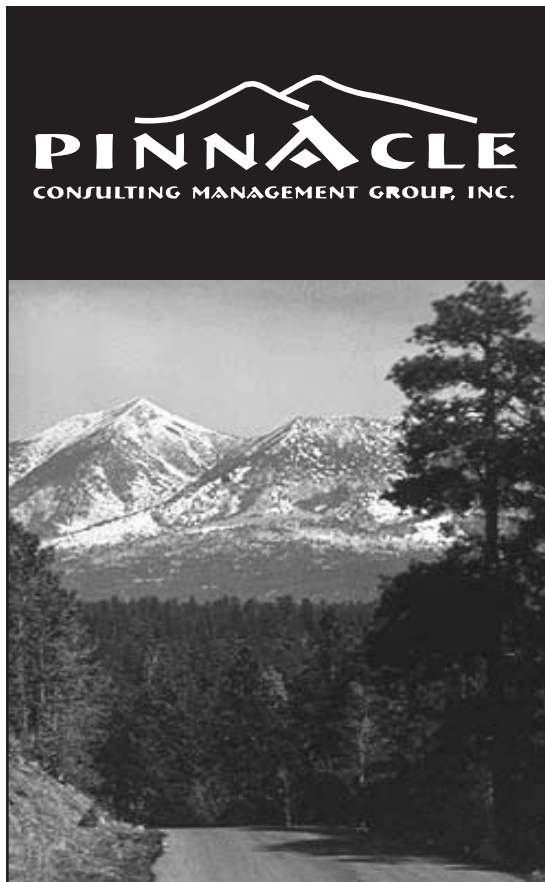


shared among many individuals.

- Legal Tools: How does a ROW professional evaluate and calculate the loss of goodwill resulting from projects when they have yet to be constructed? An IRWA member relates his first experience with 3D animation.

**An Actual Case:**  
*What a difference a day makes!*

*In preparation for a condemnation of a partial acquisition of an aerial easement for a freeway structure going over an auto dealer's sales lot, the County of Alameda, through its legal counsel, became aware of 3D animation and the ability to demonstrate the "before and after" conditions. Using 3D animation, we turned one dimensional right-of-way drawings, construction plans and aerial photos (which can be confusing*



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to a lay person), into a 3D visual representation. Given the magnitude of the dollar difference between the County's appraisal and the owner's, along with the impending trial date, the County decided to venture into this new technology to bolster its presentation to the jury and assist the County's expert witness. A 3D visualization was created to illustrate what the construction would look like in the after condition.

On a Monday afternoon, a settlement conference was held with the trial judge that extended into the evening hours. Late in the evening, the trial judge pounding on both sides, effected a settlement. Keeping a prearranged meeting time Tuesday morning, the County's appraisers, legal counsel and myself viewed the 3D animation of the completed future construction. In unison, we concurred that if the days had been switched, we would have gone to trial because the 3D animation made the County's decision graphically clear that the structure would have had minimal impact on the use of the property under the structure for parking (either the display of vehicles for sale, parking, or other uses of the property).

Hence, the opening statement - What a difference a day makes!

Recognizing we have become a visual society, I have become a strong advocate of the use of 3D animation technology for the right-of-way professional in condemnation actions involving those complex partial takings. These are difficult to visualize from the plans, and clever wordsmithing from a defendant's attorney can paint a bleak picture, translating into lost

dollars. Conversely, if the 3D animation shows that the impacts of the project have a severe negative effect on a property, an agency can better access its position to effect a settlement in lieu of going to trial.

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## Continuation

There is no conclusion to this article, as technology, skills and imagination will continue to provide new and better tools to communicate at a rapid pace. For the ROW professional, 3D animation is the most compelling presentation and communication tool available today. Tomorrow? Stay tuned for specific ROW case examples as well as information about the release of new products and capabilities that will enhance today's 3D animated presentations. ■

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