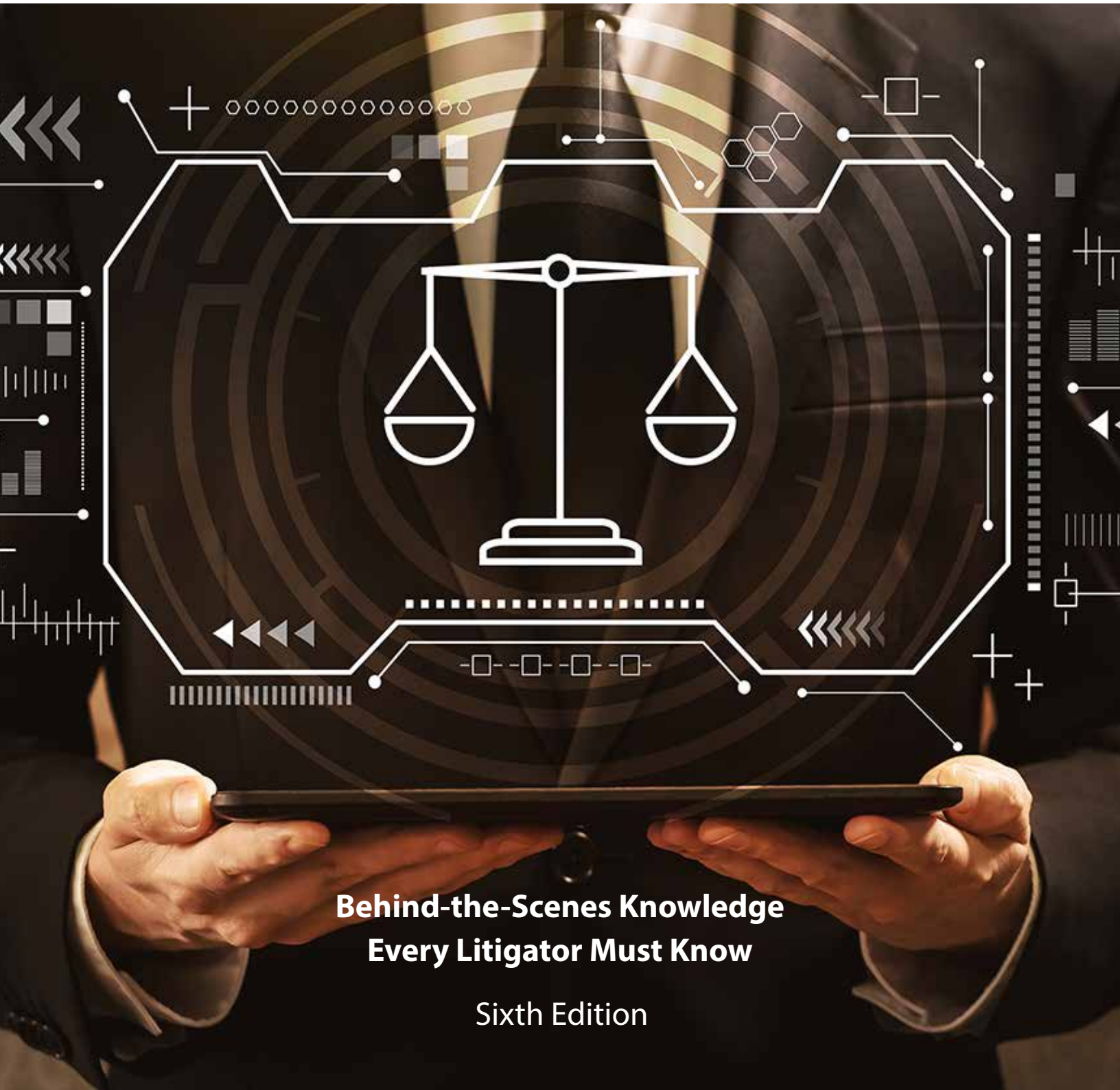
Legal Arts
Experience Visual Persuasion

Mastering the Art of the Technology Tutorial



Behind-the-Scenes Knowledge Every Litigator Must Know

Sixth Edition

Mastering the Art of the Technology Tutorial

Behind-the-Scenes Knowledge Every Litigator Must Know

6th Edition

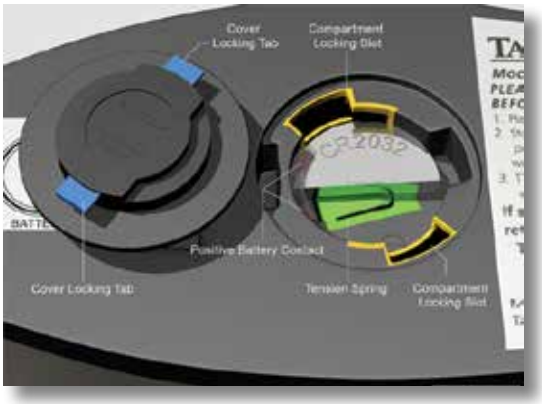
Executive Summary

Hon. Roderick R. McKelvie, ret.

Graphical technology tutorials achieved great popularity in United States litigation practice when responsibility for producing visual learning tools shifted from expert witnesses examined directly in trial to the trial lawyers before trial.

Patent infringement litigation led the way in the 1990s, especially by jurist Roderick McKelvie, then of the U.S. District Court, Delaware. Judge McKelvie popularized the practice of suggesting but not requiring neutral professional presentations on videotape that were succinct, on point, and covered everything the judge needed to become knowledgeable about the subject in dispute.[1]

This sea change created a new opportunity for persuasion (even when neutrality was mandated) precisely because content could be selected, written, crafted, and controlled by advocates. However, planning and producing persuasive technology tutorials can be a complex and overwhelming task. So, if you have not yet mastered the art of planning and producing technology tutorials, this publication will help you understand the process. It is presented in three parts:



Scene from a technology tutorial produced for a product liability and personal injury matter involving the design and operation of a "coin battery" storage compartment of a household bathroom scale.

Part One describes the purpose and efficacy of technology tutorials, stresses the importance of choosing the right approach, and discusses how production value affects perception and cost.

Part Two covers the processes of staging and scripting through final production and introduces you to the behind-the scene creative talent produce the deliverable. It offers advice for managing expectations and briefly covers intellectual property rights of creative content.

Part Three explains how to craft and control a realistic budget. Several examples of tutorials at different price points demonstrate many options available to you ranging from inexpensive PowerPoint presentations to animated interactive productions.

1 Interview of Hon. Roderick R. McKelvie (ret.), September 10, 2009.

Table of Contents

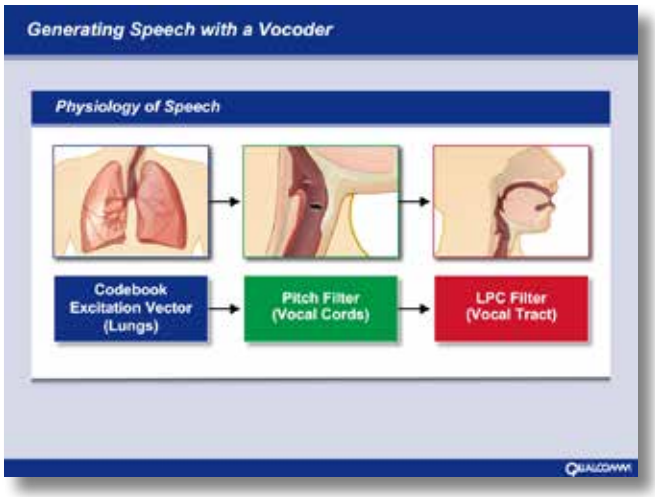
Part One: Purpose, Efficacy, and Approach

Technology tutorials are an excellent medium to teach a technical subject in a logically structured manner, efficiently transitioning the learner from a high-level overview to very specific technical content in relatively short time. Successful tutorials focus on need-to-know information, build a solid foundation of facts, and apply established principles of persuasive visual communication.

Litigation-specific technology tutorials can be presented before oral argument, delivered live, or both, and are easily adaptable to illustrate direct testimony in trial.

Purpose

The underlying purpose of tutorials is to acquaint the learner enough about the technology at issue to make an objectively fair decision about a particular subject.



A PowerPoint *tutorial about vocoder technology for cellular telephones.*

Learners reasonably expect to be taught the basic information they need to do their job. How this is accomplished is ultimately the trial team's decision, but some learners—jurists—might convey certain preferences relative to length and medium, or constraints such as prohibiting advocacy. In some practice areas, such as patent infringement litigation, jurists might favor packaged tutorials to aid the court's understanding of the technology before claim construction oral argument. Sometimes, a joint neutral tutorial is requested.

Learners hunger for tutorials because they can greatly reduce court time teaching technology basics or expert testimony, especially when trial time is clocked. A concentrated 30-minute technology tutorial might save an hour or more of precious courtroom time.

Tutorials are particularly helpful when the technology at issue is esoteric or dense. Consider this remark by the late Hon. Rudi Brewster, when he was senior judge of the Southern District of California:

Hon. Rudi Brewster

> "I have a real problem with some technology. I never had high school chemistry, and I have a real 'hole in my head' when it comes to that kind of technology…. If I can't explain the technology successfully to my 12-year old granddaughter, I know I don't understand the technology fully myself."[1]

Consider these factors when planning your tutorial:

Necessity

- What purpose will the tutorial serve and how is your audience expected to benefit from it?
- What information must be delivered for the tutorial to succeed?
- How will you teach the technology if a tutorial is not produced?

Propriety

- What is the most appropriate mechanism to teach the technology?
- What are the most appropriate production and display media?
- Is advocacy permitted or prohibited?
- Will the tutorial be presented in advance of or in lieu of a live presentation?

Structure

- How much information must be conveyed?
- In what order should the information be presented?
- Should the tutorial be self-explanatory?
- Is on-screen or live interactivity with the tutorial desirable?

Efficiency

- How much time is needed to adequately present your information?
- How much court time will be saved by pre-packaging the tutorial?
- Will voiceover narration replace or supplement on-screen text?

Budget

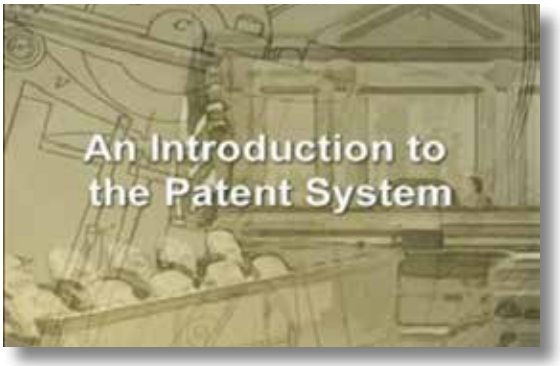
- What is the exposure of your case? How much money does your client stand to win or lose with a positive or negative outcome?
- What is the likelihood of settlement? Can tutorial content be used to facilitate settlement?

1 Judicial panel discussion on patent infringement litigation presented by the San Diego Intellectual Property Lawyers Association at California Western Law School, March 1, 2006.

- Can your client afford to pay for tutorial you need?
- Can your producer provide an acceptable deliverable within your desired budget?
- Can tutorial content be repurposed for trial or for other cases?

Efficacy & Approach

Technology tutorials are excellent teaching tools because they can be structured to communicate essential content in a user-friendly manner and tailored to accommodate different learning styles and learner cognitive capabilities.



Federal Judicial Center's video tutorial prepared to benefit trial jurors.

A ringing endorsement from the federal district courts about the efficacy of tutorials and the audio-visual method of teaching is exemplified in the widespread use of the patent procedure tutorial, "An Introduction to the Patent System." The Federal Judicial Center distributes this 18-minute video to provide jurors an overview of patent rights in the United States, patent office procedure, and the contents of a patent.[2]

There are several ways to structure a tutorial, different methods to establish a suitable learning environment, and multiple production techniques to retain the viewer's attention and interest. Let's examine a few.

As most of us already know, the combination of written information and imagery, and ideally, voice and imagery, facilitates better retention of new information.

This is because the combination of voice and visual enables the learner to grasp a lot of information in a shorter amount of time, much more so than if it is presented just orally or just visually.[3]

2 "An Introduction to the Patent System" http://www.youtube.com/watch?v=-q0mL-rvw1Yc

3 Harold Weiss and J.B. McGrath, Jr., "Technically Speaking: Oral Communication for Engineers, Scientists, and Technical Personnel," McGraw-Hill Book Company, Inc., New York, 1963, pp. 77-78 [aka the "Weiss-McGrath report"]:
"One study showed that telling alone produces an audience recall of 70 per cent of the material three hours later; only 10 per cent after three days. Showing alone produced 72 per cent recall of the material after three hours; 20 per cent recall three days later. But telling and showing together produces 85 per cent recall after three hours; 65 per cent after three days. Military leaders claim that 40 per cent of instruction time is saved by the use of visual methods. Psychologists say that 85 per cent of human knowledge is absorbed through the use of sight. Material that is seen is remembered 55 per cent better than material that is only heard, according to research in reception through the senses."

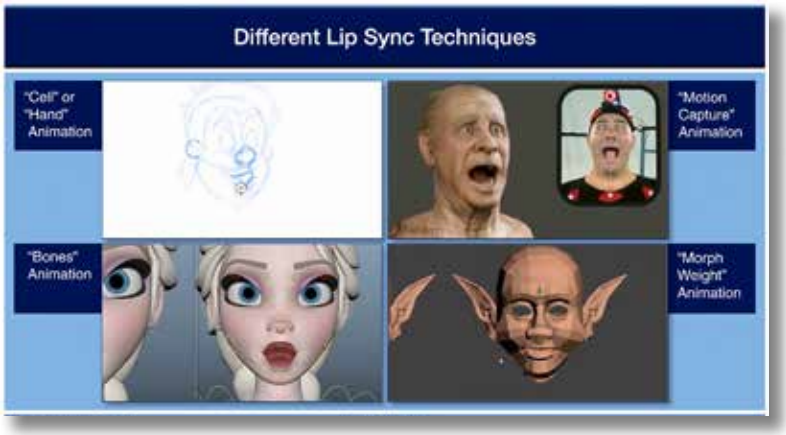
New research by Prezi reports that the three keys to maintaining viewer engagement are a strong narrative (~ 90%), stimulating dialogue (41%), and visual stimulation (33%).[4] Each are hallmarks of an effective technology tutorial.

A familiar starting point makes learning new information easier.

Quick assimilation of new information can be accomplished with a documentary-style approach beginning with a universally familiar subject and then progressing to new information.

For example, stating that a computer processor uses more power to create a sophisticated gaming environment than performing a Google search opens the general topic of power consumption, which paves the way for explaining different methods of regulating voltage, which segues to voltage regulator design at the heart of the dispute.

This approach exploits mental interactivity, or "programmed learning:" using something learned to understand new information that results in better retention of technologically complex information.[5]



A technology tutorial focused on facial animation software demonstrated different technologies used to achieve similar results.

Depending on which side you represent, a **technology attributes** approach might help the learner appreciate why the technology is preferable or is just one of several options available to consumers. For example, the inventor of facial animation software might demonstrate the how its patent is superior to conventional methods, while the defendant might show how an alternative workaround achieves substantially the same result without infringing plaintiff's intellectual property.

4 Prezi, "The 2018 State of Attention Report, Investigating our evolving attention spans and what makes content binge-worthy." Last retrieved on 3 Dec 2019 at https://prezi.com/resources/2018-state-of-attention-report/

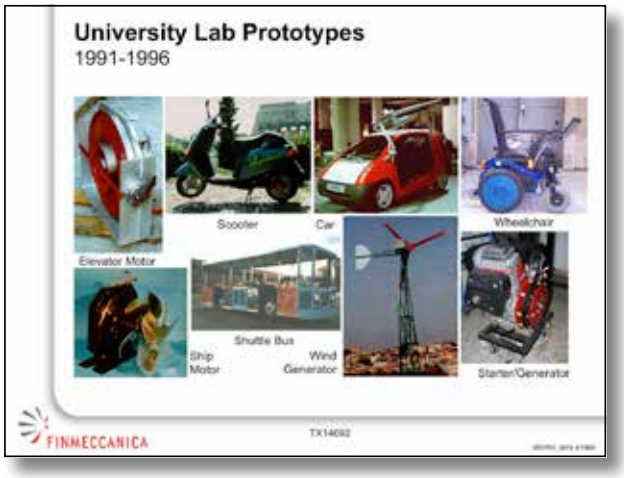
5 A. Tana Kantor, Winning Your Case with Graphics, CRC Press, Boca Raton, 1999, p. 64

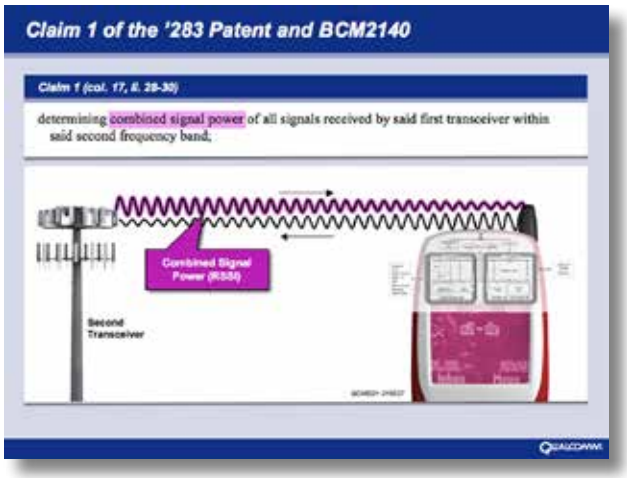
*A **problem** (limited control of spread of fuselage breaches) and **solution** (proprietary aluminum alloy) approach for a patent case.*

Another commonsense approach with broad appeal is to pair a technological **challenge** illustrating a particular problem with a viable technological **solution**.

Graphical history of an invention that was the subject of trade secret misappropriation.

Another popular approach is to demonstrate the proverbial better mousetrap, such as how a wheel motor might be an acceptable alternative to the conventional internal combustion engine:

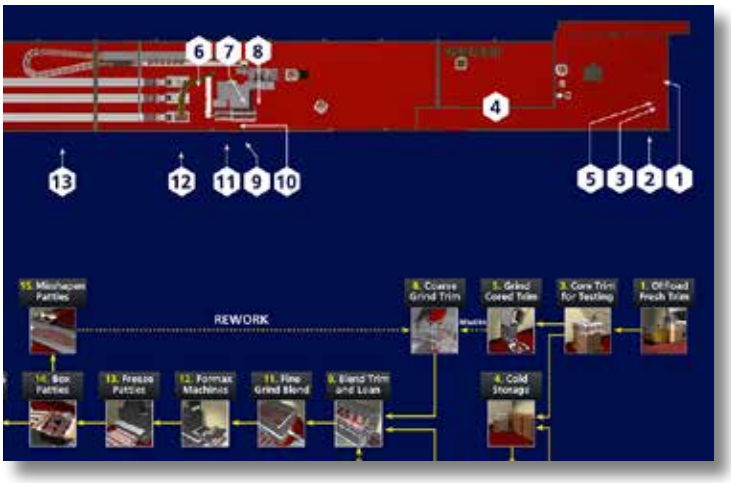




Depending on your audience, technology tutorials might be structured to emphasize certain **terminology** or parts of a **process**.

Jurists often rely on information imparted in technology tutorials to construe the meaning of patent claim language.

A technology tutorial suggesting a specific way to interpret patent claim language.



Processing plant plan with interactive buttons used to access key locations where food safety procedures could have but were not implemented (detail).

Technology tutorials are not limited to patent cases. In this example from a breach of warranty foodborne illness matter, counsel wanted to teach every step that should have been taken to prevent propagation of pathogens by raw meat contaminated by E. coli O157:H7. This interactive layout of the food processing plant allowed the learner to select any numbered location or step along the process path to jump to another screen and learn more.

Tailoring Content to the Learner's Level

Judge Richard A. Posner

The cognitive level of your audience and their capacity for understanding technical content is important, so carefully choose your approach. Judge Brewster cautioned not to assume your audience is prepared to absorb technical content simply because they are highly educated. Judge Richard A. Pozner's agreed, stating, "judges have difficulty understanding modern technology and jurors have even greater difficulty."[6]

This brings up a separate but important variable to resolve when designing technology tutorials. For any tutorial, the script must be written at the most appropriate teaching level for the learner. Depending on the subject being taught, and the cognitive, intellectual, and technological capacity of the individual, teaching levels might transition from lower (easier) to higher (more difficult) in fairly rapid order.

In our experience, it is advisable that the author of the tutorial (likely an expert or technically-trained lawyer) overcome personal familiarity with the subject, which might create cognition bias, and write the script to appeal to an intelligent layperson.

Some lawyers resist this advice because they assume the learner is less tolerant of hearing lower level introductory material than the average lay person, or they fear "talking down" to a powerful person who might take

6 Posner, Richard A., "Why There Are Too Many Patents in America," The Atlantic, July 12, 2012.

offense at being treated like a layperson. Judge McKelvie recommended, "think of your judge or jury as being as smart, or smarter than you are."[7]

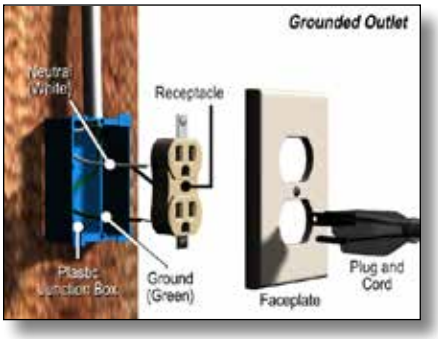
Regardless of who the learner is, you can reasonably expect to spend considerable time balancing your objectives with the learner's need-to-know. This challenge is so pervasive it typically extends all the way to final production. In one recent computer chip design patent dispute, the trial team spent about eight weeks producing twenty-four iterations of a PowerPoint technology tutorial before completion.

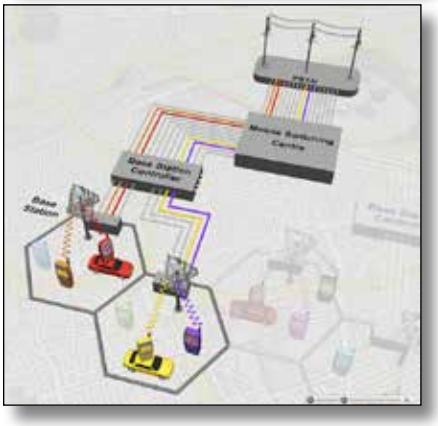
The risk of including too much content is that you bore the learner or dilute the impact of your most important content. No one wants their tutorial to be perceived as merely tolerated, pedantic, or patronizing. If you leave important content out, you might miss a golden opportunity to tell a more persuasive story or fail to adequately satisfy the learner's needs.

A little detective work might be in order if your are unsure of the learner's. technical familiarity. Ask the judge or her clerk what she prefers or solicit advice from counsel who have appeared before the court before.

Creative Content

Depending on your budget, timeframe, and desired production value, creative content can take different forms. Each has advantages and disadvantages, and there is no single right or wrong choice.





- **Graphic design** establishes the overall look and feel of the tutorial by expertly employing composition, color, typography, and images to create compelling static and motion graphics. Good design unifies the entire production and is most successful when unnoticed.
- **Technical, scientific, and medical illustrations and animations** are expected to be highly accurate and may be produced as 2D or 3D renderings.
- **Non-technical illustrations, motion graphics, and animations** can effectively demonstrate processes, sequential movements, and cause-and-effect relationships.

7 Interview of Hon. Roderick R. McKelvie (ret.), September 10, 2009.

Above left: Technical illustration/animation.
Lower left: Non-technical illustration/animation.

Custom photography.

Historical photography.

- **Video and photography** demonstrate realistic situations by demonstrate actual or historical products, processes, and tests. Stock video and photography is an inexpensive choice to show people, places, and objects in settings germane to the technology.
- **Special effects** engage the learner. Boring documents and photos can come to life in ways popularized by Ken Burns in his documentaries comprising exclusively static images.
- **Professional voiceover narration** overlaid onto a separate track explains or supplements on-screen content. Narration can greatly assist comprehension of highly technical content when it articulates teaching points without cluttering the screen with written copy.

Production value, also known as quality level, is the aesthetic look and feel of the tutorial and has an important and sometimes persuasive effect on the learner. Decide the production value before production commences because it will influence talent selection, schedule, and cost.

Production Value

Higher production values might incorporate substantial animation or video, richer 3D renderings instead of boxy graphics or 2D clip art, and professional voiceover narration. Some clients like well-known consumer technology companies might demand higher production values that will be consistent with their corporate brand or reputation in the industry as technology leaders. Plaintiffs in high-stakes patent infringement litigation might favor high production values to make a great first impression and to convey their seriousness about taking a case to trial if necessary. Generally, the higher the production value, the higher the cost.

A higher production value PowerPoint *tutorial utilizes custom 3D illustration (top) in lieu of lower-value stock clip art (bottom).*

However, because production value is subjective, good professional graphic design might convey just the right production value you need for less cost. The right choice depends on what the subject requires, what medium best teaches your point, and what the learner needs to see to get that point. Regardless of style, one option to consider is how to take advantage of "graphical immersion."

Because you have your learner's full attention at the outset of the technology tutorial, you need to work smart to keep it. When tutorials last twenty

minutes or longer, fatigue can set in and your production value choices assume added importance.

People pay better attention when engaged in continuous and immersive "multimedia learning."[8] Litigation-specific research has discovered that jurors immersed in continuous graphics during opening statement had better recall of information by a statistically significant margin than jurors exposed to occasional graphics or no graphics during the same opening statement.[9] While technology tutorials are obviously different than trial exhibits, the key takeaway is "continuous" or how often scenes change with new content. As fatigue sets in, more frequent scene changes are beneficial because:

- Content is perceived to be more important and worth paying attention to when presented in several scenes instead of one long take
- Frequent scene changes keep the learner focused and alert to new information
- Tutorials with shorter scenes are more dynamic and are perceived to be more interesting

Learner Interest and Engagement

Animations (and animated effects) solicit keen interest from viewers. The Prezi *2018 State of Attention* survey of over 2,000 business professionals reported 79% said the use of animated visuals is effective in keeping them engaged in a presentation whereas heavy text or bullet points cause disengagement (44%) making information retention challenging (40%).[10]

Real Case Example

We analyzed three video technology tutorials for the same litigation prepared by different providers for a patent infringement matter involving facial animation software. These variables were compared:

8 Richard E. Mayer, Multimedia Learning, Cambridge University Press, 2001, p. 139: "People have two separate information-processing channels - one for visual/ pictorial processing and one for auditory/ verbal processing. When words are presented as narration, the auditory/verbal channel can be used for processing words (i.e., the narration) and the visual/pictorial channel can be used for processing pictures (i.e., the animation), so neither one is excessively overloaded"

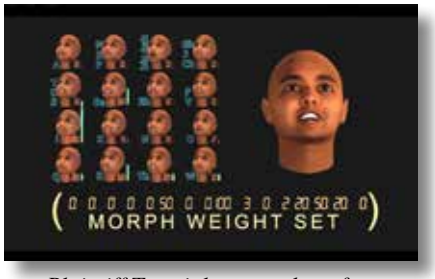
9 Ken Broda-Bahm, Ph.D., "Show, Don't Just Tell," 2011, Litigation Postscript blog, http://www.litigationps.com/litigation_postscript_per/2011/07/show-dontjust-tell-continuity.html

8 Prezi, "The 2018 State of Attention Report, Investigating our evolving attention spans and what makes content binge-worthy." Last retrieved on 3 Dec 2019 at https://prezi.com/resources/2018-state-of-attention-report/

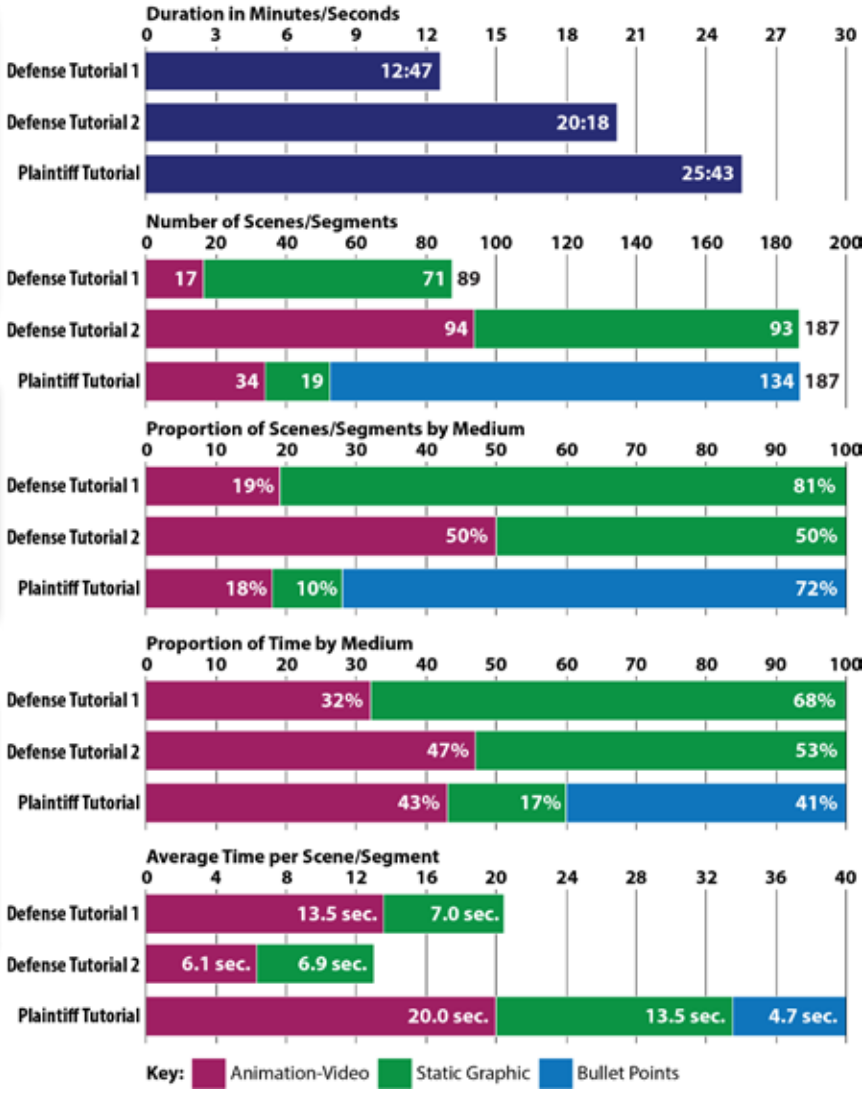
1. **Total duration in minutes/seconds.** Total elapsed time.
2. **Number of scenes/segments.** New content, e.g., an entirely new scene or a new segment such as an added bullet point.
3. **Proportion of scenes/segments by medium:** (a) animation/video, (b) static graphic, or (c) animated bullet points.
4. **Proportion of time by medium.**
5. **Average time on-screen** per scene/segment.

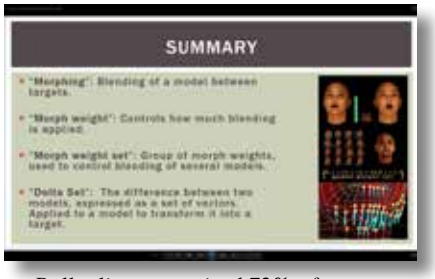
Defense-1 screen shot of "Morph Weight Set" topic.

Defense-2 screen shot of "Morph Weight Set" topic.



Plaintiff Tutorial screen shot of "Morph Weight Set" topic.





Bullet lists comprised 72% of Plaintiff's screen segments.

This static screen comprised the only image in an entire Defense-1 chapter.

Takeaways affecting scene usage, learner interest, and engagement:

- **Bullet lists** comprised **41%** of Plaintiff's tutorial, appearing in **72%** of its screens/segments; learners prefer very few bullet points
- Although "animation" was the tutorial topic, **static graphics** comprised **81%** of Defense-1's tutorial with one image (see left bottom) remaining unchanged while the narrator droned on for a full minute
- Defense-2's tutorial was **evenly split** between relatively short (6.5 seconds on average) static and animated segments
- Learner interest and engagement were best served by the Defense-2 tutorial featuring the **shortest segments, most frequent scene changes, and most motion graphics**

All three tutorials were produced by very experienced and well respected service providers who routinely produce technology tutorials for patent infringement matters. Apart from Defense-2 (produced by *Legal Arts*), it is not known if any material production or budget constraints existed in the Plaintiff and Defense-1 productions.

Assuming that conditions were equal for all three providers, the choices made to emphasize so many bullet lists in the Plaintiff's tutorial, and so many static documentary visuals in Defense-2's tutorial, were most likely made by trial counsel. In any event, it is the creative producer's responsibility to mitigate dull and repetitive content whenever possible.

Part Two: Production

Staging

Tutorials are often produced in three discrete stages:

1. **Pre-production:** scripting, scheduling, and budgeting.
2. **Production**: graphic design, animation, voiceover narration, compositing, review, rewriting, final production, and editing.
3. **Post-production**: publishing the deliverable and possible repurposing content into demonstrative exhibits for trial.

Scheduling

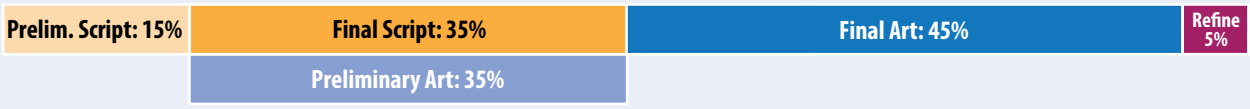
Your first priority after engaging a service provider is to establish a realistic production schedule and budget and start your script. Ideally, allot at least two weeks to complete a first comprehensive draft (longer if you need to include input of others). The creative team may require up to a week to plan production and align assets.

The schedule will be based on the volume and complexity of creative work and the availability of talent, attorneys, and experts. Once the script is substantially completed the creative team will work backward from the due date to create a production schedule. Within that schedule, expect to be given hard deadlines for new input, revisions, and final approval. Here's an example of an ideal and actual schedule for a 20-minute animated tutorial completed over a 44-day time period. Note that completing the script took half the calendar, leaving less time than we preferred for refinements. But, the project was completed on time with exemplary results.

Real Case Example (scheduling with ideal and actual time allotments)

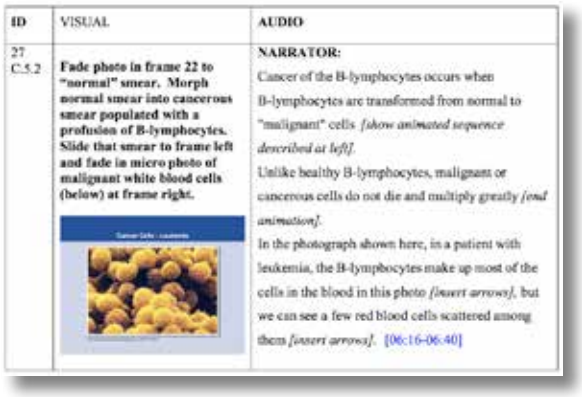
Ideal

Actual



Scripting

A script can be prepared in outline, narrative, storyboard, or PowerPoint formats, whichever is easiest for you to impart essential teaching points in a natural storytelling flow. Storyboards combine illustrations with text for production guidance and a visual preview of the deliverable.



ID	VISUAL	AUDIO
27 C.5.2	**Fade photo in frame 22 to "normal" smear. Morph normal smear into cancerous smear populated with a profusion of B-lymphocytes. Slide that smear to frame left and fade in micro photo of malignant white blood cells (below) at frame right.**	**NARRATOR:** Cancer of the B-lymphocytes occurs when B-lymphocytes are transformed from normal to "malignant" cells *[show animated sequence described at left].* Unlike healthy B-lymphocytes, malignant or cancerous cells do not die and multiply greatly *[end animation].* In the photograph shown here, in a patient with leukemia, the B-lymphocytes make up most of the cells in the blood in this photo *[insert arrows],* but we can see a few red blood cells scattered among them *[insert arrows].* [06:16-06:40]

Writing a script is commonly a collaborative effort involving counsel, expert, and the producer. While this team approach ensures content viability and chapter-to-chapter continuity it also tends to delay completion as different busy people find the time to contribute their parts.

While desirable (but not likely practical) the first draft of the script should be completed before production commences, understanding that refinements are inevitable. The goal is to minimize changes after production starts. On rare occasion substantial rewrites are necessary due to unforeseen circumstances such as additional discovery, dropped patents or claims, or partial settlement. Changing a script is far less expensive than production changes.

Creating Memorable Takeaways

Takeaways are what the learner will remember and the impressions he or she is left with after viewing the tutorial. Time spent developing and articulating strong takeaways will pay large dividends.

The key to crafting a persuasive takeaway is to craft every message from the learner's perspective (rather than the teacher's). Takeaways can be informative, logical, emotional, or a combination. Strive to end each chapter of the script with a strong takeaway message and end the tutorial with a clear and concise summary of the most important takeaways.

Subtle Advocacy

Technology tutorials that teach sound principles, impart vital information, and create lasting useful takeaways are imbued with a patina of authority when they convey sound scientific or engineering logic and truthfulness to the learner. If positioned as advocacy-neutral, that positive glow brightens.

Naturally, advocates will want to exploit that by nudging neutrality a smidgen to their side. No one is surprised when this occurs because it is both expected and, to a limited degree, accepted.

In a practical sense, advocacy is inevitable and unavoidable as it is inseparable from emphasis or reinforcement of content, inclusion or omission of facts, and selective use of expert opinion. Done well, it is usually invisible to the learner.

Engagement versus Entertainment

No one will confuse a technology tutorial with Hollywood entertainment, and rightly so, because the purpose of a tutorial is to inform. But that doesn't mean it has to be dry as dust, devoid of aesthetic appeal, or deny the learner's emotional need to stay interested.

We learn important new information when engaged by the material we are seeing, not simply because we are presented with fact after fact. Engaging the interest of the learner—even a judge—with aesthetic enhancements to promote learning requires tact, but it is common sense to make the effort.

These techniques work:

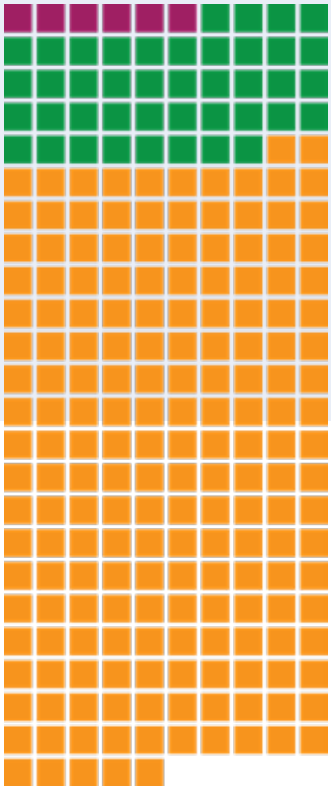
- Increase the production value by striving for a polished and professional look and feel
- Add *professional* voiceover narration
- Use motion to enhance otherwise static images (e.g., the pan-and-scan "Ken Burns effect")
- Employ animation when it is feasible and appropriate to do so, and when it saves time
- Use color to emphasize, subdue, differentiate, and unify
- Employ on-screen interactivity to demonstrate a process or to facilitate navigation through the tutorial

Structure

Organizing the script in chapters that follow a logical sequence helps the learner keep their place in a lengthy tutoria and breaks the monotony of a highly technical or lengthy presentation. When published in an interactive medium, chapter formatting aids navigation within the tutorial.

Real Case Example

Here is how the"Defense-2" case described above was organized into chapters, chapter sections, and scenes. Chapter length varied between sixty-five seconds (01:05) and 07:22. Average chapter length was 03:38.



Real Case Example

Chapters (6)	Chapter Sections (42)	Scenes (187)
1. Introduction (01:17)	2	18
2. How technology is applied (01:50)	6	25
3. Technology basics (02:22)	9	14
4. The technology at issue (06:06)	11	51
5. The patent and the technology (7:22)	13	69
6. Summary (01:05)	1	10

While this tutorial was delivered as a continuous video presentation, it could have easily been produced as a self-running *PowerPoint* show, which is the medium overwhelmingly preferred for most technology tutorials. A basic conversion to this platform would translate to approximately the same number of slides are there are scenes (187). Scriptwriting for either medium is essentially identical.

Working Script and Production Log

Once the producer receives your first draft script, he or she will prepare a working script and a production log. The working script breaks action and commentary into discrete segments tied to descriptions of visual action. The production log is a matrix tool that allows the producer to track the production status of each discrete scene.

Here's an example of a script pairing voiceover narration ("VO") to a fifteen-second action scene:

VO: "In wireless communication systems such as WiMAX, C-P-Es [spell out] can support a variety of different user applications such as voice transmissions, [pause] streaming video, [pause] web browsing, [pause] and file transfer."

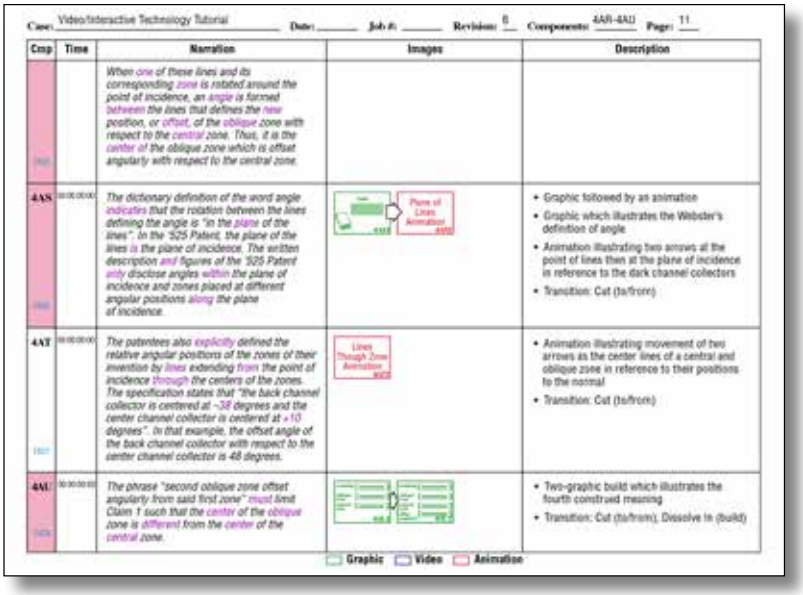
Action: Graphic of a base station and CPE on screen left "communicating" via analog waves with four stacked detail images on the screen right representing "voice," "streaming video," "web browsing," and "file transfer" that appear in sequence as captions, when mentioned in the VO. [~ 00:15].

Voiceover Narration

Voiceover copy should be written tightly and include instructions for the narrator about pronunciation, emphasis, pauses, and timing. Professional VO artists can accurately time their narration to precisely match motion graphics, builds, animations, and scene transitions. The best artists have such consistent delivery and tonal control that post-production substitutions of individual words are possible.

The Storyboard

The storyboard serves several functions. During production it serves as a working script matching visuals to narration or on-screen text and provides basic instructions to the talent for creating the visuals. For counsel and experts (and by extension the client), it offers a preview of how the tutorial will look and feel and how it will flow. There are many ways to format a storyboard.


Case: Video/Interactive Technology Tutorial Date: Job #: Revision: B Components: 4AR-4AU Page: 11

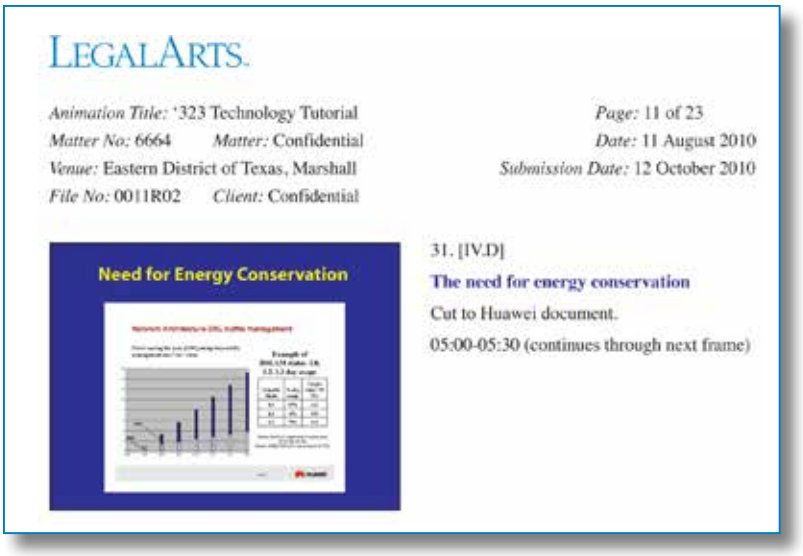
Cmp	Time	Narration	Images	Description
		When one of these lines and its corresponding zone is rotated around the point of incidence, an angle is formed between the lines that defines the new position, or offset, of the oblique zone with respect to the central zone. Thus, it is the center of the oblique zone which is offset angularly with respect to the central zone.		
4AS		The dictionary definition of the word angle indicates that the rotation between the lines defining the angle is "in the plane of the lines". In the '525 Patent, the plane of the lines is the plane of incidence. The written description and figures of the '525 Patent only disclose angles within the plane of incidence and zones placed at different angular positions along the plane of incidence.	Plane of Lines Animation #4AS	• Graphic followed by an animation • Graphic which illustrates the Webster's definition of angle • Animation illustrating two arrows at the point of lines then at the plane of incidence in reference to the dark channel collectors • Transition: Cut (to/from)
4AT		The patentees also explicitly defined the relative angular positions of the zones of their invention by lines extending from the point of incidence through the centers of the zones. The specification states that "the back channel collector is centered at -38 degrees and the center channel collector is centered at +10 degrees". In that example, the offset angle of the back channel collector with respect to the center channel collector is 48 degrees.	Lines Through Zone Animation #4AT	• Animation illustrating movement of two arrows as the center lines of a central and oblique zone in reference to their positions to the normal • Transition: Cut (to/from)
4AU		The phrase "second oblique zone offset angularly from said first zone" must limit Claim 1 such that the center of the oblique zone is different from the center of the central zone.		• Two-graphic build which illustrates the fourth construed meaning • Transition: Cut (to/from); Dissolve In (build)

Graphic Video Animation

The comprehensive storyboard format comprises a voiceover script, small key frame illustrations, and descriptions of on-screen action, timing marks, and transitions segmented into scenes.

ID	VISUAL	AUDIO
27 C.5.2	**Fade photo in frame 22 to "normal" smear. Morph normal smear into cancerous smear populated with a profusion of B-lymphocytes. Slide that smear to frame left and fade in micro photo of malignant white blood cells (below) at frame right.**  	**NARRATOR:** Cancer of the B-lymphocytes occurs when B-lymphocytes are transformed from normal to "malignant" cells *[show animated sequence described at left].* Unlike healthy B-lymphocytes, malignant or cancerous cells do not die and multiply greatly *[end animation].* In the photograph shown here, in a patient with leukemia, the B-lymphocytes make up most of the cells in the blood in this photo *[insert arrows],* but we can see a few red blood cells scattered among them *[insert arrows].* [06:16-06:40]

The abbreviated storyboard format features a key frame image and/or brief written description of a visual next to voiceover narration. It rarely includes instructions to the talent about how to create the visual.


LEGALARTS

Animation Title: '323 Technology Tutorial
Matter No: 6664 *Matter:* Confidential
Venue: Eastern District of Texas, Marshall
File No: 0011R02 *Client:* Confidential

Page: 11 of 23
Date: 11 August 2010
Submission Date: 12 October 2010

Need for Energy Conservation

31. [IV.D]
The need for energy conservation
Cut to Huawei document.
05:00-05:30 (continues through next frame)

The illustrative storyboard format features important key frames juxtaposed with voice-over narration along with written instructions relating to composition, imagery, action, and timing.

Production and Display Media

Graphic Design

Production begins with design of a graphical template, the backbone of the production. This usually incorporates a muted background (field), typographic standards, color palette, and common layouts to promote uniformity and focus the learner on content. Professional designers rarely (if ever) use stock *PowerPoint* design templates although they reuse their own templates once they have a design they like.

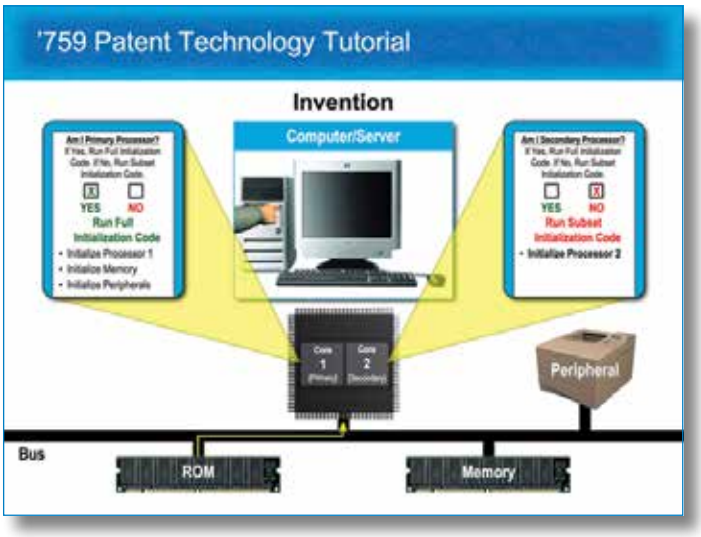
The art director develops placeholder graphics for each chapter segment. As needs dictate, these might number well over a hundred individual treatments. As content is developed, artists will drop new art into the placeholder screens. For animated tutorials, it is sometimes practical to create a composite "skeleton" with rough timing between scenes so the art director can monitor how the presentation is shaping up without waiting for the individual scenes to be completed.

Content and media selection directly affect design and production choices. Providers can choose from many media options, starting with basic *PowerPoint* or its much less popular Apple alternative, *Keynote*.

Microsoft *PowerPoint*

The popularity of *PowerPoint* for technology tutorials is based on its user-friendly interface and the accessibility by non-designers to experiment with content and to reorder, add, delete, or change native content on the fly. Importantly, *PowerPoint* can be played without special software or equipment (besides the ubiquitous *Microsoft Office* or on some iOS

(*i.e.*, iPad) devices), and easily accommodates embedded animation, video clips, and voiceover narration. While *PowerPoint* has distinct advantages and disadvantages for the producer, it cannot be overlooked as the go-to conceptualization tool for lawyers and experts.[11]



Slide from a PowerPoint *technology tutorial.*

As a presentation medium, *PowerPoint* improves every year and for lower budget tutorials, it is an excellent choice. Most technology tutorial producers are intimately familiar with the application and when its limitations are respected, it can mimic higher production-value deliverables.

We recommend using *PowerPoint* animated effects sparingly and only to increase the learning quotient. Superfluous movements and unnecessary special effects (especially fancy transitions) are annoying and sometimes time consuming to endure.

Although *PowerPoint* has rightfully earned a notorious reputation for being the medium of choice for bad designers and clueless presenters,[12] most of its quirks and limitations can be accommodated but others might vex you and your provider. The most problematic is font fidelity. This is an age-old problem rooted in how poorly the Microsoft Windows OS handles fonts. Mac users are eternally frustrated having to dumb-down their typography to accommodate cross-platform utility.

Another commonly encountered problem with *PowerPoint* is version incompatibility. In the old days, presentations prepared in one version might not faithfully display or perform in older or newer versions even when produced in the same computer operating system. Fortunately with the transition from software disks to Software as a Subscription ("SaaS"), updating to the latest version is simple and sometimes automatic.

11 Popular titles for *PowerPoint* reference include these three by Deanne C. Siemer, at al.: "PowerPoint for Litigators: How to Create Effective Illustrative Aids and Demonstrative Exhibits for Trial, Mediation, Arbitration, and Appeal" (1999); "Basic PowerPoint Exhibits (Easytech Series)" (2003); and "Argument Slides: Quick Mastery of Exhibits for Cross and Closing (Easytech Series)" (2003).

12 See Tufte, Edward R., "The Cognitive Style of PowerPoint: Pitching Out Corrupts Within," 2ed, 32 pages, Graphics Press, 2006

Like any *Microsoft* application, native files cannot be protected from future modification by the viewer unless they are saved in a different format, such as PDF (which will not preserve animated effects). However, there are third-party workarounds to this issue.

Creative Applications

Alternative applications include the SaaS *Adobe Creative Cloud* ("CC") suite incorporating *After Effects, Flash, Illustrator, Photoshop,* and *Premier*. Professional 3D-modeling and animation apps such as *Autodesk's 3ds Max and Maya* are commonly used to create content.

These programs enable producers to create productions that rival mainstream entertainment in quality, but they also require steeper learning curves to make proper design choices and specialty skills to use correctly. It is not a sandbox that most attorneys and experts will likely want to play in, so consult with a provider like *Legal Arts* if you want the deliverable these applications are used to create.

One example of how these applications are used is to create motion graphics. By utilizing an application like *Adobe After Effects*, relatively simple effects such as rotating or curling a document, showing progressive highlighting, or zooming in or out of an image or document excerpt can create a documentary film look and feel.

Another simple but very useful treatment is panning (side to side) or zooming a static image to create movement and interest (*i.e.*, the so-called "Ken Burns effect" as popularized in numerous historical documentaries). Neither technique appreciably increases production costs but the cumulative effect is noteworthy, especially when a long voiceover narration without a scene change is unavoidable.

Entirely Animated Tutorials

Depending on the producer's skill (and sometimes a healthy budget) on-screen activity may rarely stop, scenes change every few seconds, and a lot of ground can be covered in an efficient manner. An entirely animated tutorial is rarely necessary, but the perception of something always moving or changing is guaranteed to keep the learner glued to the screen and listening attentively.

Production budgets for animated tutorials usually exceed *PowerPoint* presentations by a multiple of two to ten depending on content. This is

because each segment requires specialty talent (*e.g.*, animator, voiceover artist), and multiple treatments (*e.g.*, initial layout, first draft, review, possible rewrite, and final composition). It is reasonable to expect that each scene might require from two to four hours of creative work to complete. Multiply that by more than a hundred scenes and costs start mounting.

Display Media

A preferred display medium for self-contained, high-production value technology tutorials is the interactive DVD. A DVD is playable on a personal computer, and if properly "authored," may also be played on a home DVD-player connected to a television. If a disk successfully plays on a computer or TV, it will reliably play back the same way, every time.[13]

Interactive Presentations

An interactive DVD has several advantages. It gives the learner control over chapter selection and playback options such as pause, rewind, fast-forward, and chapter skipping. These controls might be built into the display application (*e.g.*, *Abobe Flash*) or they might be authored into the composited playback file. DVDs also have relatively large storage capacity,[14] and can easily accommodate at least four gigabytes of content that can be embedded, or "authored" into a single playback format.

Continuous playback helps the tutorial flow seamlessly and flawlessly without balky interruption or at an unacceptably low resolution. However, there are potential disadvantages to DVDs: content cannot be modified after it is burned to disk (unless the disk is rewritable, but that is rarely done); and, for production media like *Flash*, last minute changes might require a specialist, which if not in-house, could result in an undesirable production bottleneck at crunch time.

Streaming Video

Secure online browser-based streaming video technology (*e.g.*, *YouTube*) is an easily accessible and very affordable alternative to traditional hard-copy distribution methods. A learner can view streaming video from any location with a suitably fast Internet connection.

13 There are at least fifteen different DVD formats, not all of which are compatible on the typical personal computer or home DVD player.

14 The capacity of a typical single-sided, single-layer disk DVD (digital versatile disc) is approximately 4.7 gigabytes. This is almost seven times the capacity of a typical 700-megabyte CD (compact disc).

Using Cloud-based Resources

The ubiquity of cloud-based exchange servers greatly eases production sharing and file transfer. Very large files can be uploaded and downloaded so the learner need not be tethered to the Internet.

We use the cloud to post in-progress "skeletons" (*i.e.*, rough cuts) for online accessibility by team members. Once completed, the technology tutorial can also be posted online for future reference.

Live Presentation

Playback during oral argument or live expert testimony is sometimes necessary, and it is often how technology tutorial content for trial is repurposed. Ideally, live playback should be made directly from a computer hard drive rather than from disk or the cloud. Voiceover narration, if it exists, is usually muted during playback in court.

Hard-copy Tutorials

Hard-copy printed tutorials are rare as stand-alone presentations but are commonly produced for the learner to follow along a live presentation. One downside to read-along back-ups is it sometimes becomes the primary medium the learner relies on. It can be frustrating to a presenter to see the learner ignore on-screen animations because their eyes are on a binder.

Obsolete Media

Before digital playback became ubiquitous, technology tutorials were distributed in several obsolete or rarely used media.

Videotaped tutorials have now been relegated to history. The last maker of VCRs stopped production in 2016. However, if you want to deliver your tutorial on videotape, care should be taken to ensure proper playback if it will be distributed internationally. There is no universal worldwide video format for standard definition (SD) analog or digital video. United Stated uses the NTSC format (30 fps) while the EU, Australia, and New Zealand all uses the PAL format (25 fps). High definition video can be formatted in either 780p or 1080i formats. Unless you can guarantee that foreign playback of your tutorial will be in digital format, provide your target audience with the appropriate video conversion for their area.

Other obsolete media once popular but no longer used for technology tutorials include *Betamax* videotape, *Laser Disc* digital video disks, and *Macromedia Director* "projectors" played on a computer.

Assembling the Team

Production Talent

For smaller productions, individuals might wear many hats, but for larger productions, different creative and technical specialists collaborate to create the deliverable. These are the creative people who might be involved in technology tutorial production (titles and roles vary among providers):

The **Producer** (a/k/a **Graphics Consultant, Account Executive**) heads production. He or she is the primary client liaison, collaborates with counsel and experts to write or finalize the master script, plans storyboards, and is tasked with learning enough about the technology at issue to provide quality control at the production level. The Producer is also responsible for negotiating the contract, establishing the budget, and monitoring and reporting the budget burn rate.

Some providers never allow "artists" to become Producers or have direct contact with clients while others encourage their most experienced creative talent to produce. In such cases, the Producer might also take creative lead during production and assume art direction responsibilities. For larger projects, the Producer works closely with the creative director to manage talent and oversee creative content development. On small projects, the Producer might be the only person in the job, which eliminates the superfluous management layer and can save the client a lot of money.

The **Creative Director** (a/k/a **Art Director**, **"CD,"** **"AD"**) supervises all creative content development, manages creative personnel, collaborates with the Producer to ensure adherence to the script, establishes the look and feel of the master template, and supervises storyboard production. The CD also supervises final master file editing and may occasionally substitute for the Producer as needed.

The **Graphic Designer** creates the master template and graphical content such as charts, document excerpts, scene layouts, *PowerPoint* slides, and other graphical content.

The **Animator** creates 2D-vector or bitmap art, produces 2D-*Flash* animations, and creates 3D-models, scenes, and animations. Animators usually specialize in either 2D or 3D, but some are adept at both.

The **Special Effects** ("**FX**") **Artist** applies special visual effects to completed static and animated 2D and 3D files. These effects might mimic animations and enhance the production value of the deliverable.

The **Editor** assembles all digital files and voice-over tracks into discrete chapters and compiles those into a master file for reproduction and distribution. The Editor might also make minor cut-and-paste edits to visual and audio files, adjust the timing of sequences to precisely match voiceover narration, and create seamless transitions between segments.

The **Voiceover** ("**VO**") **Artist** is a professional actor. The VO artist reads from the final script in an appealing voice electronically scrubbed to eliminate transient or ambient noise. The best VO artists narrate segments so consistently that different passages spoken at different times can be seamlessly interwoven in virtually any order without noticeable differences in modulation.

The **Production Manager** ("**PM**") ensures quality control while facilitating global production of the project. The PM proofs work to catch typographical and content errors, verifies continuity of the script and voiceover narration, posts completed clips to the Internet for online access by counsel, maintains the daily production log, helps to resolve production roadblocks and bottlenecks and, along with the Editor, facilitates post-production authoring and distribution to the service list.

Production Workflow

Staffing

During production, sufficient manpower (*i.e.*, bandwidth) should be scheduled without needless overstaffing or bottlenecks that can cause delays. For particularly intensive projects with short timeframes, distributing workflow among different people can prevent burnout and accommodate scheduling conflicts or limited blocks of uninterruptible availability.

In lengthy productions, flexible staffing helps to keep costs down. Conversely, for shorter productions (or a shorter than normal timeframe), flexible staffing may not be feasible if availability of specialty talent is limited. On rare occasion, overstaffing might be necessary to guarantee availability of key talent to meet the deadline.

Scheduling

The project timeframe, complexity of subject, readiness of the script, availability of specialty talent, and conflicting obligations by key personnel all influence production workflow.

Just like mainstream moviemaking, technology tutorial productions are not necessarily produced in final scene order. As soon as substantial portions of the script are completed, production will usually commence. If production lead-time is a concern, certain introductory or contextual content might be developed before technology-specific content. Ideally, the most complex or time-consuming content is scheduled earliest to accommodate ample time for review and changes.

Some padding is ordinarily put into the critical path schedule to accommodate conflicts that might arise due to emergencies, discovery delays, and other unforeseen problems. Additional padding may be required specifically if availability of key personnel is compromised (*e.g.*, during holidays or other scheduled absences).

Interruptions

For large projects stretching over a long timeframe, interruptions will inevitably occur due to other commitments, unscheduled events, and counsel's constantly shifting priorities. It is common for key lawyers or experts to be drawn away for blocks of time to prepare an important motion, take or defend depositions, or work on other cases. Traditional holidays can cause considerable disruption due to personal commitments by one or more team members. Sometimes it is easier to obtain commitments from key personnel when production is scheduled weeks in advance.

Leadership

Lead counsel, who may be engaged in one or more other high priority matters, are especially prone to schedule interruption, so their involvement in essential concept development and review sessions may be tentative. Workflow scheduling must anticipate this and be flexible enough to accommodate their needs. Lead counsel must be respectful of the production schedule and not issue unreasonable demands that unnecessarily burden the team.

At the outset of production, respective team leaders should instill a sense of purpose and confidence, set reasonable expectations, and promote proactive involvement by all team members. This will help prevent or mitigate

potential miscommunication as the deadline draws closer and tensions and anxieties inevitably increase.

Changes to Script and Creative Content

Changes to the script and content are commonplace. A good practice is to apportion some of the timeframe and budget to changes. Changes can occur for many reasons; the most common in response to completed segments or chapters after the lawyers and experts have their first opportunity to see work in progress. Changes may also be prompted by refinements to the script, new discovery, added or dropped claims, experts' modifications, or Court rulings.

Logically, some changes will have impact greater than others, particularly if they affect the schedule or the budget. Such changes must be handled tactfully so as not to ruffle feathers or cause undue consternation by people not intimately involved in production.

Mistakes

No one is perfect and mistakes sometimes happen. Missed communications are more likely to occur when content originates from multiple sources. Having single incoming and outgoing gatekeepers who practice good housekeeping can help alleviate this.

During production, it is normal to come across minor typographical errors, transposed numbers, mispronounced words, or other glitches. Careful proofing and timely editing correct these problems, so there is little cause for agitation by worried team members. Cool heads eventually prevail.

Expectation Management

Expectation-related issues due to lawyer unfamiliarity with the production process might lead to delays getting the project started, timely response to changes, the desire for a higher production value than the budget allows, and wishful but unrealistic thinking. These remedies can help:

- Become familiar with the creative process described in this publication and allow adequate time for production
- Provide examples of preferred styles, production values, or outcome early in the project, especially from senior "I know what I want, and I'll let you know when I see it" stakeholders
- Communicate early and often and adhere to the production schedule to minimize eleventh-hour changes

- Involve the client in the creative process and keep them up to date to reduce their anxiety and eliminate temptation to promise deliverables without first knowing if they can be completed on time or on budget
- Avoid the mindset that "throwing more people" at a looming deadline is a viable way to put more hours on the clock or days on the calendar
- Accept when a project must end; this is especially important for stakeholders who insist that additional tweaking is absolutely necessary before the deliverable will be acceptable

Periodic Cost Reporting

It is the producer's responsibility to monitor the burn rate of the budget on a real-time basis, so while cost reporting might be optional, we recommend that producers do so proactively.

Reporting periods can be pegged to certain budget milestones or may be as frequent as every day. Regular reporting is a good way to avoid unpleasant cost-related surprises by alerting stakeholders to an unacceptable burn rate and allowing them to respond. If costs are rising too quickly or are projected to exceed the budget, reasonable responses might be to edit the script, change production techniques, lower production values in minor or undetectable ways, or seek permission to increase the budget.

Intellectual Property and Usage Rights

Do not assume that independent contractors and vendors operate on a work-for-hire basis or that your client or your firm will own exclusive rights to the deliverable. In the United States, work-for-hire arrangements are the exception and not the rule. Copyright ownership is retained by the creator with certain exceptions:

> Copyright protection subsists from the time the work is created in fixed form. The copyright in the work of authorship immediately becomes the property of the author who created the work. Only the author or those deriving their rights through the author can rightfully claim copyright.
>
> With works made for hire, the employer and not the employee is considered the author. Section 101 of the copyright law defines a "work made for hire" as:
>
> 1. a work prepared by an employee within the scope of his or her employment; or
> 2. a work specially ordered or commissioned for use as:

- a contribution to a collective work
- a part of a motion picture or other audiovisual work
- a translation
- a supplementary work
- a compilation
- an instructional text
- a test
- answer material for a test
- an atlas

if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire.

The authors of a joint work are co-owners of the copyright in the work, unless there is an agreement to the contrary.[12]

This last point is important for technology tutorials because it is almost unheard for the entire creative work to originate from the producer. Therefore, reputable providers (including *Legal Arts*) insert contractual language into our agreements that acknowledge shared copyright ownership and usage rights of deliverables with the client of record under the condition that the producer's fee is paid in full. However, not all producers work this way.

If you or your client have any intellectual property concerns—particularly if protectable client content is included in the tutorial—or if you want exclusive control and ownership of the deliverable, negotiate protective language to that effect in your engagement with the provider.

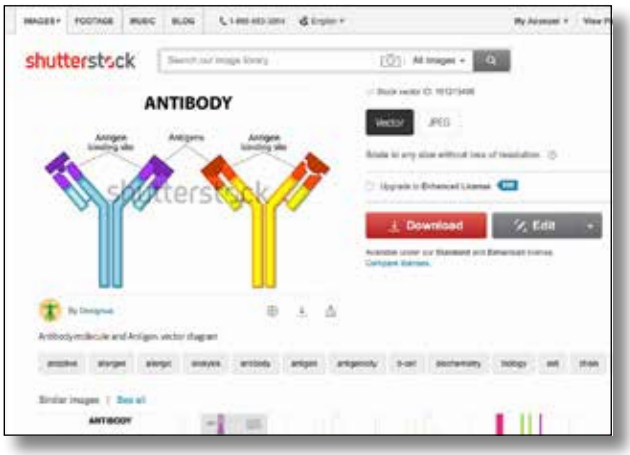
Using Stock Images

You should assume that every image on the Internet (*e.g.*, from *Google* image searches) is copyright protected and using it in your technology tutorial without proper licensing might infringe someone's copyright. Don't risk putting you and your client in legal jeopardy when there is likely a relatively low-cost solution available (even if you believe that using found images in an educational tutorial constitutes a "fair use" copyright exemption).

Google image search for "antibody."

Prices and licensing terms for the same image can vary widely among stock image providers but with a little prac-

12 "Copyright Basics" United States Copyright Office, p. 2. Last retrieved February 2017 at https://www.copyright.gov/circs/circ01.pdf



Top and middle: Online image search on TinEye's *Reverse Image Search site netted 15 published sources including the royalty-free resource* Shutterstock.

Bottom: Image search result on Shutterstock.

tice you'll discover which sites have the options you like (e.g., photos, illustrations, vector art), and which have the most reasonable licensing terms and fees. If you find an image online and want to learn if it can be licensed, or if you want to comparison shop prices and usage rights among different licensors, online image search tools can help.

A reliable source we like is *TinEye's* **Reverse Image Search** (see https://www.tineye.com). Simply upload a saved image to their site and within seconds you'll get a result. Not every image will be available "royalty-free" (*i.e.*, for a modest fee), but "image collections" usually are. If more than one source is listed, comparison-shopping is easy to do.

Be warned that copyright owners also use these sites to locate potential infringers. Therefore, if your demonstrative exhibits become Internet-searchable, images downloaded from the Internet that appear in your work might be found in a search like this.

We always recommend that non-original content be licensed from royalty-free stock image sources such as *Shutterstock* (https://www.shutterstock.com/home) or *123RF* (http://www.123rf.com).

While there are obvious advantages to creating original art to suit specific needs of a technology tutorial, if stock art is a viable alternative, license fees are usually a fraction of the cost to develop entirely original work.

Certain types of images may only be available from a single source (if at all). For instance, the work of renowned medical illustrator Frank Netter is available only from *Elsevier's* "**Netter Images**" website (see https://www.netterimages.com). The price for each image (or sometimes a group of images) for a single-use demonstrative exhibit is about $275.

Home page for Netter Images *featuring Frank Netter's work, which has been used in demonstrative exhibits for decades.*

Here are additional popular sources for stock imagery. Most services offer single image licensing for either a set price or for pre-paid "credits." Pre-paid subscriptions can save money if you intend to buy five or more images within a certain time frame (usually a year), and discount coupons are frequently available online.

A.D.A.M. OnDemand (see http://www.adamondemand.com) offers single-user licenses in the $40 range (at time of publication) featuring high production value medical and physiology tutorials.

Adobe Stock (see https://stock.adobe.com) is a relatively new entrant to the stock imagery lineup and features several modifiable 3D models compatible with *Adobe's* "*Felix*" application that enable artists to create images for apps like *Photoshop*.

Doctor Stock (see http://www.doctorstock.com) features medical-related imagery and a wealth of medical illustrations. Its licensing terms are somewhat cryptic but their customer support is helpful.

Dreamstime (see https://www.dreamstime.com) has a user-friendly website and millions of images in inventory. We've found many high quality medical images on this site that are unavailable elsewhere.

Getty Images (see http://www.gettyimages.com) contains perhaps the largest collection of licensable images. Its prices are on the high end and licensing terms can be very restrictive (*e.g.*, one-time usage). Its subsidiary **iStock Images** (see http://www.istockphoto.com) appears to be somewhat more competitively priced.

Medicalimages.com (see https://www.medicalimages.com/mainMenu.do) is a good source for stock surgical and diagnostic imagery. Prices are based on intended use, industry, resolution, and length of time. Expect to pay at least $120 per image.

Part Three: Budgeting

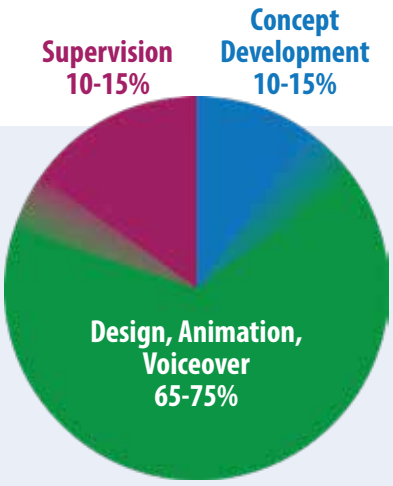
Establishing a budget that more or less accurately reflects the scope, duration, complexity, and desired production value of the final deliverable is more art than science. Therefore, the value proposition will depend largely on your perceived value of what the tutorial will accomplish and what your client will pay. Because there is usually more than one way to approach a project, the producer will rely upon you to provide this initial guidance.

Ultimately, the budget will reflect what is in the script, the time available to produce the tutorial, the billing rates of talent, and the production value you choose. Cost ranges can vary widely: it is reasonable for a *PowerPoint*-based tutorial to cost under $10,000 and an entirely animated and narrated production to cost well into six figures.

A **global budget** incorporates costs associated with all aspects of conception and production, including attorney and expert time while the **production budget** focuses on just the creative production effort. Our discussion is limited to the latter.

Estimates, Proposals, and Budgets

An **estimate** is a good faith, ballpark guess based on broadly defined parameters and expectations. An estimate is very useful to gauge the feasibility of a project based on contemplated complexity and duration, to determine which production value is appropriate, and to verify that the client will pay a certain amount of money for the effort. An estimate is not a commitment to produce a tutorial for a set price.



Here's a streamlined example of how the cost for production of the "Defense-2" tutorial described above was originally apportioned:

Real Case Example: Estimated Cost $130,000

- Concept development and scripting (not including attorney/expert time): **10-15% = $13K to $19.5K**
- Graphic design, animation, voiceover and production: **65-75% = $84.5K to $97.5K**
- Art direction, creative supervision and project management: **15-20% = $19.5K to $26K**

A **proposal** commits the vendor to produce the technology tutorial for a set price, or price range, based on known information and predictable variables, and excluding or making exceptions for unpredictable variables. A proposal is a qualified promise to deliver the final product for a set price.

A **budget** differs from a proposal in the sense it establishes monetary benchmarks for discrete tasks or milestones. Once established, a budget should be constantly monitored and continually assessed for viability. When required, the budget can be modified to accommodate new information or resolution of unpredicted variables.

Phased Budget

A **phased budget** is structured to meet pre-defined production milestones after which it is adjusted going-forward. This is a good choice when project scope is unpredictable at the outset or the client wants to consider different options once underway.

The **first phase** usually includes basic concept development and script-writing. Typically, counsel writes the first draft and submits it to the producer for creative input.

As the script is refined, the stakeholders should get a reasonable feel for time and cost variables for subsequent phases. The first phase ordinarily consumes between 10-15% of the final production budget but it might take up to half the calendar to complete. On rare occasions involving an accelerated timeframe, script changes may continue to the end of production.

The **second phase** incorporates design and production, which commonly begins before the script is finalized. This phase typically consumes 65-70% of the budget.

The **third phase** normally includes minor rewrites, post-production editing, and publishing, which typically consume the last 15-20% of the budget but can be reduced significantly in smaller *PowerPoint* productions.

As with any budget, unpredictable variables can affect the bottom line: unfinished discovery, court rulings, change of strategy, unexpected interruptions, parties settling out, and unforeseen emergencies.

Flat-Fee Budget

The **lump sum**, **value-priced**, or **flat-fee budget** option is a straight-forward proposition equating fair value for the quoted price. Some clients (and quite a few providers) prefer this budget and, by extension, this method for proposing a fee for an entire project.

A flat-fee budget is more of a gamble for the producer because, except for defined contingencies, it encompasses all labor and out-of-pocket costs. Flat-fee budgets are only appropriate when project scope is predictable.

Range-of-Cost Budget

A **range-of-cost budget** projects total cost from high to low, giving the provider some flexibility. This budget is the most common because it protects the producer if more work is needed than is originally contemplated.

Preventing Cost Overruns

When a budget is exceeded, the usual culprits are significant or late script changes; eleventh-hour global changes (*e.g.*, change the widget color from red to blue in every scene); inappropriately high production value; more difficult or complex content than originally contemplated.

To mitigate sticker shock for labor-intensive technology tutorials, we recommend these best practices:

- Provide very specific guidance to your provider for the deliverable
- Request periodic burn rate reports
- Set a very clear budget ceiling
- Change your guidance if there is a disconnect between what you want, what your client is willing to pay, or what the provider will provide
- Avoid these budget-killers:
    - Throwing money and people at the project because the initial plan was too aggressive for the schedule
    - Compressing the production schedule because too much time was spent writing the script
    - Failing to monitor the burn rate

Once the project is underway the creative team will be reactive to the approved script. If it calls for labor-intensive work, don't be surprised when the final bill reflects it.

What to Expect

Technology tutorials don't necessarily have to cost a lot of money. Today (2020), most productions are in *PowerPoint* format, which tend to cost less than multimedia interactive presentations. Following are representative examples at different price points.

Sample Budget: Under $10,000

Medium: *Microsoft PowerPoint*

Complexity: Simple

Length: ~ 40 slides

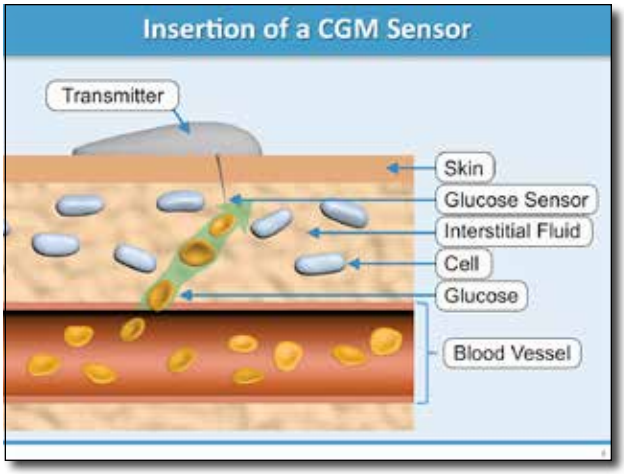
Animation/Motion graphics: None

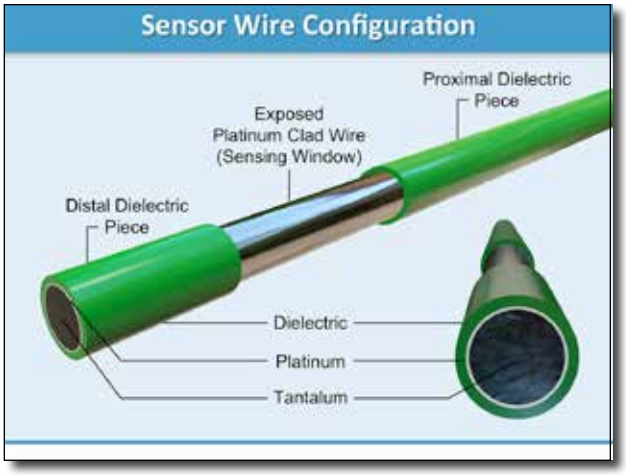
Narration: None

Features: Simple images and graphics; imagery consisted mostly of client-furnished photos and colorized patent figures; some custom 2D and 3D static illustrations

Use: Pre-trial hearing repurposed for jury trial

Two illustrative graphics featuring a simple custom biomedical illustration (left) and technical illustrations (right).





Tip: It is common for lawyers to prepare a basic *PowerPoint* "deck" describing most content of a technology tutorial and request the producer to polish the deliverable. This is usually a straightforward mechanical exercise involving limited original content creation.

We recommend budgeting $100 to $200 per slide for this type of presentation.

Sample Budget: Under $10,000

Medium: *Microsoft PowerPoint*

Complexity: Simple to moderately complex

Length: 18-minute video (60-70 slides)

Animation/Motion graphics: None

Narration: None

Features: Simple images and graphics; considerable number of imported images; written copy only on about 50% of slides; custom photography

Use: Motion for Summary Judgment and *Markman* hearings

Technology tutorial produced in PowerPoint *featuring custom photography. Tutorial was used initially for a claim construction hearing and later repurposed for trial, resulting in a $147.2 million award.*

Tip: When a tutorial requires a lot of original images to demonstrate processes involving people and technology, consider using a combination of stock and custom illustrations and photography.

You might be pleasantly surprised how quick and easy it is to create visually appealing and informative content on a shoestring. In this case involving wireless telecommunication technology, we used staff actors to demonstrate how a mobile phone lost in an airport can be remotely managed.

By keeping talent in-house and saving modeling fees, a substantial technology tutorial consisting of about 75 slides can be reasonably produced for $150 to $200 per slide.

Sample Budget:
$15,000 to $25,000

Lower production value technology tutorial related to barcode scanning and Internet shopping. Medium was chosen to accommodate a fixed budget.

Medium: *Microsoft PowerPoint* and *Adobe PDF*

Complexity: Simple

Length: 15-minute video (50-60 slides)

Animation/Motion graphics:
2D *Microsoft PowerPoint* animation effects

Narration: Yes

Features: 2D and 3D illustration and photographs; native *PowerPoint* animated effects

Use: Pre-trial hearing

Tip: Native *PowerPoint animated* effects utilizing illustration and photography is a relatively inexpensive way to create motion graphics.

In this case involving Internet commerce software, we demonstrated basic computer data entry with interactivity by laser bar code reader, mouse, and keyboard, and data processing by moving simple block illustrations.

PowerPoint animation was used to define motion paths, show hand and object movement, and build a multi-step process.

The deliverable was a *PowerPoint* video with professional voiceover narration matched precisely to timed animations.

A reasonable budget for this production is $300 to $400 per slide.

Sample Budget:
$20,000 to $40,000

Medium: *Microsoft PowerPoint* published to DVD

Complexity: Moderately complex

Length: 15-minute DVD comprising 75-100 *PowerPoint* slides

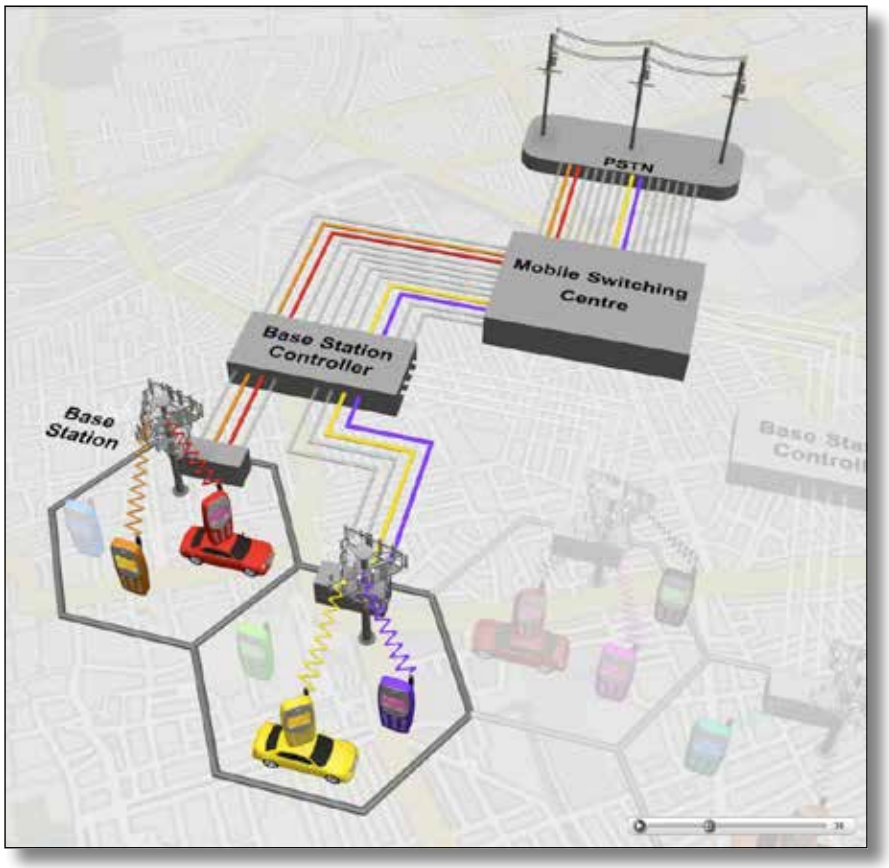
Animation/Motion graphics:
Animations prepared in *3DsMax* and *Adobe Flash*

Narration: None

Features: Some complex graphics and several animated clips

Use: International and domestic arbitration

Technology tutorial originally produced for International Arbitration in the Netherlands and repurposed for patent infringement litigation in the United States.



Tip: Use *Adobe Flash* to combine 3D-illustration and 2D-animation imported into a *PowerPoint* presentation to demonstrate dynamic activity and processes.

Depending on what you need to demonstrate, the time and cost investment to create content can vary tremendously. Budgeting $1,500 to $3,000 per deliverable minute, or $300 to $400 per slide is reasonable.

Sample Budget:
$30,000 to $50,000

Medium: *Microsoft PowerPoint*

Complexity: Moderate

Length: 7 PowerPoint videos comprising 5.5 minutes comprising 90 slides and 10 animations

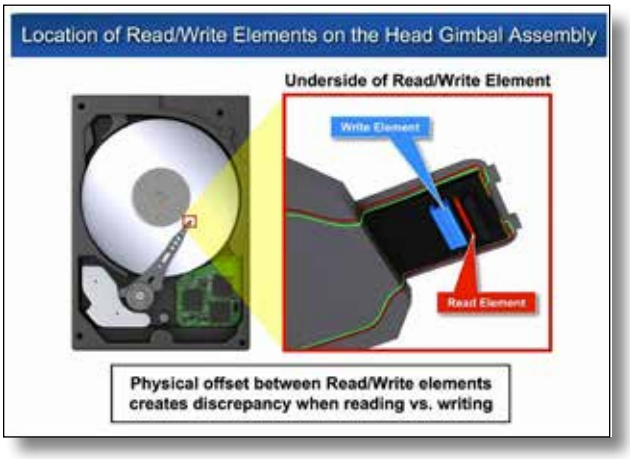
Animation/Motion graphics: *Adobe Flash* animation

Narration: No

Features: 2D and 3D graphics and 2D animations.

Use: *Markman* hearing, expert direct testimony

Series of seven self-running PowerPoint *presentations that varied between 19 to 110 seconds. Each tutorial featured one 2D animation.*



Tip: For this case involving nine patents relating to hard disk drive technologies, the client desired seven technology tutorials to set the stage for a claim construction hearing.

The tutorials shared a common template and display medium and were discretely packaged in the event one or more patents were dropped from the lawsuit.

A reasonable budget for this production is $6,000 to $8,000 per finished minute.

Sample Budget:
$100,000 to $150,000

Medium: Non-interactive DVD

Complexity: High

Length: ≥ 20 minutes

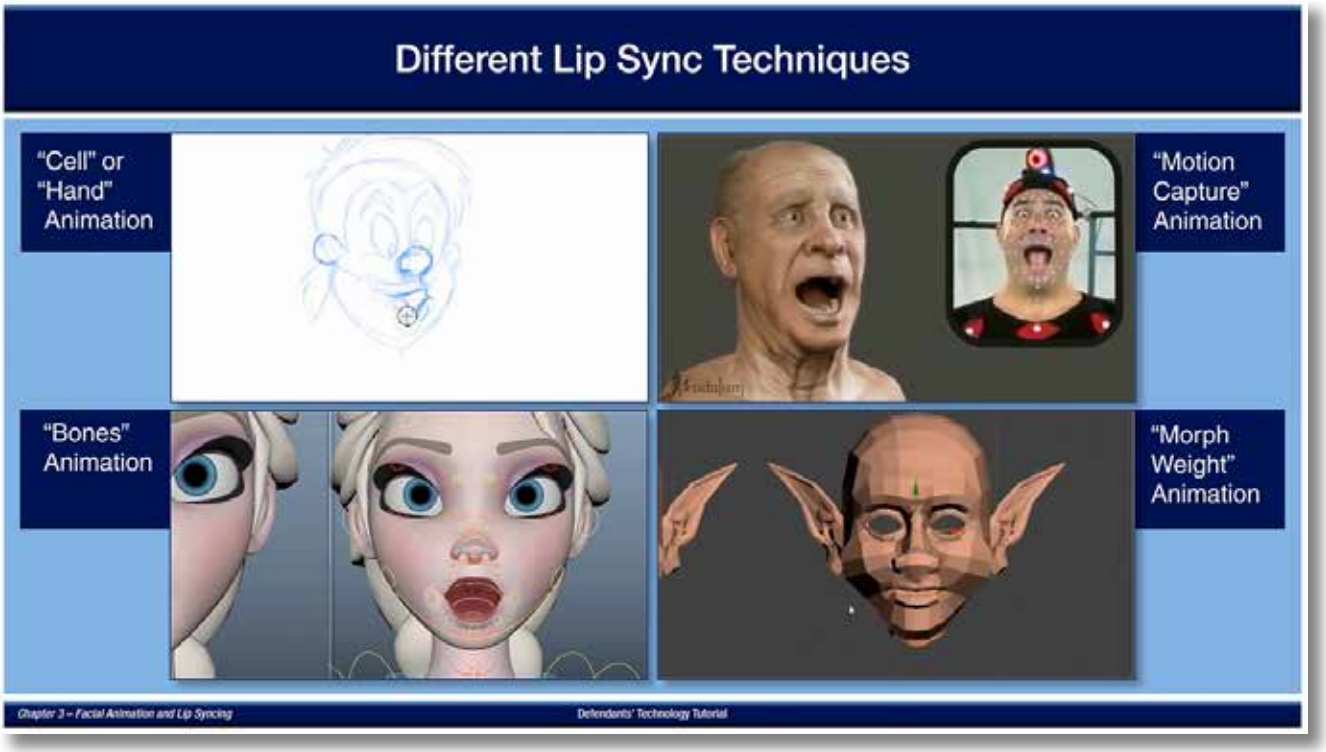
Animation/Motion graphics:
3DsMax, Maya, Adobe After Effects

Narration: Yes

Features: Constant movement on screen from animation and video clips or "Ken Burns effect" pan-and-scan of static images

Use: *Markman* hearing; content repurposed for jury trial

Entirely animated and narrated self-contained tutorial relating to facial animation techniques and software prepared for joint defense group representing six defendants.



Tip: Entirely animated and narrated technology tutorials offer a seamless presentation of a great amount of material within a tight timeframe. Here, we produced a 20-minute tutorial featuring almost 100 animated scenes or video clips comprising half the running time, with scenes changing about every six seconds. This kept the learner's attention firmly glued to the screen.

We recommend budgeting $5,000 to $7,500 per minute of final running time.

Sample Budget: $200,000 and Higher

Medium: Interactive DVD

Complexity: High

Length: ≥ 40 minutes

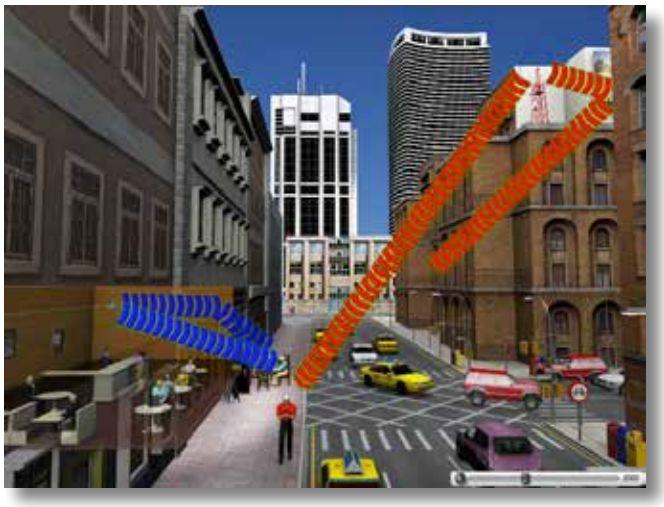
Animation/Motion graphics:
Adobe Flash, 3DsMax, Maya, Adobe After Effects

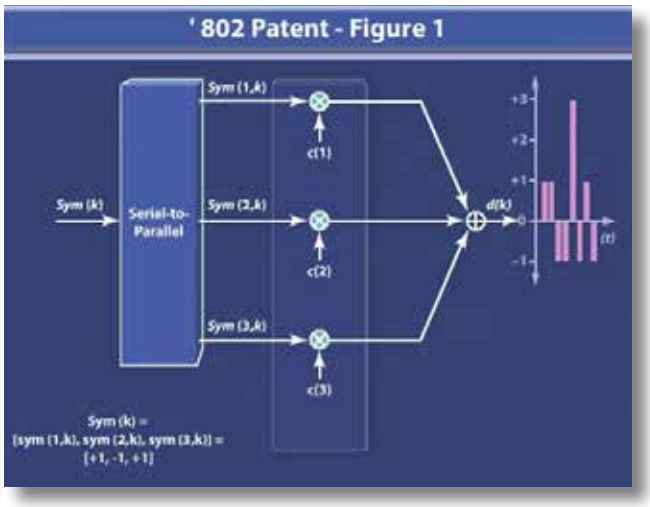
Narration: Yes

Features: Very complex graphics and animations; continuous animation (graphics or video) except for chapter headings and some chart-based content

Use: *Markman* hearing and pre-trial settlement conferences

Technology tutorial produced for a 50-minute fully narrated tutorial relating to Wi-Fi and WiMAX technologies. Presented to the court before a claims construction hearing.





Tip: In the big picture, graphics budgets for bet-the-company high-tech patent infringement cases with 9-figure or higher exposure involving multiple patents, might be "decimal dust." Still, it is imperative that costs be projected in a careful and reasonable manner.

Our mandate for this tutorial was, except for title screens, "something always had to be moving" for about 45 minutes. The final deliverable comprised hundreds of scenes, and dozens of 2D motion graphics and 3D animations.

The cost for this tutorial, produced in just 35 days, was about $10,000 per finished minute.

About the Author

James R. Gripp is the founder and proprietor of **Legal Arts, Inc.,** which he established in 1979. **Legal Arts** is one of the oldest and most experienced litigation graphics specialty firms in the United States.

With over four decades' experience in virtually every major practice area, Mr. Gripp has personally participated in over 5,000 individual cases including over 300 intellectual property matters since the late 1990s. He has produced well over 100 technology tutorials for patent infringement and other practice areas. Jim can be contacted at jgripp@legalarts.com.

Legal Arts, Inc.
3755 Avocado Blvd., #307
La Mesa, CA 91941
Phone: 619.316.5672
www.legalarts.com

Legal Arts®
Experience Visual Persuasion

Selected Technology Tutorial Clients and Topics appear on the next two pages

Selected Technology Tutorial Clients and Topics

Medical, Biomedical & Biotechnical

- **Acme Spine**
  Pedicle screw & receiver design
- **Agilent Technologies**
  Gas chromatography pump
- **Alaris Medical Systems, Inc.**
  Intravenous valve design
- **Breg**
  Patellofemoral knee brace design
- **Carl Zeiss Vision (Australia)**
  Progressive spectacle lenses
- **Covidien**
  Ultrasonic tissue sealing
- **Dexcom, Inc.**
  Implantable continuous blood glucose monitoring system
- **Histogen, Inc.**
  Human cell regeneration
- **MedComp**
  Vascular access ports
- **Medtronic, Inc.**
  Cardiac balloon catheter design
- **St. Jude Medical**
  Cardiac catheter guide wire design
- **Sherwood Medical/American Home Products/Wyeth**
  Tympanic thermometer
- **Stryker Howmedica Osteonics**
  Knee prosthetics
- **SurgiQuest Inc.**
  Laparoscopic surgery medical device

Entertainment and Lifestyle

- **Nike**
  Athletic shoe design
- **NJOY**
  Electronic cigarette design
- **Roku**
  Remote control devices

Pharmaceuticals

- **Abbott Laboratories**
  Pharmaceutical formulation
- **Apotex Inc.**
  Pharmaceutical formulation
- **Biogen Idec**
  Pharmaceutical formulation
- **Genentech, Inc.**
  Pharmaceutical formulation
- **Great Lakes Chemical Corp.**
  Pharmaceutical fabrication
- **Pfizer Inc**
  Pharmaceutical formulation
  Celebrex product liability defense

Industry

- **Alcoa Inc.**
  Aircraft fuselage alloy
- **Briggs & Stratton Corp.**
  Lawnmower motor design
- **Eldorado Stone**
  Architectural stone products
- **Finmeccanica SpA**
  Wheel motor design
- **Microtune/Zoran Corp.**
  Television tuner technology
- **Ricoh Company, Ltd.**
  Photocopier technology
- **Sempra Energy and San Diego Gas & Electric Co.**
  Electricity transmission and delivery
- **Sungear**
  Turboprop reduction gear design and manufacturing
- **Sunny Fresh Foods (Cargill, Inc.)**
  Liquid egg pasteurization
- **Virgin Atlantic**
  First Class seating design
- **Zenon Environmental**
  Wastewater filtration technology

Logos appear for purpose of identity, not recommendation.

Continued on next page.

Communications

- **Ajaxo**
  Wireless technology
- **Apple Inc.**
  Video streaming software
  Telephonic voice command software
  Wireless communications software
- **Corning Gilbert, Inc.**
  Coaxial cable connector design
- **Dowa Mining Co.**
  Magnetic tape formulation
- **Eastman Kodak**
  Video signal processing
- **Hughes Network/DirecTV**
  Satellite television technology
- **InterDigital, Inc.**
  Cellular telephone technology
- **JDS Uniphase Corp.**
  Fiber optic connectors
- **Lambda Optical Systems**
  Fiber optic switching
- **Power Integrations**
  Cell phone power conversion
- **QUALCOMM Inc.**
  CDMA technology
  Cellular phone hand-off technology
  Video coding and compression
  Voice analysis and synthesis
- **VISTO/Good Technology, Inc.**
  Mobile phone technology
- **WiLAN**
  WiMAX and WiFi technologies

Software

- **Adobe Systems, Inc.**
  Soft brush tablet software
  Font design software
  Graphics software
  Photo imagery software
- **Amazon.com**
  Internet commerce systems

Software, Cont.

- **Autobytel Inc.**
  Internet commerce
- **Bethesda Softworks**
  Facial animation software
- **Data General**
  Computer operating system
- **Hewlett-Packard**
  Flatbed scanning software
  Inkjet printer halftone software
- **Samsung Electronics**
  Video format conversion
- **Sophos**
  Computer network security software
- **Versata**
  Pricing technology software

Computer Chips & Equipment

- **Apple Inc.**
  Microprocessors
- **GSI Technology**
  SDRAM computer memory chips
- **Hewlett-Packard**
  Laptop computer design
  Digital projector image correction
  Inkjet cartridge design
- **Isola**
  Printed circuit boards
- **KLA-Tencor Corp.**
  Computer chip-testing technology
- **LAM Research Corporation**
  Semiconductor fabrication
- **Maxtor/Seagate Technology LLC**
  Hard disk drive controller chip
- **Micronics, Inc**
  Computer chip-testing technology
- **Rambus Inc.**
  SDRAM computer memory chips
- **Single Chip Systems Corp.**
  RFID tracking technology
- **Texas Instruments Inc.**
  Computer chip fabrication

Logos appear for purpose of identity, not endorsement.

Mastering the Art of the Technology Tutorial

Behind-the-Scenes Knowledge Every Litigator Must Know

6th Edition

Legal Arts®
Experience Visual Persuasion

Visual Strategy
Creative Development
Technology Management
International Service

3755 Avocado Blvd. # 207, La Mesa, CA 91941 • USA
T: +1.619.316.5672
www.legalarts.com