The State of the Global Visual Effects Industry 2013

An Analysis of
Current Business Models and Better Business Practices

Published by the Visual Effects Society
July 16, 2013

5805 Sepulveda Blvd., Suite 620

Sherman Oaks, CA 91411

Phone: (818) 981-7861

Email: info@visualeffectssociety.com

Table of Contents

Executive Summary

No matter your vantage point in the visual effects industry, it is clear that the business is changing significantly.

The visual effects industry was built on innovation, with new techniques invented in rapid succession. Milestone pictures happened almost every year in the 1980's, 1990's, and through the mid 2000's using groundbreaking technology and sophisticated artistry created especially for those projects (e.g., *Tron, The Abyss, Jurassic Park, Terminator 2, Toy Story, Lord of the Rings, Avatar*).

Artists can now create heretofore-unimagined imagery to feed an ever-increasing demand for visual effects in entertainment, and the number of effects shots per year and worldwide expenditures on digital productions continue to rise. Changing consumer preferences and an adapting entertainment industry, though, have shortened production schedules and increased expectations. Government tax incentives have helped to globalize production, while technological advances have knocked down barriers for competition causing supply to outpace demand. Innovation has shifted from conceiving new technologies for creating effects to developing efficient production techniques. Meanwhile, business practices within the effects industry have not evolved and don't reflect the realities of modern production.

In recent months, worldwide dialogue in the visual effects community has created a sense of urgency to address the complex pressures on artists and facilities dealing with issues of frayed business models, financial instability, and an increasingly "nomadic" workforce operating without a secure vision of the future.

Of course, entire business ecosystems don't change course overnight. The cumulative force of these and other dynamics have been at work for years or decades – and so a single quick fix is neither realistic nor adequate to address such complexity.

The Visual Effects Society (VES), the industry's professional honorary society, is committed to using our resources and relationships to support the industry we all love – and to seeking out workable solutions during these especially challenging times.

Over the past few months there have been several public forums that have highlighted a number of issues of concern to our industry, mostly concentrating on the possible formation of a visual effects union or trade association. Building on those efforts, the VES saw a need and an opportunity to take a fresh and comprehensive look at the issues at hand and use our unique position and relationships to convene stakeholders from all aspects of the industry. Together, we have been engaged in a vital effort to analyze and update the various business models that govern our industry.

Leveraging our broad network of industry stakeholders, the VES convened a summit meeting this past March which brought together key representatives from leading effects facilities, studios, unions, individual artists, independent effects producers, supervisors and others. The meeting was held privately to encourage candid, robust conversation on a range of sensitive topics. Though most of the attendees were California-based, there were also representatives from Canada and Australia and from companies with operations in a number of other countries. The meeting culminated with the

VES commissioning this white paper and tasking a working group, assembled from among the summit participants, to lead its development.

The working group was co-chaired by two widely respected professionals, Carl Rosendahl and Ken Williams. Rosendahl is the former President of PDI DreamWorks and a former VES Board Chair, and now serves as an Associate Professor at the Entertainment Technology Center at Carnegie Mellon University. Williams founded the Digital Studios Division and co-founded Sony Pictures Imageworks during his tenure at Columbia and Sony, and is currently the CEO and Executive Director of the Entertainment Technology Center at USC. Together, they have deep expertise in the intersection of entertainment, technology and business.

This white paper focuses solely on issues germane to the feature film segment of the visual effects industry and incorporates information from a number of sources in addition to input gleaned from the March summit meeting participants. The authors also interviewed numerous facility executives, whose companies have operations in eight countries and 15 cities around the world, as well as representatives from studios and other business areas. To gain valuable perspective from the artist community, Scott Squires, a visual effects supervisor and VES Board member, conducted a (non-scientific) online survey on key issues regarding VFX artists worldwide, resulting in more than 600 responses. In addition, information was sourced from blogs, articles and published interviews.

Other market segments, like commercials, animation, television, and games have a large overlap with the film industry and were part of the conversation for comparison or mentioned as complementary businesses, but each of them also have their own set of unique issues. Addressing those other industries is beyond the scope of this undertaking.

This paper takes an academic and agnostic approach to the issues presented. It aspires to be as comprehensive as possible in analyzing and presenting issues on a global scale and represents a wide spectrum of sometimes contrasting viewpoints on the genesis of problems and possible solutions, and shares them without bias or value judgments.

Based on the caliber and diversity of participants and their keen insights, we can point to several key findings and common themes for consideration.

The collection of challenges the visual effects industry faces relate to workflow, profit margins, business models and workforce issues that together have brought about a period of immense change, ranging in characterization from natural business evolution to turmoil.

There appear to be four complex, independent drivers of this widespread shift:

- **Government Dynamics** – Tax incentives have a large impact on where work is produced. Exchange rates, health insurance and other benefits that vary by country also can affect the workers, facilities and studios.
- **Growing Competition** – Not specific to this industry, competition is being nurtured by technological advancement, an expanding workforce with varying skill levels, and globalization, which offers options to capitalize on market-specific tax advantages or lower cost of labor.

- **Non-business Motivations** – Passion for being part of the filmmaking process combined with the fear of not being able to do so can lead to a short-term focus and emotionally charged decisions that create unsustainable business models.
- **Industry Dynamics** – A number of issues related to the way the film industry is structured at present and the forces at play includes: a small number of large companies responsible for awarding the majority of effects production work; a volatile and highly unpredictable production pipeline; and growing international markets with regulatory restrictions. There are also current business practices exacerbating the issues including fixed-price bids, not charging for changes, and not charging hold fees for reserving production resources for delayed work.

Over the next few years certain trends will accelerate and continue to have huge impacts on the industry and the people in it. The two key trends are technological advances and the impacts of a global economy.

As newer and more cutting edge technology hits the market it will substantially impact how work gets done: there will be much greater reliance on the cloud; software will continue to decrease in cost and get ever more sophisticated and non-proprietary; and pipeline advancements – both in hardware and bandwidth – will also see their costs drop while their capabilities expand.

Regarding economic issues, if tax incentives proliferate and costs for entry into the visual effects field continue to decline, the industry will see further global expansion with a fast growing workforce being produced in countries that may not be major players in today's visual effects calculus. And as market forces are brought to bear in a changing economic climate, facilities will likely be bifurcated between a small number of consolidated larger companies along with a group of very small and specialized companies.

What does this mean moving forward for the visual effects industry?

In reviewing possible reactions, it is important to put the drivers into two categories – those out of our control and those that we can take ownership of. As noted, some of the drivers are endemic to the realities of a global economy, which will compel companies to continue to pursue options that they believe enhance both efficiency and profitability. Companies and practitioners everywhere will need to conceptualize a new future for doing business.

But there are numerous, important actions that the industry can adopt to improve business and financial management practices.

- **Best Practices** – Better business management and greatly expanded financial training for facility managers; transparency with clients on costs and financial information; and accountability within a facility to help ensure everyone is aligned with the same goals.
- **Fixing Current Models** – Improving industry standards and practices such as standardizing contract definitions of terms and conditions; charging holding fees or other efforts to counter the volatile, seasonal nature of production timelines; and increasing the use of previs to improve accuracy of bids.
- **Alternative Pricing Models** – Adopting alternate pricing models to fixed price bidding; either cost-plus, to compensate for changes that are requested that are not clearly delineated in the

materials provided for the work estimate, or “four walling,” where the client commits to buying a percentage of the facility for a set amount of time. Exploring pop-up companies that hire effects crew members by project or flex companies with scalable small core teams. Facilities are also exploring investment models to secure backend profit participation or residuals.

- **Business and Labor Organizations** – Conversations are in process on these issues and as of yet, are inconclusive. Trade associations can be effective business advocates, but to be effective in impacting standards and practices in a meaningful way, an international organization would be required with a majority of key companies signed on. Unions could address issues of portable benefits, collective bargaining protections, and put artists on similar footing to all other film workers, but they would not impact the pipeline volatility issue or production budgets. They may add additional costs to facilities, thus potentially making the facility less competitive in the global marketplace.

Conclusion and Next Steps

This paper was designed to provide a strategic blueprint to help bring about a new, sustainable future for the visual effects industry. It lays out the myriad challenges facing artists, studios and facilities and the menu of possible solutions that could provide a course correction. We hope it is viewed as a comprehensive source of information and a catalyst for change.

To that end, the VES and its working group suggest starting with those items that could be kick-started within the next few months to improve business education and acumen, including:

- Developing industry standards and best practices
    - Providing a standard definition of terms
    - Cash forecasting and cost-tracking
    - Measuring the impact of delays
    - Finding ways to minimize overruns
    - Blocking time for future work
    - Instituting cancellation fees
- Developing a training program for VFX professionals and facilities business management
- Instituting training on smarter bidding practices

The VES is committed to advancing this process and to continuing to offer its leadership and expert resources to the community. As a respected convener and clearinghouse of information, we will follow up as described in **Conclusions and Next Steps** at the end of this paper.

1 The Problem

The current business model for visual effects was born in the post-*Star Wars* 1970s. Prior to that time, visual effects practitioners were typically either a part of the film crew hired for a production or members of a studio's special effects department. After *Star Wars,* artists began to open independent effects facilities, leveraging off of production financed R&D to develop new technologies for advancing the art of visual effects. Fixed bid pricing was developed in the early 1980s when techniques and expectations were both highly constrained. Effects artists were offered staff positions at companies, changing their expectations from being project based hourly workers to full time salaried employees. Motion control and optical compositing gave way to computer graphics in the 1980's and modern digital film making was born. This new model allowed for continued rapid development of advanced techniques and has driven much of the current demand for visual effects.

The visual effects business has always been volatile with a long history of effects companies going out of business (1). Though the difficulties of the effects industry have been evolving for a long time, additional forces have come into play that challenge facilities and artists more than ever before. The recent bankruptcy filings by Digital Domain Media Group and Rhythm & Hues brought the fragility of visual effects companies into public discussion, as well as affecting the entire filmmaking ecosystem. Though some voices fear the collapse of the industry and cite the bankruptcy filings as evidence, others are more circumspect. They feel the filings were partially due to fallout from industry dynamics, but also believe there were internal issues specific to how those two companies were managed. Many of the issues cited in the next section have been in place for decades (such as fixed price bids and unpredictable work demands).

1.1 A Specific Note on a California-centric Perspective

This paper strives to present an unbiased global perspective to the state of the visual effects industry, a difficult task given the breadth of interests involved. To that end, it is worth identifying separately the situation that California facilities and artists are facing.

The six major studios are all parts of multi-national media corporations, some not even based in the US. Their film units, however, are all based in Hollywood and are the source of most of the major film effects financing this industry depends on. This geographic concentration fostered the growth of a large number of effects companies in the area whose proximity gave them a distinct competitive advantage in working with the studios.

"Runaway production" first became an issue in California in the 1990s as live action filming left the state to take advantage of favorable exchange rates and tax incentives offered in the UK and Canada. The visual effects industry was immune to this for a while, but by the 2000s international effects providers were able to take advantage of high speed communications, and proximity to the studios was no longer as important. Cities and countries, believing digital production could help attract technology industries to their regions, began offering significant tax incentives to film companies to produce their effects there. The studios rationally took advantage of 20-60% effective discounts to their productions, and effects work began to leave California at a fast clip. Other factors, such as lower cost labor in India and China and continued commoditization of less sophisticated effects work, have also contributed to competition attracting work away from the state.

California effects companies which have survived these changes are adapting by opening production facilities in tax incented areas and are often trimming down local staff to creative development, production management and support. Artists hoping to stay employed in the industry are finding it necessary to relocate permanently or for long periods outside the state. Other reactions within the state have included a call for increased film tax incentives in California, a challenge of the legality of tax incentives with regards to international trade agreements, and most recently, a possible pursuit to apply countervailing duty (CVD) law (2).

One participant in the interviews for this paper offered California as a cautionary tale for other regions that are dependent on tax incentives to keep work in their area. No regions have guaranteed incentive support indefinitely, and any number of external economic, social, or political forces could quickly alter the offerings. An area that suddenly finds itself not offering the best tax deal could suddenly experience the “runaway production” that California has seen, with even bigger consequences if the local industry is not sustainable without incentives.

1.2 A Broader Perspective

While California has experienced an exodus of production, many areas have benefitted from the growing effects industry. But tax incentives are far from being the only issue affecting the industry. In fact, companies worldwide identify significant issues that make it difficult for visual effects to operate as a stable mature industry.

There are three segments to the visual effects industry: the studios who provide the work, the facilities who create the effects, and the artists who work at the facilities. This is an inter-dependent ecosystem, and all parties are concerned about the current state of the industry. Even though each group has a different perspective on what the issues are, an unstable environment is bad for everyone. Although there isn’t consensus on identifying “a” problem, the symptoms and impact on each party are clear:

- Facilities operate on thin and unpredictable margins, leaving them vulnerable to cash flow crises – they find it hard to build up cash reserves with which to survive slow periods and pursue new opportunities. Meanwhile, cutthroat competition drives prices even lower.
- Production work is moving around the world – tax incentives, regional low labor costs and low barriers to entry for new companies put pressure on existing companies to reduce costs and set up facilities in tax advantaged or low cost regions. In many cases, the studios may require facilities to produce the effects in specific tax areas.
- Shortened production schedules and delayed starts provide little visibility of the amount of future production work for facilities management, making it difficult to plan, schedule and invest in companies.
- There has been renewed interest by some facilities in forming a trade association to address many of these issues. While there is a lot of work and many facilities are at least marginally profitable, they see no value engaging in a public debate that is swirling about in social media, so their voices are not part of the conversation. That said, even facilities that are doing well identified issues that make this a difficult industry in which to compete, and large changes are necessary to bring stability to the market.
- As facilities shrink or close in one location and expand or open in others, artists and other practitioners worldwide find themselves moving to find work. In many cases work is only for

the duration of a project, leading to a "nomadic" lifestyle for many artists as they move between facilities (and cities and countries) to follow the global distribution of work. Shortened schedules create regular stretches of overtime. These challenges were well documented in the online survey of artists done in conjunction with this white paper (3). These pressures are also rallying workers to consider unionizing in some geographic areas.

- Studios are concerned about the instability of facilities, so they require portable assets, spread jobs among multiple companies (for security and because of short schedules), and are reluctant to pay in advance, opting instead to pay as they go. The studios are taken to task in social media for making enormous profits on effects films, while using their power to minimize profits for the facilities and artists who produced the effects. The studios counter that aggregate film margins are not large, and the gains from profitable projects cover the losses on other projects. People working at studios share the same desire as the facilities and artists to create great films.

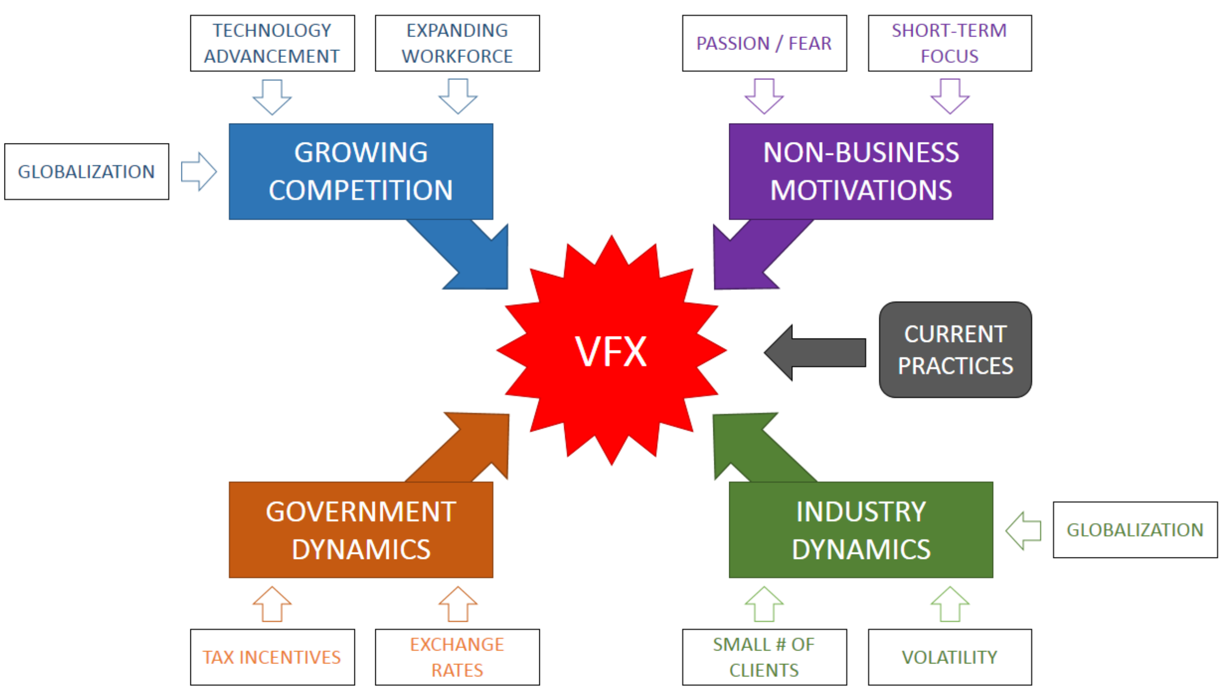
"There is not a common enemy, no one-size-fits-all demon."

But these are just some of the high level symptoms of an industry in transition. The causes run much deeper and are not the result of a single dynamic at work.

Before proposing solutions or next steps, we set out to define the core drivers.

2 Sources of the Problems

Interviews, research, and distillation of the information gathered linked the well-known issues back to fundamental sources, or "drivers." The resulting sources seemed to fall into four natural groups, along with a set of current practices that exacerbate the problems, as this graphic illustrates:



2.1 Growing Competition

The visual effects industry is maturing. Techniques are well known, technology continues to improve, and a plethora of educational institutions and online training programs are making it easier to train a new workforce worldwide. That combination, along with lower cost of international labor, intensifies competition as barriers to entry for new companies dissolve.

As it matures, the industry is transitioning from inventing mode to manufacturing mode. This isn't to say that innovation isn't happening – but it has shifted from conceiving new technologies and techniques for creating effects (natural phenomena, hair, skin, bridging the "uncanny valley"…) to developing more efficient ways to produce effects (rendering performance, motion capture, visualization, pipelines, asset management…). Much of the work is becoming further automated or can be produced by a less skilled workforce.

Growing competition among facilities drives prices down and incentivizes them to become more efficient, which benefits studios and filmmakers. Facilities that don't offer unique services, improve efficiency, or have lower costs face narrower profit margins. Artists may be offered fewer benefits or work longer hours as they vie for jobs.

"Effects are ubiquitous now. There is craft involved if you are working closely with the director, but most effects are much less precious."

2.1.1 The March of Technology

Software, hardware and bandwidth costs continue the trend towards "free," putting more emphasis on the labor force and less on proprietary or expensive technology as the tools become commoditized. A side effect of this is that the ratio of Cap-Ex (capital expenditures, or equipment) to Labor costs has shifted significantly. Where an artist used to need tens of thousands of dollars' worth of equipment for his/her workstation, they can be set up now for a tenth of that cost. The reduction in Cap-Ex expenses has made labor costs the primary expense for a company – and thus labor costs are the primary tool a company has for managing costs.

2.1.1.1 Software

The industry was originally built on proprietary software. Over time, software tools have become more available and increasingly sophisticated. Techniques that were once impossible for all but a few are now easily accomplished with inexpensive – and sometimes free – software. Developers in the effects industry have been very generous in sharing their methods and algorithms. Compared to other technology industries, there is very little IP protection in the way of patents. This has allowed the industry to grow quickly and has kept technology on a fairly level playing field, but it also removed what would be a formidable barrier to entry for competitors.

Facilities that claim a technological advantage from proprietary software typically now point to pipeline and asset management tools rather than the ability to create specific effects. Oftentimes, competing software comes on the market so rapidly that the advantages of proprietary software are quickly overcome. One facility's unique advantage today can be gone tomorrow. There have also been concerns about pirated software giving competitors a financial benefit over companies that acquire their tools legitimately. The lowering cost of software and trend toward buying capabilities "by the hour" from cloud services may reduce the impact of pirating.

2.1.1.2 Hardware

Hardware costs (the combination of processor speed, memory and storage) continue to decrease annually, and there is no reason for that trend to slow down. Variations of "Moore's Law" impact visual effects as much as any other industry. Though the cost to render a final frame of effects in a major motion picture may remain constant, the complexity of those frames has increased dramatically. With the addition of higher resolution (IMAX), stereoscopic (left and right eye needed) and potentially higher frame rates (48fps or more), the demand for rendering hardware continues to grow.

Large facilities have been able to differentiate themselves by their ability to finance and support large render farms. Recently, multiple cloud rendering services have become available that address privacy and proprietary concerns while offering the ability for companies to buy their rendering by the hour – offloading the direct cost of ownership and support while still enjoying most of the benefits of having access to a larger render farm. Small facilities can now scale their rendering resources instantly to the size of larger ones. Though they arguably pay a bit more for the flexibility, they don't bear the cost of the farms when they aren't being used. Other small and mid-sized companies have solved the ramp up problem by renting machines for only the crunch time they are needed for.

2.1.1.3 Bandwidth

The cost for bandwidth – either on the Internet or a dedicated network – is also on a constant downward path. The ability to video conference, review footage, and transfer terabytes of data effortlessly and inexpensively has reduced the necessity for visual effects to be produced in any close proximity to their clients.

2.1.2 Growing Workforce

There are now hundreds of colleges and universities around the world offering training and degrees in visual effects related skills. Though these are of varying quality (some excellent, some not), more qualified students graduate each year than are absorbed by the industry. In addition, online training courses offer non-degree training to those who wish to study on their own. Better technology has also created opportunities for less skilled workers to enter the field, further increasing the available workforce.

2.1.3 Globalization

Advances in technology and education have facilitated the growth of the global workforce. Fast communications have broken down the barrier of needing all staff to be local to the production. Workers can be found in locations that may have tax advantages or lower labor costs.

Areas like India and China offer labor costs well below even the tax-subsidized costs of other regions. These areas originally attracted "commodity" work that demanded a lesser trained workforce, but through experience and training, they are developing the skills necessary for higher end work. US and UK companies are choosing to partner with, or expand into, low labor cost regions rather than try to compete remotely. International companies are also acquiring US companies for the name, talent, and connections.

2.2 Non-Business Motivations

2.2.1 Passion and Fear

Everyone in this industry is passionate about participating in the filmmaking process. They want to tell stories, they enjoy the camaraderie of solving tough creative or technical challenges together, they get a rush from families and friends seeing their names on the big screen, and they cite the "cool factor" of working on movies.

This passion is what drives the industry, and the fear of not being able to pursue that passion is one reason why people and facilities choose not to say "no" to bad situations. It is a strong motivator to work 80 hour weeks without overtime pay, and a reason why facilities are willing to reduce prices below their actual costs. They fear that by not "being a team player" they will lose their jobs or business and be out of the game altogether. This feeling is especially acute because of the limited client base.

2.2.2 Short-Term Focus for Facilities

Most managers and facility owners moved up through the ranks of visual effects or related industries. They started as programmers, artists, marketers or effects producers. They learned the business from their co-workers and rose up in responsibility. Some of them spun out and started their own companies.

Ironically, the effects industry's standards and practices are built on emulation and conformation rather than innovation. New effects companies take their forms from existing companies, adopting unsound management systems rather than innovating with new business practices. The visual effects industry doesn't hire experienced financial executives to help build their businesses or define their business models. The resistance to considering external advice is often voiced as, "this industry is different, and you can't understand it until you've worked in it a long time."

> *"When studio film budgets hit $50M, they start bringing in MBAs and professional business guys. When effects companies get that big they don't – but they should."*

There are many other introspective criticisms from management about how facilities are run. These include that in this volatile business, most companies are highly undercapitalized and don't put enough emphasis on managing their cash flows; that facilities don't have an accurate accounting of costs; and that bids have a false precision whose errors spread across hundreds of shots with a huge accumulated error.

This lack of a formal business outlook also leads companies to make short-term decisions rather than prioritizing for long-term survival. As an example, many companies are reluctant to lay off idle staff, so they pursue unprofitable jobs rather than cutting costs. They argue that it is hard to hire and train people, and that experienced people may not be available when needed. This is especially true of facilities with proprietary software. They also may feel loyalty to their employees. Regardless of the reason, this approach has often led to the disastrous result of laying-off employees after all cash reserves have been used, leaving the company unable to pay those employees for work already completed, who then need to fend for themselves regarding legal recourse.

Pricing jobs below actual cost for short-term survival also has the side effect of establishing even lower price points that clients expect on future jobs.

The impact of these non-business motivations is to reduce the long-term viability of facilities, increase the risk and reduce the trust that studios have in their potential suppliers, and contribute to instability for the workforce.

2.3 Industry Dynamics

2.3.1 Small Number of Clients

The film industry is a mature business with a small number of large companies responsible for the majority of effects production work. This oligopoly gives the six major studios – Disney, Fox, Paramount, Sony, Universal and Warner Bros. – enormous leverage in controlling prices from its suppliers.

2.3.2 Volatility

The amount of work available at any particular time for effects companies is highly unpredictable. Though seasonal box office demand can be forecast with reasonable accuracy, film effects budgets and schedules cannot.

- Studios delay green lighting films as long as possible as they try to predict consumer behavior – media consumption habits change rapidly, windows for film releases are narrowing, and follow-on markets are shifting from television, cable, DVD and rentals to streaming and digital downloads.
- Studios take into account the "cost of money" on their investments. The interest expense on multimillion dollar projects is substantial, and delaying production expenses as long as possible reduces the bottom line impact of those costs.
- Marketing and distribution costs to release a film are high, and prime release dates are few. There are limited opportunities to get an audience on a big weekend, so studios' strategies rely on a small number of large films ("tent poles") rather than a greater quantity of smaller films.

This approach impacts the entire production pipeline, and creates a demand for large amounts of work to be produced in a very short time. Once delivered, the facilities go through dry spells before films are green lit for the next audience season.

Facilities used to be able to predict workloads for the next six to twelve months, while now they can rarely see beyond three months. High volatility in workload (or "lack of continuity") causes temporary shortages of qualified artists, and results in massive overtime in order to meet the short-term high demand. In addition, the iterative process of creating effects can make estimating artists' hours inherently inaccurate, while delivery deadlines are not allowed to slip. Facilities explain that during crunch times additional experienced workers are not available, and people who are available can't come up to speed quickly enough to make a positive impact on the project. Still, the facilities want to take the extra work because of the unpredictability of future business.

This in turn impacts all the workers. This same volatility makes their jobs less secure, and they are asked to work additional overtime, sometimes unpaid.

Short production schedules also mean that large shows need to be split between multiple facilities. From the studios' perspective, this also reduces the risk of failure from any individual company. From the facilities standpoint, they feel they can be more efficient (and thus more cost-effective for the client) by taking on more of the work until they reach full capacity.

2.3.3 Globalization

The international film market is changing. For example, the film market in China is growing quickly and creating new opportunities to capture an audience. Regulations in China limit imported films without a certain amount of Chinese participation, so studios are partnering to produce content there. Though this has little impact on the effects industry today, that may change soon.

2.4 Current Practices Exacerbate the Issues

There are a number of current practices in the industry that can't be traced back to industry dynamics, globalization, Moore's Law or other external factors. They include standards that have been in place for decades, formed under very different conditions than exist in the industry today. Examples include fixed price bids with little enforcement of charging for overruns; not charging hold fees for reserving production resources; and not charging fees for delayed work. The visual effects industry has also been content operating as a "black box" to its clients – being perceived as wizards in command of mysterious processes and maintaining opacity of the actual costs involved. No other provider to the film industry works in this manner.

In the new production climate, these practices only serve to amplify all the other issues the industry is facing.

2.4.1 Fixed Bid Pricing Model

The fixed bid pricing model is commonly cited as a broken method that leads to losses for facilities. However, everyone wasn't universally critical of this pricing structure – if the work was predictable and had enough volume to average across, a fixed bid can support a reasonable profit margin. The method falls apart when the work is subject to out of scope changes that are not charged for.

It is the fixed-bid pricing structure that most people are referring to when they say "the business model for visual effects has to change."

The fallout from the fixed bid process is wide ranging: facilities are not always paid for changes or overages, and are afraid of losing the client for future work; clients are frequently asking for small changes, or promising "we'll make up for it next time," and delaying turnovers but not accepting responsibility for them.

One client stated that the problems of a fixed bid are a reflection of bad facilities management and there is a limit to what can be asked for on an effects shot. They felt that if the specs are clearly defined in the artwork, storyboards, script, previs and contract then it becomes the fault of the effects facility for not enforcing the contract.

Facilities in turn argue that they are coerced into allowing for changes far outside the contracted specs. They are threatened with the job being pulled, or "you won't work in this business again," or "we'll make it up next time." They also argue that at other times the specs are unclear, and the director does not give clear or consistent guidance as to what s/he wants.

Facilities don't feel they can enforce their contracts without severe penalties. There were examples of clients delivering temp plates or elements to satisfy the contract, but then changing the plates without expecting to pay for the change. Examples were cited of work actually being pulled if facilities complained – so this fear isn't an unrealistic one.

2.4.2 Client Education

Filmmakers are not always held accountable to the studios for the impacts of a change in direction on some decisions. Many facilities criticize studios for not controlling directors on effects work in the same way they control them on live action. The studios recognize that many producers and directors do not understand the impact on schedule or budget that their requests have and are very interested in changing this.

There were a lot of criticisms about how little producers and directors understand the visual effects process. Many still consider it a post-production black box, so they don't engage in the process and they expect changes to be simple and free. Productions sometime hire effects supervisors, who either don't understand the process themselves, or don't share a common vision with the director. Clashes within the production team create counter-productive iterations of the effects at a cost to the facility, but without significant penalty to the production. Facilities complain that the producers or studios don't manage this process or these people well, and thus allow these issues and conflicts to happen. Changes requested by a supervisor and director may both be within the scope of the bid, but are non-compatible with each other. The facility ends up thrashing between the two of them.

Facilities feel bullied by the studios. They cited specific examples of studios pulling work from a facility when the facility pushed back on change orders. They are afraid that if they don't give in to requests for extra work or deep discounts, they will not be awarded any work in the future. This is a real fear because of the oligopoly of a small number of clients controlling the vast majority of production work.

2.4.3 Service Business Model

The business model for effects facilities is typically a work-for-hire service model. Companies may provide any combination of production management, creative services, previs, effects production, and post production services. They may differentiate themselves in many ways – low cost, tax beneficial, specialized techniques, creative services, production oversight, high-touch client management, to name a few. Bids for jobs are competitive, but low price is not the only criteria that clients consider – they want the best value for their production based on a balance of relationship management, risk, quality, schedule, and cost.

If the facility is not providing a unique "value add" to the job, they are competing directly with other facilities, and the client's value decision is reduced to simply price. To be able to justify a higher cost, facilities need to add unique value, either though customer service and support, exceptional capabilities, production efficiencies, or personal relationships.

2.4.4 Other Facility Concerns

"911" work – defined as last minute work that is urgent and/or difficult – is highly stressful, with extremely short schedules that demand 24x7 efforts to meet the deadlines. Facilities and workers dislike the pressures associated with this type of work, but recognize that it can be a high risk high reward opportunity. Because of the circumstances of the work, facilities have more flexible pricing options and can command premiums that may not be available otherwise.

Effects work is “custom one-offs,” so there is little ability to leverage off investments on a project; custom work is hard to bid accurately. The risk is currently passed off to the facilities.

Because effects are produced after all the live action has been shot, facilities are “last in line” for the budget and schedule of the film. Facilities feel that any overruns that happen in live action come out of the budget or schedule of effects, without reducing the work that is necessary – thus effects take the hit for other inefficiencies in the filmmaking process further impacting crunch time and increasing costs.

2.4.5 Work Environments

Artists are also concerned about the long-term stability of the companies they work for. Recent closures of facilities in various countries have left artists unpaid for weeks of work, and similar poor behavior from facilities has helped fuel the dissatisfaction artists are feeling with the state of the industry. According to a recent survey conducted by Scott Squires, nearly one-third of the artists responding said that having to move in order to keep working was a significant problem for them and their families. (3)

Freelance or short-term artists are not eligible for company benefits like health, vacation, and retirement, and for non-union workers there are no portable benefits packages available. Some 60% of the artists responding to the Effects Corner survey were “highly” or “very highly” concerned about health insurance coverage, with only 37% reporting that they currently receive it. This is primarily an issue in the US because of a lack of universal health care.

Some artists are not paid overtime, and feel that they should be. Some believe they are being misclassified as exempt staff, or as independent contractors, so the facilities can avoid paying overtime, a practice that may break labor and tax laws. About 78% of respondents to that survey said they were highly or very highly concerned about overtime abuse, while just 38% reported that they received all the overtime pay they were entitled to, while that same amount received no overtime pay.

These conditions and experiences have generated interest in unionizing among many artists. They see the benefits of unions in fair treatment, overtime management and portable benefits. A link to the survey of artist concerns can be found in the Sources section of this paper. (4)

Conversely, facility owners are concerned that unionization may raise their costs and make them less competitive. Artists and facilities are both concerned with issues of unions being local rather than international. Without being international, unions could cause work to leave regions if the costs increase, and artists in non-union areas may still be subject to the same problems.

2.5 Government Dynamics

2.5.1 Tax Incentives

Local, regional, and national governments have introduced production incentives to attract film and TV production work. These incentives typically represent between a 20% and 60% rebate or tax credit on expenditures made locally. Studios now count on these tax incentives, going as far as mandating them as a part of the budget of a film or green lighting a film based on qualifying for them.

The actual mechanics of incentives vary by area and are complex to understand, but they offer a significant lure to attract production. Studio clients are demanding that production facilities be located within such regions to qualify for the tax incentives. Companies have borne the expense of setting up facilities in these areas to compete for the projects, which is an additional financial and management burden. When there are not enough qualified artists in an area to do the work, facilities import artists. Artists who want – or need – to work on the projects must move to these areas to remain employed.

There is considerable disagreement on the role of tax incentives. Studios and local politicians like them, and film workers in areas that benefit from incentives don't want them to go away but fear that they may. Artists and facilities that are losing work because of tax incentives are against them, and many studies have shown that the incentives don't benefit the local taxpayers (5). Some sources also believe they violate international trade agreements. There is currently an effort based out of Los Angeles to challenge film production tax incentives from outside the United States using countervailing duty law (2). If successful, this could reduce studios' ability to take advantage of international tax incentives and potentially shift geographic production priorities.

The future of tax incentives is unknown, but most facilities acknowledge them as a reality for the current business climate.

2.5.2 Exchange Rates

As the industry becomes more global, exchange rates between currencies have become an important factor. The film industry has no influence over exchange rates, but money needs to flow between countries as tax incentives are pursued, and within facilities with locations in multiple regions. One facility person pointed out that the thin profit margin of a job can be lost in the simple fluctuation of an exchange rate.

Often tax incentives are the focal points for producers who may not have factored in the fluctuations in exchange rate as well as the local cost of labor. As an example, while the Australian rebate is significant its true benefit has been greatly altered by the recent fluctuation to its exchange rate versus the USD – a 14% change in the first six months of 2012.

2.5.3 Local Benefits

Health insurance coverage and other benefits vary by country. For example, citizens in Canada and the UK are entitled to government-sponsored health care benefits, while temporary workers may or may not be, depending on visa status, time in the country and other factors. In the US, the health care system is changing and expanding under "Obamacare." Some companies and unions offer insurance benefits to their employees and members. Health benefits for non-union US workers are not transferable, oftentimes making job transitions more difficult for US citizens than for artists in other countries.

3 Suggested Solutions

This section is a compilation of recommendations that were mentioned at the Summit and subsequently in direct interviews.

3.1 Best Practices

Facilities managers, individual artists and studio representatives recommended some general business practices that they currently use or have observed.

3.1.1 Better Business Acumen for Facilities

"This is a business that makes art, not the other way around."

It is difficult to run a successful effects company, and managers need every ounce of business acumen they can get. At a business level there isn't anything special about effects, the core principles are the same as other industries. Management needs to understand cash flow, bidding, cost tracking, estimating, accounting, negotiating, etc. Business owners should bring professional expertise into their companies either through their own education or by recruiting talent.

Managing cash flow was the most common example of business naiveté mentioned, where companies don't adequately forecast their cash needs in light of the risk apparent in this industry, or they choose to ignore the reality of their situation hoping for a "white knight" job to save the day. A more professional and honest assessment of the company's needs should affect business decisions with a bias towards long-term survival.

More sophisticated systems for understanding and tracking actual costs on productions and refining future bids based on that knowledge was another example of processes in place in other businesses that could be easily adapted to the effects industry.

Facilities have a challenge of developing a way to incent each other to behave for the benefit of the community. Known as the "Tragedy of the Commons," individuals work in their own self-interest while eroding the base they all depend upon. This issue deserves much more investigation.

Overall, a better understanding of their business will give companies a long-term focus, reduce "fear related" decision making, and build healthier companies.

3.1.2 Business Acumen for Employees

For employees, whether staff or freelance, the advice was to treat your career like a business. Don't do what you wouldn't want your employer to do – i.e. don't work at a loss or give your work away. In particular, if you are not getting paid, or if you are working under uncomfortable circumstances, address the issues immediately or stop working at that facility. If a company can't afford to pay their employees it is in dire trouble. It is not your responsibility to go without pay to save the company. Responsible behavior from artists will encourage the studios to use facilities that have the capacity and management to be responsible for their work. Unions may be able to help address these issues, but individuals need to be willing to take responsibility for themselves.

It should also be noted that film productions are project by project for most people working on them – directors, writers, crew, etc. People entering the visual effects world should be aware that working for a facility does not mean they will be employed at all times.

3.1.3 Client Relationships

Most people volunteered the importance of a good relationship with their client that allowed for open discussion of issues, and this was reinforced by the studios. This covered a wide range of topics, from open details about assumptions made in bids and costs associated with them, to raising flags on potential issues before they become problems. Openness builds trust between both parties, making projects flow more smoothly when obstacles come up. Transparency, however, shouldn't be a substitute for good management by deferring that responsibility to the client.

A number of facilities gave specific examples of projects where they were fully transparent with the client, openly sharing costs and financial information. In each case they talked about the difficulty of adapting to that level of client involvement, but that ultimately it made the projects much easier to manage and more profitable. None of those companies cited an example with a negative outcome, and they were all open to doing it again.

Facilities frequently mentioned the need for more attention from the director during post production. Access makes the entire process faster and more efficient, and often adds additional time for creative exploration without impacting the budget.

Clients talked about the importance of transparency in the initial bid. If facilities don't share information about their processes, the talent working on their jobs, unique technology and other benefits, then the client is left depending solely on price as a comparison point between competing bids. The lowest price is not the only factor studios weigh in their award decisions – a bid that spells out other benefits can make clients more comfortable with a vendor, and openness about costs can build trust at an early stage in the process. Factors that are considered include:

- Relationship. Trust, good communications, and transparency are critical for major contracts. Studios will pay a small premium for this, and they won't seriously consider a company for a large project without that trust.
- Quality. This is a top priority for big effects in tent pole pictures. Clients need to be confident that the facilities they use will deliver at a very high level. 2D work (like rig removal, comps, etc.) is seen as a commodity that many facilities can do with consistent quality.
- Risk. Studios are generally risk-adverse for major effects in large pictures, they prefer to work with teams that have a track record for delivering on time. They are willing to take risks on commodity work if there are other benefits and the schedule allows for a plan B. (This is the source of some 911 work having to be produced.)
- Price. Studios have a good understanding of what the price should be. If a bid is way too low they may lose confidence in the facility's ability to estimate the work and thus not award due to the risk. For major projects they prefer a very large amount of detail in the bid to understand each facility's approach. Clients also have to consider hidden costs like access for the director, face to face communications, sending people to/from areas to oversee work, etc.

This topic comes up in more detail in Pricing Models, below.

3.1.4 Accountability within a Facility

Multiple examples came up of ways that facilities use accountability in their business practices to ensure that everyone in the process is aligned with the same goals.

The first example emphasized the value of artists participating in the bid process – something that, surprisingly, is not done at many facilities. The artists help estimate the workload and sign off on the bid, along with the facility producers and management. That way everyone has ownership of the estimates and understands the goal. When changes happen, the signoff process is repeated. If the price is reduced to match a competitive bid, then the price is disconnected from the work estimate, which is especially important to recognize so that everyone understands the tradeoffs being made.

At some facilities artists feel that work estimates are unrealistically low because producers bid without their input. They believe the producers are estimating the workload based on hitting a target budget rather than the actual needs of the project. This automatically leads to a “surprise” when the workload goes over budget.

Another example of accountability is from facility owners who cited the importance of transparency within the company. Open communications keeps everyone working toward the same goal. When things are going well the whole company can celebrate together. Likewise, when there are problems, everyone has visibility. Although no one likes layoffs, situations when employees knew that layoffs were coming, or that they were possible, reduced stress and rumors. Employees were able to plan ahead in case they were affected.

A third example is “a strong CFO to kick your ass.” More generally, management performs better when they are held accountable for the bottom line by someone who is not driven by creative passion for the project.

3.1.5 Diversification

Diversification into other areas of production (TV, advertising, animation, games, etc.) was cited often as a necessity for survival, but not a full solution. Other markets have their own challenges and cycles that are not always reliable. A rapid downturn in advertising in 2008 was a factor in a few facilities closing, and was used as an example of unpredictability in that market, and the game industry has seen its share of turmoil, too. Diversifying services within the effects market was also mentioned. Moving towards being full service – either “soup to nuts” production services, or expanding into creative services were examples.

Companies are also diversifying by getting involved in up-front creative development and fundraising for projects they believe in. Digital Domain and The Third Floor have publicly mentioned this as strategies they are using to reduce their dependence on service work. Not all facilities are able to incorporate this strategy into their business models.

Very few companies are diversified outside of media production, but this would be the best way to mitigate the volatility of the media markets. Other industries that can take advantage of the techniques of effects facilities and artists include scientific and medical visualization, industrial design, architecture and military simulations.

3.1.6 Specialization

The counter-example to diversification was specialization. By focusing on a specific technique or piece of the pipeline, companies are building reputations as the premium provider of that specific type of work. This may be done by dedicated R&D in a particular area, or a focus on skills in production management, creative services, previsualization, etc. This approach can support small companies well but likely would not attract enough specialized work to keep a large company busy.

As technology advances, specialization areas will narrow if those proprietary techniques become standard in commercial tools. There is also a risk of a specialization going out of favor if the needs of the industry or wants of the consumer changes.

3.2 Fixing Current Models

3.2.1 Standards and Practices

There is a unified desire from facilities to improvement standards and practices in the industry.

There is a desire for standardized definitions of terms and conditions commonly used in the industry. For example, a facility was expecting background footage from one camera, while the client delivered footage from multiple cameras meant to be stitched together into one seamless element. Because the definition of "plate" was not in writing, the facility had difficulty demanding a change fee.

A suggestion was made for a common contract rider that contained standard definitions and expectations. This would be the default unless specifically negotiated otherwise. Other practices mentioned were turnovers, hold fees, turnaround time, payment schedules and penalties for late payments, though most contracts already contain terms for these items.

As important as standardized terms are, there was an equal call for less self-destructive practices among facilities. Facilities need to be strong in negotiations, and clear in their contracts about critical assumptions. Though it is not a standard practice today, they need to be willing to charge for legitimate changes to the job and walk away from fear.

3.2.2 Client Education

Multiple client representatives with different opinions lead to confusion, inefficiencies and cost overruns. For example, when directors and effects supervisors do not share the same vision it can lead to multiple changes that are arguably within the scope of the bid but are contradictory to each other. One person needs to be identified by the client as the sole person with authority to ask for and approve changes, and the facilities need to enforce this agreement. An additional recommendation is for the production to have a post-supervisor similar to a live action 1st Assistant Director who is responsible for keeping the director on course and on budget.

Directors and producers need to understand the process better so that they can foresee the impact of decisions they are making. Facilities believe that directors often insist on making what they believe are small changes that are in fact complex and expensive to execute. With a better understanding of the process, the budget could be spent much more effectively on improving the final footage. The responsibility for this education is on the facilities; by being transparent during the bid about costs, techniques and processes, the facilities can help the clients understand the pipeline and the impact of changes. In cases where the director was not involved in evaluating the bid and awarding the job, the facility needs to accept the additional burden of educating the director about their assumptions and expectations. The industry needs better trained and educated visual effects supervisors and producers. But, as costs have become an issue, the definition of a visual effects supervisor is missing from the industry. They have the potential to create huge cost overruns or savings – depending on how well they can do the job – but not everyone with the title is qualified to do it.

3.2.3 Reduce Volatility

The sharp seasonality of the movie business, compressed production schedules, and inability to predict future film budgets, makes it difficult for facilities to forecast cash flow needs and plan ahead for headcount and other investments.

As mentioned in Section 2.3.2, there are many dynamics the studios deal with that determine their schedules. It is unlikely that films will be green lit sooner or that production schedules will be relaxed, as there is simply no motivation for the studios to alter their practices. Effects facilities and other post-production processes which are impacted have little ability to change the volatility of the film effects market, so they must develop tools to help them survive the large demand swings.

Facilities can, however, reduce the impact of schedule changes by charging hold fees for future work or enforcing penalties for delays or cancellations. A few facilities do this now, but it should become a standard practice. This can trickle down to hold contracted talent also.

Diversification (Section 3.1.5) is another powerful way to reduce volatility. If there is unavoidable down time, facilities should use idle resources to invest in projects that could create a return in the future. Facilities need to recognize the volatility of the effects market and be flexible in size if they are not diversified into other areas.

Part of the reason the demand is so unpredictable is that there is very little hard data about the effects industry. Statistics about the size of the market (in dollars, employees or shots produced) are scant, and any numbers mentioned in articles or interviews tend to be speculation and educated guesses. Without real information, trends are difficult to identify and impossible to forecast, and the impact of changes on policies and standards can't be measured or evaluated. A legitimate set of historical data could be very helpful in understanding the industry better.

3.2.4 Importance of Pre- and Post-visualization

"Previs can make things much clearer and less volatile. If the studio is doing previs then the volatility is on their payroll – the facility does the heavy lifting to produce the final shots, but the product is well defined."

Pre-visualization and post-visualization have proven to clarify the vision of the director. Detailed previs can make bids much more accurate, effectively giving the facility a better blueprint, rather that conceptual artwork, from which to bid. If detailed enough, it can also act as a basis for determining if requested changes are outside of the original contracted work.

Production companies and studios are beginning to set up previs capabilities in-house for a production, rather than using facilities for the service. Some of these previs teams are also continuing on to produce the simpler effects for the films. This reduces the risk of the unknown on the bid, and pushes that risk back to the production company or studio. This risk reduction is good for facilities, but it also moves the creative process away from the facility.

3.3 Alternate Pricing Models

Alternate pricing models to fixed price bidding have been suggested. The two mentioned most frequently were cost-plus and four walling.

3.3.1 Fixed Bid vs. Cost-plus

The differences between fixed bids (the most common pricing method used in visual effects) and cost-plus bids arise when changes are requested that are not clearly delineated in the materials provided for the work estimate. To bid a project, facilities are given a detailed breakdown about a sequence of shots that need effects, along with a timeline for the production. From that information the facility estimates a cost for the shots. Filmmaking, though, is a creative endeavor and there are constant changes throughout the process. Facilities make their best efforts to estimate and allow for a certain amount of flexibility and discovery, and should reflect this in their costs.

For a fixed bid, the facility adds a markup, and potentially contingencies, to the cost to arrive at a price. The facility is then responsible to deliver that sequence for the estimated price, regardless of their bidding accuracy. If the estimate was wrong but the job stays within spec, the facility absorbs the difference, positive or negative. If the specs of the job change, the facility has the ability to submit a change order and be paid for the extra work.

Cost-plus is defined as fully loaded costs for production, plus an additional allowance for other overhead and profit. Fully loaded costs include salaries and an allocated portion of other relevant costs like facilities, equipment depreciation, etc. Overhead and profit can be fixed or based on a percentage of cost. An additional incentive bonus for delivering under budget or hitting other performance goals is sometimes possible. If specifications change, or the estimate of work was wrong, the client is responsible for all additional costs.

Studios need to manage the budget of the film, and will not award work without a best effort estimate of the cost. From that standpoint, a cost-plus and fixed bid budget should be similar. Both need to estimate the amount of work necessary to complete the task, and assign costs, overhead and profit to develop a final price. The primary difference is in who carries the risk if the estimate is wrong.

If the specs are tight and the facility understands its abilities and costs well, the two approaches should be equivalent. However, the specs are not always accurate and may even change during the bid process, and facilities are not perfect at estimating their costs or the amount of work needed for even a well specified shot. To protect themselves from loose specs on fixed bid projects, facilities allow for a certain number of changes when they estimate the work. There is no way to accurately predict how long it will take a specific director or effects supervisor to hone in on their vision.

Studios, meanwhile, want to protect themselves from facilities intentionally underestimating the work in order to present a low bid, so fixed bids are the best solution. With a straight cost-plus bid the studio would carry that risk, and the facility would not have any incentive to keeps costs down. The fixed bid approach keeps the onus on the facility to accurately estimate the amount of work needed for the job, and thus makes the budget for the film more accurate.

The fixed bid approach also puts the responsibility on the facility to manage the director and control the budget. As long as the director is staying within the specs of the job, it is difficult for the facility to stop changes if the shots go over budget – they have no authority over the director. Though a strict cost-plus bid would move the risk back to the studio – which has the authority to control the director or alter the budget – the studios would need to also oversee production management to control the costs effectively. Facilities would also have to completely open their books to the studio to audit the costs assigned to the project, which few facilities are willing to do.

Not all facilities agreed that cost-plus is a better pricing method. Cost-plus does not necessarily solve volatility problems at the facility. Down time between projects and non-project R&D is not paid for by the client. Because costs are exposed, the facility also must work harder to justify a premium for services based on unique skills or technology. One argument against cost-plus is that a fixed bid can be quite profitable if the project is clearly defined and well managed. A facility could lose on a few shots but make up for it elsewhere. Also, cost-plus does not remove the necessity for getting approval for all changes from the client, and it does not keep the client from asking for "freebies."

A concern from clients about cost-plus is that there is no incentive for the facility to control its costs. Even if the "plus" part of the bid is a fixed fee (versus a percentage), there is still little benefit to the facility keeping costs down; facilities are generally happiest when everyone on staff is working. This can be addressed with a cost-plus incentive pricing model. In this case, the facility estimates the cost of the project and gets a minimum fee plus a bonus for coming in under the estimate. However, if the project goes over budget, there is no additional incentive for the facility to control costs. For this reason, it is common for clients to be closely involved in production management for cost-plus projects.

Facilities and studios both are culpable for problems with productions – facilities do a poor job of submitting change orders when projects go out of spec, and studios are not always responsive, sometimes not responding to requests for change orders for weeks or months, leaving the facility in limbo.

Either pricing model can work. The solution that facilities and studios both cite as successful is a very open and transparent relationship. Facilities need to present very detailed bids, outlining all the assumptions and estimates. Where there are gaps in the specs from the producers, the facility needs to fill those in with their own specific assumptions. These can be in the form of additional artwork, previs, detailed written descriptions, or any other form that will communicate their needs and expectations. The goal is to reduce the unknowns to a manageable and predictable amount while allowing for creative latitude in the process. As the job progresses, the facility is responsible for managing the process. The facility also needs to be firm about negotiating change orders every time there is a change outside of the specifications. The studio in turn needs to respond quickly and decisively to requests from the facility. Open and transparent means that all concerns are shared and addressed in a timely manner, and that facilities are not coerced for favors.

Many people cited the construction industry as an analog, saying that they don't build buildings on a fixed bid basis. This is not true. The construction industry uses both fixed bid and cost-plus pricing models. The fixed bid method is used when the project is well spec'd out, the contractor feels confident there are few risks, and clients don't want to be involved in the day to day process of construction. There is a standard method for change orders, which is used extensively and unabashedly by contractors. Cost-plus is used when projects are not fully defined or there are a lot of unknowns or risks. The "plus" part of the bid can be either a percentage (which contractors love for its limitlessness) or fixed with perhaps an additional incentive for coming in under budget. On cost-plus projects, all costs are exposed and the client is intimately involved at every step along the way to help manage their costs.

3.3.2 “Four walling”

A similar pricing model to cost-plus is “four walling.” Under this model the client commits to buying a percentage of the facility for a set amount of time. The client is responsible for making sure there is sufficient work available to keep the resources busy – they are committed to the full cost, whether artists are working or not. In some cases the facility also provides production management, but it has also been the case where the client takes responsibility for production management, as well. Again, the facility needs to be fully transparent with costs for this to work. This pricing model has been used successfully a number of times, usually on fully animated projects.

3.3.3 Participation

In the studios’ business model, gross participation is earned either by investing in the film or by bringing star marquee status. Some facilities have been successful in getting backend participation by investing time and production resources in a film at no, or significantly reduced, cost. This strategy carries risk with it because there is no guarantee of box office success. Even under the best circumstances, recovering the investment can take years, straining a company’s cash flow.

Effects practitioners argue that their work creates box office value in line with the marquee status of major stars. *Life of Pi’s* Richard Parker, *Iron Man’s* suits, and the dinosaurs of *Jurassic Park* are cited as digital stars of their films which are as critical to the movies’ success as their human actors are. They feel that back end participation is justified for the creators of these stars. The counter argument is that these effects can be produced by a number of different effects facilities, so they have no bargaining power to demand that participation.

Without a box office brand or a heavily discounted contribution to the production, facilities will have a difficult time arguing for back end participation in a film.

Residuals were brought up as an alternative form of participation. There are many examples of providers who receive residuals from film work including art directors, puppeteers, composers, assistant directors, unit production managers, and directors of photography. These recipients are all individuals, not companies, and they generally have guilds or unions to negotiate and manage residuals for them. Currently the effects industry has no such organization.

3.4 Alternate or Expanded Business Models

A scenario that came up often in discussions was that of bifurcation and consolidation. In this scenario, companies would consolidate into a small number of large, diversified companies and a larger number of small, specialized companies with little advantage to being in the middle. This is a typical evolution as industries mature, and can be seen in dozens of examples, including automobiles, computers, search engines, and of course, media companies – the owners of the six major studios.

3.4.1 Bifurcation

The theory of a bifurcated market is that there are only large and small companies, with no strategic advantage to being in-between.

Larger companies have access to cash and resources, and can afford creative and technical R&D. They can market themselves well and invest in building relationships with clients.

Small companies can be nimble, adapting to opportunities. They have a tiny core of people and can take advantage of cloud technology to scale up and down as necessary. They can be structured as location agnostic, ramping up virtually or renting temporary space in a tax advantaged area. These companies need to have a special talent to make them desirable for large projects. That talent can be creative, they may have unique technical specialties, or they could be wizards in production management. The core group would likely be at or near the client's home office.

Middle size companies do not have the resources of large companies nor do they have the nimbleness of small companies.

3.4.2 Consolidation

In one possible scenario, most large companies would be created through consolidation. Again, this is common in mature industries where market leaders grow through acquisition.

Deluxe and Technicolor are both examples of companies that have consolidated smaller companies and are diversified across many parts of media creation. There are compelling reasons for companies to consolidate: to reduce volatility through diversification (diversification can be across many industries or broadly throughout the media industry); to implement better business practices and make companies more effective; for a multinational presence for tax incentives; to offer a better price to customers because of reduced volatility and better efficiency; and to reduce (but not eliminate) competition.

A conglomerate can afford to take loss leaders on the creative business to get the manufacturing business. They can invest in infrastructure to make the process efficient. They have the cash (or access to it) to weather the storms. A radical consolidation of the effects industry would also put more power on the facilities' side. Studios would need to lock up resources by committing to a schedule before their competitors. This could bring more stability to the industry.

One person forecast that there would be five or six big effects companies for large creative projects. They would be diversified for tax incentives and have the infrastructure to quickly mobilize to tax advantaged locations. Some would be specialized for high end work and would likely be associated with a director or studio (like WETA and ILM are). Others would be able to handle a large volume of lower end (not groundbreaking) shots (>1000 shots per show). Smaller shops would be able to handle 300-500 shots for an entire small show, and would be flexible to handle "calendar risk." Small companies would be the ones who are really innovating with new techniques (Mirada was cited as an example).

A counter argument to consolidation is that the studios could refuse to work with more powerful companies. They would potentially have the power to launch a new mid-sized competitor with the awarding of a single $30M contract. However, as long as there are a few different suppliers, there will be enough competition to drive prices down, and the mere threat of a new company could be enough to create a balance of power. Under consolidation, facilities may have more control over price, but it would be much harder for mid-sized companies to compete. This could lead to bifurcation of the industry.

3.4.3 Pop-up and Flex Companies

An alternate method for building up production teams specifically for projects was discussed – "Pop-up" and "Flex" companies were the terms that made sense. Pop-up companies refer to production companies hiring effects crew members for the project, like other film crew members. Flex companies refer to very small independent core teams that expand as necessary for projects.

Pop-up companies are an extension of a production company's live action business model, where a crew is hired for the time they are needed on a project. In fact, visual effects for many films in the pre-digital era were produced this way. There are examples now of productions hiring previsualization artists for the project, rather than contracting that work to previs facilities. In some cases the previs crews stay on the project and work on final effects for the film. A longer term vision was also proposed, where digital artists could be hired as part of traditional film departments, rather than as a specific post-production effects crew. Examples included matte painters being a part of the scenic department, and modelers being in the art department. This is a more fully integrated future for a digital production pipeline.

The model for a Flex company is to be independent and extremely flexible in size. At its minimum, a Flex company may be just a few people or a few dozen. When a job is awarded, the company hires additional artists and rents facilities and equipment. The core team would likely specialize in relevant areas (either production management or specific creative or technical skills), or would have a unique relationship with the production company.

Both of these methods share specific needs and challenges for ramping up quickly.

3.4.3.1 Needs of Pop-up and Flex models

To ramp up quickly, these companies need to have access to people, technology and infrastructure.

The available workforce needs to be trained on appropriate tools, and needs support for a freelance lifestyle. A union or similar organization, would be an important part of this model by providing portable benefits and training.

Cloud services which comply with necessary standards for security, are coming on line quickly to support these business models. Some of these services not only handle rendering, but also licensing of most other software tools that are commonly used in effects production. They can handle all license management for short term software tool usage, sometimes even on a per-day basis. Other infrastructure also needs to be available. These include physical resources like office space, furniture and workstations, and non-physical resources like HR, payroll, production scheduling, production management, asset management, and other pipeline management.

To make pop-up and flex companies work smoothly there would need to be additional standardization of data formats, tools, and production processes.

3.4.3.2 Challenges of Pop-up and Flex models

Specific issues were discussed that would make pop-up and flex companies difficult. There were good arguments that this structure wouldn't support huge jobs, and it may not have the efficiency of full commodity work.

The nature of an on-call trained workforce and standardized tools does not allow for usage of proprietary tools. Proprietary tools allow facilities to either produce effects that others can't, to do them with much greater efficiency, or to do them at a lower cost. None of these benefits would be available to temporary teams. There was also concern about temporary teams having the skillset and working relationships in place to handle complex problems.

Just like crewing up for a film, finding the right amount of skilled people on a short-term basis could be very difficult, and may necessitate paying a premium. The model implies that there is a reasonable amount of local talent available and that similar pop-up or flex companies are in the area to support a base of freelancers. Responsibility for production management and downtime falls on the production company; there is little possibility of using excess resources on another job if the project gets delayed so hold fees would need to be paid to guarantee availability of artists after a project delay or hiatus.

Though there are examples of pop-up and flex companies happening now, this approach can benefit from further exploration of the challenges.

3.5 Content Creation

Original content creation is often cited as a possible alternate business model for effects facilities. Effectively, facilities want to move up the food chain to become a production company or studio. This may be a possible strategy for a few companies with access to resources to invest in development, but it is not a general solution to improve the visual effects industry overall, so was not pursued as a topic for this paper.

3.6 Organizations Discussed

3.6.1 Trade Association

Trade associations exist to enable companies, and sometimes individuals, to work together to improve their industries. This can be done through standards and practices, research, lobbying, marketing and PR, or any number of other channels. As examples, the MPAA works at an international level managing film ratings and content protection, among other things, for the studios; UK Screen represents companies in film and television services in the UK; and Post New York Alliance works with facilities and unions in New York to promote the film and television industry in that state. An international trade association for the visual effects industry does not exist.

Efforts to form a trade association for visual effects facilities are underway and inconclusive as of the writing of this paper. Facility executives were overall supportive of the idea, but also skeptical about how much change it could create. To effectively impact standards and practices, most agreed that it would need to be an international organization, with a majority of companies signing on, and with the major players participating. Without international cooperation, little change could happen.

An international trade organization would not lobby for or against government tax subsidies because of the conflicting interests of its members. However, it could be the organizing force behind addressing standards and practices (section 3.2.1), client education (section 3.2.2), exploring alternate pricing models and business models (section 3.3), and other initiatives. These issues alone could provide enough justification for a trade association to be formed.

3.6.2 Unions

Efforts to organize visual effects workers as a union or guild are happening in the US and Canada via IATSE (6) and in the UK through BECTU (7). In those areas most other workers in the film industry have unions. Union organization is a regional solution, and there is no consensus, even among the artists who would be most impacted, about the value that unions bring.

Pro-union voices talk about the value of portable benefits (like health insurance and retirement benefits), having representation for overtime pay, fighting misclassification of employees, compelling facilities to follow labor and tax laws, and other workplace issues; having representation for these issues also allows artists to focus on the unique aspects of their work. Others counter that unionization may increase facilities' costs, making them even less competitive or erasing the narrow profit margins they have. Unionization would not prevent any companies from declaring bankruptcy or shutting down, and in fact may hasten that conclusion for companies nearing the edge. In those situations, however, a union may be able to help terminated employees bargain for unpaid wages due them. (6)

Portable health insurance is an important issue to visual effects workers in the United States, particularly if they are moving between facilities on a contract basis. This is not nearly as important an issue in countries that have nationalized health care, like Canada, the UK, Australia and New Zealand. But unions do cooperate internationally, and standards and working conditions set by unions can become templates even for non-union facilities or regions. Non-union crews in Hollywood, for example, typically work under similar or identical conditions as union crews.

Unions could provide a strong support structure for a transient workforce in flex or pop-up companies. Unionization will not impact the amount of visual effects the studios are producing, or their budgets, but they could potentially impact where the work is being produced.

3.7 Tax Incentives

Parties at the Summit meeting and those interviewed for this paper have broadly different views about the usefulness, validity and future of tax incentives.

Without a crystal ball to predict the future of tax incentives, but knowing that the status quo may remain in place for several years, facilities need to adapt to the reality of tax incentives and how they are used by studios. From the client's perspective, post production is not location critical (like some live action is), so much of it can be based in the most tax advantageous areas, and in fact this has been proven out many times.

A studio will look for the best circumstances under which to make its films. For a 20 to 60% discount on production expenses, they can afford to take more risks on unknown providers, even if they need to spend some of that savings later doing "911" fixes at higher prices. However, there will always be a few projects that have very unique needs that can only be produced by specialized teams, and those teams can command a premium that will allow them to work independent of tax incentives. The challenge for a facility in an area without tax incentives will be to develop those specialized talents.

For longer term planning, facilities and artists need to stay aware of the changing tax incentive landscape. Geographic regions are constantly re-evaluating their incentives based on many factors including local and global economies, political forces, and competing packages from other areas. The potential pursuit of the application of CVD law by US-based artists is also a new dynamic at play.

Changes in any of these could impact the value of local incentives and affect where effects work is produced.

Low cost labor can also be attractive if prices are below the tax subsidized rates of other areas and they can provide equal quality and risk. Currently, production in India can attract business for this reason, with much of the “commodity” work being produced using low cost labor with limited training or experience.

4 Conclusions and Next Steps

The VES working group developed this whitepaper to provide a strategic blueprint to help bring about a new, sustainable future for the global visual effects industry. We have described the myriad challenges and instability issues that have impacted all sectors of the industry and have offered a menu of possible solutions that could provide a course correction. We hope this paper is viewed as a comprehensive source of information and a catalyst for change that we can all embrace.

But there are no quick fixes. Some of the solutions can be initiated in the short-term, while others will require ongoing discussion to identify and then execute the options that will foster maximum engagement and impact. As well, no one entity has the authority or reach to enact sweeping industrywide changes. Enhanced cooperation and collaboration among artists, facilities, studios, independent producers and supervisors is essential.

The VES and its working group are committed to advancing this process and continuing to offer their leadership and expert resources to the community. We suggest starting with a series of initiatives aimed at improving business education and acumen, particularly among facility management, as so many of the stakeholders interviewed for this paper pointed this out as an important area in need of immediate improvement. We believe that widespread participation in a focused business training program would result in better forecasting, bidding and managing of jobs, increased transparency and accountability – and would usher in a more stable VFX infrastructure with greater skill and leverage. A healthy and sustainable industry ultimately supports all the people who are so passionate about their future in this industry.

The initial programs that we propose would include:

1. **Developing industry standards and best practices.** The working group will convene a series of meetings to create guidelines that set forth new procedures related to external bidding, negotiating and managing of projects and internal best practices related to financial management, communication and production management. Topics may include:
   - Providing a standard definition of terms
   - Cash forecasting
   - Cost-tracking
   - Measuring the impact of delays
   - Finding ways to minimize overruns
   - Blocking time for future work
   - Instituting cancellation fees

2. In addition to crafting these guidelines, we will explore opportunities to **hold public forums** on such things as adopting smarter bidding practices and other aspects of standards and practices as they are rolled out. These forums will continue the public dialogue and allow for meaningful interaction with the Working Group and other subject matter experts.

3. **Developing a training program for facilities management and visual effects professionals.** The VES working group will take the lead in exploring how to create an institutionalized business training program for facilities managers, artists, and other effects professionals. Designing a curriculum, finding the right mix of teachers (connecting academic, business and financial resources), looking at in-class vs. online options, and elements that will bring true "value added" will require thoughtful analysis, consensus-building and outreach to industry stakeholders, leading business schools, financial analysts and other experts. But ultimately, an educational pipeline would serve not only current practitioners, but would better equip the next generation of business leaders poised to take the mantle at their respective companies.

Trends related to globalization, competition, volatility and government dynamics will persist. But working together, we have both the opportunity and responsibility to address the elements within our control, to find new ways to update the business models that govern our industry and to help create a new culture and a new future for the industry we all love.

The VES and its working group look forward to continued collaboration on this most important undertaking.

5 Sources

5.1 Works Cited

1. **Kaufman, Debra.** VFX Crossroads: Causes & Effects of an Industry Crisis, Part 1. *Creative Cow.* [Online] 2013. The end of the article includes a list of VFX companies that have closed down, compiled by Phil Finer. http://library.creativecow.net/kaufman_debra/VFX_Crossroads-1/1.

2. **Picard Kentz & Rowe.** 2013-07-02 Feasability Study final.pdf [sic]. *vfxsoldier.wordpress.com.* [Online] http://tinyurl.com/VFXSubsidiesStudy.

3. **Squires, Scott.** Visual Effects Working Conditions Survey. *Effects Corner.* [Online] May 20, 2013. http://effectscorner.blogspot.com/2013/05/visual-effects-working-conditions-survey.html.

4. —. Survey Comments. *Effects Corner.* [Online] May 23, 2013. http://effectscorner.blogspot.com/2013/05/survey-comments.html.

5. Down the Rabbit Hole: The Madness of State Film Incentives as a "Solution" to Runaway Production. **McDonald, Adrian.** 1, s.l. : University of Pennsylvania Journal of Business Law, 2011, Vol. 14.

6. **IATSE.** Issues for VFX. *IATSE International.* [Online] http://vfx.iatse-intl.org/issues-for-fvx/ [sic].

7. **BECTU.** Visual Effects. [Online] BECTU. http://www.bectu.org.uk/get-involved/vfx.

5.2 Other References

- Visual Effects & Animation Series: The Imbalance of Art vs. Commerce http://www.shootonline.com/go/news-view.rs-web3-1499349-1366314610-2.Visual-Effects – Animation--Art-vs--Commerce.html
- VFX Cloud Studio 2.0 - What it means for Producers and Artists http://digitopiafilm.blogspot.com/2013/04/vfx-cloud-studio-20-what-it-means-for.html
- Major Film Studios Prosper on the Margins http://variety.com/2013/biz/news/major-film-studios-prosper-on-the-margins-1200376494/
- VFX Crossroads: Causes & Effects of an Industry Crisis (plus closed houses list) http://magazine.creativecow.net/article/vfx-at-a-crossroads, VFX Crossroads Pt. 2: Can the VFX Business Be Saved? http://magazine.creativecow.net/article/vfx-crossroads Debra Kaufman
- John Parenteau – The VFX Quandary http://www.johnparenteau.com/wordpress/?p=234
- Interviews http://matteline.tv/
- VFX Watchers facility reviews http://thevfxwatchers.com/

5.3 Acknowledgements

We would like to acknowledge the input and perspectives of more than three dozen industry stakeholders including artists, studio, business and labor leaders as well as facility executives and others, who together represent companies with operations in eight countries and 15 cities worldwide. Following is a list of participants who have given permission to include their names publicly as data

sources in the whitepaper's development. Inclusion in this list does not imply specific endorsement of the paper's content or conclusions. Moreover, neither the VES nor the whitepaper's authors will attribute any specific comments in the document to named individuals.

Jeff Barnes	Visual Effects Executive - Freelance
Jason Bath	Executive Producer, Fuel VFX
Mat Beck	President, Entity FX
Mike Chambers	Visual Effects Producer
Peter Chiang	Visual Effects Supervisor, Co-Founder, Double Negative
Eric Christensen	Visual Effects Supervisor, Founder, Factory VFX
Bob Coleman	Talent Agent, Founder, DAA, Inc.
Chris DeFaria	Executive Vice President, Production Digital Production, Warner Bros.
Ray Feeney	President & Founder, RFX, Inc.
Michael Fink	Visual Effects Supervisor/Adjunct Faculty at USC's School of Cinematic Arts
Wayne Fitterman	Agent, UTA
Warren Franklin	Visual Effects Executive - Freelance
Jenny Fulle	CEO, The Creative Cartel
Shannon Gans	CEO, Co-Founder, New Deal Studios
Sari Gennis	Animator/Digital Artist
David Gouge	Head of Marketing, Weta Digital
Tom Greally	General Manager, Weta Digital
Vanessa Holtgrewe	IATSE, International Representative
Robert Jaffe	Chief Strategy Officer, Prime Focus World
John Kilkenny	President, Visual Effects, Twentieth Century Fox Film
Marty Kline	Art Director, Illustrator, Storyboard Artist
Chris Kubsch	President, Method Studios
Kim Lavery	Visual Effects Producer
Amy Lemisch	Executive Director, California Film Commisssion
Arnon Manor	Executive Producer, Visual Effects, Sony Pictures Entertainment
Tim McBride	COO/CFO, Zoic Studios
Michael F. Miller, Jr.	IATSE, 6th Int'l. Vice President/Dept. Director, Motion Picture & TV Production
John Nelson	Visual Effects Supervisor
Jeffrey A. Okun	Visual Effects Supervisor
Michael Ramirez	Tracking/Matchmove Artist
Gene Rizzardi	Model Supervisor
Jules Roman	CEO & President, Tippett Studio
William Sargent	CEO, Framestore
Tim Sarnoff	President, Digital Productions, Technicolor
Allen Soong	Senior Vice President, Deloitte CRG
Scott Squires	Visual Effects Supervisor
Nancy St. John	Senior Visual Effects Producer/Consultant
Sebastian Sylwan	CTO, Weta Digital
John Tarnoff	Head of Industry Relations, Carnegie Mellon MEIM Program
Bill Taylor	Visual Effects Supervisor
Ed Ulbrich	CEO, Digital Domain