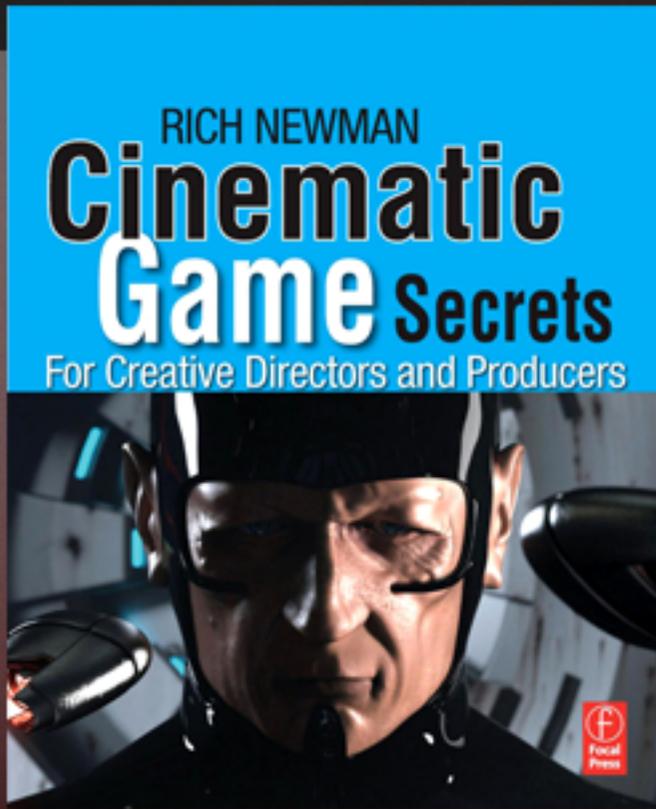


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**Cinematic Game Secrets for
Creative Directors and
Producers**

Newman

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PRODUCTION IN THE GAME INDUSTRY

Though this is by no means an exhaustive look into the world of producing a video game, this chapter will give you an idea of just what is involved with game development. Part 4 of this book covers some of these topics in more detail—mostly geared towards the production of an “independent” game. In this primer, we take a more succinct look at the various elements involved with getting production up and rolling.

One of the first major decisions that you will make as a director/producer is what types of technology will be used in designing and programming your title. Although some areas of game dev have almost standardized tools (for instance, it is almost an inevitability that animators will be using 3ds Max and Maya), the choices of



Creating a game like Midway's *Blacksite: Area 51* means using a lot of software and tools. Reproduced by permission of Midway Games. All rights reserved.

game engines and middleware are growing on an almost daily basis. Factors that determine which tools you will use include the needs of the engineers, the costs of licensing and using certain software, and the platforms the game will be played on.

3.1 Technology and Tools

Early on—probably during designing the game concept and design document—the technical leads will evaluate the game and the requirements needed to accomplish development. These decisions will be made based on the budget (some software can carry a pretty high licensing fee), the level of graphics and functionality desired, and the knowledge base of the team. Sometimes, the team is chosen after the tools have been determined and hiring is based upon experience with these tools.

Either way, the major areas of software include game engines, AI systems (artificial intelligence), necessary middleware (software designed to work with another existing program), and physics systems. All of these needs will have to be addressed—and you can actually get middleware programs for most of these areas (meaning that you can get second-party-developed software to handle specific needs rather than licensing expensive programs from the developer of your game engine). The area of middleware is huge in the game industry right now and is a huge source of employment for engineers/programmers.

Of course, some developers make the decision to create their own proprietary technology for game creation. Though this can add considerable time to the project, the studio will own the program and will not have to shell out any money for licensing. There is also the added benefit of being able to sell your engine to other developers for income. Either way, once the software package has been determined, the tech leads will create a pipeline or workflow for the game.

The pipeline is basically the path that the team takes regarding the creation, programming, and implementing of individual game assets. Because most items in a game must be compiled or converted to fit the programming needs of the game, it's important to establish this workflow early. Some of the things to identify when constructing this pipeline are the critical path for getting the work done, the tracking system for monitoring production and bugs, and any risks that could affect production.

Once the tools are in place and the pipeline is established, the team can move on to the individual development requirements and workflow needed for the design, art, and engineering departments.

Development Tip



A great way to familiarize yourself with a game engine is to get one! You can pick up the Torque game engine from Garage Games or the XNA game engine from Microsoft for a very low price. Also, many of the programs involved with game development have free trial versions that you can download for free. Working on mods for other games is another great way to learn about this area as well.

3.2 Design Production

Early in the process, you must choose the tools and middleware that will best serve the programming needs of your game. As mentioned earlier, the tools needed to support the actual game design will be evident in the choices of functionality present in your game. Some of the factors in the design that will require technology/tool choices include sound design, artificial intelligence, and physics. Another factor influencing your choice of game engine and middleware should be the ability to make changes easily.

Once the design team has begun the development process, the need to change the functionality within the game and test the existing features will become quite evident. The ability to make changes and add additional functionality should be one of the deciding factors when choosing your software for development.

Some of the game elements to be considered when choosing software includes the use of speech, use of game controls, and any detailed data that must be monitored during game play (such as scoring, levels, and so on). The ability to iterate and change these functions during development should be a deciding factor when choosing a game engine and middleware. Though redesigns should be kept at a minimum, they are almost an inevitability and the software must allow for this.

Also, the feedback that the design team receives from the QA department will become an important tool for designing subsequent builds on the game and ensuring that all functionality is on point. The basic workflow of the design team involves implementing features, testing features, and then making appropriate changes to the builds to accommodate this information (all to be approved by the directors/producers).

3.3 Art Production

On the art side of the house, the workflow goes a bit differently. Once the basic concept art has been approved and the team is in alignment with the overall artistic vision and look of the game (a lengthy process that involves creative meetings focusing on the script, production, and goals of the game), the art team begins the lengthy process of creating art assets within the game. These assets can be everything from the locations and buildings to the individual characters, props, and vehicles used throughout the game. Often, the list of assets can be so long that much of this work is outsourced to external parties.



An example of concept art from *Lost Planet: Extreme Condition*. Reproduced by permission of Capcom U.S.A., Inc. All rights reserved.

Typically, the art team has sets of deadlines for “deliverables” (individual items) and individual artists/animators has specific assets assigned to them. It’s usually a good idea to assign a specific animator or artist to each character to ensure continuity throughout the game. As the art team creates more and more assets, they begin working closely with the engineering team to ensure that the assets can be integrated into the game.

Some of the more prevalent programs in the art department include Adobe Photoshop, Autodesk Maya, and Autodesk 3ds Max. There are other 3D modeling programs, as well as painting programs used for coloring and applying textures, that are more specialized and available as well, though finding artists that specialize in them may be more difficult.

3.4 Engineering Production

The engineering team is responsible for researching and coding everything into the actual game, as well as debugging any problems that occur. As they receive assets, they code and engineer them into the game using the tools and software available.

Every time the code changes within the game, a new build is essentially created. Depending on the schedule and budget you have in place, new builds can be made available on a daily, weekly, or milestone basis. Every new build means more debugging and another pass through the QA department. It is the smooth operation of these cycles that gets the game through development and into publishing.

It is important to also take into consideration the use of revision (or version) control system software. This is just one of the ways you can track changes to code within the game, as well as manage it. You can even use this software to keep multiple versions of the game archived as they are created. Best of all, if something is working you can see who made the changes to it, as well as allow multiple people to work with/from the same code.

There are literally hundreds of choices in software, depending on the engineering needs of the game. At the very least, you should address all the various sections of the programming team (AI, graphics engine, game flow, network, database, user interface, tools, installation, and sound)—this is best done by speaking with the technical leads for the department. Because the technical side of the house becomes even more complicated when you begin to discuss the game's platform (or the use of cross-platform development) and the various programming elements of the game (including the programming language, libraries, debug systems, and profilers), it's best to let your tech leads guide your way.



Making a game geared to a single console, like *Halo 3*, definitely has its advantages. Copyright © Bungie LLC and/or its suppliers. All rights reserved.

Different systems have different costs and considerations involved with them—and some are easier to acquire/use than others. Some of the more common choices today for programmers include OpenGL, Microsoft Visual C++, and Microsoft's

XNA/DirectX programs. There are also specialized programs that focus on artificial intelligence and on physics, as well as middleware that helps implement functionality between the programs being used. Most of these choices will of course be based upon the game engine that you use.

Communication between the art, design, and engineering teams is essential for the production to remain on schedule (yes, everyone will actually have to use the wiki/online collaboration tools and attend assigned meetings). All departments should take time testing new levels as well—everyone can make suggestions and improvements in the game play. The individual teams should be in contact with the QA department as well to track bugs and correct them as they occur.

3.5 The Team

In addition to the personnel who typically run a studio (management)—this would include the creative director, studio head, and the administrative personnel—there are four general areas of employment in the game industry: art, design, programming, and testing. Testing will be discussed later this chapter; first, let's take a look at the other three areas.

The art department is usually made up of character artists, animators, background artists (sometimes called “digital matte painters”), and sometimes texture artists, though most character artists are also skilled at texture work. When the individual assets for the game have been dealt out to the various artists in the departments, there is typically a lead that is in charge of making sure that each artist pulls his/her weight and turns in assets on time.

The design team includes level/mission designers who report to a lead as well. Though the design team is involved with the production process early in the basic game design plan (this includes designing the locations of obstacles, goals, and props throughout the game), designers are also expected to be able to modify levels and continue designing throughout the production process. Any changes made to the basic design require the designers to be able to adjust the level plans accordingly.

The programming team involves all the personnel assigned to the various coding tasks associated with making the game. Every tool or program that's involved in creating your title will require a mini-team of programmers to work with it—this includes the game engine, all middleware, graphics, artificial intelligence, and any specialized programs that will be involved. The programmers also report to a lead that then reports to the technical director.

In addition to the studio directors (creative and technical), there are also a number of producers involved with managing the various teams and logistics for developing the game. The producers are

responsible for making sure that the teams are working on schedule and budget, as well as reporting progress to the studio. Producers come from all aspects of game development, but a general knowledge of the tools being used (coupled with a strong project management background) is a must. Producers come in quite a few varieties including associate producers, assistant producers, line producers, and full-blown producers (we will discuss this aspect more and in great detail in Chapter 8 of this book). Other details that must be familiar to the producer include licensing and negotiation, testing, and localization.

There are also personnel who will be involved with creating the music, sound effects, and recording the voice over for the game. Sometimes the music is outsourced to local music producers/composers, but having an internal composer capable of writing and recording music is a definite plus for the production.

3.6 Sound Design

Though video games are thought of as a visual medium, the truth is that one of the most important characteristics of a successful title is the sound design. Sound designers usually have a background in studio engineering, music production, and composition. Deciding upon the right sound designer for your project rests entirely on the style of music you want for the game. Will it be an electronic-based soundtrack or a traditional symphonic score? Once you know the type of soundtrack you want, you can then select an appropriate composer/designer.



The symphonic score by Jeremy Soule contributes immensely to the cinematic production value of Bethesda's *Elder Scrolls IV: Oblivion*. The Elder Scrolls IV: Oblivion® © 2006 Bethesda Softworks LLC, a ZeniMax Media company. All rights reserved.

It also important to know the types of audio tools the sound designers are familiar with. With many different options available on the market (Pro Tools, Soundforge, Propellerhead Reason, Cakewalk, among others), you can and should make sure that you have the appropriate programs on hand for that designer.

In addition to the music involved with the game, the sound design team is also skilled in sampling and designing sound effects. Every individual sound used in the game—everything from the sounds of walking/running to gunshots to animal sounds—must be created or recorded by the sound design team. In addition to obtaining sounds the traditional way (recording them), there are also sound effect libraries available for licensing. Most of these are quite reasonable—and even more cost-effective when you consider the logistics of recording some sound effects.

Much like the art department, the sound design team will have a laundry list of assets that must be acquired: music and songs, cut-scene scores, ambient sound and music, sound effects, and “stingers” (brief musical trills that punctuate a defeat, victory, or achievement), to name a few. It is important for these assets to be named and filed appropriately as well, so organization skills can be a factor when making a choice.

A great way to approach the sound design of a game is to use “temp tracks” in development—standard tracks extracted from other musical works that are temporarily used in the game to illustrate the type of music desired for that portion of game play. Once the music styles match the desired mood and scope of the game, you can then work on getting original music composed in the vein of the temp tracks. This approach can also be used with stock sound effects.

Often, the sound design team is also in charge of recording any voiceover used in the game, though the use of external sound studios is also a viable route.

3.7 Motion Capture and Voiceover

Before going into a voiceover session, make sure that the dialogue is reasonably set within the script. Though a little improvisation may occur during recording, the bulk of the dialogue should be written in stone. Before going to the studio, the producer should sit down with that script and make direction and technical notes. These notes should include the names that will be assigned to each sound file (this step helps with importing the audio into the game), as well as any key elements relevant to the recording (such as “character is very angry”).

Every character within the game must have an actor for the voiceover work. If your sound designer has no background in voiceovers, it may be wise to directly involve a producer or external sound engineer when recording as well. Finding the talent needed

for the characters is usually the most difficult step. The use of an outside casting director is usually recommended for filling the roles (see the chapter in this book about casting). As the voiceover work is being recorded, it is necessary to remember the context of the lines being read, so that the actor can be directed to use the appropriate level of emotion or concern when recording. Once all sounds and music have been generated and archived with appropriate file names, the game will wait for audio postproduction.

When creating file names for the various elements you are recording, it is also important to remember that you may be localizing the game in multiple languages. Make sure to annotate the files with the appropriate locale in the name. In addition to working outside the studio for the voiceover work, there will also be the use of a motion capture studio in most game productions.

Though some studios do have an on-site motion capture studio (or at least an area devoted to it), the typical practice is to outsource the motion capture work. Generally, the producers hire actors with motion capture (mo-cap) experience, work with them to outline the general movements of the characters they will be portraying, then accompany them to the mo-cap studio to do the actual work. Again, directing techniques are needed to get the appropriate character traits out of each bit of capture (cinematic directing techniques will be discussed thoroughly in Part 2 of this book). Though the game may have many characters, it is not uncommon to use only a couple of actors for all the various roles. This is why it is important to let the actor know the particular character they are portraying in each move and the context of the action they are performing.

Whether you are using professional motion capture actors, general actors, or just a couple people from the studio, it is important to allow for the mo-cap work in the budget, as well as the time needed to translate the information from the session into the game.



Extensive use of motion capture makes for ultra-realistic movement in Ubisoft's game *Assassin's Creed*. Reproduced by permission of UbiSoft. All rights reserved.

3.8 Testing and Quality Assurance

The final team you will deal with during production is the QA department. Though this area is usually reserved for people who are entering the industry at the ground level (sometimes the QA personnel are even gamers with little-to-no game development experience), make sure that there are experienced QA leads here and a well-seasoned QA manager. The QA team tracks bugs throughout the game development process and works with the programming department to fix these bugs, so it's important that this department is well-trained and well-equipped to handle their job. Some of the elements that the QA team look at include the functionality of the game, the cohesion of the story, the game's interface, and the compatibility of the game with the intended hardware to be played on—and, most importantly, the bugs themselves!

The QA manager is responsible for managing the testing team, reporting bugs to the producers, and tracking the various builds of the game to make sure they are on point. This team can be utilized in-house as part of the game studio, or the entire QA process can be outsourced to an external studio or team. With the availability of high-quality bug tracking software, though, it is advisable to attempt to keep the team within the studio.

Though hiring a QA department costs money, this cost can be less than that of outsourcing the work. Factors that will influence your decision regarding the QA department include the availability of skilled testers, the game's overall budget, and the amount of time allowed for Alpha and Beta testing in the schedule. Having the department in-house will speed up the testing process—also, the studio will now have the software and department in place for the next project, so you won't have to purchase testing software again. Having the team on-site also allows for closer collaboration between QA and the producers. This can have a positive impact on your schedule and managing payments to contractors. Also, many game designers believe that keep young, fresh game testers on the payroll is an easy way to keep a game cutting-edge with current technology and trends.

However, if there simply is a shortage of local talent for game testing—the pay for this department is usually not high enough to entice people to move—it may become necessary to outsource this work. Using an established testing firm means getting a level of professionalism that you may not have had in your own studio, as well as not spending money regarding the overhead of housing another department.

The QA team also gets the final crack at the Gold Master at the end of production. This is the final round of testing that will

Development Tip



Are you interested in being a game tester? Download a trial version of TechExcel DevTrack (<http://www.techexcel.com>) or TestTrack Pro from Seapine software (<http://www.seapine.com>) and get a leg up on the competition.

determine whether the game is ready to ship to the publisher. Though most of the responsibility of the QA department falls under the QA manager (sometimes referred to as only a lead), it is also the duty of the producers to make sure that bugs are being tracked and resolved (or closed).

Letting a backlog of bugs get out of hand is one of the quickest ways to get a game off schedule. Bugs should be addressed as early as possible when discovered so that the programmers will still be familiar with that code that was generated. A great way to track bugs is to make sure that all builds include a level of accountability. If a new build breaks when played, it will be easy to see what assets were introduced in that version of the game—as well as what probably caused the problem.

Some of the perks of getting a game properly through a long-term QA process include implementing a quick release worldwide (as localizing issues will have been addressed), preventing piracy by implementing copy protection, and getting a quick thumbs-up from console manufacturers.

Interview: Ray Pena, Senior Animator, Spacetime Studios

Ray Pena has more than ten years of experience in games and film. He has worked as an animator on the *Turok* video game series and was the art director on *The Red Star* game based on the award-winning comic series, while at Acclaim. Other works include animation on *The Ant Bully* and *Everyone's Hero* feature films. Ray also worked on *Area 51:Blacksite* for Midway. He's done work for Disney and Nickelodeon for television shows including *Jimmy Neutron: Boy Genius*.

Newman: As an animator, you are in a position to work in both the game and film industries. Describe the challenges of keeping up with both communities and how you stay on top of technology.

Pena: Well, knowing a lot of folks in both industries helps me keep up with what's being worked on and any films or games that are the buzz in either community. I'm a member of a few Google Groups that include game and film animators/crew. I also peruse the forums often to see what the latest is in software, animation and modeling techniques, and so on. There's so much to keep up with, though, that it's difficult to be well versed in all aspects of 3D art. That's why I focused on animation.

Newman: Have you worked on an animated film before? If so, what lessons learned/good practices did you bring with you to the game industry?

Pena: Yes. Planning is the single most important lesson I learned from film. Before, I always did what I thought looked cool and that seemed to work quite often. In film, my acting choices weren't always the best. So I sketched a lot, blocked in my anims pose to pose in a stepped key method, then I submitted that. I had to approach it as key drawings. It felt slow at the beginning of the process, but it sure did make life easier when changes were requested or the director simply pointed me in the right direction. Nowadays, I always do sketches for my animations and get a feel for what others around me think about it. It's always good to get opinions from other animators or just anyone before, during and after the creation of your animation. I tend to think more in depth of what a character's purpose is as well. I consider what their motivation is, what their history may be. Are they evil? Do they have good intentions? Are they quick or slow? Heavy or light? Male or female? Clumsy or agile? Right-handed or left-handed? Married, single or divorced? Do they have a hearing problem?

Newman: What programs/software would you recommend that a recent animation graduate in the game industry master?

Pena: It's not the software that makes a good animator. It's about knowing the principles of animation and nuances of movement in bringing characters and objects to life. But, that said, the industry standards in 3D animation are 3ds Max and Maya. If you know one program, you pretty much know them all. It's just about finding the buttons at that point.

Newman: Typically, a day on the job for you would involve...

Pena: Animating. Lots of animating. I've been working on some alien creatures lately, so studying insects and sea life is always included. I'm always taking a look at videos online or on DVD of anything that could inspire me. The research is never done, it seems.

Newman: Describe your workflow; where does your work come from and where do you hand it off?

Pena: The ideas usually start from the design team, the folks who create the gameplay and fiction of the game. That is described to the concept artists. Once they are happy with sketches, color studies, and so on, they hand everything off to the modelers/texture artists. I like to keep up with what's going on in these early steps so that I can start getting my head around what motivates these characters.

Newman: In most cases, do animators create the actual artistic look of the characters, vehicles, and similar items that they are creating, or is there usually an artist involved?

Pena: I like to throw in my two cents occasionally, but usually I let the concept artists do their job. They've always been open to input from us. I usually look at it from an animation perspective,

obviously. Concerns I sometimes have are something like, are these arms worth having on the character if they're useless? Is this weapon too big for this specific character?

Newman: Describe the creative process involved with meeting the overall artistic vision for the project when creating original animation.

Pena: The animators will always have an initial meeting with the lead designer, lead concept artist, and art director to discuss a character. We talk about every animation for that character and what direction we want to take it. Of course, there will always be differing opinions, but it's great to come to a consensus and a well thought out idea. I usually then go back to my office and sketch as much as possible to nail down key poses and arcs.

Newman: Artists are known for their passionate opinions concerning their own art. How do you handle a clash in opinion when you feel an asset needs to go in a different direction?

Pena: I'm always open to criticism. That's one thing every artist needs to learn to deal with early on. I don't always agree with criticism of my work, but I love talking about finding a common direction that could be better than my opinion and the others I'm working with.

Newman: Because you are a senior animator, a team of additional animators work in your department with you. How do you communicate a game plan to the team for a particular sprint/milestone? How do you keep them focused?

Pena: We usually try to stick to one animator per character. That way they are able to keep it consistent in all of its motions. Seeing a character come together in the game is always very satisfying. I think that's always a lot of motivation for any animator. There will always be bumps along the way. The anims sometimes don't match up well with one another or the milestone may just be too long to keep focus, but it's great to see the characters come to life. That always gives me a boost of excitement.

Newman: What advice would you give an animator just getting into the job market?

Pena: Work hard! Nothing will be given to you. To get ahead, you have to be thinking ahead of everyone else. Study animated films, live action films, animals, people and anything that moves. Inspiration will always be around you. Take acting classes. I've been to a few workshops. It's scary sometimes, but very fun too. And of course, put all of that to use. Study with a purpose. Know why you're looking at how an arm swings during a walk cycle or how most things will naturally move in some sort of arc. Networking is very important as well. Always be good to everyone around you. You never know who may be your boss someday.

