VISUAL TECHNOLOGIES

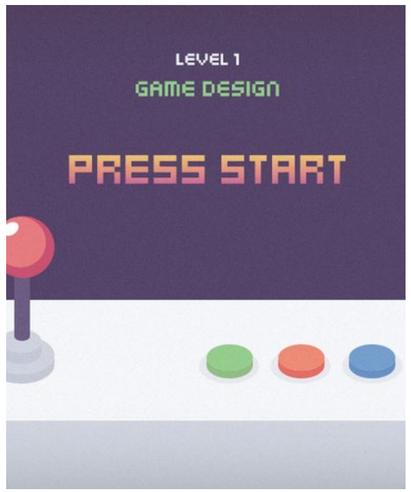
GAME INDUSTRY

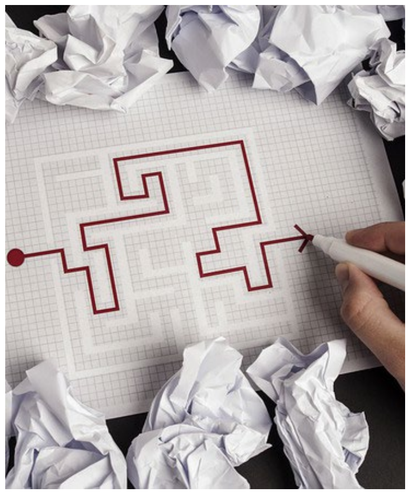
TODAY’S TOPICS

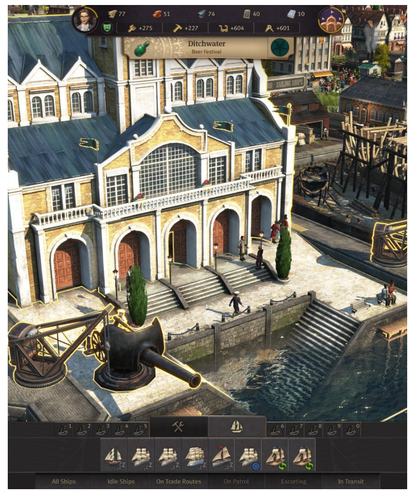
Publishers either hire their own developers to work in-house (internal development) or they sign a contract with a development company (external development) to build a game. This has certain implications for the development process, depending on the approach used.

Introduction: **HOW VIDEO GAMES ARE MADE**

CONCEPT | PRE-PRODUCTION | PRODUCTION | TESTING








PART 1
CONCEPT
GAME INDUSTRY
Lucas Staniec

THE CONCEPT

EVOLUTIONARY OR REVOLUTIONARY

The vast majority of games in the industry are “**evolved**” from earlier games. Their creative, and often their technical, content—what you might call their genetic material— is a mixture of ideas that have gone before. Certain groups of characteristics are especially popular with the players, so games have evolved into different “breeds”— the genres. As you can imagine, this evolutionary approach has given rise to a world of games that look somewhat alike.

The alternative, a **revolutionary** game, is much harder to persuade a publisher to build, and even if they do build it, it’s harder to sell to the public. Players like their cozy, familiar genres. Asking a player to buy a revolutionary game—a type of game the world has never seen before—is asking him to gamble $50 or so on a game that he may end up hating. But when the revolution succeeds, the rewards are enormous.

FINDING A PUBLISHER

To begin with, **whoever has the idea** (I'll assume it's you for the moment) **has to persuade a publisher to think about it**. Not to develop it—we're still a long way from that stage—but just to think about it.

More frequently, an external development company whom a publisher has already worked with, or has heard of—someone like Monolith, for example, with a track record of creating successful games—phones up a producer and says, "Hey, we've got a great idea for a game that we want to talk to you about."

But publishers don't just wait for ideas to come to them, either. They have a product plan that specifies what kinds of games they want to release in the next year or two. In this case, they already know what they want to build, and they go looking for developers to do the work.

PITCHING

Pitching a game is more than just talking about it. You should have **a prepared presentation**, with PowerPoint slides and handouts. You should bring along some early, “high-concept” design documents and some concept drawings that show key visual elements in the game, especially anything radically new. You might have some animations already, a short video to show, some working code, or ideally, a playable prototype.

A pitch is not just a lot of blue-sky enthusiasm about new technology and innovative gameplay, however. **You have to convince the publisher** that there is a market for the game and it will make them a lot of money. You also have to show them that you can build the game on time and under budget. A well-prepared pitch includes cost estimates and a proposed schedule.

PART 2

PRE-PRODUCTION

GAME INDUSTRY

PRE-PRODUCTION

DESIGN & PLANNING

At this point, the publisher still isn't fully committed to producing and marketing the game. For the time being they only want to **explore the idea, but they're prepared to spend a little money to do so**. There was a time when a publisher said, "Yes, go!" and a developer dived into coding the game the very next day. That time ended about 1985, when a game still cost between fifty and a hundred thousand dollars to develop. Nowadays, we need **pre-production: a design and planning stage**.

Once a publisher has decided to go into pre-production, they will assign a producer to it. This person is an employee of the publisher whose job it is to make sure the idea turns into the game the publisher wants. The producer is responsible for making sure it's a fun and, above all, marketable product. These are the main stages you'll go through in pre-production:

- **Design Document**
- **Technical Research & Prototyping**
- **Project Planning**

DESIGN DOCUMENT

The first thing that's needed is a design document, although one may already exist. The developer may have written it on spec, and shown it to the publisher to get their interest, or someone at the publisher may have written one. In most cases, the design will be incomplete, because there's no point in fleshing out every detail until you know the publisher is interested.

Now is the time to finish that work: in addition to thinking about **how the game should look, sound, and, most importantly, play**, the designer does a certain amount of **competitive analysis, checking to see how similar games work, and doing background research**— for instance, familiarizing herself with the subject matter of the game. If it's a military flight simulator, for example, she'll go to the public library and check out Jane's All the World's Aircraft for inspiration.

RESEARCH & PROTOTYPING

Risks fall into three categories: technical risks, production risks, and creative risks.

Technical Risks

Any video game that is not a direct clone of another requires new programming. All new programming represents some technical risk, but certain areas, such as new graphics technology or artificial intelligence, are particularly tricky. Two or three programmers will build **a small demonstration program (sometimes called a proof of concept) to test out the new ideas**. A proof of concept is not a game at all. It's just a demo that is written to illustrate the correct behavior. The proof of concept is used to show the publisher that the technical issues facing the team are surmountable.

RESEARCH & PROTOTYPING

Production Risks

Can the developer's team actually complete the project? Usually, the developer's internal producer/project manager will assemble a document describing the experience of the team, their production methodology, their ability to meet milestones and handle change requests, and other elements that will prove there is a minimal **completion risk**.

Creative Risks

No one can really be sure **what the public is going to like**, but if a game design calls for a new kind of user interface or gameplay, the publisher is likely to want to try it out before giving the go-ahead for the project. Likewise, they will want to see what the game is going to look like, and maybe even get an idea of how it will feel to play. This is where **prototyping** comes in. A prototype is a partially working model of the game.

PROJECT PLANNING

The third aspect of pre-production is project planning. This is an unexciting but absolutely vital part of the process. It's also a black art that can only be learned with experience.

Project planning is normally done by the producer working together with a project manager. They'll define the scope of the project: how big and complicated the program will be, and how much artwork, animation, and audio the game will require. From those assumptions, they'll then **estimate the size of the staff required to develop the game, and how long it will take**.

PART 3

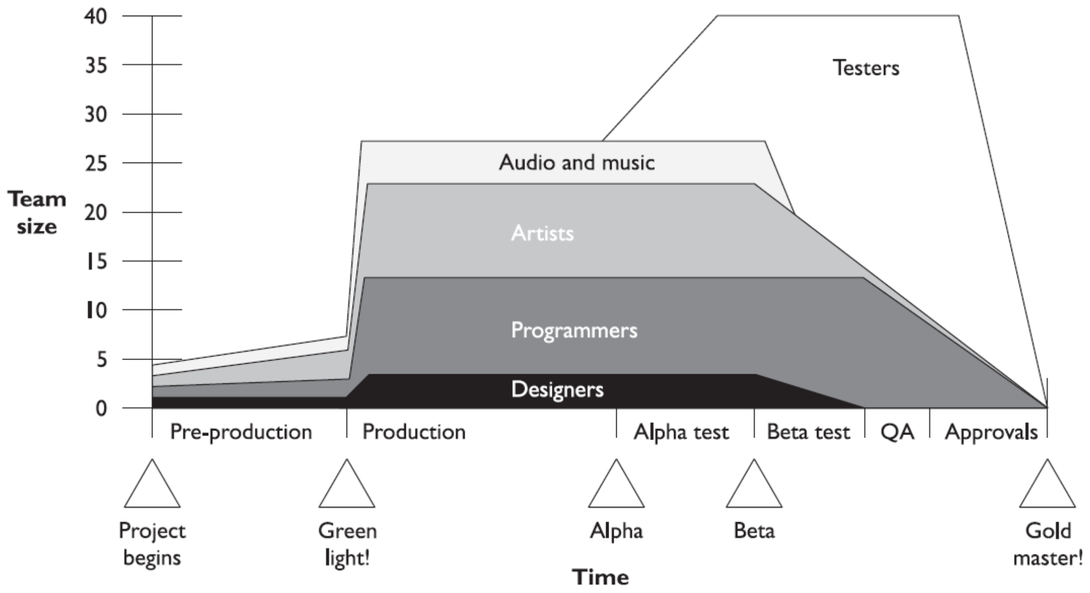
PRODUCTION

GAME INDUSTRY

PRODUCTION

WHERE ALL THE WORK IS

The project is off and running! The development team, whether internal or external, has gotten the green light—that is, received **approval to execute the development plan**. At this point, the company staffs the project, deciding on all the programmers, writers, artists, animators, musicians, sound engineers, and other creative and technical people that will need to be on board. They may be coming from other projects that have just been completed, or they may be hired to work on the game.



10:40

Are we really going to use red for the logo?

11:20

Is the main character ‘inclusive’ enough to appeal to watermelons?

11:30

John’s birthday is today and we forgot the cake.

MEETINGS, MEETINGS, MEETINGS!

Every week throughout the production period there will be regular meetings. Subsets of the team, like all the animators, will get together with their lead to discuss issues specifically related to their role. All the leads will get together with the project manager to report on their respective departments. From time to time, the whole team will get together as a group, both for people to learn what the others are doing, and for management to give them information. And these are just the regular meetings.

Often, a problem will come up during a larger meeting that requires only two or three people to solve. It’s a waste of the others’ time to try to solve it there, so the people involved will schedule another meeting to get together and deal with it. And then there are the ad-hoc meetings that arise spontaneously...

MARKETING

Long ago, all a publisher had to do was buy ads in some gamer magazines, because those were the only media available. Nowadays, there are many more ways to reach gamers, and the marketing department has to cover them all. Here's a list of approaches modern game marketers use: **print advertising, web sites, trade shows, press events, television ads, public events, box design, ...**

You know those "designer diaries" you see online? If one is being produced by a small development company or a one-person shop, it's probably more or less real and tells the unvarnished truth. But if it's on a big publisher's web site, it's essentially a marketing gimmick, letting the public think it's getting a peek into the internals of the design process. Trust me, if there was a colossal screw-up on the project and half the animations had to be reworked, it wouldn't appear in a big publisher's "designer diary."

PART 4

TESTING

GAME INDUSTRY

TESTING

HERE WE GO AGAIN

Once the game has gotten to the point where large parts of it are playable, testing begins. Testing is an absolutely essential, but rather unglamorous, part of developing any game. It involves no creativity, only **hour upon hour of trying out different features in different combinations to make sure they all work**. Informal testing goes on throughout the development process, as programmers run their code and producers check it over at milestones. Formal testing is normally divided into phases called alpha, beta, and quality assurance (QA), although there are more issues to be dealt with in the meanwhile, like localization, content ratings and licensing approvals.

Introduction: **ALPHA VS BETA**

ALPHA TESTING

Testing may begin on a game long before the whole thing is assembled and playable; testers can test parts of it as development progresses. But **when the game reaches the point that all its features are present—even if all its content is not—then the game is said to be “at alpha” and ready for alpha testing**. Alpha occurs when all parts of the game are functional but not all the graphics or data are necessarily available. For example, in a flight simulator, the plane may be fully functional but not all the landscapes are ready yet.

Alpha testing can go on for weeks or even months. It’s a hard, grueling time. The bugs seem to come in an endless stream, and the **programmers develop a secret hatred of the testers and the bug database.** In the meantime, the artists, audio people, and other content providers are hurrying to provide the remainder of the data needed to complete the game.

BETA TESTING

When all the content is ready, all the levels designed, and all the art and audio created— including foreign versions—the game is complete and we can call it beta. The internal testers are now working on the beta version and the programmers are still fixing the bugs they find. All the content must be checked to make sure it works with the game. This process is called beta-testing.

Once the game is in beta-test, the publisher can, if they want, do open beta testing. In open beta testing, the publisher allows members of the general public to test the game—in effect, a field test. It's only possible with PC games; console games cannot be tested this way because the public doesn't have the specialized development hardware necessary to run the game.

LOCALIZATION

If your product is going to be sold in another country, you have to plan for it in advance.

Programmers: Programmers must write the software so that all text is read in from files and none is hardwired into the code. Far Eastern languages require two bytes, rather than one, to store each character of text, so if the game is to be localized for one of those languages, the programmers must allocate additional memory for the text. On console machines, the programmers must make sure the code works on both PAL and NTSC television systems.

Artists: This group must create multiple versions of any art that includes text, and multiple versions of any art that is culturally sensitive. Nazi symbols are forbidden in Germany, for example, so games about World War II require special artwork for the German market.

Audio engineers: Audio engineers have to record separate versions of any voiceover dialog in every language the game will support. The game may even need different music; Japanese and American tastes are somewhat different, for example.

Writers: Writers must get their material translated. In addition to the in-game text, the product will need a new box and manual for each country.

FINAL ADJUSTMENTS

EVEN MORE TESTING

CONTENT RATINGS

In many countries in the world, a video game must be submitted to a ratings body to determine how violent, scary, or sexually explicit it is before it may be sold. This is done after the game reaches beta, when all the content is present. The rating institution takes a few days or weeks to examine the game and return a rating, which the publisher is required to print on the game's box and possibly in any future advertising as well.

QUALITY ASSURANCE

The QA department tests the game for a number of hours, and gives it a simple pass/fail grade. If a game ever crashes, responds inappropriately to a command, or displays something it isn't supposed to display, it fails QA and cannot be shipped. The QA department at a publisher is normally separate from, and independent of, the production department that is responsible for the game. That way they can't be pressured into passing the game even if it has problems.