



How to Create a Games Industry in Your Country

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The desire for the founding of a games industry in unserved parts of the world is growing dramatically. In this article, I discuss how to create a games industry where there is none.

Silicon Valley is known as the hub of technological innovation and entrepreneurial spirit¹ and that has led to the attempted creation of copies in other places, with names such as *Silicon Beach*, *Silicon Roundabout*, *Silicon Docks*, *Silicon Wadi*, and other such ersatz places. With the success of the games industry in the United States, the European Union, Japan, and China, the desire for the founding of a games industry in unserved parts of the world is growing dramatically, especially since much current technological innovation comes from the games industry.

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INTRODUCTION: WHAT YOU NEED TO BUILD GAMES IN YOUR COUNTRY

From the outside, Silicon Valley looks easy to replicate: all you have to do is find some unused piece of dirt, slap up some industrial shells for open-plan offices, and come up with a snappy name for your sign, something like *Silicon Beach* or *Sil-*

icon Dustbowl. If you have forgotten space for trendy restaurants and affordable housing for your development teams, then so what ... The game industry is kind of like this and I a.m. going to try, from a high level, to describe to you the various required parts and their costs (Figure 1).

GAME DEVELOPMENT TALENT

You cannot declare that you have a robust games industry in your country unless you have a way to create local game development talent, a way to create and utilize new technologies with that talent and a way to deploy that highly educated talent on game development locally. In 2004 in the United States, the only way you could get a position in the games industry was to have already been



on a team that shipped a AAA-title. In 2004 when Electronic Arts and Microsoft decided that raiding other company's talent to build their own game development teams was a zero-sum game, that they both ought to try and pull together and support the creation of university programs on game development, they supported 38 different university game development programs and put all of the founders of those programs onto the same cruise ship for several years' worth of socialization and information transfer, so that there was some coordination between the programs. The amazingly humorous part of this effort was that when you spoke to the hiring people in the games industry at Electronic Arts and Microsoft in 2006/2007, they all continued with the mantra of "we only hire people who have already shipped a AAA-title." That eventually got sorted out by the various game development programs having end-of-semester

demo days where the student-built games could be presented directly to the game development hiring people so that they could see the nascent talent visible in what was being presented. So, the starting thing required to create a games industry is to build

HOW BIG A PROGRAM TO CREATE

I have been approached by many places globally and they all are interested in creating a games program, and when you ask them how big a program do they want to create, they most all say: Can

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an enduring game development program that your nascent games industry can hire from. Figure 2 shows the high level of what such a prototypical game development education program should look like. We spoke about this in detail in a previous column.²

we start with something small? And "small" usually means maybe three classes with 53 students total for those classes. And you can do that the first semester but the second semester could potentially then be 200+ students, which is great, but if you started small,

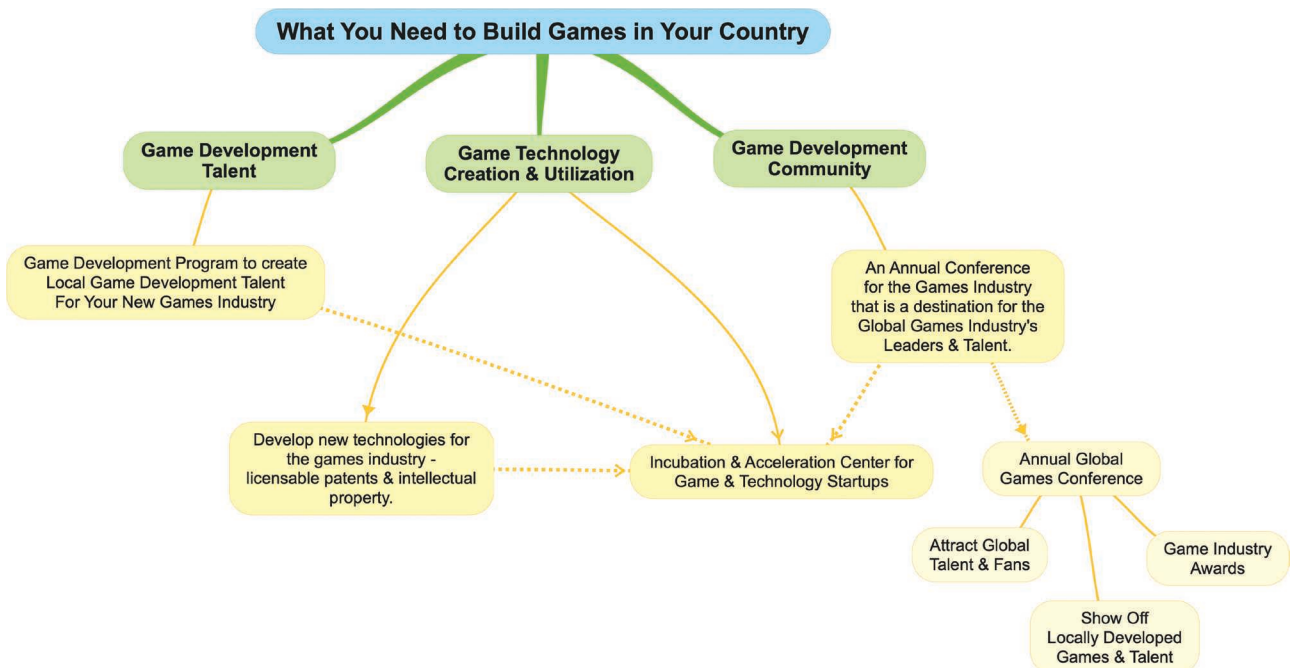


FIGURE 1. What you need to build games in your country.

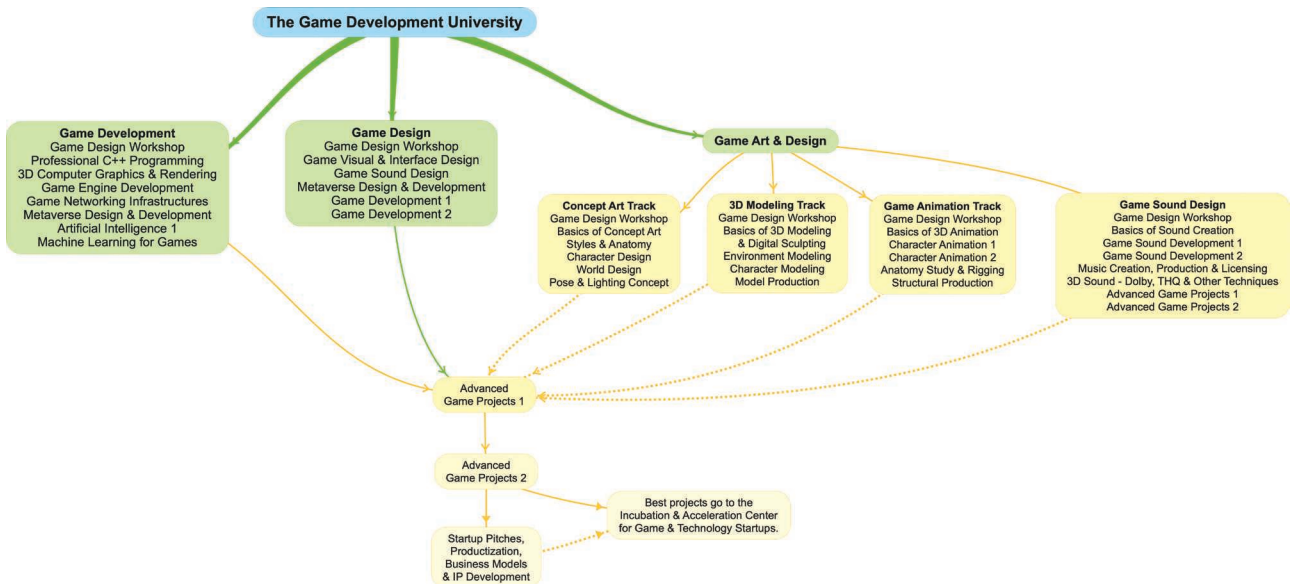


FIGURE 2. A high-level look at what a prototypical game development program looks like.

that means you don't have many faculty to teach or much space for teaching labs; all of these things are somewhat hard to get on short notice. My dean at University of Southern California gave me an 800-sq. ft. space two weeks before the semester started in 2005, US\$200,000 to purchase computing hardware and

furniture, and said I had to have three game development classes running in two weeks. He also gave me the bonus problem of saying I could only have that space for 90 days, even though the semester runs five months! I worried all semester that he was going to be at the door asking us to move out once three months had passed. Well, we did get to have the space all semester long and we then had 150 students the next semester in that same 800-sq. ft. space and no additional budget. Our first demo day had 12 people from the games industry come to visit and all 53 students could be in the lab to see the demos. The second semester we had 65 people from the games industry attend and 150 students trying to cram themselves, phone booth style, into our spacious 800 sq. ft.

So, we did not get much additional space for TEN MORE YEARS, or much of a budget, until we got a 4,000-sq. ft. space off campus, the University of Southern California GamePipe Laboratory. So for those of you thinking of a small start, please just do the right thing and figure out how large you want the program to be and shoot for the stars. I suggest that you plan for 1,000 total students taught by about 65 faculty. I can send you the spreadsheet

as to why those numbers make sense, if you so desire.

WHERE DO YOU GET THE TEACHING TALENT?

Hiring new faculty for a games program in the United States in a city where there is a large development effort already happening is easy. There are plenty of game developers that would love to teach part-time in the evenings and many who would like a career change to the easy life of being a full-time faculty member. BUT if you are trying to create a games industry in a new country where there are not any developers, then you need to do special things to acquire your faculty. There are two parts to this: 1) bring in game development faculty from other countries by offering them a great opportunity and a salary double what they made back home or wherever they currently are, and 2) educate your own faculty from the best students you find in your program. You need to do both parts. Now, one country I have been following has founded an entire university focused on artificial intelligence and their seed-faculty were all early/recent retirees from Carnegie Mellon University, including a former

COMMENTS?

If you have comments about this article, or topics or references I should have cited or you want to rant back to me on why what I say is nonsense, I want to hear. Every time we finish one of these columns, and it goes to print, what I'm going to do is get it up online and maybe point to it at my Facebook (mikezyda) and my LinkedIn (mikezyda) pages so that I can receive comments from you. Maybe we'll react to some of those comments in future columns or online to enlighten you in real time! This is the "Games" column. You have a wonderful day.

dean who tried to hire me away from the Naval Postgraduate School in 1986. So, a quick start with respect to hiring is to find faculty recently retired/separated from an outstanding games program in the United States and bring them on for a three-year contract. This would get you up and running quickly with appreciative faculty looking for something interesting to do for a few years. If you focus on your best students, the ones whose presentations are outstanding and smart, then you could begin the dance of trying to get them to teach in your new game development program upon graduation.

The most important hire for this new game development program is the university president, basically the person who makes sure an appropriate amount of money flow is there to create and run the new university. Additionally, there needs to be a smart provost who oversees the academic programs from a high level. Hiring a search firm with experience in such hires is probably the right thing to do.

THE COST OF THIS NEW UNIVERSITY

If you propose a plan to create the games industry in a new country, the next question people ask you is: What does it cost? Well, it costs whatever you want but I put together this spreadsheet draft to kind of show you the size of what we might be talking about (Figure 3). First, it's a spreadsheet and all of the numbers are changeable to allow you to see what happens if the numbers are different. If you change the total students' number, currently 1,000 students, it changes the amount of tuition the university receives per year. The tuition, currently US\$150,000 per year, is changeable as well. The size of the faculty, set at 65, is also adjustable and you can see how it impacts budget. The average fully loaded faculty cost, US\$500,000, is a guesstimate, but it is a guess based on experience. The leadership costs are similar to those visible at a university like the University of

Southern California. The only maybe crazy part of this is the "build/acquire a magnificent building in downtown near the water 350,000 sq. ft." I list building acquisition/construction costs, costs to outfit the building, annual operations costs, and the annual cost to outfit the building. Embedded in the spreadsheet is a US\$1,000/sq. ft. cost for the building and that can be broken out, should it be so desired. This is just a draft to show most of the large-ticket costs and the receipts that make this university happen. The bottom line is: startup costs US\$402 M+, annual operating costs US\$142 M+, and annual receipts US\$150 M. This provides a net annual profit of just US\$7.5 M, which is way too low. Of course, startup from zero requires some rather large expenditures, so

hopefully a government agency and some game industry donors can fill in the holes...

GAMES RESEARCH INSTITUTE AND THE INCUBATION AND ACCELERATION CENTER

The focus of the games research institute was detailed in a previous column.³ The purpose of the games research institute is to develop new technologies and game designs for the games industry. The incubation and acceleration center's purpose is to do the work of patenting/protecting the generated intellectual property and doing the work of licensing deals for that intellectual property. Figures 4 and 5 show the cost of creating and operating both entities.

The Game Development University		
Build/Acquire a Magnificent Building in Downtown Near the Water 350,000 sq ft.		
Cost of building acquisition/construction		\$350,000,000
Cost to outfit building		\$52,500,000
Annual operations cost of building		\$52,500,000
Annual cost to outfit building		\$35,000,000
Initial Building Costs		\$402,500,000
Annual Building Costs		\$87,500,000
University Leadership		
President		\$5,000,000
Provost		\$4,000,000
Director of Academic Advancement		\$3,500,000
Leadership Support/year		\$10,000,000
Annual Leadership Costs		\$22,500,000
Size of Student Body 1,000 Students when Fully Operating		
Annual tuition		\$150,000
Total Students		1000
Tuition Received Per Year		\$150,000,000
Faculty Acquisition - How to Acquire Existing Talent to Teach		
Director of Academic Advancement		
Advancement Support Office		
Annual Costs Rolled into Annual Leadership Costs		\$0
Size of Faculty When Fully Staffed		
Total Faculty		65
Average Fully Loaded Faculty Cost		\$500,000
Total Faculty Cost Per Year		\$32,500,000
The Game Development University Cost Rollup		
Startup costs		\$402,500,000
Annual costs		\$142,500,000
Annual Receipts		\$150,000,000
Net Annual		\$7,500,000

FIGURE 3. The costs for starting and operating the game development university.

The Games Research Institute		
Share Space with the Educational Program		
Costs in line item with the Game Development University		\$0
Researcher Acquisition & Management		
Director of Research		\$3,000,000
Research Office Operations Annual		\$34,000,000
Research Admin Annual		\$37,000,000
Researchers When Fully Staffed.		
Total Researchers		50
Average Fully Loaded Researcher Cost		\$500,000
Total Researcher Cost Annual		\$25,000,000
The Games Research Institute Budget Rollup		
Startup costs		\$10,000,000
Annual costs		\$62,000,000
Annual Receipts - Donations & Grants		\$100,000,000
Net Annual		\$38,000,000

FIGURE 4. The cost of operating the games research institute.

Incubation & Acceleration Center for game & technology startups		
Share Space with the Educational Program		
Costs in line item with the Game Development University		\$0
Incubator & Accelerator Staff		
Director of Incubation		\$1,000,000
Director of Acceleration		\$1,000,000
Seasoned Developers & Business Leaders		\$5,000,000
Seasoned IP Lawfirm for Patents & Licensing		\$10,000,000
Total Annual		\$17,000,000
Incubator & Accelerator Budget Rollup		
Startup costs		\$10,000,000
Annual costs		\$17,000,000

FIGURE 5. The costs of the incubation and acceleration center.


eSports Resort		
Space requirements - near the water in a very beautiful resort setting		
1,000,000 sq ft building to be built/acquired in vanilla shape		\$1,000,000,000
eSports Resort Staff		
Director of Research eSports Resort		\$5,000,000
Detailed planning to be conducted via contract to Applied Minds & Gensler		
Buildout of the resort from the vanilla shell		\$1,000,000,000
eSports Resort Budget Rollup		
Annual Director		\$5,000,000
Resort Creation		\$2,000,000,000
Resort Annual Maintenance & Upgrade		\$400,000,000
Resort Staff Annual to Operate		\$500,000,000
Resort Annual Receipts		\$3,000,000,000
Net Annual		\$2,095,000,000

FIGURE 6. Costs for the creation and operation of the eSports resort.

GAME DEVELOPMENT COMMUNITY

The formation and nurturing of an active game development community in many dimensions is key to the success of creating this new industry for your country. One of the most important things is that the developing games industry has a palace or event venue, maybe an eSports resort, where game industry events can be held in grand fashion. This resort will be the location of an annual conference for the global games industry; this resort will become a destination for the global games industry's leaders and talent and be a venue where the locally developed games, technologies, and talent can meet the global industry. There will be an event like the DICE Summit of the Academy of Interactive Arts and Sciences, where the people who have done great things in games over the last year are showcased.⁴ There will be a games industry awards show, like the Oscars. Since the venue is a resort, it will be a place where global talent and fans can meet during eSports competitions. The cost of building this resort is in Figure 6 and is a WAG. It can be anything.

This column has been a high-level presentation on what it would take and cost to create a games industry from scratch in your country. There are many reasons to do this. One is you want the youth of your country to stay home and build games whose stories emanate from local historical contexts. That is a big reason. Developers in San Francisco and Los Angeles don't know your country's stories, histories, or where you are on the map. Games are media, meaning they communicate a story from a particular point of view and that point of view comes from the development team. Another reason to build a games industry in your country is that game development brings about much technological innovation, innovation that no longer comes from government

agencies like the Defense Advanced Research Projects Agency. Another reason might be that game developers are typically some of the happiest people on Earth and that happiness is communicated globally from your potentially hit game! Think about this! I am happy to fly over and consult on what you are dreaming to build and help you change your country's future ... 

ACKNOWLEDGMENT

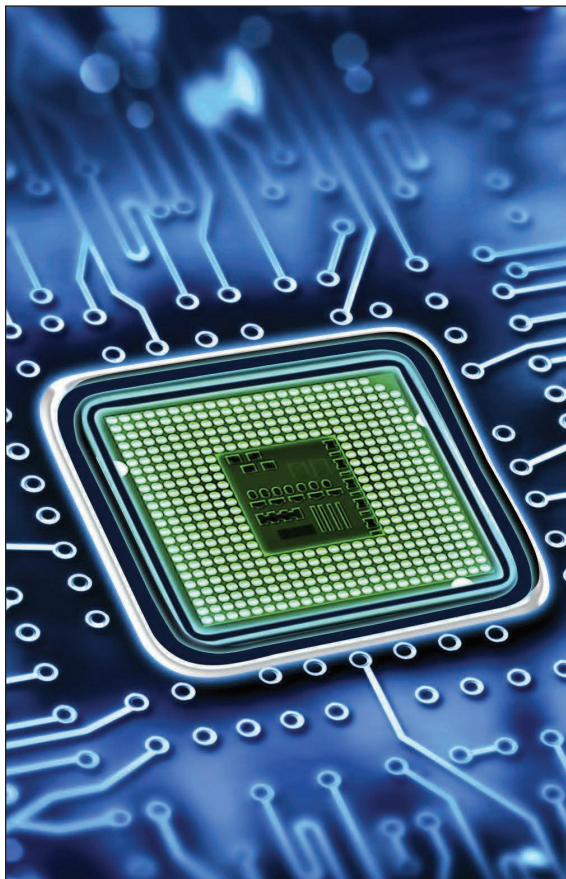
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REFERENCES

1. T. Segal. "Silicon Valley: Definition, where it is, and what it's famous for." Investopedia. Accessed: Oct. 26, 2023. [Online]. Available: <https://www.investopedia.com/terms/s/siliconvalley.asp#:~:text=The%20term%20Silicon%20Valley%20refers,used%20in%20all%20modern%20microprocessors>
2. M. Zyda, "How do I get a position in the games industry? The FAQ," *Computer*, vol. 55, no. 5, pp. 102–108, May 2022, doi: 10.1109/MC.2022.3151459.
3. M. Zyda, "We need something like "Bell Labs" for the games industry," *Computer*, vol. 55, no. 5, pp. 16–21, May 2022, doi: 10.1109/MC.2022.3154205.
4. DICE Summit. Accessed: Oct. 27, 2023. [Online]. Available: <https://www.dicesummit.org>

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