

Quantum Games 2023

Annakaisa Kultima





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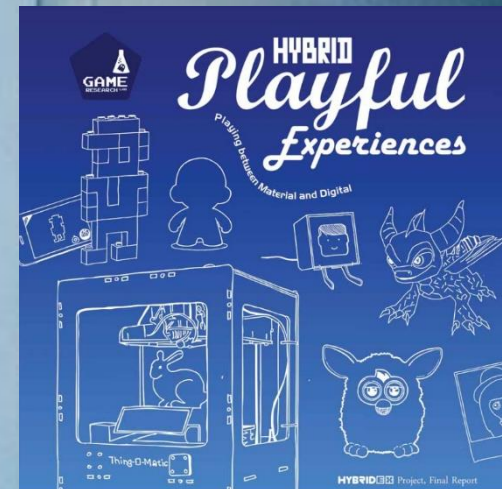
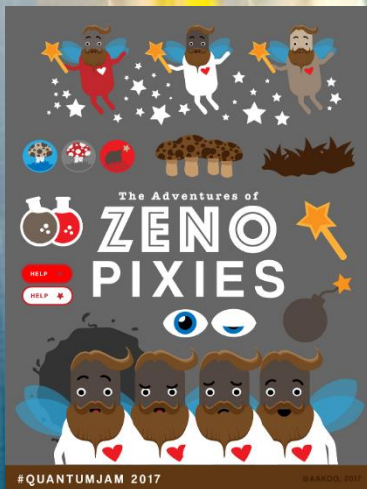
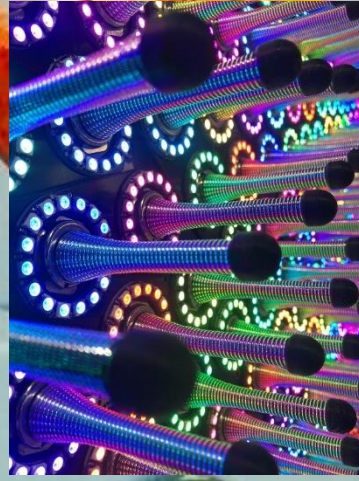
University Lecturer

PhD in Game Studies

Docent

CEO, Designer, Founder

My Projects





Ethnography (2006-2016)

~ 40 game conferences

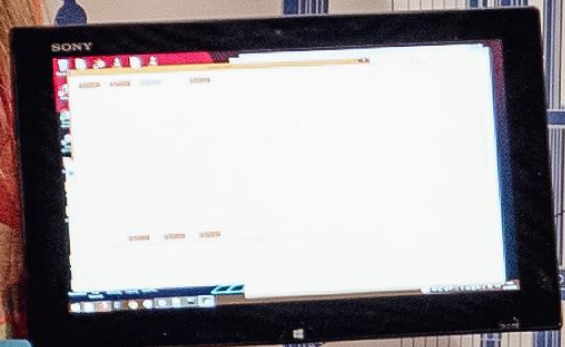
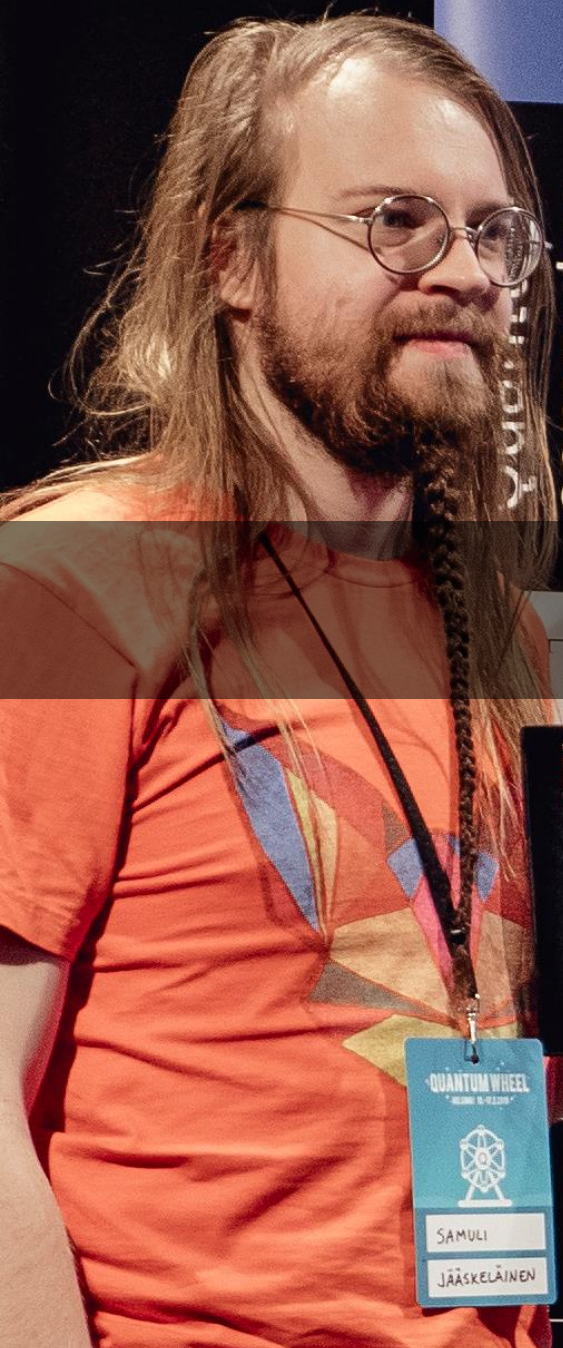
~100 other game industry events

~20 game jams (now over 50)

IBM Q

computer

Quantum Game Jam





Quantum Garden

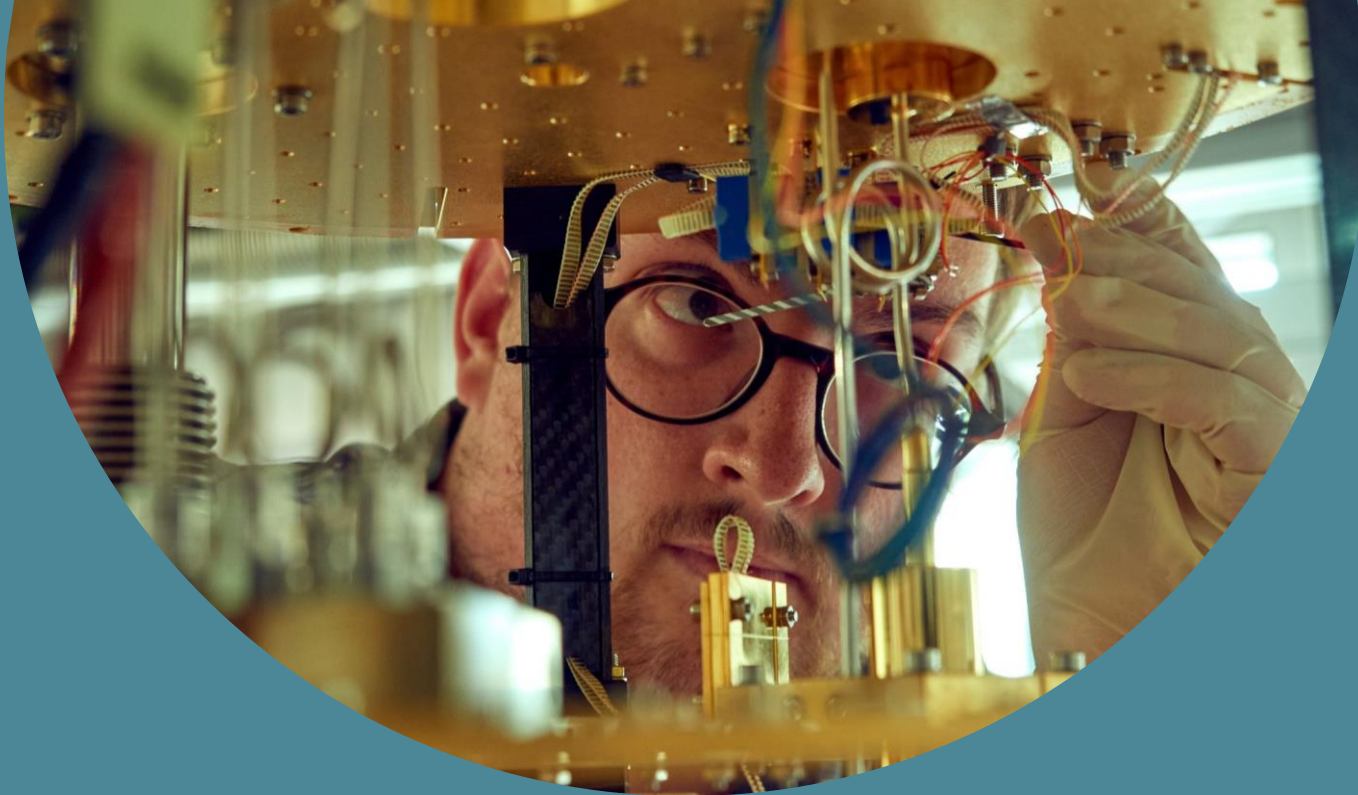
What happens on this course?

- Lectures @ Discord
- Game project work @ Discord
 - Following the milestones!
- Published projects: quantumgames.aalto.fi



Schedule

- Wed 25.10. 17-19
 - Lecture: Introduction to Game Design and Development
- *Wed 1.11. (by 10 am)*
 - *Milestone: Bitsy warm-up*
- Wed 1.11. 17-19
 - Lecture: Introduction to Quantum Games and Quantum Computers
- *Wed 8.11. (by 10 am)*
 - *Milestone: Teams & Ideas*
- *Wed 15.11. (by 10 am)*
 - *Milestone: First playable*
- *Wed 22.11. (by 10 am)*
 - *Milestone: Second playable and presentations*
- *Tue 5.12.*
 - *Final deadline for the projects & project reports*



Jorden Senior, VTT

Mentors

Laura Piispanen, Aalto University



Game Projects

- In small teams or as a solo project
- Digital game or analog game
- Quantum?
 - 1) ABOUT quantum physics OR
 - 2) ABOUT quantum computers OR
 - 2) USING a quantum computer

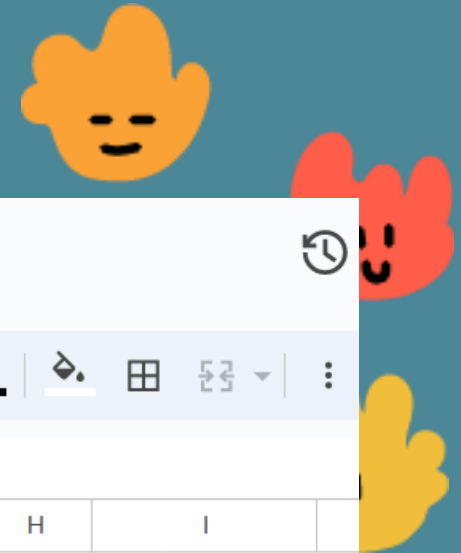


How to pass the course?

- Meet the milestones
- Submit a quantum game (team or solo)
- Submit a project report (personal)



Report template



QG23 Project Report Template ☆ 📁 ☁

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	A	B	C	D	E	F	G	H	I
1	Type of activity	Details	Day	Month	Hours		Estimated credits	2	
2	Game jam program	<i>Participating to the lecture on Zoom</i>	16	9 (Sept)	2		Total Hours	54	
3	Game jam program	<i>Team forming exercises</i>	16	9 (Sept)	3		Credits (1=27h)	2	
4	Independent work	<i>Playing Quantum Break</i>	20	9 (Sept)	5				
5	Independent work	<i>Reading research articles about que</i>	21	9 (Sept)	8		Course duration	25.10.-5.12.2023	
6	Community	<i>Chatting on the jam Discord</i>	25	9 (Sept)	2		(in weeks)	6	
7	Independent work	<i>Learning pathfinding techniques on</i>	25	9 (Sept)	8				
8	Game development	<i>Making new level</i>	26	9 (Sept)	8		Examples of workload		
9	Team communications	<i>Discussing with the team on Discor</i>	2	10 (Oct)	2		maximum hours:	243 (5 days per week, 8	
10	Team meeting	<i>Meeting at Aalto campus</i>	12	10 (Oct)	3			9 credits	
11	Team meeting	<i>Meeting at Zoom</i>	14	10 (Oct)	2		minimum hours:	81 12-15 hours per wee	
12	Game development	<i>Fixing bugs, creating UI</i>	14	11 (Nov)	8			3 credits	
13	Project report	<i>Writing the reflection task</i>	5	12 (Dec)	3				
14							Tips for healthy working:		
15							Keep the daily workload in less than 8 hours		

Short Introduction to Game Development



[CRYSTAL] THRONE BUTT
TELEPORTATION

Making games is hard





Anybody can make games!

A group of people are gathered around a table, playing a board game. The scene is dimly lit, with a warm, yellowish light source illuminating the table and the players. The players are focused on the game, and their hands are visible as they move pieces. The background is dark, suggesting an indoor setting at night. The text "Making money with games" is overlaid on the image in a white, sans-serif font.

Making money with games



Making profit with games



Making games is easy

Game elements?

- Characters
- Environment
- Narrative
- Dialogue
- Audio and music
- Interactivity (mechanic, goals, rules)
- ...
- Depends on a game!



PONG

Pong, 1972



Pac-Man, 1980



Y POSITION

X POSITION

Tennis for Two, 1958

INTENSITY

FOCUS

DNL - Balance of Plant



A screenshot from the video game Max Payne. The character Max Payne is in the center, sitting on the floor in a dark, bullet-riddled room. He is wearing a dark suit and a patterned scarf, and is holding two handguns, one in each hand. The room has a checkered floor and a wall with many bullet holes. A large fire is burning on the right side of the room. In the background, there is a wooden door and a framed picture on the wall. A fallen enemy is visible on the floor to the left. The text "Max Payne, Remedy Entertainment (2001)" is overlaid in the center of the image.

Max Payne, Remedy Entertainment (2001)



Angry Birds, Rovio (2009)

153 1549

5506

Builder: 2/5

Shield: None

Max: 8 500 000

1794 919

Max: 8 500 000

942 517

Max: 60 000

23 459

999 995

Clash of Clans, Supercell (2012)

Attack!

Shop

A vibrant city skyline under construction. Several tall, modern buildings with glass facades and curved balconies are visible. Two large yellow construction cranes are positioned on the left and right sides of the frame. The sky is a clear, bright blue with a few wispy clouds. The overall scene conveys a sense of rapid urban development and progress.

Cities Skylines, Colossal Order (2015)

CITIES SKYLINES



Control, Remedy Entertainment (2019)



Chesmac (1979)





Design knowledge in games



Play games!

A close-up photograph of a diverse group of people's hands stacked together in a circle, symbolizing teamwork and collaboration. The hands are of various skin tones and are wearing different colored sleeves (green, red, blue). The background is slightly blurred, showing an outdoor setting with greenery and a building. The text "Games are made by people" is overlaid in white on a semi-transparent dark band across the center of the image.

Games are made by people

Game Developers

- Game designers
- Game programmer
- Game artist
- Audio designer, musician
- Writer, narrative designer
- Level designer, costume designer, UX designer...
- Tester
- Monetization designer



Game Engines and Tools

- Unity & Unreal
- Adobe Photoshop etc.
- Maya, Blender
- ...



Tiny Tools for Game Development



- Construct
- Bitsy
- GB Studio
- Twine
- RPG Maker
- Tabletopia
- More from my list:

https://docs.google.com/document/d/17VspP4p4FSXOxmDgro5Yd_Np_4j3zk2uJ1HQN_Kgl2Y/edit?usp=sharing

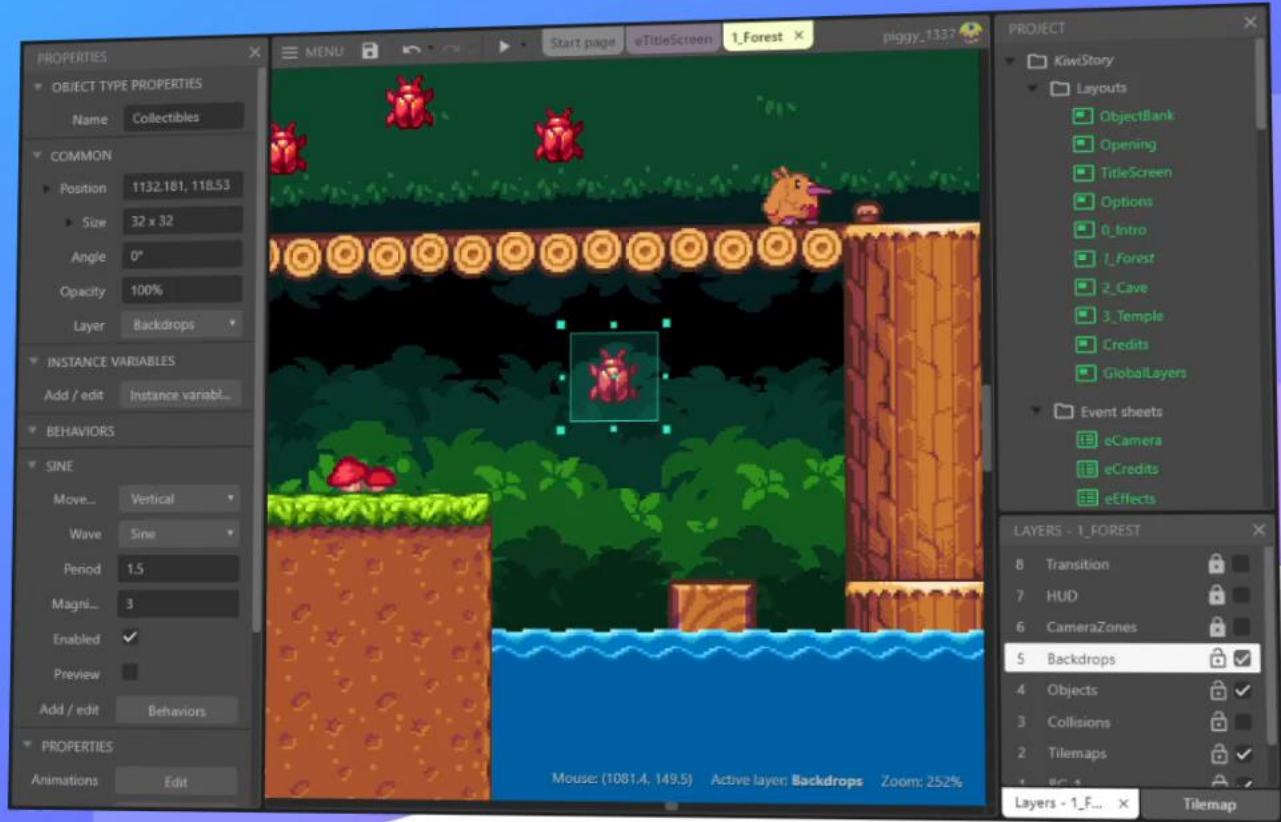
NEW Construct 3 updated 1 day ago >

CONSTRUCT 3 GAME MAKING SOFTWARE

Construct 3 is the best software to create games. Over 100,000 users monthly make & sell thousands of games globally.

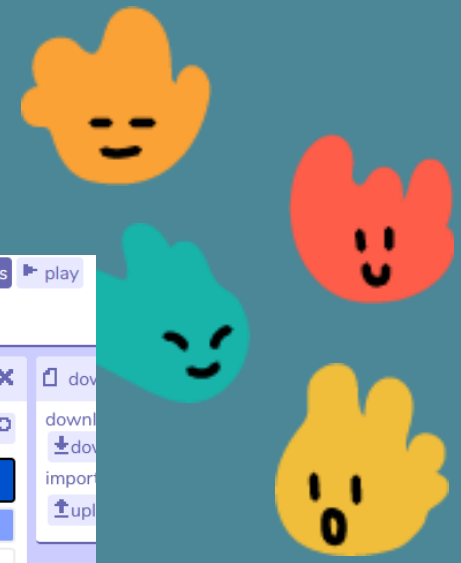
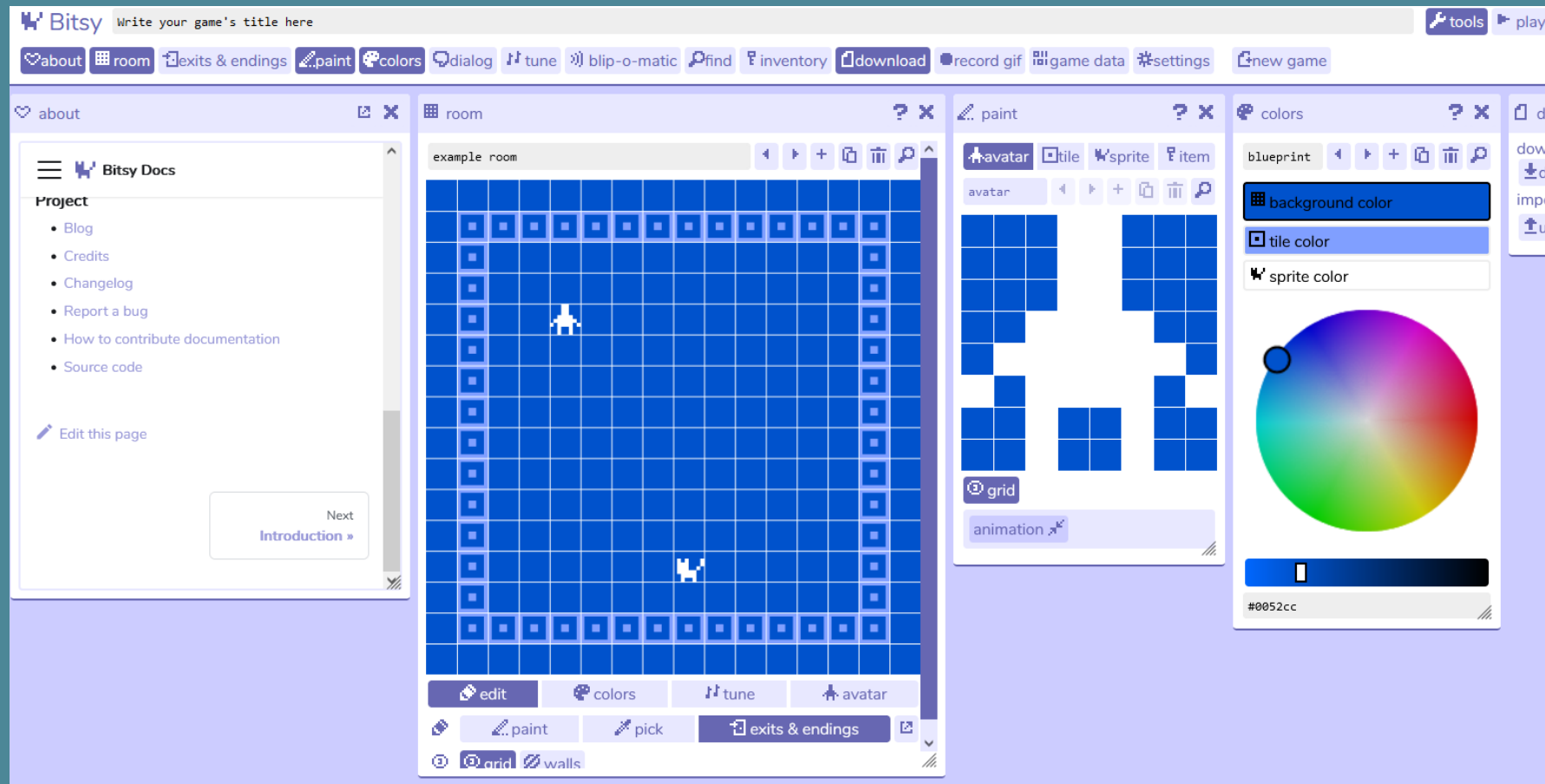
TRY IT NOW!

SOME OF OUR CUSTOMERS



The screenshot displays the Construct 3 development environment. The central canvas shows a 2D platformer game scene with a red enemy, a player character, and various terrain elements like platforms and water. The interface includes several panels: a Properties panel on the left for object settings, a Project panel on the right for scene management, and a Layers panel at the bottom right for layer control. The status bar at the bottom indicates the mouse position and active layer.

Bitsy



- <https://www.youtube.com/watch?v=51LCXnBJG-M&t=3s>

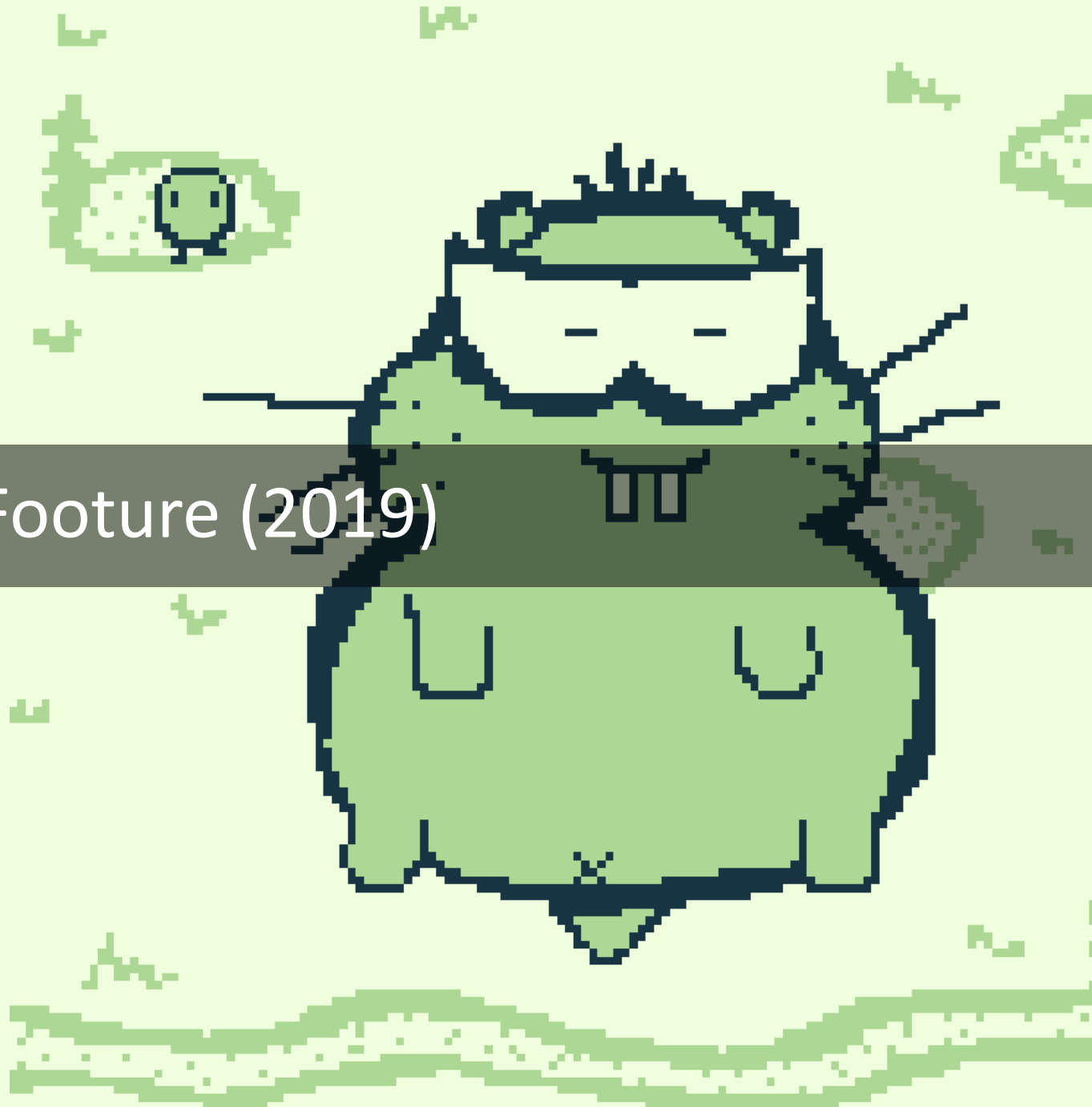
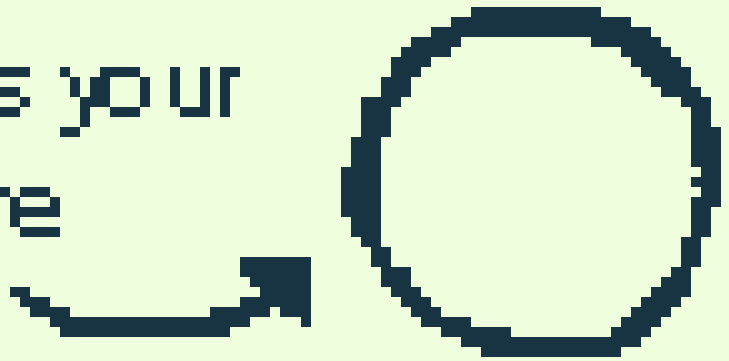



Watch Parsnip Grow in Real Time (2014)

HAMSTER FOOTURE

Hamster Footure (2019)

here is your
footure



A close-up photograph of a blue plush toy with a yellow face and a smartphone in its mouth. The toy has a yellow face with two large blue circular eyes and several small brown dots. The smartphone screen shows a red heart with a smiling face and a white cloud. The background is blurred, showing a person's hand and a red surface.

Bebbu (2012)

Don't Let them Touch your Qubits (2021)



Basic Concepts of Game Development



4 Basic Concepts of Game Development

- Game ideas
- Game mechanics
- Iteration
- Teaming



Game ideas

- Exciting!
- Can start from anything
 - What player(s) do in the game?
- Game ideas change
 - Prototyping, exploration, testing
 - Dead ends!
 - A mass murder of ideas
- Similar games do exist
- Your constraints
- Use brainstorming techniques!



A GOOD IDEA ...



Game mechanics

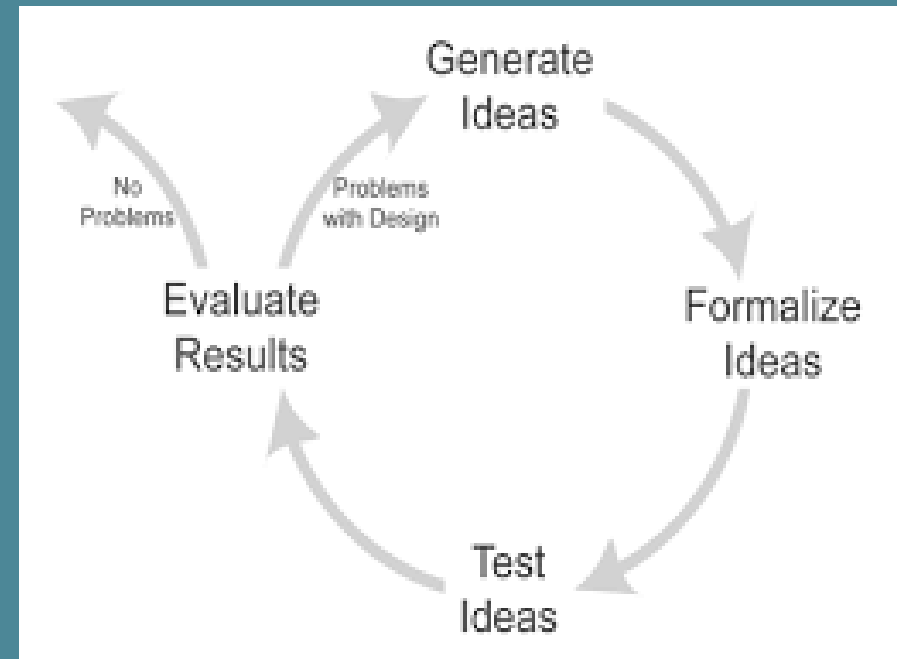
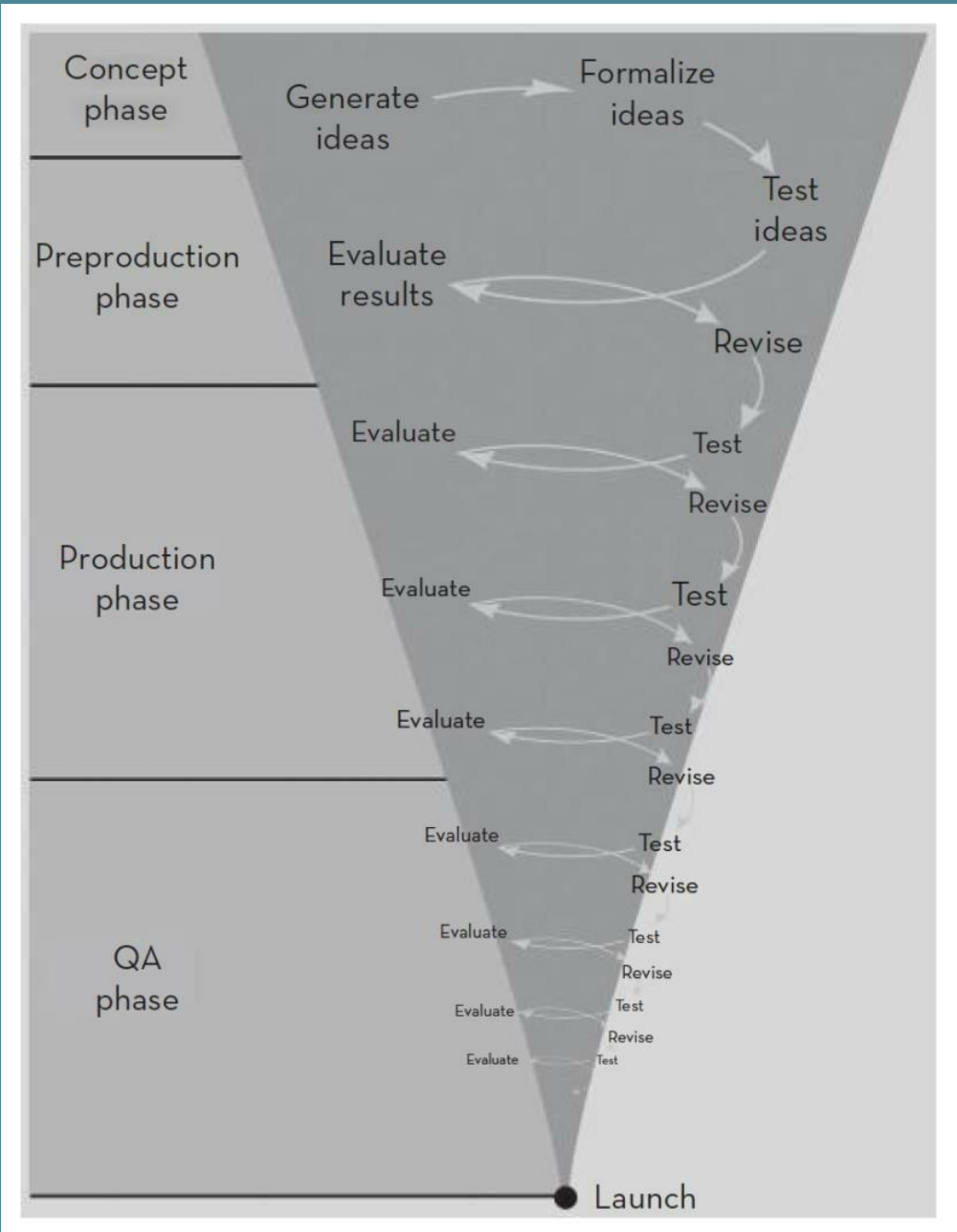
- Games are interactive...
- Game mechanics
 - Methods given to players to interact with the game world
 - “Verbs of the game”
 - Core of game design
- Games are systems
 - You create the systems by creating the rules
 - Your players need feedback to understand the system
- Artificial challenges, “lusory attitude”
- Core loop? (repeatable actions)



Iteration

- Games are experiential = subjective
- Games are built cyclically
 - Building, testing, evaluation, building, testing, evaluation
 - The space of possible design solutions is gradually narrowing
 - Sometimes you need to change a lot
- Game development is full of surprising challenges
 - Plan to use double time that what you initially think
- Testing is very important!
 - Test yourself
 - Friends and family
 - External people
 - Test early!





Teaming

- Games are usually made in multidisciplinary teams
- Programming, graphics, audio, music, etc.
- Games are made by people → human problems
- Preserve time for communication and getting to know each other
 - Concrete examples of games and prototypes help!
- Some areas of game development take more hours than others
 - Working with several hats
- Shared vision is important!
- Are all motivated to work on this idea?
- Instead of teamwork, think of “teaming”
 - What is the game that you can make with the team at hand



Next up?

- Introduce yourself on Discord!
 - #Introductions
 - React, comment and ask further questions of others
- Start marking down the hours for reading and playing!
- Milestone 0
 - Make a really simple game with Bitsy and post it to Discord by 1st of Nov
 - #Milestones
- Next week:
 - Laura Piispanen: Quantum games
 - Jordan Senior: Quantum computers and technologies

