

The design is not just what it looks like and feels like. The design is how it works.



- Famous fruit company guy





#### Minecraft in numbers

- Created 2009, initial release 2011
- > 170 million monthly active players
- Player demographic: All ages (but average age 24)



Sources:

- https://en.wikipedia.org/wiki/Minecraft
- https://en.wikipedia.org/wiki/List\_of\_best-selling\_video\_games
- https://www.pcgamesn.com/minecraft/player-age
- https://www.statista.com/statistics/680124/minecraft-unit-sales-worldwide/

#### Henrik Kniberg

#### List of best-selling video games

From Wikipedia, the free encyclopedia

Rank +	Title +	Sales +	Series +	Platform(s) +	Initial release date 🗢	Developer(s) <sup>[a]</sup> ◆
1	Minecraft	238,000,000 <sup>[b]</sup>	Minecraft	Multi-platform <sup>[c]</sup>	November 18, 2011 <sup>[d]</sup>	Mojang Studios
2	Grand Theft Auto V	169,000,000	Grand Theft Auto	Multi-platform	September 17, 2013	Rockstar North
3	<i>Tetris</i> (EA)	100,000,000	Tetris	Multi-platform <sup>[e]</sup>	September 12, 2006	EA Mobile
4	Wii Sports	82,900,000	Wii	Wii	November 19, 2006	Nintendo EAD
5	PUBG: Battlegrounds	75,000,000	PUBG Universe	Multi-platform	December 20, 2017	PUBG Corporation
6	Super Mario Bros.	58,000,000	Super Mario	Multi-platform <sup>[f]</sup>	September 13, 1985	Nintendo R&D4
7	Mario Kart 8 / Deluxe	55,280,000	Mario Kart	Wii U / Switch	May 29, 2014	Nintendo EAD
8	Pokémon Red / Green / Blue / Yellow	47,520,000	Pokémon	Game Boy / Color	February 27, 1996	Game Freak
9	Red Dead Redemption 2	45,000,000	Red Dead	Multi-platform	October 26, 2018	Rockstar Studios





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# How a feature is born



# Beware local optimas Don't get stuck iteratively improving the first solution you came up with



Finding the Awesome





### Exploring the design space of a feature





# KYD





# Design is its own craft, but should be tightly integrated with development

#### "Design owner" = mini-producer for a game feature





Should design be separate thing from development?

Development includes design + coding



### **Design is a craft** Like other crafts in a cross-functional development team





#### Designer craft needs to collaborate (across teams)





# Prototypes come in all shapes and sizes

#### Example: Piglins & Hoglins

Design goal Give life to the Nether dimension. Should feel like an ecosystem!





#### **Player stories**



Piglin



Hoglin



I'm gonna make me a nice little home in the red forest. And a Hoslin pen for fued I'm gonna explore + breeding. Don't wont the nether! And there mobs in or near my red forests! house though. Don't mind some excitement, I warma find wit but I shouldn't just die to (tech builder) what those Piblins can all the time I need a ton of burter. Don't wanna hese barbaric piglin need quartz for my machine. a Leader ! fight really. Heard that Piglins can Lets see if I can donesticate them? will the live in the provide that. Can I houses I build for them? scale/automate it? .... (Peaceful mode) I'm gonna explore that forest. On cool, look at those mobs! Hope they don't hurt me. Wonder what I can do with them? want to do some Look! Mobs! the Rampage! Kill 'em all' to capture a fe happens in they are exploded/ inshed/fect potions or are forced to fight with XP! Loot ! (hardcore mode) I'm lost! Trying to I need to get to I heard that Piglins that nether fortress. The find my way back sometimes hunt or only thing botween me to the portal. Need and the fortress is that food though! Wait, ride hoglins. Gonna big crimson forest. go for a safari and maybe those Hoglins .. go tor a sature! J'm see if it's true! J'm just curious about how they behave Here yoes ... or Piglins ...?

#### Example: Piglins & Hoglins

Design goal Give life to the Nether dimension. Should feel like an ecosystem!



### Iterating on hunting logic using paper prototyping

#### Hoglin ==> Piglin

- l never initiate attack against Piglin. When hurt, I attack back.
- If I see another Hoglin in battle then join the battle
- When I hurt a piglin, decide whether to continue fighting or flee
  If we don't outnumber Piglins, I flee a random distance, faster than piglin. May move out of combat range.
  If we outnumber piglins, stay and fight.

#### Piglin ==> Hoglin

- If I haven't seen a hoglin die in a while, and I see one now, then start fighting.
- If I see another Piglin in battle then join the battle
- When hurt, I decide whether to keep fighting or flee.
- If I'm outnumbered, I flee (and stop being aggressive), avoid that hoglin for a while.
- If not outnumbered, I stay and fight.
- If I have crossbow, I will always keep a minimum distance from piglin



## In-game prototype gradually refined to production quality



#### When implementing a feature, what do we do with the prototype?



## Hypothesis: ear flopping is fun and useful way to convey emotion

#### Conclusion: Cool but not worth the effort



ldle



Excited



Scared



Angry

# Circus piglins

Accidental discovery. Conclusion: Cute, fun, simple. Keep it!



### Testing the limits.....



#### Sometimes we make prototypes just to learn how stuff works...



#### We toned it down a bit


## Test your design continuously!



#### Invest in tools & overlays to help improve and debug the design



## Concept Art is also a form of prototyping



## Oops! The new caves all get flooded below sea level!



Wait, what if we still allow some caves to be flooded? Prototype: lower the sea level and try it out!

## Result: Aquifers (local water levels)





## Pattern: Use the product itself as a prototyping tool



Source: https://successstory.com/photos/people/kjeld-kirk-kristiansen

# Don't be too obsessed with "potentially shippable product increment"



## The Scrum Guide

The Definitive Guide to Scrum: The Rules of the Game

November 2020

#### Increment

An Increment is a concrete stepping stone toward the Product Goal. Each Increment is additive to all prior Increments and thoroughly verified, ensuring that all Increments work together. In order to provide value, the Increment must be usable.

Multiple Increments may be created within a Sprint. The sum of the Increments is presented at the Sprint Review thus supporting empiricism. However, an Increment may be delivered to stakeholders prior to the end of the Sprint. The Sprint Review should never be considered a gate to releasing value.

Work cannot be considered part of an Increment unless it meets the Definition of Done.

#### Commitment: Definition of Done

The Definition of Done is a formal description of the state of the Increment when it meets the quality measures required for the product.

The moment a Product Backlog item meets the Definition of Done, an Increment is born.

The Definition of Done creates transparency by providing everyone a shared understanding of what work was completed as part of the Increment. If a Product Backlog item does not meet the Definition of Done, it cannot be released or even presented at the Sprint Review. Instead, it returns to the Product Backlog for future consideration.

If the Definition of Done for an increment is part of the standards of the organization, all Scrum Teams must follow it as a minimum. If it is not an organizational standard, the Scrum Team must create a Definition of Done appropriate for the product.

The Developers are required to conform to the Definition of Done. If there are multiple Scrum Teams working together on a product, they must mutually define and comply with the same Definition of Done.





#### Prototyping is all about learning fast



#### Scrum-by-the-book approach



#### Systemic learning-optimized approach



#### Test automation is great! But later when the design is somewhat stable.



## Test automation verifies that the feature works as expected ..... but not that the feature is any good





Minimize the gap!

Maker









#### How to communicate with users when there are millions?



#### Sources of insight & decision making



#### Example: Public bug tracker (yes, *anyone* can add tickets!)



#### Social media (watching videos & streams)



itsa new snapshot! today the 21w20a snapshot for Minecraft 1.17 released and brought a TON of bug fixes as well as some small ...

#### Social media (interacting)



#### Henrik Kniberg @henrikkniberg · Aug 17, 2021 ···· OK minecrafters, we've now shipped 1.18 experimental snapshot 4. Try it out (ideally in survival) and give us feedback! minecraft.net/en-us/article/...



Viki
Reference in a los ob found on minecraft net. See also <u>snapshot 1</u> and <u>snapshot 2</u> and <u>snapshot 4</u>.

Henrik Kniberg @henrikkniberg · Sep 29, 2021 ···· Been tinkering a bit with the peaks, especially for the smaller mountain ranges, to make them more jagged and interesting. The big mountain ranges were mostly fine, but the small ones tended to be a bit too round and flat. Maybe something like this?

E



## Mini surveys



Henrik Kniberg @henrikkniberg  $\cdot$  Oct 21, 2021  $\cdot \cdot \cdot$ If you've been playing on the latest two java snapshots, do you have trouble finding non-flooded cave entrances?

Yes, often a problem	16.3%
Sometimes a problem	20.9%
Not a problem (or rarely)	19.1%
No opinion	43.7%

6,229 votes · Final results

9,279 votes · Final results

B 185	
NO	
-	

#### Henrik Kniberg @henrikkniberg · Oct 11, 2021

Hey Minecrafters, last Java snapshot (21w40a) we changed the size of biomes. If you've played on that snapshot, how do you feel about the average biome sizes now?

Mostly too large	13.9%
About right	46.1%
Mostly too small	7.4%
No opinion	32.6%

Henrik Kniberg @henrikkniberg · Aug 9, 2021

If you've tried branch mining for diamonds in 1.18 experimental snapshot 2 in the deeper levels, I'm curious about your results. How many diamonds do you get compared to in 1.17? (in survival, digging straight tunnels for diamonds)

• • •

Got more diamonds in 1.1	18 37
About the same	35
Get less diamonds in 1.18	26

3,284 votes · Final results

PF

•••

#### Beware of feedback selection bias



## Hanging out with the real players



#### Agent M 👼 @AgentM124 · 15h Playing with @henrikkniberg has been a pleasure. Thanks to highly involved testing on actual servers, the game's quality will greatly improve.



Hanging Out With Mojangsta Henrik on Minecraft 20w... Henrik is awesome, but his relationship with piglins is very complicated! ------ LINKS ------- ... Ø youtube.com



Hanging Out With Mojangsta Henrik on Minecraft 20w08a! 232 views + 2 years ago

👔 Agent M

Henrik is awesome, but his relationship with piglins is very complicated! ------ LINKS ------ Twitch: ...



#### You can also get feedback BEFORE releasing



Henrik Kniberg @henrikkniberg · Jan 14

 $\sim$ 

Today design decision: What should Piglins give you in return for gold? Suggestions?



#### Impressions

times people saw this Tweet on Twitter

166,092

#### Media views

62,995

all views (autoplay and click) of your media are counted across videos, vines, gifs, and images



Henrik Kniberg

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# Simple is usually better (and often harder)





#### Stockholm Syndrome

- a condition in which hostages develop a psychological bond with their captors during captivity

Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.



Very cheerful fellow

Half of all quotes are attributed to the wrong person

Christopher Colombus

## Village children

Goal: Village children play with each other to make the villages feel more alive.


Simple rules create dynamics and illusion of play

- Am I being chased?Run!
  Someone else being chased? Join the chase!
- 3.Nobody being chased? Boring! Start chasing someone!

..... Max 5 kids involved in a chase



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## Ruined portals Gold block sometimes (up here, or fallen down) Portal frame with missing blocks random pieces of crying obsidiar Goal: Help players discover the Nether dimension and figure out Loot chest how to get there. Inspire players to speculate about their origins. Stone structure with random replacement blocks to create an Random procedurally cient worn look generated netherack + magma Replacement blocks vary depending on biome & dimension The netherrack "drips" down

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## Ruined portals

We simplified the design, to encourage players to improve them or build on them.







## Simple structured inspired the players to improve or complete them





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