

Game necessity study

Factorio



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Game summary

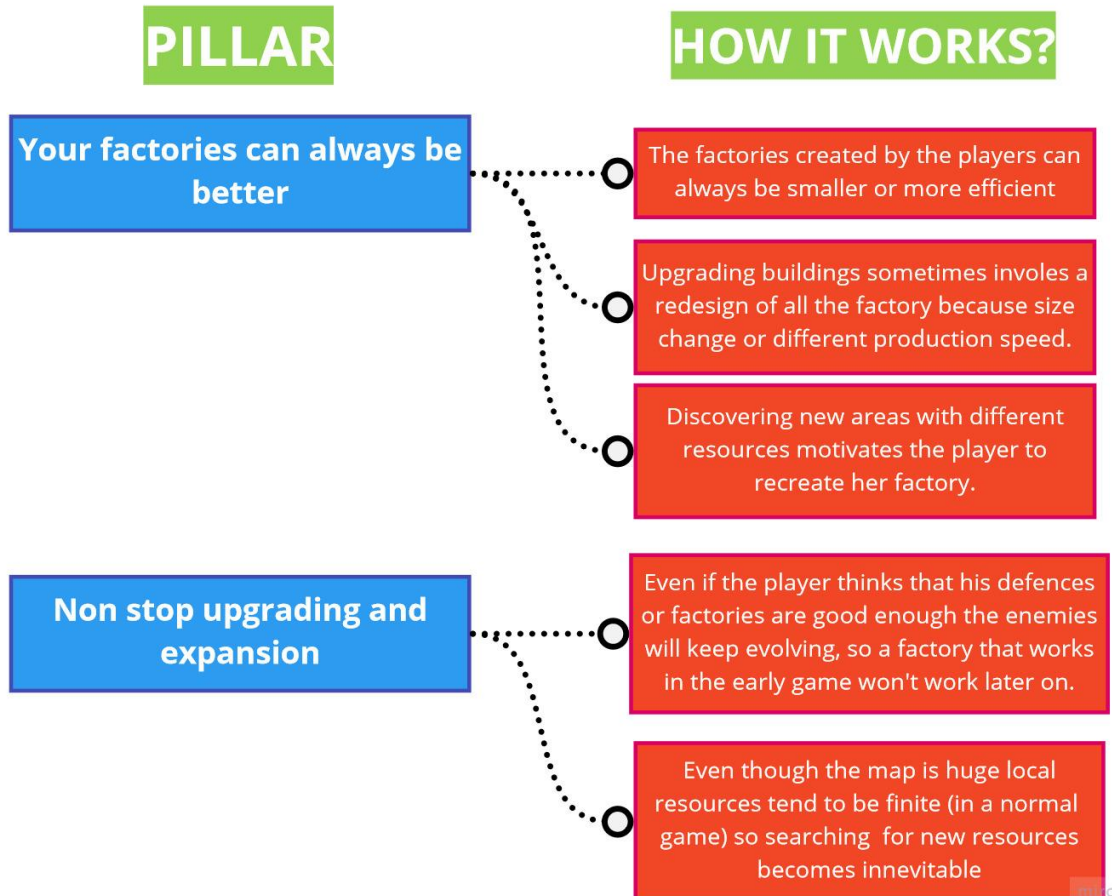
Factorio is a simulation management game, focused on resource gathering and processing. The goal of the game is to generate an industry capable of assembling a rocket that will save the protagonist from the hostile planet he has crashed on. The protagonist can create a variety of buildings like miners, assemblers, furnaces etc... These buildings process materials in different forms, forcing the player to configure them in a way he feels suitable.

The player also has to be careful with the wildlife of the planet. All the machines the player builds expel CO₂, which, in large quantities, will make those life forms hostile to the players industry, therefore the player has to also create a militaristic industry, creating turrets, bullets and walls that will protect her factories.



Success factor

In the next diagram there is an explanation of which mechanics are core to the game and make it a successful one.



Big community with tutorials and feedback

Since it is a game that involves a lot of thinking there are tons of tutorials of it online

Some of the game's active community invest their time making blueprints for other players

Some players actively continue researching for more efficient methods in the game.

Simple rules with complicated combinations

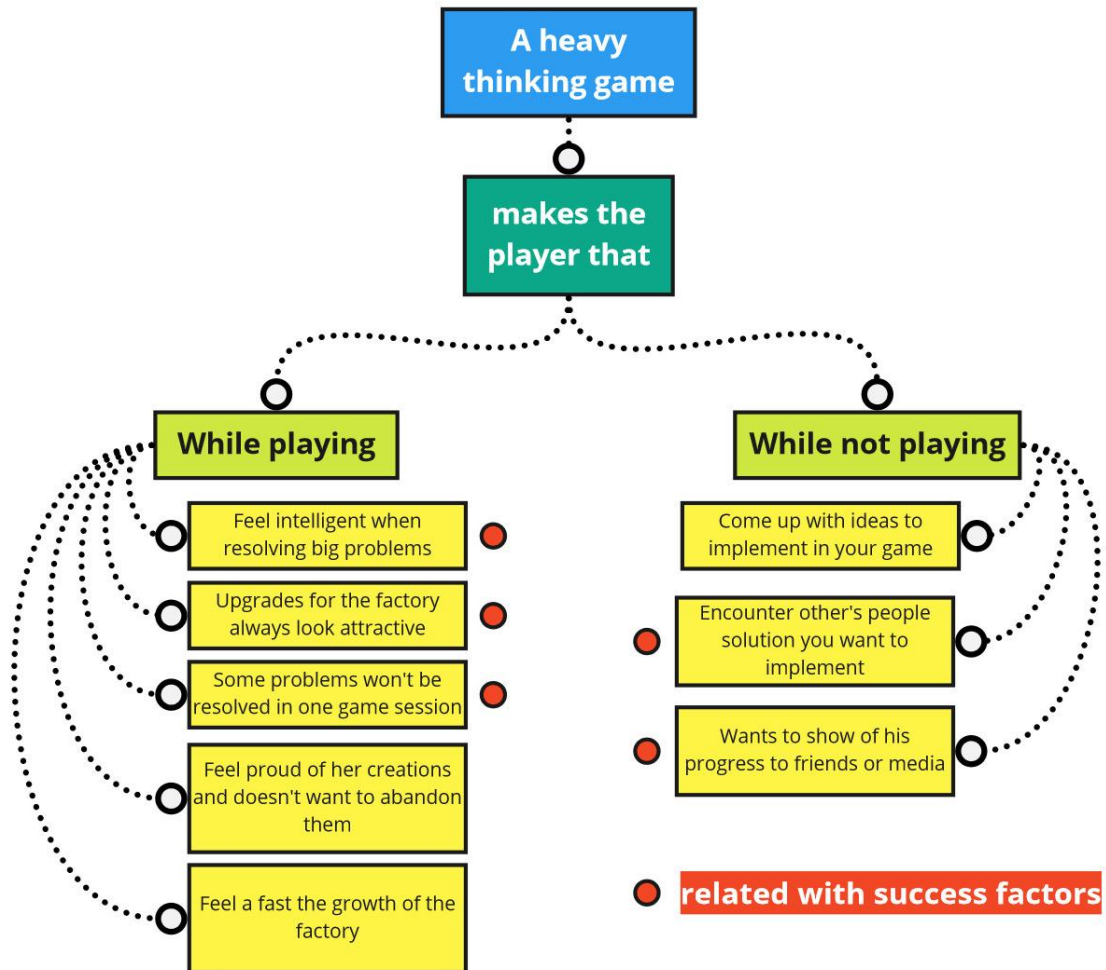
There are few primary materials but by combining them and processing them you can get extremely complicated systems for manufacturing



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Why do users keep playing?

Every game creator always wants players to return to his game. Fatorio is not the exception and has crucial factors that make players return to their experiences showed in the next diagram



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Why do players spend their money ?

Factorio has sold over 2.5 million copies (according to the [game's web page](#)). Various factors have contributed to make it worth buying:

1. Massive options for **players that like building**.
2. This game lets players **build** extensive and **complex factories** that can easily get more complicated. Factorio accomplishes this easier than other building, strategy or automation games.
 - a. When a potential customer reads reviews, she will **hardly find** a comment saying that the **player just used the game for a few hours**.
3. For someone interested in this game genre (**Simulation / RTS / Building / Management / Tower defense**), Factorio is an **option to start**.
 - a. Simple rules, complicated combinations.
4. Hard to miss in **social media**
 - a. Once you put an eye in the game you will easily encounter it later due to **its big community**.



How does it generate value in multiplayer?

The game devs knew multiplayer would be an important feature in the game, that is why we can see that feature was implemented in [early development](#) .

- ❖ Allowing players to **share the game experience** helps her to **diminish the frustration** and overthinking created when playing alone.
- ❖ The game tends to make the player **feel alone** in face of the immensity of the map and the time spent alone thinking for survival.
- ❖ Simply working with others in **difficult problems can be engaging** for certain groups of friends.



Decisions behind the gameplay

Some factors are key to communicate to the player what is happening in the game. Most of them are visible in the next screenshots.



1. **Factories and containers allow you to see what they are producing or containing**, making it easier for the player to understand what all the system is doing as a whole. Without this feature, making the simplest of factories would become extremely hard, as the player would have to memorize what each building is doing or would have to enter each one constantly.
2. **Each item has a distinctive color facilitating the understanding of what items are being moved to where**. Also items that derive from others tend to have the same color as copper ore → copper plate → copper wire. This allows the player to have a notion of how the input materials are being refined.
3. **Belts and pipes have a clear representation of the direction the material they are transporting is being moved**. This is useful to know when there is a jamming

in some point of the factory or to organize "transport buses", a basic setup used by players.

4. **The map is a basic tool for planning the expansion and defending of the factory.** The player cannot only see the available terrain and resources but the pollution and the localization of enemies, allowing her to plan where to expect attacks in order to prepare and focalize defences, specially in early game when resources are limited.

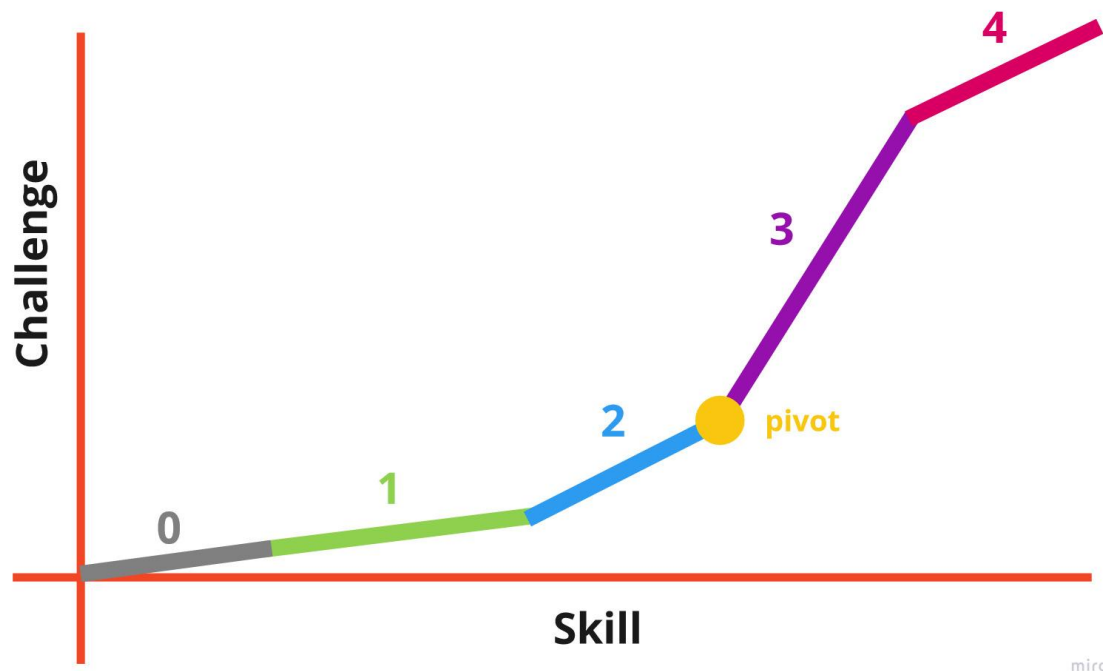


5. Since efficiency is a fundamental part of the game, an accessible and informative **information of each factory building allows the player to help him configure his factory the best way he can figure out.** This information has been derived in the community programming ratio calculators to help other players make the perfect configurations without taking time calculating them.



How does the learning curve affect gameplay?

The learning curve in Factorio has crucial steps worth noting. This curve represents the experience a new player has with no previous or little knowledge in the genre.



0. The tutorial part:

- **The player understands the setting of the game and its goals**, yet he doesn't know the effort that will be needed to accomplish them.
- The player can see his progression clearly, making him feel capable with what's coming next.

1. The first run part:

- **The player leaves the basic tutorial** and is now free to do what she feels best for her factory
- She encounters her **first problems** and manages to resolve them.
- The factory starts to take form and the **player starts to feel proud about her creations**, most of them are her own.

2. **Learning from the past part:** The player, not being cautious, **makes an overwhelming factory** and **frustration appears**.
 - The players start to guess that it is a long and complicated trip.
 - Some problems become too complicated and the player starts looking online for solutions.
 - Most of the players decide to **start a new game**, since they **feel more confident**.
 - The player watches his past creations and can clearly identify the errors made, this makes him **feel how past frustrations have not been in vain**.

Pivot: Players tend to have **two kind of experiences** here now that they know how much time will be needed to progress:

I. Some players take it easy, they just want to enjoy the game. So may start new games with easier world map settings, winning and perfection is not that important.

II. Other groups of players take the challenge. At this point of the game, making factories becomes more and more difficult, but these highly organized players take their time to learn and upgrade.

3. **No pain no gain:** The second group takes this path. They invest time improving their factories and researching for better ways to do them. This part is very demanding, **so each step forward is highly rewarding for the player**. The upgrades available in this part tend to be important for late game and impress the player

Learning curve conclusion

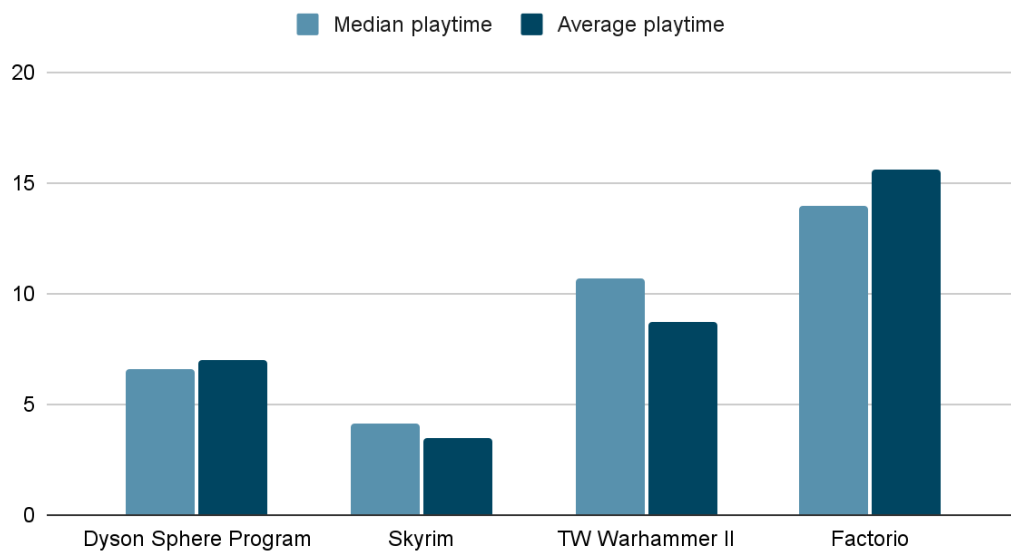
Factorio's learning curve is a versatile one. **The first half of it allows new and casual players to enjoy the game, while the second half of it appeals to the hardcore ones.** The genius of it is that there is still **interaction between the two types of players**. As hardcore players serve as inspiration to keep playing and new players find help in the community.



Factorio Core Data

To put in perspective how much time players engage in the game here we can compare the median time with other games.

Playtime in the last two weeks - October 2021



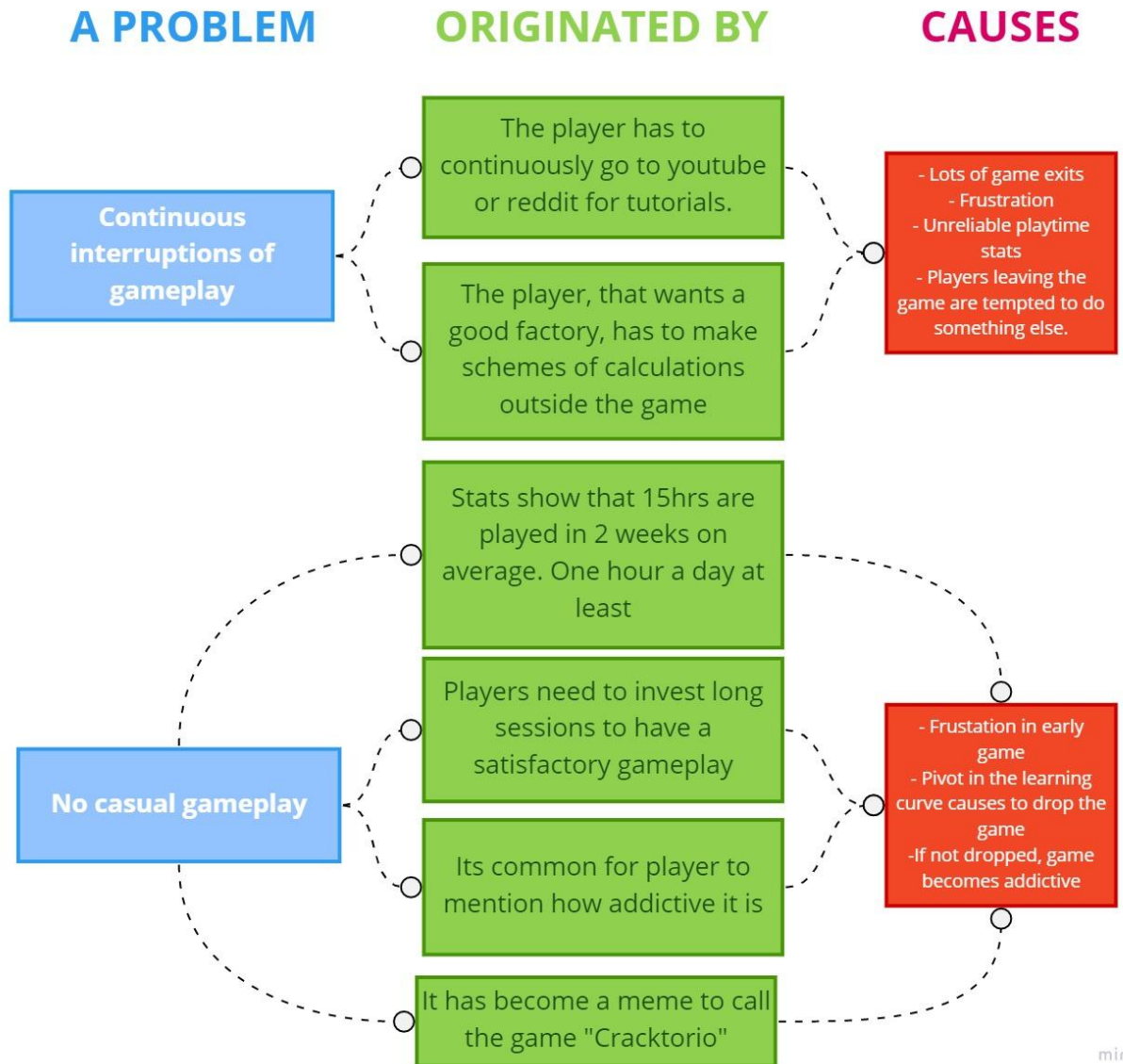
Stats referred in the charts above can be seen in this [link](#). This graph was done with the data of two weeks earlier on the 5th of October.

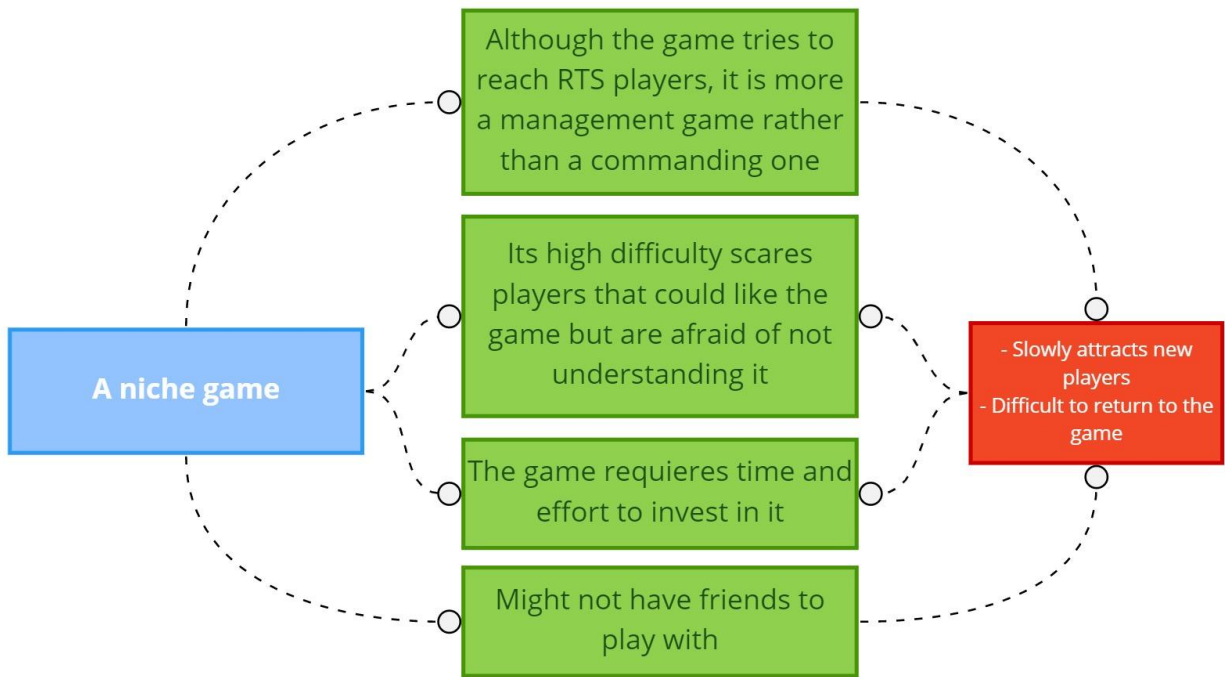
- ❖ We can see how much more time players tend to invest in their Factorio playthrough. We can argue **this is because of how much time it is needed to make the playtime worth it.**
- ❖ As we know, the player has to continuously go for tutorials, provoking an **overestimated playtime** since players are not likely to close the game while searching for help.
- ❖ Players leaving the game for short periods of time and making them enter Reddit or Youtube, **exposes them to get distracted and stop playing.**



What stops the game from being more successful?

No game is perfect, and Factorio is no exception. Although it is a great game it has opportunities to get even better.





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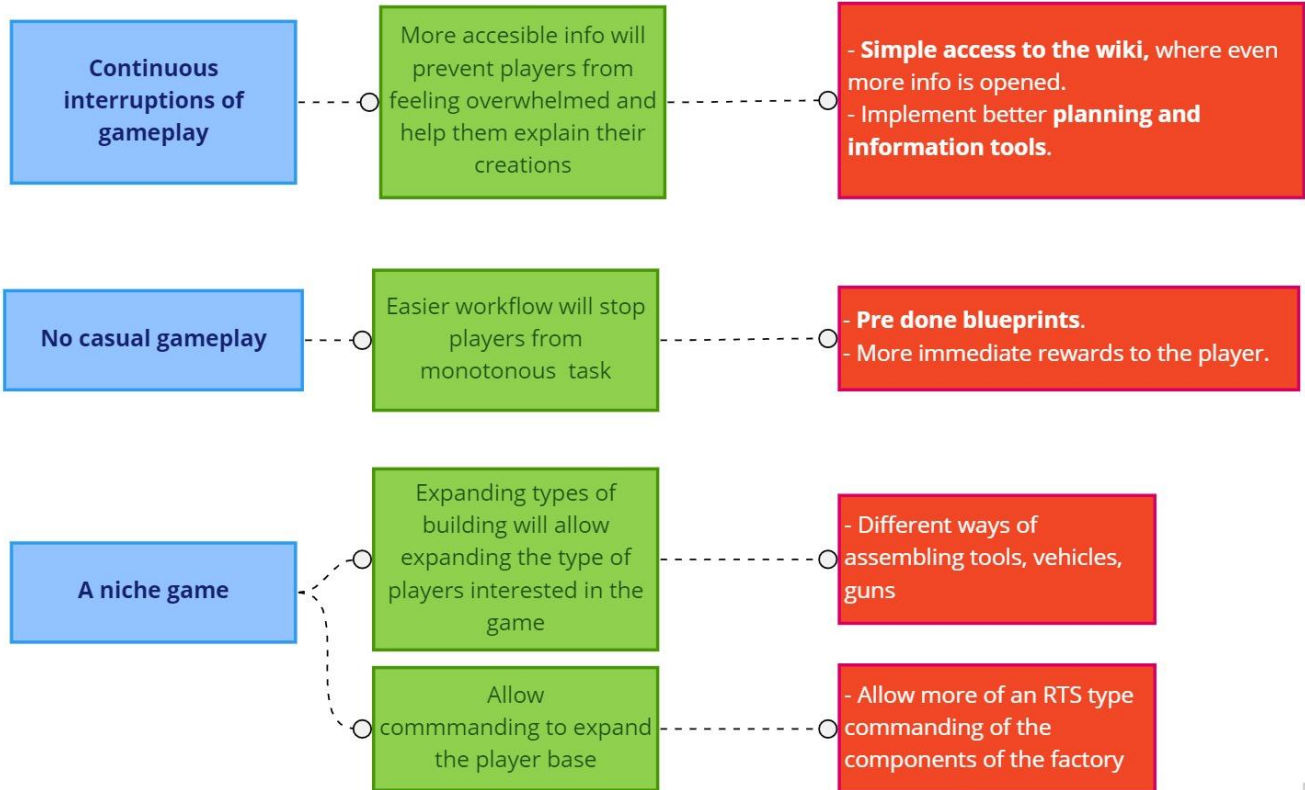


What mechanics cause these problems and how to deal with them.

Every problem has a potential solution and here we can see some initial approaches to them.

A PROBLEM

RESOLVED BY



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General proposal

If we take one of those proposals, we can observe its reach is enough to be considered as a possible solution.

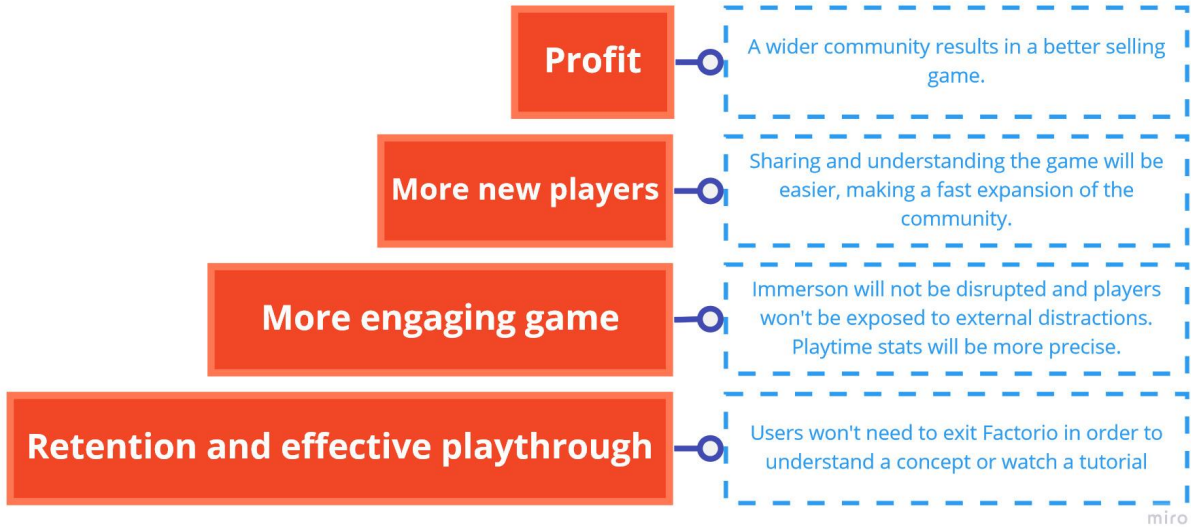


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How will Wube Software benefit from this?

Efforts must transform into results, in the next chart we can appreciate how this will happen.



New Features

Based on the above, we can come with the following features the game would benefit from.

Feature	Overview	Components	Cost
Stats by region	<p>Divide the map by regions and access its own stats. DPS allows this in planetary, system and galactic scale.</p> <ul style="list-style-type: none"> - Players can craft poles to make regions in their map. -Each region can have its local stats -Creation and consumption of materials are visible stats. -Assigning colors to each region helps the player identify them. 	<ul style="list-style-type: none"> -Code - UI - Game design -Art 	Medium - High
Right click wiki access	<p>Total war games allow entering the wiki with right click. Making an easier learning curve.</p> <ul style="list-style-type: none"> -With a right click in any object in the inventory, the player can access the wiki of it. -Each object has a little synthesis, an example of usage and its stats. -This will stop the player to leave the game and enter the 	<ul style="list-style-type: none"> -Code - UI 	Low
In game blueprint community	<p>Making an in game community for sharing blueprints.</p> <ul style="list-style-type: none"> - Blueprints have the advantage to be a character string, making a community for sharing this will not be that difficult. -Migration from fan sites and reddit will take into account what works in those sites 	<ul style="list-style-type: none"> -Code - UI 	High

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Feature	Overview	Components	Cost
In game calculator	<p>An in game ratio calculator is a common tool for Factorio players.</p> <ul style="list-style-type: none"> -Players indicate a desired output and a velocity of production -The calculator will show how much materials are needed to have the desired output. -It can be better than the online one by letting it take into account the current production in the game. 	<ul style="list-style-type: none"> -Code - UI - Game design 	Low
Flow chart	<p>Factorio Lab is a complete calculator even used for other games like DPS or Satisfactory.</p> <ul style="list-style-type: none"> -Similarly to the ratio calculator the player indicates an output and a velocity of production - The flow calculator indicates the inputs and buildings needed for it to work. - It shows a flow chart where the player can graphically see how to configure a factory with the desired results 	<ul style="list-style-type: none"> -Code - UI - Game design 	Medium

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Risk of features

Each new idea comes with a risk. In the following charts we can see how much of it each feature involves.

Low Risk

Ingame calculator

- It **has been done** an players use it.
- There are **plenty of references** to know which features work and which don't
- **Less frustrating playthroughs**

- Players might **already have a workflow** with their calculators
- Has to be **better than the online ones**

Right click acces to wiki

- Super **easy to implement**
- It will allow players to inform faster without leaving the game.

- Players might need to **download the wiki** or have an **internet connection**
- **Miss click** can become frustrating.

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Medium Risk

Stats by region - med

- Easier **problem localization**
- Easier factory **planning and sharing**
- Less frustrating gameplay**
- Development **based in ratio calculator**
- Will be **better than online calculators**
- Help player **leave the pivot zone**

- More UI and calculations can **overwhelm the inexperienced player**
- Players can **prefer their old workflow**

Flow calculator

- It **has been done** an players use it.
- There are **plenty of references** to know which features work and which don't.
- **Easier to plan** factories

- Has well established competition.
- Player may prefer thier older workflow

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High Risk

Stats by region - pro

- Highly scalable
- Will instantly be **better than online alternatives** because of the realtime feedback.
- Game **easier to share.**

- Difficult for coding to implement.
- Might leave older version of Factorio unable to open maps with the update, due to the regions the player creates.

Blueprint community

- Super **easy to implement**
- It will allow players get blueprints **without leaving the game.**
- Can allow **the study of the most common blueprints** and why they are popular

- Competes with social media and internet forums.
- Needs a dedicated server to run.



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