

NebulaWare presents

ARCHIBOTS

Game Design Document

(Nebulaware. A collaborative project by Dario Deponti, Andrea Scambia, Eraldo Zanon)

Last Modified: 06/15

1. Design history

- 06/15: Added economy balance considerations.
- 06/10: Added monitor resolution to the system requirements.
- 06/05: Added some other references in paragraph 9.
- 06/02: Added platform and system requirements.
- 05/25: Added some references in paragraph 9.
- 05/02: Modified paragraph 3.1, 5.3, 9, 10.
- 05/02: Added wireframes for the interface. Appendix A created for images.
- 04/30: Added the flowchart of the game.
- 04/15: Integration of the remaining parts of the document, where applicable.
- 04/15: Changes to gameplay description, rules, levels, game world; added NPCs and Backstory.
- 04/04: Defined the main part of the document.

2. Vision statement

It is a far future for mankind; life on Earth is prosperous and every nation is peaceful, healthy...and overpopulated! But as a scientist, you will have the opportunity to fix everything back to normal. As space travel is an everyday technology, send your little robots onto brand new planets and join the latest vogue: terraforming!

By controlling one robot at a time, manage the extraction of resources on a planet, and cooperate with other scientists' robots to build up structures and make the planet safe for human life. Socialize with the nicest robots to gather more difficult resources and define your own land-use strategy according to your fancy! And be careful, since some resources will be kept in secret spots or protected by some foes.

As a planet will have a sufficient amount of buildings, you will have the opportunity to leave with other robots and start anew on another world, but you can still stay on the surface and make the planet even better, or visit planets entirely terraformed. No matter what you will decide to do, as long as you enjoy building and meeting new people!

2.1. Game logline

ArchiBots is a massively multiplayer online simulation game in which, thanks to some little robots, players will be able to build cities on wild new planets to solve the Earth overpopulation problems.

2.2. Gameplay synopsis

ArchiBots fosters the collaborative creation of the scenery by putting few rules about how buildings are actually created and by loosing each player imagination, while rewarding the most productive ones. The look and feel of the game will be simple and fancy, while the setting (that is, each of the playable planets) should reflect this style.

The main mechanics are related to the ability of the player to directly control a robot in the effort of terraforming a planet with other players' robots.

His capacities will include gathering resources, placing buildings and fighting with some NPCs to get some rare resources. The players will be able to help each other bringing their resources to the other robots' buildings, so the creation of the city will be a collaborative process.

Every planet will have its own objective (from now on "quest") to complete, which consists in a sort of land use plan which guarantees the success of the terraforming process. The land use plan will require a certain number of buildings of the same kind, as the player will choose among different kinds of buildings: the House, the Barracks, the Workshop, the Stellar Power Plant and the Teleport.

When the terraforming process is complete the robots can continue building as they please

until any space on the planet is available (see 5.3); when this condition will apply, though, the world will be only visitable but not modifiable.

3. Audience, platform & marketing

3.1. Target audience

The game is primarily aimed at players who enjoy expressiveness and collaboration as core mechanics. According to the Bartle Graph, these individuals are mainly Socializers, or more broadly, players described by the “interacting” axis of the model.

It is also targeted at more casual players, given the simplified nature of the interactions.

3.2, 3.3 Platform and System requirements

The game will be developed for PC and Mac platforms (see 10.1.2).

Since the game will be massively multiplayer, system requirements will be tailored to play the game on every medium-power computer. Two system requirements lists have been produced, based on playtesting sessions made on different computers. Additional playtest may help to refine these values.

An additional version may be produced, with minor adjustments, to be run in a proprietary player (Unity Player) embedded within the browser.

3.4, 3.5 Top performers and Feature comparison

It is difficult to identify direct competitors for this kind of game. However, the identified target audience may be interested in similar games like Farmville, Cityville and especially Spore. Archibots shares with them some features like a collaborative environment and a ranking system based on reached objectives. Nevertheless, this game differs from the above mentioned titles by providing a communication-oriented interface and a more direct control system.

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5. Gameplay

5.1. Overview

When the player starts the game he can choose where he wants to send his robots among a list of planets. As he made his choice his robot is spawned on the planet he chose and there are two possibilities: the planet was discovered since little time and there is few or no buildings on it, or the planet colonization started before and there is a little city growing.

In these contexts the operations a robot can do are the same: gather resources, place buildings, contribute to a building construction bringing his own resources and attacking NPCs in order to obtain more rare resources. This allows the player to play even if he is alone, but requires socialization in order to achieve higher objectives.

5.2. Gameplay description

When a planet is first discovered a related quest is created. This objective may vary from planet to planet and is a sort of land-use plan which states how many buildings and which kind are needed on that planet. Players, once on a planet, may interact with the scenery in two ways: gathering resources and building structures.

To gather a resource is an instant action, but the interaction vary depending on its type. Three kind of resources exist: Clayron, Irideon and Zargon, which are described in detail in chapter 8. Clayron and Irideon can be found in separate groups on the level surface; they can be gathered by walking on them. For the latter, however, two players need to walk on the same instance; the quantity will be shared between each extractor. Zargon may be gathered by killing hostile NPCs, which are described in 6.2. The quantity is shared among each player who participated to the attack.

The most important part of the gameplay is related to construction. There are five kinds of buildings, described in their relevance order: the House, the Barracks, the Workshop, the Stellar Power Plant, and the final Teleport. Different buildings require different resources and amounts; Table 1 describes those dependencies.

Any robot can place one of these buildings and bring there his resources, stored in a private inventory, to raise it.

Players will have the opportunity to contribute to the creation of other players' buildings, by helping them actively in the process of construction bringing there their own resources in the same manner as they were interacting with a personal building.

To be able to build Teleport and Power Plant, the robots must have built all the other facilities stated in the quest, because this guarantees the success of the terraforming process. A reserved area is unlocked then this happens, allowing players to proceed in the construction. A detailed list of every structure follows in Table 1; this helps to understand the main aspects of the gameplay mechanics related to the building aspect. The amount of each resource has been tested as far as our mean allows, but further playtesting sessions with more players may help to define more precise values.

Building type	Description	Resources to finish / Resources to start
The House	This is the most basic building. Since, aside from keeping trace of the name of the robot which started the construction, it is the only one that can be built entirely alone, it can be intended as an incentive for pioneering. The house has a special device which serves the purpose of cleaning the atmosphere as a part of the principal mission of the robot	<i>Clayron: 10 / 100</i>

	expedition on the planet, terraforming. Only basic resources found on the ground can be used to build it.	
The Barracks	This building grants the players the possibility to enhance their robots with the attack power-up, in exchange for some resources. This will help players in the process of getting zargon, the rarest resource, as it is the material some hostile NPCs are made of (see 6.2). Since this is an advanced building, robots will need more complex resources to build it, so the cooperation with other players will be essential.	<i>Clayron: 20 / 100</i> <i>Irideon: 10 / 50</i>
The Workshop	This one grants to the robot the repair power-up in exchange for some resources, so he will be able to help other injured robots to get their life back. As for the barracks, this building will require more advanced resources.	<i>Clayron: 20 / 100</i> <i>Irideon: 10 / 50</i>
The Stellar Power Plant	Since the energy needed to activate the teleport is huge and must be continuous, this building will help to gather the necessary amount for using it, hence it becomes necessary for the city and for obvious reasons must be near the teleport.	<i>Clayron: 40 / 500</i> <i>Irideon: 20 / 200</i>
The Teleport	This is the last and most important building, as it allows human settlers to come onto the planet. In order to be able to build and activate this, the robots must have completed the planet quest, that guarantees the atmosphere is breathable by humans (because a sufficient number of houses was built). Also, the teleport will have to wait for the energy provided by the Stellar Power Plant to be sufficient in order to work. If the robots want to build this, they have to bring zargon, which can be looted from hostile NPCs found around the planet.	<i>Clayron: 50 / 500</i> <i>Irideon: 20 / 400</i> <i>Zargon: 10 / 200</i>

Table 1. Detailed list for each building.

There is a limitation on how many buildings per type can be built on a planet surface; this

constraint is discussed in the economy paragraph (see 5.3).

Players may interact with already built structures, too; information about the constructor will be shown.

Power-ups are another core mechanic. They have the mean to increase the game experience by introducing some elements taken from a class-based game scenario: they can grant abilities or increase robots' statistics. For now, the team introduced just two power-ups, but this mechanic should be implemented modularly to include possible new elements in a commercial implementation. Table 2 summarize pickable power-ups.

Name	Where to find	Cost	Description
Missiles	The Barracks	Clayron: 50 Irideon: 25	A double-sided missile launcher that grants an attack value increment during combat. This is a passive effect.
Repair Kit	The Workshop	Clayron: 50 Irideon: 25	A repair kit mounted directly on the robot that grants the repair ability. The player may repair other robots by clicking on them and spending a defined amount of irideon per damage point (see Rules in 5.3).

Table 2. Power-ups of the game.

Note that the Repair Kit introduces another mechanic, i.e. the ability to repair injured robots, which should follow the general rules of interaction already used for the construction (see 10.6).

The player is able to set his own aims by deciding his play style, by completing the planet quest or deciding to set free his imagination deciding how to develop the urban center.

To create a more unpredictable game experience, in a commercial implementation, the team considered to add some other hostile NPCs, whose purpose is to get actively in the way of players' robots and try to damage them while they build or gather resources.

5.3. Controls

Interface

After the login phase, the player will be able to interact with an interface for choosing his destination planet, with a general chatroom as well.

When he chooses a planet to join, if he has not done it yet, he has the possibility to choose the model of the robot he will use there.

During the game, the interface should be divided into a "game area", that shows the planet, and in a "data area" where the player can choose between buildable structures, see gathered

resources, and so on. This follows common guidelines that are applied to RTS games. A chat system (relative to the planet) will be implemented to foster socialization, too. See Appendix A for interface wireframes.

Rules

- Each planet is considered as different atomic units, called room or instance (see 10.7). The same is true for the world selection zone (the “lobby”). Players in different rooms cannot interact with each other, nor talk through the chat system. In a commercial implementation, a direct call system may be implemented to overcome this limitation, though.
- A player can send a certain number of robots around the universe, with a limitation of a robot per planet. If he has reached the limit, he can delete one of his previously created robots and send a new one around. While this limit has not been implemented for the prototype version of the game, a commercial implementation should consider to set this constraint to a minimum number around five.
- When the planet is created there is a zone upon the surface which is reserved for the future construction of the Stellar Power Plant and the Teleport, because those buildings need some dedicated space given their importance for the final stage of the terraforming process, as well as a reserved area in which robots are spawned.
- There is also a reserved zone (in which building is forbidden) around each hostile NPC.
- In order to start the construction of a building, the planner must provide a defined percentage of the needed resources, as stated in Table 1 (the exact percentage should be balanced on the first playtesting sessions).
- There is a limit on the buildings which can be started in a single planet, so, before being able to place more, the ones already placed must be completed. There should be also a limitation about the number of started and unfinished buildings per character. Those constraints will not be implemented for the prototype, though.
- A construction can be placed only if there is enough free space to start it; otherwise the robots will only be able to visit the planet. This is because there is a minimum distance between buildings which need to be respected, in order to prevent them to be overlapped.
- A robot cannot start the construction of the Teleport or the Power Plant unless the planet quest has been completed. Also, those constructions can be started only if they reach the correct construction ground (identified by two different platforms within the reserved zone).
- When a player joins a game, his robot is spawned in a fixed point of the map, called “Respawn Point”.
- The power-up granted by the barracks and the one provided by the workshop are

mutually exclusive.

- A robot with a repair power-up cannot repair himself.
- A robot cannot exceed his life maximum by getting repaired.
- If a robot has a power-up and he gets killed, he will lose it and will have to buy it back from the related building.
- When a robot is killed, he is respawned at the Respawn Point with full health.
- Each resource instance (i.e. the actual game object) grants a fixed amount of resources that are added to the inventory of the robot. Those amounts are set to 20 for clayron, 10 for irideon, and 10 for zargon. Additional rules are provided for those resources which require player interaction to be taken (see also Economy below).
- Irideon can only be picked up by two players contemporaneously. The resource quantity they get is divided between those two players.
- When an Ancient Keeper is killed the players who killed it are awarded with a total amount of 10 zargon. That quantity is equally splitted among the players who contributed to the kill, with an implicit maximum of 10 players.
- In order to repair a robot the player spends 1 Irideon unit every half second, the targeted player is healed with 3 points of health.
- If a player has reached the maximum amount of a certain resource, he won't be able to pick up more. See paragraph 6.1 for more accurate values.

Economy

The team defined a basic economy system to make every planet self-sufficient, i.e. resources are respawned with a fixed update time until a certain limit is reached. This limit is based upon a tradeoff between the actual space on the planet and the computation load of an overpopulated scenario. The continuous respawn, however, grants the possibility to players to pursue the terraforming process even in resources are splitted among a huge number of players. Such data, as shown in Table 3 and 4, were calculated approximately, but more playtesting sessions are needed to verify the fairness of these data.

Terraformation quest limit: 100 houses.

Max number of players: 100 (this is due to licensing issues, see 10.7).

Buildings	House	Barracks	Works ho p	Powerplant	Teleport	Total
Max number	150	10	10	1	1	172
Cost <i>Clayron - irideon -</i>	100-0- 0	300-100- 0	300-100- 0	1500-500- 0	2000-1000 -500	24500 - 3500 -

<i>zargon</i>						500
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Table 3. Repartition among the various buildings; costs are expressed in units.

Resources	Clayron units / instances <i>(c = 1 inst. or 20 units)</i>	Irideon units / instances <i>(i = 1 inst. = 10 units)</i>	Zargon units / instances <i>(1 inst. = 10 units)</i>
Starting spawn quantity (Planet creation)	5000 / 250c	800 / 80i	100 / 10 mobs
Respawn Quantity (Period: 60 seconds)	200 / 10c	30 / 3i	n/a *

Table 4. Repartition among the various resources with costs expressed both as units and game objects (i.e. instances).

(*) *Since zargon is a particular resource, held by mobs, it respawns in a different way than the other two resources. After a mob is dead it respawns after a random time between five and ten minutes.*

The number of resources spawned when a planet is created is sufficient to cover 1/5 of the total cost.

Every 60 seconds around 1/100 of the total clayron and irideon cost (see Table 3) is spawned. The maximum quantity of clayron a robot can carry, as described in 6.1, was chosen in order to let a player build a house completely by himself if he has full inventory, while the max irideon quantity is a little superior to the power-up cost (see Table 2).

Winning condition

There is no winning condition since the game aims to foster socialization and imagination. A player should feel realized by getting achievements and building something that can be shared with other players.

In a commercial implementation, players will have the opportunity to see each other player profile and confront achievements and ranking, as described below.

5.4. Modes & other features

There is only a massive multiplayer mode, in the form of cooperative play. There is no PvP mode.

Features

- Ranking system: the players gain “fame” in a ranking system depending on how they are

playing and how much they contribute to the terraforming process on multiple planets (see Table 5).

- **Personalization:** the player should be able to define some personalizations about his robot and his buildings. For the prototype, players will have the opportunity to choose his or her robot among a predefined set; however, in a commercial implementation, the player should be able to personalize his character even more, with a The Sims-like approach. The same is true for buildings, which may be built using a Spore-like interaction.

Achievements

Reaching some particular conditions will cause the player to gain some achievements, overviewed in Table 5. Those achievements should be visible within the game, but in a commercial implementation each player should be able to see each other's achievements list even outside the game (e.g. through the website).

Each achievement grants a certain amount of points, in a similar way X-BOX achievements are implemented. The resulting score point should be used to calculate the above mentioned player ranking. In a commercial implementation, ranking points may be ordered in a decreasing order, or can be used like experience point to calculate the player level.

For the prototype, a subset of the following achievements has been implemented; however, as for other mechanisms of the game, the achievements management is sufficiently modular to permit the extension of the list with other goals. The team decided to propose extremely simple achievement, for the prototype, just to make the mechanic simply visible.

Name	Description	Points	Implemented
<i>Archin00b</i>	Start your first building	5	X
<i>I'm so proud of you!</i>	Complete your first building	10	X
<i>OMG! Shiny!</i>	Gather one unit of any resource	5	X
<i>I got it all!</i>	Gather at least one unit of each resource	10	
<i>I brought a friend!</i>	Meet with another robot on a planet	10	
<i>Connection established</i>	Write your first chat message	5	
<i>PWNED!</i>	Kill your first mob	30	

<i>A little help from my friend</i>	A friend has brought his resources to your building	5	
<i>Call of Duty</i>	Get an Attack power-up	10	X
<i>Where is my screwdriver?</i>	Get a Repair power-up	10	X
<i>Still here?!</i>	Play for three consecutive minutes	5	X
<i>Low battery</i>	Play for a total of 10 hours	50	
<i>Never gonna give you up</i>	Play for a consecutive hour	20	
<i>Spaceships are overrated</i>	Build (or contribute to the building of) a teleport	30	
<i>Home Sweet Home!</i>	Build a house	5	
<i>To the arms!</i>	Build (or contribute to the building of) a barracks	10	
<i>Anyone needs repairs?</i>	Build (or contribute to the building of) a workshop	10	
<i>Ecofuel for everyone!</i>	Build (or contribute to the building of) a power plant	20	
<i>Tourist bot</i>	Visit ten planets	20	
<i>Rich is good</i>	Max out your inventory	20	
<i>Trendy robot</i>	Use two different models for your robots	10	
<i>God slayer!</i>	Kill ten Ancient Keepers	30	
<i>Humanity is awesome</i>	Visit a terraformed planet	5	X
<i>Ready to go</i>	A teleport where you brought your resources was completed	10	
<i>Full battery</i>	Power Plant fully charged on your planet	10	

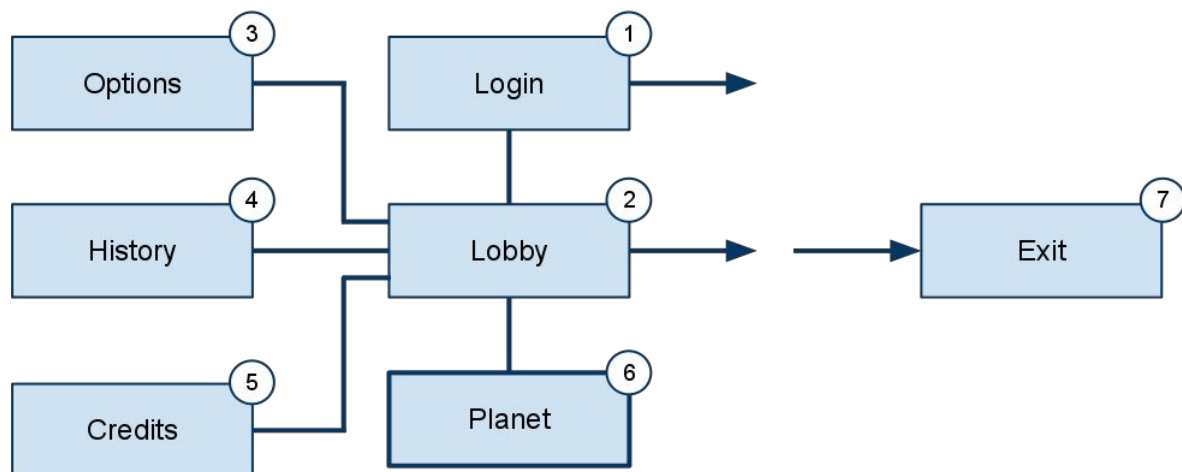
Table 5. Minimal achievement list.

5.5. Levels

The player gets the possibility to choose a planet where he wants to send his robot. How these worlds are characterized should slightly vary among each one, but the planet should be generally harsh and uninhabitable. However, the more the terraformation process advances, the more luxuriant the planet should be, with grass gradually growing from sand and/or rocks. When a planet is created there is a zone upon the surface which is reserved for the future construction of the Stellar Power Plant and the Teleport, because those buildings need some dedicated space given their importance for the final stage of the terraforming process. This reservation is shown through fences or similar obstacles. Resources and NPCs will be scattered around the world in pseudo-random places.

Note that there is no linear progression among levels; each player may choose his own destination, although there are some limitations about how to advance; see paragraph 5.3.

5.6. Flowchart



Each scene is described with a ID to specify additional details.

2: this scene will contain the planet selector and a general chat. Here the player chooses his destination world, so if he is trying to enter in a new world, a window should manage the robot selection/creation here.

4: the history, as presented in chapter 7, will not be visible in the prototype. However, to create a more immersive environment, a commercial implementation should strongly point to the development of this aspect.

6: even though this is considered a single level from a software point of view, its content, players and characteristics are different according to the room the player joined (see 10.7 for a definition of room).

7: this is not an actual scene, but a state reachable by closing the application.

6. Game characters

6.1. PCs

The player character is represented by a little robot. Since players can join more planets (even if only one at a time), their characters will vary according to the game they chose. Robots abilities include gathering resources from the ground, placing buildings, helping the construction of the buildings by bringing the resources they gathered and fighting with some NPCs to get more rare resources.

Their design should be simple and fancy: these are flat-characters, but the player will have the opportunity to customize them a little.

For example, there are some additional abilities which can be gained after the construction of two special buildings is over: the Barracks and the Workshop. This purchase is visually aided by the addition of a component to the robot itself.

Table 4 shows technical data related to player characters. These data were calculated both on economy consideration above mentioned and on NPC data, in order to avoid unbalances.

Type	Health	DPS	Max Clayron	Max Irideon	Max Zargon	Additional Skills
Standard robot	100	11	100	50	20	None
Robot w. Missiles	200	33	100	50	20	Passive skill: strong damage
Robot w. Repair Kit	150	22	100	50	20	Active skill: repair ability

Table 6. Description of the player characters.

6.2. NPCs

NPCs are a rudimental form of AI integrated in a heavy armored tank. Known as Ancient Keepers, they are programmed to defend the alien reliquary and attack every player in their area. They have the ability to auto-regenerate their life and their heavy armor made of Zargon grant them a lot of hit points (HP). Remember that zargon units are equally distributed among attackers, with a maximum set to the total number of units (in this case 10). Table 7 shows data related to NPCs.

Name	Health	DPS	RegenPS	Zargon
Ancient Keeper	1000	5	10	10

Table 7. Description of the non-player characters.

7. Story

7.1, 7.2 Complete story synopsis:

It is the year 2183, and overpopulation on Earth has become a big problem for cities and nations. Aware that this matter could endanger the peaceful situation, the World Government gives the responsibility to find a favorable solution to the most brilliant minds on earth: the scientists community. Luckily, recent progresses in outer-space travel have opened the gate to space colonization, which seems to be the ideal solution to the problem. However, finding a habitable planet and building a base on it is a very complex and dangerous work, so people have built some special robots which are able to take care of the whole terraforming process. Scientists will have the opportunity to manage a limited number of robots from their safe stations, and those robots will build up structures to make the planet inhabitable. Ultimately, they will manage the creation of a portal to permit a safe travel for colonizers, and then the process will start again under new horizons.

3. Backstory

As humanity is going to discover, mankind is not the only inhabitant of the galaxy.

An ancient alien civilization left some mysterious marks during their explorations.

The Ancient Keepers that can be found on every terraformable planet are a sign of their culture, as they are forgotten synthetic guardians of weird altars, artifacts and incomprehensible eeriness.

Players will find necessary to eliminate those guardians since they hold a resource needed for the construction of the Teleport, precious Zargon, but no further hint about those weird artifacts will be provided by the game in order to foster players' imagination.

4. Narrative devices

The team will develop a story trailer to describe the main characteristics of the story, along with the gameplay mechanics. A full gameplay trailer was produced, too, to strongly underline the collaborative environment during a short play session.

Since the story does not influence in a particular way the game mechanics, further story hints will be provided in game as additional content, like through some descriptive images.

5. Subplots

Currently, no subplots are planned, since the story is limited to the premise.

8. Game world

As previously said, the game world consists of a set of planets within the universe. Those planets share some common characteristics, and for this reason they are eligible for terraforming. Each level consists of a wild planet which hides some rare resources that can be used for the process of terraforming. Those resources resemble building materials of the Earth,

scattered around the surface. The first one, clayron, is a malleable soil which can be used to build walls; the second one, Irideon, is a strong ore for accuracy jobs; the third one, Zargon, is a bright polymer usable for electronics. Resources are scattered around the world and the player creates space for the buildings by extracting them.

Some ruins of an alien civilization lie onto the surface, too. Those artifacts are guarded by a limited number of Ancient Keepers, as they protect them from unwary explorers.