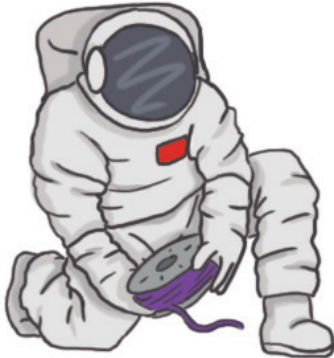# 3D Printing Mission
A scape odissey

Game instructions

THE STORY

Space: the final frontier. This is how the chapters of a famous science fiction series ended and it was not without reason. Scientists and astronauts of all nationalities pass through the International Space Station and put their ingenuity to work in the search of habitable planets, new sources of energy and materials, intelligent life and, why not to say it, a new home, in case Earth was unrecoverable.

Moreover, the latest innovations in the field of 3D printing have revitalised the conquest of space. Why manufacture parts in the Earth and then send them 408 kilometres away?

But of course, not everything can be harmony and creation. A big grouping of meteors approaches the station at full speed and the initial estimate, even with active countermeasures, bodes for serious damage.
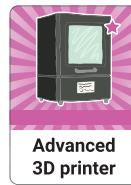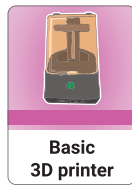
There are too many and, at that speed, even the smallest ones are capable to destroy the Station.

We have to escape, but... the escape pods are not ready yet! We have to get them ready and keep the whole crew safe. Hurry up, to the 3D printers! Maybe this is not what you had planned to do today, but, perhaps you will become the heroes to save the situation.

3D PRINTING MISSION is a simple 54-card game for between 2 and 4 players. The objective of the game is to be the first to get the necessary parts to rescue the members of the International Space Station from the great meteor shower that is inexorably approaching.

COMPONENTS

4 double-sided *3D printer* cards. Each card shows a basic 3D printer on one side and an advanced one on the other side, both of the same technology.
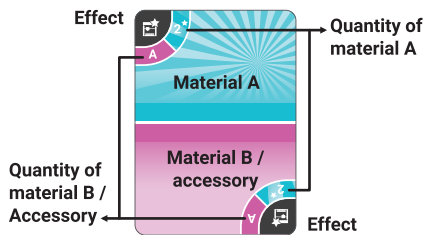

Basic 3D printer

Advanced 3D printer

50 cards of *Materials* on one side and *Designs* on the other side.

The *Materials* side shows two materials or accessories. The materials have an associated number indicating the quantity, while the accessories are represented by an *A*.

There are *Advanced materials*, which can be recognised by their striped background and a star next to the amount of material.

In the corners of this face there is a symbol that corresponds to an *Effect*, the same in both.

Effect

Quantity of material A

Material A

Material B / accessory

Quantity of material B / Accessory
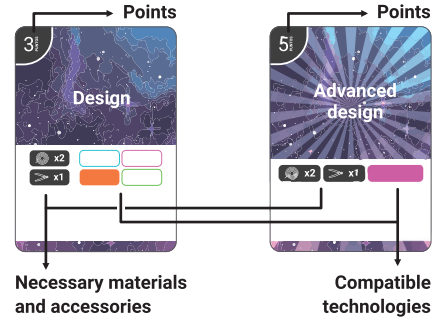
Effect

The *Design* side of the cards has two different areas. The upper left corner indicates the score that will be achieved when the *Design* is successfully printed.

Below the illustration, it appears the amount of *Materials* and *Accessories* required to print the *Design* as well as the technologies in which it can be printed are indicated.

The *Design* cards with a striped background correspond to *Advanced designs*.

Points

Points

Design

Advanced design

Necessary materials and accessories

Compatible technologies

PREPARATION OF THE GAME

1. Place the 4 cards of *3D printers* in the centre of the table showing the basic model of each technology and shuffle the general deck.

2. 4 cards are given to each player on the *Design* side. Before picking them up from the table, each player will choose one of the designs and leave it on the table in front of him, creating his *Printing zone*.

The chosen *Designs* never leave the table. The rest of the cards will be turned over and become their starting hand of *Materials*.

3. Next, the remaining cards on the deck make up the *Warehouse*, with 2 *Materials* cards on the left and 2 *Design* cards on the right, leaving the deck on the *Materials* side and a space as a *Discard area*.

If the central deck runs out during the game, the *Discard area* will be shuffled to form a new central deck.

Discard area

Warehouse

HOW TO PLAY

The initial player will be the one with the lowest rated *Design*. In the event of a tie, the tied players will draw lots.

In his turn, a player will do **two of the following five actions**, being able to repeat any of them:

1. Pick up a card from those visible in the *Warehouse*

(this includes the top card in the deck). Then, replace the space left with a card from the deck, turning it over if a *Design* has been chosen. The *Materials* cards are taken to the hand, the *Design* cards are placed on the table in front of the player. The maximum hand size is 6 cards, while the maximum number of *Designs* that a player can have in its *Printing area* is 2.

2. Complete a *Design*.

Assign the materials and accessories needed from our hand to a *Design* of our *Printing zone*. You can choose to allocate more material than is necessary to carry out one *Design*, but never less. You can't mix materials of different technologies.

> **Important!**
>
> To complete an *Advanced design*, advanced materials are required. Advanced materials can also be used to print *Basic designs* but, in this case, an *Advanced 3D Printer* will be required.

3. Print a complete *Design*.

Pick a 3D printer compatible with our *Design*, as long as it is available in the centre of the table, and the calibration and printing process will be activated, which will extend until our next turn.

The *Design* will be printed at the beginning

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of our next turn, so be careful that nobody sabotages your printing…

> **Important!**
>
> *Basic 3D printers* can print only basic materials, while *Advanced 3D printers* can print basic and advanced materials.

When a player manages to finish a print, he takes all the cards used to the *Discard zone*, returns the 3D printer to the centre of the table and moves the completed Design to his scoring deck. Completing a print will not count as an action.

4. Playing an *Effect*.

All *Material* cards include an *Effect* that can be used at different times during the game by playing it from the hand and discarding the card after it has been applied:

Space jump. Skip the next player's turn (in 2-player games this means you repeat your turn).

Unexpected turn. Change the direction of the turn (does not apply in 2-player games).

Renewal of stocks. Discard all cards in the *Warehouse* and replenish with cards from the deck.

"Borrowing". Steal a card randomly from another player's hand.

Reallocation of resources. Discard a *Materials* card assigned to another player's *Design* as long as it is not in the process of calibration and printing. The remaining cards stay on the *Design*, and that player may complete it again in later turns.

3D printing Upgrade. Upgrade a printer, turning it over to show the advanced 3D printer of the same technology. It does not serve to make it worse.

Urgent printing. Print immediately, skipping the calibration and printing round. If this *Effect* is cancelled, it will continue with the normal process of calibration and printing.

Print sabotage. Stealing a printer from another player, being able to start the calibration and printing process if possible, or taking it to the centre of the table if not.

Quick reaction. Cancels any *Effect* played by another player at any time, even out of turn. It is possible to use this *Effect* to cancel another *Quick Reaction*.

5. Discard cards.

Any number of cards that cannot or will not be used can be discarded from both the hand and the *Print zone*.

END OF GAME

The game is played in turns from one player to another, in a clockwise direction (although this may change throughout the game) until one of them manages to reach the required score, when he will manage to repair the escape module and keep the entire crew safe.

You can vary the duration of the games establishing the necessary score for win:

Quick game	**11** points
Normal game	**13** points
Long game	**16** points

To know more…

Why four types of technology?

There are currently many 3D printing technologies, known by various acronyms, which can be divided into four main groups:

Filament	Resin
Low resolution and precision. Parts from low complexity.	High resolution and great surface finish. Medium complexity parts.
Plastic powder	**Metal**
Great precision. Complex parts.	Metal parts. Great precision. Complex parts.

Each technology (both *3D printers* and *Materials*) is represented on the deck by a different colour.

Why advanced designs cannot be printed on basic 3D printers?

Advanced designs usually require certain conditions that are only found in advanced 3D printers, such as a higher printing volume or the need to use advanced materials, which require certain characteristics (not available in basic 3D printers) to be printed with total guarantee, so it is necessary to print them in advanced 3D printers to achieve optimal results.

Advanced material	+ Basic design	+ Basic 3D printer	✕
Basic material	+ Advanced design	+ Basic 3D printer	✕
Basic material	+ Basic design	+ Advanced 3D printer	✓

Do you want to know more about 3D printing?

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