

# HOMEWORLD2

## Creating Technologies

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### 1 Introduction

This document explains how to use the build and research scripts which between them describe everything you can build, research or upgrade.

### 2 File structure

Each race has its own set of scripts with the root being:

**Data\Scripts\Building and Research\**

Inside each race directory are two files, **build.lua** and **research.lua**.

### 3 Research

#### 3.1 General

The research file is one big table with sub tables for each item of research that is available to the race. Each research item has a number of core fields as well as optional fields for specifying upgrade information. The upgrade system is part of the research system and specifies what ships to upgrade and the type of upgrade.

### 3.2 Research Fields

Name (required)	Name of the research item, this name is used in the dependency list of other build and research items.
RequiredResearch (required)	A list of all the research items needed before this item is available to the player. You can use Boolean operations to make complex dependencies, the operators are: '&' for and, ' ' for or, and '!' for negation. You can also use brackets.
RequiredSubSystems (required)	A list of all the subsystems that need to be present <i>somewhere</i> in the player's fleet for this research item to be available to the player. The name is the typeString not the name of the subsystem so you should use "AdvancedFighterProduction" instead of "Hgn_AdvancedFighterProduction". Boolean operators can be used to make complex dependencies.
Cost (required)	Cost in resource units for this research item.
Time (required)	Time in seconds to fully research the item. This is the base time for when the player has one research subsystem, more research systems will speed up the process.
DisplayName (required)	The text for the research item in the UI
DisplayPriority (required)	Research items are sorted by this number in the UI, low numbers go at the top.
Description (required)	Description of the item, used in the UI
UpgradeType	Type of upgrade granted by the research item. Can be <b>Modifier</b> or <b>Ability</b> .
TargetType	Type of target for the upgrade, can be <b>AllShips</b> (everything in the player's fleet), <b>Family</b> (everything in the player's fleet of the given attack family), and <b>Ship</b> (every ship of the given type in the player's fleet).
TargetName	Name of the target, not needed for a target type of AllShips, for Family it is an attack family name and for Ship it is a ship name e.g. Hgn_Scout.
UpgradeName	Name of the modifier or ability to change, see HW2_MultipliersAndAbilitiesHowTo.doc for more details.
UpgradeValue	For Modifiers, this is the new value for the target ships, it will replace the current value. For abilities 0 means disable the ability, > 0 means enable.

## 4 Build

### 4.1 General

The build file is one big table with sub tables for each item that can be built by the race. Cost and time are not included in the scripting as they are specified in .ship and .subs files.

### 4.2 Build Fields

Type	Ship or SubSystem
------	-------------------

ThingToBuild	Name of the item to build e.g Hgn_Scout or Hgn_AdvancedFighterProduction.
RequiredResearch	A list of all the research items needed before this item is available to the player. You can use Boolean operations to make complex dependencies, the operators are: '&' for and, ' ' for or, and '!' for negation. You can also use brackets.
RequiredShipSubSystems	A list of all the subsystems that need to be present <i>on the building ship</i> for this build item to be available to the player. The name is the typeString not the name of the subsystem so you should use "AdvancedFighterProduction" instead of "Hgn_AdvancedFighterProduction". Boolean operators can be used to make complex dependencies.
RequiredFleetSubSystems	A list of all the subsystems that need to be present <i>in the player's fleet</i> for this build item to be available to the player. The name is the typeString not the name of the subsystem so you should use "AdvancedFighterProduction" instead of "Hgn_AdvancedFighterProduction". Boolean operators can be used to make complex dependencies.
DisplayedName	The text for the build item in the UI
DisplayPriority	Build items are sorted by this number in the UI, low numbers go at the top.
Description	Description of the item, used in the UI

## 5 Walk Through

### 5.1 Creating a Research Item

Creating new technologies is fun! Here is an example how you would add new research items to the Vaygr tech tree.

Diagram 1

```

{
  3 Name = "MissileCorvette",
  4 RequiredResearch = "",
  RequiredSubSystems = "Research & CorvetteProduction",
  5 Cost = 750,
  Time = 40,
  6 DisplayedName = "Missile Corvette Technology",
  7 DisplayPriority = 2,
  8 Description = "Researching this technology will allow you to build Missile Corvettes",
  9 TargetName = "Vgr_MissileCorvette",
  10 Icon = Icon_Tech,
  11 ShortDisplayedName = "Missile Corvette",
},

```

- 1) Open Homeworld2/Data/Scripts/Vaygr/Research.lua

- 2) Decide what type of technology you want to add. In this case lets add a prerequisite to the Vaygr Missile Corvette.
  - a. Diagram 1 is an example of a completed technology.
- 3) Give the technology a name. Lets call it "MissileCorvette". This name will be interchangeable in both the research.lua file and the build.lua file as research.
- 4) Give the technology prerequisites. If you want this to be available without any research simply leave it blank. In our example we will require the player to have research and corvetteproduction modules.
  - a. Use the following symbols to create more complex dependencies; Brackets can also be used. For example
    - | = or
    - & = and
    - ! = not
- 5) Give the technology a Cost and Time. In our example the MissileCorvette Technology is going to cost 750 RU's and take 40 seconds to research.
- 6) The displayed name will appear as the Header for the Help Text
- 7) Display priority places the items in the UI in decending order of priority; If you have two display priorities that are the same and they are both currently available for research only one will show up.
- 8) The Description fills in the help text.
  - a. It can be localized using **\Homeworld2\data\Locale\English\buildresearch.dat** and then adding the appropriate line of localized text you want to reference with a \$ in front.
    - i. For example in **buildresearch.dat** line 7035 is the line you wanted to reference type "Description = \$7035"
  - b. There are a number of ways to aid in formatting your help text below are a couple examples.
    - i. **<b>Description:</b>** would be displayed as "**Description:**" in the help text.
    - ii. **/n** creates a blank line helping you space out your paragraphs
- 9) Target name is used to show the UI for the item
- 10) The icon is used to give the user information on what the technology does.
  - a. You can create new icons by adding a new graphic and referencing that graphic at the top of the research.lua file, the Icon\_Tech file is referenced in the following way:
    - i. **Icon\_Tech = "data:ui/newui/research/icons/tech.mres"**
- 11) The final item you must create is the short displayed name. This is displayed in the research manager and must be under 14 characters.

## 5.2 Creating a Build Item

```
{
  3 Type = Ship,
  4 ThingToBuild = "Vgr_LaserCorvette",
  5 RequiredResearch = "CorvetteLaser",
  6 RequiredShipSubSystems = "CorvetteProduction",
  7 DisplayPriority = 105,
  8 DisplayName = "$7140",
  9 Description = "$7141"
},
```

- 1) Open **Homeworld2/Data/Scripts/Vaygr/Build.lua**
- 2) Decide what you want the player to be able to build. In this case lets imagine you want to add the Laser Corvette to the game.
- 3) First you need to describe the Type: this should be either ship or subsystem in our case it is a ship.
- 4) Next you need to put in what is going to be built. This should be the name of the ship that is exported by shiptuning.xls.
- 5) You now need to place the required research. In the case of the laser corvette it needs the corvettelaser technology that was created in research.lua.
- 6) Now add the requiredshipsubsystems, The corvettes require corvetteproduction.
  - a. Corvetteproduction is a tpestring found in subsytemtuning.xls; Multiple subsystems can have the same tpestring.
- 7) Research items are sorted by this number in the UI, low numbers go at the top.
- 8) The above example has localized text found in:
  - a. **Homeworld2\data\Locale\English\buildresearch.dat**
    - i. DisplayName = \$7140 will display as "Laser Corvette" in the corvette section of the build manager
- 9) The above example has localized text found in:
  - a. **Homeworld2\data\Locale\English\buildresearch.dat**
    - i. DisplayName = \$7141 will display in the help text as:  
**"Description:** Anti-Capital Ship Corvette Squadron.

**Strong vs:** Frigates, Capital Ships

**Weak vs:** Corvettes, Capital Ships

**Prerequisites:** Corvette Facility, Research Module and Corvette Laser Research.”