Ancient Warfare – The Basics

# General Information

Ancient Warfare is a modification for Minecraft that adds a variety of game enhancements; new blocks, new entities, and a template based world-generation structure generator.

Beginning with the 2.x releases Ancient Warfare has been split into a multi-module release. There is a single Core module that all other modules rely on for shared functionality. Each other module may be installed individually, or in any other combination desired. The non-core modules are – Automation, NPCs, Structure Generation, and Vehicles. Each of these modules focuses on a single aspect of the mod

# Section I - Core Module

## General

The Core module in Ancient Warfare offers very little functionality on its own. It merely contains the framework that the rest of the modules use to communicate between one another, and any code shared amongst multiple modules. The Core module is mandatory if any of the other modules are to be installed.

The Core module adds the Research Station and Engineering Station blocks, the Research Book, Backpack, Quill (research), and Hammer (work/block-rotator/weapon) items. It additionally contains many of the frameworks and systems used by the rest of the modules, such as the research and crafting systems and improved item use/interaction systems.

## Research System

 

Research Station GUI Research Queue GUI

The Research Station may be crafted in a normal vanilla workbench. For the precise recipe, see NEI or similar. Once crafted, it may be placed into the world like any other block. It has a single externally-accessible inventory – the slots labeled as ‘Input’.

To begin researching, place your research book into the top-left slot (below the name) (research book is crafted in a normal crafting bench). Press the ‘Adjust Research Queue’ button to view the research-queue GUI, where you can add or remove goals from your research queue. Resources needed for your current goal (if any) will be shown in the slots labeled ‘Needed’. Place your resources into the slots labeled ‘Input’. Once all resources have been met, the resources will be used and the current goal will begin researching. Research progress will continue for as long as you have the GUI open, but will cease as soon as you close the GUI. You must be present at / have the GUI open on one of your research stations, or use a researcher NPC in order to make research progress.

Once a particular goal has been completed, the goal at the head of the queue will be moved into the ‘active goal’ position. As long as the required resources are already present in the ‘Input’ boxes, the goal will start, and research will progress on the new goal. A research goal in the ‘active’ position may only be cancelled if it has not yet been started (go the research queue, and remove it from the queue).

Goals that may be learned but are not yet queued will be shown on the right-hand side of the Research Queue GUI. Goals that are currently queued and not yet in-progress will be shown on the left-hand side of the GUI.

Goals may be added to the research queue by pressing the ‘+’ button located to the right of the goal name. Goals may be removed from the research queue by pressing the ‘-‘ button located to the right of the goal name. In order for a goal to be added to the queue, any pre-requisite goals must already be learned or queued. If a goal is removed from the queue that has other goals dependent upon it, those goals will also be removed from the queue.

The research station may be optionally configured to use adjacent inventories to withdraw resources for research goals. To enable this functionality, check the checkbox marked ‘Use Adjacent Inventory’.

Other notes:

* Most recipes in Ancient Warfare require research before they are craftable. The entire research system may be disabled in the core configuration file – in which case, no research will be required and all Ancient Warfare recipes will be craftable in the normal workbench.
* Research is done only at the Research Station, which may be crafted in the normal workbench or in an Ancient Warfare engineering station.
* Research requires a Research Book, which is also craftable in the normal workbench.
* Research is stored per-player. Any player may contribute to any others’ research by obtaining a copy of their research book and using that book in any research table.
* You may use other players research for crafting by obtaining a copy of their research book and using it in your Engineering Station.
* You may only progress on a single research goal at a time. All research stations with a copy of your research book will all contribute towards your selected goal.
* Research goals have both a time and materials component. The needed materials may be viewed on the tooltip of the goal in the research-queue GUI, or in the ‘needed’ box on the main research progress GUI. Once these materials are present in the ‘input’ box, the materials will be used and research will automatically start progressing.
* In order to make progress on a research goal you must do one of three things:
  + Leave the research station GUI open.
  + Assign an NPC researcher to work at the station.
  + Right click on the research station with a ‘Quill’ item equipped.
* Multiple Research Stations may be setup to make faster progress towards a single goal. They will each need researcher NPCs assigned to them, or have players using quills / viewing their GUIs.
* The Research Book may be right-clicked after it is assigned to view a GUI with details about each research goal and researchable recipe.

## Crafting System



Engineering Station GUI

Crafting in Ancient Warfare 2 has been simplified from the prior versions to use a single crafting block. All Ancient Warfare and vanilla recipes may be crafted at the Engineering Station. The Engineering station may be crafted in a vanilla crafting table. See NEI or similar for the recipe.

Once crafted and placed in the world, the Engineering Station crafting GUI may be accessed via interacting with the block (default: right-click). The Engineering Station has a Research Book slot, and a Research Book must be placed into this slot in order to craft any recipes that have research requirements – the recipes available will depend upon the completed research for the player owning the Research Book. If no Research Book is in the slot the Engineering Station will only be able to craft vanilla recipes or the few Ancient Warfare recipes that do not have research requirements.

To craft using the Engineering Station, lay out your recipe in the crafting grid as normal. Results may be removed from the output slot one at a time, or shift-clicked to craft as many as possible (placed directly into player inventory). The additional slots below the layout grid can be used for extra raw materials storage. The crafting-grid will auto-refill from these components if possible. All slots in the Engineering Station are persistent – unlike the vanilla crafting bench they will not be ejected into the world when the GUI is closed; they will still be there whenever you return, enabling you to grab forgotten materials or extra materials without losing your recipe layout.

## Crafting Recipes

INSERT SCREENSHOT OF NEI RECIPE VIEW

To view crafting recipes, use NEI or other similar mod. As the recipes may change at any time (and some are user-configurable), they are not listed here.

There is a built-in NEI plugin that should be compatible with recent releases of NEI. It adds recipe lookup and item use search capability for all researched recipes. It does not currently list the required research for viewed recipes (that capability is planned for a future update).

## Teams

INSERT SCREENSHOT OF SCOREBOARD GUI

Ancient Warfare 2.x versions use the vanilla Scoreboard system for team management. Teams may be created/joined/left by using the vanilla scoreboard chat commands. Please see the Minecraft documentation for a list of these commands.

Most entities and tile-entities in Ancient Warfare are owner and team-aware. These entities and tiles store a reference to their owners **name** (not UUID), and use this reference to look up their owners team. Any time a player switches team, **all** of his owned entities (npcs/vehicles/gates) and tiles (crafting blocks, worksites, others) that are team-aware will switch team with him.

Any assigned team colors will be used to display the nameplates for entities owned by other teams (npcs/vehicles) (only applicable if enemy nameplates are enabled in the client-side configuration).

Interaction with many entities and tiles is limited by owner and/or team. You will not be allowed to interact (open GUIs, send commands, etc) with entities or tiles that you do not own or are not on the same team as the owner.

## Options Menu and Keybinds

INSERT SCREENSHOT OF OPTIONS GUI

There is an in-game client-side options GUI that may be accessed via the F7 key (default, re-assignable via MC key-binds GUI). This screen offers options and toggles for all of the in-game adjustable settings. These same settings may be adjusted manually through the configuration files, but the in-game GUI offers a central location to modify them while the client is running. The only options here are the purely client-side options that have no effect on server.

INSERT SCREENSHOT OF KEYBINDS GUI

The options screen also has an additional button to access a custom Ancient Warfare keybinds GUI. From this keybind GUI you may modify or reassign any of the keybinds used by Ancient Warfare. These keybinds are handled through a different system than the vanilla keybinds, and can share keys with them. It is the users-responsibility to resolve any keybind conflicts with shared keys and other mods.

## Configuration Files

Each module has its own configuration file(s) for module-specific options. The core module also has its own configuration file for global/shared options. Please pay attention to the default values and comments in the configuration files, as these should explain everything necessary to make adjustments.

More configuration options will be added to these files as development continues. If there is a specific option you would like added, please open up an issue ticket on GitHub including information regarding the option you would like added (see the Features Requests section for more information).

## Item Use

Most useable items have been reworked to use a key-driven activation scheme in addition to the existing right-click action. This additional interface is needed due to the complexity of several of the items as well as a workaround for item/block interaction conflicts (e.g. cannot right-click on an item when a block has a right-click action).

The keys used for item interaction can be changed/reassigned in the Options->Keybinds GUI. The default assignments for these keys are ‘Z’, ‘X’, ‘C’, ‘V’, and ‘B’. Any particular item may use one or more of these keybinds; a few of the more complex items from other modules use all of them. Many actions for items that previously used right-click will now use item-key 1 (default ‘Z’). Please see the tooltip on specific items to see what key is bound to which action for that item.

INSERT SCREENSHOT OF ADVANCED ITEM TOOLTIP

## Core Module Items

### Backpack

INSERT SCREENSHOT OF BACKPACK GUI

The backpack serves as a portable chest. It comes in four sizes – 9 slot, 18 slot, 27 slot, and 36 slot. Larger sizes are more expensive to craft but have no other additional features.

Press the main item-interaction key to open the Backpack GUI. From here you can move items into or out of the backpack. The inventory slot that the backpack occupies will be locked and unavailable for manipulation – this is to remove any chances of doing something silly (like putting the backpack inside of itself, thus deleting it when you close the GUI). To close the GUI, press ‘esc’ or ‘e’ (or whatever your inventory keybind is).

### Hammer

The Hammer item has three functions: weapon, block rotator, and tool for allowing players to work at Automation Module Worksites. To use it as a weapon simply attack an entity with it; it should have damage equivalent to a sword of the same material, but lacks a block ability. To use it as a block-rotator or work-tool, right click on the target block. To switch between ‘rotate’ and ‘work’ modes press item-interaction key 1 (default ‘Z’). The Hammer is also used as an equipment item for some NPCs in the NPC Module.

INSERT SCREENSHOT OF HAMMER TOOLTIP

### Quill

The Quill item may be used as a mid-grade weapon (slightly less than same-material sword), or as a tool to allow players to ‘work’ at a research station (similar to working at a worksite with a Hammer). To manually add research to a research station simply right-click on the block – one seconds worth of research time should be added to the progress of the currently researching goal. The Quill is also used as equipment for some NPCs in the NPC Module.

### Research Book

INSERT SCREENSHOT OF RESEARCH BOOK GUI

The Research Book serves to denote what player’s research progress should be used in Research Stations, Engineering Stations (and other AW crafting stations). Exact research progress is not stored in the Research Book – losing your Research Book or having it destroyed will not result in losing any research progress.

After a Research Book is first crafted it must be assigned to a player to be of any use. Press the item interaction key 1 (default ‘Z’) to assign a new research book to the player using it. After it has been assigned to a player, the Research Book can be used to view the Research goal tree as well as any recipes that are unlocked from specific research. Press the item interaction key 1 (default ‘Z’) to open the Research view GUI.

Once a Research Book has been assigned to a player it may not be re-assigned. You may give a copy of your Research Book to other players to allow them to use your Research progress or allow them to contribute progress towards your current Research Goal.

### Research Notes

Research Notes items. These may be right clicked to either learn the denoted research directly, or add progress towards your current research goal (depending on if you already know the research from the note). These will be added to the dungeon-chest loot generation system in the near future, with configurable options for rarity/enable/disable. They are currently only available via the creative menu.

## Core Module Blocks

### Engineering Station

The Engineering Station is the main crafting block for Ancient Warfare. To interact/open the crafting GUI simply right-click on the block. See the Crafting System section for more details.

### Research Station

The Research Station is necessary for progressing on the Ancient Warfare Research tree. To interact/open the Research GUI simply right-click on the block. See the Research System section for more details on its exact use.

## Bug Reports / Issues

Please report any bugs or issues on GitHub. The issue tracker is located at: <https://github.com/shadowmage45/AncientWarfare2/issues>. Issues reported in any other way will be ignored. Please browse the existing tickets to ensure it is not a duplicate. If an issue exists that covers your problem feel free to add any additional info that you may have.

If your issue is not a duplicate, feel free to open up a new ticket. Please describe the problem in as much detail as possible. If it is crash related, include the crash report. If it is a repeatable issue, describe the steps necessary to duplicate it. All of this information will come in handy tracking down and solving the issue – the more information you provide, the quicker the issue can be found and dealt with.

## Feature Requests

Is there a new feature you would like to see added? Think the balance on something could use adjusting? Want more options for configurability?

The steps for feature requests are as simple as opening an issue ticket on GitHub. Navigate to <https://github.com/shadowmage45/AncientWarfare2/issues>, click on the ‘New issue’ button, and when you open your ticket flag it as an ‘enhancement’ or ‘balance’ issue. Fill in as much information as possible regarding the feature you would like. Screenshots, links, diagrams, etc. are welcome (and encouraged) for explaining your idea.

## Contributions

Ancient Warfare is an open source project. Contributions to the code are welcome. More specific details can be found at the source repository, located at: <https://github.com/shadowmage45/AncientWarfare2>.

# Section II – Automation Module

## General

The Ancient Warfare Automation Module adds many new blocks to the game with the intent of adding tools for automation of resource gathering, processing, and crafting. It also adds a fully BuildCraft-MJ compatible power-framework to power the automation blocks. A few other utility oriented blocks are also included.

Many of the features of the Automation Module are intended to be used in combination with the NPC Modules ‘Worker’ type NPCs – these NPCs provide the energy for operation of many of the automation machine blocks. Alternative means of power-generation are available in the Automation Module allowing it to be used as a stand-alone/without the NPC module if wanted.

## Worksites

Worksites form the heart of the Ancient Warfare automation system. A Worksite is a block that requires energy input in order to process its work. Many different types of worksites and work exist. Each worksite is devoted to a single task or type of work. Many worksites have work-bounds that denote the area over which they have control / will work in.

In order to place a worksite, simply right-click with the worksite block in-hand. The worksite will be placed with default bounds if applicable. To adjust the work-bounds, open the GUI (right-click) and hit the ‘Bounds’ button at the bottom. Many of the worksites with bounds also have configurable target/work blocks; these blocks may be set in the ‘Bounds’ GUI as well; red=target, black=not a target.

Most worksites can have various properties upgraded through the use of ‘Worksite Upgrade’ items. Please see the Worksite Upgrades section for more details.

Most worksites have configurable block side/inventory assignment. Open the main GUI and press the ‘Inv’ button to adjust the block side/inventory mapping. Each side of the block may be mapped to a single internal inventory area (or none). Multiple sides on the block may be mapped to the same inventory area.

Players may manually ‘work’ at a worksite by right-clicking on the control block with a Hammer equipped.

Worksites may be ‘turned off’/disabled by applying a redstone signal to the control block.

The following types of worksites are currently available:

### Crop Farm

The Crop Farm plants and harvests Wheat, Carrots, Potatoes, Melons and Pumpkins. The blocks to be tilled / planted / harvested may be adjusted in the ‘Bounds’ adjustment GUI. Harvested resources will be placed into the upper inventory area. Seeds to be planted should be inserted into the middle inventory area. The lower area is reserved for Bonemeal, which will be used to speed the growth of any crops after tilling/planting has been done. Can use bounds, enchanted tools, and quality tools upgrades.

### Tree Farm

The Tree Farm plants saplings and harvests logs from grown trees. The blocks to be planted and harvested may be adjusted in the ‘Bounds’ adjustment GUI. Harvested resources will be placed into the upper inventory area. Saplings to be planted should be inserted into the middle inventory area. The lower area is reserved for Bonemeal, which will be used to speed the growth of any saplings after planting has been done. Can use bounds, enchanted tools, and quality tools upgrades.

### Mushroom Farm

The Mushroom Farm plants brown and red mushrooms as well as Netherstalk. The blocks to be planted may be adjusted in the ‘Bounds’ adjustment GUI (all non-planting blocks will be ‘harvest’ blocks). Harvested resources will be placed into the upper inventory area. Mushrooms/Netherstalk to be planted should be inserted into the middle inventory area. Mushrooms and Netherstalk both have special requirements that must be met for their planting and growth – low light for all and soul-sand necessary for Netherstalk. Meeting these requirements is the responsibility of the player/user. Can use bounds, enchanted tools, and quality tools upgrades.

### Reed/Cactus/Cocoa Farm

The Reed Farm plants and harvests the ‘odd’ crops from vanilla Mincraft; reeds, cactus, and cocoa beans. The blocks to be tilled / planted / harvested may be adjusted in the ‘Bounds’ adjustment GUI. Harvested resources will be placed into the upper inventory area. Items to be planted should be inserted into the middle inventory area. Any special requirements for the crops growth must still be met – jungle logs are needed for cocoa beans, sand is needed for cactus, and reed requires water nearby with either grass/dirt/sand to grow on. Can use bounds, enchanted tools, and quality tools upgrades.

### Animal Farm

The Animal Farm allows for the automated feeding had harvesting of vanilla livestock. The maximum number of allowed adult animals per type is configurable via the ‘Adv’ button in the main GUI. Harvested items are placed into the top inventory area. Feed items for the animals may be placed into the lower inventory area. Animals will only be fed if there are two adult and breed-ready animals available. Can use bounds, enchanted tools, and quality tools upgrades.

### Fish Farm

The Fish Farm provides an automated means for catching fish (all vanilla types) as well as ink. More water in and below the bounds of the fish farm will result in faster production. Can enable/disable the catching of fish and/or ink through the ‘Adv’ GUI. Can use bounds, enchanted tools, and quality tools upgrades.

### Quarry

The Quarry uses input energy to harvest blocks. By default he Quarry can harvest any block harvestable with a stone pickaxe. Upgrades are available to harvest harder blocks. The upper inventory area is where harvested resources will be placed. The Quarry will remove water source blocks, but will not harvest below lava. Can use bounds, enchanted tools, and quality tools upgrades.

### Warehouse

The Warehouse is an upgradeable mass-storage site. It requires a Warehouse Control block to set up the site, as well as storage and interface blocks for actual operations. The Warehouse can use bounds, enchanted tools, and quality tools upgrades. See the Warehouse section for more information on setup and use.

### Auto Crafting Station

The Auto Crafting Station is a worksite devoted to the automation of crafting. Lay out your recipe in the layout matrix. Provide materials in the raw materials area. For every work unit of power input, one item will be crafted and put into the output area. See the Auto Crafting section for more information on setup and use.

### Hand-Cranked Generator

The Hand-Cranked Generator provides a means of turning NPC and player based ‘work’ into a form of energy useable by worksites and convertible into BuildCraft-MJ. Its main purpose is to allow an interface between NPC workers and BuildCraft – can use workers to power any BuildCraft machines with the use of a Hand-Cranked Generator and conversion blocks. It also allows a late-game means for players to consolidate and optimize their energy use and production for worksites. See the Torque Power System section for more details on setup and use.

## Worksite Upgrades

Worksite Upgrades are items that may be applied to a worksite to upgrade or alter its functionality. To apply an upgrade to a worksite right click the item while targeting the block – if it can be used it will be and the item will be removed from your inventory. If the applied upgrade overwrites an existing one, the existing upgrade item will be ejected into the world. Not all upgrades are applicable to all worksites.

The following upgrade types are available:

### Bounds Upgrade Medium

Increases the work bounds maximum width/length to 9 blocks for most bounded worksites. Is overridden by the Large Bounds Upgrade. Cannot be applied to Quarries (use the Quarry Bounds Upgrade items).

### Bounds Upgrade Large

Increases the work bounds maximum width/length to 16 blocks for most bounded worksites. Overwrites the Medium Bounds Upgrade. Cannot be applied to Quarries (use the Quarry Bounds Upgrade items).

### Bounds Upgrade Quarry Medium

Increases the work bounds maximum for a Quarry to 32 blocks. Is overwritten by the Large Quarry Bounds Upgrade. Can only be applied to Quarries (use the normal bounds upgrades for other Worksites).

### Bounds Upgrade Quarry Large

Increases the work bounds maximum for a Quarry to 32 blocks. Is overwrites the Medium Quarry Bounds Upgrade. Can only be applied to Quarries. Can only be applied to Quarries (use the normal bounds upgrades for other Worksites).

### Enchanted Tools 1

Adds the equivalent of ‘Looting I’ or ‘Fortune I’ for generating extra loot when harvesting block or animal drops. Also increases Worksite efficiency by a small amount. Is overwritten by Enchanted Tools 2.

### Enchanted Tools 2

Adds the equivalent of ‘Looting II’ or ‘Fortune II’ for generating extra loot when harvesting block or animal drops. Also increases Worksite efficiency by a moderate amount. Overwrites Enchanted Tools 1.

### Quality Tools 1

Increases Worksite efficiency by a small amount. Also provides the Quarry with the ability to harvest at an Iron pickaxe level. Is overwritten by Quality Tools 2 and Quality Tools 3 Upgrades.

### Quality Tools 2

Increases Worksite efficiency by a moderate amount. Also provides the Quarry with the ability to harvest at a Diamond pickaxe level. Overwrites Quality Tools 1 Upgrade. Is overwritten by Quality Tools 3 Upgrade.

### Quality Tools 3

Increases Worksite efficiency by a large amount. Also provides the Quarry with the ability to harvest any breakable block. Overwrites Quality Tools 1 and Quality Tools 2 Upgrades.

## Auto Crafting

INSERT SCREENSHOT OF AUTO CRAFTING STATION GUI

The Auto Crafting Station is a Worksite dedicated to automating the crafting of items. It uses a research book (like the Engineering Station) to determine what researched recipes may be crafted. Like other Worksites, the Auto Crafting Station requires energy input to function.

The Auto Crafting Station has three inventory areas – raw goods storage, recipe layout, and crafting output storage. Block-side access for each of these inventories can be configured from the ‘Inventory’ button.

To use the Auto Crafting Station begin by laying out your intended recipe in the recipe grid. Items in the layout grid will not be used up while crafting, only items from the raw-goods inventory area will be used when crafting. After your recipe is laid out as intended, the item to be produced should show in the output area. Place any resources needed for crafting the recipe into the raw goods area.

To process the crafting of items in the Auto Crafting Station either supply a power input from workers (work type: Crafting), torque conduits, ‘using’ a Hammer on it, or by pressing the ‘Craft’ button in the inventory GUI. For every press of the button or 50 energy units input a single output item will be crafted. Any items crafted will be placed into the crafting output inventory area. If the output area cannot hold the item to be crafted, no action will be taken (and no energy used).

## Warehouse

The Warehouse is meant as an upgradeable self-sorting and auto-organizing mass item storage area. It has work bounds like other Worksites, but is also a Multi-block structure in that it requires other blocks for its functionality. Like other Worksites, the Warehouse requires energy input to function. This energy may come from torque conduits, workers, or a player using a Hammer. The Warehouse comprises four different types of blocks – the Warehouse Control Block, Warehouse Storage blocks, Warehouse Interface blocks, and Warehouse Stock Viewer blocks. Additionally there is a Warehouse Crafting Station to allow a Player to use items directly from the warehouse for crafting.

### Warehouse Control Block

INSERT SCREENSHOT OF WAREHOUSE CONTROL GUI

The main block of the Warehouse is the Warehouse Control Block. This block manages the bounds of the warehouse and is the target for workers and energy input. It does not by itself offer any storage capability – storage capacity is added by placing Warehouse Storage blocks within the managed bounds. What it does offer is a way to view all stored items, filter view by text input, and manually input and withdraw from the managed storage blocks.

By default the Warehouse manages an area of 5x5x4 (w,l,h) blocks. This area can be expanded through the use of the Medium and Large Bounds Upgrades, which will increase the bounds to 9 and 16 blocks respectively. The bounds to be managed by be adjusted by pressing the ‘Bounds’ button in the main GUI.

The Warehouse Control Block does not offer any externally accessible inventories, all automated item input/extraction must be done through Warehouse Interface blocks. The Warehouse Control Block provides coordination amongst the many types of warehouse block and facilitates moving items from one block to another within the warehouse (from storage to interface, and from interface to storage).

The Warehouse Control Block requires constant energy input in order to move items between blocks. This energy may come from torque conduits, workers, or a player using a Hammer. Energy is only consumed when items are moved, and is the same regardless of stack size or contents.

The warehouse controller block may itself be interacted with to display the warehouse GUI. This GUI displays all items stored in the storage blocks controlled by this warehouse controller. Multiple sort modes are available – by name, by quantity, or by user-input text string.

A search input box is available. To use it, set the sort type to ‘Input’. Items with names matching the input will be filtered to the top. Partial matches below full matches. There is a toggle to sort by ascending or descending – default is descending (a-z, 0-9).

Click on any item in the warehouse gui to withdraw that item. Shift-click to move it directly into your inventory. Items requested in this manner are withdrawn directly from storage blocks and workers are not needed to process the request.

Drop any item into the warehouse item-view panel to manually deposit that item into the warehouse. Items deposited in this manner are moved directly into storage blocks and do not need workers to process the request.

### Warehouse Storage Blocks

INSERT SCREENSHOT OF WAREHOUSE STORAGE GUI

Warehouse Storage blocks provide a means to expand the capacity of the Warehouse. Every additional Storage block placed within the managed bounds will increase the total capacity of the warehouse by a set amount; higher grades of Storage block add more capacity than lower grades. Items are actually stored in these Storage blocks. If you break a Storage block all items it contains will be dropped in the world and no longer available in the Warehouse. Players may manually add and remove items from the Storage blocks, but their main use is for the Warehouse Control Block to manage their stored items

Warehouse Storage blocks may be interacted with to view or manipulate contents or to set content filters. Once a filter is set, only items matching that filter will be placed into that storage block; any existing items will be left in place. An empty filter list denotes that any item may be stored there. An empty filter matches no items (and thus a storage block with a single empty filter will not store any items). These blocks do not provide any externally accessible inventories, all automated interaction must go through the Warehouse Interface blocks.

### Warehouse Interface Blocks

INSERT SCREENSHOT OF WAREHOUSE INTERFACE GUI

Warehouse Interface blocks provide the means to access the items in the Warehouse through external and automated means. These blocks provide an externally accessible inventory that may be directly manipulated by NPC Couriers, vanilla hoppers, BuildCraft pipes, or any other mod-added means of manipulating block-based inventories. The Interface block serves as both the input and output for the Warehouse, and every Interface block may be used as input, output, or both.

The Warehouse Interface block can be interacted with to open up a GUI to control its filter list. The filter list determines what items will be automatically placed into the interface, and which items should be automatically removed. Any items in the filter list will be automatically placed into the Interface block at regular intervals by the Control Block, up to the quantity specified in the filter (as long as the Control block is powered). Any items not in the filter list will be automatically removed from the Interface block at regular intervals by the Control Block (again, as long as it is powered).

### Warehouse Crafting Station

INSERT SCREENSHOT OF WAREHOUSE CRAFTING GUI

The Warehouse Crafting Station must be placed on top of a Warehouse Control block (not within the bounds), and works with materials from a single Warehouse. Like other crafting stations, the recipe may be laid out in the recipe grid. Results may be pulled from the result slot. Any resources needed from crafting will be pulled from the Warehouse’s Storage blocks.

## Mailbox

INSERT SCREENSHOT OF MAILBOX GUI

Mailboxes serve as a late to end-game item-teleportation system. Item travel time is determined by distance (20 ticks/block, configurable/60 seconds cross dimension, configurable). Mailboxes can be flagged for either the ‘public’ network, or a ‘private’ network for each player. Mailboxes do not require any power input or interaction other than adding items to send and remove items received.

Public mailboxes can be interacted with by anyone regardless of team or the owner of the mailbox. Public mailboxes can send to, and receive from, any other public mailbox. Everyone can see the full list of public mailbox names, and add/remove names from this list.

Private mailboxes can only be interacted with by their owner. Private mailboxes can only send to and receive from other private mailboxes of the same owner. Only the owner of a private network can add or remove mailbox names or assign a box a particular private name.

## Chunk Loaders

INSERT SCREENSHOT OF DELUXE CHUNKLOADER GUI

Chunkloaders force Minecraft to keep specific world chunks loaded and ticking. This removes the requirement of a player being nearby for the world to be active, but only for those chunks under the effect of the Chunkloader. This allows for worksites to continue functioning, NPCs to continue doing their thing, and overall for the game to run like normal for effected chunks.

The ‘Simple Chunk Loader’ loads a 3x3 chunk area centered on the chunk it is placed in. The ‘Deluxe Chunk Loader’ has a GUI where you may configure which chunks around it are to be loaded (the top of the GUI denotes north, the chunkloader is in the center). It may load any chunks in a 5x5 area, up to 25 total chunks.

## Torque Power System

INSERT SCREENSHOTS OF A COUPLE TORQUE SETUPS

* Mid to Late game alternatives to NPCs to provide power to worksites.
* Also available early game in cases where NPCs are disabled/not present/manually set through config. Allows the automation module to function independently of the NPC module and not have a dependency on an external mod for power.
* All worksites may be powered by energy from the torque system as an alternative energy input.
* Power production, transport, and storage are available, in the form of generators, conduits, and flywheels.
* Power transport is one-directional, the red/pink side is output. Use a hammer or other block-rotating tool to change their orientation.
* Flywheel blocks act as power storage. They have a single input side and a single output side. If they are stacked vertically they will balance power between the stack and act as essentially one large storage block.
* Compatible with Buildcraft 6.x MJ energy system. Energy conversion is at a 1:1 ratio. For the time being energy can only be extracted via a conductive wooden pipe (wooden energy extraction pipe, w/e they are called in this revision). MJ Energy may be input directly into any torque conduit, distributor or storage block. Worksites need at least one torque-conduit/distributor/storage block between them and the BC energy pipe. Generators can output directly into wooden conductive pipes.
* Hand-Cranked generators function as work sites, to convert NPC work-energy into torque energy (and thus, into Buildcraft MJ). Players may also work at these by using the ‘Hammer’ item in work mode.
* Waterwheel generators must be placed beside at least three blocks of flowing water. The faster the flow / the more the fall, the higher the energy output.
* Sterling generators burn solid fuel to output torque energy. Fuel may be added manually in the gui, piped in through any side, added through hoppers, or added via couriers.
* All tiles suffer gradual power loss. It equates to about 1% of currently stored energy lost per second – the more stored, the higher the loss.
* Multiple tiers of block/tile are available. Lower tiers have lower capacities and transfer rates.

## Automation Module Items

### Worksite Upgrades

Please see the section on Worksite Upgrades for more information on these items.

## Automation Module Blocks

### Worksites (Farms, Quarry)

Please see the Worksites section for a description of each of these blocks functions.

### Auto Crafting Station

Please see the Auto Crafting section for a description of this blocks functions.

### Mailbox

Please see the Mailbox section for a description of this blocks functions.

### Basic Chunkloader

Please see the Chunk Loaders section for a description of this blocks functions.

### Deluxe Chunkloader

Please see the Chunk Loaders section for a description of this blocks functions.

### Warehouse (Control, Storage, Interface, Stock Viewer, Crafting)

Please see the Warehouse section for a description of each of these blocks functions.

### Torque Tiles (Conduits, Flywheel, Distributor, Generators)

Please see the Torque Power System section for a description of each of these blocks functions.

# Section III – NPC Module

## General

The NPC Module adds several types of player-owned and commanded NPCs. It also includes a computer-controlled faction oriented NPC system for use in map creation and world generation through the Structure Module. Player-Owned NPCs can be recruited for combat, worker, and utility roles. Faction controlled NPCs are available in several varieties (both combat and non-combat) for up to eight different factions (five pre-configured, three user-configurable).

## INTERACTION

* A Player Owned NPCs inventory may be accessed via right-clicking on the NPC. A Player Owned NPC may be commanded to start or stop following a player by sneak-right-clicking on the NPC.

## CREATIVE MODE INTERACTION AND CONTROL

* Players in creative mode have access to the inventory GUI for all faction-based NPCs. Faction based NPCs do not use their upkeep or work orders slots, so these slots may be filled with items to act as custom-rewards for when the NPC is slain. They also do not use their primary weapon slot to determine combat type, so you may equip any item in their weapon slot. However, if using a non-weapon item, it is recommended to set an Attack Damage Override, as the NPCs **do** use the weapon to determine their base attack damage.
* Players in creative mode may command a faction-based NPC to follow/stop following by shift-right clicking on it.
* Players in creative mode have additional controls available on all NPCs. These controls are accessible via the ‘Creative Controls’ button in the NPCs main inventory screen. The additional controls are:
  + Set Owner Name – useful for reassigning a player-owned NPC to a different player. Has no effect on faction-owned NPCs.
  + Enable/Disable wander – turn on/off the NPCs wander AI. Temporary setting, not saved. Should be used to aid in structure or map creation and NPC positioning.
  + Attack Damage Override – if set to >=0, this value will be used for attack damage instead of the NPCs equipped weapon. Most useful for creating custom NPC bosses or subtypes.
  + Armor Value Override – if set to >=0, this value overrides the armor value from whatever armor the NPC is wearing. Most useful for creating custom NPC bosses or subtypes that should be armored but still show their texture.
  + Max Health Override – if set to >0, this value will be used to determine the NPCs max health. Can be used in combination with the other overrides to create custom NPC bosses.
  + Custom Texture Override – may specify a custom lookup type for the NPC. This custom type should exactly match the custom type specified in the skin-pack file. E.g. If the skin-pack has ‘custom.boss.1=boss1.png”, then this field should say ‘custom.boss.1’. This field/input box will be moving into the main NPC inventory/gui shortly to allow for all users to specify custom textures for their player-owned npcs.

## CRAFTING

* NPC spawning items for the player-owned NPC types may be crafted at the Engineering Station.
* Each spawner requires a food bundle (also crafted at the Engineering Station) in addition to some gold for their initial pay, and some equipment to be used in their training.
* For exact recipes, please look them up in NEI or similar.

## TOWN HALL

* Functions as an auto-assigned upkeep point for same team / owner npcs.
  + If a same-teamed npc is within range and does not have an upkeep point assigned, they will auto-assign the town-hall as their upkeep point.
* Has an inventory for storage of food for npc upkeep.
* Tracks deaths of nearby npcs, player owned priests may resurrect these npcs.

## COMMAND BATONS

* Functions as a sword, with no block ability
* right click to add or remove an npc from the commanded npc list, which are displayed in the upper-left and also highlighted in red
* commands are issued to the highlighted block or entity, which is displayed in the upper-right
* use one of the following keys to issue commands to the current selected npcs (reassignable through keybinds gui (f7))
  + Z -- clear current command (such as guard or follow)
  + X -- attack target (entity target), move to target while looking for things to attack (block target)
  + C -- follow/guard target (entity targe), move to target while ignoring potential attack targets (block target), mount target (horse target)
  + V -- set home point / (sneaking) clear home target
  + B -- set upkeep point / (sneaking) clear upkeep point
* Each Command Baton stores is own commanded npc list. You may have multiple batons equipped and switch between them to act as an NPC grouping system.

## TEAMS

* All teams are derived from owning players team.
* If owning player is not on a team, or npc is not owned, they are considered NEUTRAL.
* Neutral will not attack other teams, but will defend themselves vs attacks and attack 'bandits'.
* Bandits / hostile NPCs will not be part of the team system and will have customized AI
* Combat npcs will attack other combat NPCS if the attacker has a team and the target has a team, and they are not the same team
* Npcs whos owner are not on a team may only be commanded by their owner. If their owner is no a team, they may also be commanded by team members.

## NPC INVENTORIES

* All npcs have full inventory accessibility for equipment slots
  + main-hand slot determines work/combat type/inventory-size for couriers/bonus effectiveness for bards
  + armor slots are used for actual armor
  + upkeep slot is for upkeep orders -- where to get the food
  + orders slot is for work/combat/route orders -- where to work / what to fight / what items to move
* All npcs have an 'upkeep order' slot
  + simple work-order that denotes a single point for npc upkeep.
  + allows setting the amount of upkeep to withdraw
  + allows setting the block-side to withdraw from (in the case of sided inventories)
* all npcs have an 'orders' slot, the specific item used in this slot varies by npc type:
  + worker = work order, denotes what sites and in what order a workers should work
  + courer = routing slip, denotes what sites and what items a courier should move
  + combat = combat order, denotes a patrol route for combat npcs.
* All NPCs have an offhand slot. This slot is available to all NPC types and subtypes.
  + Equipping a ‘Shield’ in this slot will increase NPC armor value dependent upon shield material level.
  + Equipping any weapon in this slot will increase NPC damage output by 150% (output is calculated from the main-hand equipped weapon).

## ORDERS ITEMS

* Orders items all function in the same way.
* Press the primary item-use key (Z key by default) to assign a point/add a point.
* Right-click to open the GUI. From here you can alter settings, setup filters (for courier route slips), and change the order of points.
* While holding a combat/upkeep/route/work order item the route and blocks that it is referring to will be highlighted.

## NPC UPKEEP

* Player owned NPCs may have their upkeep point set through the use of the 'Upkeep Orders' item
* Alternatively, if no upkeep item is present, an NPC will auto-assign an upkeep point to the nearest in range friendly town-hall.
* A player may use the command-baton to override this 'auto assigned upkeep point' to one of their choosing however while it does not require a upkeep-orders item ,using the command baton does not give the option to set the amount of upkeep to withdraw or the side of the inventory to withdraw from.
* If an NPC is hungry he will attempt to move to his upkeep point if he has one, otherwise he will return to his assigned home point.
* Hungry NPCs will not work. Combat NPCs will still retaliate but will not seek out new targets.

## NPC WORKERS

* Worker work points may be set via work-orders item.
* If no work-orders item is present, NPC will work at whatever nearby worksites have work that are appropriate for his work-type.
* Workers work-type is set by the item in their weapon/primary hand equipment slot. Worker types are:
  + Hoe = Farmer
  + Axe = Lumberjack
  + Pickaxe = Miner
  + Quill = Researcher
  + Hammer = Craftsman
* With no item equipped, a worker has no ‘work type’ and cannot work at any worksites – equip them first!
* A workers ‘effectiveness’ stat is determined by a combination of their level for their current work type and the material quality of their currently equipped tool. This effectiveness stat determines how much work they do for each work ‘tick’ at a worksite – the highest levels and tools result in a net ~2x increase in work output.

## COMBAT NPCS

* Combat NPCs type is determined by their primary equipped weapon:
  + Sword = Soldier
  + Bow = Archer
  + Baton = Commander
  + Axe = Medic
  + Hammer = Engineer
* If no weapon (or unrecognized item) is equipped the NPC uses the ‘Soldier’ AI routines.
* Attack damage is set via the equipped weapons’ ‘Attack Damage’ item attribute – you should be able to equip soldiers with mod-added weapons as long as the modder made the weapon correctly. (On-hit stuff might not function appropriately, but damage bonuses should apply correctly)
* Combat NPCs may be issued a patrol route through the use of a ‘Combat Orders’ item. Set the item up appropriately and place it into the work orders slot.
* Soldiers have a simple default melee attack.
* Archers have a simple default ranged arrow attack.
* Medic NPCs will attempt to heal any nearby friendly injured NPCs (or players). They also use
* Commanders give a slight (2-point) damage bonus to nearby friendly combat NPCs.
* Engineers will attempt to repair nearby friendly mechanical units (gates, vehicles)

## COURIER NPC

* Courier NPCs move items between inventories.
* Couriers need a ‘Routing Orders’ item in their orders slot in order to function. This item denotes what inventories to move between and what action to take at each stop.
* Couriers’ main-hand item is a ‘Backpack’. They MUST be equipped with a backpack item in order to have storage inventory to store the items they are moving.
* You may remove a couriers’ backpack at any time to view/alter the items that are in it or replace it with a higher capacity.

## PRIEST NPCS

* Player owned priest NPCs serve a single purpose – resurrecting their fallen comrades.
* This is done at a town-hall – if you do not have a town hall setup, a priest has no function.
* The list of dead/resurrect-able NPCs is stored and viewable in the town-hall GUI.
* If there are resurrect-able NPCs in the dead NPC list, the priest should move towards the town hall and begin his ritual. Once complete, the dead NPC will be brought back to life at half-health with no equipment (it was dropped when they died). They must be re-equipped and issued new orders (if applicable). They will retain any levels, experience, custom name, and custom texture references they had at the time of death.

## NPC HORSE RIDING

* All player-owned NPCs may be ordered to mount and ride a horse while performing their duties.
* An NPC may be commanded to ride a horse via the command baton by selecting the NPC and issuing a move/guard/mount command (default C key) while targeting the horse to be mounted. The horse must be tamed and saddled (the saddle will disappear while the NPC is riding, but is still present)
* To dismount an NPC that is riding a horse, select the NPC with the command baton and issue another move/guard/mount command while targeting the horse he is riding.

## NPC LEVELING

* All npcs have a base (shared) level and experience value.
* Base level determines max hit-points.
* Sub-type level determines bonus damage or work-effectiveness.
* Sub-typed npcs also store level and xp per sub-type.
  + For npcs that can change subtypes (combat,worker), current level is looked up per-subtype;
  + Each work/combat type will return a different level/experience value.
* When an NPC gains experience, it is applied to both his base-level/xp, as well as the sub-type level/xp
* Npcs with no subtypes will have the same value for their base and (single) subtype level/xp values.

## NPC HEALING

* All npcs will 'heal' over time on their own, slowly. The time/delay between heals is customizable via config file.
* Player-owned NPCs will require upkeep be met in order to heal – they will not auto-heal when hungry.

## NPC SKIN PACKS

* Custom skin-packs may be placed into the config/AWConfig/npc/skin\_pack/ folder
* Skin-packs should contain only minecraft skin-format .png files and a single skin-pack.meta file
  + The skin-pack.meta file is should be specified with one entry per line, in the format of:
    - npcType.npcSubType=image\_name
  + Each npc type may be specified multiple times with separate images
  + When multiple images are found for an npc, the npc will be assigned a random skin from those found for his type/subtype
  + Examples:
    - worker=worker1.png
    - worker=worker2.png
    - worker.farmer=farmer1.png
* Custom npc types may be specified in the skin-pack.meta file, these custom npc types may be referenced in the npc gui 'custom texture' field.

## NPC FACTIONS

* There are currently five factions (and the corresponding biomes they should be found in)(biome is merely a guideline and not enforced by the NPC):
  + Bandits/Brigands (plains/forests)
  + Pirates (islands/oceans/coastal areas)
  + Vikings (tundra, taiga, colder biomes)
  + Jungle Natives (jungle, tropical forests, warm/wet biomes)
  + Desert Natives (deserts, dry/hot biomes)
* There are an additional three factions available that must be customized through configuration file and skin-packs. These custom types do not come with any textures or localizations for their naming by default, but are available for intrepid map designers to further customize the experience.
* There are currently twelve subtypes for each faction:
  + Soldier
  + Mounted Soldier
  + Elite Soldier
  + Archer
  + Mounted Archer
  + Elite Archer
  + Leader
  + Elite Leader
  + Trader
  + Priest
  + Civilian Male
  + Civilian Female
* The only difference between the normal and ‘elite’ varieties is that the ‘elite’ varieties require a much higher faction standing before they will be neutral. The elite varieties are meant to serve as treasury / elite guards for areas in structures that a player is not supposed to enter regardless of faction standing (or at least not until they have very high standing).
* The ‘elite’ faction offset is configurable via the npcs config file.
* Starting faction standing for each faction is configurable via the npcs config file.
* Faction standing for each faction vs. each other faction is configurable via config file. You can have bandits be hostile vs. pirates for instance.
* Faction standing may be lost by killing any npc belonging to a particular faction. The amount lost is configurable via config file.
* Faction standing may be gained by trading with a trader belonging to a particular faction. The amount of standing gained per trade is configurable via config file.
* Faction standing is tracked per-player – a players’ team has no effect on their faction standing.
* Civilian NPCs serve no purpose – they are purely decorative, for use by map and structure designers. They may be equipped and given custom skins/names like any other NPC, but have only basic AI functions (wander, stay near home) and no interactivity.
* Starting health for each faction based NPC type / subtype can be specified in the configuration file.
* Custom names for each NPC faction name, NPC type, and subtype may be specified in the configuration file. Section IV – Structure Module

Instruction Manual WIP

# Section V – Vehicle Module

Instruction Manual WIP

Module not yet implemented.

# Section VI - Credits

## Programming

Shadowmage

## Modeling

Shadowmage

## Textures

Shadowmage

## Sound

## Testing

Pelirow

Dulciphi

MohawkyMagoo

Varkas

Me2003

## Structures

MohawkyMagoo

## NPC Skins

Shadowmage