AGE 2

Version 5.0
17 July 1998

i. Document Purpose, Organization, and Conventions

The AGE 2 Master Design Document is intended to act as the central source document for all phases and aspects of the official AGE 2 development process.

As many aspects of the design will invariably change over the course of its evolution from a conceptual to a finished state, this document is structured to readily adapt to and present changing information in a coherent and functional fashion. To this end, all related information will be compartmentalized into a number of specialized fields, each providing for the easy location of relevant data and also minimizing instances of contradictory statements via repeated information being updated in one location but not others. The document will also be maintained in versions (allowing regression when necessary and providing the ability to track chronological progress) and a Version Change Summary (outlining any changes made) will be included as part of each complete document.

Additionally, please note that portions of the document still pending final agreement prior to implementation will be identified by the prefix "(pending)" in their title. Any decisions contingent upon the accuracy of pending information should be discussed with members of the AGE 2 team prior to finalization.

This document and all of its related subdocuments will be maintained (primarily) upon the Ensemble Studios Intranet. Normally, its content will be altered by Ian M. Fischer (ifischer@ensemble-studios.com), who will combine information received from all members of the AGE 2 team into each successive version. New versions will be made available to all members of the AGE 2 team each Friday through email.

Please do not make changes directly to this document or any of its subdocuments. Suggestions for any content you feel should be added, revised, or excluded can be sent directly to Ian M. Fischer or Mark Terrano (mterrano@ensemble-studios.com).

Document Versioning

The major document version number will correspond to the current milestone while the minor version number will be updated with every revision (weekly). The contents of the document will correspond with the developmental state of the project at each milestone and will attempt to be as accurate as possible between these.

Originally, Word's version tracking utility was being used in the construction of this document. However, this feature caused the document's file size to increase to a degree that made it unacceptable for transmission or editing. The use of this feature has been discontinued starting with v0.5. A more efficient means of conveying document changes is being engineered.

Options

The exact implementation of certain aspects of the AGE 2 design is dependent on the outcome of playtesting, scheduling, team discussions, and so forth. In instances where multiple (viable) implementations have been suggested, these will be presented in the document along with the

word “option” in their heading. In general, options are listed in order of their current expected precedence (i.e. the most likely option is listed first.)

Document Use (Online)

This document is designed with the use of Word’s ‘document map’ feature in mind. When using the document online, we highly recommend enabling this feature.

ii. Version Change Summary

Document

The entire cursed document has been rewritten.

Feature Re-introduction Schedule

In order of priority:

Status	Item
X	Battering Rams
X	Other Units Battering Rams
X	Static / Packing Siege Weapons
X	Gather Points (from Buildings)
	Gaia Behaviors
	Walls and Buildings Stop Missile Attacks
	Relic (combat)
	Gates
	Garrisons
	Naval Special Combats
	Production Queues
	Internal Trade
	Relic (economic)
	Ore replaces Gold
	Gathering Generates Gold
	Overland Trade / Trade Carts
	New Diplomacy Model
	Castles
	Unique Units
	Special Unit Attacks and Defenses
	Raider Cultures
	Cultural Differences
	Formations
	Unit Level State AI
	Kings
	* Optional items below this row *
	Bribery
	Facings
	Regrowth
	Infiltraitors

Milestone Items

iii. Vision Statement

Vision Statement

To keep the best parts of the Age of Empires game but extend and evolve it with selected changes and additions: improved interface, fresh visual look, enhanced tactical combat (formations and facing), new trade options, new diplomacy options, and a new time period (Dark Ages through Early Renaissance) with appropriate cultures, buildings, units, and technologies.

Litmus Test

All ideas for potential design elements related to AGE 2 are subject to discussion among members of the AGE 2 team. However, comparing any concept to members of the below vision statement should provide a general idea of a suggestion's suitability.

- **AGE 2 will not alienate its existing audience.**
  The core elements which made Age of Empires a success will not be changed in AGE 2.
  (Example of ideas excluded by this: Age of Flight Simulators, Age of Tetris.)

- **AGE 2 will build upon its predecessor.**
  Changes made from the Age of Empires design to the AGE 2 design will be evolutionary rather than revolutionary; AGE 2 will expand and refine components of the Age of Empires design.
  (Example of ideas excluded by this: first person perspective combat, RPG elements.)

- **AGE 2 will strive to achieve completion on or about July 1998.**
  Features added to the design will conceivably be achievable within the limits of the AGE 2 production time frame.
  (Example of ideas excluded by this: 16 bit color, full 3D engine.)

- **AGE 2 will generally keep within the limitations of its approximate historical time period**.
  Every effort will be made to accurately model the elements of the 450 - 1450 AD time period, except in cases where reality would sacrifice gameplay.
  (Example of ideas excluded by this: aircraft, aliens, submarines, atomic weapons.)

1.0 Interfaces

Section Notes

- Come up with a new name for the random map game.
- Improve the utility of the save game function.
- Input boxes should be same length as input fields.
- Improve the help interface.
- Trade interface; incorporate naval and overland options in a single UI, share like controls.
- Add ability for local taunt mute; disable taunt sending when locally muted.

General Interface Design Concepts

- All user interfaces will be rendered in a higher (800 x 600 x 256 color) resolution. This will be done even when the user elects to have the game itself (i.e. the game window) displayed in higher or lower resolutions.
- Text used in all interfaces will be handled through programmatic map text overlays to allow for a simplified localization process.
- Interfaces will make use of animated icons.
- Users will be provided with a customization feature that will allow them to save and recall their favorite interface settings.
- User interfaces will be combined and streamlined, allowing for quick, simple navigation and the most commands issued through the least number of screens.
- All interfaces will employ a cursor based help system using a (delayed) non-displaced roll-over text help system.
- Standardized size for all dialogs – 640 x 480

Pre-Game Interfaces

Overview

The main AGE2 pre-game (game setup) interface is designed to present the user with a functional and attractive interface that conveys all necessary information without being complex. The appearance of this interface will be modeled after buildings and villages of the medieval time period. Using a series of basic game icons (player number, map type, etc.) players will be able to select their setup preferences and watch as these choices are reflected in the appearance of the interface tapestry.

- Pre-game interface should allow the setting, display, and locking of game speed.

Pre-Game Interface Item, Game Speed Lock (Optional)

The AGE2 multiplayer pre-game interface will provide a display for a game speed lock. The host will select a game speed from among those listed in this dialog and his selection will be apparent to all players. When the game begins, no player will be able to alter the game speed.

Pre-Game Interface Goals

- Good transition between type selection and game set-up.
- Make selections obvious.
- Some screens use pictures to select (game settings / player prefs.)

In-Game Interfaces

Overview

The in-game interface has two primary components; a general static UI (a set of controls always displayed) and a specific conditional UI (a set space on the UI where various controls can be placed as conditions in the game demand). The general static UI consists of controls such as the score display button, the menu button, the chat button, and so forth. The specific conditional UI displays the buildings that can be built when a villager is selected, the units that can be trained at a building when the building is selected, and so forth.

In-Game Interface Element, User Interface Controls

General Static UI Buttons

- Menu

  Provides player with access to the following options:

  - Quit
  - Achievements
  - Scenario Instructions
  - Save
  - Load
  - Restart
  - Game Settings
  - Help
  - About
  - Cancel

- Diplomacy

  Allows the player to set relations and tribute resources with other players in the game; functions as in Age of Empires.

- Help

  Changes player's cursor to a help cursor that can be clicked on parts of the UI to receive related help messages.

- Chat

Allows player to selects players or player groups to chat to / with and also allows viewing of the chat buffer.

- Player Summary / Mini-Map Filter

  Each click cycles the player summary display (lower right corner of screen) and mini-map through a series of display filters. See the Player Summary section of this documment (page xx) for motr information. The possible modes are:

  - None

    Mini-map displays as normal but there is no player summary display.

  - Normal

    Mini-map displays as normal and the player summary shows the score (as in Age of Empires).

  - Combat

    Mini-map is displayed in combat mode and player summary shows combat statistics.

  - Resource

    Mini-map is displayed in resource mode and player summary shows resource statistics.

  - Trade

    Mini-map is displayed in combat mode and player summary shows resource statistics.

Multiple Unit Selections with the Specific Conditional UI

Desired implementation of this feature is to be determined.

Specific Conditional UI Buttons, Military Unit Selected

- Heal (only present if selected unit is a Monk).
- Stop
- Launch Flare

Specific Conditional UI Buttons, Siege Unit Selected

- Pack / Unpack

Specific Conditional UI Buttons, Villager Selected

- Build Economic Buildings
- Build Military Buildings
- Repair
- Stop
- Launch Flare
- Cancel

Specific Conditional UI Buttons, Ship Selected

- Stop
- Launch Flare
- Unload (only appears if units are loaded aboard selected ship).

Specific Conditional UI Buttons, Building Selected

- Set Gathering Point
- Cancel
- Any Trainable Units
- Any Researchable Technologies

In-Game Interface Element, Mini-Map

The mini-map is part of the general static UI located at the bottom right portion of the interface. This diamond shaped display will show the playing area to scale, using (primarily) blocks of the appropriate player's color superimposed over a scale map of the terrain to show the location of his building and units. As with the normal game display, undiscovered areas on the mini-map will remain black and fogged areas of the mini-map will be partly obscured by a gray overlay (with the underlying terrain still visible).

A small white bordered rectangle will always be visible on the mini-map, representing the location and boundaries of the current area being viewed by the player. This viewing area can be manipulated via the mini-map by moving the cursor to a portion of the mini-map and left clicking. This will cause the viewing area (and white bordered rectangle) to center on the clicked location. If a player left clicks and drags his cursor on the mini-map, the viewing area will be dragged as well but always centered on the player's cursor.

Players can issue location requiring commands (i.e. move *here*, build *here*, etc.) via the mini-map as if it were the actual playing area. This is done simply by clicking a location on the mini-map rather than on the actual playing area (note that the reduced scale of the mini-map display obviously precludes this from being overly accurate).

The location of and units involved in any noteworthy activity (i.e. a combat) will be identified using a visual cue (accompanied by audio) on the mini-map; this will consist of an initial box that will shrink to outline the rough location of the event followed by a flashing of the units involved in the event for its duration.

The mini-map has four filters, each of which corresponds to a player game summary display. A button next to the mini-map can be used to cycle the map and game summary display through all of the possible modes. One mini-map filter must always be active and only one can be active at any given time. This is not true of the player game summary display which can be made (by cycling through the modes) made inactive.

In-Game Interface Element, Mini-Map Filters

Normal Filter

- All player units are shown in their primary color transform color.

- Selected units are shown in white
- Terrain is shown in its normal color (i.e. blue for water, brown or green for land, dark green forests, etc)
- This filter is just like the Age of Empires diamond map.

Combat Filter

- Light green represents your player owned combat units.
- Medium green represents your player owned non-combat units (fishing boats, villagers, etc.).
- Dark green represents your player owned buildings
- Light red represents enemy combat units.
- Medium red represents enemy non-combat units.
- Dark red represents enemy buildings.
- Yellow represents neutral / non-allied units.
- Light Blue represents allied combat units.
- Medium Blue represents allied non-combat units.
- Dark Blue represents allied buildings.
- The mini-map is rendered in grayscale; water is black, forest is dark gray, and all land is lighter gray.
- Selected units are shown in white.
- Artifacts and ruins – magenta.
- Mercs show as allies or enemies.
- Gathering Point represented by pulsing colored dot.

Resource Filter

- Magenta represents a resource that can be picked up / foraged (anything: gold, trade goods, food etc)
- All food resources are dark yellow.
- Dark green represents forests or wood forage.
- Dark red represents ore.
- Gray represents stone.
- Player's buildings and working units are purple.
- Red for any enemy unit or building
- Idle villagers are light blue.
- Map displays only unharvested resources (i.e. not those being carried by villagers).
- Map colors for terrain are normal.
- Selected units are shown in white.

Trade Filter

- Moving trade units are shown in purple.
- Own trade buildings are shown in dark green.
- Idle trade units are shown in light blue.
- Other trade sites are shown in dark blue.
- Other trade units are shown in dark blue.
- Threat units and buildings are shown in red.
- Outlaws are also shown in red.

- Selected units are shown in white.

In Game Interface Element, Player Game Summary Display

The Player Game Summary is linked to a player's selection of a mini-map filter. This display appears when the player cycles through the possible filters by clicking the map filter button. An additional map filter (a duplicate of the normal filter) is provided in the cycle to allow players to view the mini-map in normal mode with no Player Game Summary Display active. This causes the cycle to be as follows:

1. Normal Mini-Map Filter with no Player Game Summary Display
2. Normal Mini-Map Filter with Score Player Game Summary Display
3. Combat Mini-Map Filter with Combat Player Game Summary Display
4. Resource Mini-Map Filter with Resource Player Game Summary Display
5. Trade Mini-Map Filter with Trade Player Game Summary Display

The various Player Game Summary Displays function as follows:

Player Game Summary Display, Score

This mode shows a stack of all player names and their related scores. In general, the order player names are presented in is based on the highest score; allied players are grouped together and arranged in order of the highest score within their group. Names of players no longer in the game remain in this display but have a single line through them.

To the left of a player's name will be space for icons, a red dot denoting a bad connect speed and a turtle representing a bad machine speed.

Player Game Summary Display, Combat

This mode shows the current number of combat units a player has by type.

Player Game Summary Display, Resource

This mode shows the player his total number of villagers and fishing boats along with the number of these that are currently idle. Below the villager portion of this display will also be a column showing the number of (non-idle) villagers currently working, grouped by task.

Player Game Summary Display, Trade

Trade units are not currently in the game. When added, the trade Player Game Summary Display will show a player's current number of trade units and the number of these that are idle. The functionality of this display can currently be tested using developer tools (CTRL+T) to place Trade Carts.

In-Game Interface Element, In-Game Tech Tree

A button on the player's UI will provide access to an in-game tech tree with a general implementation as follows:

- Use a 50 x 50 icon to represent buildings.
- Use a small text block for techs and units.
- Use a 2 or 3 pixel border to show units, technologies, and buildings (i.e. red for buildings, blue for technologies, green for units).

- All tech tree items should be capable of having a roll-over drop-down text box that can be used to provide additional related information.
- Use bright or dark shades to show things that can be built or researched and to show things that cannot yet be built or researched, respectively.
- Subdue any units, buildings, or technologies that are not available to a specific culture. Possibly use one bitmap shown on a black background and programmatically change the color of absented items to that of the background to obscure them.

In-Game Interface Element, Unit Visibility

Units will be visible behind tall (obscuring) objects:

- When a unit is partially or completely hidden by a taller object in the 'foreground' (closer to the bottom of the screen than the object) its outline will be shown 'through' the obscuring object.

- The outline will be shown through up to two levels of obscuring objects (a tree in front of a wall in front of a swordsman – or – a swordsman behind two rows of walls). The unit will not be displayed if it is behind more than 2 objects.

- An obscured unit will be selectable by clicking inside its outline area.

- Some parts of a unit may not be outlined – though generally the entire unit will be surrounded by an outline (this is to allow for overlays, such as the raider's sack of goods, the king's crown, a boat's sail).

- All player controlled units will be visible, including owned units, allied units, and enemy units.

- If possible, enemy, owned, and allied units will be outlined in different colors or in different style lines to be able to tell them apart.

In-Game Inteface Element, Other Features

Map 'Flare' Feature

When a unit is selected and the 'flare' is done, a special message is sent to allied players indicating the 'flare' with both a sound, and a mini-map indication of where the player was when flare was selected. The flare should stay on the mini-map for 2 minutes.

The flare *will* expose (and later fog) terrain surrouning it to the player's allies. There is no limit to the number of flares a player can launch; if a player wishes to use the flare to share LOS rather than researching shared LOS (cartography), more power to him.

Map 'Trouble Spots' Feature

The previous 5 battles (anywhere a building or unit took damage) are indicated on the mini-map. These change to a dim color after 2 minutes, and disappear after 4 minutes. These are displayed regardless of the selected filter.

Optional implementation – the trouble spots are indicated by successively darker shades of the 'trouble spot' color – Red for instance, starting as pink and fading to dark red for spot #5.

Other Suggested In-Game Interface Features

- UI item for universal gather points by type.
- UI item for villagers; drop all and go idle.
- UI item for villagers; cycle to next idle villager.
- UI item for mini-map; increased map display size.
- UI item for mini-map; zoom in / out control.
- UI item for unit visibility; obscured unit outline flashes when selected.
- UI item for player summary display; to the right of a player's score will be a space for icons, a small wonder icon showing that the player has built a wonder and a small crown icon if a player has killed or captured a King.

Post-Game Interfaces

AGE 2 Timeline

Currently, the AGE2 timeline is the same as that in Age of Empires. A second timeline version (one which represents the same data in a slightly different fashion) is currently being tested.

Timeline Icons

Timeline icons are not currently in AGE2. When these are enabled, the following events will cause a representative icon to appear in the appropriate location on the timeline:

1. Fuedal Age
2. Middle Age
3. Imperial Age
4. Construction of Wonder
5. Destruction of Wonder
6. Construction of Castle
7. Destruction of Castle
8. Battle event
9. Razing event
10. Swear Feality
11. Accept Feality
12. Declare Jihad
13. Kill King
14. Capture King.

Programmer Notes

Fine timeline technical data compliments of David Lewis.

Battle/Razing event determination

- TIME SLICE RATE the is the rate at which history events and population samples are taken. It is 25 sec.
- Battle and Razings event depend on two things: a numeric rate at which stuff occurs to state that a battle/razing is occurring, and total amount which specifies if the event(battle/razing) is significant enought to be recorder. So for example if the player is killing enough targets in any time slice then a possible battle is occuring.

- Battle determination depends on two items; the number of deaths the player is causing per time slice or the hit points killed per time slice. A battle is significant when a certain total number of kills or a certain total hit point killed is reached. Once a battle is determined to be sigificant then as long as battle is continuing at a certain rate no new battle events are marked.
- Razing determination depends only on a razing rate and a razing total, no extra concern with hit points of the buildings razed.
- the actual values of these figures are at present:

  TIME SLICE = 25 seconds
  BATTLE KILL RATE = 3 player kills
  BATTLE HIT POINT KILLED RATE = 300 hit points of player kills
  BATTLE KILL TOTAL = 6 total player kills
  BATTLE HIT POINT KILLED TOTAL = 600 total hit points of player kills
  RAZINGS RATE = 3 buildings destoyed
  RAZINGS TOTAL = 6 total buildings razed.

- The above figures are in the database and can be readily changed?????
- Only the 5 biggest battles and razings or keeped track off. if a larger event comes in then a smaller event is discarded.
- Note that both battle and razing determination keep no track of geographical area. So it counts all the player kills and razings regardless of were the occur to determine if the player has had a significant battle/razing event. Also they only track what the player is doing not what is being done to him.
- The consideration of hit points of the killed units was added to be able to track battles were the units are high hit point units so the number of kill is low in any time slice. this ws not added to the consideration of razings because I felt that that level of granularity was not needfor razings.
- Eventualy these events will so on the timeline with a color transformed icon to show who you wre whupping ass on.

AGE 2 Player Score and Rating Model

The current AGE2 score model is the same used in Age of Empires. A new score and rating model is forthcoming (see Section E, Score Model).

Miscellaneous Interfaces, AGE2 Editor

The current AGE2 editor is a slightly modified version of that in Age of Empires. This editor will eventually be redesigned.

New Editor Function, Copy and Paste

- Selecting the Terrain tab will open an interface offering the Map Copy as a brush type. Selecting this brush enables the copy and paste system.
- To copy an area, left click and drag over it; the area will be marked by a red overlay.
- Click Copy Selected Area to enable the manipulation buttons.
- Clicking Rotate Left, Rotate Right, Flip Left / Right, or Flip Up / Down will cause the copied area to change its facing.
- After manipulation, the user can place the copied area by moving the red overlay to the desired location and left clicking.

- New areas can be copied by clicking Goto Copy Mode and repeating this process.

Note: only square areas can currently be selected for copy and paste functions.

General Interface Data

Icons

There will be icons. Some will be animated.

Holistic Icon List

The following is a list of all of the commands a player will be able to issue (at some point) while using the AGE 2 UI. Some of these will certainly be normal buttons described only with text but others will be icons.

All icons are stored frames in .flc files with one file per category.

General Icons

(BTNCMD.flc)

Frame	Icon
	Help
	One page tech tree display
	Score
	Mini-map filter – combat
	Mini-map filter – resource
	Mini-map filter – trade
	Mini-map filter – normal
	Chat
	Diplomacy Options
	Achievements Display
	Main Menu
	Situation Summary
	Go to gather view
	Go to retreat view
1	Launch flare (to allies)
	Basic units tab
	Stance units tab
	Common units tab
	Common buildings tab
	Train buildings tab
	Research buildings tab
	Garrison buildings tab
2	Advance to age 2
3	Advance to age 3
4	Advance to age 4
5	Form-up

6	Attack
7	Heal
8	Stop
9	Charge special attack
10	Set pikes against charge special attack
11	Shield wall special attack
12	Repair
13	Move
30	Go to gather point
29	Go to retreat point
28	Set gather point
27	Set retreat point
26	Release (delete)
25	Guard
24	Patrol
23	Scout
22	Aggression level one – aggressive
21	Aggression level two – reactive
21	Aggression level three -- defensive
19	Aggression level four -- passive
15	Load / Unload toggle button for transport capable boats
14	Load / Unload toggle button for semi-mobile units and buildings (pack / unpack)
	Build military buildings
	Build economic buildings
18	Form-up
	Set gather point
	Set retreat point
	Stop
17	Form line
16	Form column
45	Form group
44	Disband / ungroup
	Set gather point
43	Ring Alarm bell
42	Decompose / delete building
41	Gate up / down
40	Disband wounded
39	Garrison portrait – villager class
38	Garrison portrait – priest class
37	Garrison portrait – footman class
36	Garrison portrait – mounted class
35	Garrison portrait – ranged class
34	Garrison portrait – relics class
33	Garrison, all out
32	Garrison, all out, ally only
31	Undiscovered trade route
60	Land trade routes 1
59	Land trade routes 2
58	Land trade routes 3

57	Land trade routes 4
56	Land trade routes 5
55	Land trade routes 6
54	Land trade routes 7
53	Land trade routes 8
52	Land trade routes 9
51	Land trade routes 10
61	Sea trade routes 1
62	Sea trade routes 2
63	Sea trade routes 3
64	Sea trade routes 4
65	Sea trade routes 5
46	Sea trade routes 6
47	Sea trade routes 7
48	Sea trade routes 8
49	Sea trade routes 9
50	Sea trade routes 10
	Trade Goods
	Gold
	Ore
	Wood
	Stone
	(research items)
	TIMELINE ITEM ICONS
	Build housing
	Stop construction
	Buy ore level 1
	Buy ore level 2
	Buy ore level 3
	Buy ore level 4
	Buy ore level 5
	Buy ore level 6
	Buy ore level 7
	Buy ore level 8
	Buy stone level 1
	Buy stone level 2
	Buy stone level 3
	Buy stone level 4
	Buy stone level 5
	Buy stone level 6
	Buy stone level 7
	Buy stone level 8
	Buy food level 1
	Buy food level 2
	Buy food level 3
	Buy food level 4
	Buy food level 5
	Buy food level 6
	Buy food level 7
	Buy food level 8

	Buy wood level 1
	Buy wood level 2
	Buy wood level 3
	Buy wood level 4
	Buy wood level 5
	Buy wood level 6
	Buy wood level 7
	Buy wood level 8
	Sell ore
	Sell stone
	Sell food
	Sell wood
	Trade – nothing available

Building Icons

(*.flc)

Frame	Icon
1	Blacksmith
2	Church
3	Dock
4	Farm
5	Town Center
6	Town Center (fortification upgrade)
7	Market
8	Mill
9	Trade Workshop
10	University
11	Guard Tower
12	Wall
13	Gate
14	Barracks
15	Barracks (archery range upgrade)
16	Castle
17	Siege Workshop
18	Stable

Unit Icons

(*.flc)

Frame	Icon
1	Cavalry, Lance portrait
2	Cavalry, Knight portrait
3	Cavalry, Paladin portrait
4	Gaia, Deer portrait
5	Gaia, Fish portrait
6	Gaia, Hawk portrait
7	Gaia, Outlaw portrait

8	Gaia, Wolves portrait
9	Infantry, Spearman portrait
10	Infantry, Berserker portrait
11	Infantry, Swordman portrait
12	Infantry, Pikeman portrait
13	Infantry, Heavy Swordman portrait
14	Infantry, Two-Handed Swordman portrait
15	Misc, Artifact Cart portrait
16	Villager, Male portrait
17	Villager, Female portrait
18	Missile, Archer portrait
19	Missile, Compound Archer portrait
20	Missile, Cavalry Archer portrait
21	Missile, Crossbowmen portrait
22	Missile, Heavy Crossbowmen portrait
23	Missile, Hand Cannoneer portrait
24	Ship, Cog portrait
25	Ship, Fishing Ship portrait
26	Ship, Galley portrait
27	Ship, Junk portrait
28	Siege, Mangonel portrait
29	Siege, Covered Battering Ram portrait
30	Siege, Trebuchet portrait
31	Siege, Bombard Cannon portrait
32	Siege, Scorpion Ballista portrait
33	Special, Infiltrator / Spy portrait
34	Special, Monk portrait
35	Trade, Cart portrait
36	Unique, Cataphract portrait
37	Unique, Chu-Ko-Nu portrait
38	Unique, Dervishes portrait
39	Unique, Goth Berserker portrait
40	Unique, Janissary portrait
41	Unique, Longboat portrait
42	Unique, Longbowmen portrait
43	Unique, Mobile Siege Unit portrait
44	Unique, Multipurpose Cav portrait
45	Unique, Samurai portrait
46	Unique, Teutonic Knight portrait
47	Unique, Throwing Axemen portrait
48	Unique, Woad Berserker portrait
49	King portrait
50	Queen portrait

Cursors

There will be a cursor.

Fonts

There will be fonts.

Credits

There will be credits.

Hotkeys

Hotkey Table

Key	Base	Shift +	Ctrl +	Alt +
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				
U				
V				
W				
X				
Y				
Z				
1				
2				
3				
4				
5				
6				
7				
8				
9				
0				
F1				
F2				
F3				
F4				

F5				
F6				
F7				
F8				
F9				
F10				
F11				
F12				
Tab				
Backspace				
Spacebar				
Enter				
Insert				
Delete				
Home				
End				
Page Up				
Page Down				
Arrow Up				
Arrow Down				
Arrow Left				
Arrow Right				
ESC				
` or ~				
- or _				
= or +				
, or <				
. or >				
/ or ?				
; or :				
‘ or ”				
[or {				
] or }				
\ or |				

2.0 Ages

The Ages in General

As with Age of Empires, AGE2 also makes use of four distinct ages to gate a player's progression in the game by making certain technologies, buildings, and units available for research during each of the following periods:

- The Dark Age
- The Middle Age
- The Feudal Age
- The Imperial Age

Advancement Through The Ages

AGE2 will require players to meet a specific set of prerequisites before they are allowed to enter into and make use of the advantages in any age. As with Age of Empires, the AGE2 interface (Town Center) will have an “advance to next age” button that will allow the player to dictate when he should progress into the new age. This control will alter its apperance (subdue / unsubdue) to reflect its availability based on the status of the prerequisites.

AGE2 will use the same method as Age of Empires to enable advancement throught the various ages. That is, the player must construct a number of buildings from the current age and expend a specified amount of resources to enter into the next age, as follows:

Dark to Feudal

Any two buildings and 500 food.

Feudal to Castle

Any two buildings, 800 food, and 400 gold.

Castle to Gunpowder

Any two buildings 1000 food and 800 gold.

3.0 Resources

All data in this chapter pertains to the resource model intended for AGE2 and not the current resource model in place.

Resources in General

The current resource model in AGE2 is the same as that in Age of Empires. A new resource model, a slightly altered version of that used in Age of Empires, will be added in the future. This new model will introduce a fifth resource (ore) to the game and will remove gold as a harvestable resource. Instead, gold will be aquired through trade and an automatic fee generated by harvesting resources. Other changes will include resources that renew but, for the most part, the basic function of the model will remain the same (i.e. to get wood, task a villager on a tree).

Basics of Resource Model

Players generate raw materials by assigning villagers to harvesting / gathering tasks. When sufficeient amounts of these resources are gathered, the player can use them to construct buildings, train units, or research technologies.

For every 50 units of a resource gathered, the player adds one unit of gold to his treasury (abstractly representing a form of taxation). Resources can also be converted directly to gold through internal trade at a marketplace and gold can similarly be used to purchase resources (see section 4.0, Trade).

Non-traditional resource gathering is possible through scavenging. Destroyed buildings (and possibily some units) will yield salvage piles that can be harvested for the goods they contain (see section 11.0, Buildings).

As with Age of Empires, various technologies will improve a player's ability to gather resources. New to AGE2 will be special conditions that alter this ability as well, namely in relation to a player's inherent ability to generate gold. One example of this is the operation of a relic, which can be used to increase a player's gold income (see section 13.0, Relics).

Renewable Resources

Some resources will renew as a game progresses, providing for increased amounts of these resources and a more realistic playing environment. Resources such as trees, animals, fish, and outlaws will be modeled as renewable in the game and their stocks will replenish if the player does not deplete them entirely. These resources will replenish at a set rate (their expansion limited by their environment so that evergreen trees cannot onto a desert or building, for example) and to a set global maximum. Certain renweable resources may appear under the LOS fog of war as they replenish.

For information related specifically to the renewal of gaia units in the game (deer, fish, etc.) see Section 9.0, Gaia Units.

Transferring Resources (Tribute)

See section 6.0, Diplomacy.

Farms

See section 11.0, Buildings.

4.0 Trade

All data in this chapter pertains to the trade model intended for AGE2 and not the current trade model in place.

Overview of Trade Model

Currently, there is no trade model (or even trade for that matter) in AGE2.

Internal Trade

Once players have built a market, they can conduct trade by means of the internal trade interface which appears when this building is selected. This interface consists of two rows of four buttons, one button in each row for each of the resources (food, wood, stone, ore). Superimposed over the top buttons are the selling prices for each commodity and over the bottom buttons the buying price.

A click of any upper "sell commodity" button will cause the player to sell 100 units of the selected resource from his inventory and receive the amount superimposed over the button in gold. A click on any lower "buy commodity" button will cause the player to purchase 100 units of the selected resource at the cost (in gold) of the amount superimposed over the button. Players attempting to buy or sell resources when they do not have enough of a commodity or gold will be given a "you cannot" message (buttons that have no function, such as the "sell" buttons when a player has less than 100 of a resource, will also be grayed out). Players must also pay a 10% fee on any transaction (to cover the cost of moving the commodities).

Buying a lot of any resource will cause an increase in the buying price of that good, selling a lot of any resource will decrease its selling price. As purchases and sales influence the price of goods, the internal trade interface at the market will change to reflect the new prices; the prices superimposed over the buttons will update with every exchange.

All resources begin with a 1 gold to 1 unit value but any purchase or sale made by any player in the game will impact the price of commodities. There is no limit to the price a good can be driven up to but a lot of 100 will never sell for less than 1 gold. As time goes on, the game will slowly attempt to level the price of all goods back to the original 1 to 1 value (increase or decrease prices by 1 gold per 10 seconds).

Player-to-Player Trade

Players can conduct player-to-player trade over land or water. Over land, trade is conducted using the trade cart unit built at the market. Over water, trade can be conducted using the cog or any variety of galley. Trade units have the following capacities:

Unit Capacities

Unit	Base Capacity (trade goods)

Cannon Galley	2
Cog	8
Galley	2
Trade Cart	4
War Galley	1

Player to player trade is based on the transfer of trade goods. Trade goods are manufactured at the marketplace or dock automatically when a player's trade unit is following a trade route and arrives empty. Trade goods cost 10 each of wood, stone, ore, and food to manufacture. Trade goods are an "invisible" resource; they are manufactured as required at the appropriate location without direction from the player.

Every trade good takes 10 seconds to manufacture. A marketplace or dock manufactures trade goods on demand (starting when an empty trade unit arrives) and does not stockpile trade goods. Trade units will loiter around a dock or marketplace while awaiting trade good manufacture. A dock or market will manufacture only one trade good at a time and (if multiple trade units are around) will load it into the vessel closest to being full (if vessels are equally full, it will load them into the one with the smallest capacity first).

To conduct player to player trade, the player builds a trade unit, selects it, and clicks on an appropriate trade site (another player's dock for ships or another player's marketplace for the trade cart). The selected trade unit will then approach the nearest dock or market owned by the player, be filled with the appropriate amount of trade goods, and head for the targeted trade site. Upon arrival, the player's trade unit drops its cargo in exchange for an amount of gold (no player gets the dropped trade goods). The unit then returns to the dock or marketplace from which it originated where the gold it is carrying is deposited in the player's inventory. At this point, the trade unit will load a new cargo of trade goods and repeat its previous route.

Once ordered, trade units will continue on a route until given other orders or killed. If the trade location they are attempting to trade with is destroyed, they will return to the marketplace where they originally received their trade goods and await orders. If they are attacked they will flee a certain distance and then attempt to continue on their route. If the trade cart is killed, it leaves behind a salvage pile which can be pillaged (as a building) for a random amount of resources.

The amount of gold received in exchange for trade goods is calculated using a base value of 40 gold for each trade good carried. This is then modified by the following distance and age modifiers:

Condition	Modifier
Closest reachable trade location is <10% map size away.	-70%
Closest reachable trade location is 11 – 20% map size away.	-50%
Closest reachable trade location is 21 – 30% map size away.	-30%
Closest reachable trade location is 31 – 69% map size away.	+/- 0%
Closest reachable trade location is 70 – 80% map size away.	+100%
Closest reachable trade location is 81 – 90% map size away.	+200%
Closest reachable trade location is 91> map size away.	+300%
Location being traded with is 2 superior ages (Age 2 player trading with an Age 4 player)	-20%
Location being traded with is 1 superior age (Age 3 player trading with an Age 4 player)	-10%
Location being traded with is 2 inferior ages (Age 4 player trading with an Age 2 player)	+20%
Location being traded with is 1 inferior age (Age 4 player trading with an Age 3 player)	+10%

In the table above, "closest reachable trade location" refers to the distance between the two closest trade locations between the player and the player he has chosen to trade with. "Reachable" is defined

as not requiring any interim transportation (i.e. a market that would require a trade cart to be loaded on a ship, moved across the water, and then unloaded would not qualify as “reachable”). Both the closest reachable and the inferior / superior age modifiers are applied based on the circumstances of the game at the time the player’s trade unit exchanges its cargo for gold.

10% of all gold generated in trade goes to the market of the player being traded with.

Programmer Notes

Technical trade related data from David Lewis.

Calculation of changes in world prices

- all buys/sells are in lots of 100 of any commodity. this amount is fixed.
- The buy/sell costs have lower and upper bounds. The lowest price is 1.0 gold per lot of 100. The highest price is 9999.0 gold per lot of 100. the starting buy/sell prices are set to 100 gold per lot of 100.
- The amount that the world price can change based on each buy/sell also have lower and upper bounds. The smallest a price can change is by 1.0. An example is going from 100.0 gold to 99.0 gold per lot of 100. The largest delta is 10.0 gold.
- The formula for the price changes is as follows:

    price change = (A + SQRT(B + (C*price_delta))) where

    price change = amount the world price changes.
    price_delta = the number of changes +/- from the baseline of 0.0 to world price, i.e. this counts the buys/sells of a commodity
    A, B, C = constants, definded in code. They are: A = 0.0 B = 10.0 C = 250.0

This is a square root function so the price delta is greatest for the first few buys/sells. If 10 sells of a commodity are done the change of the price change gets lower and lower. Note that if the opposing action is done i.e. buys the price change will start going back up.

Commodity Buy/Sell gold values

- Sell prices are the world commodity price plus a percent trade vig rate which increase the price
- Buy prices are the world commodity price minu a percent trade vig rate which decrease the selling price.
- The trade vig rate is 10%.
- The prices shown of the buy/sell buttons on the Market building UI reflect the trade vig rate.

Commodity trading limits and their refresh rate

- players can do unlimited sells.
- player is limited on the number of buys he can do. This limit is the number of flags on their best market. An example is a 3 flag market the player can only do 3 buys of wood., and 3 buys of ore, etc.

- Sells of a commodity will reduce your limit to buy. For example the player has a 5 flag market, this means he can only buy 5 lots of wood. The player buys 3 lots of wood, now he can only buy two more lots. If the player then sells 2 lots of wood his by limit will go up to 4 lots. Sells can also drive the buy limit above the that of the market. The player sells 10 lots of wood and has a 5 flag market then his buy limit is 15 lots.

Your buy limit will refresh over time to approach the limit imposed by your best market. The rate is **500 secs/# flags of best market** . When ever this time has counted off the player buy limit will go up or down by **one** to approach the limit of his best market. If your best market changes then this time will be altered.

5.0 Combat

General Combat Model

Facings

This feature is currently disabled in AGE2.

Facing properties (rear and flank) will be assigned to appropriate AGE 2 units; units which do not have an organic defense (i.e. catapults) will not be assigned facings and attacks against them will be resolved without modifier regardless of the direction of attack. Attacks against the rear facing will do 50% more damage and those against a flank will do 25% more.

- Unit and computer player AI will be modified to handle unit facing.
- If commanded, units will face the unit they are ordered to attack.
- If left to their own devices, units will face the most valuable target present per the AI.
- It will not be necessary to modify the interface to accommodate this feature; players will never have to issue facing commands independent of a hostile target.

Formations

This feature is currently disabled in AGE2.

There are two play options for formations in AGE2, an automatic formation system and a manual formation system, both detailed below. Players are able to select the system they wish to use before or during a game but must research the leadership technology to actually enable the use of formations in the game. Before leadership is researched, no formation options are available and all units move in massed groups as in Age of Empires.

All units are assigned a specific class (see the Formation Classes Table, appendix E, for details) which is used to determine what formations they may be placed in and what position in a formation they should take. In the automatic mode, the units selected and orders issued automatically dictate the formation a group of units will be placed in. In the expert mode however, a user must issue orders to set a formation. This is done by first selecting a group of units, the classes of these are then checked against the requirements of each formation, and those formations possible are presented to the user through the UI.

While in a formation, selecting any unit of the formation selects the entire formation and all orders given to it are given to it as a whole. The UI provides “about face” and “wheel left / right” controls to allow the players to manually change the facing of a formation at will (and in place). A “break formation” button is also available and use to return the units of a formation to a non-formation state.

In combat, units in a formation will break ranks and move to attack enemy units. If this occurs and the enemy units are defeated, all units in a formation will fall back into their original formation following the combat (when no other enemy units are in their LOS).

Of the four formations currently planned, there is none that excludes any particular unit from being placed inside it (this does not mean that this will not change in the future). If units of dissimilar speeds

are placed in a formation together, the entire formation will move at the pace of the slowest unit. Formations form as follows:

- Line

  Lines form with two general areas: hearty units such as infantry and cavalry form at the front of a line and more vulnerable units such as monks, villagers, and archers form at the rear. Starting at a central point, units will form in lines up to 10 units abreast. If more than 10 of one of the two types is placed in a line formation, the line will be doubled. Cavalry units will form in eqaul numbers on the front flanks of a line with infantry between them. Vulnerable units will form in the rear ranks with ranged units given forward priority (shorter ranged units will be placed before longer ranged units) and other (non-combat) units forming behind these in no particular order.

  Line Formation, Example 1

  Given 4 archers (**A**), 3 knights (**K**), 1 villager (**V**), and 6 swordsmen (**S**), a line will form as follows:

  KSSSSSSKK
  AAAAV

  Line Formation, Example 2

  Given 10 archers (**A**), 10 composite archers (**C**), 4 knights (**K**), and 8 villagers (**V**), a line will form as follows:

  KKKK
  AAAAAAAAAA
  CCCCCCCCCC
  VVVVVVVV

- Column

  As with the line formation, columns also form with stronger units at the fore. Columns will form in lines up to 3 abreast with each fourth unit creating a new line. Columns will form in the order cavalry, infantry, archer / missile, other. As with line formations, the shortest ranged missile units will be placed closest to the front of the formation and those with greater ranges behind them.

  Column Formation, Example 1

  Given 4 archers (**A**), 3 knights (**K**), 1 villager (**V**), and 6 swordsmen (**S**), a column will form as follows:

  KKK
  SSS
  SSS
  AAA
  AV

  Column Formation, Example 2

  Given 10 archers (**A**), 10 composite archers (**C**), 4 knights (**K**), and 8 villagers (**V**), a line will form as follows:

KKK
KAA
AAA
AAA
AAC
CCC
CCC
CCC
VVV
VVV
VV

- Box

Boxes form in three separate areas. In an outer ring, cavalry and infantry units will form. In a smaller ring behind this, missile units will form. In the center, protected units (monks, villagers, siege units, or trade units) will gather. The size of a box formation is partially dictated by the number of units placed in it but also follows some basic guidelines: the missile unit ring will always form at least 3 tiles from the protected units and the cavalry and infantry ring will always form 3 at least 3 tiles from this. In addition, missile units will attempt to maintain a 2 tile seperation within their ring while infantry and cavalry will attempt a minimum 3 tile seperation. If too many units exist to allow this seperation, the size of the ring will expand to allow it. The box formation will attempt to place units equally (i.e. if you have 4 archers in a box formation, it will place one on each side of the box).

Boxes are the only formations that force a unit AI routine on the units within. While in a box, the infantry and cavalry in the outside ring will leave their stations only to attack an enemy unit within 5 tiles of their location. Also, missile units will not perform their routine back-up-and-shoot maneuver and will give targeting priority to the unit closest to the protected units. If a box is ordered to attack an enemy unit, it will not break up to do so.

Box Formation, Example 1

Given 4 swordsmen (**S**), 4 archers (**A**), and 4 villagers (**V**), a box will form as follows:

								S									
								A									
								V	**V**				**A**				**S**
S				**A**				**V**	**V**								
									A								

									S								

Box Formation, Example 2

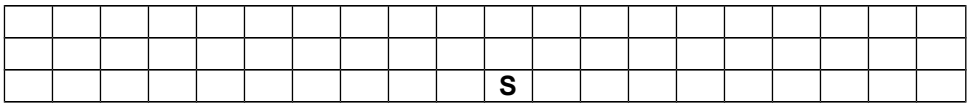
Showing distribution of unlike units in uneven quantities; given 10 swordsmen (**S**), 2 Lance Cavalry (**L**), 4 pikemen (**P**), 10 archers (**A**), 2 crossbowmen (**X**), and 4 villagers (**V**), a box will form as follows:

	L			**S**				**P**				**S**				**S**	
					A			**X**			**A**						**S**
S													**A**				
				A													
								V	**V**				**A**				**P**
P				**A**				**V**	**V**								
													A				
				A													**S**
S						**A**			**X**			**A**					
	S				**S**				**P**				**L**				**S**

Box Formation, Example 3

Showing increase in formation size when too many units exists to maintain minimum seperations; given 4 swordsmen (**S**), 4 villagers (**V**), and 14 Archers (**A**), a box will form as follows:

									S									
					A			**A**			**A**			**A**				
				A											**A**			
									V	**V**								**S**
S				**A**					**V**	**V**					**A**			
				A											**A**			
					A			**A**			**A**			**A**				



- Wedge

  The wedge forms using the same basic rules established for formations but with cavalry and infantry positions reversed. That is, infantry (pikemen are given priority) lead this formation, followed by cavalry, followed by archers (shortest range closest to the front, and followed by vulnerable units. This formation begins with one unit in a row with each row increasing the total number of units in it until all units are in the formation. When a line is formed by a number of unlike units, these units will divide their position to be even on both sides of the formation (for example, pikemen have priority over swordsmen but if there are 2 left to place in a column of 3 total and the next unit is a swordsman, the placement will be pikeman / swordman / pikeman rather than pikeman / pikeman / swordman).

  Wedge Formation, Example 1

  Given 5 pikemen (**P**), 2 swordsmen (**S**), 4 lance cavalry (**L**), and 6 villagers (**V**), a wedge will form as follows:

  P
  PP
  PSP
  LSLL
  LVVVV
  VV

  Wedge Formation, Example 2

  Given 7 swordsmen (**S**), 2 knights (**K**), 1 Monk (**M**), and a Packed Trebuchet (**T**), a wedge will form as follows:

  S
  SS
  SSS
  KSMK
  T

Automatic Formations

There are three basic formations that are used in AGE2's automatic formation model: the line, the column, and the box. Any time a group of units is selected, they will automatically be placed in one of these formations when given orders. Once units are placed in a formation using the automatic formations system, the units become a group and, as with expert formations, selecting any one of these selects the entire group. Individual units can be removed from an automatic formation via the "break formation" button on the UI. Once an automatic formation has been broken, the ramaining units are no longer part of any formation, they must again be selected and issued orders together to have them reform into a formation. Additional units can be integrated into an automatic formation by selecting the formation and units to included at the same time, then issuing a command. Additional units can also be added to a formation by selecting the desired additions and right clicking on a unit in that formation. The rules for which formation will be selected are as follows:

- Line

  Units will form in a line when given orders to attack. Infantry and cavalry units will form at the front of a line (with infantry in the center of the line and equal numbers of cavalry at the flanks) and archer units will form up behind them. After an attack, units will remain in a line formation occupying their old positions (i.e. not filling those vacated by the dead). When ordered to move, units in a line formation will fill in the spaces vacated by lost units. Units in a line ordered to move ten tiles or less from their present location will remain in a line formation, if ordered to move a greater distance they will switch to a column (see below). A group of units that was moved in a column but has since stopped and become idle will change into a line formation facing advanceing enemy units when these appear inside their LOS (facing priority given to closest enemy / bulk of enemy). A group of units in a column formation that are still in the process of moving will not form a line if an enemy is sighted (but will if they arrive at their destination and the enemy remains inside their LOS).

- Column

  Units will form a column when given orders to move. If the selected units are not currently in a formation or are members of different formations, they will automatically form a column when given orders to move. However, if all of the selected units are currently of the same line formation, they will form a column only if given orders to move 11 or more tiles from their present location (see above). Units in a line formation will form with mounted units at the fore, infantry in the middle, and archers and other units in the rear.

- Box

  Units will form a box if a mobile (including packed) siege weapon, King, or monk is among the units selected and given orders; a box formation forms *only* when this condition is met and any order (move or attack) is given. The siege weapon, King, or monk in a box formation will always be placed at its center. Missile units will form a rbox around this unit or units and all other units will form a box around the missile units. While in a box formation, missile units will give attack priority to the enemy unit closest to the protected units in the center. All other units will attack the closest enemy unit attempting to break their ranks. All units in a box formation will remain in a box formation until issued orders without a siege weapon, King, or monk among them.

Manual (or Expert) Formations

The expert formations option is enabled by the player in settings or in the pre-game. The expert formations system allows the player full control and increased options involving his formations. There are four basic formations possible using the expert option: column, line, box, and wedge. These formations are formed when units are selected and a “form” order issued via the UI. Individual units can be removed from an expert formation via the “break formation” command on the UI; this will cause all units to exit their currently assigned formation where they can they be manipulated independently. If a player wishes to continue using a formation minus selected units, it must be broken, the units extracted, and the formation then rebuilt. Additional units can be added to an existing formation by selecting the units to be added and right clicking them on (unit in) a formation.

Custom Formations (OPTION)

An option for inclusion with the expert formation system; players opting for expert formations would be able to design and use their own formations in the game.

Formation Bonuses (OPTION)

An option for inclusion with all formations; formations would be given artificial bonuses associated with their intended operation (i.e. units in a column formation move 10% faster).

Special Attacks and Defenses

None of the AGE2 special attacks are currently enabled.

Shield Wall

This applies to swordsmen and heavy swordsmen units. When alert (facing a missile attack), these units will raise their shields before them. While in this state they receive an additional +1 pierce armor modifier. If the units attack or move, this modifier is nullified. If the units are not facing a missile attack, they will not execute this defense but they will turn toward the attack so that they may defend against a second.

Pikeman Lunge

Pikemen have the ability to close the last three tiles between themselves and a mounted foe at a pace quicker than their normal movement rate. This is automatic and happens any time a pike unit targets a mounted enemy and closes to within this distance.

Set Against Charge

When idle, pikemen will set their pikes against a charge. If attacked by lance cavalry while in this state, pikemen will do **triple** their normal damage on the first attack. If pikemen are moved or given orders to attack, this bonus is nullified. If they are attacked from the rear or flanks this bonus does not apply.

Charge

Lance Cavalry, Paladins, and Knights may charge opponents to inflict a double damage attack. This special attack is executed by selecting the appropriate unit or units, clicking the “special attack” UI button, and selecting a target. The selected cavalry units will then charge their given target. Alternately, this order can be given by double right clicking the target. Charging units must be at least 2 tiles from their target to charge.

Similar to the priests’ conversion attack in Age of Empires, the charge attack may be done only when there is enough power to execute it. After a charge attack, units must rest for a period of time (60 seconds, base) before the option is available again. During this time, they may perform all other actions as normal. An indicator will appear on the UI to show a player the “recharge” status of this attack. While unavailable, the “special attack” button on the UI will be grayed out.

Any charge attacks targeted at pikemen who are set against charge will increase the pikemen bonus (normally triple damage) to **quadruple** damage.

Conversion

In AGE2, the monk unit will be able to perform a conversion attack similar to that of the priest in Age of Empires. This will be the only attack for this unit and will thus require no special UI. As with the priest

in Age of Empires, the monk conversion attack will be ranged, will be randomly effective, and will require a recharge between multiple attacks.

Pillage

Pillage is a special attack unique to certain units of the raider cultures.

Raiders can steal assets from enemy buildings by clicking on any of their military units, clicking the special attack "raid" button on their UI, and clicking on the location they wish to pillage from. Units thus assigned will move toward the targeted building and "pillage."

Pillage takes a short amount time to complete (units will execute an attack or pillage animation during) and rewards the pillager with an amount of a specific resource. The exact amount of time required to pillage is determined in the same manner as the monk's conversion chance; that is, the pillager has a per cent chance (in this case, 33%) to successfully pillage and each "attack" he makes (at the unit's set rate of attack) allows the "dice" to be rolled again. Unsuccessfull pillage attempts result in damage to the target at 50% of the normal level. Successful pillage attempts do not cause damage.

When successful, resources are removed from the inventory of the player who owns the building being pillaged at a random amount ranging from 10 to 25 units per pillager. Raider units tasked to pillage will immediately attempt to return to their closest town center after pillaging an enemy building. Raider units carrying pillage must return it to their town center before the items are added to their inventory (if a trip aboard ship is required for this, raider units carrying pillage do not take up additional space.)

Raiders will only be rewarded with pillage if the player owning the building they have targeted for pillage has these resources in his inventory. Items available for pillage at each building are as follows:

Building	Pillage Item
Archery Range	Ore or Gold
Barracks	Ore or Gold
Blacksmith	Ore
Church	Gold
Dock	Wood or Food
House	Food
Market	Any
Mill	Wood or Food
Siege Workshop	Wood
Stable	Food
Town Center	Any
University	Gold
Wonder	Gold

Raiders carrying pillage will be identifiable through an overlay. These units will not auto-attack sighted enemies and if given orders to attack they will immediately drop whatever they were carrying. In addition, if any raider is damaged to 50% of his hit points or lower, he will drop whatever he was carrying. Dropped resources will remain on the map where dropped; any pillage capable unit or villager will be able to pick these up.

Raiders cannot target unoccupied (20% or lower HP) buildings for pillage.

Raiders can also target player trade carts for pillage. The resource pillaged in this case will be determined based on what the trade cart was carrying.

Kidnapping

Kidnapping is a special attack unique to certain units of the raider cultures.

Raiders can steal enemy villagers. This is done in the same manner as pillage, only with an enemy villager targeted rather than an enemy building. Most of the operational rules are the same:

- Raiders must return a kidnapee to their town center to convert the unit.
- If travel aboard a ship is required, raiders carrying villagers still take only one space.
- Raiders will drop a kidnapee if damaged below 50% or if given orders to attack another unit. When dropped, kidnapees will flee screaming toward their nearest town center.

Some differences:

- Villagers targeted for kidnapping take no damage when kidnapped.
- Only enemy villagers can be targeted for kidnapping.
- Only mounted raider units can kidnap enemy villagers.
- It takes no time to kidnap; the raider unit runs toward its intended target and executes the kidnapping when it "touches" this target.

Enemy villagers returned to the raider town center take a short while to be "indoctrinated"; this process does not interrupt any other training or research being done at the town center. If feasible, a UI element should be added to show the player the status of any kidnapee conversions. When a kidnapee has been fully converted, the villager pops out of the town center as if built there.

Ship Special Attacks

- Basic Operation

In AGE 2, the Cog and Galley type ships can attack. All of these have a set base attack that is adjusted based on the number of units garrisoned aboard (just as tower attacks are adjusted by their garrison number and type). Galley units have an inherent attack while Cog units do not – if a Cog has no ranged troops aboard, it has no attack.

In age 3, three technologies become available: the ram, Greek fire, and grapple and board. Each of these costs the same (300 wood / 200 gold) and takes the same amount of time to research (100 sec). Only one of the three may be researched. Once one is selected, the others become unavailable. If the research of one is cancelled before finishing, all three become available again. The research of any of the three technologies impacts only the operation of the **war galley** units (not cogs). Ships given special attack orders do not also attack with their normal attack while attacking (so, a galley doesn't fire arrows at another ship while ramming it).

All ship special attacks will have a UI button associated with the attack. Use of this button can be avoided through clever mouse manipulation, when a vessel is selected and a target double right clicked, any special attack possible will be initiated.

- Ram

The ram provides ships with a special attack that does 50 points of damage to the target and 10 points of damage to the attacker. Once researched, any war galley owned by the player will have a "Ram" button on its interface. Clicking this button and a target will cause the vessel to move toward

and “ram” its target. A ship must be at least 3 tiles away from its target to initiate a ram. After a ramming attack, the vessel will be adjacent to its target and will have to move to a distance of 3 tiles or greater to initiate another ramming attack. If a targeted vessel flees, the attacker will pursue.

- Greek Fire

Researching Greek fire causes a “Greek Fire” button to appear on the interface of all war galley type ships. Clicking on this button and clicking on a target ship will cause the player’s vessel to close with its target (to within 3 tiles) and attack. This attack will cause damage directly to any units being carried aboard the targeted ship. If any trade goods are aboard, one will be lost in each Greek fire attack. All units aboard will lose 20 hit points per attack. Once targeted, a ship attacking with Greek fire will continue to do so until sunk or until there are no units left aboard to attack. If a targeted vessel flees, the attacker will pursue. The rate of fire for Greek fire attacks will be 6 seconds.

- Greek Fire Targeted at Water (optional)

  If a player selects the Greek fire special attack and targets a patch of empty water, that location (2 x 2) will be covered with scary flaming Greek fire. This will continue to burn for 30 seconds. Players can target different patches of water at the same rate as they can normally attack (3 seconds per). Ships passing through patches of burning water will take damage as follows:

  1. Each individual 2 x 2 patch of burning water is equal to one normal Greek fire attack (so for every patch the ship drives through, 1 trade good is lost and every unit aboard takes 20 points of damage).
  2. Each 3 seconds spent in a burning water tile is equal to one normal Greek fire attack (so if a vessel is parked on a burning water tile, it loses 1 trade good and every unit aboard takes 20 points of damage every 3 seconds).

  Note that this damage is applied to all units, friend and enemy alike (fire not being discriminating).

- Grapple and Board

Researching this technology causes a “Grapple and Board” button to appear on the war galley ship interface. Clicking this button and clicking a target causes a player’s ship to approach the target. Once adjacent to the target, both ships become locked and immobile. At this time, both ships attack one another as normal, however, the attacking ship takes damage while the targeted ship does not. The targeted ship is given “virtual damage”; the attack is calculated as if both ships were simply attacking one another but the targeted ship does not appear to be taking any damage to the players.

There are now two possible outcomes:

1. The attacking player takes too much damage and sinks. In this case, either the targeted ship or other ships around him dole out too much damage for the attacker to handle. The originally targeted ship is released and operates as normal once again but has 20% of the total “virtual damage” subtracted from its HPs.
2. The targeted player takes too much damage and “sinks”. In this case, the targeted ship has taken “virtual” damage sufficient to sink it if it were actual damage. If this occurs, the targeted vessel has 20% of the virtual damage it received subtracted from its HPs but the vessel becomes the property of the attacking player. Any units aboard the vessel are lost but any cargo remains.

Unit AI Modifier: Alert State

Unit AI should be modified to allow units to have an alert state. Units will enter into alert state whenever an enemy unit is sighted. In the case of units capable of performing the shield wall, alert state will be entered into if such units are attacked by missile units (archers). While in alert state, military units will face the enemy military unit closest to them or, for shield wall units, toward the direction of incoming arrows. Pikemen will set for charge when in alert state. Non-military units are not impacted by alert state and will not alter their behavior if an enemy unit falls inside their LOS.

Garrisoning

This feature is currently disabled in AGE2.

AGE 2 will allow selected structures and ships to house a player's and a player's ally's military and civilian units. This is done simply by selecting the units to be garrisoned and issuing a command for them to move to a specific building. The selected units will then approach and enter the building (provided that it allows for garrisoning). A reduced size green health bar will appear above the regular size building health bar to display the number of units currently garrisoned in a selected structure.

While garrisoned inside a building or ship, units are protected from attack. If the building or ship is a defensive structure with an attack capacity, ranged units garrisoned within add to its inherent attack by allowing it to fire vollies of multiple arrows for the duration of their stay. This modification to the attack is determined by taking the combined attack (damage) of all garrisoned missile units and comparing it to the structure's or ship's base attack. For each multiple of the structure's or ship's base attack provided by a garrisoned archer, another arrow will be added to the volley fired. So, if a tower has an attack of 10 and 5 archers each with an attack of 4 are garrisoned within, the tower will fire 3 arrows per volley (5 archers x 4 damage each = 20 / 10 for tower attack = 2 + 1 base tower attack = 3 arrows). The range and rate of attack of the object units are garrisoned within dictates the range and rate of attack for all attacks originating from that object.

Garrisoned units can be ejected from their building or ship via a series of UI controls. Buttons are provided which display the classes of units garrisoned within the selected object (those possible are villager, priest, footman, mounted, ranged, special, and relics but these buttons are shown on the UI only when a unit of that class is garrisoned within the selected object). Superimposed over these buttons is a number showing how many units are currently garrisoned within the selected object. Left clicking any of these buttons will cause a unit of that type to be ejected from his garrison with each click; right clicking will cause all units of that type to be ejected. Only a player's own units are displayed using these buttons. A separate button, "allied units", displays the total number of these garrisoned and also allows ejection. An "all out" button causes all garrisoned units to be ejected. When a player garrisons units in an ally's structure or ship, selecting that object will bring up a UI for handling his garrison as if the units were garrisoned in his own building or ship (an "allied units" button will not be provided in this case). Units garrisoned in an ally's building or ship share its LOS as if it were their own. Obviously, ships may not eject units from their garrison while at sea.

All garrisoned units will be automatically ejected from any structure if that structure is damaged to 20% or less of its total hit points. This is not true for ships which will force units to remain garrisoned until they reach land where the units can be offloaded or the ship is sunk at sea (killing all aboard). Units garrisoned in an ally's building will automatically be ejected from it if a change in diplomatic status occurs (the same will happen to units aboard previous ally's ships as soon as they come sufficeiently close to shore).

While garrisoned, units will heal automatically at a base rate equivalent to 30% that of a monk's base ability. Various technologies will alter this rate as will different structure types.

Garrison Properties

Objects not listed in the following table do not permit garrisoning.

The Formations Classes Table (see Section E) provides descriptions for the "Classes Permitted" column of the table below. Note that *unpacked* siege units are excluded from the "P" class for the purpose of garrisoning; packed siege units are allowed but provide no attack benefit.

Object	Classes Permitted	Max Units	Modifier to Base Healing Rate
Archery Range	I, A, P, K	10	+10%
Barracks	I, A, P, K	10	+10%
Castle	I, A, C, H, P, K	50	+20%
Castle, Improved	I, A, C, H, P, K	75	+20%
Church	I, A, P, K	10	+20%
Gate	I, A, P, K	10	+0%
Market	I, A, P, K	15	+0%
Stable	I, A, P, K, C	10	+10%
Tower, Bombard	I, A, P, K	20	+15%
Tower, Guard	I, A, P, K	15	+10%
Tower, Keep	I, A, P, K	20	+15%
Tower, Watch	I, A, P, K	10	+0%
Town Center	I, A, P, K	20	+10%

Directed Garrison Ejection (OPTION)

Ejecting units from a garrisoning may cause problems in certain circumstances (i.e. a tower adjacent to a wall ejecting units on the "wrong" side of the wall). To counter this, it may be necissary to emply an ejection system similar to that used with transport ships where location information is required before units can be ejected.

Town Bell (OPTION)

AGE2 may possibly employ a technology that allows players to make use of a "town bell". When rung (via a button on the interface), the bell causes all a player's villagers to garrison in the nearest possible location. When the player clicks the town bell a second time, the bell is rung again and all villagers exit their garrison locations *and return to their original tasks*.

Siege Units

The AGE2 Siege units are, for the most part, fundamentally different from those in Age of Empires. This is due primarily to the fact that mobile siege units (such as Age of Empires' stone thrower and catapult) do not make a reappearance in AGE2. Instead, the majority of AGE2's siege units must be packed to move and must be unpacked at their destination to attack. This obviously changes the manner in which these units are used in the game.

Siege units that must be packed to move appear in this fashion after trained (that is, if you train a trebuchet, it pops out of the siege workshop as a packed trebuchet). To unpack a packed siege engine, the unit is selected and the "pack / unpack" button on its interface pressed. The player's cursor then becomes a cycling picture of the assembled siege engine. This is used to select a location

for the siege unit construction in the same manner as placing the foundation for a building. Once a location has been selected, the packed siege engine will travel to the location and begin assembling itself. To pack the siege engine again, the engine is simply selected and the “pack / unpack” button pressed. After a time, the engine will revert to a packed unit.

Siege units that must be packed and unpacked cannot move from their location while assembled. They can slowly change their facing to attack targets around them but at a rate too slow to effectively engauge most enemy units (this variety of siege unit is primarily for use against enemy buildings).

Notes on the Mangonel, Trebuchet, and Mobile Siege Unit

These units must be packed and unpacked. The fire only when fully assembled and cannot move while doing so. They can change their facing while assembled to attack enemy targets around them. The Mobile Siege Unit is actually semi-mobile, it packs and unpacks much faster than either the Mangonel or Trebuchet.

Notes on the Scorpion Ballista, Hand Cannoneer, and Bombard Cannon

These units do not need to be packed or unpacked but are slow moving and have a range and attack that is generally inferior to the packing siege units. The Scorpion Ballista and Hand Cannoneer are better for use against enemy units than enemy buildings.

Notes on the Battering Ram and Capped Battering Ram

These slow moving hulks can take a great deal of damage before collapsing but can attack only buildings, they do no damage to units.

Graduated Siege Weapon Damage (OPTION)

Siege units can be made to have a graduated damage model associated with their attacks. This would allow for attacks with increased damage at the point of impact and ever diminishing damage levels radiating out from this.

Combat Unit Behavior

The majority of this feature is currently disabled in AGE2.

Combat Unit AI (Specific)

Most AGE2 combat units will have a series of unit AIs associated with them that the player can select using the UI to get them to perform certain specialized functions. The functions are as follows:

Patrol

The player selects a unit or group of units and set a series of waypoints, the selected units will then continuously patrol the area defined.

Scout

Using the UI, the player will select a unit or group of units, give them a scout command, and select the location they wish scouted. Any selected units will proceed to this location and orbit it several times to

uncover unexplored territory. Scouting units will scout their location only for a short period of time and must be given addition scouting assignments if the player wishes to use them to uncover additional territory. Units told to scout will do so much less efficiently than player managed scouts.

Guard

Units told to guard another unit or structure (any object may be guarded) will approach it and station themselves near it. If their target is mobile, guarding units will follow as it moves. Guarding units double their response radius (the distance from the object they are assigned to guard that they will allow an enemy unit to approach before initiating an attack) and will give overall attack priority to the unit closest to the unit they are guarding.

Follow

Follow is a derivative of the scout function; units assigned to scout but given a specific target will follow (thus this does not require a separate UI button). Units so assigned will follow the unit he is assigned to at the edge of his line of sight and will not engage. Uses: a scout or spy following an enemy unit home.

Formations

See above.

Combat AI (Inherent)

Inherent Combat AI describes the basic involuntary logic used by combat units to function and execute commands.

Missile Unit Fire and Retreat

Missile units not in formation should automatically fire and retreat as computer controlled missile units do.

Target Prioritization

To be determined.

Movement (Special Circumstances)

Units issued orders to attack an enemy unit or building should continue to move toward it if it is destroyed while they are enroute. All units, archers included, should move to a location from which they could have attacked their target had it still remained.

Order Prioritization

Order prioritization refers to the behavior combat units follow when circumstances in the game interfere with the orders they have been given. For example, when a group of units are told to move to a specific location but are attacked while enroute, should they continue toward their destination or defend themselves?

The order prioritization model for AGE2 is to be determined.

Combat Unit Stances

The unit stance (or aggression level) defines how a unit should decide to attack enemies that are in it's line of sight when the unit is not performing a user order. The user can always force a unit to attack an enemy no matter what the unit's aggression level is.

Aggressive

Unit should work like it did in Age of Empires. If it sees an enemy, it will run after and attack the enemy. It will follow the enemy until the enemy dies or cannot be seen anymore. Then it will look for another enemy.

Defensive

This is the "stand ground" state. The unit does not run after an enemy. It only attacks if an enemy is within range based on the unit’s current location.

Passive

The unit does not automatically attack any enemies.

6.0 Diplomacy

Diplomacy Options

Basic Options

War

A player's units will attack (on sight) units and buildings belonging to a player they have declared war against.

Neutral

A player's units will ignore the units and buildings of a player they have declared neutrality with. Players can issue orders to attack units they have declared neutrality with and will defend themselves if attacked.

Allied

A player's units will aid in the defense of the units and buildings of a player they have allied with as if they were his own. A player cannot target for attack the units or buildings belonging to a player he has allied with.

Special Options

These options are not yet in AGE2.

Fealty

The diplomacy interface will allow players to declare fealty to another player. Fealty causes the player declaring to become a subject of the player he declares fealty to. 50% of the declaring players resources will immediately be tributed to the player fealty is declared to and control of the declaring player's units will thereafter be cooperative (as if the players were of the same player number). The player who has declared fealty will be unable to make any other diplomatic arrangements with other players; all of his diplomatic settings will always match those of the player he has declared fealty to. In addition, the player declaring fealty will not share the LOS of the player he has declared fealty to but the player fealty is declared to will receive the LOS of any player who has declared fealty to him (if they choose, players can set their diplomatic state to "allied" with a player who has declared fealty to them to provide their LOS). Players in a fealty status cannot target one another for attack.

Once fealty has been sworn, a player may not rescind his decision. A player may terminate the fealty status of any player who has declared fealty to him through a button on the interface and this will return control of all units to the original owner, cancel any shared LOS, and set both parties to "neutral." If a player is eliminated from the game, any players who have declared fealty to him are similarly freed.

Jihad

The diplomacy interface will allow players to declare a jihad against another player. Declaring a jihad provides the declaring player with a 20% attack bonus against units of the player he has declared the jihad against. While in effect, a jihad will also penalize the player who declares it by providing all other players (except the one who has the jihad declared against him) with a 10% attack bonus.

Once declared, a player cannot stop his jihad but the elimination of the player who a jihad has been declared against will stop the 10% attack bonus for other players. A jihad can be declared only once per game. Players who declare jihads against one another effectively negate each others' bonuses but still are penalized with the 10% attack bonus all other players receive against them.

Declaring a jihad automatically places the declaring player at war with the player he has declared against and no other diplomacy options are then permitted between these players.

Mercenaries

Mercenaries are not yet in AGE2.

Implementation is TBD.

Tribute

Tribute is not currently modeled in AGE2 in the fashion described below. Currently, the Age of Empires system is in place.

Using the diplomacy interface, players will be able to tribute goods to one another. At the start of the game, a player with a market will be able to tribute goods to any other player, with 20% of the tribute lost as a fee for the tribute. Players can research several technologies to reduce this fee later in the game. The only exception to this is with gold, which can be tributed by any player with a market to any other player at no penalty.

Diplomacy Interface Elements

The diplomacy interface currently in AGE2 is not that described below. Currently, the Age of Empires interface is in place.

Note: buttons will only appear in the diplomacy dialog if they are available. If a player has no gold, there will be no gold tribute button. If he has declared fealty to another player the buttons he would use to declare fealty to other players will be absented.

Player Icons

At the left of the dialog are icons for all players in the game, each with a background color corresponding to the player's color. Player icons are arranged in order of alliance, with allied units grouped (alphabetically by the players' names) at the top of the screen, neutral units in the middle, and hostile units at the bottom. The player's name will always be the first in this list (as he cannot go to a neutral or a war status with himself, this should pose no problem). Double left clicking on any player icon will bring up a chat box to send a message to that player only.

Diplomacy Icons

To the right of the player icons are the 5 diplomacy icons arranged in the following order: allied, neutral, war, fealty, jihad. Allied, neutral, and war are radio buttons, pressing any of them replaces the one currently set in that player's row. One of these will always be active in each player's row, telling the player what his status with all others is at a glance.

The fealty and jihad buttons to the right of these are normal buttons. Either option is declared by pressing the appropriate button in the row of the player to be targeted for a jihad or fealty declaration.

Status Space

To the right of the diplomacy icons is a blank column. When any player declares jihad or fealty, a jihad or fealty icon will appear in this space in the color of the targeted player. Thus, if you are the blue player and you declare fealty to the red player, a red fealty icon will appear in the column along your row and a blue one in this column along your opponent's row. Similarly, if you are the blue player and you declare a jihad against the green player, a green jihad icon will appear in your row and a blue one in his row.

Tribute Icons

To the right of the status space are the tribute icons: food, stone, ore, wood, and gold. Left clicking any of these adds 100 tribute (shift left clicking adds 1000) to the player whose row the icon is in. Right clicking subtracts 100 (shift right clicking subtracts 1000). The amount a player has set for tribute is superimposed over the appropriate icon.

Mercenary Controls

TBD.

Control Buttons

At the bottom of the interface are two buttons, clear and send. Clear will eliminate all changes made by the player since the dialog was last opened. Send submits the changes (sends tribute to other players and changes diplomatic stances) and closes the dialog.

7.0 Cultures and Civilizations

Player Civilizations

- Britons
- Byzantines
- Celts
- Chinese
- Franks
- Goths
- Japanese
- Mongols
- Persians
- Saracens
- Teutons
- Turks
- Vikings

Cultures by Art Set

Asian Set

- Chinese
- Japanese

Arabic Set

- Persians
- Saracens
- Turks
- Byzantine

Raider Set

- Mongols
- Celts
- Vikings

Eastern European Set

- Teutons
- Goths

Western European Set

- Britons
- Frankish

Culture Abstracts

The following tables are used to keep track of various data about the selected AGE2 cultures.

Civilization	Britons
Bonus	• Improved diplomacy, cheaper forced treaties.
Bonus Basis	The English were forever making diplomatic resolutions with everyone they encountered.
Penalty	
Penalty Basis	Offensive penalty (their tactics depended on an enemy charging them), factionalism – Ireland, Wales, Scotland, nobles, etc.
Unique Unit	Longbowmen
Wonder	Westminster Abbey
Artifact	
Trade Item	Wool

Civilization	Byzantine
Bonus	• Improved defensive structures at a reduced cost. • Use of Greek fire
Bonus Basis	Constaninople was attacked for centuries and did not fall; its thick walls were legendary. Early on, one of the things that prevented the Muslims from overrunning the Byzantines was their effective use of Greek fire, especially in naval engagements.
Penalty	• Poor diplomacy, forced treaties are more expensive.
Penalty Basis	The Byzantines represented eastern orthodox Christianity, which was opposed by the Holy Roman Empire. A schism developed between the Byzantines and the Papal powers in Italy. Numerous leaders attempted to repair this break but were always unsuccessful. The Byzantines also paid the Persians huge amounts of gold in exchange for peace.
Unique Unit	Cataphracts
Wonder	The Hagia Sophia
Artifact	
Trade Item	Icons

Civilization	Celts
Bonus	• Ferocity. • Cheaper military units.
Bonus Basis	The Celts were renown for their ferocity in battle and had no shortage of simple axemen to use as troops.
Penalty	• Reduced unit defense
Penalty Basis	The Celts often fought naked; bare skin makes poor armor.

Unique Unit	Woad Berserker
Wonder	None – Raiders
Artifact	
Trade Item	None -- Raiders

Civilization	Chinese
Bonus	• Improved technology • Population bonus
Bonus Basis	The Chinese were, by far, the most advanced and populus civilization of this time.
Penalty	
Penalty Basis	The Chinese were isolated from the rest of the world for much of this time thanks to strong forces (primarily the Mongols) in their north.
Unique Unit	Semi-auto crossbow (Chu-Ko-Nu, p. 181 of Glossary….)
Wonder	Alter of Heaven, p.78 / 79 Architecture of the World, China
Artifact	
Trade Item	Silk, jade

Civilization	Franks
Bonus	
Bonus Basis	The Franks (eventually the French and Germans, primarily) became known for their metalworking and also for their cavalry. The former was a trait more applicable to the east Franks, the latter one more the west.
Penalty	
Penalty Basis	Both the east and west Franks were plauged by dynastic struggles; on any occasion when control was to be passed on to a new ruler there was a high probability of something close to a civil war breaking out.
Unique Unit	Axe throwers
Wonder	Charlemagne's palace chapel at Aachen, see p. 93 – 94 of Great Architecture of the World
Artifact	The True Cross
Trade Item	Beer, Glass

Civilization	Goths
Bonus	
Bonus Basis	The Goths appeared to the Romans as a numerous people, Ammianus wrote that there were more of them than sands on the seashore.
Penalty	• Cannot build walls.
Penalty Basis	In their battles against the Byzantines, the Goths never had enogh troops to garrison the towns they captured sufficeiently; to prevent these towns from becoming enemy strongpoints if they were lost, the Goths would demolish all city walls (a practice begun by Totila).
Unique Unit	Berserker
Wonder	

Artifact	
Trade Item	

Civilization	Japanese
Bonus	• Better military units
Bonus Basis	The Japanese had a caste society with a defined warrior class.
Penalty	• More expensive military units
Penalty Basis	
Unique Unit	Samurai / Bushi
Wonder	Temple at Nara
Artifact	
Trade Item	

Civilization	Mongols
Bonus	• Improved spies • Siege bonus • Improved light cavalry
Bonus Basis	
Penalty	• Model their forced return somehow
Penalty Basis	
Unique Unit	Mobile siege unit
Wonder	None – Raiders
Artifacts	
Trade Item	None -- Raiders

Civilization	Persians
Bonus	
Bonus Basis	
Penalty	• Conversion prone • Poor infantry
Penalty Basis	Worshipped fire, Belisarius claimed the Persian infantry consisted of farmers brought along to undermine walls and pillage the dead.
Unique Unit	Multi-purpose (archer / infantry) unit
Wonder	Palace of Ctesiphon
Artifacts	Carpet of Chosis I
Trade Item	Spices

Civilization	Saracens
Bonus	• Excellent light cavalry • Fanaticism • Adaptable culture
Bonus Basis	
Penalty	
Penalty Basis	
Unique Unit	Dervishes (mounted berserkers)
Wonder	Mosque built by Omar (637, on the site of Solomon's Temple) or the Great Mosque at Samarra (see p. 134 of Great Architecture of the World)
Artifacts	
Trade Item	Soap, Amber

Civilization	Teutonic Knights
Bonus	• Conversion resistance • Improved Knights
Bonus Basis	
Penalty	• Incresed building costs
Penalty Basis	The Teutonic Knights were more concerned with killing everyone in eastern Europe than building up an infrastructure; they were primarily warriors and built little of note.
Unique Unit	Teutonic Knight
Wonder	
Artifacts	
Trade Item	Furs

Civilization	Turks
Bonus	• Cannon bonus • Siege bonus
Bonus Basis	
Penalty	
Penalty Basis	
Unique Unit	Janissaries
Wonder	The Selimiye (Suleimaniye) at Edirne (p. 140, Great Architecture of the World)
Artifacts	
Trade Item	

Civilization	Vikings
Bonus	• Defensive bonus – chainmail • Ship bonus
Bonus Basis	
Penalty	
Penalty Basis	

Unique Unit	Longboat
Wonder	None – Raiders
Artifacts	
Trade Item	None -- Raiders

Raider Cultures

Raider cultures are not yet enabled in AGE2.

Game Start

Raiders start games with the standard three villagers and one town center.

Basic Operation

Raiders can gather resources and increase their population in the normal fashion but will be much more productive if they raid enemy assets.

Pillage

See Pillage in Section 5.0, Combat.

Kidnapping

See Kidnapping in Section 5.0, Combat.

Training

Raider cultures can train villagers in the standard fashion, from the town center. To train military units, however, requires that a villager exists. If a raider player wishes to train a military unit, he must first garrison villagers at his town center (if there are no villagers at the raider's town center, the buttons used to train military units will be grayed out.) One military unit can be trained for every villager in the town center, replacing the villager when finished. Raider military units trained in this fashion are much faster and cheaper to produce that similar units of non-raider cultures.

In a similar manner, any raider military unit garrisoned at the town center can be converted into any other (as appropriate, longboats cannot become cavalry archers) for the normal cost (as if it were a villager being converted) but with no training time required.

Raider military units can be converted back into villagers also. This is done via a button on their interface and does not require that the unit be garrisoned in a building. Raider military units converted into villagers return none of their original training cost to the player and the full amount must be spent on them again if the player ever wishes to transform them back into military units.

Units

All raider civilizations have a Villager, Spearmen, Transport Boat, and Fishing Boat unit.

- The Celts have a Cavalry, Archer, and Woad Berserker unit.

- The Mongols have a Cavalry, Cavalry Archer, and Mobile Siege Unit unit.
- The Vikings have a Cavalry, Archer, and Longboat unit.

Buildings

All raider civilizations have only a Town Center, Dock, and Tower building. The raider town center has a population capacity of 50 (which cannot be exceeded). The raiders do not have houses and may only build another town center if the original one is destroyed.

Technology and Advancement

Raiders do not have ages.

They do have a very limited selection of unique technologies related to their specialized units.

Technologies are TBD.

Special

All raider units are immune to conversion.

8.0 Units

Units in General

Unit List

This list does not include units planned for but not yet in the game.

Archery Range
Archer
Archer, Composite
Cavalry Archer
Cavalry Archer, Heavy
Crossbowmen
Crossbowmen, Heavy

Barracks
Pikeman
Pikeman, Halberdman
Pikeman, Iron Shank
Spearman
Swordman
Swordman, Champion
Swordman, Heavy
Swordman, Two-Handed

Church
Monk

Dock
Cog
Fishing Ship
Galley
Galley, Cannon
Galley, War

Siege Workshop
Bombard Cannon
Covered Battering Ram
Covered Battering Ram, Capped
Hand Cannoneer
Mangonel
Scorpion Ballista
Trebuchet

Stable
Cavalry, Knight

Cavalry, Lance
Cavalry, Paladin
Scout

Town Center
Villager

Unit Attributes

This list does not include units planned for but not yet in the game.

Table Key:

HP Hit Points; the amount of damage a unit can take before death.
ROF Rate Of Fire; amount of game time between attacks.
LOS Line Of Sight; distance a unit can see for.
RNG Range; distance of a unit's attack.
MOV Movement; speed at which the unit moves.
CST Cost; resources required to train unit.
DEF Defenses; the armor posessed by a unit.
ATK Attack; the damage done by a unit.

Unit	HP	ROF	LOS	RNG	MOV	CST	DEF	ATK
Archer								
Archer, Composite								
Bombard Cannon								
Cavalry Archer								
Cavalry Archer, Heavy								
Cavalry, Knight								
Cavalry, Lance								
Cavalry, Paladin								
Cog								
Covered Battering Ram								
Covered Battering Ram, Capped								
Crossbowmen								
Crossbowmen, Heavy								
Fishing Ship								
Galley								
Galley, Cannon								
Galley, War								
Hand Cannoneer								
Mangonel								
Monk								
Pikeman								
Pikeman, Halberdman								
Pikeman, Iron Shank								
Scorpion Ballista								
Scout								
Spearman								
Swordman								

Swordman, Champion								
Swordman, Heavy								
Swordman, Two-Handed								
Trebuchet								
Villager								

Per Civilization Unit Breakdown

The distribution of units on a civilization by civilization basis has yet to be determined.

Planned Units, Unique

Unique units are not yet in AGE2.

Each culture has a (super) unit that is unique to it. With the exception of the raider unique units, these are all trained at a castle in the fourth age (the castle being selected to prohibit the practice of quickly building a vast number of super units through posessing multiple training locations). The raider unique units are built at their town center and (for the Viking) dock and are available throughout the game. The technologies, costs, and attributes of the raider unique units will be adjusted to compensate for their early availability.

Civilization	Unit	Notes
Briton	Longbowmen	
Franks	Axe Throwers	
Vikings	Viking Longboats	
Celts	Woad Berserkers	Art derivative from regular berserker (but blue).
Byzantines	Cataphracts	
Teutons	Teutonic Knights	Art derivative from regular knights but on foot.
Goths	Goth Berserker	Derivative.
Saracens	Dervishes	Religious fanatics, cav unit – mounted berserkers.
Turks	Janissaries	Shock troops, captured white slaves.
Persians	Multi-Purpose Cav	Light cav units capable of fighting with sword or bow.
Chinese	Semi-Automatic Crossbow	Art derivative of heavy crossbowmen.
Japanese	Samurai	
Mongols	Mobile Siege Unit	Art is a regular light siege engine capable of morphing to and from a transportable unit (horse, donkey, etc.).

Planned Unit, Trade Cart

When the AGE2 trade model is in place, a Trade Cart unit will be used to conduct overland trade. The trade cart will use a cargo overlay to make the times when it is full or empty apparent to the user.

Optional Units, Alternate Villager

Possibly add a second villager typr to build from the start of the game. This type would be a “super villager”, a villager on horseback that could move faster, gather faster, carry more, and cost more than a regular villager. This would at least slightly mitigate some of the dificulties experienced with the larger map sizes and would provide a new strategic element in the early game.

Unit Behavior

The majority of this feature is currently disabled in AGE2.

Unit AI (Inherent)

Inherent Unit AI describes the basic involuntary logic used by units to function and execute commands.

See Section 5.0, Combat for Unit AI information specific for combat units.

Movement (Special Circumstances)

Units issued orders to attack an enemy unit or building should continue to move toward it if it is destroyed while they are enroute. All units, archers included, should move to a location from which they could have attacked their target had it still remained.

Similarly, villagers given orders to build a building or harvest a resource should continue on to the location at which they would have built or harvested if the building is completed or the resource exhausted while they are enroute.

Order Prioritization

Order prioritization refers to the behavior combat units follow when circumstances in the game interfere with the orders they have been given. For example, when a group of units are told to move to a specific location but are attacked while enroute, should they continue toward their destination or defend themselves?

The order prioritization model for AGE2 is to be determined.

Trade Unit Behavior

To be determined.

Unit Art

See Section B, Database File Naming Conventions for technical information related to AGE2's art.

A Note to Artists

It is difficult to find exact reference pictures for each unit. Keep in mind that units should generally adhere to some appearing age related guidelines:

- Age One units should be clad primarily in cloth or padded armor. They could also have some leather.
- Age Two units should be clad primarily in leather or studded / ringed leather armor. They could also have some chain mail items and metal helms.
- Age Three units should be clad primarily in chain main or scale mail armor. They could also have some plate mail items.
- Age four units should be clad primarily in plate mail armor.
- Archer units should generally be clad in chain mail or lesser armor.

- Berserkers and the axe thrower can wear less clothing than the others.
- Janissaries must have their distinctive hats.
- Woad berserkers must have their distinctive tattoos, pants, and neck torques.
- Dervish should have a scimitar.
- Infiltrator / Spy should be ninja-ish (light or no armor).
- Samurai should have distinctive Japanese armor.
- Teutonic Knights and Samurai are foot units.

The Ensemble Studios network location for source material is:
Z:\AGE2\ART\APPROVED_SKETCHES – units are listed by task name.

Additional source material can be found in:
Z:\AGE2\ART\AGE2 SCANS

A Special Note on Monks

The Monk unit's appearance should vary depending on a player's religion selection:

- Christian monks should wear brown robes tied with rope (Friar Tuck).
- Pagan monks should be as Christian monks but with a goat-head mask.
- Muslim monks should wear an off-white robe and a small circular cap.
- Buhddist monks should be as Muslim monks but with no cap and a bald head.

Unit Notes

Possible Units, Heros

These units are not yet in the game.

- Can convert other units (via persuasion or intimidation) but cannot be converted themselves.
- Bonus for units in range.

Ships

Ships will be rendered as hulls only. Three sail sets (European square, Arabic triangular, and Asian fan) will be built and will be programmatically added to ships in the game based on the culture of the owner (at the time of construction).

Possible Unit, Infiltrator

This unit is not yet in the game.

Infiltrators are units that are invisible to all units in the game (except other spies). They have a large line of sight and can see units garrisoned in buildings (that is, enemy buildings in their LOS will display the hash marks denoting garrisoned units when a player selects that building). To attack an enemy infiltrator, the player must have a spy of his own keeping the enemy spy visible.

Infiltrators may also play a role in bribery, a possible game mechanic.

Possible Unit, Kings

This unit is not yet in the game.

Kings are special units that abstractly represent the player in the game. They are better than average infantry units and they provide a +1 bonus to attack and defense for all of their units (not allied units) within a 5 tile radius.

Queen units, with an identical functionality, may also be added to the game.

A victory condition, regicide, revolves areound this unit, see Section14.0, Victory Conditions.

9.0 Gaia Units

Gaia Units

Gaia units are units present in the game but not controlled by any player. Map size and type will, to a great degree, determine their numbers and distribution.

The following are the gaia units planned for AGE2, not all are currently in the game:

- Bear
- Deer (buck and doe)
- Dolphin
- Fish
- Hawks
- Mercenaries
- Outlaws
- Seagulls
- Wild Boar
- Wolves

Gaia Unit Renewal

Gaia unit renewal is currently disabled in AGE2.

The population of gaia units (excepting mercenaries, hawks, and seagulls) will be dynamic in AGE2. All renewable gaia units will have a global population range and renewal rate. If the global population of a certain gaia unit type falls below specified levels and there are gaia of that type remaining (i.e. the player has not killed all deer), then that gaia type will renew.

Renewal will be achieved through the splitting technique (i.e. one deer starts to move and, as it does, becomes two deer, each of which move in opposite directions to become independent units) or by simply having these units enter from off-map.

Gaia unit renewal will be a slow and controlled process and not one intended to provide players with a perpetual supply of deer or such (the idea here being that keeping a few gaia units about improves the appearance of the maps). Potentially dangerous gaia, such as wolves or outlaws, also slightly increase their strength when they are not dealt with fully, adding a dimension to their gameplay.

Gaia Unit Behavior

Bear

As a possible replacement for the wild boar, the bear should have same behavior set (see below). If the bear does replace the boar, the bear should have forage sights, farms, and shore fish as locations that it will try to “eat” from.

Dolphin and Fish

Dolphin and fish should pretty much jump up and down to let people know that they're there. Possibly, these should also slowly migrate about the map.

Hawk

The hawk should fly around and look hawk-like. It should avoid crossing paths with or otherwise bumping into other birds. The speed at which it moves should be periodically altered to make it look like it is drifting on thermals.

Mercenaries

Mercenaries are not yet in AGE2.

Mercenaries are units that can be, via the diplomacy interface, hired to act on behalf of a player. These units will employ the same basic AI as normal computer controlled opponents but a separate AI will be required to allow mercenary units to evaluate offers. This system is to be determined.

ATTACK FLAG TO USE
BIDDING – OFFERED TO ALL PLAYERS

Outlaws

As with wolves, the outlaws should operate in a group that consists of the original outlaws placed in a "clump" and any that are generated to this clump by the reproduction model.

Outlaws should try to avoid contact and search out the map for likely trade routes (i.e. the straight-line territory between two markets). Once a likely location has been discovered, the outlaws should set up an ambush and await a full trade cart. When a trade cart approaches, they should put a few arrows in it which will cause the trade cart to stop. The outlaws will then approach the trade cart and "steal" its cargo. After the theft, the outlaws should run off to set up another ambush and the trade cart should return to the vicinity of its original market. Once outlaws are successful along a certain route, they should attempt to continue exploiting it.

Outlaws should be able to make a determination of odds in battle and should avoid trade carts accompanied by overwhelming enemy forces. Similarly, they should avoid non-trade cart units in general and attempt to remain undiscovered. If attacked, they should return fire or run away (based on the same determination of odds).

Seagull

The seagull should fly around as the hawk but should confine itself to coastal areas. The seagull should also circle around schools of fish periodically and occasionally follow behind fishing boats.

Wild Boar

The wild boar should mostly stand around but occasionally move a few tiles in a random direction. If a forage sight or farm is within its LOS, the boar should move to the sight and "eat" some of the food periodically. It should not attack unless attacked.

Wolves

A starting group of wolves (or wolves added to the game from these) will form a pack and will act together. Wolves should wander the map, making an effort to avoid (circle around) “towns”. From time to time, they should get hungry and seek food (deer, villagers, wild boar, bear, etc.); if encountered while hungry, they should attack in a pack, kill something, and “eat”. If encountered when not hungry, there should be a chance of attack but it should be more likely that the wolves will avoid contact and move on.

Wolves will howl from time to time. Players will be able to judge the severity of their “wolf problem” based on the frequency of these howls.

10.0 Map

Map Types

- Coastal
- Continental
- Hiland
- Inland
- Islands, Large
- Mediterranean
- Narrows
- Islands, Small

Possible Map Types

- "River down the middle"

Terrain

Terrain Tiles

To be determined.

Terrain Objects

To be determined.

Obscured Units

The change in scale done for AGE2, which provides for a more proportional building to unit scale, necessitates that there be a way to display units that are obscured by objects in front of them. This is done by outlining obscured units (in the controlling player's color) when the units are obscured; partially obscured units will have a partial outline. Commands issued within an outline will be issued to the outlined unit rather than the object obscuring it.

Note that other units do not cause the units they partially obscure to become outlined.

Obscured Unit Model Issues

- Outlined units remain difficult to detect due to colors employed and size of outline.
- Outlined units need to provide better visual feedback to show that they have been selected.
- Resources obscured by objects need to be outlined also.

11.0 Buildings

Buildings

Building	HP	LOS	CST
Archery Range			
Barracks			
Blacksmith			
Church			
Dock			
Farm			
House			
Market			
Mill			
Siege Workshop			
Stable			
Tower, Bombard			
Tower, Guard			
Tower, Keep			
Tower, Watch			
Town Center			
University			
Wall, Fortification			
Wall, Palisade			
Wall, Stone			

Building Sets

The East European building set is a re-textured version of the West European building set.

Generic
Town Center
Barrcks
Blacksmith
Dock
Farm
House
Mill
Wall, Palisade

Arab, Asian, and West European
Archery Range 2
Archery Range 3
Archery Range 4
Barracks 2
Barracks 3
Barracks 4
Blacksmith 2

Blacksmith 3
Blacksmith 4
Castle
Church 3
Church 4
Dock 2
Dock 3
Dock 4
House 2
House 3
House 4
Market 3
Market 4
Mill 2
Mill 3
Mill 4
Siege Workshop 3
Siege Workshop 4
Stable 2
Stable 3
Stable 4
Tower, Bombard
Tower, Guard
Tower, Keep
Tower, Watch
Town Center 2
Town Center 3
Town Center 4
University 3
University 4
Wall, Fortification
Wall, Stone
Wonder

Raider
Town Center
Dock
Raider Tower

Building Functions

Construction

This feature set is not yet fully implemented in AGE2.

Buildings are constructed by villagers. When selected, the player's cursor is altered into a transparent sprite of the building. This can be moved around the map and will cycle red if it cannot be placed at its present location.

When first placed, a foundation sprite appears at the selected location. This foundation should be pathable until a villager arrives at the foundation and begins, at which point the building will progress through aeveral construction sprites until completed. Foundation tiles are visible only to a player (and not his allies) until his villagers begin work on it. All units will avoid building foundations and path across them only if required or if the unit would be forced to path more than 10 tiles to avoid pathing across a foundation. Foundations can be placed atop villagers and they will thereafter attempt to avoid them; a player's or ally's idle villagers standing atop a foundation will move (enemy units will not).

Multiple villagers can be assigned to the construction of a building to make it build faster. Allies may also task villagers with assisting one another in the construction of a building.

Repair

This feature set is not yet fully implemented in AGE2.

As with their construction, AGE2 buildings can be repaired by either a player's or a player's ally's villagers (or any combination thereof) and assigning multiple villagers increases the speed at which the repair is conducted. Villagers garrisoned in buildings must be ejected from them to begin repairs.

To assign a villager a repair task, the player selects the villager, issues the repair command, and selects the target structure by right clicking on it. Repairs are done at the same rate as construction and cost the player a quarter as much in resources to repair (thus, a building that costs 100 wood and 200 stone to build would cost 25 wood and 50 stone to repair from a theoretical 0%).

If a villager is selected and right clicked on any building (normally the command to garrison that unit) and the targeted building has been damaged to 20% total hit points or less remaining (which disallows garrisoning), the villagers will automatically attempt to repair this structure. Note that these villagers will not garrison in the building after repairing it.

Combat

This feature set is not yet fully implemented in AGE2.

Buildings with an inherent attack (towers, castles, etc.) will target and engauge visible enemy units and buildings as if static archer units.

Buildings and walls will also block all missile attacks against a player's units while still allowing the arrows of a player and his allies to pass. Gaia units may fire through walls and buildings regardless of ownership.

Garrisoning

See Garrisoning in Section 5.0, Combat.

Pillage

See Pillage in Section 5.0, Combat.

Deconstruction

This feature set is not yet fully implemented in AGE2.

Players may deconstruct their own buildings by selecting them and using the delete key, as in Age of Empires. Players deconstructing their buildings in this manner receive no return of resources from it but the destroyed building will leave behind a salvage pile (as if it were destroyed by the enemy). Any research or training tasks in progress at a building at the time of its deconstruction are cancelled as if they had been stopped seperately from the deconstruction itself (see Research and Training, below).

Buildings deconstructed while still foundations (after placement but before any work has begun on them) will return 100% of the resources required to build them to the user. Buildings deconstructed while in the process of construction will also return 100% of their resources to the player, provided that the pathable foundation system is in place (see Construction, above), otherwise they will return 70%. The amount of resources returned via deconstruction is scaled by the damage a building being deconstructed has absorbed (for example, a building damaged to 50% of its total HP will return only half the resources from deconstruct as deconstructing the same undamaged building).

Damage

This feature set is not yet fully implemented in AGE2.

Buildings will begin to show signs of damage when their HP are reduced to 75% total or less. At this point they will begin to smoke. When damaged to 50% or less, they will burst into flame. When damaged to 20% or less, buildings will eject any units garrisoned, cancel all research or training (as if done independent of the damge, see Research and Training, below), and cease any inherent behaviors (i.e. towers will no longer attack). When damaged to 0% total HP, buildings collapse and cease to exist. Destroyed buildings leave a salvage pile and ruins behind; both of these will fade as game time progresses.

Salvage

This feature set is not yet fully implemented in AGE2.

A salvage pile containing 30% of the resources originally used to construct a building appears any time a building is destroyed or deconstructed. The resources in this salvage pile will gradually diminish at the rate of 1 unit of resource per 10 seconds of game time.

Resource piles can be harvested by villagers or pillage capable units. Collecting from a salvage pile requires only that one of these units come in contact with the salvage pile itself, no work need be done to collect the resources (as is the case with mining and so on).

Capture

This feature set is not yet fully implemented in AGE2.

As mentioned in Damage, when damaged to 20% or less, buildings will eject any units garrisoned, cancel all research or training (as if done independent of the damge, see Research and Training, below), and cease any inherent behaviors (i.e. towers will no longer attack). Any building which has been damaged to 20% HP or less will become the property of the next player who repairs it to a level above 20%.

Research and Training

This feature set is not yet fully implemented in AGE2.

Orders to conduct research or unit training are issued at buildings via representative buttons on their interface. When such an order is issued, the resources required are immediately removed from a player's inventory and a per cent complete status indicator appears on the UI to display the progress of any research or training.

Any controlled cancellation of a research or training assignment (i.e. hitting the stop button, deconstructing the building) will return 100% of the resources required to begin the research or training to the player. Any uncontrolled cancellation of a research or training assignment (i.e. the building is destroyed by the enemy) will cause a loss of all resources involved.

To make it easy for the player to locate and use newly trained units, all units will emerge from the building they are constructed in at the bottom of that building. The "bottom" refers to what most people call the "6 o'clock" position or, considering the diamond shapes, "home plate". All newly trained units should attempt to emerge at this location first. If this location is occupied, the unit will then attempt to emerge in the next available space, moving around the border of the building in a counter-clockwise direction.

Production Queues

This feature set is not yet fully implemented in AGE2.

Clicking on a building capable of training units will provide, as part of its UI, a selectable list of icons representing all of the units that can be trained at that location. Superimposed over each unit icon will be a number representing the number of that type of unit currently in the production queue. Left clicking any icon will add one unit to the queue, right clicking will remove one (holding shift while doing either will cause the queues to be altered in increments of 10).

Queued units are produced in the order they are queued as the resources for their production become available. Note that individual buildings are handled independently, so queues from different buildings will operate in tandem.

All of the resources required to produce a unit are subtracted from the player's resource pool at the time a unit begins production. If there are insufficient resources for a unit's production, the queue will pause until such time that resources become sufficient.

Units removed from a queue do not impact a player's resources in any manner, they are simply removed. Units in production that are cancelled also return all resources.

If production in queue has stopped, a message will appear telling the player that this is the case (the message will be relayed to the player as a normal chat message and will be accompanied by an audio annunciator). In addition, the resource causing the stoppage will be outlined by a red box on the user interface.

Produced units appear surrounding the building they are trained at upon completion (unless a set gathering point dictates otherwise).

Research items and houses (built at the town center) cannot be queued. Buildings can not be queued using this system either but can still be set down in multiples as per Age of Empires.

There will be three buttons on the main interface that will handle the global start and stoppage of production queues, one each for units, technologies, and trade good manufacture. Each of these will operate as a toggle. Their default setting is "on" and a green frame will surround them in this state. If

clicked to change to “off” this border will be red. While set to the “off” state, all goods of a button’s type cease being produced.

Gathering Points

This feature set is not yet fully implemented in AGE2.

Any building capable of training units will have a “set gathering point” button as part of its interface. Clicking this button changes a player’s cursor into a gathering point flag which can then be set down anywhere on the map. Once placed, all units trained (after the placement) will procede toward the gather point as if given a command to move there (thus, villagers can be made to automatically begin gathering a resource by placing their gather flag atop a supply).

If a building has a gether point set, selecting that building will cause the associated gather point to become visible on the game map and as a pulsing white dot on the mini-map. To move a gather point the player can select a building and reissue the command or select the gather point flag object on the map and drag it to a new location. To remove a gather point the player can either set the building as its own gather point or select the gather point flag and delete it.

Buildings cannot normally be selected in multiples but AGE2 will allow using shift left click (or drag) to do so. When multiple buildings (that are capable of training units) are selected, only the “set gather point” button will be available on their combined UI. Setting this gather point will issue the same gather point to all of the selected buildings.

Three hot keys will also allow a global setting of gather points by unit type (villager, military, ship); these hot keys are not yet defined. When typed, these hot keys will provide the player with the appropriate global flag to place. Placing a global flag deletes all other gather points set for units of that type.

A final hot key (also not yet defined) will clear all gather points of both varieties.

Building Notes

Special Buildings, Nomadic Buildings

This feature set is not yet fully implemented in AGE2.

The buildings of raider cultures are all nomadic, with the exception of any docks or towers. Nomadic buildings can, via their interface, be ordered to pack. When ordered to pack, any research and training in progress at the location is suspended and the building begins the process of converting itself into a mobile cart.

While in this state, the building will not accept orders or provide the benefits of a normal building (i.e. a packed or packing mill would not allow villagers to drop food off at it). This cart can then be moved about the map and, using the same UI button, ordered to unpack. Clicking the “pack / unpack” button when a nomadic building is packed will cause the player’s cursor to become a transparent sprite of the fully constructed building. This sprite can then be moved around the game map and used by the player to specify a desired building location in the same fashion as normal building placement and construction. When a location has been decided upon, the packed building will move to the set location and begin the process of unpacking.

During its unpacking, a building will be subject to the same restrictions it was when packing. When this is complete, any suspended research or training will resume and the building will again be available for commands.

Special Buildings, Wonders

Wonders currently function as in Age of Empires but require research prior to becoming available for construction. When complete the time a wonder must stand has been altered based on game map size. The current adjustment is +/- 5 minutes of game time for each map size above or below the standard (large) in the game, to a minimum of 5 minutes.

Special Buildings, Gates

This feature set is not yet fully implemented in AGE2.

Gates will allow units to pass through walls without requiring the destruction of a segment. Players can control their gates by double clicking them, each double click toggling them open or closed.

Gates will allow garrisoning and, when manned, will become automated. A manned gate will open for when any of the player's or player's ally's units attempt to pass and close any time an enemy unit is within the gate LOS (note that gates cannot see enemy infiltraitors).

Special Buildings, Castles

This feature set is not yet fully implemented in AGE2.

Castles function (basically) as large and powerful towers which allow a large number of units to garrison. They also provide non-raider cultures with the ability to train unique units (see Unique Units, Section 8.0, Units) in the fourth age.

12.0 Technologies and Technology Tree

Technology Tree

Technology Index

The following table lists all technologies currently enabled in AGE2. The operation of the technology is defined in the text in parenthisis. Technologies that do not have a description in parenthesis are enabling technologies, technologies that simply allow the construction of a particular unit or building in the game.

No.	Technology and Description
	Advance to Feudal Age
2.	Advance to Imperial Age
3.	Advance to Middle Age
4.	Archer Armor 1 (+2 normal armor for archers)
5.	Archer Armor 2 (+2 normal armor for archers)
6.	Archer Armor 3 (+2 normal armor for archers)
7.	Archer Upgrade 2 (+1 damage, range, and line of sight for archers)
8.	Archer Upgrade 3 (+1 damage, range, and line of sight for archers)
9.	Architecture (+20% building HPs, +2 normal and pierce armor for buildings)
10.	Bombard Cannon
11.	Bombard Tower
12.	Cannon Galley
13.	Capped Battering Ram
14.	Cartography (shared line of sight with allies)
15.	Chain barding (+2 normal / +1 pierce armor for mounted soldiers)
16.	Chain mail (+2 normal armor for foot soldiers)
17.	Champion (upgrade Two Handed Swordsman to Champion)
18.	Chemistry (+1 damage for all non-gunpowder missile units)
19.	Crop rotation (+2 farmer carry capacity, +50% food production for farms)
20.	Crossbow
21.	Engineering (+20% building HPs, +2 normal and pierce armor for buildings)
22.	Faith (allows conversion of enemy units)
23.	Flat Hull (+50% trade ship carrying capacity)
24.	Fletching (+1 range and line of sight for archers)
25.	Forging (+2 hand to hand damage)
26.	Fortified Watchtower
27.	Great shield (+2 pierce armor for foot soldiers)
28.	Greek Fire
29.	Gunpowder (allows gunpowder units)
30.	Halberd (+1 pikeman damage, +2 vs. cavalry)
31.	Hand Canon
32.	Heavy Cavalry Archer (upgrade Cavalry Archer to Heavy Cavalry Archer)

33.	Heavy Crossbow (upgrade Crossbow to Heavy Crossbow)
34.	Heavy plow (+2 farmer carry capacity, +40% food production for farms)
35.	Horse collar (+2 farmer carry capacity, +30% food production for farms)
36.	Husbandry (+20% cavalry speed)
37.	Iron casting (+2 hand to hand damage)
38.	Iron Shank Pike (+1 pikeman damage, +2 vs. cavalry)
39.	Keep
40.	Knight
41.	Large shield (+1 pierce armor for foot soldiers)
42.	Mangonel
43.	Medicine
44.	Metallurgy (+3 hand to hand damage)
45.	Mining (+10% miner work rate, +2 miner carry capacity)
46.	Nets (+15% fishing ship work rate)
47.	Paladin (upgrade Knight to Paladin)
48.	Pike
49.	Plate barding (+2 normal / +1 pierce armor for mounted soldiers, -20% speed)
50.	Plate mail armor (+2 normal armor for foot soldiers, -20% speed)
51.	Scale armor (+2 normal armor for foot soldiers)
52.	Scale barding (+2 normal armor for mounted soldiers)
53.	Scorpion Ballista
54.	Shaft Mining (+10% miner work rate, +2 miner carry capacity)
55.	Small shield (+1 pierce armor for foot soldiers)
56.	Squires (+15% infantry movement speed)
57.	Stirrup (allows lance cavalry units)
58.	Stone cutting (+20% villager building speed)
59.	Town watch (+2 to line of sight for buildings)
60.	Tracking (+1 line of sight for infantry)
61.	Trebuchet
62.	Two-Handed Swordman (upgrade Heavy Swordman to Two Handed Swordman)
63.	Upgrade Archers to Composite Bowmen
64.	Upgrade Swordman to Heavy Swordman
65.	Wall 3
66.	War Galley
67.	Wheel 1 (+15% villager movement speed)
68.	Wonder Plans
69.	Woodcutting Upgrade 1 (+10% woodcutter work rate, +2 woodcutter carry capacity)
70.	Woodcutting Upgrade 2 (+10% woodcutter work rate, +2 woodcutter carry capacity)

13.0 Relics

Relics

By default, relics are a component in the basic AGE 2 game environment. One relic is added to the game per player, each placed on the map at the start of the game in a random location. Note: placement should be equal; if we decide on 7 – 10 tiles from starting town center as our base parameter, then one relic should be placed within 7 – 10 tiles of every town center.

Relics start unclaimed and immobile but, once located, a player can direct his monks to the relic to claim it (other units cannot move or claim a relic – exception: raider military units can pick up and move relics but receive no bonuses from them). Upon arrival, the monk becomes a relic carrier capable of transporting the relic about but unable to perform any other task (i.e. the monk can not convert or heal units while carrying the relic).

If a relic carrier is killed, the relic reappears on the ground; such a relic continues to "belong" to the player who originally claimed it and will remain in his possession until another player claims it with a monk. If a relic carrier is released (DEL), the monk will drop the relic and step away from it, making too separated and easily identified objects. While immobile on the ground, a relic that has been claimed will continue to provide its normal benefits to the player who has it in his possession (see individual relics, below).

A relic moved into a building bestows its benefits upon those also garrisoned in the building but does not impact any units outside of the structure. When in a building, the presence of a garrisoned relic will be indicated by means of an appropriate overlay above that building (grail, flag, etc.) Relics garrisoned inside churches generate additional income at the rate of 3 gold per second per relic.

Base Relic

If carried into battle all non-siege ground units within 7 tiles of a relic owned by them or an ally will receive +10% to their damage and –10% to damage done to them. Priests within 7 tiles of a relic have a +20% conversion bonus while the units of the relic owner and his allies in the same radius are 20% more resistant to conversion. Only one relic impacts the units surrounding it; a spearman standing next to four relics will get the same bonuses as a spearman standing next to one.

Culture Specific Relics

Each non-raider culture has a culture specific relic. This relic provides double the base relic bonuses for the player who controls it and is of the appropriate culture. That is, a Chinese player in possession of the Chinese relic will provide units within 7 tiles of it a +20% to the damage they do and a –20% to damage done to them. This bonus does not impact allied units around the relic; these players receive only the normal advantages (+10% / -10%).

14.0 Victory Conditions and Game Options

Standard Victory Conditions

The standard victory conditions are the means by which any (default setting) game can be won.

Conquest

Players may win a game by eliminating all of an opponent's offensive capability.

The player is eliminated when they have no *offensive* attack capability, and no means to produce one. If the player does not have a military unit, military building, a priest (monk) unit, or a villager, they will lose under this victory condition. Town centers and churches count as villagers and monks respectively and will keep the player from being eliminated as long as they are available. Fishing boats, towers (defensive), trade units, farms, walls and the like do not prevent a player from being eliminated. Note that a wonder counts as a military building for this purpose.

Wonder

Players may win a game by building a wonder and protecting it for a set period of time.

A wonder can be constructed after the researches required to build it are complete provided that the player initiating its construction has sufficient resources (see Section 11.0, Buildings). Once complete, the wonder must stand for a set period of time (15 game minutes for a large sized map, + or – 5 minutes for every map size above or below a large map, respectively; minimum 5 minute time).

If a player or group of allies manage to trigger this victory condition, all players will be notified of the fact and a timer will appear on everyone's UI.

Relic Capture

Players may win a game by capturing and holding all relics in the game for a set period of time.

If a player or a combination of his allies capture all relics, they will win the game if they retain posession for a set period of time. As with the wonder, the time that they must remain in possession is based on the selected map size.

If a player or group of allies manage to trigger this victory condition, all players will be notified of the fact and a timer will appear on everyone's UI.

A possible option will be that the relics must all be housed (in churches or all in the same church) to trigger this victory condition.

Optional Victory Conditions

Option victory conditions are specific conditions that can be toggled on or off by players in the pre-game.

Score

Players may win a game by being the first to achieve a specified score.

Players are given points for various accomplishments in a game (see Section E, Score Model). At the start of a game, players may elect to play to a specific point total (set by the players in the pre-game). The first player or group of allies (allied scores are combined) to achieve this score win. When players approach the score required to win (within 20%) a warning message is displayed to all players.

Regicide

Players may win a game by killing an enemy (or all enemy) king.

Players start with a King (or Queen) unit garrisoned in their town center (see Section 8.0, Units). If the king is killed in combat, the player whose king was killed is eliminated from the game. The player who killed the King gets a 'crown' notation on the score, and gets all of the gold the player had in their materials stores instantly. The player whose king was killed has all of their units and buildings go to neutral / unclaimed status.

Timed

Players may win a game by having the highest score at the end of a certain period of time.

Overwhelming Odds

Players may win a game by eliminating the vast majority of an opponent's offensive capability.

A routine is used to compare a player's standing in the game with that of his opponents'. This routine will take alliances into account and will examine overall military and economic strength. If, in the computer's estimation, a player has no hope of winning the game, the player will be eliminated. The purpose of this feature is to eliminate games where a single player runs his one remaining villager around the map to deny his opponent a win for as long as possible.

A means of informing the player of an impending loss via this option may need to be included. Another possible option is that this would not eliminate a player from the game but instead reveal the position of all his posessions on the mini-map for all players.

15.0 Easter Eggs and Cheat Codes

- If religion model is adopted and Buddhist monks can fight – “kung-fu” B-movie Easter egg.
- Windmills spin very fast (like 16x speed) and blow units around the board
- Dragon unit from Sorcerer flies around and torches buildings randomly.
- Sea monsters appear in the water and eat boats and shallows units occasionally.
- Holy Grail – they call me Tim.
- Holy Grail – killer bunny, look at the bones.
- MHC 54 with EZ sink feature.

16.0 Cinematic Art

Opening Cinematic

The design of the opening cinematic has been finalized and work on it is in progress.

Campaign Cutscenes

To be determined.

Alternate Reality Cutscenes (OPTION)

The final scenario of any of the campaigns included with the game will be based upon a battle that was lost by the player's civilization. This provides the player with an opportunity to win a battle that was historically lost and thus change the course history would have taken. To show a player how he has altered histroy, a closing cinematic consisting of a series of stills (fading in and out, focusing on areas of the still, etc.) will be shown. Among these will be stills of a map showing how the player's victory has rearranged borders and at least three stills showing how things in the world would be different (i.e. Ghengiz Khan's face on a dollar bill, the Notre Dame mosque, etc.)

17.0 Sounds

Stereo Sound

Sounds originating one tile off screen, from the right or left, are heard at half volume from the appropriate side. Sounds to the top or bottom are at half volume centered.

Official Taunts

To be determined.

Internationalized Sound Specifications

Goal

To have the 13 civilizations in Age of Empires 2 represented by there own language when commanding units during game play.

Contact

Chris Rippy, Ensemble Studios. (972) 960-2700 x210. Email: crippy@ensemblestudios.com

Deliverables

Each of the internationalization groups, selected by Microsoft, should deliver the following:

- Complete recording of all words or phrases listed below.
- Written translation of all words and phrases listed below.
- CD-ROM or Zip disk of recorded .wav files in specified file format.
    - File Format:
        - All files should be recorded as a .wav file.
        - All files should be recorded in 16bit 44.1hz, mono.
        - All files should also be duplicated and resampled to 16bit 22hz mono.
        - All files should follow the naming convention specified below.
        - All 44.1khz files should be placed in a directory called 44.
        - All files recorded at 22khz should be placed in a directory called 22.
        - No file should exceed 125k in size at 16bit 44.1hz, with a target range of 100-115k in 16bit 44.1hz.
- Words and phrases should closely resemble the tone and inflection of those in the original Age of Empires 1.
- Words and phrases should be spoken in the manor of its description specified below.
- Words and phrases may be replaced with similar words if necessary. For example, “wood cutter” could be substituted for “lumberjack”.

Villager

The list below represents Villager commands. These should each be recorded as *both* Male and Female. Note for female recording naming convention: replace the first "m" in the file name with "f". For example "Yes" for a female villager would be named "vfs1.wav".

Word	Inflection	Description	File Name (*.wav)
Yes?	Question	Villager Select	Vms1
Hello?	Question	Villager Select	Vms2
Ready	Statement	Villager Select	Vms3
Command?	Question	Villager Select	Vms4
Miner	Statement	Villager Command Mine	Vmm
Lumberjack	Statement	Villager Command Lumberjack	Vml
Farmer	Statement	Villager Command Farmer	Vmfa
Builder	Statement	Villager Command Builder	Vmb
Repairman	Statement	Villager Command Repair	Vmr
Fisherman	Statement	Villager Command Fish	Vmfi
Attack!	Exclamation, Angry	Villager Command Attack	Vma
Hunter	Statement	Villager Command Hunt	Vmh
Forager	Statement	Villager Command Forage	Vmfo
OK	Statement	Villager Move	Vmm1
Yes	Statement	Villager Move	Vmm2
Correct	Statement	Villager Move	Vmm3
I will	Statement	Villager Move	Vmm4
Run Away	Exclamation	Villager retreat	Vmr1

Military Units

The list below represents Military commands. These should each be recorded only in a Male voice. This voice should be deeper, and more aggressive sounding. The voice should have a military feel to it; commanding and imposing.

Word	Inflection	Description	File Name (*.wav)
Yes?	Question	Military Select	Vmms1
Ready	Statement	Military Select	Vmms2
Command?	Statement	Military Select	Vmms3
Yes	Statement, very aggressive	Military Attack	Vmmm1
I will	Statement, very aggressive	Military Attack	Vmmm2
OK	Statement, very aggressive	Military Attack	Vmmm3

Attack!	Exclamation, very aggressive	Military Attack	Vmma1
To Battle!	Exclamation, very aggressive	Military Attack	Vmma2
Yes!	Exclamation, very aggressive	Military Attack	Vmma3
Attack Yell	Yell	Military Attack	Vmma4
For the King!	Exclamation	Military Yell	Vmmy1
For the Queen!	Exclamation	Military Yell	Vmmy2

Religious Unit

The list below represents Religious Unit commands. These should each be recorded only in a Male voice. This voice should be deeper, and more passionate and persuading sounding. The voice should have a confident air to it.

Word	Inflection	Description	File Name (*.wav)
Yes?	Question	Priest Select	Pms1
Hello?	Question	Priest Select	Pms2
Ready	Statement	Priest Select	Pms3
Command?	Question	Priest Select	Pms4
OK	Statement	Priest Move	Pmm1
Yes	Statement	Priest Move	Pmm2
Correct	Statement	Priest Move	Pmm3
I will	Statement	Priest Move	Pmm4
Heal	Statement	Priest Heal	Pconv
Convert	Statement	Priest Convert	Pheal

King and Queen

The list below represents King and Queen commands. These should each be recorded as *both* Male and Female. The King and Queen should have an authoritative voice, powerful, formal sounding and commanding.

Word	Inflection	Description	File Name (*.wav)
Yes?	Question	King Select	Ks1
Hello?	Question	King Select	Ks2
Ready	Statement	King Select	Ks3
Command?	Question	King Select	Ks4
OK	Statement	King Move	Km1
Yes	Statement	King Move	Km2
Correct	Statement	King Move	Km3

I will	Statement	King Move	Km4
To Battle!	Exclamation	King Rallying Troops	Kr1
For the Kingdom!	Exclamation	King Rallying Troops	Kr2
For the Queen!	Exclamation	King Rallying Troops	Kr3
For the King!	Exclamation	King Rallying Troops	Kr4
Join Me!	Exclamation	King Rallying Troops	Kr5

Languages

- Japanese
- Chinese: Oldest Dialect
- German
- Mongolian
- Arabic
- Middle English
- Latin
- Welsh/ Galic
- Farsi

18.0 Campaigns and Scenarios

Dynamic Campaign System

To be determined.

Campaigns

Learning Campaign

To be determined.

Mongol Campaign

(Pre 1206) Unify kingdom; establish capitol at Karakorum.

(1208) Battle of Irtysh; overcome last resistance in Mongolia by defeating Kushluk (leader of Naiman tribe who fled to seek refuge with the Kara-Khitai Tartars).

(1217) Kushluk treacherously overthrew the Khan of the Kara-Khitai in 1216 and prepared for war with Genghis (whose spies kept him informed of this). Genghis' armies were tired from 10 years on campaign and he sent only 2 toumans (20,000 men) to deal with Kushluk. These men managed to incite a Tartar revolt and Kushluk was defeated.

(1224 – 1226) The Tangut (of Hsia) refused to assist Ghengis with his war against Mohammed Shah and formed an alliance with the Chin. This led to war and in 1226 the Mongols met and crushed 300,000 Tangut cavalrymen at the Yellow River.

(1226) Victory over Hsia and Chin; Hsia emperor is killed in a mountain fortress, new Hsia emperor surrenders.

(1231) Conquest of the Chin; the Mongols formed an alliance with the Sung and sieged city of Pien Liang (Kaifeng), thus defeating the Chin.

(9 April 1241) The Battle of Liegnitz; With the Mongols pouring into eastern Europe, the chivalry there were prepared rto fight desperately. Prince Henry the Pious of Silesia gathered an army of 40,000 Germans, Poles, and Teutonic Knights and was to be reinforced by King Wenceslas of Bohemia and his 50,000 troops. King Wenceslas did not arrive in time ands the Mongols crushed Prince Henry's army at Liegnitz. The Mongols then headed for Hungary.

(11 April 1241) The Battle of the Sajo River; the Mongols headed for Hungary and King Bela received word that they had arrived on the opposite side of the Sajo River. Bela marched eastward from Pest and siezed a bridge over the Sajo from a small Mongol detachment. The Hungarians formed a huge bridgehead and came under attack on the 11th. Using fireworks, noise, and missile weapons, a small Mongol holding force was able to distract the bridghead. In the predawn darkness some 30,000 Mongols had waded the Sajo to the south. While the Hungarians were distracted, these Mongols turned to the north and attacked the rear and flanks of the enemy. The Hungarian army collapsed,

paniced, and fled – the Mongols pursued until they had butchered the majority of the retreating Hungarians (est. 40k – 70k men).

(1242) Historically, the Mongols were ready to push into western Europe at this time. Just after Christmas, the crossed the frozen Danube and began across the Julian Alps into northern Italy. Several west European groups had hastily gotten defensive forces together but they would likely have been crushed. The only thing that saved western Europe was the news that Ogatai (son and successor of Ghengis) was dead, forceing them all to return to Mongolia for the selection of a new Khakhan. Scenario should be based on Ogatai not dying at this time.

Japanese Campaign

(1274) The Mongol armada from China (800 ships and around 30,000 men) arrives off the Japanese coast. The islands on the way to Kyushu were quickly overrun. The Japanese were confused by the new form of combat – they traditionally fought in a very ritualized manner with Bushi of similar ranks calling one another out for single combat and only the militaries being involved. The Mongols and their Korean conscripts fought in massed formations and massacared civilian and soldier alike.

(1274) The surprised Japanese at the front sent frantic requests for help to Kamakura.

(1274) The Mongols reached Kyushu and forced the defenders there to entrench.

(1274) Histroically, the Mongols had their ships in the Hakata harbour and pulled out in search of a safe port, fearing night-time raids while in enemy territory. They were low on supplies and knew that they would have to give up their invasion soon. A typhoon then struck and destroyed many of their ships. The Mongols returned with around half of the men they had originally invaded with – most had died in the storms. This scenario could be based on an alternate history where the player did conduct a night-time raid.

(1274 – 1281) After the first Mongol attack the government of Kamakura ordered defenses to be prepared around the Hakata Bay including a massive wall.

(1281) The second Mongol invasion (4000 ships and 200,000 men) is aimed at Hakata. Divided in two groups, the smaller force's overanxious commander arrives a month before the other portion of the Mongol invasion.

(1281) The second and larger portion of the Mongol invasion arrives. Historically, the Samurai played a waiting game and would have lost. History / myth records that the Emperor made an offering at the Ise Grand Shrine and that a kamikaze (Divine Wind) was the reward. This typhoon destroyed a vast portion of the Mongol forces and saved the defenders from certain doom.

British Campaign

(800 – 850) Wessex, under the control of King Egbert, is under constant Viking attack.

(866) London is lost to the Vikings in 851. Alfred the Great, now the king in Wessex, takes it back after building a large navy and attacking the Vikings at sea.

(1066) The Battle of Hastings;

Remainder to be determined.

Arab Campaign

To be determined.

19.0 Suggestions and Related Outcomes

This section has been moved to a separate document.

20.0 Historical Data

This section has been moved to a separate document.

21.0 Technical Specification

Technical Programming Items Request for AGE 2

Notes:

- ITEM: A description of the item. (MT, BS)
- PRIORITY: A-Must Have B-Significantly improves product treat as a required item but the scope is negotiable. C-As time permits, nice but not crucial can be dropped if needed. D - Wish List.
- Agreement: C listed items can be dropped to meet a milestone. (MT, BS & Microsoft)
- ESTIMATE: Estimate in time, resources, etc. (AL)
- MILESTONE: What milestone this feature will appear as complete. (AL, HR, MT).

Type	Task	Item	Pri	Est	Mile
All AI	AA1	AI Changes as dictated by other game changes.	A	DP	
Comm.	CO1	Diagnose dropping players.		Patch	
Comm.	CO2	Automatically check for games.	A	1	
Comm.	CO3	Address 'pre-game hanging' as direct play sends the game information around (move it to engine-guaranteed delivery)	A	Patch	
Comm.	CO4	Dialogs based 'dropping' of players that are not communicating or that are chronically slow.	B	1	
Comm.	CO5	Ability to send around a player designed 'bitmap'	B	2	
Comm.	CO6	Ability in pre-game to transfer limited size files such as scenarios, player battle cries, etc.	C	5	
Comm.	CO7	Use the DP5 address shortcut method for connecting without dialog boxes.	D		
Comm.	CO8	Cut			
Comm.	CO9	Cut			
Comm.	CO10	Rewrite Game Communications to remove use of DirectPlay API keep alives.			
Comm.	CO11	Checksum the score information for Zone upload.			
Comm.	CO12	Better player connection-loss detection.			
Comm.	CO13	Packet routing.			
Comm.	CO14	Debug control to simulate connection-loss.			
Comm.	CO15	Vote system for player drop.			
Comm.	CO16	UI work.			
Comm.	CO17	Ping grid – displays ping times for all players to all players. Appears on the game screen or as a pop-up dialog.	C		5
Database	DA1	Ability to roll-back changes, version the database, and use 'source control' on it.	B	1	
Diplomacy	DI1	CUT Treaties between players can be entered into for a set period of time, say 5 minutes (expressed in years).	B	5	
Diplomacy	DI2	Multi-paged interface for 'treaties' that the player has agreed to (arrows flip between pages like a notebook).	B	5	1

Diplomacy	DI3	Diplomacy filtering toggle.			
Facing	FA1	Facing damage - units take additional damage when attacked from behind or from the flank.	A	1	1
Facing	FA2	Computer AI upgraded to support facing changes as part of its evaluation of targets.	B	DP	
Formations	FO1	Formation movement – units when placed into a particular formation - say a column, a wall, a triangle etc. will try to stay in that formation as they move across the map. We should support at least formation combat if not a full support for formation movement. Will require additional UI, etc.	B	DP	
Gaia	GA1	Persistent fire – spreads to adjacent combustibles (chance), starts at 20% total hit points remaining or less, some attacks can cause immediate fire, continues to damage object until put out (damage level brought >20% total hit points).	B	1	
Gaia	GA2	Renewable resources such as trees and animals that repopulate.	B	1	1
Gaia	GA3	Seagull Gaia – AI routine keeps them around their territory (i.e. specific body of water).	B		
Gaia	GA4	Gaia Hawk has a variable speed so that it appears to be floating.	B		
Gaia	GA5	Gaia flock of birds rises up from a tree when startled or when tree is felled and fly off-map.	C		
Gaia	GA6	Vulture AI	B		
Gaia AI	GI1	Fish migrate and replenish.	B	1	
Gaia AI	GI2	Predatory animals that can 'retreat' to non-player path areas (like wolves that attack then retreat to the woods).	B	1	
Gameplay	GM1	A map-based campaign style interface, a location on the map corresponds to battles, cities, and existing castles at different time periods. Possibly use iconic representations (i.e. Civilization) to change the map. Possibly use a 'period style' map for the over-map, that changes over time showing the players losses, victories, and encroachment of enemies. '3D' style figures that look like wood could show up on the map. Player could select various scenarios from a campaign by clicking on the map. (SEE: DUNE 2)	B	5	
Gameplay	GM2	Buildings can be deconstructed (instead of deleted) to recover raw materials.	B	+1	
Gameplay	GM3	Buildings deconstructed to 'rubble' that can be mined for wood and stone.	B	2	
Gameplay	GM4	Burning buildings finish the current task and do not accept new tasks until repaired.	B	1	1
Gameplay	GM5	Cut			
Gameplay	GM6	Damaged buildings are less effective at production until repaired.	B	1	1
Gameplay	GM7	Docks can deconstruct ships into lumber and iron.	B	+1	
Gameplay	GM8	Mercenary units can be 'hired' to attack a particular player, and can be coordinated for a particular attack in number of years. Appropriate notifications when the attack is starting and how it plays out. Mercenary units -	B		

		from time to time in the game, mercenary units (computer controlled) will offer to fight on your side for a limited time, possibly there is a 'button' to contact mercenaries once they have contacted you. Perhaps you have defeated the invaders and now have earned their 'respect'. They will accept payment (in advance) in gold or trade goods, and will then hang out for a period of time. You can command them pretty much like your own troops except that they may leave if they take heavy loses.			
Gameplay	GM9	Player unit AI setting (unit aggression).			
Gameplay	GM10	Production queues.			
Gameplay	GM11	Raiders - can carry off and convert enemy villagers, can pillage and raze. Only cultures allowed to have mobile siege weapons and nomadic buildings. Get no wonders and minimal advances.	A	2	1
Gameplay	GM12	Road building on commonly traveled areas.	B	2	1
Gameplay	GM13	Roads built to allow faster traffic, flow of goods. Units would stay more-or-less on the roads.	B	1	1
Gameplay	GM14	Ships are multi-function and can carry a mixture of trade cargo and units. Ships know their 'capacity' for each and this is shown on a 'progress bar' type system or another easy-to-use display.	B	1	
Gameplay	GM15	Villagers can pick up goods, food, wood, stone, etc. that has been dropped just like they are collecting other things (from lumberjacking or mining for example) and carry it to the town center. If they are tasked for a particular commodity that they gather they will prefer these 'pre-mined' items if they see them.	B-C	1	
Gameplay	GM16	Walls that function more as combat structures - i.e. walls block some missile fire, units on the opposite side of attacks from walls only take damage from siege engines, etc.	B	2	1
Gameplay	GM17	Cut			
Gameplay	GM18	Major battles appear on timeline (gauge with ‘kills per minute’.)	B		
Gameplay	GM19	Graduated area-of-effect for siege weapons - so direct hit does X damage, one tile out does X/2 two tiles out does X/4.			
Gameplay	GM20	Implement building capture function.			3
Gameplay	GM21	Standardized trained unit build model; all trained units apprear at the 6 o’clock position of the building they are trained from, if this location is obstructed they appear in the next available location, moving counterclockwise from 6.			
Gameplay	GM22	Relics.			
Garrison	GR1	'Garrisoning' units and unit behaviors - i.e. units can be 'stored' in a castle or tower and they fire from the tower if possible. Units stored in the garrison will slowly heal. Garrison or 'storage' of troops in a building. A concept where a tower, for instance can hold 10 archers. The tower would have a strength of '10' as far as firing, and a	A	3 + 1	1

		longer visibility range than the archer. The player could, at their discretion 'turn out' the archers from the tower. Also, the archers in the tower would take damage proportional to the tower, i.e. damaged 10% if the tower is damaged 10%. Possibly have them 'turn out' if the tower is damaged to 20% total hit points or less remaining and do whatever they would do as units.			
Graphics	GP1	Allow an overlay to be created by the player (one per player) with their particular 'symbol'. This overlay would be placed on large buildings, on flags, etc. Player would have a tool to design and edit this bitmap, or possibly an icon format could be used by the player. Interface: 1, Game: 5, Editor: 5	B	11	1
Graphics	GP2	Change clipping range to accommodate larger buildings (larger than current 3 tile), prevents buildings from disappearing during scroll.	A		
Graphics	GP3	Change map size to double the current (Age of Empires) size of the tiles. (RESEARCH)	B	1	1
Graphics	GP4	Improve performance of 'smoke' with the dither support in the compression for sprites.	C	MP	
Graphics	GP5	Increase map size.	A	1	
Graphics	GP6	New 'boat movement' to allow units to 'bob' on the water slightly (this may be a unit movement and not specifically a graphics enhancement) - wave overlay.	C	1	1
Graphics	GP7	Organize graphics (database).	A	3	
Graphics	GP8	Realistic horse fidget.	B	1	
Graphics	GP9	Two color transformation.	A	1	
Graphics	GP10	Work out a way to show units that are behind very large buildings (castles). Ideas: map rotation on 90/180 degree increments	A	5	1
Graphics	GP11	Units kick up a dust or spray when moving in or across certain terrain types.	C		
Graphics	GP12	Cut			
Localization	LO1	A way to extract, edit, and re-insert text in scenarios	A	2	
Localization	LO2	Cut			
Pathing	PA1	Arrow indicator for moving units (i.e. Gettysburg style.)	C	2	
Pathing	PA2	Gathering points for produced units (by building).	B	1	
Pathing	PA3	Line-Of-Sight – increased by 1 tile for each unit of elevation (simple).	C	<1	1
Pathing	PA4	Optimize for units that go back and forth between two points (i.e. villagers and trade units.)	C	DP	
Pathing	PA5	Cut			
Pathing	PA6	User drag and drop waypoints, re-appearing.	C	2	
Scen Ed	SE1	Cut			
Scen Ed	SE2	When testing scenarios, I'd like to be able to choose the difficulty level to test, from within the editor. Currently, Age, when testing from the editor, defaults to the difficulty level that was last played in a normal game. (ChrisR)	B	<1	
Scen Ed	SE3	Ability to cut and paste sections of a map from one to another; do either as a lassoed section or a as a smaller map into a larger. Include manipulation utilities (flip, rotate, etc.)	B		

Scen Ed	SE4	Campaign score and summary.	B		
Scen Ed	SE5	Import / export text utility for scenarios, string tables, etc.		3	
Sound	SO1	"Pitched Battle" terrain sound - to make a more rich sound for large battles, have a 'battle background' sound be based somewhat on the number of units in combat on the screen.	B	2	
Sound	SO2	Ability to play a sound and see a sprite from within the database instead of launching separate applications.	C	2	
Sound	SO3	Cut			
Sound	SO4	Improved 'terrain' sounds that would be able to cycle through a list of different sounds to add a lot of variety - these could be associated with particular buildings. The current terrain sound system for tile types is adequate for wilderness - I would like the same facility for villages/cities as well. This will be especially important to give a feeling of 'life' to the castles and other buildings.	A	2	
Sound	SO5	Individual unit sounds and group sounds are separate - when a single unit agrees to move somewhere, it has a single "ho!" sound, when a group moves (say > 5 units) it makes a different group move sound like a lot of voices. The same comment applies to the 'movement' sound for a group as opposed to an individual - a group of 10 heavy cavalry makes a different sound than a single scout when moving.	B	1	1
Sound	SO6	Off-screen sounds. The sound 'extends' from off screen for some distance - so a battle taking place just off screen can be heard. Troops marching in will be heard slightly before they appear. Off screen sounds should be played at a reduced volume. (RESEARCH)	B	2	
Sound	SO7	Play looped sounds, especially looped terrain sounds. Streams gurgling, for instance. (RESEARCH)	B	1	
Sound	SO9	Some words are specific to the individual civilization - about 10 words each Civ.	B	1	
Sound	SO10	Sound Fonts used in the game. (Gets additional marketing mileage from creative labs) for Midi. Possibly use sound fonts for sound effects to reduce CPU/Bus load for playing sounds, effects. (RESEARCH)	B	1	
Sound	SO11	Support for stereo sounds in the engine.	B	<1	1
Sound	SO12	The game should not cut-off a sound before it plays again - i.e. Hammering sound in Age of Empires. (RESEARCH)	B	1	
Sound	SO13	Use of 'panning' for on-screen sounds. If the combat is to the left of the screen, the sound is left channel panned to give more stereo separation. Possibly dividing the screen into left, center, and right areas for panning separation. On-screen panning handled by the engine. Ability from within the database to select if a sound should be played in relation to screen placement or not. Database entry for panning.	C	3	
Testing	TE1	A feature that causes the game to auto-save every 'period' say, 4 minutes.	A	1	
Testing	TE2	A list of all 'report' type command words, i.e. FPSlog etc.	B	5	

		that might give useful information for testing.			
Testing	TE3	Debugging input box that logs comments to a central file.	A	1	
Testing	TE4	Improved notification (multiplayer) that the game is being saved.	A	1	
Testing	TE5	Test hooks into the object list / engine / etc. to enable automatic testing.	A	1	
Testing	TE6	Cut			
Trade	TR1	Evaluation of on-map trade routes - based on bandit activity, risk of enemy attack, diplomatic situation. (pretty much a table decision with some randomness or personality influence)	B	DP	
Trade	TR2	Evaluation of trade risk - trade routes will have an associated risk for off-map trade. Computer player will evaluate level of risk and level of need and decide if it should use off map trade and which trade route. (pretty much a table decision with some randomness or personality influence)	B	DP	
Trade	TR3	Off-map trade. Units (land and sea) move off-map (disappear at the edge of the map) and are gone for a period of time. They return to the map after that period facing opposite the direction they left. They proceed to their point of origin	A	+3	1
Trade	TR4	Implement any unique trade unit behaviors.			4
Trade	TR5	Off-map movement to on-map locations options.			
UI	UI1	A 'setting save' for random games – possibly more than one setting save - so when a user sets their map size, tile set, victory conditions, etc. they are preserved and can be activated at the click of a button.	B	1	
UI	UI2	A way to show roughly how many units were contained in another unit, i.e. showing 'tags' on a transport highlight to show the number of units. Being able to show the types of units and their counts would be good in the 'pop up' information - what in Age of Empires is in the square box to the left. Pop-up panel or other interface item that shows the content of a unit that can store other units (i.e. transport boat or garrison). Units can be commanded to leave from this interface. - Interface should probably show iconic representations of the units.	B	2	1
UI	UI3	Add UI selector for 'game size' in number of units.	C	0	
UI	UI4	Cut			
UI	UI5	Changes required to implement (TBD) new interface. New pre-game interface would be more 'game' look and feel with objects representing the interface elements. Also, animated UI items	B	15 PRE, 5 IN, 5 POST, 1 ANIMATED	
UI	UI6	Hot-key to jump between combat sites (trouble spots).	B	1	
UI	UI7	Improve the speed of the mini-map (per MattP)	C	MP	
UI	UI8	Improved mini-map that is selectable between a few 'modes'. 1) Combat mode - owned units appear in one color, allies another, and hostile units in a third color. Buildings are in darker versions of the color. Terrain is shown as gray for land, black for water and possibly gray shades for elevation and walls. 2) Trade mode that	B	1	1

		shows trade generation and delivery sites. Shows idle trade units in a special color. Shows 'favorable' and 'disfavorable' trade sites in different colors. 3) Resource map shows resources highlighted and workers gathering resources, as well as idle workers. Resource collection points (color coded?) can be shown also. All other units can be shown in black or gray or something. 4) Normal mode would be as Age of Empires. (combat mode only for M1)			
UI	UI9	Interface support for animation in the 'background' i.e. non-selectable animation that loops.	C	0	
UI	UI10	Interfaces support animated icons - i.e. a flag that waves when you select it in the interface.	C	0	
UI	UI11	Mini-map indicators of 'trouble spots' that are easy to see	B	1	
UI	UI12	Mini-map signal to send a 'flare' to allies on their mini map to request assistance, indicate a point of interest, etc. Flare might show in flashing green or yellow or something instead of the combat color.	B	1	
UI	UI13	Multi-player save-game feature would allow players to save the game (or have it save periodically) and allow it to be resumed if all of the players were available.	B	3	
UI	UI14	Previous chat messages are available in the chat dialog	B	1	
UI	UI15	Support for DirectInput keyboard (performance? -- RESEARCH)	D	1	
UI	UI16	Support text overlays for the interface to handle text on maps. This might need to be a part of the Scen Ed. (MS Request)	C	0	
UI	UI17	User configurable hot-keys to do specific things, i.e. jump to town center is 'T' but I can change mine to 'X'.	D	2	
UI	UI18	Victory condition warning sound - repeats at an interval to let the player know a timed victory condition is pending (i.e. when a Wonder is created - the victory pending sound triggers every 4 minutes or something).	B	1	
UI	UI19	Unit outlines reflect alliance (enemy = diamond, own = box, etc.)	C		
UI	UI20	“Go Idle” button takes player to next idle villager.	B		
UI	UI21	One-button access to an online tech tree - possibly display of a static image, or could be a computer-drawn tree.	C		
UI	UI22	CUT In-game overlay displays unit categories (military, villager, ship, etc.), activities (guard duty, idle, en route, etc.) and numbers assigned to each behavior. Clicking these cycles through the appropriate units.	B		
UI	UI23	When you are victorious, you immediately get bounced out of the game -- I'd like to be able to turn off fog of war and turn on reveal map and be able to survey the map and see what I was up against.	C		
UI	UI24	UI to handle gates in game.			
UI	UI25	Game settings dialog 'speed lock' entry.			

UI	UI26	Mini-map scale reflects on-screen scale			
Unit AI	AI1	"Farmer" AI to allow a farmer to convert adjacent grassland into farmland. Farmland would be 'borderless'	A	2	1
Unit AI	AI2	A 'blocking' behavior of units that prevents faster or smaller units from running through a blockade. In Age of Empires a scout could run through a line of axe-men if there was even a small gap. If possible I would like to be able to have units able to block an area and move to close a gap if someone tried to break through.	B	DP	
Unit AI	AI3	'Charge' action - unit has a fast move that does additional damage when it connects. Unit resumes normal movement after the charge and cannot charge again for a time period. (4 TILE DIST)	B	1	1
Unit AI	AI4	Damaged units move at a different rate than healed units. They have a different 'injured' movement animation. (>50% -- IDENTIFY AFFECTED UNITS)	B	1	1
Unit AI	AI5	Defend behavior that is more like what the computer does in Age of Empires - if you assign a swordsman to defend an area, it can move around to attack, but will return to the defense place. I.E. it will take an advantageous attack but cannot be 'lured out' too far by harassing troops. PART OF GUARD	B		
Unit AI	AI6	Different scouting sounds when a tower or scout sees an enemy unit and goes to 'alert' status. Improved notification sounds so they don't get 'lost' if you are initiating a battle. Possibly by defining an 'alert' state for troops - and you can get a sound if they are 'alerted' but not when they are engaged in combat.	B	2	
Unit AI	AI7	Follow behavior - avoids contact with enemy units, or can follow a unit and stay just out of visual range.	B	2	
Unit AI	AI8	Guard - unit or building may be selected. The unit will stay close to the guarded unit and engage any attackers. Unit will return to the protected unit after engaging or if the unit faces different attackers. (uses computer AI for this)	B	1	1
Unit AI	AI9	'Notification' of units in a group when one unit is in trouble. Units react to threats to a group as a group not as individuals.	B	Patch	
Unit AI	AI10	Cut			
Unit AI	AI11	Patrol movement- UI button and associated unit AI that will allow a unit to move through the set of waypoints by going to waypoint 1 after say waypoint 7 automatically.	B	2	1
Unit AI	AI12	Scout movement - will attempt to uncover new areas slowly and carefully. Could have a special movement rate.	B	2	1
Unit AI	AI13	Unique unit actions when grouped (Volley for archers, Set-against-charge for pikemen, Shieldwall for footmen) group special actions / moves appear as interface items when a group of the appropriate size has been selected.	B	1	
Unit AI	AI14	Units can signal when they discover a particular object. I.E. One scout behavior might be to look for 'gold'. (This could be any of several objects like food, enemies -- only,	B		

		buildings, etc). When it sees the selected item it will stop and make a particular sound that is played for the user. PART OF SCOUT			
Unit AI	AI15	Units need to be able to “see’ the center tile of a building prior to attack. (RESEARCH – any change required to support larger buildings?)	A		
Unit AI	AI16	Hero type units have the ability to convert other units and cannot be converted themselves.			
Unit AI	AI17	AI for computer to manage gates.			

AI Related Tasks

Items below are listed in order of priority.

Task ID	Task	Status
	Enhancements to provide actual strategy; expert system.	
	Ability to use formations fully.	
	Ability to deal with unit facings.	
	Ability to handle garrisoning; what to insert or remove, healing, etc.	
	Ability to manage renewable resources.	
	Ability to handle new siege types.	
	Ability to handle charging, shield walls, etc.	
	Ability to better breach defensive structures, especially walls.	
	Ability to better construct defensive structures, especially walls.	
	Ability to handle mercenary units.	
	Ability to handle outlaw unit defense.	
	Ability to handle outlaw unit AI.	
	Ability to handle unit Ais (guard, follow, explore, etc.)	
	Additions to provide a realistic trade system.	
	Additions to provide a realistic diplomacy system.	
	Changes to implement the surrender / overwhealming odds victory condition.	
	Ability to effectively assault wonders.	
	Radier unit behavior.	
	Changes allowing CP to understand all victory conditions.	
	“Little” bug fixes.	
	In general, a better all-around multiplayer computer player.	
	Host migration in multiplayer.	
	Pathing enhancements (zone changes).	
	Reduce CP’s focus on single damaged unit.	
	Allow CP to build on multiple islands.	
	Improve CP late game performance.	
	Increase attack group size.	
	Increase likelihood of CP building appropriate structures near attack points.	
	Improve CP performance in random games.	
	Include advanced diplomacy logic.	
	Improve CP presence in games.	
	Handle players walling in CP buildings.	
	Improve CP resource gathering.	
	Allow CP to do something useful with civillians after sufficient gathering.	

	Ability for CP to use and understand unit deletion.	
	Allow CP to use taunts.	

Communications Related Tasks

Pri.	Task	Est. (Days)	Comments
1	Automatically check for games. Use the DirectPlay enumeration in DP5 to update the list of 'games to join' screen.	1-2	Code may already be in there – not difficult to do.
1	Review raid bugs for existing system		
2	Address 'pre-game hanging' as direct play sends the game information around (move it to engine-guaranteed delivery) Remove Dplay's use of send shared data.	4	
3	Diagnose dropping players / uncompleted games. Test Winsock2 Learn the logging information	2	
3	Test with DirectPlay 6 runtime only.	4	Should be no errors. Required for Q4 98 release.
4	Dialogs based 'dropping' of players that are not communicating or that are chronically slow. For players we detect are not responding, a dialog would be presented to the host to allow them to drop the player. Work on UI design. Should have chat box support in the UI.	3	
5	Compile with DirectPlay 6 libraries.	1	Does not include implementation of any features of DP6.
5	Test on Win98	1	Probably done by MS – should not present any problems.
5	Add ability to transfer the Age2 player heraldry (very small file). Implementation: There would be a specific file associated with the current player in a certain directory. The file would be transferred to all peers. The files would be stored in a temporary cache directory that is cleaned out each time the game starts. The files would be small – about the size of a couple of icon bitmaps (about 1 Kbytes). A more complex system would be to only transfer it if they did not already have that particular file (file is identified by a GUID or player name). These files are stored in the cache directory on the machines – cache can occasionally be cleaned of old files – or perhaps the last 25 can be kept or something.	3	Does not apply to Xpack.

6	Replace direct play's keepalive code with our own system to identify a new host, start the host, and notify the players that the host has changed.	5	May be done at the same time as replacing the host migration.
6	Store commands for the previously processed (or currently processed) turn. The 'highest' processed turn player would pass the 'valid command set' to all players if the host migrates unexpectedly, or if a player drops. All players update their current command set using the new set. Players resume processing. This should reduce the number of players incidentally dropped if they are expected to be 'out of sync' because the have a different turn ID.	4	
6	Support re-start of saved games	?	
7	Replace direct play's host migration with our own system using our own timings. Move the host to a running player if the machine identified as the host is dropped.	3-6	
8	Ability in pre-game to transfer limited size files such as scenarios, player battle cries, etc.	5	Does not apply to Xpack.
8	Reduce the size of some messages that do not need the larger header.	2	
8	Reduce the size of game commands (in game). Identify and pass only the needed information. Reduce the size of structures by using the smallest data type that represents the data.	2	Probably an Angelo task.
8	Pass only the changed information around in the pre-game to already-joined players. Split the 'I'm ready' message into separate messages i.e. 'Have CD', etc. Allow the host to request the various player settings instead of passing them on the I'm Ready. Evaluate the way pre-game information is passed around. Possibly do a new system that uses individual messages, rather than the large 'game settings' to pass around each change. Make sure game settings are not being passed whenever a player goes ready or not ready – that only that player information is passed around.	4	
8	Fix the 'pre game chat drops first message' problem that happens on occasion.	1-2	
8	Identify problems with computer players using chat system.	2	
XX	Implement DirectPlay 6 features that improve game performance or reliability.	?	Does not apply to Xpack.
XX	(OPTIONAL) Checksum the score information for Zone upload. This would be used to reduce cheating by uploading forged score information.	1	
XX	(IF REQUIRED) Rewrite Game Communications to remove use of DirectPlay API	30-65	

Communications Programming Issues

IP Launch of Game

IP Launch of the game: The host launches the game with the new command line parameters:
HOST_IP_LAUNCH “MyName” “GameName”
The client launches with: “CLIENT_IP_LAUNCH “MyName” “ipaddress”

ICQ Support

To add the support into ICQ for age2:

- Open ICQ and from the main ICQ button, choose Preferences.
- Select the tab Internet Phone/Games/Chat and click on the New External button. External Application Name is *Age of Empires 2*, External Application Executable is *z:\age2\game\paulrungame.bat*, and under Command Line, enter CLIENT_IP_LAUNCH “yourname” “%I” (the yourname part and the %I part should have quotes around them).
- Hit the Client-Server Application button. Your External Application Server Executable is the same as your External Application Executable (z:\age2\game\paulrungame.bat) but your Server Command Line should be HOST_IP_LAUNCH “yourname” “yourgame’s name” (the yourname part and the yourgame’s name part should have quotes around them).
- ICQ Support will be later automated via a registry modification (needs to be done at installation of Age2)

Command Line Parameters

#	PARAMETER	BEHAVIOR	SCOPE
1.	800/1024/1280/1600	Sets screen size to the appropriate resolution. I f that mod is available	not active in TRIAL_VERSION
2.	8BITVIDEO	Toggles 8 bit video.	
3.	AISPEED=	Fix AI time interval, for use when using FIXEDUPDATE. Set AI speed to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
4.	ALLCP	Sets all human player position in to computer players	not active in TRIAL_VERSION, FINAL_RELEASE
5.	ALLCP	Turns human players into computer players. Forces all computer player game	not active in TRIAL_VERSION, FINAL_RELEASE
6.	ALLCP1	Turns human players except player 1 into computer players. Forces all computer player game	not active in TRIAL_VERSION, FINAL_RELEASE
7.	ALLGRASS	Tells map generator to use all grass. No effect right now code is disabled	not active in TRIAL_VERSION, FINAL_RELEASE
8.	ALLOWCP	Allows computer players	not active in TRIAL_VERSION, FINAL_RELEASE
9.	CDAUDIO/ CD AUDIO/ CD_AUDIO	Turns music on. Turns on CD music, turns off other music	not active in TRIAL_VERSION, FINAL_RELEASE

#	PARAMETER	BEHAVIOR	SCOPE
10.	CLIENT_IP_LAUNCH	Launch to join an MP game.	
11.	COLORLOG	Turn on color log debugging.	not active in TRIAL_VERSION, FINAL_RELEASE
12.	CUBEOUTLINE/CUBE OUTLINE/CUBE_OUTLINE	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE
13.	CUSTOMMOUSE/CUSTOM MOUSE/CUSTOM_MOUSE	Turns on using the custom mouse.	not active in TRIAL_VERSION, FINAL_RELEASE
14.	DATA=	Set game data file name.	not active in TRIAL_VERSION, FINAL_RELEASE
15.	DDERRORLOG	Turns on the drawing debug log. Also only allows logging when an error occurs. File name "aoeddlog.txt" and the directory is c:\	not active in TRIAL_VERSION, FINAL_RELEASE
16.	DDFLUSHLOG	Forces logging to the drawing debug log to get wrote to the hard drive.	not active in TRIAL_VERSION, FINAL_RELEASE
17.	DDLOCKLOG	Turns on another draw system log. File name is "aoelock.txt", and the directory is c:\	not active in TRIAL_VERSION, FINAL_RELEASE. Only active if DEBUG_LOG_LOC is defined
18.	DDLOG	Turns on the drawing debug log. File name "aoeddlog.txt" and the directory is c:\	not active in TRIAL_VERSION, FINAL_RELEASE
19.	DDNOFLUSHLOG	Turns of the forced write to the hard drive of logging to the drawing debug .	not active in TRIAL_VERSION, FINAL_RELEASE
20.	DEBUGLOAD	Loads a save game in debugging mode.	not active in FINAL_RELEASE
21.	DEBUGSAVEGAME	Turns off compression for save games.	not active in TRIAL_VERSION, FINAL_RELEASE
22.	DEVELOPER	Sets game mode to developer – allows cheating, quick build etc…	not active in TRIAL_VERSION, FINAL_RELEASE
23.	DIRECTDRAW / DIRECT DRAW	Game will use directdraw mode	not active in TRIAL_VERSION, FINAL_RELEASE
24.	DOLOGSTATUS	Turns on more logging. File name is "AILog\'player name'.log".	not active in TRIAL_VERSION, FINAL_RELEASE
25.	DRAWLOG	Turns on shape draw logging. File name is "drawlog%#.txt"	not active in TRIAL_VERSION, FINAL_RELEASE
26.	DRAWLOG=	Turns on shape draw logging and set file name to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
27.	DROPPACKETS	Tells game to intentionally drop packets for debugging.	not active in TRIAL_VERSION, FINAL_RELEASE. Active only _DEBUG is defined
28.	Econlog/ ECONLOG/ EconLog	Turns on economic logging. File name is "aoeELOG". The directory is c:\	not active in FINAL_RELEASE
29.	EDGEOUTLINE/EDGE OUTLINE/EDGE_OUTLINE	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE
30.	EDIT:	Sets starting scenario file to edit. Scenario file name to edit = ##.	not active in TRIAL_VERSION, FINAL_RELEASE
31.	EXIT=	Automatically exit game after a certain time. Time = ##.	not active in TRIAL_VERSION, FINAL_RELEASE
32.	FASTVIEW/FAST VIEW/FAST_VIEW	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE

#	PARAMETER	BEHAVIOR	SCOPE
33.	FILEFIRST/ FILE FIRST/ FILE_FIRST	Forces game to look for shape files in the game root directory instead of the shape directory first	not active in TRIAL_VERSION, FINAL_RELEASE
34.	FIXEDUPDATE	Set world update time to fixed amount	not active in TRIAL_VERSION, FINAL_RELEASE
35.	FIXEDUPDATE=	Set the world update time to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
36.	FORCE800	Forces screen resolution to 800*600	not active in TRIAL_VERSION, FINAL_RELEASE
37.	FULLSCREEN/FULL SCREEN/ FULL_SCREEN	Game will run in fullscreen mode. Also turns on directdraw mode	not active in TRIAL_VERSION, FINAL_RELEASE
38.	GAM=	Sets starting save game. File name = ##.	
39.	GAMECD	Forces the existence of a game CD	not active in TRIAL_VERSION, FINAL_RELEASE
40.	GROUNDOUTLINE/GROUND OUTLINE/ GROUND_OUTLINE	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE
41.	HOST_IP_LAUNCH	Start video/menu system for MP games.	
42.	IMAMUSIC/IMA MUSIC/IMA_MUSIC	Turns on music. turns on ima music. Turns off other music.	not active in TRIAL_VERSION, FINAL_RELEASE
43.	Loaddb/ LOADDB	Loads data base files	
44.	LOBBY	Closes existing copies of the game, Starts lobby MP game	
45.	LOGACTION	Turns on the game action logging. The file name "aoeact.txt". The directory is c:\.	not active in TRIAL_VERSION, FINAL_RELEASE
46.	LOGAI	Turns on logging of AI. File name is "aoeai.txt", and is placed in c:\ root directory	not active in TRIAL_VERSION, FINAL_RELEASE
47.	LOGAI=	Turns on AI logging of a specific AI player. File name is "aoeai.txt", and is placed in c:\ root directory	not active in TRIAL_VERSION, FINAL_RELEASE
48.	LOGCOMM/ LOG COMM/ LOG_COMM	Turns on communications debugging log	not active in TRIAL_VERSION, FINAL_RELEASE
49.	LOGDEBUG=	Specifies which unit to log debugging info. File name is "aoeunit.txt" and is a c:\ directory	not active in TRIAL_VERSION, FINAL_RELEASE
50.	LOGDIR:	Sets logging directory	
51.	LOGFPS/ LOG FPS/ LOG_FPS	Turns on the fps/update time/memory usage logging. File name is "fps.txt", and is placed in c:\ directory	not active in TRIAL_VERSION, FINAL_RELEASE. Active only _DEBUG is defined
52.	LOGLOCAL	Opens the comment log to local directory. log file name is "aoecomnt.txt".	not active in FINAL_RELEASE
53.	LOGNAME	Sets logging files postfix extension	
54.	LOGNET	Opens comment log to network directory. log file name is "aoecomnt.txt".	not active in FINAL_RELEASE
55.	LOGNET=	Set network path for logging to ##.	not active in TRIAL_VERSION, FINAL_RELEASE

#	PARAMETER	BEHAVIOR	SCOPE
56.	LOGOUTPUT/ LOG OUTPUT/ LOG_OUTPUT	Turns on communications debugging log	not active in TRIAL_VERSION, FINAL_RELEASE
57.	LOGRANDOM	Turns on the game debug random logging. Also turns on the visible map log. File name for the random is "aoerand.txt". File name for the visible map log is "aoeexlog.txt". The directory for these logs is c:\.	not active in TRIAL_VERSION, FINAL_RELEASE
58.	LOGUPDATECHANGES	Logs various object info like world location, and target	not active in TRIAL_VERSION, FINAL_RELEASE. Active only if DEBUGCHANGES is defined
59.	Makeres/ Makeres/ MAKERES	Builds game resource files	not active in FINAL_RELEASE
60.	MFILL	Fixes horizontal line problem that may occur with some Matrox video adapter configurations	not active in TRIAL_VERSION
61.	MIDIMUSIC/MIDI MUSIC/ MIDI_MUSIC	Turns on music. Turns on midi, turns off other music.	not active in TRIAL_VERSION
62.	MSYNC	Fixes lock-up problem that may occur with some SoundBlaster AWE configurations.	not active in TRIAL_VERSION
63.	NOAICHEAT	Turns off AI cheating	not active in TRIAL_VERSION, FINAL_RELEASE
64.	NOCHATCHEATCODES	Does Nothing	not active in TRIAL_VERSION, FINAL_RELEASE
65.	NOCOMMSPEED	Set game speed control off.	not active in TRIAL_VERSION, FINAL_RELEASE. Active only if SPEEDDEBUG is defined
66.	NOCP	Allows no computer players	not active in TRIAL_VERSION, FINAL_RELEASE
67.	NODXCHECK	Checks if machine is running greater than directX 5.0 or greater.	not active IN FINAL_RELEASE, TRIAL_VERSION
68.	NOLOGSTATUS	Turns off more logging	not active in TRIAL_VERSION, FINAL_RELEASE
69.	NOMOUSE/NO MOUSE/ NO_MOUSE	Turns off custom mouse and uses normal windows mouse	not active in TRIAL_VERSION, FINAL_RELEASE
70.	NOMUSIC/ NO MUSIC/ NO_MUSIC	Turns off game music.	
71.	NOPATHCAP	Set no cap on pathing	not active in TRIAL_VERSION, FINAL_RELEASE
72.	NOPATHLIMIT	Allows pathing to keep check for path	not active in TRIAL_VERSION, FINAL_RELEASE
73.	NORMALMOUSE/ NORMAL MOUSE/ NORMAL_MOUSE	Turns of custom mouse.	
74.	NOSOUND/NO SOUND/ NO_SOUND	Turns game sounds off, except those played in the cinematics	not active in TRIAL_VERSION
75.	NOSTARTUP/NO STARTUP/ NO_STARTUP	Turns off startup splash screens.	not active in TRIAL_VERSION
76.	NOTERRAINSOUND	Turns off terrain sounds	not active in TRIAL_VERSION,
77.	ONEBUTTON/ONE	Sets mouse interface to one button mice.	not active in TRIAL_VERSION,

#	PARAMETER	BEHAVIOR	SCOPE
	BUTTON/ONE_BUTTON		FINAL_RELEASE
78.	QUICK1	Sets quick start mode.	not active in TRIAL_VERSION, FINAL_RELEASE
79.	QUICKBUILD	Turns on quick build.	not active in FINAL_RELEASE
80.	RANDOMGAME=	Set random game seed to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
81.	RANDOMMAP=	Set random map seed to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
82.	RES_WARN	Tells game to give a warning if resources files are missing.	not active in TRIAL_VERSION, FINAL_RELEASE
83.	RESEND1=	Sets communications packet resend time one. Resend time = ##.	not active in TRIAL_VERSION
84.	RESEND2=	Sets communications packet resend time two. Resend time = ##.	not active in TRIAL_VERSION
85.	RUNLOG	Opens the run log to C:\ directory run log file name is "aoerun.txt".	not active in TRIAL_VERSION, FINAL_RELEASE
86.	SAFEDRAWLOG	Writes more stuff to the draw log	not active in TRIAL_VERSION, FINAL_RELEASE
87.	SCENARIOS=	Set scenario directory to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
88.	SCN=	Sets startup scenario file. Scenario file name = ##.	not active in TRIAL_VERSION, FINAL_RELEASE
89.	SKIPSYNCSAVE	Toggles saving game on out of syncs	not active in FINAL_RELEASE
90.	SLOWVIEW/SLOW VIEW/SLOW_VIEW	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE
91.	SPEED1=	Sets communications speed one to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
92.	SPEED2=	Sets communications speed two to ##.	not active in TRIAL_VERSION, FINAL_RELEASE
93.	SQUAREOUTLINE/SQUARE OUTLINE/SQUARE_OUTLINE	Does nothing.	not active in TRIAL_VERSION, FINAL_RELEASE
94.	STEPMODE	Turns on communications step mode for debugging. Step through com turn one by one.	not active in TRIAL_VERSION, FINAL_RELEASE. Active only _DEBUG is defined
95.	STREAMMUSIC/STREAM MUSIC/ STREAM_MUSIC	Turns on music. Turns on wave music. Turns off other music.	not active in TRIAL_VERSION, FINAL_RELEASE
96.	STRING=	Set string table file name.	not active in TRIAL_VERSION, FINAL_RELEASE
97.	SYNCMSG	Shows debugging chat message with sync info.	active only in _DEBUG
98.	SYNCSTOP	Toggles if games stops on a sync failure	not active in TRIAL_VERSION, FINAL_RELEASE
99.	SYSTEMMEMORY/SYSTEM MEMORY/SYSTEM_MEMOR Y	Use system memory for drawing.	not active in TRIAL_VERSION
100.	TWOBUTTON/TWO BUTTON/TWO_BUTTON	Sets mouse interface to two button mice.	not active in TRIAL_VERSION, FINAL_RELEASE
101.	UIP	Tells Ai to use influence placement for buildings	not active in TRIAL_VERSION, FINAL_RELEASE

#	PARAMETER	BEHAVIOR	SCOPE
102.	UNP	Does Nothing	not active in TRIAL_VERSION, FINAL_RELEASE
103.	VIDEOMEMORY/VIDEO MEMORY/ VIDEO_MEMORY	Use video memory for drawing.	not active in TRIAL_VERSION, FINAL_RELEASE
104.	WINDOW	Makes game work in window	not active in TRIAL_VERSION, FINAL_RELEASE
105.	WORLD=	Set world Db directory to ##.	not active in TRIAL_VERSION, FINAL_RELEASE

Machine Specifications

Machine	Minimum	Recommended	Minimum Multiplayer / Zone	Recommended Multiplayer / Zone
Mb Memory	32	32	32	32
Resolution x Colors at Resolution	800 x 600 x 256	800x600 x 256 1024 x 768 x 256	800 x 600 x 256	800 x 600 x 256 1024 x 768 x 256
Processor MHz	133	166	166	200

22.0 Design Prototyping

This section has been “overtaken by events”.

23.0 Milestones

This section has been removed from document and is superseded by the comprehensive Age2 schedule attached:


Age2.mpp

24.0 Wish List Items

This section is designed for the storage of all game concepts that have been removed from the design proper but which could still possibly be implemented if time permits.

Roads

Roads improve trade by allowing trade units to move more quickly over the terrain.

- Neutral to all players.
- Build automatically.
- Progressive.
- Decay when not used.
- Appearance and quality depends on traffic (matted grass, dirt path, etc.)

Sound

Attack sound is played in stereo (i.e. attack from area to the right of your screen equals attack sound played through right speaker, etc.)

Interface

In a random game (single and multiplayer), I'd like to be able to call up a screen once the game has started that tells me what settings were used in the map generation (map size, map type, fixed positions on/off, etc.).

Game Types

- A forced alliance (45 minute) game.
- A castle game – players begin with castles.

Suggested Civilization Bonuses

- Improved garrisoning. Civ can garrison X% more units in every garrisonable structure.
- Improved formations or formation bonuses. If we limit the type of formations available, this civ gets more formations to pick from or gets better bonuses (i.e. their column goes 2X as fast as normal walking, whereas other civs' columns only go 1.5X as fast)
- Automatic research items. English automatically get chemistry or something.
- Economic Information. You get immediate updates when something is sold on the world market. I don't really care what this is, but we should really, really emphasize the world market by giving bonuses for it to several civs, IMO.
- More intelligent units. Villagers automatically avoid wolves or something. Other civs have to research this.

Multiplayer Anti-Cheat System

Devise an ironclad anti-cheat system.

Wishlist Items from AoK Design Meeting

Legend:

Boldface indicates items that everyone likes
Italics indicates items that were shouted down
Normal type indicates items on which there was significant debate.

1. **Current/Max Pop somehow made visible**
2. Indicate the owner of a selected unit (instead of just its nationality). NOTE: perhaps making the unit colors more distinctive will solve this problem.
3. *Production Queues*
4. Secondary object display bug fix (Matt)
5. *Anti-hack support for multiplayer (checksums, etc.)*
6. Anti-torpedo support (Matt)
7. **Multiplayer save, including file transfers**
8. **You can see trees being chopped down in fog of war. Fix the doppleganger**
9. New debug monitoring stuff to track things like slowdowns
10. **1280 resolution**
11. command-line all-random game start
12. *let Host lock speed for Multiplayer NOTE: deemed unnecessary because we like having only the host choose speed*
13. *let Host force Random civ for Multiplayer NOTE: deemed unnecessary because players can already pick Random.*
14. **!mute / !nomute affects your own local system only**
15. *disable cliffs in game settings NOTE: it's possible that cliffs turn up too often as a random possibility*
16. **sometimes stone appears within sight of the town center. Add 3 tiles to min distance**
17. **let a building become visible when viewed from the edge instead of just the middle**
18. **recall/review old messages**
19. **add "shoot at enemy, but don't move" option for catapults.**
20. **** Visible cue to remind you that a Stand Ground catapult can't move.
21. Doppleganger bug (Matt)
22. Continue moving a unit towards a target, even if that target is destroyed or built
23. Wall placement bug (Matt)
24. *Builders move out of the way of buildings coming down*
25. **When multiple buildings are selected (example: 6 barracks), clicking on "clubman" makes them *all* build a clubman. NOTE: if you run out of resources, none should be built**
26. ** In a mixed group, if you issue a command such as "attack ground" that some units can't do, *none* of the units do it. This is bad and should be fixed.
27. There is a sound bug in mixed groups; if one of the units is a building, you often don't hear the "acceptance" sound when you give them an order.

28. **Make trade more productive in some way. NOTE: suggestions included trading for stone, letting you trade with your own docks, and just getting extra money via trade.**
29. *Let the Host ban certain units from the game (like catapults, say)*
30. *permit the buliding of bridges or shallows or something similar*
31. **when a transport is selected, be able to see the units inside, and disembark only part of them. Perhaps one separate icon for each type of unit would be sufficient.**
32. Group pathing bug (when multiple units are tasked to go somewhere and one guy won't move, the jerk)
33. **Option to place team town centers together at game start**
34. **Kill birds (for food? Or just to kill?) NOTE: need a cloud of feathers when the bird is hit**
35. New cliff art, in combination with the old art
36. **Make the diplomacy screen reciprocal, so you can tell what the other guy thinks of you.**
37. *Alchemy catapult stones set trees on fire*
38. Research item that lets human-controlled missile units back up while firing.
39. Research item that lets human-controlled units try to dodge catapult fire as part of unit AI
40. **Another shield, past Iron**
41. **A land transport unit**
42. The Horse/Scout idea
43. **More (official) taunts**
44. **Automatically display town centers of all allies in a team game at start**
45. **Show the random map type while in the game**
46. **Show the map size while in the game**
47. **See what units are going to be selected while click-and-dragging**
48. *Let villager hide inside a tree to be an invisible sentry. Have him fall out of the tree when it's attacked.*
49. **Roads: villagers build them, they increase speed.**
50. **More research items besides Drill.**
51. *Pop limit options for singleplayer games*
52. **When a group is selected and you hit delete, let all of them die at once**
53. **Set up default chat mode to "Allied" in multiplayer games. Also list what kind of chat you're using in the mini-chat box (i.e., Allied, All, etc.)**
54. **New terrain tile set**
55. While click-and-dragging, some way to have it select *only* military units or *only* villagers
56. **Double-click to select all units of same type, like in Starcraft**
57. Let mixed groups show all the different unit types at the bottom of the screen. Click on one to select just those.
58. **If you double-click while trying to build a villager (or whatever), it turns off the build. This sucks.**
59. **Better fog-of-war NOTE: Matt says we can make it "more rounded" but that's all.**
60. **Custom superunit artwork**
61. **Edge of world distinguishing art**
62. **Lions should not attack catapults or ballistas.**
63. **Boat movement bug (they get stuck). Make rivers wider so boats can ease through**
64. **More facets for boats so they look better when turning around**

65. **Make player colors more distinctive**
66. **Fix the tribute screw on end-of-game scoring**
67. *Passable foundations;or* don't let us build things too far away from our villagers.
68. **Let the players see what the game setup is after the game starts.**
69. **New cheat units (spaceship, laser tower, etc.)**
70. **Have a chat box accessible at game end, to discuss one's triumph or defeat**
71. **Print-screen option for end-of-game stuff**
72. **See wonders built on the timeline**; **see major battles on the timeline NOTE: presumably the latter means "enemy town centers destroyed" or something.**
73. *Turn on smoke trails*
74. *Smoke from burning buildings*
75. **Let the host set the teams in multiplayer NOTE: players can always subvert this after the game starts by using Diplomacy, so this would really only let games start faster, which is good anyway.**
76. Parameter quick-launch game (Paul B)
77. **Make the timeline text easier to read**; **Make the timeline more like CIVILIZATION's, so it starts small, then gets fat, etc.**
78. **When a unit finishes training, have a hot key to teleport you to that unit. NOTE: seems good to teleport you to buildings that just finished researching, or to a place that just had a fight start.**
79. **Make it easier to rebuild farms (queue them?)**
80. **Better multiplayer code, including winsock 2, whatever that is (Paul B)**
81. **Drop lagging player via vote as in Age2**
82. **Add a new "Tribute All" button that gives away everything you own.**
83. **Only the host can change speed**
84. *The scenario-creator interface is hideous, make it prettier*
85. **User-configurable hot keys**
86. *When you resign, give your bldgs to your allies*
87. *In-game Help*
88. **Idle villager notification (snoring, or something)**
89. **Key to find the idle villager (maybe the same as #78 above)**
90. **Sound effect for research completion**
91. *Villagers stop tasking when player drops*
92. *Don't let the pop limit be exceeded by the common ploy of making multiple buildings*
93. Put Gaia units on their own tab in the scenario creator
94. Split buildings and units in the scenario creator
95. Cannibal cheat.

A. Contact Information

Team e-mail	mailto://age2@ensemblestudios.com	
Game Design -		
Bruce Shelley	mailto://bshelly@ensemblestudios.com	847-259-7127
Mark Terrano	mailto://mterrano@ensemblestudios.com	972-960-2700 x-243 (Pager: 214-897-0491)
Design Spec -Ian Fischer		
	mailto://ifischer@ensemblestudios.com	972-960-2700 x-235
Programming -Angelo Laudon		
	mailto://alaudon@ensemblestudios.com	972-960-2700 x-211
Music & Sound - Chris Rippy		
	mailto://crippy@ensemblestudios.com	972-960-2700 x-210
Art – Brad Crow		
	mailto://bcrow@ensemblestudios.com	972-960-2700 x-234
Project Management – Harter Ryan		
	mailto://hryan@ensemblestudios.com	972-960-2700 x-268
Product Managerment (MS) - Tim Znamenacek		
	mailto://timz@microsoft.com	425-936-5075
Test Lead - Jamie Evans (MS)		
	mailto://jevans@microsoft.com	425-703-2303
Press (Shandwick,MS)		
Genevieve Ostergard	mailto://gostergard@shandwick.com	(425) 452-5400
Adam Kahn	mailto://akahn@shandwick.com	(425) 452-5400
Age2 Suggestions	mailto://questions@ensemblestudios.com	

B. Database File Naming Conventions

Units

Basic Filename Structure

U = Unit Abbreviation
A = Animation Code
O = Overlay / Shadow Code
X = File Extention

UUUUU_AO.XXX

Examples

- Shadow for a walking knight: KNGHT_W0.XXX
- Overlay 3 for a running outlaw: OUTLW_R0.XXX
- Fidget for a Pikeman with no shadow or overlay: PKEMN_FN.XXX
- Fidget 2 for a Pikeman with no shadow or overlay: PKEMN_GN.XXX

Unit Abbreviation Table

Unit	Name
Cavalry, Knight	KNGHT
Cavalry, Lance	LANCE
Cavalry, Paladin	PALDN
Cavalry, Scout	SCOUT
Gaia, Deer	DEERX
Gaia, Fish	FISHX
Gaia, Hawk	HAWKX
Gaia, Outlaw	OUTLW
Gaia, Wolves	WOLFX
Infantry, Berserker	BRSRK
Infantry, Heavy Swordman	HVSWD
Infantry, Pikeman	PKEMN
Infantry, Spearman	SPRMN
Infantry, Swordman	SWDMN
Infantry, Two-Handed Swordman	THSWD
Missile, Archer	ARCHR
Misc, Artifact Cart	ARTCT
Missile, Compound Archer	CARCH
Missile, Cavalry Archer	CVRCH
Missile, Hand Cannoneer	HCANR
Missile, Heavy Crossbowmen	HXBOW
Missile, Crossbowmen	XBOWM
Siege, Bombard Cannon	BCANN
Siege, Covered Battering Ram	BTRAM
Ship, Cog	COGXX
Ship, Fishing Ship	FSHSP
Unit	**Name**
Villager, Male	VMALE
Ship, Galley	GALLY
Ship, Junk	JUNKX
Ship, Off Map Trade Boat	OMTBO
Siege, Mangonel	MANGO
Special, Monk	MONKX
Special, Infiltrator / Spy	INFIL
Siege, Scorpion Ballista	SCBAL
Siege, Trebuchet	TREBU
Trade, Caravan	CARAV
Trade, Cart	TCART
Trade, Donkey	TDONK
Unique, Cataphract	CATAP
Unique, Chu-Ko-Nu	CHUKN
Unique, Dervishes	DERVI
Unique, Goth Berserker	GBRSK
Unique, Janissary	JANNI
Unique, Longbowmen	LNGBW
Unique, Longboat	LNGBT
Unique, Mobile Siege Unit	MOSUN
Unique, Multipurpose Cav	MPCAV
Unique, Samurai	SMURI
Unique, Throwing Axemen	TAXEM
Unique, Teutonic Knight	TKNIT

Unique, Woad Berserker	WBRSK
Villager, Female	VFMLE

Additional Unit Abbreviations

- These are abbreviations for units that have not be finalized but which require database entries for testing.

Unit	Name
(Hero) Charles Martel	HCMAR
(Hero) Harold Haardraade	HHAHA
(Hero) Hrolf the Ganger	HHRTG
(Hero) Joan Darc	HJODA
(Hero) William Wallace	HWIWA
Cannon Galley	CANGA
Capped Battering Ram	CBATR
King	KINGX
Off-Map Trade Boat	OMTBO
Small Trade Boat	STRBO
Trade Donkey	TDONK
War Galley	WARGA

Animation Code

Animation	Code
Attack	A
Build	B
Carry	C
Death	D
Death, Still	S
Fidget	F (G, H, and I if additional fidgets)

Animation	Code
Null	N
Run / Charge	R
Special	X
Task	T (U and V if additional tasks)
Walk	W

Overlay / Shadow Code

Code	Denotes
0	Shadow
1 – 9	Overlays (sequential)
N	Null – neither shadow nor overlay

Buildings

Basic Filename Structure

B = Building Abbreviation
A = Age Code
S = State Code
O = Overlay / Shadow Code
C = Civilization Code
X = File Extention

BBBBASOC.XXX

Examples

- Blacksmith, age one, construction level one, no overlay or shadow, Asian: BLAC1ANF.XXX
- Castle, age four, null state, shadow, East European: CSTL4N0E.XXX
- Wonder, null age, null state, no overlay or shadow, West European: WNDR0N0W.XXX

Building Abbreviation Table

Description	Name
Archery Range	ARRG
Blacksmith	BLAC
Barracks	BRKS
Church	CRCH
Castle	CSTL
Dock	DOCK
Farm	FARM
Fortified Town Center	FTWC
Wall Gate	GATE
Guard Tower	GRTW
Mill	MILL
Market	MRKT
Town Center	RTWC
Siege Workshop	SIWS
Stable	STBL
Trade Workshop	TDWS
University	UNIV
Wall	WALL
Watch Tower	WCTW
Wonder	WNDR
House	HOUS

Age Code

Age	Code
First Age	1
Second Age	2
Third Age	3
Fourth Age	4
Null Age	0

State Code

State	Code
Construction Level One	A
Destruction Level One	V

Destruction Level Two	W
Destruction Level Three	X
Dying	Y
Rubble	Z
Null	N

Overlay / Shadow Code

Code	Denotes
0	Shadow
1 – 9	Overlays (sequential)
N	Null – neither shadow nor overlay

Civilization Code

Civilization	Code
Celt	C
East European	E
Far Eastern / Asian	F
Generic	G
Middle Eastern / Arab	M
Mongol	K
Viking	V
West European	W

C. Debugging Input Box

Function

The debugging input box allows players to add comments to a central pool. Bug reports, suggestions, etc. can all be logged to this same area.

Use

The user sends a normal chat message that starts with an '!' e.g. '!the chinese mill in age1 has a purple background". The user hits okay (or send) just like a normal chat message. A properly formatted message sends back a chat message that says (in effect) "Log message added to S:\LOGS\"

Implementation

- Comments are always appended to the file, with the following information in CSV format. (Date, Time, version#, player name, civ playing, age they are in, game time, "user comments").
- If the file does not exist, an error message appears
- If the file is busy, or in use, etc. the program should try several times (say up to 10 seconds) before failing the log and notifying the user that their comment did not go in the file.
- You should be able to use a network file name i.e. \\NTS_ENS3\Studios2\Age2\Logs to specify the file.
- A new registry entry "Shared Log Directory" is used to indicate the directory where the comments file is located.
- The new registry entry should probably go under "\HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\GAMES\AGE OF EMPIRES\2.00" with a Name of "Shared Log Directory"

Other Implementation

A separate dialog box is used that allows the user to select a broad category (Suggestion, Art, Gameplay, Music, TechTree, etc) for the problem. This

Notes

A tool exterior to the game (i.e. Access or Crystal Reports, or heck Notepad) will be used to manage the problem reports and put them into Raid, PR-Tracker etc. No management of the file is needed by the game.

D. AI Expert System

This section moved to a separate document.

E. Formation Data

Formation Classes Table

Per the table below, AGE 2 units are assigned a formation class that defines their behavior when ordered into a formation (i.e. protected class units move to the center of a box formation, missile infantry move behind infantry in a line formation, etc.)

Note: for building garrison purposes, the protected (P class) units exclude siege weapons. That is, siege weapons may not be garrisoned in buildings.

I Infantry
A Missile Infantry
C Cavalry
H Missile Cavalry
P Protected / Misc
S Ship
K King
X Any

UNIT NAME	ID	OBJ #	CLASS
Missile, Archer	ARCHR	1	A
Missile, Compound Archer	CARCH	26	A
Missile, Hand Cannoneer	HCANR	106	A
Missile, Heavy Crossbowmen	HXBOW	120	A
Missile, Crossbowmen	XBOWM	349	A
Unique, Chu-Ko-Nu	CHUKN	35	A
Unique, Longbowmen	LNGBW	137	A
Cavalry, Lance	LANCE	133	C
Cavalry, Knight	KNGHT	131	C
Cavalry, Paladin	PALDN	173	C
Unique, Cataphract	CATAP	28	C
Unique, Multipurpose Cav	MPCAV	149	C
Missile, Cavalry Archer	CVRCH	55	H
Infantry, Berserker	BRSRK	20	I
Infantry, Heavy Swordman	HVSWD	116	I
Infantry, Pikeman	PKEMN	185	I
Infantry, Spearman	SPRMN	210	I
Infantry, Swordman	SWDMN	219	I
Infantry, Two-Handed Swordman	THSWD	259	I
Unique, Dervishes	DERVI	60	I
Unique, Goth Berserker	GBRSK	82	I
Unique, Janissary	JANNI	124	I
Unique, Samurai	SMURI	208	I
Unique, Throwing Axemen	TAXEM	221	I
Unique, Teutonic Knight	TKNIT	261	I
Unique, Woad Berserker	WBRSK	340	I
Misc, Artifact Cart	ARTCT	7	P
Siege, Bombard Cannon	BCANN	8	P

Siege, Covered Battering Ram	BTRAM	22	P
Siege, Mangonel	MANGO	139	P
Special, Monk	MONKX	145	P
Special, Infiltrator / Spy	INFIL	122	P
Siege, Scorpion Ballista	SCBAL	203	P
Siege, Trebuchet	TREBU	275	P
Unique, Mobile Siege Unit	MOSUN	147	P
Capped Battering Ram	CBATR	33	P
King	KINGX	129	K
Queen	QUEEN	TBD	K
Ship, Cog	COGXX	47	S
Ship, Fishing Ship	FSHSP	74	S
Ship, Galley	GALLY	80	S
Ship, Junk	JUNKX	126	S
Unique, Longboat	LNGBT	135	S
Cannon Galley	CANGA	24	S
Off-Map Trade Boat	OMTBO	168	S
Ship, Small Trade Boat	STRBO	216	S
Ship, War Galley	WARGA	338	S
Trade, Cart	TCART	241	P
Trade, Donkey	TDONK	243	P
Villager, Female	VFMLE	305	P
Villager, Male	VMALE	319	P

Format Specifier for Formations Data File

For documentation purposes, the formations file is called "FORMATIONS.TXT" and is in the \Data\ directory.

```
//Formation Data File
//
//Syntax:
//
//FORMATION 'FormationNameAsASingleConcatenatedStringEnclosedInSingleQuotes'
//Orientation float float float        (Canonical Orientation of the "Front" of the Formation)
//NumTypes X                           (This formation will have X different types)
//Type0
//.
//.
//TypeX-1
//SingleType   0/1                     (Says whether or not this is a single type formation.  If it is a
//                                  single type formation, then the types above are the types that
//                                  can be put into this formation.  The types in the slot listings
//                                  must also be -1 if this is a single type formation).
//Bonus int int int int                The four bonus values for this formation (Universal, Attack, Defense,
Commander)
//MaxTurnAngle int                     The maximum angle (in degrees) that this formation is allowed to turn at one
time
//NumSlots int                         The number of defined slots below
//int R/U int float float float float float float
//      (Slot# R=Required/U=Optional TypeID XYZOffset ForwardVector; There can be up to 255 diff types per
formation)
```

```
//
//NOTE:  This uses the standard 3D coordinate system:
//      Positive Y comes out of this screen right into your eyeballs.
//      (0,0)      Positive Z ---->
//        P
//        o
//        s
//        i
//        t
//        i
//        v
//        e
//
//        X
//
//        |
//        |
//        |
//       \/


FORMATION 'Line'
ID 0
Orientation    0.0 0.0 1.0
NumTypes       2
0
1
SingleType     1
Bonus 0 0 0 0
MaxTurnAngle 45
MovementType 1
SyncFrames 0
NumSlots       10
0     R  -1    0.0   0.0   0.0      0.0   0.0   1.0
1     R  -1    -1.0  0.0   0.0      0.0   0.0   1.0
2     R  -1    1.0   0.0   0.0      0.0   0.0   1.0
3     U  -1    -2.0  0.0   0.0      0.0   0.0   1.0
4     U  -1    2.0   0.0   0.0      0.0   0.0   1.0
5     U  -1    -3.0  0.0   0.0      0.0   0.0   1.0
6     U  -1    3.0   0.0   0.0      0.0   0.0   1.0
7     U  -1    -4.0  0.0   0.0      0.0   0.0   1.0
8     U  -1    4.0   0.0   0.0      0.0   0.0   1.0
9     U  -1    -5.0  0.0   0.0      0.0   0.0   1.0


FORMATION 'Column'
ID 1
Orientation    1.0 0.0 0.0
NumTypes       2
0
1
SingleType     1
Bonus 0 0 0 0
MaxTurnAngle 90
```

```
MovementType 1
SyncFrames 0
NumSlots       10
0     R  -1    0.0   0.0   0.0      1.0   0.0   0.0
1     R  -1    -1.0  0.0   0.0      1.0   0.0   0.0
2     R  -1    -2.0  0.0   0.0      1.0   0.0   0.0
3     R  -1    -3.0  0.0   0.0      1.0   0.0   0.0
4     R  -1    -4.0  0.0   0.0      1.0   0.0   0.0
5     U  -1    -5.0  0.0   0.0      1.0   0.0   0.0
6     U  -1    -6.0  0.0   0.0      1.0   0.0   0.0
7     U  -1    -7.0  0.0   0.0      1.0   0.0   0.0
8     U  -1    -8.0  0.0   0.0      1.0   0.0   0.0
9     U  -1    -9.0  0.0   0.0      1.0   0.0   0.0


FORMATION 'ArcherCavalryLine'
ID 2
Orientation    0.0 0.0 1.0
NumTypes       2
0
1
SingleType     0
Bonus 0 0 0 0
MaxTurnAngle 90
MovementType 1
SyncFrames 0
NumSlots       20
0     R  0     0.0   0.0   0.0      0.0   0.0   1.0
1     R  0     -1.0  0.0   0.0      0.0   0.0   1.0
2     R  0     1.0   0.0   0.0      0.0   0.0   1.0
3     R  0     -2.0  0.0   0.0      0.0   0.0   1.0
4     U  0     2.0   0.0   0.0      0.0   0.0   1.0
5     U  0     -3.0  0.0   0.0      0.0   0.0   1.0
6     U  0     3.0   0.0   0.0      0.0   0.0   1.0
7     U  0     -4.0  0.0   0.0      0.0   0.0   1.0
8     U  0     4.0   0.0   0.0      0.0   0.0   1.0
9     U  0     -5.0  0.0   0.0      0.0   0.0   1.0
10    R  1     0.0   0.0   2.0      0.0   0.0   1.0
11    R  1     -1.0  0.0   2.0      0.0   0.0   1.0
12    R  1     1.0   0.0   2.0      0.0   0.0   1.0
13    R  1     -2.0  0.0   2.0      0.0   0.0   1.0
14    U  1     2.0   0.0   2.0      0.0   0.0   1.0
15    U  1     -3.0  0.0   2.0      0.0   0.0   1.0
16    U  1     3.0   0.0   2.0      0.0   0.0   1.0
17    U  1     -4.0  0.0   2.0      0.0   0.0   1.0
18    U  1     4.0   0.0   2.0      0.0   0.0   1.0
19    U  1     -5.0  0.0   2.0      0.0   0.0   1.0


FORMATION 'Wedge'
ID 3
Orientation    1.0 0.0 0.0
NumTypes       2
0
```

```
1
SingleType     0
Bonus 0 0 0 0
MaxTurnAngle 90
MovementType 1
SyncFrames 0
NumSlots       11
0     R  0     0.0   0.0   0.0      1.0   0.0   0.0
1     R  1     -1.0  0.0   1.0      1.0   0.0   0.0
2     R  1     -1.0   0.0  -1.0      1.0   0.0   0.0
3     R  1     -2.0  0.0   2.0      1.0   0.0   0.0
4     R  1     -2.0   0.0  -2.0      1.0   0.0   0.0
5     U  1     -3.0  0.0   3.0      1.0   0.0   0.0
6     U  1     -3.0   0.0  -3.0      1.0   0.0   0.0
7     U  1     -4.0  0.0   4.0      1.0   0.0   0.0
8     U  1     -4.0   0.0  -4.0      1.0   0.0   0.0
9     U  1     -5.0  0.0   5.0      1.0   0.0   0.0
10    U  1     -5.0   0.0  -5.0      1.0   0.0   0.0


FORMATION 'Box'
ID 4
Orientation    1.0 0.0 0.0
NumTypes       2
0
1
SingleType     0
Bonus 0 0 0 0
MaxTurnAngle 90
MovementType 1
SyncFrames 0
NumSlots       9
0     R  0     0.0   0.0   0.0      1.0   0.0   0.0
1     R  1     2.0   0.0   2.0      1.0   0.0   0.0
2     R  1     2.0   0.0   -2.0     1.0   0.0   0.0
3     R  1     -2.0  0.0   2.0      1.0   0.0   0.0
4     R  1     -2.0  0.0   -2.0     1.0   0.0   0.0
5     U  1     2.0   0.0   0.0      1.0   0.0   0.0
6     U  1     0.0   0.0   2.0      1.0   0.0   0.0
7     U  1     0.0   0.0   -2.0     1.0   0.0   0.0
8     U  1     -2.0  0.0   0.0      1.0   0.0   0.0
```

F. Build Procedure

1. Tell everyone to not run Age 2 until you are done. This includes programmer's running from VC if their working directory is set to z:\age2\game. You want to do this so no one will have any files that you need to work with locked.

2. Edit the "rungame.bat" file in z:\age2\game and uncomment the first line so when anyone tries to run the batch file, it will display a message and exit.

3. Edit the "import.bat" file in z:\age2\data and uncomment the first line like above.

4. Update the version #
- Version numbers are in the following format 00.MM.SS.MMDD where MM is the milestone number, SS is a sequential number starting with 01, MM is the month, and DD is the day. An example version number is "00.02.01.0306". Doing a second build for the same milestone on 3/11 would change the version number to "00.02.02.0311". Doing an initial build for milestone 3 on 3/11 would change the version number to "00.03.01.0311".
- In main.cpp, around line 71, change the version for info.prog_version
- In resource.rc (open as "text"... don't let VC open it as a resource file), around line 5, change the version number for FILEVERSION
- In resource.rc, around line 75, change the version number for "FileVersion"

5. Build a new "empires2.exe" from the "Age 2" project
- Make sure you have all the latest code
- Make sure all of your files are checked in
- Set the "active configuration" on the "build" menu in VC to "ztribe - Win32 Release"
- Rebuild all
- Copy the release\ztribe.exe to z:\age2\game\empires2.exe

6. Build a new "language.dll" from the "Age 2 Language" project
- Make sure you have all the latest code
- Make sure all of your files are checked in
- Set the "active configuration" on the "build" menu in VC to "Language - Win32 Release"
- Rebuild all
- Copy the release\language.dll to z:\age2\game\language.dll

7. Build the graphics and sound resource files
- From Paradox, open the "menu" form
- Click "export" and answer "no" to auto-import
- Click "renumber resource id's and export"
- Click "export" and answer "no" to auto-import again
- Copy the *.rm files from z:\age2\data to z:\age2\game\resource (These *.rm files were created from the above steps)
- Move (not copy) all *.slp, *.pal, *.col (except for shp2slp.col), and *.sin from z:\age2\game to z:\age2\game\resource
- Move (not copy) all non-terrain sounds from z:\age2\game\sound to z:\age2\game\resource... all *.wav files with names that do not start with bird, snake, wave, or wind.
- From the z:\age2\game directory, run empires2.exe and pass in the command line parameter "MAKERES". This will take several minutes (around 5 to 10). It causes the game to build the "data*.res" files which hold all of the graphics and sounds. You won't be able to tell it is doing anything, but "empires2.exe" will be running in the background (you can see it in the task list when you press ctrl-alt-del).
- Once the game actually starts, press Ctrl-L to load the database.

8. Update the latest build of the game in "z:\age2\build"
    - Copy empires2.exe and language.dll from z:\age2\game
    - Delete the data sub-directory and copy in all the files from z:\age2\game\data
    - Copy any scenarios the designers want to include from z:\age2\game\scenario
    - Copy any campaigns the designers want to include from z:\age2\game\campaign
    - Copy terrain sounds and music midi files from z:\age2\game\sound

9. Make sure it works!
    - Run empires2.exe from z:\age2\build
    - Start a random game
    - Build a building or two
    - Train a villager
    - Tell some villagers to do some tasks
    - Save the game to "test"
    - Load the game you just saved

10. Clean up extra files in the z:\age2\build
    - Delete *.nfo files
    - Delete the savegame\test.gam file

11. Zip the file for Microsoft
    - Use WinZip (or another zip program that can handle long file names) to zip everything that is in z:\age2\build (including sub-directories)
    - Create the zip file on our ftp site which you can get to by browsing the network neighborhood, selecting entire network, then BSS. The path is \\Ww1\WWWStudios\Ftp\Ms\Age2\Builds
    - Name the zip file "Age2_MMDD" where MM is the month and DD is the day. So the file name for a build done on 3/11 would be "Age2_0311.zip". If you need to do more than one build on the same day, just append a letter to the end of the file name starting with "a", then "b", etc. So the second zip for 3/11 would be "Age2_0311a.zip"

12. Send an e-mail to Tim Z. (timz@microsoft.com), Jamie Evans (jevans@microsoft.com), Mark Thomas (a-markth@microsoft.com), and carbon-copy Harter Ryan letting them know that the build is on our ftp site and what the name of the zip file is.

13. Edit the "rungame.bat" file in z:\age2\game and the "import.bat" file in "z:\age2\data" and comment out the first line in each file so people can use the batch files again. Also let everyone know they can run the game again.

The above is for doing a full build. If you just need to update the "empires2.exe" and/or the "language.dll" file, then you can skip step #7 (the time consuming one), change step #8 to only copy the empires2.exe and language.dll files, and change step #11 to only zip those two files instead of the entire directory.

E. Score Model

To be determined.

F. Hotkey Index

Age 2 HotKeys

Select Building Hot Keys

Select Town Center "H" "CTRL H" "CTRL N"
Select Barracks "CTRL B"
Select Dock "CTRL D"
Select Seige Workshop "CTRL K"
Select Stable "CTRL L"
Select Church "CTRL C"
Select Trade Workshop "CTRL P"
Select Castle "CTRL J"
Select Blacksmith NONE
Select Mill NONE
Select University "CTRL U"
Select Market "CTRL M"
Select Archery Range NONE

Villager Hot Keys

Build Economic "B"
Build Military "V"
Repair "R"
Stop "S"
Launch Flare NONE

Villager Build Economic Hot Keys

House "E"
Mill "I"
Blacksmith "S"
Dock "D"
Market "M"
Farm "F"
Church "C"
University "U"
TownCenter "N"
Wonder "O"

Villager Build Military Hot Keys

Barracks "B"
Archery Range "A"
Stable "L"
Seige Workshop "K"
Palised Wall "P"
Stone Wall "W"

Watch Tower "T"

Barracks Hot Keys

Spearman "T"
Swordman "T"
Heavy Swordman "S"
Two-Handed Swordman "S"
Champion "S"
Pikeman "E"
Iron Shank Pikeman "E"
Halberdman "E"

Archery Range

Archer "T"
Composite Archer "A"
Crossbowmen "R"
Heavy Crossbowmen "R"
Cavalry Archer "C"
Heavy Cavalry Archer "C"

Stable HotKeys

Scout "S"
Lance Cavalry "C"
Knight "N"
Paladin "N"

Seige WorkShop

Battering Ram "R"
Capped Battering Ram "R"
Mangonel "A"
Trebuchet "T"
Scorpion Ballista "B"
Hand Cannoneer "E"
Bombard Cannon "C"

Dock Hot Keys

Fishing Ship "F"
Cog "T"
Galley "A"
War Galley "W"
Cannon Galley "C"

Church Hot Keys

Monk "T"

Misc Hot Keys

Move
Ungroup "U"
Select Group 1-9 "1-9"
Delete Unit "DEL"
Chat "ENTER"
Speed Up "+"
Speed Down "-"
Next Idle Villager "."
Cycle Focus Area "HOME"
Goto Selected object “SPACE"
Review Chat Messages Rewind “PAGE UP"
Review Chat Messages Forward "PAGE DOWN"
Command Group by Number "CTRL 1-9"
Command Select Group "SHIFT 1-9"
Command Tab Selected "TAB"
Zoom in "ALT F2"
Zoom out "ALT F3"

Formation Hot Keys

??? "N"
Break Formation "B"
Form Formation "F"
Wheel Formation "R"
Wheel Formation "L"
About Face "Q"
Outline "U"

Developer Hot Keys

Show Selected ID's "ALT I"
Show Map Paths "ALT P"
Show Render Update "ALT S"
Force Redraw "ALT C"
Toggle Obstruction Map "ALT O"
Toggle Object Display "ALT A"
Toggle System Palette "ALT X"
View Occlusion "ALT M"

Command Player 1 "CTRL F1"
Command Player 2 "CTRL F2"
Command Player 3 "CTRL F3"
Command Player 4 "CTRL F4"
Command Player 5 "CTRL F5"
Command Player 6 "CTRL F6"
Command Player 7 "CTRL F7"
Command Player 8 "CTRL F8"

Command Player 9 "CTRL F9"

Record Comment "CTRL F11"
Cast Vote to Drop "CTRL F12"
Save Game "CTRL E"
GOLD "CTRL G"
STONE "CTRL S"
Wood "CTRL W"
FOOd "CTRL F"
ORE "CTRL O"
Tool Box Toggle "CTRL T"
Save Scenario "CTRL V"
Write Mem info to File "CTRL X"
View Grid Mode "CTRL Z"

Cancel "ESC"
Toggle Score "F4"
Toggle FPS "F5"
Visibility "F6"
Fog of War "F7"
Comm info "F8"
AI info "F9"
Clock Toggle "F11"
Request Save "F12"

Debug Ping ?? "CTRL J"
Restart Game "CTRL N"

//Compilation List Please ignore for now.....
Unit Hot Keys

Knight "N"
Lance Cavalry "C"
Paladin "N"
Heavy Swordman "S"
Pikeman "E"
Spearman "T"
Swordman "T"
Two-Handed Swordman "S"
Archer "T"
Composite Archer "A"
Cavalry Archer "C"
Hand Cannoneer "E"
Heavy Crossbowmen "R"
Crossbowmen "R"
Cog "T"
Fishing Ship "F"
Galley "A"
Bombard Cannon "C"
Covered Battering Ram "R"
Scorpion Ballista "B"
Infiltrator / Spy "S"
Monk "T"
Trade Cart "T"

Longboat	"L"
Villager (Male)	"C"
Cannon Galley	"C"
Capped Battering Ram	"R"
Off-Map Trade Boat	"F"
Trade Donkey	"D"
War Galley	"W"
Scout	"S"
Caravan	"C"
Archery Range	"A"
Archery Range3	"A"
Archery Range4	"A"
Blacksmith	"S"
Blacksmith2	"S"
Blacksmith3	"S"
Blacksmith4	"S"
Barracks	"B"
Barracks3	"B"
Barracks4	"B"
Church	"C"
Church2	"C"
Church3	"C"
Church4	"C"
Castle	"J"
Castle4	"J"
Dock	"D"
Raider Dock	"D"
Dock2	"D"
Dock3	"D"
Dock4	"D"
Farm	"F"
Guard Tower	"T"
Keep	"T"
Bombard Tower	"T"
Mill	"I"
Mill2	"I"
Mill3	"I"
Mill4	"I"
Market	"M"
Market3	"M"
Market4	"M"
Town Center	"N"
Raider Town Center	"N"
Town Center2	"N"
Town Center3	"N"
Town Center4	"N"
Siege Workshop	"K"
Siege Workshop4	"K"
Stable	"L"
Stable3	"L"
Stable4	"L"
Trade Workshop	"R"
Trade Workshop4	"R"
University	"U"

University4	"U"
Watch Tower	"T"
Wonder	"O"
Gate / Closed	"/"
Gate / Closed2	"/"
Gate / Closed3	"/"
Gate \ Closed	"\\"
Gate \ Closed2	"\\"
Gate \ Closed3	"\\"
Palisade Wall	"P"
Stone Wall	"W"
Fortification Wall	"W"
Packed Town Center	"N"
House	"E"
House 2	"E"
House 3	"E"
House 4	"E"
Iron Shank Pikeman	"E"
Halberdman	"E"
Packed Mangonel	"A"
Champion	"S"
Heavy Cavalry Archer	"C"

Index