

Digital Creations Studios

Technical Design Supplement

(Introduction Screens)

Army Men : Sarge's Heroes

Gameboy Advance Version

Gameboy Advance Technical overview for Army Men : Sarges Heroes

Introduction Sequence and Menu Screens - Risks

Certain points must be considered during the development of the intro sequence and the individual screens involved.

Palette Suitability

As the AGB relies on an LCD screen, which is not back-lit, we must ensure that the colours we will use provide sufficient enough contrast when viewed on AGB. We plan to avoid dark looking bitmaps and only pick the best colours to give the most easily recognisable display. Ideas may be gained by studying some of the examples packaged with the AGB Development Kit. These best demonstrate the correct use of high contrasting colour palettes.

Code Compatibility

Care must be taken to ensure that the Intro Screens Code and the In-Game Code will merge together as seamlessly as possible and that all programmers are aware of all variables that need to be shared between both portions of code. Once the programmers have a better idea of what their respective areas of development will involve, (by 24th August) a combined strategy will be sought which will effectively ensure that their programs will work together.

3DO Confirmation

Care also must be taken to ensure that the game is fully in line with 3DO's requirements with regards to the ARMY MEN series of games. As a theme has already been developed for the ARMY MEN games, it would be beneficial for both 3DO and for DC-Studios to adhere to this design theme. With less time being allocated for these design aspects, more time will be available for developing and fine-tuning the actual playability, look and feel of the game, in this case with regards to the Intro Screens.

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Introduction Sequence and Menu Screens - Breakdown of Flowchart Elements

A similar look throughout the navigation of all menu's.

All screens should visually be very impressive, reflecting, where convenient, the traits of the ARMY MEN games, while squeezing as much as possible from the AGB's hardware. We propose to use the 256 colour bitmap mode 4 to display all backdrop images and will use sprites to display all the moving elements – this approach will be employed for all of the screens, except where design might dictate the use of a different method. For example Background X, Y and Z distortion effects may be desired and these would be applicable when using one of the B.G. modes 1 to 3. For this instance we would copy our backdrop image, stored in bitmap format, to our BG mode 1,2 or 3 tile based screen using a stock “bitmap to 8*8 character” conversion routine.

Displaying the logos of all the Companies involved in production.

These must be high quality bitmaps to ensure the full satisfaction of each company. These logos, one each for 3DO and DC-Studios, will be faded in, held on screen for a few seconds and then faded out again. This should ensure a smooth transition between each logo displayed. Each logo may have its own unique 256 colour palette or if this is insufficient, may be represented in 16bit colour mode which will allow the logo to utilise up to 65,535 different colours.

Language Selection Screen

This screen will allow the player to choose between use of the English, French or German languages for all text communication between the game and the player. To represent each language there will be three different flag bitmaps which will be highlighted using one of our proposed methods detailed later, or may possibly animate when they are selected.

There will also be text at the top of the screen asking the player to “Select Language” and text at the bottom telling which language is currently selected. This text will appear in the language that is currently selected. To confirm their selection the player must press the A button, which will trigger the transition between the Language Screen and the Main Menu Screen. See Transition Effects, detailed later.

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Introduction Sequence and Menu Screens - Breakdown of Flowchart Elements cont.

Main Menu Screen

This is potentially the most important of all the screens. It will consist of several **elements**, as detailed here:

A **backdrop image**, which will be used throughout the entire menu system. Over that at the top of the screen, sits the **ARMY MEN : SARGES HERO'S logo**, which also may be used throughout the menu system with one or two exception screens, where more room is required. Below the logo there will be **four box's**, two rows of two, which resemble Tank Tracks and will fit in with the ARMY MEN theme. These will be represented using several of AGB's sprites to allow impressive effects to be applied to them. Inside these are contained the **four options** available to the player.

From here the player can choose to:

Load a Game,
Configure Options,
Practice playing in the Boot Camp, or
Start a new Campaign.

Using the D-Pad the player may control a **Gun Sprite**, which will move around the screen, over the possible selections. When the gun is over a selection, that selection will be highlighted using one of our proposed highlighting effects detailed below. Once highlighted, the player must press the A button to confirm their selection. Once this has been done, a transition effect will take place to take the player from the Menu Screen to their chosen Sub-Screen. These transition effects are also detailed below.

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Introduction Sequence and Menu Screens - Highlighting Effects

Below are listed some but not all of the highlighting effects we propose to use:

Throb

The selection will slowly be zoomed in and out giving the appearance of a throbbing effect. This will be accomplished by writing to the sprites, Scaling registers every frame with values from a table to represent the throb effect. This table may need to be fine-tuned to achieve the best looking effect.

Rock

The selection will steadily be rotated left a little, then right, around the Z-axis. This effect is similar to the throb in that it uses another table. The values will be taken from the rocking table and used to control AGB's Sprite Rotation registers. This may also require fine-tuning.

Judder

The selection sprites x and y co-ordinates will rapidly be re-written, every frame, with new values. The x and y values will always be within a contained radius of the original co-ordinates. This method gives the effect of the highlighted selection excitedly jumping around behind the Guns Sprite, but always staying within a predefined range.

Alpha-blend overlay

The selection sprite will be overlaid with a second transparent sprite, which may or may not be animated. This sprite will act as a see-through sprite containing its own unique pattern and will be drawn especially for alpha blending usage. This effect looks very impressive when implemented correctly – further research and some fine-tuning may be required.

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Introduction Sequence and Menu Screens - Transition Effects

Several Transition Effects are being considered and some or all of these may be implemented in the final design of the Intro Screens Section. Also, combinations of these effects may be mixed together to produce new and better effects.

Simple Fade-in/out

This routine should be very simple to implement, and only requires writing a new shifted value to the Display Control register, which controls the LCD display, at every Vertical Blank.

Mosaic effect

The mosaic effect looks very impressive and has its functionality built in to AGB's hardware design. It works by steadily decreasing the resolution of the screen while maintaining the integrity of where it starts and stops. This effect should not require testing, as it is built-in.

Screen Scroll in/out

This effect will give the sense of high-speed movement in the menu sections. A steady scroll or an accelerated scroll may be implemented, and also may be in any direction. This routine will be designed to smoothly scroll on a new screen or scroll out an old one and also may use one of the BG modes, 1-3. We may want to use one of these modes to allow us to have the last screen being viewed appear behind the new screen, which will be scrolling on.

Screen X/Y, shift/spin

An effect used in many games, this applies a circle table, or whatever is required, ellipse etc, to the screens x and y offset registers. This has the effect of making the player see the screen through a camera which, although is not in itself rotating around the Z-Axis, look like it is mounted on something which is spinning around and around. Bit of a wild one!

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Introduction Sequence and Menu Screens - Transition Effects cont.

Zoom effect

This effect will be used to virtually throw a screen at or rapidly pull it away from the player. Incorporating acceleration or a table driven system, the zoom effect looks especially impressive when mixed with a rotate effect, but also looks very good on its own.

Rotate effect

This is one of the most impressive effect available on AGB hardware, combined with a Zoom effect, it will blow the player away! By calculating the new values for AGB's rotate registers every frame – we can make the screen transition look as if it is rapidly rotating and falling away from the player, or alternatively look like the player is falling towards the rotating screen!

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Introduction Sequence and Menu Screens - Breakdown of flowchart Elements, Part 2

Having detailed our Highlighting and Transition effects, we will now continue to explain some of the other screens available to the player in the Menu's Section.

Options Screen

This screen will have a slightly different look to most of the other screens, in that it will use six large icons to depict the six options available to the player from this screen. The options that are available are listed here:

Objectives

Difficulty Level

Controls

Music/Sound FX

Rumble Pak

Back to Main Menu

These options will be represented using 6 unique iconic graphics, arranged on the screen in two rows of three. As the Player moves the gun sprite over one of the icons, it will highlight, using one of the highlighting methods described previously and a text string explaining the option will appear at the bottom of the screen.

If the Player wishes to change an option, they would highlight it and then press the A button to confirm. A transition effect will then take place and the player will be presented with a sub screen allowing them to, for e.g. adjust the controls or change the difficulty level.

We feel this screen should have a slightly different design and feel, purely because it is the **Options** screen. The Player may come back to this screen more than any other and when they do they will be in the process of **changing the game parameters**, this is why we feel it should have this unique iconic design - to make the Player aware of the significance of this screen.

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Introduction Sequence and Menu Screens - Breakdown of flowchart Elements, Part 2

Pause / In-Game Menu

This screen will appear when the player pauses the game during play. There are several possible implementations of this screen that we may use. We will decide which to use when a little more research has been done on the in-game engine. This should be complete by the 30th August. Until then, several options are open to us, detailed below:

1. **Full screen Pause Menu without overlay.** This will be a separate full screen menu where the player will not see the in-game action going on behind it. This is the most simple of the styles, where a complete BG mode change may be undertaken and a high quality bitmap may be copied to the screen, on top of which the options will be printed
2. **Quarter screen Pause Menu without overlay.** A quarter screen bitmap block will be copied into the centre of the screen over the other BG's containing the game action and the options printed on to of this block. The Player will be able to see what was going on in the game before it was paused, behind this bitmap block.
3. **Full Screen Pause Menu with overlay.** Similar to the Full screen without overlay, but the Player will be able to see the paused game-play action *behind* this screen as it uses alpha blending to achieve a transparency effect.
4. **Quarter Screen Pause Menu with overlay.** Similar to quarter screen without overlay but the player will be able to see the game action around the pause menu and *behind* it, as it uses a transparency effect.

Once the in-game screen scrolling and tile-mapping engine has been finalised, a decision will be made on which style of Pause Menu we will use.

The options available to the player when in the Pause Menu are as follows:

Objectives	Displays the players current mission objectives and status.
Map	This will toggle the use of a map, overlaid on top of the screen during game-play, to help the player navigate the surrounding area.
Resume Game	Return to game-play
Quit Game	Stop Play and return to Main Menu.

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Introduction Sequence and Menu Screens - Breakdown of flowchart Elements, Part 2

AVI Playback

ARMY MEN : SARGES HERO'S has been designed with the use of cut-scene AVI playback in mind. The AGB has the ability to render AVI movies to its Mode 4 BG screen at 20fps with double buffering, which is we consider to be excellent quality for AVI playback on a handheld console.

There are also real-time decompression routines available to us from AGB's System Calls ROM. These have yet to be fully investigated and hence a maximum compression ratio vs. playback speed has yet to be determined. We can confirm that Nintendo's hardware definitely has the potential to playback AVI's at good quality. It is only how much data we can compress and store then decompress and playback that is currently being researched. We expect to have this information by 30th August.

All other Intro/decision Screens

The remaining screens that will be used for the Intro Sequence and Menu Structure (see flowchart for complete enumeration) will share a similar style. They will all share a common backdrop image, will use a full colour, ARMY MEN: SARGES HERO'S theme font to communicate with the player and will use the Gun Sprite and Highlighting and Transition effects, previously detailed, to allow the Player to navigate, select and change whatever options they desire.

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Introduction Sequence and Menu Screens - Music and Sound Effects

The music that will be used for ARMY MEN : SARGES HERO'S, both in game and during the Intro sequence, should be provide by 3DO. This will be another way to help us keep within the ARMY MEN design framework and theme. These music files/modules/samples etc will be analysed and converted, at the highest quality, using AGB tools to allow them to play on the AGB hardware.

Sound effects, both in game and throughout the Intro Sequence may be provided by 3DO or by Digital Creations Studios, depending on which scenario is most convent and least time consuming. These samples will be converted to play on AGB hardware.

The music and sound effects should be of the highest quality and should in no way have less priority given to them than other elements of the Intro sequence or general game design. We consider the music and sound FX to be a very important element, contributing much to the look and feel of both the in-game and the intro sequence sections. They should be inspiring, exciting and lively and should, as much as possible, fit in with the ARMY MEN theme.

Gameboy Advance Technical overview for Army Men : Sarges Heroes

Introduction Sequence and Menu Screens - Summary

We at Digital Creations Studios believe that this game is going to be very special. This is why we have realised that our Introduction Sequence and Menu Structure will have to be absolutely top class, showing off the AGB hardware as much as possible. We are well prepared to do this and are sure that this document shows that we are.