Savage040-060_eng

László Török

	COLLABORATORS		
	TITLE : Savage040-060_eng		
ACTION	NAME	DATE	SIGNATURE
WRITTEN BY	László Török	October 30, 2022	

REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

Savage040-060_eng

1.1   Savage040-060 Main Menu

```
                              Savage-videodriver for 040-060 Amigas

                  For ShapeShifter Macintosh Emulator

                       Version 2.2 DEMO




          What's this?
              The driver's description

          Requirements
              Required hard & software

          What's the MMU?
              Technical description of the MMU

          Tech stuff
              Tech stuff about the driver

          Configuring
              How to configure the driver under ShapeShifter

          Refresh rate
              Setting the refresh rate

          Testresults 15bit
              15bit tests & results

          Testresults  8bit
              256 colors test & results

          Testresults  4bit
              16 colors test & results

          Opps! I have problems!
              Click here if you have problems with this driver
```

1.2   Required hard&software...

Requires:

Kickstart 3.0+ (for the 4bit modes too!!)

an AGA Amiga for 15bit/8bit and ECS/OCS for 4bit

A turbo/processorcard/processor which contains 68040 or 68060

Tested (and works) with:
Blizzard A1240ERC
Blizzard A1260
Cyberstorm MK II (68040/40)
A4000/6840-25 (standard Commodore CPU card)

ShapShifter3.2 or newer...   (Tested only under 3.5/3.6)

MUCH Fast memory...

1.3   What's diz?

Sadly the ShapeShifter's internal MMU driver is a bit slow, and the other non MMU ←
    based
drivers slow down the emulation speed, when none (or few) pixels changed since the ←
    last
refresh.

So i developed this driver , because with the help of MMU only these lines need to ←
    be

freshen, which changed since the last refresh. Because this is detected by
hardware-way, you able to try ShapeShifter with refresh rate 1 !
(without big slowdown!!)

1.4   Technical description of the MMU

                    Lets start with the name:
MMU = Memory Management Unit

As you can see its mission to do some things with the memory handling.
(example: write protection, cache inhibit, showing the memory changes, others)

But the AmigaOS (yet) doesn't support the memory handling wit MMU, so the MMU is
doesn't need to be in an Amiga.

Only some applications use it, where its really need: enforcer, VMM, cpu fastrom
option, all UNIX and the LINUX, because almost unable to emulate it via software.
(i can say UNABLE to emulate it via software way)

As you can see the MMU is a memory handling unit, so unable to do other thing to ←
    do
(example:chunky->planar conversion) Because many people think it from the option ←
    of the
ShapeShifter called "MMU refresh", how the MMU make the refresh, but its DON'T ←
    TRUE!

The 68060 after the boot from the 68060.library turn on the mmu, and this driver ←
    try to
use the default 68060's MMU config.
(The 68040 makes similar, but use the 68040.library)

And when we divide the Macintosh video memory to exam: 4kb size pages, the mmu is ←
    able
to show how there was a difference in this page, and if yes, then we need only ←
    convert
this chunk.

Ok that's all about MMU. If you interested by other technical information about ←
    this
driver then take a look to
                Technical description
                !

1.5   The technical description of the Driver (only for experts .... :)

                    As i said it at the
                    MMU
                     part, this driver does not other, only convert
the changed parts of the display (which displayed by the MMU) from chunky to ←
    simple

Amiga planar mode.

This driver works only when the used processor/processordcard uses the following ←
    MMU
configuratuion:

RootPageTable 32 Megabyte
LevelA PageTable 256 Kbyte
LevelB PageTable 4 Kbyte

(so if you dont understand it, simply if your processorcard uses other MMU
configuration this driver will dont work ;)

1.6   Configuring the drivers under ShapeShifter

                 Simply   copy   the   drivers to the directory called "Video Drivers ←
                  ", because that is the
default searching path of the external video drivers.

1x1 drivers:
From version 2.1 not limited the resolution of the 1x1 4bit & 8bit drivers.

The 8bit driver is usable, when the MACINTOSH display memory requirement is ←
    smaller
than 512kb.   The memory requirement of the display is easy to calculate: ←
    simply
multiple the display width with the display height.

Example:
640x480=307200, which is smaller than 524288, so usable.

The 4bit driver is usable, when the MACINTOSH display memory is smaller than ←
    256kb,
which is equal in resolutions with the 8 bit driver, because similar 4bit ←
    resolution
needs half of the memory as in the 8bit mode. (i think this is logical..)
The memory requirements of the 4bit mode can calculate at the followings: ←
    multiply the
display widht with the display height, after divide it by 2.

Example:
640x480/2=153600, which is smaller than 262144, so usable.

!IMPORTANT!:
Thats, how the resoultion is able free to set, not means, how you can use any * ←
    stupid*
resolution, and it will works! I maked this option because many people asked ←
    for it.
(i dont able to make guarantee using not recommented resolutions, because its ←
    a MAC
side problem, not the driver's problem!)

Recommented and legal MAC resolutions are the nexts: (whichs usable)
512x384

```
640x480
832x624 (Because  i  dont  know,  how  the  MAC's  support the 800x600 mode,  ←
   because a
PowerMAC 7100 is support only this resolution)

I want one thing to say:
If  select  a  display  mode  (which is not in the upper list) please make sure  ←
   how the
width  dividable  with  64.   (thats  not require for the driver, only need for  ←
   the MAC
programs)

15Bit driver:

Here is only resolution 640x480 and ofcourse you must select 15bit colors.
(That's will be converted to ham8)


2x2 driver:
Savage040-060_2x2_8bit  here the resolution is 640x480 but it will be converted to
                        320x240 - like the Xanth-driver. Recommented for games,  ←
                           and for
                        full screen animations.



Memory requirements:
The first turn off the largest free block option, and set by manual the memory  ←
   size.
The driver's memory requirements:
(the 8bit and 4bit modes are examples)

Savage040-060_8bit (640x480)   856 kb ( 640x480 = 300kb+256kb MMU page fix+300kb  ←
   dbuff)
Savage040-060_4bit (640x480)   556 kb ( 640x480 = 150kb+256kb+150kb)

Savage040-060_2x2_8bit         2326 kb (4096x480 = 1920kb+256kb+150kb)
Savage_640x480_15bit           1488 kb ( 640x480 = 600kb+256kb+600kb+32kb  ←
   ham8convtab )

Savage040-060_8bit (512x384)   640 kb ( 512x384 = 192kb+256kb+192kb)
Savage040-060_4bit (512x384)   448 kb ( 640x480 = 300kb+256kb+300kb)


Sadly (you can see it ...) for the easier handling the MMU page all driver's need  ←
   256kb
more memory than other ways....

I think you discovered it, how the 2x2 mode in the resolution 640x480 need MORE  ←
   memory,
but it have a simply answer.  For the higher speed every line need to be 4kb. ( ←
   because
the pagesize of the mmu is 4kb too)
(sorry  for  it  but in the 68040/68060.library the default pagesize is set to 4kb ←
   , and
its  too  big  for my routines, and because i want to make the highest speed i  ←
   maked it
```

so. sorry again...)

So simply sub these values from the maximal memory and write it to the mac memory. ←
    (if
the mac videoram, or other buffer located in the chip memory the driver will ←
   open a
requester and quit. So sub a little bit more if you want sure to start it!)

But these values are the most bigger values, and its able to start them at ←
   smaller
memory. (around 100-200kb smaller)

At last the
                setting the refresh
                 is coming.

1.7 Setting

Because this driver uses MMU, you should first try it with refresh rate 1.
(At the 15bit mode too!!)
This are recommended when changes an area of size around 320x256/frame, and ←
   requires
much CPU power at same time:little screen games, emulators (Hi Louise!), image
manipulators. Or simply requires much CPU power: like ray-tracers, DTP programs.

But when you can use so program what makes many screen manipulation (ex:games) ←
   then you
should try refresh 2.

1.8 Test results-8bit

Testmachine: A1200-68060/60 Mhz (YEES! 60 MHZ!) 2meg Chip+16meg Fast
Software:Mac System7.5 (hungarian) 80 meg hd - ShapeShifter 3.6
(macintosh rom was everywhere in the fast memory - so the faster speed was ←
   everywhere)
Note:only Savage and TurboEVD testvalues here, becoz all other (AGABoost, ←
   AGAEVD)
videodrivers are MUCH more slower... (because Savage and TurboEVD uses MMU)

The resolution was everywhere 640x480 8bit, and the used screenmode was Pal- ←
   HiresLace.
[note: the demo version support only 8 bit/512x384 resolution!]

Testprogram: Speedometer 4.0

1.0=Mac Quadra 605 (68040/25Mhz) 8bit mode - Higher Value = Faster Performance

```
Driver:          Savage  Savage  TurboEVD TurboEVD
Version:            2.2     2.2      34.1      34.1
Refresh rate:         1       2         1         2
----------------------------------------------------
```

```
Color Quickdraw:   0.920    1.109     0.889    1.054


Testprogram: OffScreen Toys (Boost) 1.3

All values in FPS (Frame per Second) - Higher Value = Faster Performance

Driver:          Savage  Savage  TurboEVD TurboEVD
Version:           2.2     2.2      34.1     34.1
Refresh rate:        1       2         1        2
-----------------------------------------------------
Frame per Second:  135     151       124      142


Testprogram: Symantec System Info

100 = Mac Quadra 700/8bit mode (68040/25 Mhz) - Higher Value = Faster Performance

Driver:          Savage  Savage  TurboEVD TurboEVD
Version:           2.2     2.2      34.1     34.1
Refresh rate:        1       2         1        2
-----------------------------------------------------
Display test:     53.5    69.8      48.8     62.9
```

1.9   Test results-4bit

```
Testmachine: A1200-68060/60 Mhz (YEES! 60 MHZ!) 2meg Chip+16meg Fast
Software:Mac System7.5 (hungarian) 80 meg hd - ShapeShifter 3.6
(macintosh rom was everywhere in the fast memory - so the faster speed was  ←
   everywhere)
Note:only  Savage  and  TurboEVD testvalues here, becoz all other videodrivers are ←
    MUCH
more slower...  (because Savage and TurboEVD uses MMU)

The resolution was everywhere 640x480 4bit, and the used screenmode was Pal- ←
   HiresLace.
[note: the demo version NOT support the 4 bit mode!]

Testprogram: Speedometer 4.0

1.0=Mac Quadra 605 (68040/25Mhz) 4bit mode - Higher Value = Faster Performance

Driver:          Savage  TurboEVD
Version:           2.2      34.1
Refresh rate:        1         1
-------------------------------
Color Quickdraw:  1.321    1.326


Testprogram: OffScreen Toys (Boost) 1.3

All values in FPS (Frames per Second) - Higher Value = Faster Performance

Driver:          Savage  TurboEVD
```

```
Version:              2.2       34.1
Refresh rate:          1          1
--------------------------------
Frames per Second:   190        191
```

Testprogram: Symantec System Info

100 = Mac Quadra 700/8bit mode (68040/25 Mhz) – Higher Value = Faster Performance

```
Driver:           Savage   TurboEVD
Version:              2.2       34.1
Refresh rate:          1          1
--------------------------------
Display test:        123        126
```

(wow... TurboEVD 2% Faster than Savage in 4 bit mode ;)

1.10   Testresults-15bit

Testmachine: A1200–68060/60 Mhz (YEES! 60 MHZ!) 2meg Chip+16meg Fast
Software:Mac System7.5 (hungarian) 80 meg hd – ShapeShifter 3.6
(macintosh rom was everywhere in the fast memory – so the faster speed was ←
   everywhere)
Note:only Savage tests are here because TurboEVD not support the 15bit mode, and
AGAEVD at least 2–3 times slower than Savage...

The resolution was everywhere 640x480 15bit, and the used screenmode was Pal– ←
   HiresLace.
[note: the demo version NOT support the 15 bit mode!]

Testprogram: Speedometer 4.0

1.0=Mac Quadra 605 (68040/25Mhz) 15bit mode – Higher Value = Faster Performance

```
Driver:           Savage
Version:              2.2
Refresh rate:          2
----------------------
Color Quickdraw:  0.697
```

Testprogram: OffScreen Toys (Boost) 1.3

All values in FPS (Frame per Second) Higher Value = Faster Performance

```
Driver:           Savage
Version:              2.2
Refresh rate:          2
----------------------
Frame per Second:     –
Note: Offscreen toys NOT run in 15 bit mode... ;)
```

Testprogram: Symantec System Info

```
100 = Mac Quadra 700/8bit mode (68040/25 Mhz)  Higher Value = Faster Performance

Driver:         Savage
Version:          2.2
Refresh rate:       2
---------------------
Display test:    19.3
```

1.11 Problems...

```
              Problem:  Some pixels seems to be converted wrongly and some some  ←
                  old pointer
         phases on the screen
Solution: Please turn on the MMU refresh in the ShapeShifter/Graphics


------------------------------------------------------------------------ ←



Problem:  This driver wont start, i get only a message:
          "The Selected Macintosh Display etc..."

Solution: If you use the demo version, please select the 8 bit mode, and the  ←
    resolution
          to 512x384


------------------------------------------------------------------------ ←



Problem:  I got a message: "The Delta buffer or the Macintosh video memory located ←
     in
          the chip memory"

Solution: Please turn off the largest free block option in the ShapeShifter memory
          options and select the memory as described
              here
                 ----------------------------------------------------------------------



Problem:  The driver simply crash on my machine!

Solutions for 040:
          -Make sure, how your CPU uses the MMU with page size 4kb.
           (if your CPU/CPUCard have extra programs to control it please set it to  ←
             4kb)
          -If you CPU other program than setpatch to utilize your CPU, please try  ←
            to
           set the MMU pagesize to 4kb.
          -If your CPUCard uses only the setpatch (and you dont get any program/ ←
            disk
           with your card) to detect 68040, please check the followings:
             - have you the 68040.library installed in libs: ?
               if not, simply copy it from your Workbench disk
             - your setpatch is started during the boot sequence?
               if not, please put in the Startup-Sequence
```

```
                - your setpatch is able to load the 68040.library?
                  if not, please upgrade (look Aminet for setpatch)


Solutions for 060:
          - Please copy the 68040.library and the 68060.library to libs:
          (you got its with yout CPUcard)
          - Please upgrade your Setpatch if needed. (when not load the 68040. ↩
             library)


--------------------------------------------------------------------------------- ↩



Problem:   The driver works correctly, but the MAC uses funny colors.
           (green/blue colors... not b/w and not standard MAC colors)

Solution: You have pirated/damaged keyfile for ShapeShifter
          Please register the ShapeShifter!
```

1.12   About the author

```
               If you have any problems, suggestion, bug reports then write to:
(send the registration fee here )

snail mail:              László Török (pH03N1x/CDi)
                         H-8900 Zalaegerszeg
                         Cserfa 31.
                         Hungary

phone:                   +36 92 310 396 (after 18:00 CET)

E-Mail : phoenix@master.fok.hu   <- preferred
or:      phoenix@fok.hu          (i think equal with the previous..)

or:     torokl@alpha.dfmk.hu      <- work

I think now i have an account on the
               Dark Millennium BBS
                So you can
reach me under user name:  phoenix (Thanks Dark!)

iRC (not so often..) : pH03N1x@iRC (#magyar, #amiga or #amigahu channels)

U can check my homepage at (a bit old): http://www.fok.hu/~phoenix
(maybe dont work, becoz the home volume is fucked up...)

As u can see my english knowledge is very limited, and my german is MUCH better...
(ich denke so... ;)
```

1.13   The support sites

You able to find the new versions of this driver on the following sites:
Aminet: misc/emu subdirectory

and

Dark Millennium BBS: (CDi WHQ/Crimson Jihad Distro)

phone: +36 93 320 679

HW: A1200-68060/60 18 meg ram 1.3GHD 6xCD-ROM 14.4k
open: every day: 22.00-06.00 (CET)

Sysop: Dark/CDi

1.14 Revision history

2.00 (20.07.96) First version for 060

2.1   Works on 68040 too (the 2.0 is worked too, but i got many ←
   questions, so
                 i added the 040 to its name)
                 Better memory allocation (all important address now on 32 bit ←
                    address)
                 At least 5% faster drivers (1x1 4/8 bit only)
                 1x1 8/4 bit modes free resolution selection (up to 832x624)
                 No more 2 minutes time limit in the demo version, only resolution ←
                    limit
                 (8bit and 512x384)
                 New version string handling (very important ;)
                 (released only for beta testing)

2.2 (01.12.96) New c2p for 1x1 8 bit modes (now again Savage is the fastest ←
   driver for
                 040/060 and for Savage030 030 too ;) thanx the new c2p to: EFT/ ←
                    Impulse
                 and Zak/The Forcers Team (and i speeded it up again ;)
                 30-40% speed increase in the 1x1 8bit mode (now Savage2.2 at least ←
                     10%
                 faster than TurboEVD)
                 Some optimizations in all the other drivers (little speed up)

1.15 To do list:

c2p changing for 15bit/8bit 2x2 driver (i think all will be faster)
24 bit version (for 030 is ready, dont so hard work to do it for 040-060 too)

1.16 Used hard & software

```
Hardware:

A1200-68060/60 (Blizzard1260) 2meg Chip + 16 meg Fast  <- Dark Milennium server ;)
(not my machine, i have "only" an oldie 68030/50)


1084s monitor.... (its important... :)

2x80watt audio.... (its MUCH important... :)



Pioneer PD-S503 Cd player

Pioneer SX-303RDS receiver



Version 2.0 is developed on CDi meeting (14.07.96-21.07.96 BalatonMária)

Most important peoples:
Toxin/CDi (american section)
Dæ®k/CDi&C^J (the very tall dude)
DarkSide/CDi (kübli colourer)
CaveM@N/CDi (the foundator of the logical coder section)
G®æ$$/CDi (Slamtilt tester/grapHician)
Flex/Frame18 & CDi (who heared the CDs & kübli tracer)
Józsi/CDi (arrghh... PC section.... & transporter )
And me: pH03N1x/CDi

Used things on the meeting:
Food:   30 piece of luncheon meat
        15 piece of egg
        12 kg of bread
        40 Liter Cola/Fanta etc.
        Milk, Paprika, Tomato
        20 kg peach (from the nearest peachtree)
        Some alcohol.... (hukkkk...)

Trash:  around 30kg trash
        2 telefoncards
        1 rentabike (smashed by Flex... -3000Ft 8( )
        210 MegHd partition (Darkside's DH1: virus sux)

        Many Worms+Dogfight party (5 hours of continous Dogfight)
        Looking houndreds demos
        Girl hunting
        Toilette Debugger V1.0
        Mosquito killer V1.0 (one by Flex .. ) ;)
        Arabian terrorists on the beach of Balaton ;)
        Theorical SW/HW developing (memory protection & very nice computer design)
        Making an unfinished AVI player (no sound)

Best sayings:
-"Darkside are you sleeping?" - at 2 AM.
-....

-When are we going to bike again? (after Flex had an accident...)
```

```
-Who drinked my Coke?
-At the evening it was full!

-This all stored MPEG anim !

-How can i slowing down the MPEG-player? (on 060)

-U fool!

-Darkside open the tap!

-There is a spider! Who has a matchbox? (around 3km far from the meeting place)

-U Sucker!

-Jump jump! - And a german people:
-Alles Klar?

-Fingomcsing!


Others:
Ehh!, Kübli

IIIIIIIIIIIII VEEEEEEEEEERYYYYYYYYY HAAAAAAAAATTTTTTEEEE THHHHHHHHHHEEEEEEEEEE
ROOOOOBBBBEEERRRRTTTT MMIIIILLLEEEESSS CCCCCCCCCCCCCCCCDDDDDDDDDDDDDDDDDDDDDDDDDDD!

(I (pH03N1x) have to heard it about 100 times - Flex arrrrgghh )


Software:

Shapeshifter-ExeternalVideodriver manual level2 by Christian Bauer
                    (A very good & usable manual & driverspecification  ←
                        description)

Asm-one 1.29 ..          Around 4 new bugs detected...

MMU Expert 1.32          by F.Bürgel... (oldie but goldie! (from 1991))

HippoPlayer 2.35         need some zax for developing...

D68k 2.0.7               The best resourcer on Amiga (i think better than resource  ←
    6.0)
                         (FULL MMU,FPU,68000-68060 support!)

This file checked with the MacWrite Spelling checker... (From Shape...)

19 Guru (reported by MCP gurureport) (from MMU config error to corrupt memory list ←
    in
freememen and some illegal instruction so Amiga rulez... ;)
```

1.17 The author wishes to thanks:

The author wishes to thanks:

Christian Bauer   For the World's best Macintosh emulator, and the
                              awesome external videodriver concept

K-P Koljonen   for Hippoplayer

Psycho@master.fok.hu   for the account,and for the free HDD(almost ←
    unusable ;)

Pawel Hernik   for AGA-EVD, and for the c2p routine (and 4bit c2p ←
    too)

                              and for the 15bit->ham8 conversion routines (this ←
                                 is a
                              very fast&good routine!)

Peter McGavin   for the fastest c2p routines on Amiga

Chris Brenner   for FastECS

Michael 'Xanth' Spenner   for the 2x2 version idea

Dennis Arketyd   for the Agaboost driver

Aki Laukkanen   for the TurboEVD driver (yeahh.. it was faster ←
    than

                              Savage2.1 but now try to beat the Savage060 2.2 1 ←
                                 x1
                              8bit performance ;)

EFT/Impulse   for the NEW 040-060 optimized c2p (but i speeded ←
    it up
and   around 20% ;)
Zak/Forcers Team

Thanx to my beta testers:

68040/25Mhz (Amiga4000)
Alessandro Gerelli   Yeeaahh! thax for the AVId beta testing too!
(a.gerelli@agonet.it)   Sorry for i not included your test to this doc, ←
    but i

                              want to realese this driver finally...

68040/40Mhz (A1200/Apollo040) Sorry i forgot to send the 2.2 driver to you.. ;)
Roland Lewis
(Roland_Lewis@o14amiga.demon.co.uk)

68040/40Mhz (A1200/Blizzard1240/40) Yeah... i hope i will get 040 too... ;)
Csaba Imre

AND: ALL REGISTERED USERES!

Other greetinx:

Amiga: Dark/CDi, Shamen/CDi, Flex/Frame18, Anorganic/Promise, Pogi/Crimson Jihad
        Hanzi/???, Chexum

```
        Louise/????                        A ShapeShifter maniac... ;) (like me...)
        All members of Amiga Only          <- The best Hungarian amiga-user mag
```

PC: Basq/Tsi Alive, Trajic/Shock!, Hamster/???, Dada

Last, but not at least: the Developers of the Amiga and AmigaOS (yes this is a ←
   really
OS -okay, have some bugs- , but really fun to develop under it!!)

Fuck to all PC-owners who's think how Amiga is a game-machine...

1.18 Legal mush

                    This driver is SHAREWARE, so you must register if you want use ←
                    it, because the demo
version support only the 8 bit mode with resolution 512x384.

Use it at your own risk.
If you want include this driver on a CD-ROM/or magazine i would be very happy ←
   when you
send me a free copy from it.

If You want to register it please send 15DM or 10US$ in !CASH! to my
                postal address
                and an error free 3.5 DD/HD Disk, and an answer envelope too!

Or: Send money to my postal address, and write me an e-mail, and i will send ←
   back the
driver encoded with uuencode. (or better: send your PGP public key)

I accept other currencies too, not only DM and US$!

The updates are free, when you have E-Mail address!

Note: all users whos register Savage030 or Savage040/60 before 1 jan 1997 will ←
   get a
free !FULL! version from my
                AVId
                 AVIplayer.

Please support quality software, and register.

Amiga and the AmigOS is registered trademark of ESCOM or Viscorp (i don't ←
   know it
exactly... it changes to often..)

Macintosh is registered trademark of Apple computer INC.

1.19 AVId - the AVIplayer for Amiga

(at this moment only 0.94 beta is available, a demo will be on the aminet ↩
    around 15.
dec. 1996)
AVId (0.94b) features:

Requires: 68020+
          AGA Chipset and OS 3.0+
          (maybe will be a 16 gray ECS support too... not sure..)
Recommented: 68030/50 or faster with 0.5 Mb of free FastRam
              (for 240x180 CVID 15 FPS playback needs 68040/25 at least)

Supported video encoders:
Miscrosoft RGB   (RGB) 8/16 bit
Microsoft Video1 (CRAM) 8/16 bit
Radius CinePak   (CVID)   24 bit

Supported audio:
PCM mono 8 bit

Features:
Async I/O
FULL in Assembly language coded decrunchers (at moment more than 70kb of Source ↩
    code)
Fast c2p
256 color for 8 bit AVIs
256 gray/HAM8 for 16/24 bit AVIs
FAAAASSSSSTTT Playback! (Timer based frame skipping method – like on PCs)

The demo version is will play the first 300 frames of the animation, and will be ↩
    there
no ham8 support.
The Full version registration fee is will be around 15DM/10US$ (like savage)