identify.library

A library that converts cryptical IDs to a human-readable form
Version 12.2, 8 November 2000

Richard Körber

1 Introduction

The `identify.library` has a rather long history.

It all began when I got mad about all the System info programs only showing the expansion boards as a number. So I wrote `expname.library`, which you may already be familiar with.

Later, expname could also identify the system's parameters (even if it was wrong sometimes `;)`). I still have new ideas for this library. The only trouble is that the name does not fit any more.

Well, now you have the second generation of the `expname.library`, called `identify.library`. It has been completely rewritten and expanded. The conceptional flaws of the `expname.library` have been removed, and a lot of new features have been added.

The library has currently these features:

- Converting manufacturer and product id into manufacturer name, product name, and product class.
- Converting the cryptical Amiga Guru codes into readable descriptions.
- Analyzing the system's configuration (system type, processor, memory, graphics and so on...).
- Converting shared library offsets into function names.

Even if the library appears to be quite ready — it is still far from complete!

I need your help! Please send manufacturer and product names and IDs, your system's configuration, suggestions, bug reports and so on; simply all you want to see implemented in the library.

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Identify is FreeWare. You are allowed to use the packet without paying a fee or similar to the author.

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You are allowed to compress the packet using a customary compression software (as lha, lzh, lzx, dms). You must not compress single files of the packet (e.g. PowerPacker or Imploder).

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You are allowed to add the files `identify.library`, `rexxidentify.library` and `InstallIfy` to your own program packet, without the need to add the whole Identify packet. In this case, you *must* mention in the documentation that you are using Identify by Richard Körber, and where a full Identify distribution is available.

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I explicitly permit the distribution via AmiNet, Meeting Pearls, Fred Fish and other well-known PD series.

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3 My Address

Please send all bug-reports, board descriptions, missing graphic OS, keyfiles, flames and so on to one of the following e-mail addresses:

INTERNET

I'm reachable through Internet via these E-Mail addresses:

```
shred@shredzone.de
rkoerber@gmx.de
shred@web.de
```

Check my home page for the latest release and other programs. The URL is:

```
http://www.shredzone.de
http://shredzone.home.pages.de
```

SNAIL MAIL

You can send me a snail mail letter, too. My address is:

```
Richard Körber
Überm Rost 13
51465 Bergisch Gladbach
Germany
```

Please enclose a "1,10 DM" stamp if you live in Germany and want to get a reply.

4 ListExp

`ListExp` is a small tool that was already included in the `expname.library` package.

It describes the hardware components of the system. On the first line it will write some hardware parameters (like CPU, Memory). After that, all expansion boards will be listed (hopefully by name).

By using the option `FULL`, all currently used commodities are listed too. The output is then useable for bug reports and similar.

A further option allows to get the manufacturer name, product name and class from manufacturer ID and product ID. Use the options `MANUFID` and `PRODID` to do so.

Finally, the option `UPDATE` forces identify to re-check all hardware information. Use this option e.g. after you started VMM.

Example:

```
> ListExp MANUFID=514 PRODID=9
-- ListExp V9.1 -- by Richard Koerber

 Manufacturer: Commodore West Chester
 Product:      A2060
 Class:        ArcNet
```

If some entries in the expansion list begin with a '`#`' instead of a name, you should send a copy of the `ListExp` output and the description of the missing board (manufacturer name, product name, product class) to me. `:-)`

Please write me if an expansion name has been guessed. You can easily recognize this by the class `(guessed)`.

It is also not possible to check out all combinations of Amiga expansions. If your hardware is not properly recognized, please write me.

Please note: Some manufacturers, especially GVP and Phase 5, assigned the same ID to different boards. `identify.library` is prepared and tries to differ these boards, anyhow it can't in any case decide right.

5 Guru

`Guru` translates the cryptical alert code into a human-readable form.

You may provide your alert code (all eight digits without any symbols before or behind) as parameter. An example:

```
> guru 81000005
-- Guru V1.3 -- by Richard Koerber

 Alert Code: 81000005
 Type:       Deadend
 Subsystem:  exec.library
 General:    General fault
 Specified:  Corrupt memory list detected in FreeMem
```

Or you can pass LASTALERT. In this case, the last alert code will be examined.

Please read the results like this::

`Alert Code`
: This is the alert code that has been decoded.

`Type`
: What kind of alert is it? It may be a deadend alert, or a recovery alert.

`Subsystem`
: Which system caused the alert?

`General`
: To what general class does this alert belong? In this case, it is a general fault which must be specified later.

`Specified`
: What was the cause? This example shows that the memory list has been corrupted by a badly written program.

6 Function

You can use the tool `Function` to decode the name of a function by providing the library name and the function offset.

The first argument is the library name, e.g. '`exec.library`'. You may also specify device or resource names here. All letters after the point (including the point itself) are optional, but it is case sensitive.

The last argument is the function offset to be decoded. It must be a multiple of 6, but it doesn't need to be signed.

Example:

```
> Function exec.library -456
-- Function V1.1 -- by Richard Koerber

 Library:    exec.library
 Offset:     -456
 Function:   DoIO
```

This function requires the .fd files and an assign '`FD:`' to the drawer containing these files. The files must have the usual file name format, e.g. '`exec_lib.fd`'.

7 System

`identify.library` analyzes your system and provides the result to the programs. If you read the different results, please keep this in mind:

`SYSTEM` Describes your Amiga model, e.g. '`Amiga 4000`'. Unfortunately, it is not possible to differ between Amiga 500 and Amiga 2000. In this case, '`Amiga (OCS)`' or '`Amiga (ECS)`' will be reported.

`CPU` The used CPU is returned.

`CPUREV` The revision number of the CPU, if available. Currently, only the revision of the 68060 processor is available.

`CPUCLOCK` The CPU clock.

`FPU` The used FPU, if present.

`FPUCLOCK` The FPU clock.

`MMU` The used MMU, if present. Currently, a 68030 is always recognized with MMU. In this case, the result is not to be considered as a proove for a working MMU being present.

`VBR` Address of the processor vector base.

`CHIPSET` The available chipset, e.g. '`AGA`'.

`GARY` Version of the Gary chip.

`RAMSEY` Version of the Ramsey chip.

`BATTCLOCK`
Is a battery backed up clock available?

`CHUNKYPLANAR`
Is a system conformous Chunky Planar hardware available. It is not sufficient if the blitter of your graphic board has a chunky planar feature.

`AGNUS` What Agnus chip revision is mounted in your system?

`AGNUSMODE`
What Agnus mode is selected (PAL or NTSC)?

`DENISE` What Denise chip is mounted in your system?

`DENISEREV`
What Denise revision is it? (Usually, this is not known, or 0).

`POWERPC` Which PowerPC is available?

`PPCCLOCK` The PowerPC clock. Due to a bug of the `ppc.library`, the result can be different to the real clock. When using WarpUP, the PowerPC clock cannot be evaluated under special circumstances.

`PPCOS` Shows the OS that is currently used for the PowerPC. In this version, PowerUp (Phase 5) and WarpOS (Haage&Partner) is recognized.

`OSVER` The version of the AmigaOS ROM. If you mapped a ROM from a kickstart file, this version will be used.

`OSNR` The (usual) version of the AmigaOS, e.g. '`3.0`'.

`BOINGBAG` The number of an installed BoingBag update, if available.

`EXECVER` The version of exec.

`WBVER` The version of Workbench, if available.

`SETPATCHVER`
Version of the SetPatch command, if available.

`GFXSYS` The used Graphic system, e.g. '`CyberGraphX`'. If you use multiple Graphic systems, you will only see one of them. It is also important that you have already started the system and not just installed it.

`AUDIOSYS` The used Audio system, e.g. '`AHI`'.

`TCPIP` If a TCP/IP stack (e.g. '`Miami`') has been started, its name will be returned.

`CHIPRAM`
`FASTRAM`
`RAM` Size of the RAM (virtual RAM included). The tilde ('`~`') means that a small amount of the RAM is not available to the system. This applies to the Chip RAM as well as to the total.

`VMMCHIPRAM`
`VMMFASTRAM`
`VMMRAM` Size of the virtual RAM.

`PLNCHIPRAM`
`PLNFASTRAM`
`PLNRAM` Size of the physical RAM. The 'Slow RAM' of the Amiga 500 and Amiga 2000 is included here as Fast RAM.

`SLOWRAM` Size of the special Fast RAM on Amiga 500 and Amiga 2000.

`ROMSIZE` The size of AmigaOS ROM. If you mapped a ROM file, the size of the file will be returned.

`VBLANKFREQ`
Frequency of VBlank interrupt.

`POWERFREQ`
: Power frequency. This can be different to the real frequency on UAE.

`ECLOCK` Frequency of a special system clock.

`LASTALERT`
: The recent system alert.

`RAMACCESS`
: Access time of the *motherboard* RAM, if available. The access time of memory expansion boards or accelerator boards are ignored.

`RAMWIDTH` Bus width of the motherboard RAM. Accelerator boards are ignored.

`RAMCAS` Returns the CAS mode of Chip RAM, if available.

`RAMBANDWIDTH`
: Returns the bandwidth of Chip RAM, if available.

Appendix A Fake Boards

Since the early beginning, a plagiarism of Identify does exist. The author confirmed me that he never took database entries from Identify. To verify this, I added some faked expansions to the database.

Every board database containing these entries, is a plagiarism of Identify (with Manufacturer ID and Product ID):

- **BSC Oktagon 508** (MID 2092, PID 4) : this board does not exist
- **Quadlite Computers Ltd.** (MID 2096) : this manufacturer does not exist
- **DelaComp** (MID 2163) : this manufacturer does not exist
- **VillageTronic PicassoIV Z2** (MID 2167, PID 20) : this PID is not allocated
- **UAS Interface Ltd.** (MID 5132) : this manufacturer does not exist
- **MacroSystem Germany ToccataPro** (MID 18260, PID 13) : this board does not exist

I ask you to be lenient for this step, but it was just too tempting to find out who copies data from Identify without prior permission... `;-)` BTW, when I found out, I also had no mercy to copy data from their databases without asking.

The database size in the Identify readme did never count these fake entries. Since V11.1, these fake entries are removed.

Appendix B Known Bugs

This is a snapshot of my current Amiga:

```
-- ListExp V12.0 -- Richard Koerber <rkoerber@gmx.de>
ListExp is a part of the Identify package (see AmiNet util/libs)

** HARDWARE **

System:  Amiga 4000
CPU:     CPU=68060/50 MHz (Rev 1), FPU=68060/50 MHz, MMU=68060
Chips:   AGA (RAMSEY F, GARY Normal, CHUNKY None) VBR=0x0805C560
Agnus:   Alice 8374 Rev. 3-4 (Mode: PAL)
Denise:  Lisa 8364 (Revision: 0)
AmigaOS: 3.5 (V40.68, BoingBag 1, SetPatch V44.6)
         Exec V40.10   Workbench V44.2
Support: GraphicOS: CyberGraphX 4, AudioOS: AHI, TCP/IP: Miami
Clock:   Power 50 Hz, VBlank 50 Hz, E 709379 Hz
RAM:     Motherboard 32 bit, 60 ns, Double CAS, 4x Bandwidth

Memory:            CHIP    FAST   TOTAL ROM = 512.0KB   SLOW = 0
          PLAIN  ~2.0MB  42.0MB ~44.0MB
        VIRTUAL       0       0       0
          TOTAL  ~2.0MB  42.0MB ~44.0MB

** EXPANSIONS **

Nr ID      Address   Size Manufacturer         Product
-------------------------------------------------------------------------
 1 2140.22 40000000  64MB Phase 5              CyberVision 64 Graphics
 2 2140.19 00EA0000 128KB Phase 5              CyberStorm '060 MK-II Flash-ROM
 3 082C.10 00E90000  64KB BSC                  Multiface II Multi I/O
 4 4754.0C 00EC0000  64KB MacroSystem Germany  Toccata Audio
 5 4754.05 00ED0000  64KB MacroSystem Germany  MaestroPro Audio
 6 0877.CA 00EE0000  64KB VillageTronic        Ariadne II Ethernet
```

THESE BUGS ARE CURRENTLY KNOWN:

- 'Phase 5' and 'GVP' have sometimes assigned one ID to two or more boards. In this case, `identify.library` may return a name that does not fit to the hardware.
- Currently, an 68030 will always be recognized with MMU.

Appendix C Frequently Asked Questions

An enforcer hit occurs while analysing the system.
: This hit is necessary on some systems to read the last alert code. It is harmless.

The CPU/FPU clock isn't accurate.
: Measuring the clock requires real Fast RAM for best results, else there may occur major faults.

The PowerPC clock isn't accurate.
: This is a bug in the `ppc.library`.

The PowerPC clock isn't available.
: This occurs with some processors using WarpOS.

The system crashes at system queries (e.g. ListExp).
: Make sure that you have *not* installed the `ppc.library` if you do not really have a PowerPC.

Where can I find another FAQ?
: On my home page: `http://shredzone.home.pages.de`

Appendix D History

V 12.2

- Now recognizes MiamiDx [Dietmar Lakotta]
- Added further boards

V 12.1

- Added further boards

V 12.0

- Added BoingBag checking
- Updated rexxidentify, Installify, ListExp and the German catalog

V 11.2

- Identify was always bumped at version 10. Fixed.

V 11.1

- OS3.5 will be recognized now
- By chance, I found out that I haven't use PhxAss' branch optimisation for several *years*, though I relied on it being turned on. This optimisation gained 904 bytes out of V11.0, not to mention the higher speed!
- Removed all fake boards from the database
- Slightly improved CPU clock rate meter

V 11.0

- The new function FormatString() generates a formatted string with hardware elements. See AutoDocs. [Thomas Igracki]
- Added further boards

V 10.2

- Added further boards

V 10.1

- CyberGraphX 4 and GENESiS supported
- Added further boards

V 10.0

- Now the last alert is read by blitter if available. This step was necessary because all those "bug reports" were really annoying. ;) [Idea by Jilles Tjoelker]
- Denise is identified now [Himanshu Gohel]
- Updated ListExp

- Added further boards

V 9.3

- Improved Amiga 4000T recognition [Dave Clarke]
- Added further boards

V 9.2

- Improved PowerUp/WarpOS recognition [Sebastian Becker]
- Added further boards

V 9.1

- Minor docs revision
- IDHW_TCPIP is not cached
- Added further boards
- Corrected '`FILE_ID.DIZ`' [Domenic Gebauer]

V 9.0

- Divided into developer and user packet
- '`identify.library`' 68020 version
- Added further boards
- Improved clock measurement
- IDHW_TCPIP, IDHW_PPCOS, IDHW_AGNUS, IDHW_AGNUSMODE implemented
- IdFunction() now also seraches '`include:fd/`'
- Recognizes Amiga 500 with Viper 520 CD correctly [Gerald Schnabel]
- Recognizes Amiga 4000 Tower [Jan Jampolski]
- WarpOS supported
- Wrote InstallIfy

V 8.2

- Added further boards
- Improved UAE recognition
- Improved 68060 compatibility
- Visibly shortened by several optimizations

V 8.1

- Improved SlowRAM recognition
- Implemented IdHardwareUpdate()
- Implemented motherboard RAM tests (RAMACCESS, RAMWIDTH, RAMCAS, RAMBANDWIDTH)

- Removed stupid IDHW_VBR and IDHW_LASTALERT caching
- ListExp actualized

V 8.0

- Bugfix: IdFunction produced mungwall hits on oversized lines
- Bugfix: VMM messed up the memory results
- IdExpansion speed improvement
- IDTAG_ClassID returns numerical board's class code [Jens Langner]
- IDTAG_Localize returns builtin language only, if TRUE
- IDTAG_NULL4NA returns NULL ptr instead of "N/A" string
- IDHW_CPUREV returns the revision of the main CPU
- IDHW_CPUCLOCK, IDHW_FPUCLOCK returns the clock frequencies
- Reorganized the catalog files
- UAE recognition implemented
- Updated ListExp and rexxidentify.library
- Added .ct files for translation

V 7.3

- Bugfix: GfxOS detection was broken under certain situations
- Added Commodities to rexxidentify.library [Domenic Gebauer]
- Minor DraCo bugfixes [Udo Reuchlein]
- Picasso96 (hopefully) is properly recognized now [Jens Langner]
- Added further boards.

V 7.2

- Bugfix: LowMemory handler now works fine
- Some minor optimizations
- Added IDTAG_Secondary
- Added SECONDARY to rexxidentify.library
- Increased IdFunction() parser maximum line length, due to some lines in the cybergraphics_lib.fd.

V 7.1

- Bugfix: rexxidentify.library returned additional Null termination [Bossman]
- Bugfix: LowMemory handler hangs up and is temporary disabled
- Added further boards.

V 7.0

- Chunky to planar hardware recognized

- PowerPC recognition implemented, but not yet completed
- Added an LowMemory handler (AmigaOS V39+ only)
- Memory sizes are shown like in `ShowConfig`

V 6.1

- Added further boards.
- Enforcer hit now only occurs on LASTALERT query.
- Added ARexx command EXPNAME

V 6.0

- Added further boards.
- OS2.1 recognized properly.
- Some new hardware requests (VBR, Gary, RAMSEY, Slow-RAM, Frequencies, BattClock)
- You can list all expansions without the need to open expansion.library now
- IdHardwareNum() implemented: you can also request a numerical result for own evaluating purposes now
- localized and actualized ListExp, Function and Guru
- ARexx access to the library via rexxidentify.library
- More example programs

V 5.2

- Added further boards.
- Wrote a small C example: using identify with MUI

V 5.1

- Bugfix: did not recognize AHI properly
- Added further boards.
- Properly recognizes A500 with A570 expansion.
- AmigaE include files [Roger Hågensen]

V 5.0

- Better Picasso96 recognition
- Should now FINALLY recognize OCS/ECS Amiga with OS3.1
- Added further boards.
- Now also checks Audio OS and AmigaOS.
- Added plain and VMM memory checkings.
- Supports shared Manufacturer IDs now.
- Bugfix: Enforcer hit when asking directly for an unknown expansion

- Gained several KB by optimizing tables, database compression and clean-ups
- Adapted ListExp

V 4.4

- Recognizes Picasso96
- Added further boards.
- Bugfix: "-?-" printed beside guessed expansion name
- Bugfix: Some Amiga 1200 were recognized as "Walker" :-)

V 4.3

- Recognizes CyberGraphX V3
- Added further boards.

V 4.2

- CyberGraphX wasn't recognized properly.
- Added further boards.

V 4.1

- Bug fix: still some problems with Amiga recognition.
- Picasso will be recognized.
- Added further boards.

V 4.0

- IdFunction() implemented.
- New tool Function.
- Added further boards.
- Bugfix: In some cases the manufacturer name was trashed.
- Pascal include files (made by Axel Dörfler)
- Identifies SetPatch version

V 3.1

- 2 boards added
- Bugfix: always recognized an Amiga 3000 on ECS machines with OS3.1.
- Bugfix: recognized CyberGraphX even when PictDT was installed only.
- Improved memory rounding

V 3.0

- Bases on the `expname.library`, but completely rewritten.
- Now convert alert codes, too.
- Wrote GURU.

Appendix E Users

These programs are already using the `identify.library`:

batsi Author: Chris Young
AmiNet: `util/moni/batsi.lha`
E-Mail: `unsatisfactory@bigfoot.com`

cP!_ShowConfig
Author: Domenic Gebauer
AmiNet: `util/wb/cP_ShowConfig.lha`
E-Mail: `campino@gmx.net`

Custom_CTCP - Extension CTCP commands for AmIRC
Author: Don Clifton (Bossman^)
AmiNet: `comm/irc/CCTCPv??.lha`
E-Mail: `bosman@erols.com`

eTeacher Author: W.F.M.H. and Krzysiek Jonko
AmiNet: `biz/demo/eTeacher.lha`
E-Mail: `info@amiga.com.pl`

EuraTools Register
Author: Richard Körber
AmiNet: `util/misc/EuraTools.lha`
E-Mail: `shred@eratosthenes.starfleet.de`

IdentifyBB2
Author: Ferraris Luca
AmiNet: `dev/basic/IdentifyBB2.lha`
E-Mail: `ferraris.luca@educ.di.unito.it`

P96Speed Author: Jens Langner
AmiNet: `gfx/board/P96Speed.lha`
E-Mail: `deck@rcs.urz.tu-dresden.de`

Scout Author: Andreas Gelhausen, Richard Körber
AmiNet: `util/moni/Scout.lha`
E-Mail: `shred@eratosthenes.starfleet.de`

ShowSystem
Author: Jarmo Laakkonen
AmiNet: `util/moni/showsystem.lha`
E-Mail: `jami@dlc.fi`

SL!-BoxStatus
Author: Sascha Sauer
AmiNet: `comm/bbs/SL-BS??.lha`
E-Mail: `SPACEMAN@SPACELND.ruhr.de`

SIP Author: Andreas R. Kleinert
AmiNet: `util/moni/SIP.lha`
E-Mail: `Andreas_Kleinert@t-online.de`

SystemPrefs
Author: Richard Körber
AmiNet: `util/wb/SytemPrefs.lha`
E-Mail: `shred@eratosthenes.starfleet.de`

ToxicBoards
Author: Sascha Reissner
AmiNet: `comm/cnet/TBoards???.lha`
E-Mail: `sascha@toxic.franken.de`

What Config
Author: Christian Vigård
AmiNet: `util/misc/WCv??.lha`
E-Mail: `vigard@hem2.passagen.se`

XOpa Author: Axel Dörfler, Alexander Bartz
AmiNet: `util/moni/XOpa1_??.lha`
E-Mail: `axeld@ax.westfalen.de`

Your program is missing? Write me!

Appendix F Credits

I want to thank especially these fellows (in no special order):

Andreas Gelhausen
for Scout, his board list and his ideas.

Martin Wietfeld
for his great board list!

Axel Dörfler
for using Identify in XOpa, and the PASCAL includes.

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for his great `PhxAss` assembler, his hints and all his help, especially for the WarpOS PPC clock source.

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for the Amiga-E include files and his hints.

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Kössi for his many boards, his help for all my TexInfo problems, and his debug skills.

...and for their contributions (sorted alphabetically):

'2bros', Daniel Adolfsson, Ralf Adrion, 'ALV', Thomas Andersson, Andrija Antonijevic, Sven Arke, Jörn Asmussen, Norbert Becker, Sebastian Becker, Andreas Benden, Matthias Bethke, Thore Böckelmann, 'Bossman^', Paul Braithwaite, Burkhard Breuer, Benoit Broc, Dave Clarke, Frank E. De Clue, Gary Coleman, Gagliardini Daniel, Konrad Daszynski, Marcus Cai Degler, 'Diablo', Ethan Dicks, Frank Dietrich, Norbert Dimpfl, Steffen Elholm, Dámaso D. Estévez, Kevin Fairhurst, Ulrich Falke, Alexander Fichtner, Dieter Gaikowski, Ramiro Garcia, Matthew Garrett, Domenic Gebauer, Andreas Gelhausen, Sonja Gerlach, Patrick Gern, Himanshu Gohel, Paul Gooch, Neil Griffiths, Stephane Guillard, Roger Hågensen, Fred Hamilton, Michael Hartmann, Georg Hazianastasiou, Dirk Hebisch, Matthias Heilmann, Ian P.Heitmans, Gene Heskett, Patrick Hess, Thomas Igracki, Torfinn Ingolfsen, Vincenzo Iodice, Jan Jampolski, Bengt Jensie, Holger Jeromin, Krzysztof Krishna Kajdasz, Thomas Kessler, Ross Kirk, Bernd Kösling, Thomas Krafzik, A. Krauss, Bernd Kriwolat, Mario Kuban, James Kückmann, Markus Kuhnen, M. Lagier, Dietmar Lakotta, Rask Lambertsen, Jens Langner, Palle Larsen, Lutz Legero, Mika Lembke, Petter Lindquist, Mika Lundell, Gunther Mannigel, Peter Marquardt, Alfredo Martins, Peter Mattsson, Mario Misic, Arjan Moens, Gernold Mühling, L Mac Mullan, Ken Munn, Richard Munn, Pavel Narozny, Gunther Nikl, David Oakes, Jürgen Ofner, Jakob Ölund, Marcin Orlowski, Chris Painter, Oliver Peike, Markus Pietz, Heiko Polig, Giuseppe Premoli, Michaela Prüß, Michael Reichenbach, Sascha Reissner, Jan Rembser, Udo Reuchlein, Jochen Rhein, Kai Rode, Timo Ronkko, Gregor Rosenauer, Rolf Rotvel, Stefano Ruviero, Andre Schenk, Kai Schindelka, Andreas Schlick, Gerald Schnabel, Jens G. Schröder, Bodo Schulz, Thomas Schürger, Frank Seidel, Simon Shead, Thierry Sillis, Karsten Soeth, Mark Sorensen, Nicholas Stallard, Martin Steigerwald, Teemu Suikki, Johan Sundstrom, Imre Szollosi, Adam Szymczak, Patrick Thato, Colin Thompson, Henrik Tikanvaara, Jilles Tjoelker, Jürgen Urbanek, Geert Uytterhoeven, Jarkko Vatjus-Anttila, Milco Veljanoski, Christian Vigård, Federico Villata, Christian Wasner, Pete Wason, Ralph Wermke, Henrik Wetterstrom, Martin Wietfeld, Alexander Wild, Frank Wille, Beno Zidaric, Rolf Zuercher, Alessandro Zummo.

(and all I might have forgotten!)

Keep on!

```
    //
\\ //   -- Amiga - The Computer for Creative Mind --
 \X/
```

Concept Index

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