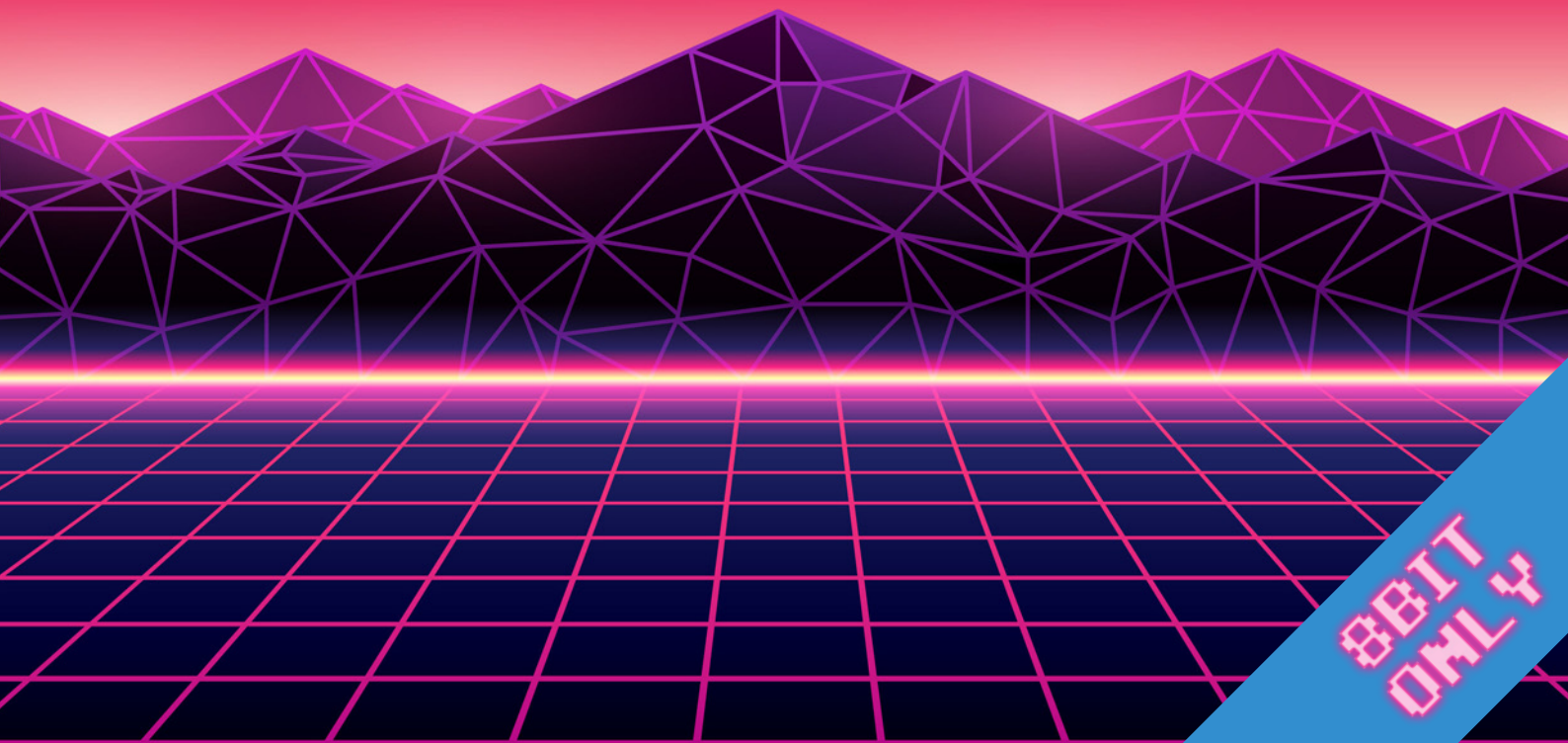


# KILOBYTE

## M A G A Z I N E

2017 / 1

THE ART OF FLOPPY DISK SLEEVES · INTERVIEW: FABIAN HERTEL · TAPECART · FORMER DISK MANUFACTURERS · CDS ON C64 · ATHANOR (C64) · 8BIT CIVILIZATIONS (C64) · AND MORE



8BIT  
ONLY

## FOCUS ON ALTERNATIVE MEDIA

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**MAIN EDITOR, LAYOUT:**

Boris Kretzinger (bk)

**ADDITIONAL INFO SUPPLIED BY:**

Martin Wendt (mw), Ingo Korb (ik), Nicholas Andrews (na), Volker Rust (vr), Tom Mulligan, Frank Wolf, Fabian Hertel, Eric Safar, James Monkman

**COVER:**

Igor Dresvyannikov, 123rf.com  
Manuscripts and article suggestions are most welcome. Please write to: kilobytemag@gmail.com  
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# COLLECTIBLES

EVERYTHING BEYOND DIGITAL BOUNDARIES



## BILL & LANCE

If you collect statues and figures, you'll know Neca. So this Set, styled like the NES classic Contra with Bill and Lance looks like a good addition to your collection. However, some collectors remarked that the figures come cross-eyed.

Price: 50 EUR/40 USD

## HOUSE OF CARDS

How about a nice set of cards for your next game of strip poker? With these, you can undress to the beat of Super Mario Bros. in your head. Or just play a harmless round of Hearts, maybe?

Price: 11 EUR



## CEE IS KEY

Are you keeping up with your Commodore? Well, now you can finally show it to everybody with this key ring. And it's officially licensed, too. Made by a German merchandise company called „Logosh!rt“ from Essen.

Price: 10 EUR

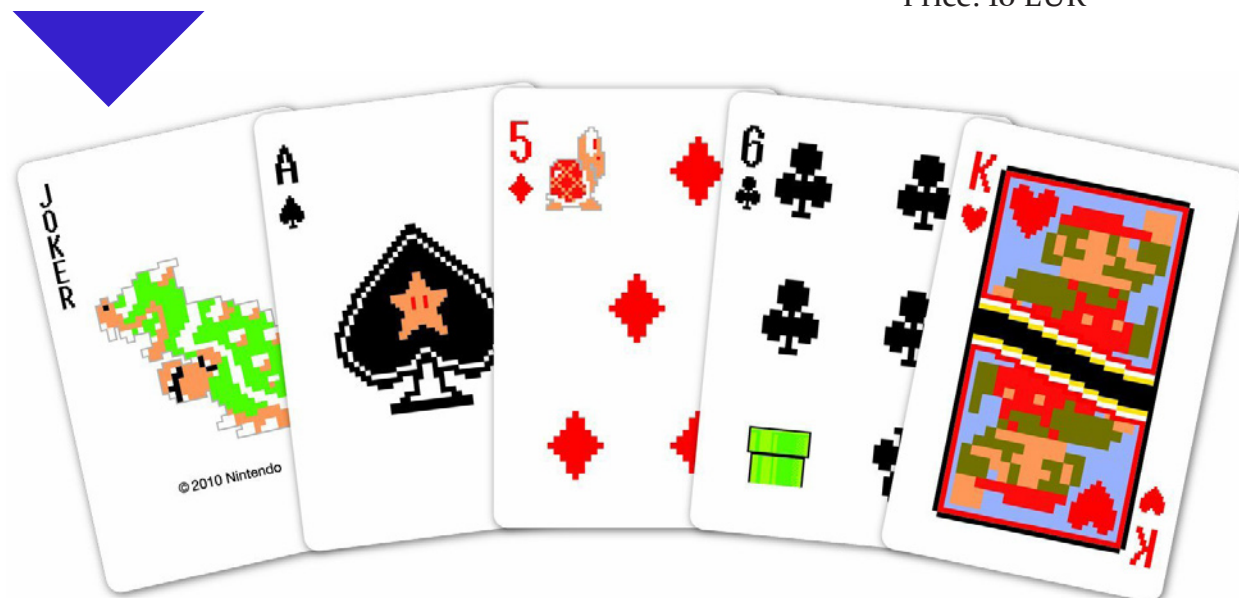






Photo: Volker Rust

*There are nice covers in your diskbox as well – we're sure of it! Please send your scans or photos to: [kilobytemag@gmail.com](mailto:kilobytemag@gmail.com)*

#### WHAT'S NOT INSIDE

Look at that disk sleeve: red laser grid in the background and a rad „Silicon“ logo before it, looking like it was made of steel. However, we're quite sure: If there is one thing not made of silicon, it's this floppy. As

rad and 8oish as they look, they are not that common in Europe nowadays. Also, there is nothing known as to who the manufacturer was back in the day. If you happen to know anything about this, please let us know. (bk)



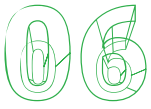
**DISK DRIVE MAKER MAKES DISKS**  
Control Data was not a small company back in the 80s. In fact, they have been a large supplier of disk drives for various companies, and also manufacturer of Computers. Founded in 1957, CDC built quite fast super computers during the 1970s and belonged to a bunch of competitors of IBM. However, their success was declining during the 1980s and the company was split up

into different divisions in 1992. Its share of magnetic media was sold to Seagate in 1989, and as far as quality goes, at least their 5.25" floppies were not that reliable. Although they granted a five year warranty on their Storage Master line of disks, collectors today often face floppies which die proplably because of cheap production methods. This completely blue Flexible Disk cover is nice to look at though. (bk)



Photo: Volker Rust





# TURN DISK OVER

THE BIG SEARCH FOR NOS DISKS

*Where have all the floppies gone: Once a billion dollar business, today just a memory in the company archives.*

*Or is there any stock left at yesterdays premiere manufacturers of floppy disks? KILOBYTE MAGAZINE asked them.*

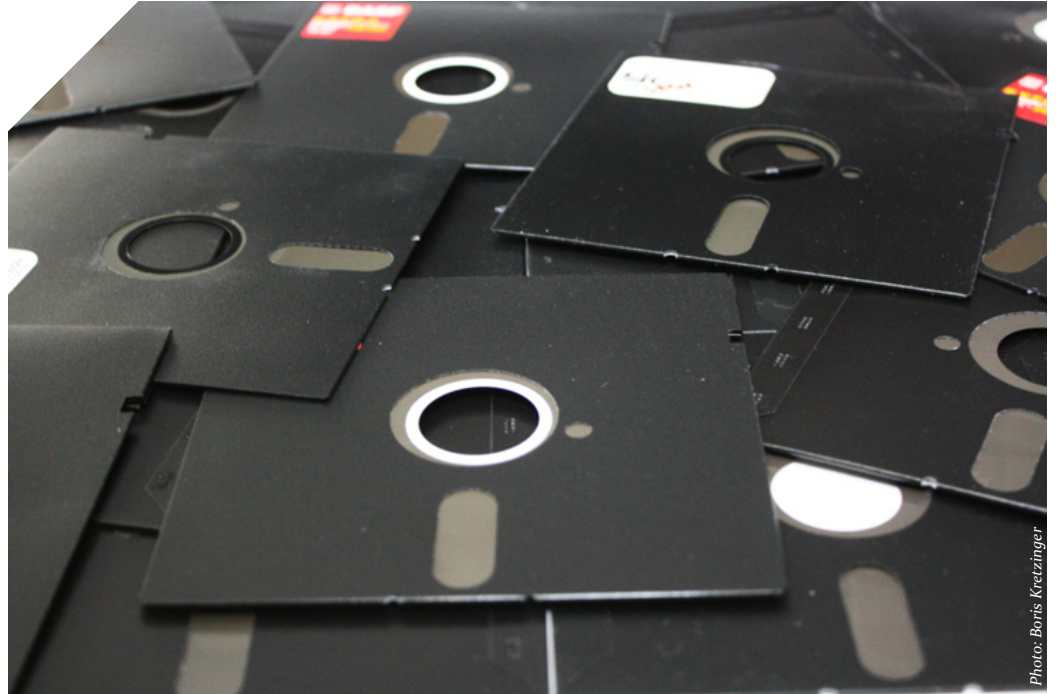


Photo: Boris Kretzinger

As home computer users, you had to have a lot of them back in the 80s and 90s. Because they stored all the beloved games you added to your collection over the years during various copy sessions: Empty diskettes. It was a time when you had probably no clue what else companies like BASF, 3M or Verbatim were producing besides magnetic storage for your computer. And 5.25" disks were the way to go for almost all 8bit home computers – sorry 3" disk users. They sold in large quantities and made big companies a lot of money before they were discontinued – the last manufacturer to produce new 5.25" disks stopped doing so as late as 2008. So as some empires stood on floppy disks, KILOBYTE thought it was time to ask the former manufacturers of the diskette era if they still have some new old

stock up their sleeves. And while we were at it, some more questions came to mind that we always wanted an answer to. It is quite interesting how different companies react to an inquiry regarding products that are no longer sold. Spending any time in answering this is a pure customer service with no chance of getting any profit from doing so. Astonishingly, most of them answered rather detailed.

## **VERBATIMS LIFETIME GUARANTEE**

There is no unsold stock of 5.25" disks to be found here. But as we had the chance, we had to know one thing which Verbatim disks were well known for: What about this lifetime warranty the company proclaimed for its magnetic media products? Can you still unwrap a sealed pack of Verbatim disks, check them,



and send them back to Verbatim if they fail? Florian Seidl from Product Support at Verbatim GmbH told us: „The lifetime guarantee refers to the flawless product condition until the day it is being used for the first time.“ Because by using a magnetic media, you change the original state of the product (due to formatting, for example). Let me stop you right there: Before you collect your defect Verbatim disks to send them in, he explains: „Verbatim gave ten years warranty and also projected a durability of ten years for their media.“ The warranty is quite long, admittedly, but it's not quite life-long. Fortunately, as we know, 5.25" disks are very durable and can hold data for more than 25 or even 30 years.

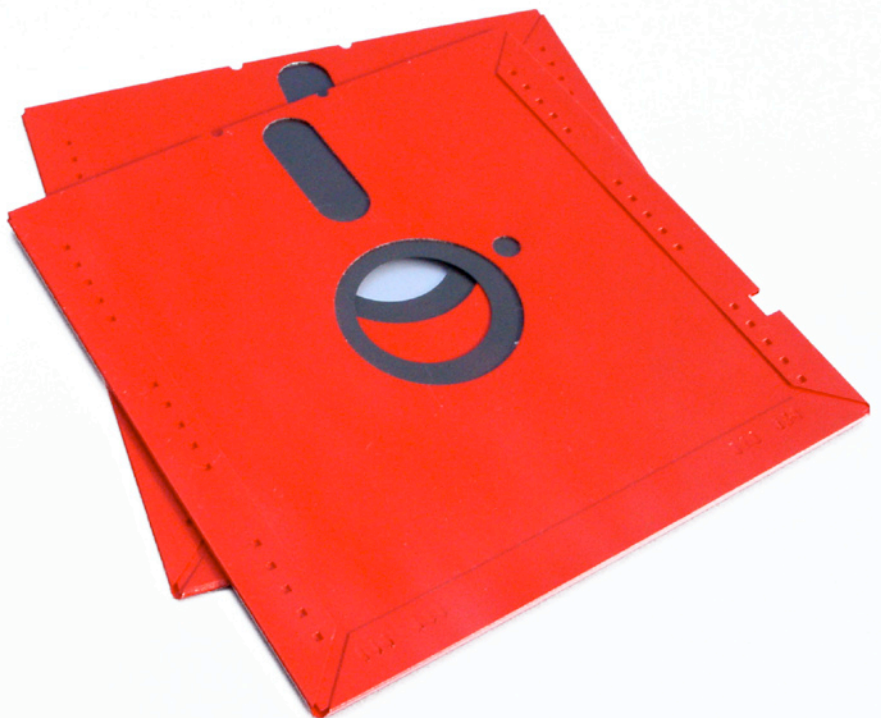
#### **SONY - READ ERROR**\_\_\_\_\_

When you want to write to Sony's customer support, you better make sure that the product you need help with is listed somewhere on their website. There is not one support mail you can write to, so this made things complicated. Somewhere, we found a mail address nonetheless, wrote – and received a notification that the mail was not in use anymore. Okay, so why not choose any product and then specify what you want to know in the text? Well – that did not work either. KILOBYTE wrote in German, used information from a German Sony site to write to a German support line – and received a badly auto-translation text from who-knows-where which stated that

they could not help us with this product. Oh, and that we had to try our local support in Austria (well, not exactly local, but you know ...). So we wrote to the exact address given to us in this mail – and it could not be delivered. Not because the inbox was full. It was because the address was simply not valid! Great: You have a question, write to get help, and all you get is invalid addresses and bad translations. Of course, there is always a hotline number, but you know what: No thanks.

#### **3M LOST THEIR MEMORY**\_\_\_\_\_

It has been some time since the last packs of 5.25" disks left store shelves. So it's only natural that during that period, many people came and went to work for big corporations like 3M. And processes that are no longer profitable for the company, like how





HAVE EX-MANUFACTURES ANY STOCK LEFT?

to make diskettes, get shelved and forgotten over time. We received a very nice reply from Irene Gesell, Team Assistant Communication at 3M Deutschland GmbH, who told us that there were no 5.25" disks left at the company and that the people who knew about them have left the company or had retired.

#### **BASF SOLD EVERYTHING**

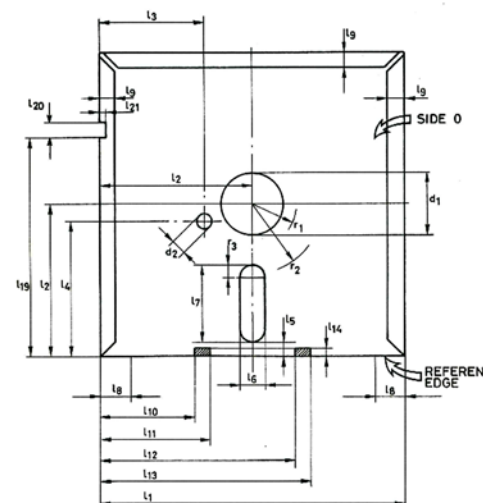
If you live in Germany, you knew BASF because they sold the best bang for the buck in diskettes and video tapes. So we had high hopes when we wrote to them – but sadly, there is nothing left of the former diskette legacy at Ludwigshafen. Well, almost nothing: Alexandra Goeke from Media Relations at BASF wrote that some examples could be found in their company archive. Furthermore, BASF sold all their business with magnetic storage devices (including audio cassettes and VHS tapes next to diskettes) to a Korean textile firm called KOHAP in 1997. This company produced and sold some products under the label EMTEC. From there, it gets confusing: EMTEC was bought a year later by a British company called LGV, went bankrupt in 2003 and was bought up in part by Imation and MPO France. Well, a long story short: You won't find any new old stock of disks at BASF in Ludwigshafen.

#### **FUJIFILM DUG DEEP**

The answer we got from Fujifilm Recording Media GmbH was, by

far, the most in-depth answer from any company. Hartmut Schmeinck explained that the size of the metal particles, 2-3µm with old floppy disks, was rather large compared to the latest magnetic media the company produces: LTO, which uses particles in the size of 20nm. Hartmut Schmeinck dug through the archive of Fuji and stated that the first metal particle media tapes the company produced in 1984 are still working fine today. He went on to say that diskettes can hold up as long as 30 years if they are being stored correctly, maybe even longer. Also, he added that Fuji produced 3.5" disks till well into the 2000s. But sadly, there is nothing left of the 5.25" disks the company once produced. Schmeinck searched the company archive for brochures and such, but found only something for 3.5" floppies from the late 90s. Maybe the older stuff is simply not digitized yet.

*And that's all. But whatever it's worth, it was entertaining. (bk)*





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FORGET ABOUT THE EXPANSION PORT

*Who doesn't like their Action Replay or Final Cartridge or Epyx Fast-load? And to all those who don't like to unplug those babies, there is a solution – and it plugs into the tape port!*



Photo: Boris Kretzinger

The tape port on the Commodore 64 is considered to be a steady supply of 5V for other, more useful devices like SD2IEC for example. And nothing more. Depending on where you live, you had more or less contact with games and programs on tape back in the heyday of 8bit home computing. But plugging in your Datasette today and waiting several minutes for a game to load that you can play within a few seconds from your 1541 Ultimate or SD2IEC seems to be out of fashion. There are, of course, collectors and some freaks who cherish the Tape port for what it is: A connection for a tape drive. They may even consider loading times like a zen-meditation. But there are other ideas flying around on how to use it in a modern fashion. And one of them makes it a cartridge port of some sort.

**A CART FOR YOUR TAPE PORT** \_\_\_\_\_  
 Unsurprisingly, the idea for this concept is from a die-hard Datasette fan: Martin Wendt. „I've always wanted to feed the C64s tape port directly from a micro controller“, he explains. Martin motivated Ingo Korb to build first prototypes as early as 2013, but didn't find it cost effective to do. Moreover, he was searching for fitting cases, but could not find any. So the project went into standby mode until last year, when Ingo Korb rewrote the code for cheaper ARM micro controllers and Martin finally dug up some fitting cases. Ingo, who is responsible for the hardware part, explains humbly: „I don't think that this is all too fancy. But it's quite inexpensive.“ They both agreed: This had to become an open hardware project. The speed of the device is quite impressive: In



fast mode, data is shoved in the 64's RAM with 10 KB per second. However, the standard mode allowing for sprites, screen display and music is still fast with 2,5 KB per second. That quick mode is way faster than what any floppy can provide, but not quite as fast as what is possible with Easyflash.

#### ROOMMATE

However, with 2 MB of storage on the Tapeart, there is plenty of room for picture slideshows, demos or even games. And all that while ones favorite cartridge can still reside in the expansion port. But there is more to it, as Martin explains: „If you're using Easyflash and intend to write data to it, there are 64 KB to be erased first which the C64 cannot buffer. For example, even if you

want to write a single savegame in Maniac Mansion or Zak McKracken, you'd need to delete a full 64 KB on the Easyflash. Because you cannot copy everything into RAM first and simply add the new savegame before writing back the segment of 64 KB.“ To make a long story short: If you're handling a lot of savegames or other data, it's easier on the tapeart. However, currently there are no games for it, although onefilers will work. But this will change, Martin is convinced: „Tapeart could be interesting for new game releases or a mobile storage for games collections.“ So maybe in the not too distant future, we might see some pretty interesting stuff coming our way - and the C64's tapeport might finally gets back some of the attention it deserves. *(bk, mw, ik)*



Photo: Boris Kretzinger

*Several Tapearts that made it into the world via German Forum64.de already come pre-flashed with a large slideshow by PriorArt of a whopping 250 selected graphics in multicolor format. Roughly based on all pixel art that got a ranking above 8/10 on CSDb. The individual pictures are faded with a wipe effect and perfected by a great soundtrack from Jammer.*







not already happen to have such an expensive device at home, you probably would not have bought one just to play this game collection. „The Codemasters CD pack is not common on eBay“, explains game collector Nicholas Andrews. Prices can easily go above 30 GBP today, as the software did not quite sell so well back in the day, to put it mildly. It was the only attempt by the company at a CD game collection for 8bit home computer users. Today, it's uncommon, but it also challenges collectors who want to preserve it. Nicholas Andrews says: „It's weird if you listen to the CD: It's in stereo and has two signals on the CD, one each channel. I shared it for archive preservation.“ But Codemasters weren't the first to attempt selling games on Compact Disc to Spectru-maniacs, Commodorks and others. They were preceded by a German company best known for Turrican and Giana Sisters: Rainbow Arts. „If it wasn't for Rainbow Arts making the 1st CD Games pack, we wouldn't have adapters for the C64 to load WAV files from our phone or MP3 player today“, claims Nicholas Andrews.

#### REACH FOR THE RAINBOW

In 1989, Rainbow Arts was trying something completely new by releasing ten classic games on one CD for the Commodore 64 exclusively. However, those were not games made by the company: David's Midnight Magic, Leader Board Golf, Mission

Elevator, Impossible Mission, Dropzone, Loderunner, Solomon's Key, Jinks, M.U.L.E. and Fist II. Good games, but in 1989, you either had them anyway in some way added to your diskbox, or you would not have wanted to buy those Evergreens on a CD for around 100 Marks. „Publishing C64 games on CD in 1989 made for some headlines with the press“, remembers C64 collector Volker Rust. But this CD wasn't all about games: It was also the first 8bit game soundtrack on Compact Disc: „Additionally, the CD contained ten soundtracks by Chris Huelsbeck“, explains Volker Rust. „This was clearly a test for Rainbow Arts, but as there never were any follow-ups, sales must have been negligible“, he adds. The CD contains the complete soundtrack of Hollywood Poker Pro as well as the title themes of To be on Top and Katakis, amongst others. Nowadays this piece of gaming history is rather rare: „Today, the 1st CD-Edition sells for between 30 and 50 Euros on Ebay“, explains Volker Rust.

#### RELOADED

What remains of the rather short conjunction of CD and C64 is an adaptor that opened the gate to load games from phones or MP3 players. It was a very innovative concept for its day, and also quite ambitious considering the target audience and their buying behavior. And both CDs are certainly a nice addition to any collection today. (bk, na, vr)



Photo: Nicholas Andrews

*Whose idea was better: Codemasters', who put 30 of their own games on a CD? Or Rainbow Arts', who combined ten all-time classics with a genuine soundtrack of their best games?*



Photo: Nicholas Andrews





Photo: Tom Mulligan

Staring at a CRT monitor can be tiring for the eyes, especially if it's an old one with green letters on a black background – like the classic monitors used with the PET line of computers. Back in the day, there was of course a solution for this, an anti-glare screen. This provided a sharper contrast and at the same time was easier to watch for several hours of coding or texting. One could argue that Commodore should have sold those items along with their computers, but they did not – which is why you won't find many of those screens today. And this is what triggered the interest of Tom Mulligan, as he explains: „I found an original Commodore PET anti-glare screen

on ebay and even though it was not the correct size for my machine, I decided to buy it anyway and discovered that it was made from simple green acrylic sheet cut to size. And so I made one for myself.“ The result can be seen in the picture above. Although the screen looks quite reflective, it serves its purpose well: „The results were better than I expected. These green screens once fitted actually appear black and are quite reflective, but glare is greatly reduced“, says Mulligan. He adds: „The overall appearance adds a futuristic retro look in my opinion.“ If you want to build one yourself or want to buy one, just write us – we'll forward your mail to him. (bk)



# SCENE WORLD



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**SCENEWORLD.ORG**



Photo: Frank Wolf. Montage: Boris Kretzinger

*Chinese fakes: You can easily spot them by the markings on the top of the chip. Frank Wolf knows the drill: He imported several thousand MOS chips from China during the last ten years.*

Twelvemillion, maybe seventeen-million or even twentyonemillion – the exact number of C64's sold is uncertain. But you can easily go online and buy a used C64 for a few bucks any day. Even now, more than 25 years after the last units left their assembly lines. But no matter how many survived in cellars, closets and garages: Most of those millions of C64s got thrown away at some point, like all consumer electronics that reached the end of their usability. And a lot of electronics goes to third world countries like India or China, where the parts are separated and some resources are scavenged. And this does not always mean that the circuit boards with all their chips get

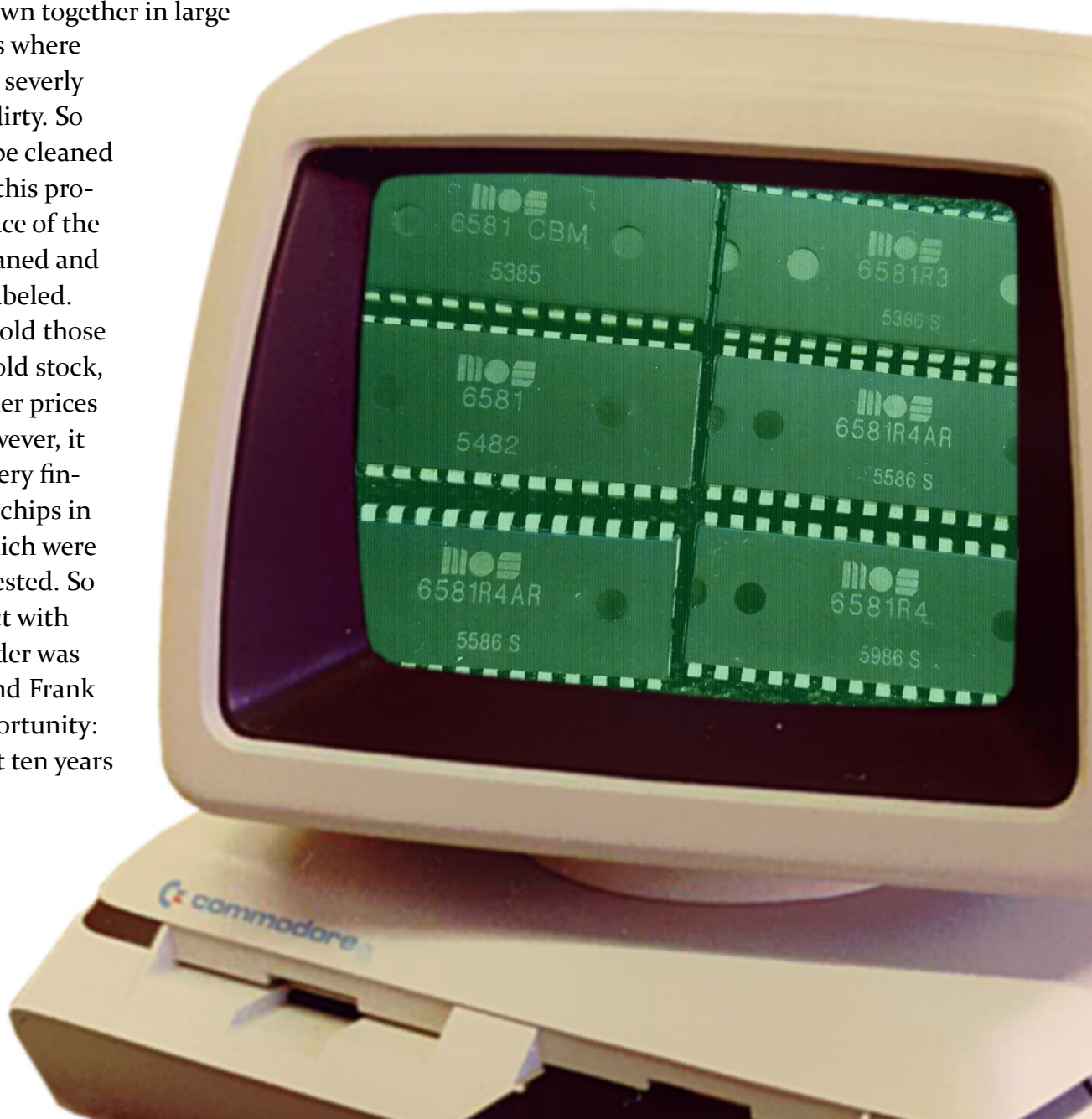
crushed and shredded. Some Chinese trader look out for valuable vintage parts and sell them to western customers – like Frank Wolf from Germany. „It all began because I was afraid that my stock of SID chips could last“, he says. First, he looked at ebay, but soon went to the source of all the chips: China. With some purchases, he received chips with odd production dates that could never be true. Many MOS chips show the date they were produced in at the last printed row on top of the chip, like e.g. 5283, which translates to 52nd calendar week of the year 1983. But suddenly there were print claiming 54, 55 or even 63 in combination with years MOS did could



never have produced any SID chips, like 72. So after a while Frank got in contact with an honest trader who looked out for MOS and CSG chips for him on the Shenzhen Electronics Market. „He offered me everything he could get hold of“, the collector explains. And his contact also told him this re-printing was all about: When electronic waste arrives in China, it is roughly sorted: cases, chips, mainboards and so on. All of those get thrown together in large sea containers where they often get severely scratched or dirty. So they need to be cleaned – and during this process, the surface of the chips gets cleaned and often also relabeled. Some trades sold those chips as new old stock, claiming higher prices for them. However, it was like a lottery finding working chips in those lots, which were of course untested. So having contact with an honest trader was important. And Frank used this opportunity: „Over the past ten years

I bought about 6.000 chips, mostly SIDs, also for friends of mine“, he claims. But finding ceramic MOS chips, his favorites, has become most difficult: „During the crises of 2008/2009, they melted all the gold they could get, and that destroyed many, many ceramic chips.“ Today, Frank has retired from ordering old chips from China. He might have enough SIDs in stock for now. (bk)

Photo of Chips: Frank Wolf  
Montage: Boris Kretzinger



## RETURN OF THE FEELIES: ATHANOR (C64)

*It looks like something EA could have done back in 1985. Eric Safar put a lot of effort in this game, which was released in 2015, but didn't get any attention. So now it's time to finally play this!*



Photo: Boris Kretzinger

The adventure game genre on the Commodore 64 is long indeed, and there have been different technical approaches on how to do the graphics. In a time when disk space – or cassette loading time – mattered, vector graphics seemed an appropriate way of illustrating adventures. And games like *Castle of Terror*, *The Hobbit* or *The Dragon Valley* were

quite popular and atmospheric. Now *Athanor*, as the autor Eric Safar explains, „was made in honour of the first-generation's adventure games with vector graphics.“ Eric has programmed games for Oric, Atari and PC and worked at Legend Software and Cryo Interactive. Now, he turned his interest back to classic game platforms again, and *Athanor* marks the first game in what will become a trilogy. Hence he refers to the game also as „*Athanor – The Awakeing*“.

**THE NAME OF THE ROSE**

The game takes place in an Franciscan abbey in South Italy during the early 12th century. Right from the start, it feels a bit like *The name of*



Photo: Boris Kretzinger





Photo: Boris Kretzinger

the Rose. In this abbey, something strange has happened, so you need to find out what's wrong there. Everything seems normal, but just a tiny bit unusual: The walls of the abbey, the moor, even the monk who lets you in. Eric really succeeds in getting the atmosphere right. And part of this works because the game does not tell you too much. In fact, if you don't happen to search for it on the Lemon64 forums, you'll not even get a list of words the parser accept. Of course there are the usual suspects, but you need to try. The same goes for the puzzles, but luckily, the picture shows everything you need to know, and you will get the hang on what to do quite quickly. For your help, Eric made a grand effort to put together a boxed version that looks and feels like something EA could have produced back in 1985. It's even the same record-sized format of those games. The feelies and the map contain valuable clues for your quest – and add immensely to the value of this piece of software for only twenty bucks. Truly a great

adventure and a must-play. Furthermore, the next game is already in the pipeline. (bk)



you have reached the end of a track leading to the abbey which can be seen far away

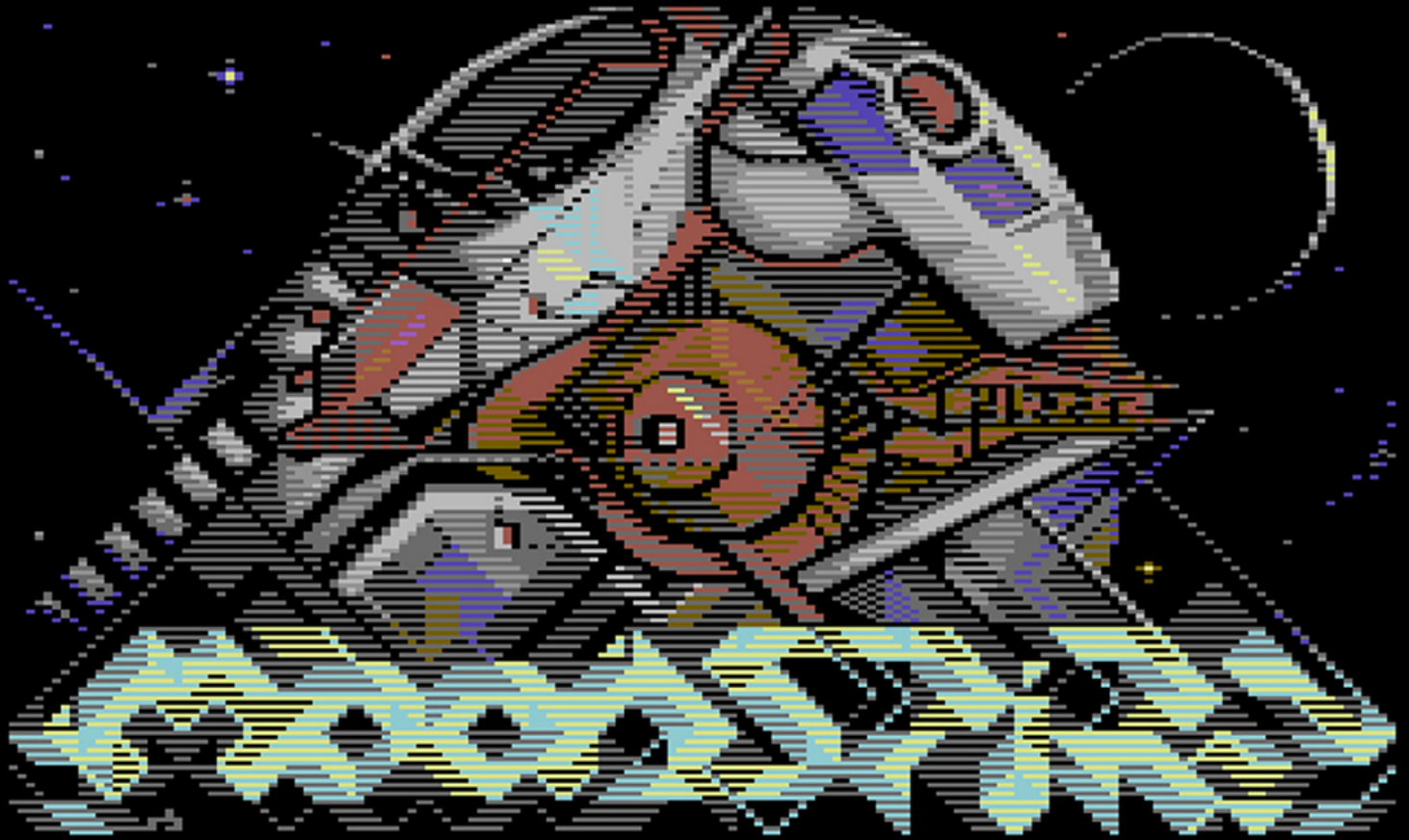
Exit : NORTH  
What to do ? ■



A monk appears.  
He looks oddly stoical.

Exit : SOUTH WEST EAST  
What to do ? ■

FLY ME TO THE MOON: MOONSPIRE (C64)



The attack came swift and unexpected, and there really was not much on this planet that could have withstood the sudden attack of the Draxx much longer. But suddenly, they withdrew their forces up onto our worlds only moon. And instead of killing the remaining humans, they chose to halt the terraforming process we had begun and start reversing it to turn Arcturus 7 back to the hostile ice planet it once was. So we put every weapon we had left into one civilian EVA pod, strengthened it with additional armor, and I volunteered to go up there and blast them off this moon. After all, with this I at least had a chance to

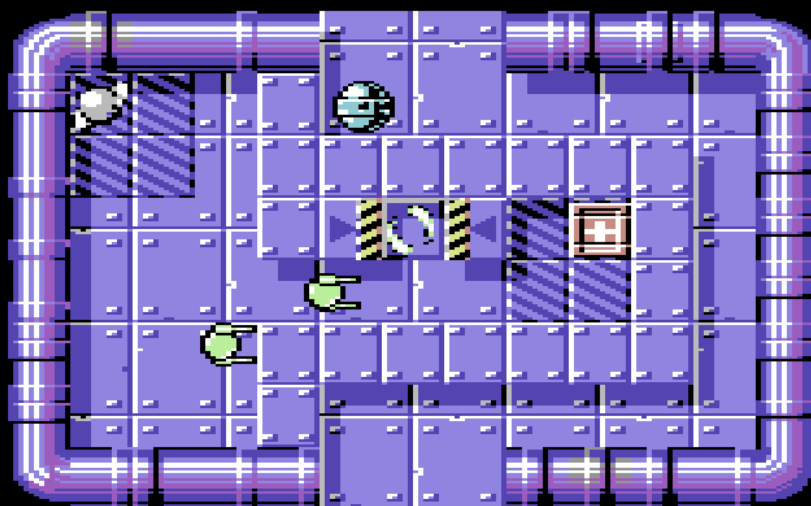
give meaning to my death, which would otherwise been just a waste. Maybe I succeed, maybe I don't. But whatever the outcome, I'll make it count.

#### FLY ME TO THE MOON

At first glance, Moonspire looks like Paradroid on Speed. However, it's a flip-screen Shoot-em-up of its own right, also offering some exploration fun – and it plays astonishingly well. While progressing through the 264 screens this RGCD title has to offer, the player encounters a colorful but hostile, somehow fascinating but yet strange environment of the so-called Moonspire. The aim is to progress



through six levels by collecting all orbs of each level while avoiding or destroying the four different enemy types. The controls feel tight and three different bullet types give some variety to the gameplay. But the better the weapon, the more ammo it consumes – so think about what weapon you choose. The futuristic soundtrack by Ari Yliaho adds immensely to the great atmosphere of this title. And for programmer Dušan Milivojević, it's his first C64 game so far – hopefully, he'll continue and surprises us with another decent Shmup someday soon. (bk)



SCORE : 207100  
WEAPON : PULSE

ENERGY : 100  
AMMO : ---

LIVES : 10  
ORBS : 042



*While the cartridge edition of Moonspire sold out pretty quickly on RGCD, James has now some units left in stock for 30 GBP. However, you can also download the emulator image for 2,99 GBP at [rgcddev.itch.io](http://rgcddev.itch.io).*

GET CIVILIZED: 8BIT CIVILIZATIONS (C64)



„Can't be done“ is a frequent answer to the question why some games have not been ported to the C64 yet.

Fabian Hertel didn't bother. The result: A respectable Civilization adaption.

**Before 8bit Civilizations, did you ever program games on the C64?**

No, I did not. I got my first C64 at the age of six as a Christmas present. I started with BASIC programming and later on read about assembler, but then my priorities changed as I got a PC and started a family of my own, so the C64 got neglected.

**So why did you start with such a complex game like Civilizations?**

When I first encountered Civilization, I was playing it with friends who owned an Amiga. Sadly, I could not play it at home on my C64. So I tried mastering some similar games like Conquestador, but there was really nothing like the real thing on the Commodore. Then, a few years ago, I stumbled upon the CBM.prg Studio by Arthur Jordison, which I found very accessible. And then it just tickled in my fingers to try



out new things which I didn't try before. So at first I wondered if it was possible to produce an isometric and scrollable map on the C64, which was kind of a challenge for me personally. As it worked out, I added units, and progressed step by step until it became a real project. Things got complicated along the way, but thanks to the help from the guys at Protovision, there is now a playable demo ready to be played. But ultimately, this is foremost a personal dream come true for me.

***The game runs on a stock C64 without any expansion modules like SuperCPU, Easyflash or REU. Why did you choose this way?***

Well, first I don't have any of those. And second, this would have been less challenging. It's fascinating to imagine that this game would have worked on a stock C64 from 1982. If you want more speed and RAM, well then, go and play Amiga or PC. But the game actually supports the SuperCPU as I adjusted the code accordingly. So the few owners of this piece of equipment can rejoice. It also works with the Emulation of this device under VICE, so you can even give it a try there. And it will work.



***What have been the greatest challenges coding-wise along the way?***

A scrolling map without any additional RAM was tough. Furthermore was it hard to write functions that write text and graphics from compressed data onto the screen. And I had to adjust some game principles to streamline the program. And this affects not only the RAM, but also the CPU speed. However, it was rather easy to store all game data like the size of the map, 254 units and 30 cities in memory: All this consumes under 8 KB. Oh, and adding the AI was challenging.

***How much memory does the AI take up and how smart is it?***

It's about 3 KB, but there are cross-references with parts of the main program which could have been

» ***The AI does not cheat.***

*Fabian Hertel*

## GET CIVILIZED: 8BIT CIVILIZATIONS (C64)



» *If the game is completed, there will be a d64 image.*

*Fabian Hertel*

written exclusively for the AI – if I only had enough memory at hand. Let me make an comparison: If you wrote an AI for expanding a city nowadays, there would be some fixed rules and a score system which would influence the probability of building this or that. Maybe even build a learning system. With 8bit Civilizations, there is also a set of fixed rules, but a less dynamic score set for decisions. The AI does not cheat, but this is a disadvantage against human players.

***How long did it take to finish the demo version of such a complex game?***

I started my first experiments back in 2014. From there, I continually made progress and released a video in early 2016. Back then, AI and menus were still missing. And since early 2017, a first playable demo is ready.

***What's missing in this version?***

First of all the diplomacy sub-menus with an audience screen to commu-

nicate with other leaders. Moreover, the sub-menus for spaceships is missing, and so are several info-menus. And I'd like to add a few sound effects as well as an animated end screen and a statistic screen.

***How do you organize yourself and structure such a project?***

Well, it did not start as a project that was to be completed, but there have been several milestones along the way. Without successfully reaching my aims, I would have dropped this project long ago. To me, it was important to see quick progress and be able to test everything. In the end, I am lucky that everything turned out with this method, doing the map first, then the units and so on. And there is always the possibility to reduce the functionality to have more memory left. I also have a to-do list in which I add new thoughts and accomplishments.

***Which tools do you use for programming?***

I used CBM.prg Studio for all the coding and Photoshop 6.0 for the graphics. And I coded a PC program that compresses text and graphics as I need them to be. For additional information, I consulted codebase64.org and the book „C64 intern“.

***How long do you think it will take you to complete the coding work?***

This depends on how much spare time all the people involved are willing to put into this. Many graphic



parts are still missing, but so far the support by Protovision members was excellent. Furthermore, I'd need more save stats from players, which is why the demo was released. We have to test it. Well, it's difficult to estimate. If this was my only job and I had everything I needed, it would take about four to six weeks.

*Will the game be released on disk only, or could you think of other versions, like on cartridge?*

If the game is completed, there will be a d64 image. There could be a cartridge version with more graphics, additional music and an expanded AI. But this would also take longer, but it could become some kind of deluxe version, with posters and stuff. Certainly some gamers would be interested in such a thing. But that depends on Protovision, and it would also mean that a fan project would turn commercial. I don't know what implications that might have.

*If you ever met Sid Meier, what would you like to talk to him about?*

Certainly about the development of Civilization and how he got into programming. And I would like to ask him if there have been moments where some things did not work and there were problems to solve, not only with Civ, but also with other games. And it would be interesting to know in which direction he wants Civilization to develop further. (bk)





# Graham Axten's the Bear Essentials



Help Bear collect fruit for the winter in this new platform game featuring simultaneous music and sfx. Face 60 enemy types while exploring 60 screens spread out over 6 unique areas! Free download from [pondsoft.uk](http://pondsoft.uk) - Jewel case disk version £10

"Bear?" asked Hedgehog. "what's that you've got there?"  
"It's a new C64 game from POND". Bear said with a big smile on his face. "and it's got a ME in it, look!"  
"Oh", squeaked Hedgehog. "Can I have a go?"



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