Preserving software heritage: the case of video games and demos

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Version de travail

Outlook

- The MO5.com non-profit organization

- Subject for this study: video-games and demos

- Binary back-up of the original software

- Three methodology to preserve such softwares:
    - Preserving the hardware
    - Emulation
    - Remaking

- Conclusion and perspectives

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The MO5.com organization

- French non-profit organization

- Created in 2003, gathers a collective of people involved in digital heritage preservation

- Aims to become a national museum

- Extensive experience in organizing exhibitions

- Very large collection of hardware, software, documentation, and related products

Game Story – Grand palais – 2012

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# Studied objects: video-games and demos
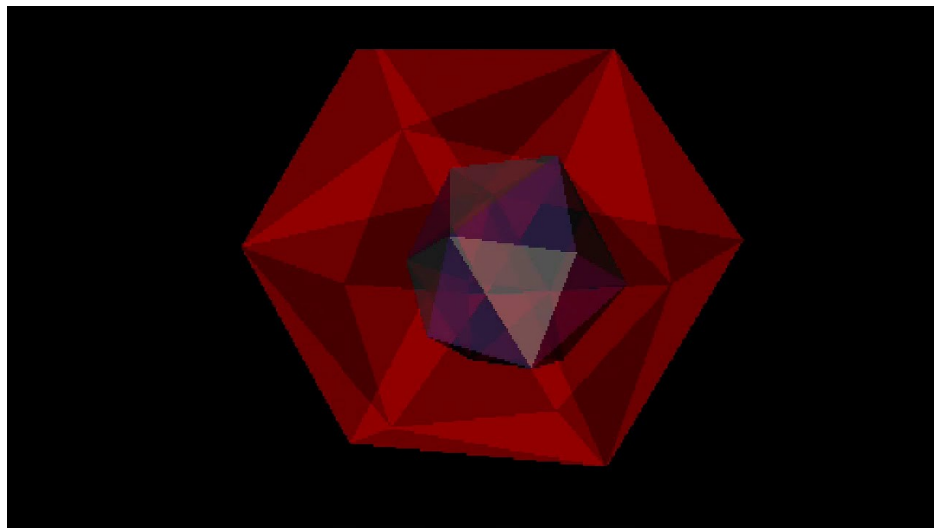
Second Reality – Future Crew – 1993

- No consensual definition
- Pieces of software, which can be hardware specific
- No utilitarian purpose
- Self-contained: the software itself is its own purpose
- Imply the use of several art forms, at least visual arts and music
- Video games are highly interactive
- Demos aim to show of the highest possibilities of a given hardware, as well as the skills of its maker

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Data binary backups: why?

- Data supports life-time is limited: soon or late, we will not be able to use them any more

- Planned obsolescence and digital right management

- Data binary backup is a good way to drastically extend data life-time

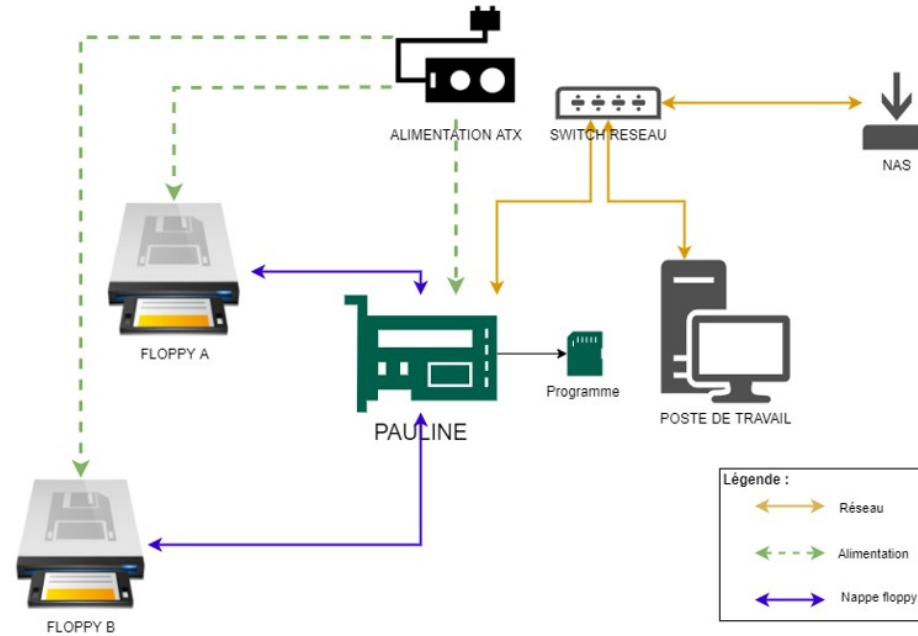- Therefore, we need to create the specific methodologies and tools to achieve such purpose

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Dumping data: how
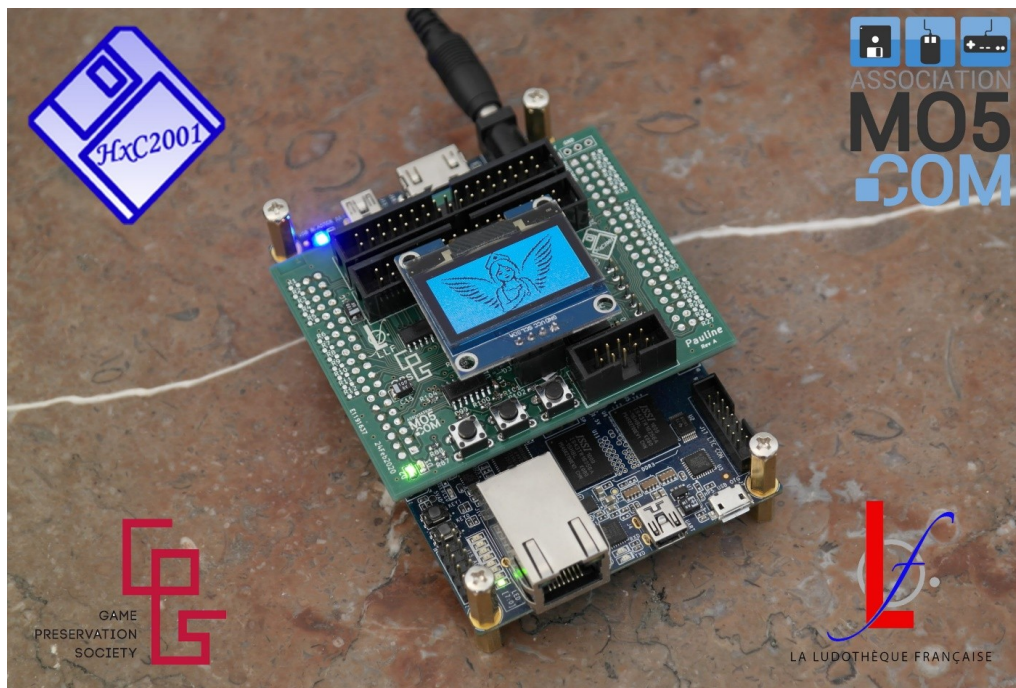
Pauline, created by Jean-François Del Nero

Pauline's workflow
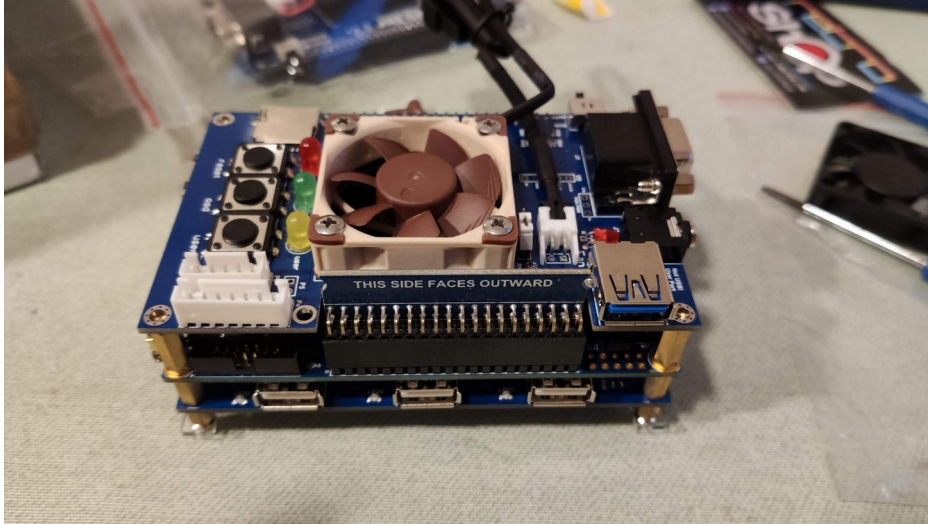
Preserving the hardware

- Preserving the hardware in a working state, as well as the original support of the software programs

- Ensure the exact same experience as when originally released

- However, no matter how well-preserved, the hardware will eventually fail

The Micral N – MO5.com collection

Hardware emulation

MiSTer FPGA emulation platform

- Using programmable logic devices to reproduce how the original platform worked

- Running backed-up software on these units

- Allows for presenting the software with the original hardware shell, while actually running an emulated version, preventing wear and tear on the original hardware

- Needs for an accurate emulation, therefore a first step is to document as precisely as possible the original hardware

- Creates the need of new hardware, which should be preserved as well

Software emulation

- Creating some software to reproduce how the original platform worked

- Running backed-up software on these emulators

- Allows for running the software on a completely different hardware than the original one, preventing wear and tear on the original hardware

- Needs the most accurate emulation, therefore a first step is to document as precisely as possible the original hardware

- Simpler preservation logistic than with hardware emulation

- Software emulation tends to be less precise than hardware emulation

- Less close to the original experience than with hardware emulation

Wii software emulation using a standard PC platform

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Remaking the software
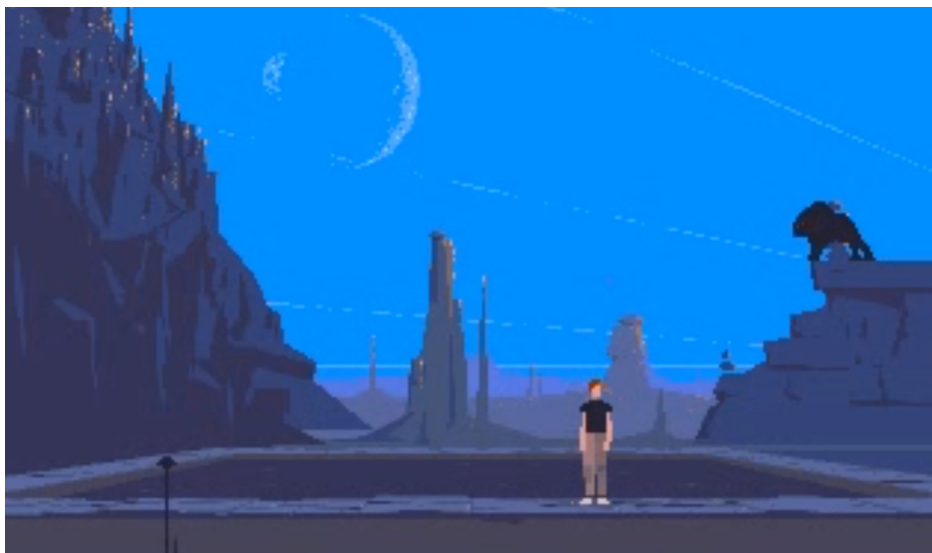
Another World – Eric Chahi – Delphine Software – 1991

- Not emulating the software, but remake the software, so it runs on modern computers, present or future

- Using as much as possible the original assets

- No need to emulate the original hardware, just to reproduce the original software behaviour

- Using original assets, you can even reproduce the original bugs

- Time consuming and cannot be automatized: need to select which software will be preserved

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Inventory system

Conclusion

- Already tested and formalized several methodologies and tools

- Extensive experience in hardware rejuvenation

- Contributing in extending software preservation methodologies

- Part of an international network of digital heritage stakeholders

Perspective

- Sharing our knowledge base: https://mo5.com/site/

- Sharing our software through Gitlab

- Inventory tools: methodology, taxonomy, protocol, framework and software

- Getting involved in Software Heritage and Software Stories (creating a hub)

- Institutional implication

- Worldwide collaboration

Thank you!

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