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

- 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

Second Reality – Future Crew – 1993
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
Dumping data: how

Pauline, created by Jean-François Del Nero

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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
Hardware emulation

- 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

MiSTer FPGA emulation platform

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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
Remaking the software

- 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

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

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Thank you!

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