



Emulation Expert Meeting

Emulating emulators for long-term
digital objects preservation:
the need for a universal machine

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ACONIT

- Association for a Conservatory of Informatics and Telematics
- Not-for-profit organization supported by the Museum of Arts and Crafts and the National Library of France
- Founded in January 1985
- Aims at preserving all aspects of computing
 - Physical machines and hardware
 - Software
 - Documentation
 - Historical material



An overview of emulation

- Dates back to around 1960
- Today, a broad range of emulators available for many source and target platforms, often created by hobbyists
- On the plus side:
 - Preserves the functionality of software in its original form, within the same logical environment
 - Code-it-once for a particular source platform on a particular target platform, works for all software created for the source platform
 - Side advantages: monitor, state saving, input/output recording, fast-forward, pause, etc.



The need for a virtual machine

- On the down side:
 - Depends on specific target platforms (hardware, OS and OS components) that are usually not durable and frequently closed and copyrighted
 - Created in various languages (ASM, C/C++, Java, etc.)
 - Same problems, again
- => platform-independant architecture needed, a virtual machine

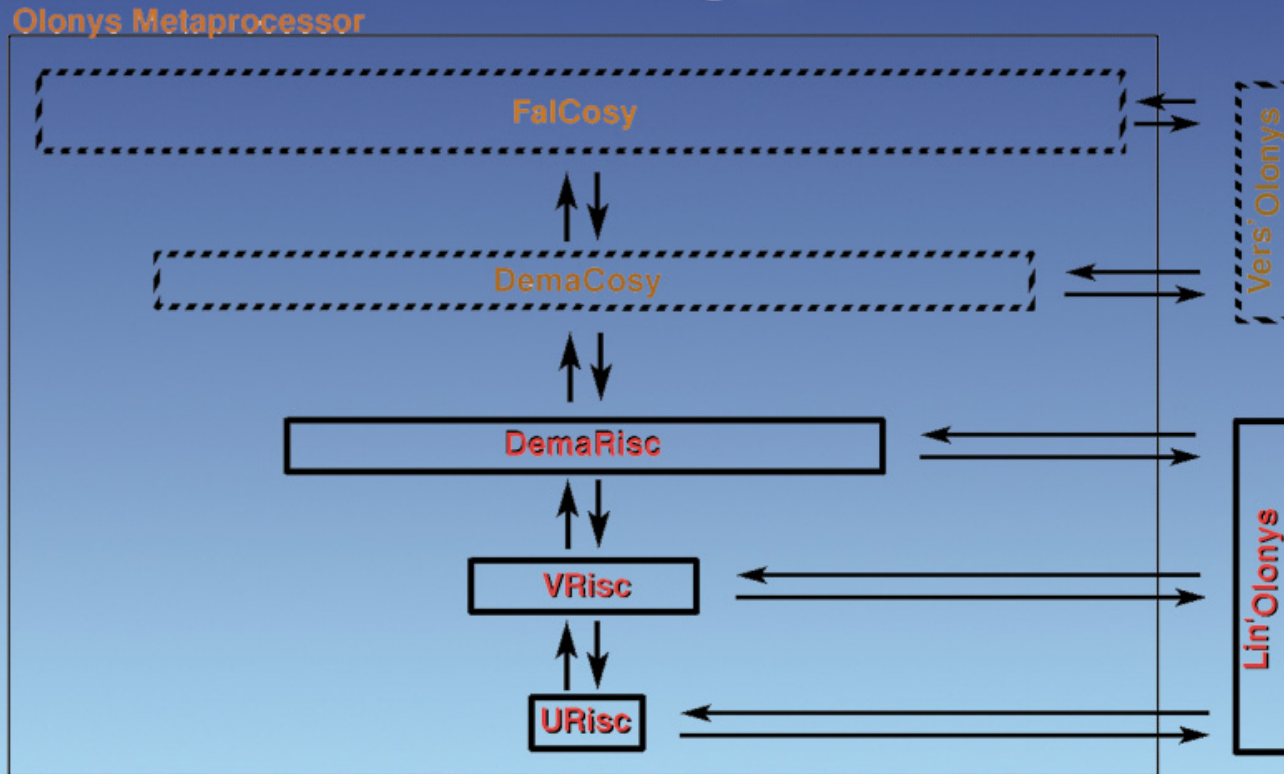


Virtual machine needed specs

- Simple-enough to be easily ported over to any kind of platform, present and future
- Efficient-enough for power-hungry application software
- Take source and target hardware disparities into account, especially different peripheral capabilities



Olonys: overview



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Olonys: portable yet efficient virtual processor

- Layered metaprocessor, made up of 5 virtual processors working together
- 3 simplest processors designed to be easily ported, one is also quite efficient
- Porting time is between a couple of hours to about one week
- 2 topmost processors designed to execute applications (emulators, OS, etc.)
- Functions are rich enough to support multi-tasking OS, modern languages, complex emulators



Olonys: flexible peripheral management

- « Natural », partly-physical representation of peripheral functionalities
- Automatically matches requested peripherals (for exemple by an emulator) to those actually available
- Generic system, so as to try to adapt to future hardware functionalities



Questions?

Thank you for listening.