

Emulation as a Tool

What Can Emulation Do for You?

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How to Use Emulation as a Tool?

1. Contextualization

- Describe & preserve object environments
- Identify, define & cope with object boundaries

2. Generalization

- Decouple environments to run „everywhere“

3. Preservation Planning

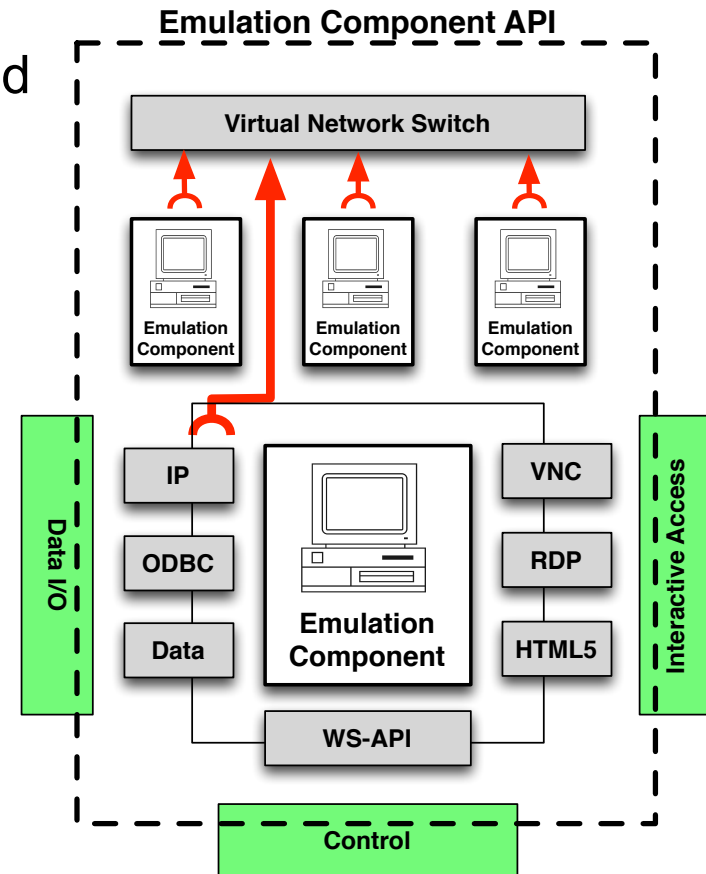
- Prepare environments to run “for ever”

4. Publication & Access

- Citation of objects in context
- Prerequisite for (peer-)review, verification, replication, re-use

EaaS - Emulation Components

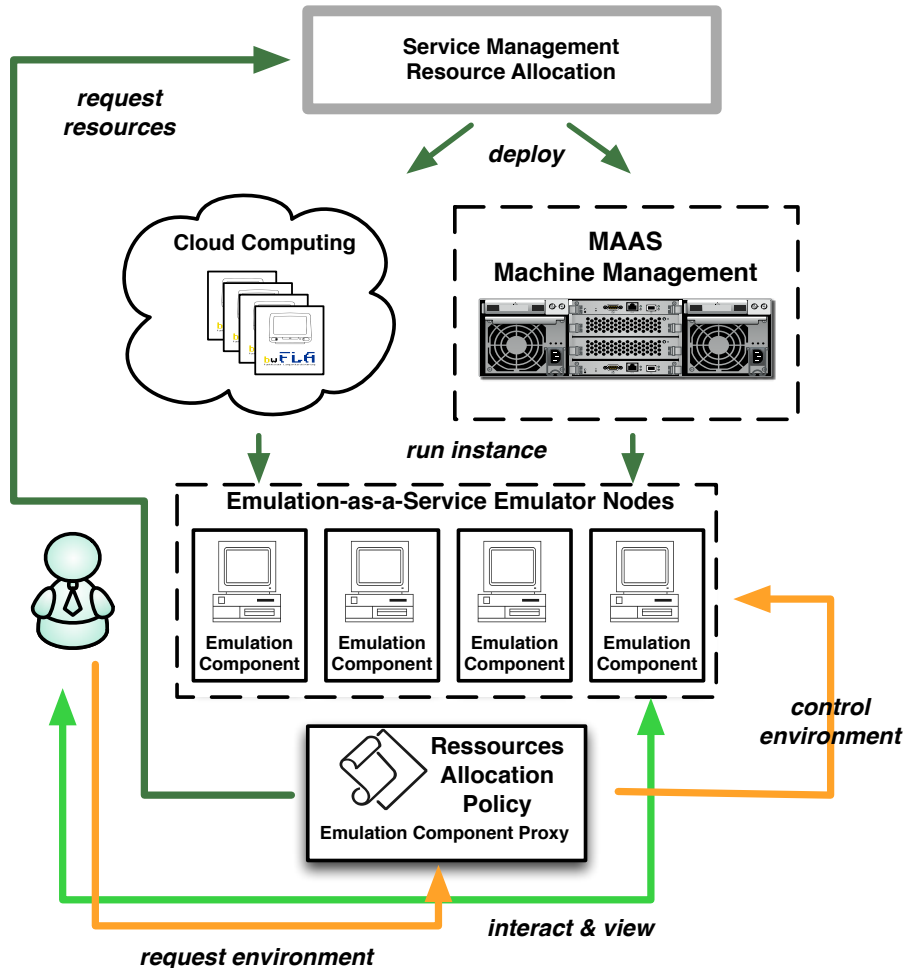
- Unified access to emulation:
 - Encapsulation of different emulators and technology to common component
 - Attachment of user-media
 - dynamically (e.g. Floppy, CD-Rom)
 - permanent (e.g. HDD)
 - Interactive access to emulated environments (e.g. HTML5 viewer)
 - Technical interaction with the environment (IP, specialized protocols)
 - Main building block for complex environments
 - Client/Server etc.
 - API exposed as Web Service (WS)
 - Interoperability to other systems



bwFLA's Emulation-as-a-Service

- EaaS improved emulation usability
 - Centralize technical services
 - Hide technical complexity of emulation through unified interfaces (Web-Service API)
 - Network support
 - → *NetworkEnvironment*
 - Browser-based access (HTML5), embeddable and shareable
 - Ready-made & managed emulated platforms
 - start with a working OS!
 - no initial setup required

bwFLA's Emulation-as-a-Service



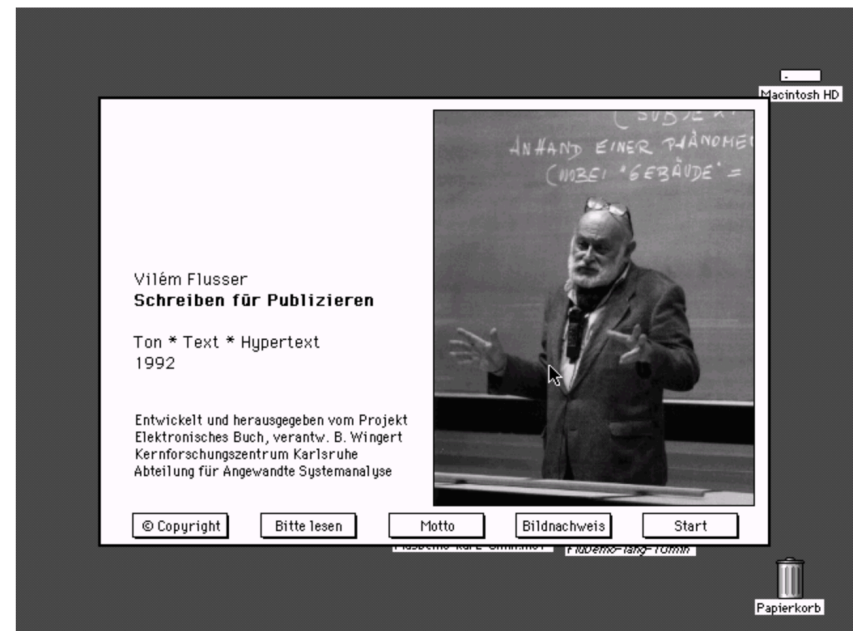
■ On-demand Resources

- EaaS components require almost no statically allocated resources
- Allocation of computing resources „on-demand“
- On demand cloud / cluster deployment
 - Amazon EC2 (e.g. € ~0.05 / h per user session (single node))
 - OpenStack

EaaS by Example

- Preservation of and access to inherited personal digital assets
 - citation support (HDL)
 - simple browser-based access
 - embeddable and shareable like Youtube videos

The Digital Heritage of Vilém Flusser



The [Vilém Flusser Archive](#) owns a personal computer the philosopher used himself. It stores mostly digital artifacts that represent Flusser's textual work, but also a software called "Hypertext" which is dependent on the obsolete authoring system [HyperCard](#).

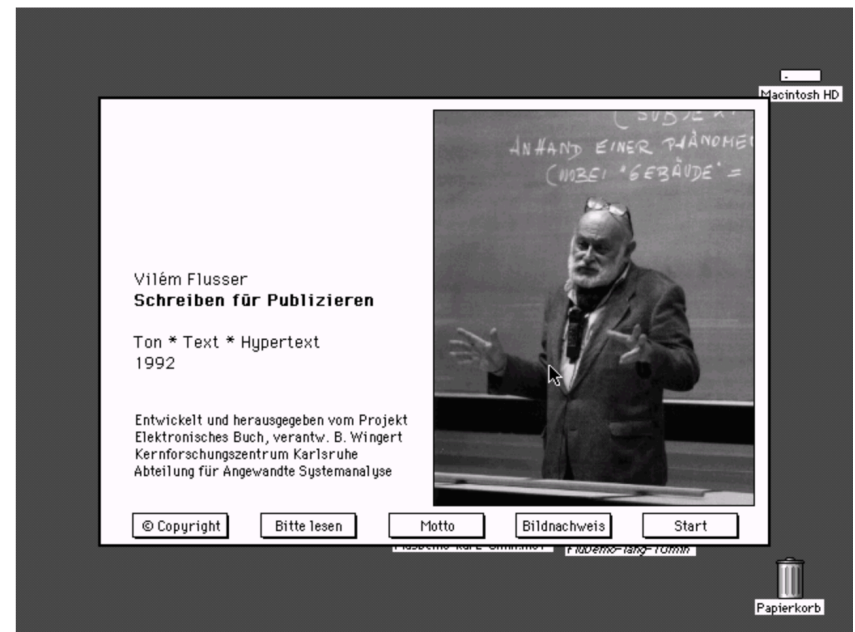
Apple Macintosh Performa 630 computer
Vilém Flusser Archive, Berlin

<http://hdl.handle.net/11270/2b87de90-37dc-4d66-a9e6-546a80b0b261>

EaaS by Example

- Preservation of and access to inherited personal digital assets
 - authentic redaction required
 - remove „personal“ items
 - publish link to the „public version“ (still linked to the original)

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EaaS by Example

- Preservation of and access to (complex) e-books
 - Content protection: presentation only, object data is not accessible to viewers(also important for dig. art)
 - Access restriction: Shibboleth support

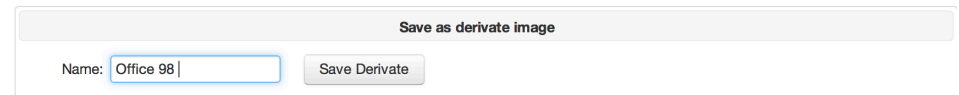
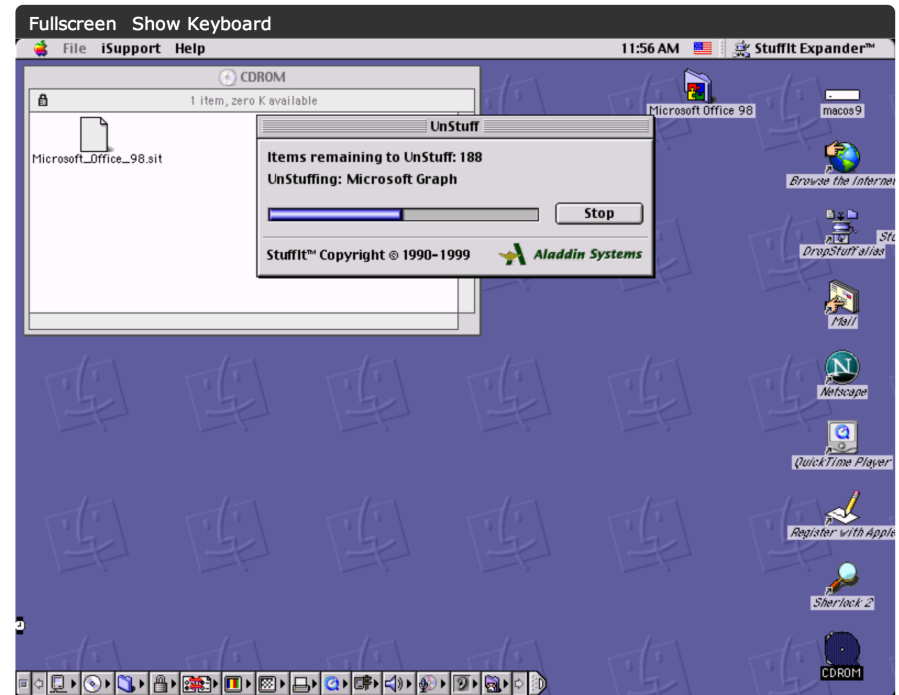


Vilem Flusser,
Die Schrift. Hat Schreiben Zukunft, 1987
Vilem Flusser Archive, Berlin

<http://hdl.handle.net/11270/767f2c0b-cce6-4623-8caf-f5a890afcb75>

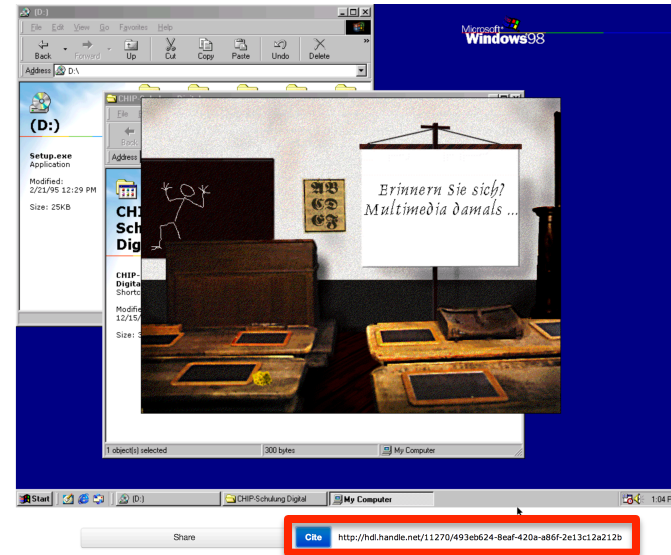
EaaS by Example

- Preparation of custom environments
 - Centralized and effective preservation planning
 - All user images are derived from base images
 - Single migration strategy for base images required, to run on next-gen emulator, then applied to all derived images



EaaS by Example

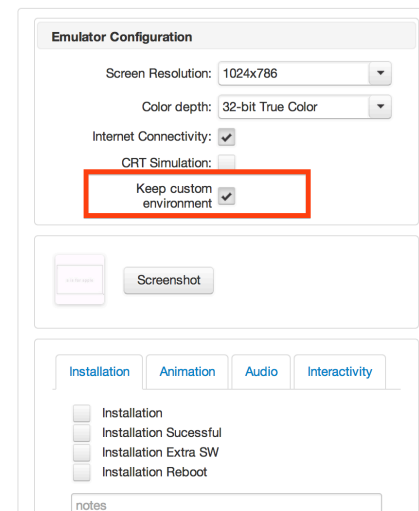
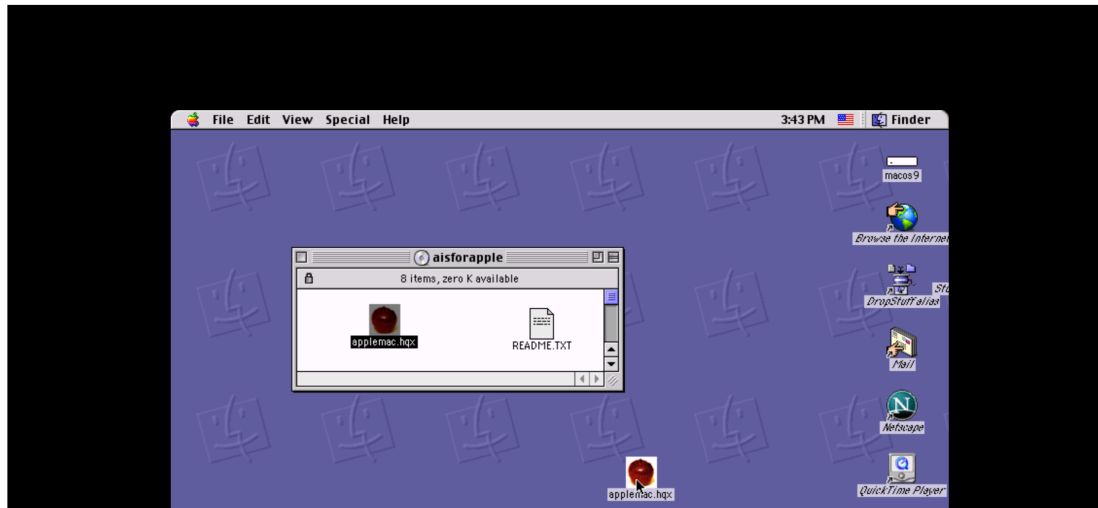
- Access to digital objects in context
 - link object to rendering environment
 - provide access through a single HDL reference



EaaS by Example

- Tailor environment to a specific object
 - e.g. install a „viewer“
 - e.g. autostart a specific object
- Support persistent user sessions

1. Basic Artifact Properties 2. Test and Evaluation 3. Complete Ingest



EaaS by Example

■ Connectivity

- Authentic client access
 - e.g. to archived web sites (esp. MIDI sound)
- Complex Server Setups
 - e.g. cost-effective preservation of a CMS-based Web-site (server)
 - re-enact server on-demand (click HDL)
 - access with old / current browser



Geocities Archive

One Terabyte of the Kilobyte Age

<http://hdl.handle.net/11270/21332f4a-c224-4877-abe4-ad44084716f0>