



Technology trends, requirements and models for providing sustainable technological support for libraries in an evolving environment

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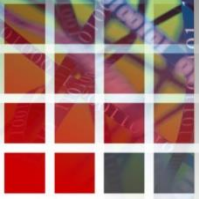
IFLA satellite preconference 2010 Chania

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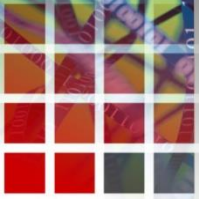
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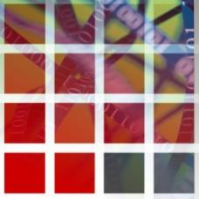


1. The Hellenic National Documentation Center
2. Libraries applications
3. Technology support requirements and IT systems lifecycle
4. Technology trends and the library s/w ecosystem
5. Conclusions



- National organisation:
 - for scientific documentation, online information and support services on research, science and technology
 - Target – **making knowledge accessible to everyone**
 - Part of the National Hellenic Research Foundation (NHRF)
 - Εθνικό Ίδρυμα Ερευνών (EIE)
- Open access advocate
 - www.openaccess.gr
 - NHRF signee of the Berlin declaration (2003)
 - www.openaire.eu, FP7 OA pilot national liaison office
- Interdisciplinary approach
 - Digital library and Information Systems
 - In-house software development expertise
 - IT Infrastructure for the delivery of large volumes of digital content using state of the art tools (OSS, virtualisation, Monitor & Control Systems)





- Repositories and catalogs
 - National Archive of PhD Theses, est. 1985, **14.000** items, **2.5M+** pages, **phdtheses.ekt.gr**,
 - Humanities and cultural content thematic repository, **pandektis.ekt.gr**
 - NHRF institutional repository (papers, technical reports, monographs), etc, **helios-eie.ekt.gr**,
 - The parthenon frieze, **www.parthenonfrieze.gr**
 - DSpace implementations and extensions (e.g., DSpace plugin for Europeana), included in **DRIVER**, **Europeana**
- Six peer reviewed open access e-journals in the areas of humanities
 - **Βυζαντινά Σύμμεικτα**, **www.byzsym.org**, etc
 - Multilingual, i.e. Greek, English, French, (Russian, etc).
 - Custom peer review work flows
- Current Research Information Systems (CRIS)
 - Active participants in the development of the CERIF standard
 - Coordinator of the Enerprise Europe Network Hellas for spreading innovation
- Library automation software (**ABEKT** – 2.200 installations),
- Union catalogs, **argo.ekt.gr**
- Overall
 - **~50 public web sites**, **>1,2M visits/year**
 - **~80 physical and virtual servers**, **TBs of data**
 - **Virtualised infrastructure**, **management, monitoring and control 100s of services**



http://phdtheses.ekt.gr/eadd/?locale=en

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The National Archive of PhD Theses contains the PhD theses from all Higher Education Institutions in Greece as well as PhD theses completed by Greek scholars abroad. The National Documentation Centre (EKT) is the organization responsible for the collection, development and maintenance of the National Archive of PhD Theses. The digital repository contains currently, more than 18,000 PhD Theses, available to the end-users for searching or browsing.

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Open Access

Useful links

- Openaccess.gr
- Hellos - NHRF R
- Pandektis

This website has been developed using the [Greek Free / Open Source Software DSpace](#) Cop

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Ancient Greek and Latin inscriptions from Upper Macedonia, Aegean Thrace and Achaia

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Ancient Greek and Latin inscriptions from Upper Macedonia, Aegean Thrace and Achaia

The collection contains 3 sets of published ancient Greek and Latin inscriptions on stone from Upper Macedonia, Aegean Thrace and the Achaean city of Patras.

Welcome To PANDEKTIS!

PANDEKTIS welcomes you to the National Hellenic Research Foundation major digital collections of Greek history and civilization. The collections have been developed by the Institute of Neohellenic Research, the Center of Byzantine Research and the Institute of Greek and Roman Antiquity, The National Documentation Center.

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Welcome!

The new scientific practices and the latest developments in scholarly communication have led us to re-evaluate the aims of *ΣΥΜΜΕΙΚΤΑ*. In its new form as a peer-reviewed open access journal with well-defined processes and scope, *BYZANTINA SYMMEIKTA* maintains high standards in publications and takes advantage of the possibilities offered by the new technologies.

Professor Taxiarchia G. Kotias
Director of Institute for Byzantine Research

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- Monitor the status of your submissions (e.g. under review, under editing, etc.)

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By visiting the journal's website, academics and researchers in the field of Byzantine Studies can, from now on, submit articles and book reviews. To submit an article, follow the steps below:

1. In the "REGISTER" section of the journal's website, fill in the registration form by selecting the "Author" role. Disregard this step in case you have already/ previously registered.
2. Go to the "USER HOME" page and select the "Author" role.
3. In the "Active Submissions" section select the page "Start a New Submission"
4. Then follow the five-step submission process to upload your article

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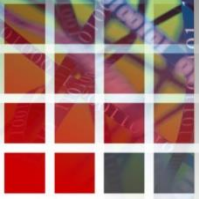
Η ζωφόρος του Παρθενώνα

Η ζωφόρος του Παρθενώνα, ένα μοναδικό έργο τέχνης, παρουσιάζεται σε ψηφιακή μορφή μέσα από την παρούσα εφαρμογή που αναπτύχθηκε από το Υπουργείο Πολιτισμού και Τουρισμού - Υπηρεσία Σωτηρίας Μνημείων, Βασιλόπουλος - Β' Εφορεία Προϊστορικών & Κλασικών Βασιλοτάτων - Τομέας Επιμνημόσυνης και Εκπαιδευτικής & το Εθνικό Κέντρο Τεκμηρίωσης - Εθνικό Ίδρυμα Ερευνών. Η εφαρμογή απευθύνεται στους ειδικούς επιστήμονες, στο ευρύτερο κοινό, αλλά και στα παιδιά μέσα από τα ψηφιακά της παιχνίδια. Σε αυτά έχουν συγκεντρωθεί και υποστηριχθεί στην ελληνική και αγγλική γλώσσα φωτογραφίες όλων των σωζόμενων λίθων της ζωφόρου των μουσείων Ακρόπολης, Βρετανικού και Λούβρου, οι οποίες έχουν συμπληρωθεί με τα σωζόμενα σχέδια του J. Carrey (1874) και του J. Stuart (1751), με σκοπό να δοθεί η κατά το δυνατόν πληρέστερη εικόνα του συνόλου.

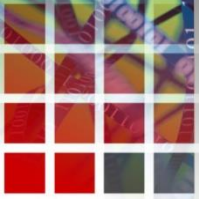
Η εφαρμογή ανανεώνει και αναβαθμίζει την προηγούμενη ψηφιακή έκδοσή.

o Παρθενώνας γνώρισε τη Ζωφόρο παίξτε με τη Ζωφόρο

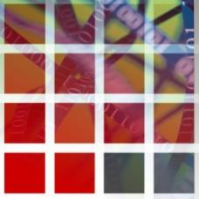
Η εφαρμογή ανανεώνει στο πλαίσιο του έργου "Εθνικό Πληροφορικό Σύστημα Τέχνης και Πολιτισμού (ΕΠΣΤΑ-1) - Π. Φ. 02/04, συνεντάξει και λειτουργικά χαρακτηριστικά Περιφέρειας Πρωτοβάθμιας, 2η Φάση, με σκοπό την ανάπτυξη ενός Εθνικού Κέντρου Τεκμηρίωσης, ανανεώσει στην "εφαρμογή Εθνική" (www.ekt.gr) και περιληφθεί κατά 80% από τον Ευρωπαϊκό Έργο - Επιστημονικό Έργο Περιφέρειας μελέτης και κατά την 2η Φάση, με σκοπό την ανάπτυξη Επιστημονικού Πληροφορικού Συστήματος της Πολιτιστικής, Π. ΚΤΣ 2000-2004.



- New and old:
 1. Integrated Library Systems
 2. Electronic Reading Rooms
 3. Backoffice digitisation processes and tools
 4. Metasearch engines
 5. Institutional/subject repositories
 6. E-Journals
 7. CRIS
- New applications and tools + **emerging interoperability requirements** (Europeana, DRIVER, OAI-MPH/ORE), will continue to emerge
- Although not applicable for all libraries it indicates the IT burden **for developing, maintaining and supporting these systems**
 - Could become a **bottleneck**
 - **Sustainability** issues

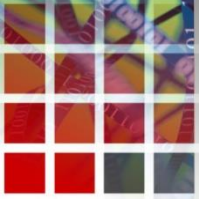


- Open source has being a disruptive force but:
 - look beyond the initial purchase and installation cost
- IT systems lifecycle:
 1. **Initial design, development, customisation**
 2. **Software maintenance and support, bug fixes, security fixes, new features requested**
 3. **System administrators, Monitor and Control Loop**
 4. **Hardware initial purchase cost, depreciation, maintenance and support**
 5. **Datacenter/computer room infrastructure,**
- Lifecycle (although not costs) largely independent from closed/open source software.
 - Total Cost of Ownership for each system/service provided

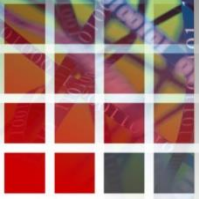


- Reverse pyramid, some hints
 - Datacenters/Computer Rooms optimised for **100s** to **1000s** servers, with virtualisation even 10Ks.
 - Hardware maintenance: **1 person per 100s** of servers
 - System administrators/Monitor and Control Loop: **1 person per 50 – 100** well run servers, depends on system heterogeneity
 - Software customisation: Some **0,5PM – 6PM** for open source customisation projects
 - Design, migration planning and full roll out (apart from IT systems/applications) much harder
- IT support and library
 - IT costs per application have fallen however new applications are needed to cope with new requirements
 - Technology support should not be a limiting factor for offering library services
 - Need to provide sustainable support and not limit each libraries development possibilities
 - What are the new options?

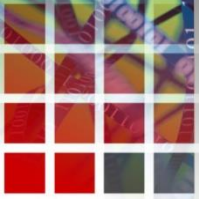




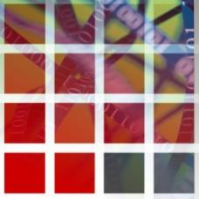
- **Virtualisation**
 - Mature technology, allows multiple virtual machines to run over the same h/w.
 - No actual performance penalty, completely uncouples the service from specific h/w
 - Enhances flexibility, could lower costs, however needs higher level of technical competence and skills
- **Cloud computing**
 - The new “hot” (buzz?) term
 - Disruptive in some areas, has been around for years in some other forms
 - Hosted services, Application Service Providers



- Infrastructure/Platform as a Service (IaaS, PaaS)
 - Computing resources, storage over the “cloud”
 - Dispense hardware fixed and basic sysadmin costs
 - Amazon Elastic Compute Cloud, Simple Storage Service and the Rackspace Cloud, etc
 - Cost models based on CPU use, disk space, etc.
 - Cost modelling?
 - applications management/monitoring depend on the end organisation



- **Software as a Service (SaaS)**
 - Complete solution, outsource a system
 - hardware / software maintenance
 - Monitor and Control, management
 - can resemble hosted services but usually with a lesser degree of customisation
 - Examples: docs.google.com, Microsoft Live, Adobe Connect
- **Promise for cost reduction (?)**
- **Issues for cloud computing**
 - Cost and flexibility VS control
 - Migration paths to different systems, “cloud lock-in”,
 - Interoperable APIs,
 - Security (?)
 - Long term cost and availability
 - Transparency issues, closed and open source



- SaaS for ILS, closed and open source:
 - SirsiDynix, VTLS, etc
 - Koha and Evergreen offered with SaaS option (Liblime/Equinox)
 - Significant uptake
- Repositories:
 - Duraspace (DSpace + Fedora)
 - New DSpace to offer operation also over the “cloud”
 - Introduction of **Service Providers** notion
 - Already available as **Hosted Service** by various providers
- **Possible worries:** altering the character of OSS development model and targets
 - “Enterprise Koha Prompts Frank Conversations on Open Source”
libraryjournal.com
 - Possible “conflict of interest?”

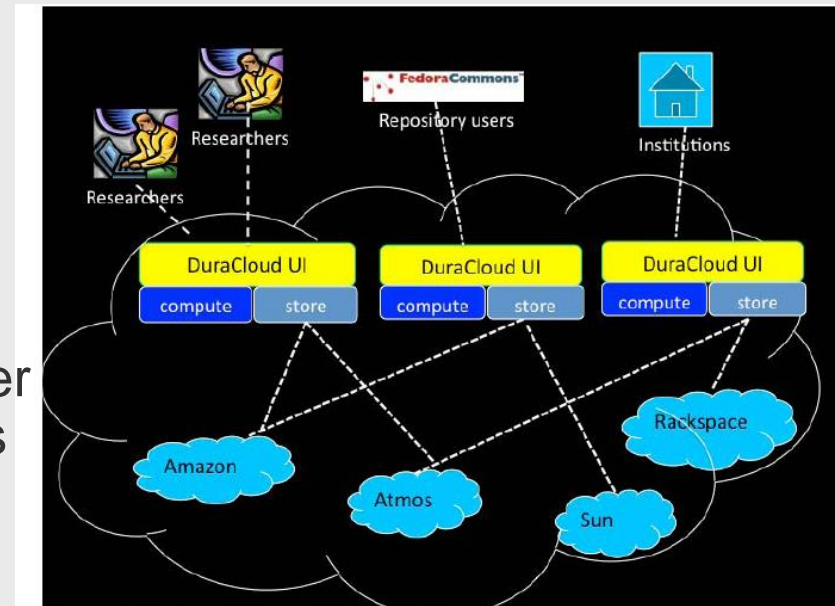
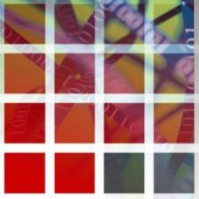
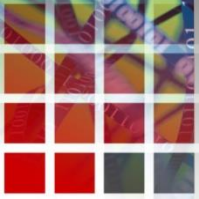


Figure 1: Notional View of DuraCloud

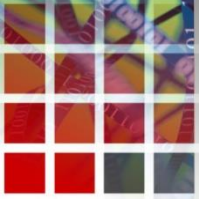




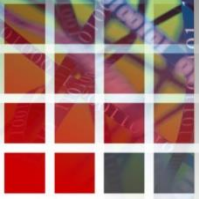
- PaaS/IaaS/SaaS could cut costs on some libraries
 - Could also give an **immediate, easy way to offer new innovative services**
- It depends on:
 - **library size, expertise and intended focus/strengths**
- Tool to focus to the libraries core functions and targets
- Not “a size fits all” or a solution with a generic applicability.
 - Depends on the library profile, and the accumulated experience
 - **Should consider if facing IT support issues or feeling that IT capabilities is limiting their potentials**
- However, cons:
 - General cloud computing issues
 - Library related issues



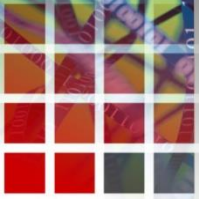
1. Ensuring **data portability** and preservation **both in IaaS/PaaS and in SaaS solutions**.
 2. Invest if a **readily available open source alternatives**, exist, avoid lockin. Ensures portability of not only metadata/content but of the full platform.
 3. Built on the capability to **monitor** and **manage** the **Service Level Agreements** the service provider and the library have agreed.
- **Trust issue, long term sustainability and preservation:**
 - Library consortia and alliances can **form** or **participate** in SaaS and Cloud Computing technologies as an enabler for achieving economies of scale or enforce the aforementioned.
 - Where libraries stand:
 - Cloud/SaaS infrastructures can assist libraries to better manage their costs
 - Since library IT systems **are thoroughly being built around standards and migration strategies**, and **open source solutions exist**, could be a viable solution for some institutions



- ABEKT , 2200 installations, large local user base on small and medium libraries.
 - An enabling tool
- New edition under initial design
 - Available as open source
 - Based on modern web interfaces
 - Modern development technologies, languages, frameworks
 - Wide support of standarws, (MARC21, UNIMARC, MODS, DC), authority databases, etc.
 - Capability to operate in **standalone mode** (exactly like today + operation over Linux) but also capability to operate over **a cloud infrastructure/or using a SaaS model**.
- Under initial internal design,
 - **an intermediate version to replace ABEKT 4.0 for older setups will become available sooner**



- Libraries have new applications and requirements to fulfill
- Rising IT support costs and new tools
 - IT can be a limiting factor
- According to each library conditions/status IaaS/PaaS/SaaS could be a solution
 - No generic solution, should not be feared, gives opportunities
- Key prerequisites should be met, **standards**, (proven) **portability**, preferably **open source** option



Ευχαριστώ!

Thank you!