



## **Danish Digital Library powered by TING – about Open Source and joined efforts in public libraries**

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### **Meeting:**

**182 — *What does the e-library mean for the public library users?*  
— Public Libraries**

### **Abstract:**

*The vision of the Danish Digital Library from the 2010 report “Public Libraries in the Knowledge Society” is now in the process of being realized. The basis for the user oriented services that are part of this is a Service Oriented it-architecture built in Open Source and an innovative and untraditional cooperation between leading movers and shakers in the public library field in Denmark.*

*Keywords: Danish Digital Library, TING, Open Source, DBC, Aarhus Public Libraries, Service Oriented Architecture.*

### **Background**

By the end of 2010 the Danish Agency for Library and Media published a strategic report on ‘Public Libraries in the Knowledge Society’. It was a result of an initiative from the Minister of Culture to formulate a strategic perspective for the future development of the public libraries. The obvious reason was the rapid change in the digital area as new services were popping up in the sector and the competition from others sectors was increasing. Six years ago YouTube didn’t exist and Facebook was a closed system for college students, now YouTube has about 144 mill users per month and Facebook has more than 600 mill users. Five years ago Twitter didn’t exist, four years ago I-phone and android smart phones didn’t exist, three years ago I-pads and tablets were non

existing and internet connectivity is in many societies moving from being a scarce and expensive commodity to a cheap and easy accessible one. Where does this development leave the public library? The overall assumption in the field in Denmark is that the public libraries have to move even faster in their development to stay relevant for the citizens. Leaders, librarians and opinion makers from the library sector and surrounding areas was involved in the discussions and work that led to the report and its recommendations. A major recommendation turned out to be the establishment of the Danish Digital Library.

### **What is a digital library?**

There is a lack of precise definition of what a digital library actually and it has undoubtedly led to different expectations among the actors in the library sector. Some have been talking about one big portal from which all digital content could be distributed; others have perceived the digital library more as an engine or framework that runs a great variety of services. In my view, the digital library is both and more too. A basic model<sup>1</sup> that has six main characteristics has been formulated: Content, User, Architecture, Functionality, Quality and Policy - and all of these will be part of the Danish Digital Library.

Seen from a user perspective the digital library should be able to give ubiquitous, instant, free and easy access to knowledge and cultural experience in form of relevant digital content. Seen from the public library perspective the digital library is a logical step in service development that started in the mid-nineties with general library web sites and enhancement of the OPAC over jointly operated search and order-services and subject portals to the current apps and mobile platforms delivering digital content to the users. So if these services are already available for the users what then is the purpose of the Danish Digital Library?

In order to answer that question we have to look at two important aspects of the digital library, namely architecture and functionality and compare to the current situation for the users of the public libraries. In Denmark, the individual public library typically has bought an integrated library system from a vendor. This includes access systems, loan registration, OPAC and handles the administration of physical media like books as well as digital media like e-books and e-sound books. Though tenders and consortia-building has made the economic challenge a bit less demanding, the library typically uses substantial resources for buying, running and maintaining such a system. For the user, this infrastructure is not very convenient. If she is using more than one library, she has to identify herself to each system – and sometimes the logical set-up of the systems is different from library to library. So a major component in the infrastructure of the digital library is a common and shared authentication and authorization system – the system must be able to recognize the user wherever she is. Another flaw of the existing systems is that

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<sup>1</sup> By the European DELOS Network of Excellence on Digital Libraries, <http://www.delos.info/>.

they seldom address multiple platforms and Operative Systems, e.g. Apple or smart phones. A digital library should support all current platforms, including mobile and smart devices. The search and find facilities in the current library systems are typically based on Boolean algebra in a database structure based on Marc format records. Navigating in this system demand certain search insights and skills. In the digital library the general searching is based on search engine algorithms and a data structure that makes it possible to personalize search results based on collaborative filtering, peer recommendations, search history and preferences. For the user this resembles Google-logics, Amazon-services and social technologies and is much easier and often leads to better match. As for the trained user, the Boolean search should be a possible choice, too. If a user wants digital content from the library she normally has to access it through the library on-line OPAC. That often requires that she leaves the context in which she needs the information or content and moves to the library website and the search field there. The digital library will be able to provide context relevant digital content embedded in third party websites through API's<sup>2</sup> and Web services<sup>3</sup>, so the user will experience added value when she is navigating various non-library websites. E.g. accessing an educational institutions teaching program in Danish literature will have embedded links to the relevant e-content of the Literature portal of the Danish Libraries.

### **It architecture**

The prerequisite for such services is a Service Oriented Architecture (SOA). It is a modular segmentation of data layer, application layer and presentation layer that makes it very easy to create new digital services for the users. It consists of a meta data repository drawing from the data layer combined with a set of API's that addresses the presentation layer. In schematic form, the architecture looks like this:

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<sup>2</sup> Application programming interface (API) is a specification intended to be used as an interface by software components to communicate with each other.

<sup>3</sup> A Web service is a method of communication between two electronic devices over the Internet.



developing process and the resulting product – and the libraries share the product between them. Even non-members of the community can take the Open Source software and develop it further on the condition that they deliver back the new development to the community. Actually, the Open Source ideology has proven strong enough to overcome institutional barriers and has released a lot of energy between the participating staff members in the libraries and it-departments. Currently, the TING community consists of 39 municipalities (of 98) representing about 2/3 of the population.

### **The Danish Digital Library**

So now the Danish Digital Library is under establishment as a governance model that embraces the elements of Content, User, Architecture, Functionality, Quality and Policy. Existing services like Bibliotek.dk (the Danish national search and ordering facility), Litteratursiden.dk (the fiction literature subject portal), Palle's Gavebod (the national children library portal), many public library portals and several other services have merged into the Open Source based Service Oriented Architecture of TING and new services like e-Reolen.dk (the Danish library e-book portal) and Netlydbog.dk (the Danish library e-Sound book portal) have been created in Open Source software and are build to fit the architecture from the start. Right now, the public libraries in Denmark are engaged in a tender for common library system, adapted to the TING-architecture. The governance model of the Danish Digital Library will on the political level consist of a steering group with representatives from the Ministry of Culture – the Danish Agency for Culture - and representatives from Local Government Denmark (KL), the organization for the municipalities. On the strategical and practical level, the governance model has a coordination group consisting of leaders from the field and work groups centered on e.g. technology, development etc. An executing office will be run by the Danish Agency for Culture and targeted content license negotiations and purchases.

For the users the Danish Digital Library will secure free, easy and seamless access to e-content of relevance, in formats and platforms of choice, whenever the user wants to access and wherever the user may geographically be located – as long as she is in contact with the internet.