

# Opening data in Higher Education Institution - Metropolia's story

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## 1. INTRODUCTION

Higher Education Institutions (HEIs) are producing a vast amount of information about education arrangements. At the moment that information is available only to those who have access to the information resources. HEIs are resourcing their efforts to create different systems where HEIs employees and students can retrieve information for their needs. Can the HEI's IT management keep up the pace of creating innovative, easy to use interfaces and support for different clients and platforms against the products of large corporations? Is the race really necessary or is there another solution? Yes there is.

In Finland the public transport operator decided a few years ago to open all their traffic data. Of course they built their own system for customers to show different timetables of public transport. But their goal was more far reaching. Immediately after the opening of the data many individuals started to build their own timetable applications. One of the applications was for iPhone, another for Android. New apps were more innovative and simpler to use than the initial service provided by the public transport corporation. Open data created new markets, created innovative products and customers of public transport were more satisfied with public transport services.

Is there a lesson to be learned also by Higher Education Institutions? Yes of course!

## 2. OPENING DATA IN HIGHER EDUCATION INSTITUTION

Higher Education Institutions handle a lot of different information. Some of that information is sensitive but most of it is more general study related or organizational information that could be opened to the public. Actually, most of that information is already available on the web-pages but it is technically unstructured. This means that the data is public but it is scattered on different sub-pages or services and it is not accessible by any defined methods.

To open their data HEIs first need to define structures for the data, then decide which data can be opened to the public and thirdly establish interfaces to access that data. The final phase is to publish those interfaces for the public. This sounds quite straightforward and it is so if you already have necessary infrastructure and tools to implement it.

So what is needed? Firstly, it is necessary to define the processes and determine input and output data within those processes. You can create necessary data schemas/structures based on that information. Furthermore, it is necessary to determine what are the master data sources for different data elements within the structure - the idea is to always use the same data source each time the data is needed somewhere. So no copying, always use the master data source.

Now we have array of processes and data structures that are needed in those processes. You'll notice that many of the processes use at least partially the same data structures e.g. personnel information or course data. Traditionally you would code a new personnel information query for each system that uses it but that is not necessary. Why not create that query only once and make it as a web-service, then use that same web-service in all the systems that need it. Furthermore, if it is not sensitive, why not publish it for the public!

To publish these web-services you need Enterprise Service Bus (ESB) which hosts these web-services and controls who can access which web-services. In this case web-services act as an interface e.g. REST or SOAP. You probably need to restrict or strip some services from public access.

### 3. OPENING DATA IN HELSINKI METROPOLIA UNIVERSITY OF APPLIED SCIENCES

In Metropolia University of Applied Sciences we have created a new planning system that is purely based on Service Oriented Architecture (SOA). The system is called Peppi and it is used in planning of curricula, yearly planning, course planning and study scheduling, so it is basically our Enterprise Resource Planning system (ERP). Due to its SOA nature all its functions are web-service based and can be accessed via interface. So every action that can be done in Peppi User Interface could be easily implemented in other systems.

**Case example Schedules:** In Schedule machine students can search for courses based on different criteria such as starting time, teacher, group information, course name and so on. They collect interesting courses into study basket and then they click "view schedule" and the service shows overall schedule based on the selected courses. By clicking on a certain course name students can see detailed information about the course. Schedules can be sent to their personal calendar and into mobile devices. They can also select "automatic schedule" in which the system regularly determines which courses the user is attending and sends updated calendar markings into user's calendar every time a change is made for the course scheduling.

Almost all of these features have been implemented by using the same web-services that were already implemented on Peppi system. The only thing needed was to couple some of Peppi's services into a new bundle called "Schedule machine".

**Case example mobile services:** A more mobile device friendly interface of Schedule machine. In addition we added public transportation information (when does the next bus or train leave near the campus), created a new service to list daily food menu in the campus and to improve the latter ones we also added support for GPS location to provide more accurate information. Latest addition to our mobile services is the Library search.

**Case example Kosketa:** Kosketa means "Touch" in Finnish and it literally is a touch screen application. We have set a few touch screens on every campus and they run this application. The application provides basically the same services as in mobile services but they are more tailored for bigger touch screens.

These examples are purely based on existing interfaces that can be published. By opening our data we hope that students and the public will figure out even more innovative and impressive ways to combine open data and come up with killer apps.

### 4. REFERENCES

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## 5. AUTHORS' BIOGRAPHIES



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