

Information Commons: Service to the Community Starts with Solid IA

by Josh Knauer

Information Architecture

Human services professionals struggle with significant roadblocks every day as they attempt to fulfill the needs of their communities. More often than not, caseworkers and social service administrators lack a central resource to consult for information on available service offerings. With a large number of agencies and nonprofit organizations to track, systems for managing local information can entail high costs and less-than-effective service delivery to community members in need. To remedy this challenge, the Department of Human Services (DHS) in Allegheny County, Pennsylvania, partnered with MAYA Design to transform how the agency and the non-profit sector manage community information. This project led to the creation of the HumanServices.net system, which now provides a comprehensive view of the full spectrum of human services available to residents of Allegheny County. Furthermore, the system has evolved into a tool that funders and policy makers are using to better understand the impacts of services on local communities.

HumanServices.net is built on the [Information Commons \(www.maya.com/infocommons\)](http://www.maya.com/infocommons) peer-to-peer distributed database technology developed by MAYA Design. Allegheny County Department of Human Services and participating organizations update their own database systems, while the Information Commons extracts the public data and reformats it for HumanServices.net. Many organizations have also begun using web-based tools to keep their information up-to-date in the system. Enabling human services organizations to keep their own records current eliminates the lag time and high costs associated with centrally controlled databases. The end result of the HumanServices.net project has been a much more accurate listing of services for individuals who need them and a much more accessible, efficient and effective methodology for delivering this information. The success

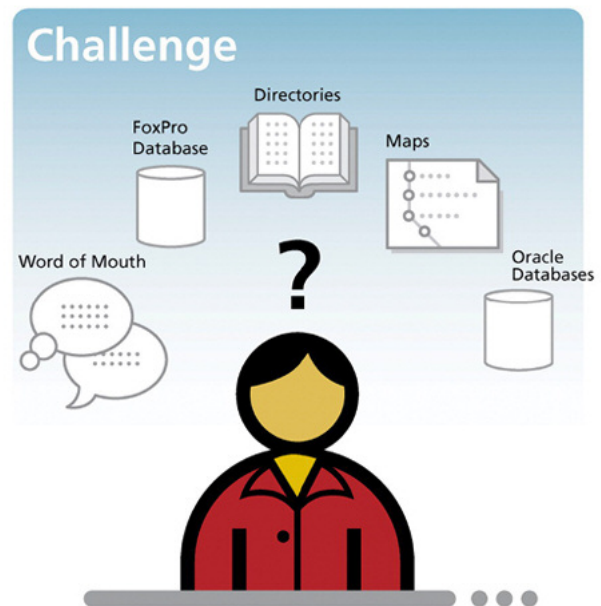
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of the architecture behind the system derives from three main elements MAYA focused on during its development: usability, flexibility and data liquidity.

Usability

Before MAYA began the actual design of HumanServices.net, the company sought a clear understanding of the day-to-day information needs of the Allegheny County Department of Human Services. The first step included thorough staff interviews, but MAYA's team also watched DHS professionals on site as they worked (Figure 1). The DHS maintains a comprehensive database of the 400 service providers they contract with directly, but their information on the more than 2400 providers that don't contract with the county was limited to word of mouth knowledge and separate paper directories. DHS staff members therefore had to consult several resources before making a referral. Furthermore, >

FIGURE 1. Human service professionals and the general public lacked a comprehensive resource about social services offered in Allegheny County, Pennsylvania. Information had been scattered across many data "silos" that were not easily accessible, nor complete.



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the different paper directories published by the DHS, the United Way of Allegheny County and other agencies focused on very specific areas of human services. These directories were costly to print, distribute and maintain,

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and it was time-consuming to reference each one individually. In addition, when referral specialists needed to provide directions, advise on bus routes or search for services by neighborhood or school district, they ended up consulting paper maps and stacks of paper bus timetables published by

the local Port Authority. Through careful observation the MAYA team was able to capture data requirements that the employees in Allegheny County had not identified themselves during the early interviews. For this reason, it is key that construction of an information architecture begin only *after* a comprehensive evaluation of the organization's workflow and daily operations.

Flexibility

Another key element to any successful information architecture is flexibility. The system must be extensible to other platforms and other needs; otherwise it's just an isolated database. The Information Commons is built on a unique abstract data type called a "U-form." A U-form is a self-contained unit of data with a universally unique identifier (UUID) (<http://en.wikipedia.org/wiki/UUID>). Each unit is made up of a bundle of attribute/value pairs attached to a UUID, a well-known identifier standard that guarantees a universally unique identity for the U-form. While in a relational database each piece of data is only unique within the table, U-forms free pieces of data from tables and give them identifiers that are unique anywhere.

As information on Allegheny County's demographics, geography and human services was added to the Information Commons, HumanServices.net was able to use all these different types of data to build unique content. The website enables quick searching by neighborhood, bus route and/or school district, and the search results are more accurate, timely and detailed than previously possible. If a caseworker or parent is looking for a suitable, nearby, subsidized program for a 17-year-

old with an alcohol abuse problem, one search can turn up names, descriptions, directions, facility photos and contact information for all programs that fulfill the criteria. The beauty of building the underlying data architecture with such flexibility is that as organizations' needs evolve or as users want to use or add data in different ways, new content can be created without having to rebuild the data engine underlying HumanServices.net.

Data Liquidity

The liquidity of the data included in the Information Commons makes it possible for data to both flow *in* from any pre-established data management system and flow *out* in any format or interface desired. Whether data is contained in a FoxPro or Oracle database, generated by users or contributed through one-off web editing, it can all flow into the Information Commons to be assigned a UUID and rebuilt as U-forms. Similarly, data can flow out to fulfill any community needs. When the non-profit A+ Schools wanted to build a separate website for locating after-school programs, the organization was immediately able to tap into the Information Commons and quickly set up a new content-delivery site. The information flows just as easily through the A+ Schools

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portal as it does through the HumanServices.net portal. Another example of this liquidity can be seen in the United Way of Allegheny County's [Help Connections](http://www.uwac.org) website (www.uwac.org), which is using the Information Commons as its data engine through a standard SOAP (simple object access protocol) data exchange interface. An unbounded number of organizations could build their own unique user interfaces to the data gathered in the Information Commons, pulling from the same pool of data, even as the data is distributed across many different servers.

Along with DHS, A+ Schools, the United Way and other human services organizations, policy makers and the regional foundation community use the Information Commons to evaluate the effectiveness, availability and quality of services offered. With no clear picture of what >

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services were offered or where and how they were being utilized, it used to be difficult to make informed philanthropic investment or policy decisions. Now, by accessing data in the Information Commons, policy makers and funders are able to create an entirely different use for the information (Figure 2).

Hope for the Future

MAYA and the DHS succeeded in creating a system that allows caseworkers, referral specialists and the public to quickly find appropriate services and agencies within the community. Because of the methodically built underlying architecture, HumanServices.net is able to easily import and incorporate new data and export and reorganize data for any organization that wishes to use it in a different way. As a result, the community can use the same data in countless ways and has already begun to expand its value by using the Information Commons as a shared, distributed data resource. New projects are contributing detailed information about school performance, toxins in the community, economic development, ecological data and other vital community health statistics to the Information Commons – not just for Western Pennsylvania where it was started, but all around the world. Because the architecture of the Information Commons can be so widely distributed, dozens of communities across the globe are starting to

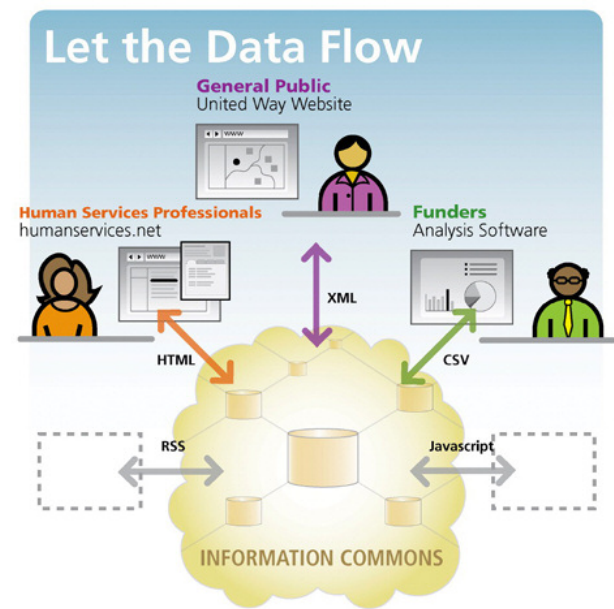


FIGURE 2. Data flows in and out of the Information Commons in almost any common data format, making it easy for many different user interfaces and applications to be developed using a shared dataset.

join in. The Information Commons enables communities to collaboratively build better tools. These projects result in a greater understanding about how we can make the places we live even better.