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Introduction

Nokia has actively participated in and promoted the creation of CC/PP and its mobile industry implementation UAProf. We are currently helping to drive the Device Profile Evolution (DPE) work item in the Open Mobile Alliance (OMA). We are committed to providing a mobile environment capable of fulfilling the role of "first-class" internet citizen. To that end we see machine accessible device description and the machine accessible description of device context as key enabling technologies.

Key Architectural Issues

1. The requirements for device description have changed dramatically since CC/PP and UAProf were first introduced to the market. Mobile devices have gone from a primarily static environment to a fundamentally dynamic one. The hardware and software properties of these devices are far more dynamic than those of fixed internet devices. Mobile devices can dynamically change hardware configuration, such as when a peripheral is added or removed. The physical context (e.g. location) of a mobile is constantly changing, affecting both low level attributes such as communications bandwidth, and high level attributes such as data relevance. The DDWG should consider an architecture that is first and foremost able to deal with the dynamic nature of this problem.

2. Authoring, interpreting, modifying and delivering content that best represents author intent is a process that requires all elements of the delivery chain be able to have access to device description and context information. From content author, to content server, to network delivery, to terminal device, to end user, there must be a way for each actor to access up-to-date, consistent device and context data and potentially modify content. Thus far, all of the solutions that have been discussed (e.g. CC/PP, Media-queries, DIAL, etc.) tend to favor a particular element in the delivery chain. The reality is that the best place to handle particular content modifications is often dependent upon the nature of the context or description data itself.

3. The design of a repository and associated protocols and APIs must be considered in the larger context of the design of an efficient architecture for the delivery and updating of device and context data. While UAProf is extremely efficient when delivering static data, it does not scale when trying to deliver dynamic information. This is due primarily to a lack of a query capability on the part of the device or repository. Any repository architecture wishing to support dynamic data must support some type of selective query and delivery.

Data Management Issues

1. While the near-term issues around mobile devices center around screen size, keyboard and other MMI issues, these are not the fundamental long term concerns. Any architecture must consider the fundamental notion of mobility and change as the key long term drivers, and not limit ourselves to a short-term view of what a mobile device is.

2. Device and context description are continuously evolving. No fixed ontology will ever capture the rapidly changing landscape. UAProf attempted to solve this issue by using RDF as its basis. History has shown us that the benefits of RDF have not been realized in UAProf, and the complexity of RDF has been a barrier to use. However, the intent was correct, and we believe that semantic web principles need to be used as the basis for managing any device and context ontology.

3. All users of device and context data must have a certain trust level as to the quality of the data before they will incorporate it into their content modification and delivery process. This lesson has been learned the hard way in the marketplace with UAProf. Uptake and use of UAProf data has now risen with the creation and implementation of a process to pre-qualify the [static] data that is published in UAProf instances. The qualification of dynamic data represents another level of trust altogether, and may require the architecture to deal with explicit authentication issues. Furthermore, dynamic device and context data represents more of a security concern then static data, leading us to believe that authorization issues will also have to be considered as a fundamental part of the architecture.

Cooperation

1. OMA has built a repository for UAProf instances (http://validator.openmobilealliance.org/VALIDATED/). They have learned a lot about the day-to-day issues associated with the management of such a facility. They have developed a best practices Guide for UAProf (http://www.openmobilealliance.org/ftp/Public_documents/BAC/UAPROF/Permanent_documents/OMA-WP-UAProf-Best-Practices-Guide-20060313-D.zip). They have published a UAProf validation tool (http://validator.openmobilealliance.org/cgi/ . They have implemented an online forum for managing community requests for additions and modifications to the core vocabulary (http://www.openmobilealliance.org/tech/profiles/uaprof/index.asp). Furthermore OMA is working on Work Item 0125 – Device Profiles Evolution (http://www.openmobilealliance.org/ftp/Public_documents/TP/Permanent_documents/OMA-WID_0125-DPE-V1_0-20050728-D.zip). We strongly believe that any work that goes on to define or create a device description repository should be coordinated and integrated with the work that has gone on in OMA.

2. The Device Description Landscape (http://www.w3.org/TR/2006/WD-dd-landscape-20060210/) has identified other organizations that are also involved with this work. It is key that active liaison be kept up as this work progresses.

General Observation

The DDWG should consider whether the implementation of a repository is the optimum solution for today's device description requirements. The fixed repository concept may prove too limiting for the class of mobile devices in the market today. The DDWG should consider whether other techonologies exist which are better suited to the needs of mobile devices.