Use Mobility Devices Services on Semantic Web

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Abstract: Growingly, companies are looking for methods to provide client with higher levels of personalization that capture different elements of a user's operation context, such as position, currently tasks that client engaged in, user's colleagues and friends who can access to different Classified data about client. These different tasks have different sources which may vary from client to client and time to time. Managing the Virtual content to mobility devices client based on their references and positions are now a leading trend in a mobility devices electronic commerce. These features will operate in semantic virtual services. In this structure computers will be able to analyze, process, and reason about the contents of Virtual pages .In this method we should have a standard and unique language so service stations broadcast their services in description logic based ontology language .To achieve these goals different telecommunication technologies have been used Describing context, evaluating it, identifying the most relevant data and then reasoning and filtering through the contextual data and introducing relevant telecommunication technologies are the most aspect in this paper.

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1. Introduction

The industry is struggling to implement methods that can decrease project time and cost, and improve productivity and performance. The main need for new methods to face these challenges has long been recognized. Recently we have also seen a movement in the construction industry towards using methods that influence and effect on the internet operation system, in this method evaluation of mobility devices technology from second generation network (2G=GSM) towards 2.5G (GPRS, EDGE), 3G (UTMS) and wireless broad band access technologies such as WiFi, WiMax, RFID are take placed to allow their client to use virtual services and semantic virtual services through mobility devices. Managing and sailing the Virtual content to mobility devices client, based on their preferences and positions are becoming now a leading trend in a mobility devices electronic commerce (m-commerce). Most of the Virtual content today is designed for human understanding, while computer programs (e.g. software agents) have no indication of its meaning. The vision of the Semantic Virtual is bringing meaning to the virtual and enabling computer programs to analyze, process, and reason about the content of Virtual pages. Nowadays, the common data like stock quotes, flight data and online data bases in all of fields are available and Software agents, may automatically access these services. When ontology is attached to a Virtual service to describe its meaning then this service is called a Semantic Service [1].

2. METHODOLOGY

2.1. The Semantic: web The Semantic Virtual is an extension of the current Virtual in which data is given well-defined meaning, better enabling computers and people to work in cooperation. It is based on the idea of, having data on the Virtual defined and linked such that it can be used for more effective discovery, automation, integration, and reuse across various applications.[2]

2.1.1. The Semantic Virtual architecture

The Semantic Virtual architecture is based on number of layers, including:

XML, Namespace and Schema layer for defining contents and rules.

RDF, is a conceptual data layer on top of XML. RDF is application and domain neutral, and defines a metadata layer and domain specific vocabulary. RDF model can be used to describe anything that has a Universal Resource Indicator (URI).

Ontology Vocabulary is RDF enhancement regarding relations between concepts, description logic, etc. Virtual Ontology Language (OWL) is one of the ontology definition languages. Logic layer define rules for dynamic inference and definition of

hierarchies and processing of schemas and instances.
Proof and trust layers involve rating of sources and processes and monitoring of logical steps.

2.1.2. Ontology architecture

Controlled vocabulary
Concept taxonomy
Other relations between concepts

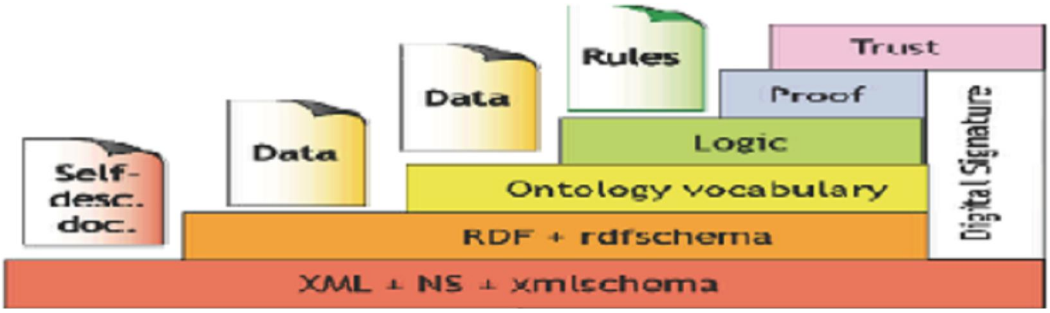

Figure 1: The Semantic Virtual Architecture (Source : W3c,2001)

2.2. Virtual Services

Virtual services are self-contained, self-describing, modular applications that can be published, located and invoked across the Virtual. Once a Virtual service is deployed, other applications (and other virtual services) can discover and invoke the deployed service regardless of operating system or programming language. Typical Virtual Services architecture consists of three entities:

Service providers
Service requestors (or clients)
Service registries

Service providers publish their services through agents who maintain registries that clients can look up. The API (Application Programming Interface) for registering services is called Universal Discovery and Description Interface (UDDI). This API enables an enterprise to describe its businesses, its services and how they wish to undertake transactions, search for other businesses that provide desired services and integrate with these businesses to undertake a transaction, if desired. Service requestors (Human client or agents) search services in registries and invoke these services using a Virtual Interface (WSDL). [3]

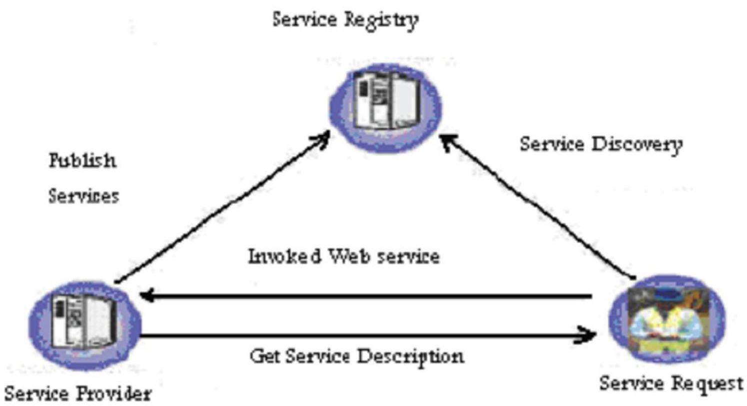

Figure 2: Key Component of virtual services Architecture

2.3. Agent System Operations

An agent is a self-contained program can control its own decision-making and acting based on perception of its environment, in search of one or more objectives. In many cases, several agents are required to work in concert, resulting in a multi-agent system (MAS). A typical scenario is naturally distributed in terms of geography, knowledge, function, expertise and data. Agents can access to data about client in the environment and typically access to public virtual services, semantic virtual comments, public ontologism and other public resources such as list of restaurants, gas stations and public weather forecasting virtual services which are position based services.[4]

2.4. Semantic Virtual Based Services

The vision of Semantic Virtual based services combines the key technology elements of the Semantic Virtual, Virtual Services and Agents. Semantic Virtual increases the utility of Virtual Services by expressing how terms relate to each other and by enabling dynamic arrangement of new services.[5] *2.4.1Methods and needs* Having a standard syntax, and one or more standard vocabularies, so search engines, producers and consumers all speak the same language

Lots of resources

Acknowledgment and trust

Figure 3: Position Based Services on mobility devices

3. USE OF SEMANTIC VIRTUAL TECHNOLOGY FOR CONTEXT-AWARE DATA IN MOBILITY DEVICES

Semantic web is a powerful concept that empowers many applications that would not otherwise be able to operate in pervasive environments. Context aware applications use environmental factors such as: time, user's position, current and future events, and other client in the environment [3]. Describing context, evaluating it, identifying the most relevant data and then reasoning and filtering through the contextual data and technologies of them are the most relevant aspect in this paper. Architecture of the context-aware data providing system contains these components: communication components, controlling components, service components (Request Analyzer, Reasoner, HTML Creator) and data components. [6] Semantic virtual services can automatically be discovered and accessed by agents. Access to a user's contextual resource is controlled according to user's specified privacy preferences (including context sensitive preferences such as colleagues have access to user's position only if they have a meeting with him in the nest hour) by privacy rules client ensure that data about them is only disclosed to authorized parties. By semantic virtual services mobility devices client can use different services which based on Position Based Services and merge Privacy and Context Awareness, such as their position the activities they are engaged in who their friends and colleagues are, where the nearest restaurants or gas stations are as well as a number of other contextual attributes and references.[7]

3.1. POSITION BASED SERVICES

Introduction with advances in wireless Internet and mobility devices computing, position-based services (LBS) are emerging as key value added services for telecom operators to deliver. LBS enable them to provide personalized position-aware content to subscribers using their wireless network infrastructure. Besides telecom operators, more and more service providers such as public wireless LAN providers, enterprises, and others are developing and deploying position-aware services for consumers and employees to gain more revenue and productivity. [7] These position-aware service providers are facing both technical and social challenges, such as positioning in various environments using different locating mechanisms, position tracking, the data delivery model, privacy issues, and the development of new LBS applications that succeed at delivering more business impact and value. It has been realized that different interfaces and technologies should be considers as the enabling infrastructure to support the different players, so that a service provider can efficiently, effectively, and quickly develop and deploy LBS applications and support innovative position-aware applications. These services are useful for gathering data about, local restaurant recommendations or directions to the closest gas station, or traffic, weather data and self tour guided. Multiple position sensing technologies like, GPS, GSM, WLAN, and Bluetooth and new technologies, like at present WiMax or RFID, are using in these cases. Hardware devices and Software components, their interfaces and architecture have to be able to deal with changing conditions to make mobility devices Position –Based Services highly available.

3.1.1 Position sensing technologies

In this section some of wireless telecommunication technologies will be described such as GSM/GPRS/UMTS, WiFi, WiMax, GPS and eventually RFID. *What is GSM/GPRS/UMTS: GSM: Global System for Mobility devices?* It is the second generation of mobility devices network after analog mobility devices systems it is based on circuit switches and specially uses for voice because the it has low bit rate of data (max. bit rate:9.6 kbps) *GPRS: GPRS: General Packet Radio Service* GPRS represents the first packet-based technology for evolution from 2G (GSM) networks to 2.5G networks. Data speeds in this generation are:

theoretical : up to 171.2 Kbps

practical: 40-60 Kbps

UMTS: Universal Mobility devices Telecommunication System

Maximum bandwidth in the third generation networks is 2Mbits/sec.

GPS: The Global Positioning System (GPS) is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations. GPS was developed by the United States Department of Defense (DOD), for its tremendous application as a military locating utility. The DOD's investment in GPS is immense. Billions and billions of dollars have been invested in creating this technology for military uses. However, over the past several years, GPS has proven to be a useful tool in non-military mapping applications as well. We can use GPS for position base services, logistic services and so on. *RFID Structure?* The abbreviation RFID (radio frequency identification) has come to signify system solutions for tracking and tracing objects both globally and locally using RFID tags. RFID is one of several technologies collectively known as Auto-ID procedures – procedures for identifying objects automatically. It bridges the gaps to IT systems that were previously bridged by manual data entry. Track and trace describes the process of tracking and locating products automatically within supply chains. In this process, RFID technology requires RFID antennas and readers, for instance at warehouse entrances and logistics hubs. The antennas could, of course, be connected to mobility devices. Nokia is the first company to provide a cell phone with an RFID reader, which could prove attractive to consumers and industry alike. When the movement of containers or other mobility devices objects is being tracked, a different Auto-ID technology comes into play such as the global positioning system (GPS). This technology has become familiar through its use in vehicle navigation systems. It is used to locate objects around the globe, and is not discussed further here. GSM, GPRS, UMTS, or the INMARSAT satellite communications system is used to transfer localization or RFID data when mobility devices are being used. Permanently installed RFID antennas have either a cable connection or a wireless WLAN connection to “back-end” systems, where the data received is processed further. (Other technologies such as GPS or position-based services can, of course, also be used for such purposes.) An RFID system consists of two main components, tags and readers. A tag (also called transponder or transceiver) is a small device equipped with a microchip carrying data and an antenna. There are two types of tags; active and passive. Antennas are connected to electronic control devices: the readers. They generate electromagnetic fields, via which data is received from or transmitted to RFID tags. Data is transferred without a line of sight to the tag. Note, however, that unfavorable conditions can cause transmission problems with certain technologies, such as metallic environments or liquids. Tags and readers/writers must have compatible frequencies.

3.2. A Semantic based Privacy Framework for Virtual Services

Another area that the semantics can be exploited is for protecting user's privacy when accessing the Virtual services. There are some important considerations in developing privacy mechanisms:

- Only the minimal relevant data should be provided to the Virtual service to prevent disclosing unnecessary personal data. As an example, a user may have to provide her credit card number when invoking a purchasing "service" but may prefer not to so for example for a "reservation" service.
- Another critical issue is not to overwhelm the client while declaring their privacy preferences. Indeed declaring privacy preferences on the basis of service instances maybe quite cumbersome and sometimes even not possible. A user may not in advance know which service she will need.
- The process should be automatic requiring minimal user interaction.

3.3. Results

A major task of the Reasoner is discovering virtual resources that suit the user's interests. Each virtual resource contains metadata which describes the content of the virtual resource and which is noted in RDF. The reasoner has to send queries to virtual resources to detect whether the content is suitable to a given interest or not. These queries are modeled in RDQL

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powerful database is the first need to have .In addition, it should provide a unified and secure semantic interface to all user's personal resources, enabling agents in the system and modify data about the user subject to the user's privacy preferences (e.g. not just determining whether the user is available between 3 and 4pm but also possibly, scheduling a meeting at that time).

4.1. Knowledge of customer

The knowledge about the user, personal resources and preferences falls into four categories:

Static knowledge
Dynamic knowledge
Service invitation
Privacy preferences

The main steps in implementing of context-awareness It can be categorized into six steps, such as:

Asserting the query's context
Authorization of the who request
Invoking personal resources as Virtual services
Checking whether the query is allowable
Application of Obfuscation Rules
Generate an answer

5. RELATED WORK

5.1. Cooltown Project by the HP labs

In this project, L3S Research Center discusses its ongoing implementation of a semantic virtual scenario. Visitors of the L3S Research Center should been able to make a self-guided tour by equipping them with a Pocket PC. On their tour they are provided with context-aware data about researcher projects and knowledge about the respective domain. The scenario is based on the Cooltown Project by the HP labs.

5.2. My Campus project by the ISRI -School of Computer Science Carnegie Mellon University this research is being conducted in the context of my Campus, a property semantic virtual environment to enhance everyday campus life at Carnegie Mellon University. In my Campus, client can acquire (or subscribe) to different sets of task-specific agents that help them with different tasks. The e-Wallet serves as a repository of static knowledge about the user just like .Net Passport, except that here knowledge is represented using OWL. [7]

5.3. Cyber guide, Guide and the Pinpoint Tourist Guide

Cyber guide [8], Guide [9] and the Pinpoint Tourist Guide [10] offer data to tourists, taking into account their current (semantic) position.

6. Summery

Networks, such as GSM, GPRS, UMTS, GPS and also RFID and other WLAN and Wimax technologies, Semantic Virtual Services emerge as the answer to efficiently provide intelligent mobility devices collaboration support to mobility devices construction workers. By bringing together necessary technology threads including semantic virtual, Virtual Services and Agent technologies with telecommunication technologies.

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