International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 2 Issue 1, Januaryr- 2013

Application Of 4G In Social Networking

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Abstract

In the European Union, the debate about 4G mobile has spawned the vision of a system that enables an "Always Best Connected" (ABC) mode of communication for the citizen of the forthcoming information society. This now widely accepted vision sketches a heterogeneous communication landscape comprising different wireless access systems in a complementary manner, where the user, supported by his/her personal intelligent agent(s), enjoys untethered connectivity and ubiquitous access to applications over the most efficient combination of wireless systems available. In the present paper, we identify the major developments in the fourth generation mobile communication market, present the technical aspects of the fourth generation network architecture and analyze the implications of the "ABC" vision upon it in terms of functional requirements and overall service provision capabilities. In closing, we introduce opportunities and challengesin 4G system model, elaborate on its major functional entities and finally, identify its key enabling technologies and solution sets.

Keywords-component; formatting; style; styling; insert (key words)

I.INTRODUCTION

Mobile systems focus on seamlessly integrating the existing wireless technologies including GSM, wireless LAN, and Bluetooth. 4G systems supports comprehensive and personalized services, providing stable system performance and quality service . 4G is a Mobile multimedia, anytime anywhere, Global mobility support, integrated wireless solution, and customized personal service network system . 4G is used broadly to include several types of broadband wireless access communication systems along with cellular telephone systems. A 4G cellular system must have target peak data rates of up to approximately 100 Mbit/s for high mobility such as mobile access and up to approximately 1 Gbit/s for low mobility such as nomadic/local wireless access, according to the International Telecommunication Union[ITU] requirements. Scalable bandwidths up to at least 40 MHz should be provided. A 4G system is expected to provide a comprehensive and secure all-IP based solution where facilities such as IP telephony, ultra-broadband Internet access, gaming services and High Definition Television (HDTV) streamed multimedia may be provided to users. In 4G networks, users joining the network via add mobile routers to the network infrastructure. Network capacity and coverage is dynamically shifted to accommodate changing user patterns. Wherever the concentration of people is more in one area, additional routes are created, thus enabling additional access to network capacity in terms of QoS. This permits the network to dynamically and automatically balance capacity and increase network utilization. The network is currently used social networking. The following part of the paper is deals with social networking and its technological issues.

II. TECHNOLOGY USED IN 4G COMMUNICATION SYSTEM.

The infrastructure and the terminals of 4G will have almost all the standards from 2G to 4G implemented. The infrastructure for 4G will be only packet-based (all-IP). But there is suggestion to have an open Internet platform. The 4G technology en suite with 802.16e mobile version of WiMax (also known as WiBro), and HC-SDMA, Adoptive Modulation and coding (AMC),Adaptive Hybrid ARQ , MIMO AND OFDM and Open distributed Ad- Hoc Wireless Network .

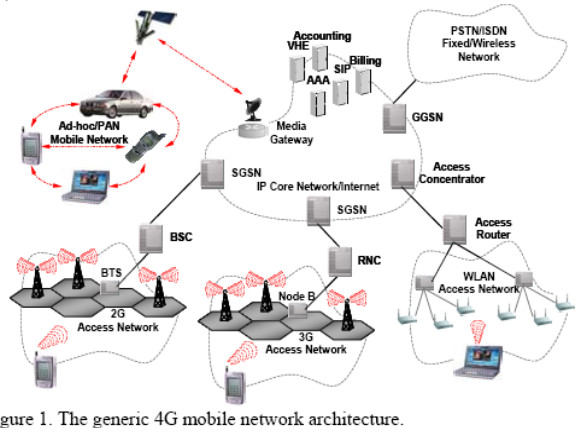

Figure 1. The generic 4G mobile network architecture.

III. SERVICE PROVISION IN THE 4G ERA

To reap the economical and developmental benefits of competition, namely diversified service offerings and rapid technological evolution, the mobile value chain must be open so as to foster and harbor the participation of multiple new players, e.g., value added service providers, content providers, application developers, etc). These players will cooperate with the incumbent mobile operators to contribute additional value to the mobile service provision process but will also compete for the lion's share of user revenue.

A. Analyzing the "ABC" vision

In the 4G mobile communication era, a plethora of disparate services and multimedia applications will have to be flexibly yet efficiently deployed over a heterogeneous multinetwork environment, raising service management requirements. Nonetheless, mobile users will expect seamless global roaming across these different wireless networks and ubiquitous access to personalized applications and rich content via a universal and user-friendly interface. In studying the implications of the heralded "Always Best Connected" vision of 4G mobile systems, we identify the notion of utility, implicitly embedded in the "best" adjective. Utility is a fundamental concept in microeconomic theory that concerns a typically continuous function representation of the consumer's preference relation over a set of commodities .

B. User utility issues

Users engage communication-based applications to realize various subjective benefits. These applications depend on the timely and orderly provision of network bearer services to exchange application-specific signaling and to move various classes of user information (e.g., image, video, corporate data) between communicating application endpoints. Inasmuch as the network is unable to provide the required levels of service, application will become dysfunctional and any user-perceived benefits of these applications will remain elusive, thus leading to a degraded user experience. Performance of communication-based applications depends on the accommodation of QoS requirements for their native signaling and the exchange of arbitrary user information. From a network viewpoint, these factors translate to traffic flows with different QoS requirements that will – in principle – levy different charges, thereby decreasing user satisfaction. Thus, ensuring an adequate performance for communication based applications so as to maximize user satisfaction, translates to honoring the QoS requirements of their traffic flows while minimizing the overall charges incurred, i.e., solving the user's utility maximization problem. Providers of network bearer services face the dual problem, i.e., maximizing revenue and minimizing network resource usage whilst meeting QoS requirements for all serviced traffic flows. However, having the network meet the QoS requirements of communication-based applications, does not – necessarily – maximize user utility. Considering QoS as a multidimensional space, user utility is a diminishing function of quantity along each of the individual dimensions of QoS (e.g., packet delay).

For communication-based applications that can operate on multiple QoS levels and content resolutions, requesting the highest QoS level possible does not necessarily increase user utility. For, in general, the higher the QoS level chosen by the application, the more network resources must be allocated to support it and the more costly the use of the network will be. Given the multitude and diversity in the product offerings of the value chain participants, the technological complexity of the overall heterogeneous system and the IT illiteracy of the major consumer segment, it is understandable that most users will be unable to engage and coordinate such service provision matters all by themselves so as to maximize their utility. Consequently, some kind of intelligent mediation as part of the mobile service provision process should be introduced to efficiently cater for the utility-related aspects. We believe that such mediation is a task that cannot – and should not – be undertaken by any of the aforementioned roles in the mobile value chain (e.g., value-added service provider, mobile network operator). For each of them will find interest in biasing a solution to his/her own preference – and monetary benefit of course. Thereupon, we claim that a trusted user delegate (e.g., intelligent agent) should always provide for the mediation between the value chain participants in providing services and applications, as well as for an unbiased solution to the user's utility maximization problem. Fundamentally, that constitutes emergence of new role in the value chain; a role that will maintain the customer relationship and provide the user with a universal roaming and service access capability whilst accommodating personal preferences, regardless of the access network(s) and terminal equipment in use.

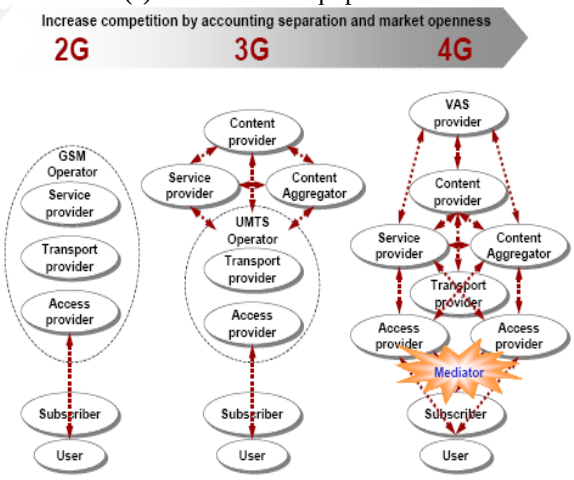

Figure 2. Evolution of the mobile value chain toward 4G.

IV. SOCIAL NETWORK SYSTEM

A social network site is a web site that Acts as a destination hub for individuals to establish relationships with co-workers and by doing so, enable them to jointly build, or expand, their professional and social networks. It includes different tools for people to interact with each other, contribute information to the site, participate in different site activities, and build a sense of community in an informal and voluntary manner. It allows the user to define an online profile (or personal) , list their connections (e.g., friends and colleagues) , receive notifications on the activities of those connections participate

in group or community activities , control permission, preference and privacy settings . We define social network sites as webbased services that allow individuals to do the following

[1] construct a public or semi-public profile within a bounded system

[2] articulate a list of other users with whom they share a connection, and

[3] View and traverse their list of connections and those made by others within the system.

The nature and nomenclature of these connections may vary from site to site .

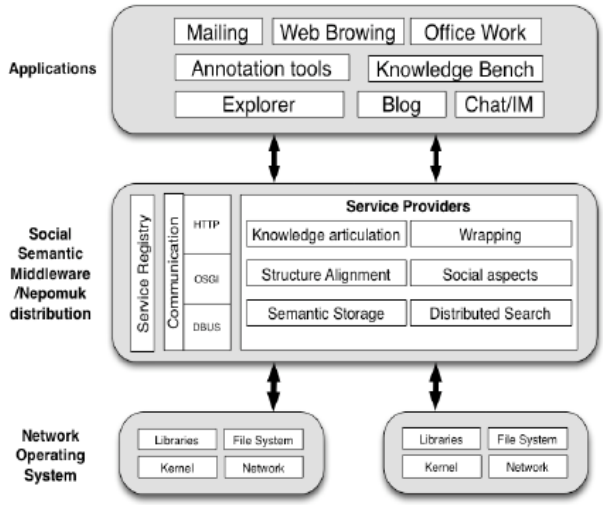

Figure . Social Network Architecture

In the existing social network sites are allowed to search the members, introduce the member, allow to send the message, share the photo , video and online chat etc. But the social networks are not realistic as we are interacting in a realistic work or environment. In the social network intermediate objects are skipped and an object member can establish the connection to the next member with its maximum degree level. This 4 G communication try to achieve the semantic technology application to the users. It is "Leveraging Semantic Technology for Infrastructure Mediation", explored how to use machine-to-machine intelligence for large scale distributed computing networks, such as grids and cloud computing

V. SOCIAL NETWORKING AND 4G TECHNOLOGY

The social networking process is a involved Varity of networks such of Corporate Network , Home area network , Wireless Personal area network n Internet and vehicle area network . The combinational network represented below with its possible connectivity architecture. example, do not differentiate among departments of the same organization). This template was designed for two affiliations.

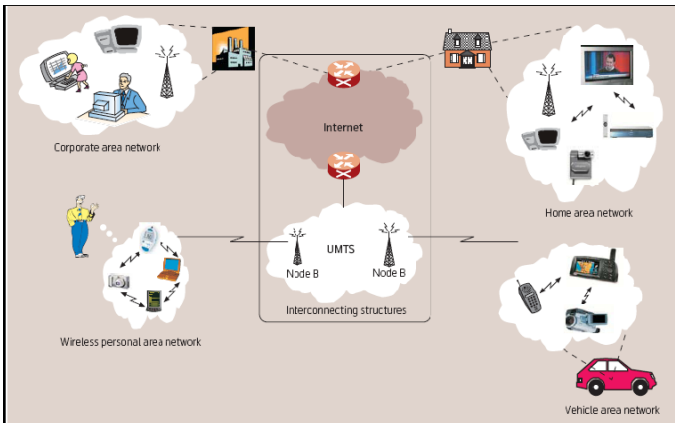

Figure 3

While we are constructing the social network that will provide infrastructure service , web site content and application , relation control and participation model . Relation control and participation model work together to enrich the social presence of the registered user of the social network group member, Actor profile and Social Graph. The infrastructure model provides the facility to Collaboration & Content service and Social Networking services. The social network architecture is simulates the Cloud computing architecture.

VI. FLEXIBILITY OF 4G ARCHITECTURE FOR SOCIAL NETWORKING

4G Communication architecture will provide access through a collection of radio interfaces, seamless roaming/handover and the best-connected service, combining multiple radio access interfaces (such as WLAN, Bluetooth and GPRS) into a single network that subscribers may use. It allows any mobile device to seamlessly roam over different wireless technologies automatically, using the best connection available for the intended use. Users will have access to different services, increased coverage, the convenience of a single device, one bill with reduced total access cost, and more reliable wireless access even with the failure or loss of one or more networks. This technology supported with the support of Hardware as service (Haas) to the social networking members. They can access the network communication system using any available network infrastructure as a Service (Iaas) . In the 4G architecture, a single physical 4G communication device with multiple interfaces to access services on different wireless networks. The multimode device architecture may improve call completion and expand effective coverage area. The device itself incorporates most of the additional complexity without requiring wireless network modification or employing interworking devices. Each network can deploy a database that keeps track of user location, device capabilities, network conditions, and user preferences. It allow the social network user to connect the rest of the network members without any modification of his/her infrastructure, application, services and the architecture of communication system .

VII. OPPERTUNITIES

***A.* Cost and Affordability** In terms of 4G Network cost and affordability, there are a number of issues to consider that

reflect some degree of risk, as well as opportunity, so that these networks are successful once rolled out to the general public, and in general, 4G Networks are designed in order to create an environment that supports high-speed data transmission and increased profit margins for organizations that utilize these capabilities . Developing a successful 4G Network platform is a positive step towards the creation of a wireless and broadband environment that possesses rapid transmission speeds, data integrity modules, and other related events that encourage users to take additional risks in promoting successful utilization of these 4G tools.

B. Cabability and Features

Although the 4G Network platform is not brand new, many telecommunications providers have not yet developed their own alternatives that will support this network in full. Therefore, 4G-related products are still in the development phase, with additional products to be developed and rolled out on a periodic basis. With the creation of these alternatives, it is likely that 4G Networks will continue to expand their scope and promote their own brand of personalization for consumers that seek these types of alternatives .In general, the possibilities associated with 4G Networks are endless, as high-speed data transmission and associated capabilities are more feasible than ever. This supports the notion that the demand for more complex networks and related capabilities are stronger than ever, as a greater number of consumers continue to buy into the potential that exists with advanced networks, such as 4G.

With the appropriate combination of resources, it is possible for 4G Networks to create alternatives that exceed consumer and industry expectations. Therefore, 4G developers must consider the appropriate security measures, the promotion of high-speed data transmission across the network, and must also consider the ways in which data quality and integrity might be preserved in order to provide the most satisfactory results.

VIII. New Challenges

A. Security and Privacy

In the development of 4G Networks, security measures must be established that enable data transmission to be as safe as possible. Specifically, "The 4G core addresses mobility, security, and QoS through reuse of existing mechanisms while still trying to work on some mobility and handover issues" . Therefore, it is necessary for the organization to develop an effective series of tools that support maximum 4G security measures as a means of protecting data that is transmitted across the network from hackers and other security violations. Because of the nature of the 4G network, there is an increased likelihood of security attacks, and therefore, multiple levels of security, including increased requirements for authentication, will be necessary to protect data and information that is transmitted across the network .

One of the main goals of G4 networks is to blanket very wide geographic area with seamless service. Obviously, smaller local area networks will run different operating systems. The heterogeneity of these wireless networks exchanging different types of data complicates the security and privacy issues. Furthermore, the encryption and decryption methods being used for 3G networks are not appropriate for 4G networks as new devices and services are introduced for the first time in 4G networks. To overcome these security and privacy issues, two approaches can be followed. The first is to modify the existing security and privacy methods so that they will be applicable to heterogeneous 4G networks. Another approach is to develop new dynamic reconfigurable, adaptive, and lightweight mechanisms whenever the currently utilized methods cannot be adapted to 4G networks .

B. Quality of Service

With respect to network quality, many telecommunications providers are promising that there will be enhanced connectivity, and the quality of data that is transmitted across the network will be of the highest possible quality, as in the case of Ericsson's 4G Network for TeliaSonera . The company promises that "The new 4G network will do for broadband what mobile telephony did for voice. With real-time performance, and about 10 times higher data rates compared to today's mobile broadband networks, consumers can always be connected, even on the move" . As a result, it is important for providers to develop an effective approach to the 4G Network that will enhance quality, provide effective security measures, and will ensure that all users are provided with extensive alternatives for downloading video, music, and picture files without delays.

The main challenge that 4G networks are facing is integrating non-IP-based and IP-based devices. It is known that devices that are not IP address based are generally used for services such as VoIP. On the other hand, devices that are IP address based are used for data delivery. 4G networks will serve both types of devices. Consequently, integrating the mechanisms of providing services to both non-IP-based as well as IP-based devices is one of key challenges 4G networks have to address

IX. CONCLUSION

4G communication system is dwell in many application of real time communication system with High speed network capacity, Fast/seamless handover across multiple networks, Wireless access technologies, MIMO and Multimedia support. The high end 4G communication architecture have flexibility to construct the social networking process in an effective manner to integrate the corporate , private and public network. This study provides the possible technology adaptation for the social networking effective process using 4G communication architecture. The study will lead to find the design architecture of secured and effective social networking information architecture using Hardware , Infrastructure, Software, platform , Communication , data storage service with Effective Quality of Services. The researcher aimed to construct the 4G based social network for the academic enhancement for the its

stakeholders in India with the knowledge sharing portal using the above specified attributes.

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