provision with service negotiation including mobility, security and QoS management will be a key requirement.

[0035] Due to the different application areas, cell ranges and radio environments, the different access systems can be organized in a layered structure similar to hierarchical cell structures in cellular mobile radio systems. The different layers correspond to the:

[0036] Distribution layer: This layer comprises digital broadcast type systems to distribute the same information to many users simultaneously through unidirectional links.

[0037] Cellular layer: The cellular layer may comprise several cell layers with different cell size and or different access technologies.

[0038] Hot spot layer: This layer may be used for very high data rate applications, very high traffic density and individual links, e.g. in very dense urban areas, campus areas, conference centers, and airports.

[0039] Personal network layer: Personal area networks will support short range direct communication between devices.

[0040] Fixed(Wired) layer: This layer includes any fixed wireline access system.

[0041] Such an integrated system as provided by the present invention could intelligently converge mobile communications, Internet, wireline communications, wireless LANs, etc into an integrated open platform. Each of these represents a variety of applications, services and delivery mechanisms. These differing information flows are desired by the users to be available regardless of the means and manner of delivery. A case in point: Over this integrated mobile terminal one is able to receive voice communications, data messages, browse the web, transmit video, listen to MP3 music, etc. The most important is, this mobile terminal becomes the All-in-One integrated personal communicator at both home and office or on-the-move.

SUMMARY OF THE INVENTION

[0042] This invention is directed to an integrated communication terminal for next generation mobile telecommunications to support the convergence and integration of various wireless standards including existing and future mobile cellular standards, wireless local area network standards, wireless personal area network standards, and wireline standards.

[0043] It is assumed that 2G, 3G (in its present state), B3G, new mobile access and nomadic/local area wireless access elements are considered to be a system as a whole. This converged and integrated communication platform as provided by the present invention, rather than separate and single mode of standards, will definitely drive the future telecommunication industry, but with new business model for service providers and operators.

[0044] Continuous evolution is foreseen in future mobile terminals, with use of new components, architectures, hardware, software platforms and improved user interfaces together providing increased performance. The key technologies that will enable the future advanced mobile terminals as described in the present invention include:

[0045] Open platform supporting multiple standards

[0046] Smart antennas, MIMO

[0047] High efficiency power amplifiers

[0048] New filters p1 Improved RF (radio frequency) modules, allowing higher operating frequencies and improved receiver sensitivity

[0049] Advances in signal processing, additional processing power

[0050] Improved battery technology with increased energy density

[0051] Integration with wired terminal

[0052] However, these advances in technology will not altogether remove the frequency dependent limitations of transmitter and receiver hardware and semiconductor technology. Rather limitations will continue to exist despite the evolution. Having new spectrum ranges far from current bands would additionally increase the challenges with future RF components. This means that also from the component point of view the frequencies should be as low as possible.

[0053] Furthermore, the aforementioned terminals are capable of operating in several frequency bands and with different bandwidths (requiring improved RF modules). Terminals have the potential of dealing with different systems (multi-mode) and they can also implement interference management to improve transmission capacity and performance (enhanced sensitivity and strategies for interference suppression).

[0054] Therefore, the integrated terminal of the present invention provides an open RF architecture which is reconfigurable and portable for various wireless air-interfaces in different frequency bands, as well as supporting new transceiver technologies, for example, smart antenna, space-time receiver and new power amplifier.

[0055] Anticipating the evolution of the worldwide mobile communication penetration for the next twenty years is a challenging work. In this timeframe, as the world population increases by 22% (from 6.2 Billion in 2002 up to 7.6 Billion in 2020), many factors will influence the particular situation of each country and their telecommunication development. The forecasts for the evolution of telecommunication penetration developed are based on the general socio-economic context and perspectives of each country. However, the following trends are clear:

[0056] Mobile phone will be much more popular

[0057] Internet access is everywhere and much more affordable

[0058] Voice over IP is becoming popular

[0059] Wireless LAN (Local Area Network) and Wireless PAN (Personal Area Network) will be much more popular at home, office or hotspot areas

[0060] The advanced system and method provided by the present invention enable the full integration of the above technologies so as to substantially increase the productivity and versatility of the communications services offered.