

Abstract “Telco3.0 and Future Internet Convergence” (A.Manzalini)

Current evolution of Telco Network and Service platforms is showing two emerging trends: 1) simplification of transport and network infrastructures towards a flat and cost-effective architectures based on packet switching (fixed-mobile convergence); 2) evolution of Service frameworks towards horizontal IT platforms (e.g. Service Delivery Platforms) in order to optimize composition, execution and provisioning of value added services with new business models.

The former trend implies that IP-based networks are capable to balance between the carrier-class requirements of performance, reliability and security and the business needs for increased network flexibility and openness. To cope with this perspective, IP-based networks are expected to incorporate enhanced operating systems and service-networking features to allowing a flexible inter-working with service and control functions.

The latter trend requires Service architectural frameworks capable of exposing and composing different kind of IT-Telco enablers, capabilities, functionalities and services components by abstracting them (with well defined interfaces) thus allowing openness and federations with Third Parties. In the medium-long term, these service frameworks should go beyond a simple S/W integration approach as today provided by Service Oriented Architecture (SOA). Innovation should enter deeper into network and service frameworks thus allowing a profound integration.

A first sign of this tendency is the so-called Telco 2.0: the attempt of bringing the principles of Web 2.0 (architecture for participation, i.e. Prosumption) into the current Service layers (e.g. thorough SDK): final goal is exposing telco-ICT enablers, service components, data, etc in order to open to new business models (e.g. based on Telco and Application Providers federations).

On the other hand, even today, Service Providers on the Web (e.g. Google) are performing much better using Web “as-a-platform” for providing dynamic services (e.g. perpetual beta versions even for long tail, etc) with alternative business models (e.g. services often for free and Advertisers pay). As a matter of fact, Web 2.0 Service Providers are generating higher profit margins than Telco 2.0.

As such Telcos need of inverting the current “investment pyramid” by adopting more flexible, effective and low expenses service frameworks based on low-cost platforms and simpler management (reducing Capex and Opex) deeper integrated with the networking infrastructure. This would allow providing even long-tail Users’ with dynamic services (even micro-ser. in perpetual beta) thus facilitating Prosumption also with alternate business models (e.g. expose and federate with ASP). We call this model Telco3.0.

At the same time, tomorrow’s Internet design is under the spot: the unstructured expansion of Internet is creating the threat that in the near future it will become too large, static and not-optimized. Thus, tomorrow’s Internet is expected to overcome current limitations and address emerging trends including: mobility, the diffusion of large numbers of heterogeneous nodes and devices, the mass digitization of media, the emergence of software as services, constraints imposed by resources, the emergence of new models of services and interaction, and the need for improved security and privacy features, etc.

It should be noted that Internet was created thirty years ago by sharing a consistent and simple vision: at that time all Players had a common purpose: creating an infrastructure to hook all computers together so that applications and services could be invented to run over it. On the other hand Internet today is a series of ongoing tussles: different Stakeholders have divergent interests, which in competition with each other: they adapt their mechanisms to achieve their goals and push-back the competitors. Future Internet architecture should meet not only technical requirements but it should also accommodate the current tussles, causing stagnation.

Tomorrow's Internet design requires "design by-variations and for-openness" so that to permit the architecture to adapt under unpredicted pressures and to allow broad federations. The former implies modularized architecture along current tussles, for example decoupling what application a User can run from what QoS can be provided; the latter means allowing Players to express their preferences, for example network protocols should allow all Parties to make a choice about which other Parties they interact with. Tomorrow's Internet (also enabling Web3.0, Semantic Web) is likely to become an networking and service framework seamlessly integrating heterogeneous devices for enabling any-layers services (e.g. network, transport services but as real-time communications, contents sharing, sensing, actuation, etc.) for human-to-human, human-to-machine and machine-to-machine inter-working.

This is a first important conclusion: both trends (Telco and Internet/Web innovation) have in common a win-win goal, i.e. convergence. Such Telcos – Internet convergence will pave the way to unlock a new wave of innovation for future services and application scenarios: openness, broad federations of Players and do-it-yourself innovative services and knowledge management will allow people to be the true center of Information Society.

This vision can be enabled by the design and development of "networking, service and knowledge frameworks" (far beyond current SOA) as an environment of services and data components, pervasively distributed over peer-to-peer (low-cost) resources, interacting with each other (even semantically) to compose and execute services and applications.

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In particular, Telco 2.0: the attempt of bringing the principles of Web 2.0 (architecture for participation, i.e. Prosumption) into the current Service layers (e.g. SDK): final goal is exposing telco-ICT enablers, service components, data, etc in order to open to new business models (e.g. based on Telco and Application Providers federations). On the other hand, even today, Service Providers on the Web (e.g. Google) are performing much better using Web "as-a-platform" for providing dynamic services (e.g. perpetual beta versions even for long tail, etc) with alternative business models (e.g. services often for free and Advertisers pay). Web 2.0 Service Providers are generating higher profit margins than Telco 2.0.

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At the same time, tomorrow’s Internet design is expected to overcome current limitations and address emerging trends including: mobility, the diffusion of large numbers of heterogeneous nodes and devices, the mass digitization of media, the emergence of software as services, constraints imposed by resources, the emergence of new models of services and interaction, and the need for improved security and privacy features, etc. Tomorrow’s Internet design requires modularized architecture along current tussles, for example decoupling what application a User can run from what QoS can be provided; the latter means allowing Players to express their preferences, for example network protocols should allow all Parties to make a choice about which other Parties they interact with.

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