BROCHURE

5G

ITALTEL PROFESSIONAL SERVICES FOR THE 5G SYSTEM

Italtel Professional Services Offer is the answer to the complexity of the new paradigm introduced by 5G & Beyond Mobile Networks: our mission is to handle this complexity and making it simple for the Communication Service Providers.

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Index

Italtel and the new 5G System Integration paradigm

The latest market demands are defining an important change in the way System Integration is carried out and Italtel is achieving this new paradigm, contributing to improve these methodologies as well. This change becomes even more crucial focusing on the advent of the mobile 5G networks, which require a more and more organized approach to guarantee a successful roll-out.

Nowadays we are dealing with networks, which evolve becoming software-driven and requiring flexible and agile management. Additionally, applications enabling meaningful and useful use cases are the further reason for investments in the abovementioned new networks. In the meantime, traditional networks (previous generations) need to be integrated into the new environment, exploiting applications acting on the overall network (if possible) and leveraging **Analytics and Security** as foundational elements as well.

Therefore, the role of a modern System Integrator consists of bringing value to the overall customer environment, by properly integrating existing and new networks and applications.

Below some pillars which drive the evolution of the networks towards the digital ones, considering the new software development capabilities.
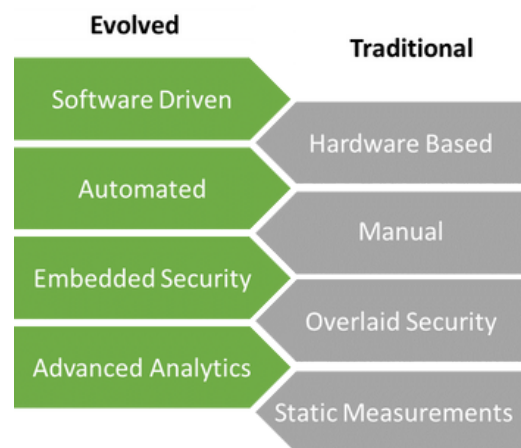

Figure 1 – Evolution of Networks towards Digital

Specifically, **DevOps** and **IaC** (Infrastructure as Code) are the cornerstones for this change. CSPs, which wish to allow and speed up this Digital Transformation, need to adopt the two new mentioned paradigms and be supported by a System Integrator who believes and fosters the new approaches, helping and assisting the customer in the transition towards a fully automated environment.

A modern System Integrator embracing the new model has to leverage the following compelling capabilities:

- Rely on a wide multivendor Solution Catalogue that can cover the addressed markets demand
- Availability of a state-of-the-art LAB, developing and integrating both proprietary and multi-vendor functions, and experimenting with mixed NFV/Cloud-Native approaches
- IaC - Infrastructure as Code – to manage and provision computer Data Centers through machine-readable definition files, rather than physical hardware configuration
- DevOps methodology adoption, helping CSPs to dramatically improve Time-To-Market and realize complete automation of Software Life Cycle
- Smart Operations model approach because multi-layer complexity imposes new models/algorithms for data collections and analytics (Big Data, Data Mining, Artificial Intelligence, etc.)
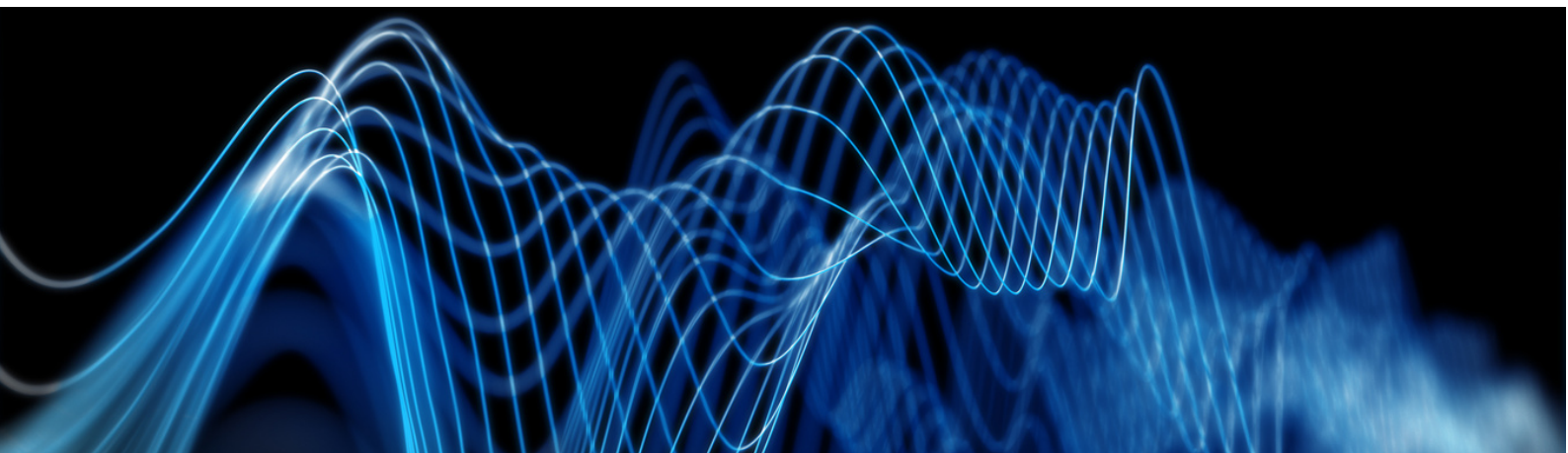
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For ten years, Italtel has been riding this new wave facing this important challenge and getting proven expertise in planning, innovating, and optimizing the processes of professional services in multi-vendor environments.

This is the reason why Italtel can play the role of unique multi-vendor solution integrator thanks to its own long experience on IP technology and Telco networks (fixed and mobile). Finally, the customer is always successful in the full achievement of the goal involving Italtel, supplying the proper skills to address any complex project.

Specifically, Italtel makes available to the customer the following resources and activities:
- coverage of both technological and operational functional areas, required for a multi-vendor solution
- focus on service, process, and activity consolidation of any solution component
- skilled engineers with proper competencies within service management and clear responsibility across the processes
- carrier-class service delivery, based on high professional and skilled resources, thanks to consolidated experience both with Telco Operators and Enterprises worldwide
- complete service portfolio, to meet any Customer requests in whatever stage of the project
- trustworthy partnership with Customer

Italtel has the attitude to support customers with experts able to work in teams across departments and design the architecture that best meets the customer needs; further, to inspect and certify the solution in dedicated LABs and finally deal with the phases of development, integration, and monitoring, following DevOps best practices.

Italtel Professional Services adopt an Organizational Model, inspired by ITIL and are oriented to the constant monitoring of the indicators related to the quality of the provided services. Service management governance ensures the full achievement of agreed targets and supports the process of continuous improvement of the delivered services.

Taking into account the previous introduction, the following picture summarizes the different contexts, which Italtel is able to operate within its own Professional Services offer.

Figure 2 - Contexts of Italtel Professional Services

Italtel 5G Professional Services Suite

Italtel has defined a dynamic and flexible suite of services to support the design and the related deployment of a 5G System. Our professional service teams have the expertise to design a complete **E2E 5G System** or integrate some required parts within an existing deployed framework.

Currently, Italtel has two different organizations that complementary supply the whole set of services:

- **Engineering Department**, with the focus on the definition of the solution and the related deployment in production

- **Technical Support Department**, which either assists the customer's Operation Department providing a dedicated Global Service Desk for support and maintenance of the live networks or offers full Managed Services, working with autonomy and providing oversight to its own area of competence.

Considered the two-abovementioned different organizations, the related activities for every single one are being gathered according to the following picture:
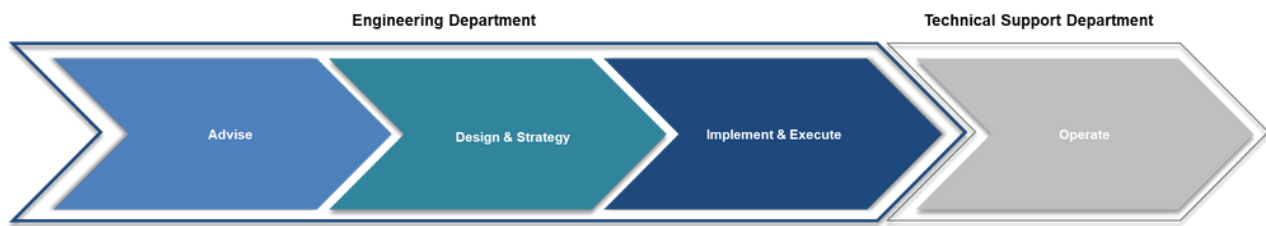

Figure 3 – Italtel Professional Services stages

The related service set has a phased mapping, which includes different types of activities as detailed hereafter, with a special focus on the Engineering Department.

ADVISE

During the Advise stage, Italtel offers the following set of services:
- Consulting
- Assessment
- Requirements collection

The Consulting service is a crucial step where Italtel helps the customer to identify the best solution to be implemented, considering plans and future investments. On the other hand, the Assessment is another fundamental phase during the Advise stage with the aim of doing a general inventory of the existing assets in order to define what and how to preserve part of them within the new 5G solution.

Additionally, Italtel takes care to carry out the Requirements collection from the customer, which is the basis for the future design of the target architecture.
The complete Advise stage gathers a set of activities, which could be required to write the documentation set of a customer's tender.

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DESIGN & STRATEGY

The **Design & Strategy stage** is the core set of services, fundamental for the definition of the solution architecture and necessary for specifying the strategy to go later live.
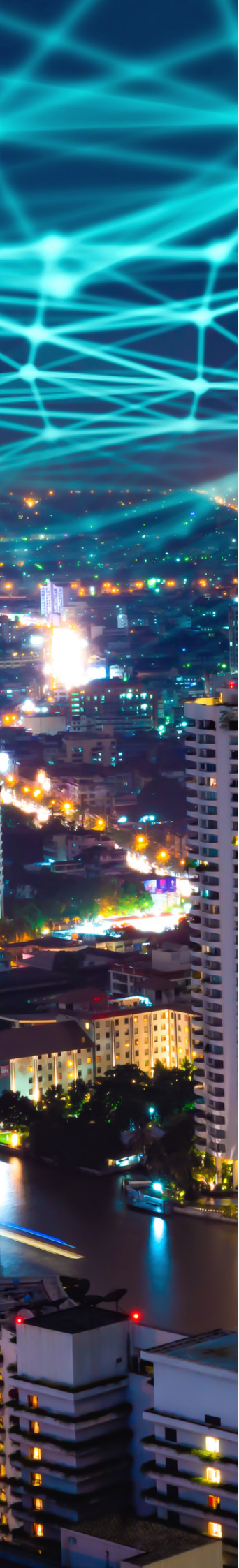It includes the following list of services:

- Customer's Technology Analysis
- Architecture Strategy
- Solution Design (HLD)
- Solution Configuration (LLD)
- Automation and Orchestration Design (Optional)
- Test Strategy and Plan
- Migration Strategy, Arrangement, and Plan (Optional)
- Early Pilot (Optional)

The **Customer's Technology Analysis** is a pivotal deep dive into the information related to the environment where developing the solution. It could be either the advanced processing of possible previous consulting and assessment information gathered during the activities carried out within the Advise stage or the very first step (without the Advise stage) to elaborate a proper solution.

This further accurate analysis jointly with the customer's solution requirements is the pillar for addressing the design of the target architecture. Starting from the last analysis, Italtel has all the elements to identify the proper **Architecture Strategy** in order to define the path to achieve the best solution.

After having clearly delineated requirements and constraints and based on a strategy-driven approach, the Engineering teams can address the **Solution Design** task working on the information set necessary to arrange the design of the whole Solution. This activity brings, as the main output, the High-Level Design document, which includes a focused summary of the solution (Network Elements, geographical distribution, supplied services, and so on) and its related dimensioning.

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Solution Configuration is the next set of activities, based on the definition of required Software and Hardware resources, necessary to build up the solution. All the details regarding the configuration of each part within the final architecture are included in the Solution Configuration task. The information related to this activity flows into the Low-Level Design document, which has two main annexes: the former more focused on "how to configure" the solution and the latter on "how to build" the same one, describing the architectural design of the network and the requirements of the customer plant.

Italtel engineering teams may optionally include **Automation and Orchestration Design** tasks, thanks to their own long expertise in designing automated networks and engineering of several solutions based on different technologies. In case an Automation and Orchestration framework is part of the 5G overall solution, it will be described in the abovementioned HLD and LLD documents.

The last mandatory step for the **Design & Strategy** stage is the Test Strategy and Plan. Considered the solution design, the engineering teams define a tailored set of tests necessary to check the right working of the functional parts in the 5G System involved in the most relevant scenarios and their planning.

Another crucial task of this stage is the **Migration Strategy, Arrangement and Plan,** which is necessary when existing deployments have to be decommissioned. The Migration Strategy outlines the way to execute the migration moving users and applications from the current technology to the new one. It also includes an expected time plan and the definition of the future test plant, which can enable the test of the elaborated migration procedure. The main challenge, which brings value to the developed procedures, is how to carry out migration path assuring minimal downtime to normal operation and in the shortest time.

Finally, **Design & Strategy** stage may envisage a possible general trial lab for **Early Pilot** demonstrating part of the designed solution and maturity of the involved products.

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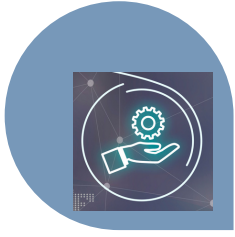
IMPLEMENT & EXECUTE

In this stage, the designed and tested solution moves to the production, with the following activities:

- Deployment & Configuration
- Global Integration
- Migration Execution & Project Management
- Training

Deployment & Configuration is the first step to roll out the designed solution in the customer's environment (live and test lab). Italtel can also install required servers setting up completely the environment, in case the agreement includes the deployment of new hardware.

Having the necessary hardware resources, specifically, the **Deployment** envisages the load and installation of Solution Software whilst the **Configuration** makes available the defined features and functionalities of the designed architecture.

Possible further Engineering Department engagement is for post-operation activities. Modification of initial solution architecture enabling features and functionalities already available in the supplied software package is under engineering team supervision. The customer can ask for a solution update and a new dedicated analysis need to be carried out and applied with appropriate configurations.

For specific requirements not fulfilled by the deployed solution, new software developments have to be evaluated and economically agreed upon. After having approved the new contents, the consequent process follows the same main steps of the solution **Design & Execute, Deployment & Configuration, Global Integration, and Training**.

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Closed the previous task, the deployed solution goes actually in production, undertaking some weeks of monitoring and live test with a restricted trial audience. This phase of **Global Integration** is crucial to check the coexistence of the designed solution within the full customer's network.

Later, if the monitoring and live test are successful in the transition time, it is planned the **Migration Execution & Project Management** task, the massive **Migration Execution** of the affected users jointly with the proper procedures to migrate to the new solution, according to the **Migration Strategy** defined during the **Design & Strategy** stage.

The application of the migration procedures is usually designed per step and every single one monitored with its own KPI. Further, a dedicated test campaign is performed to check if the migration fulfills the expected planned behaviors. The latter will help to tune the migration procedure in order to avoid any kind of risk during the production migration.

The **Training** is a phase delivered indeed during **Implement & Execut**e stage but it is independent of the other steps according to the customer's needs. During the Training, the customer gets knowledge about the new solution with deep dive on each single provided product and functionality.

OPERATE

The Operate stage follows and closes the delivery activities of the Engineering Department, leaving most of the responsibility of the live solution to the Technical Support Department. Having full control of the solution, the customer may engage the Italtel Technical Support Department in case of failures or for minor improvements of the network. Alternatively, in case of Managed Services agreement, the same Department has full autonomy and responsibility in managing completely the assigned network portion.

Hereafter a set of activities mostly in charge to Technical Support Department for the Operate stage, with the possible engagement of Engineering Department as well:

- Global Service Desk
- System Oversight for Management and Automation
- Baby-Sitting
- Managed Services

Usually, the **Global Service Desk** service is engaged via Single Point of Contact (SPOC) within the Technical Support Department. SPOC enables the ticket processing to the Italtel NOC (Network Operation Center) which offers different levels for issue handling. Specifically, SPOC first submits all field issues, service requests, and whatever problem to the level 1 Service Desk (TAC1) to be logged in the ticketing system, and then either resolved at level 1 or dispatched to another source of support where the ticket can be resolved.

A SPOC service desk is not expected to resolve every ticket it logs. Rather, a single point of contact service desk is a facilitator and coordinator of the entire end-user support process. They are responsible for resolving the tickets that can be resolved at level 1, and expeditiously dispatching tickets that cannot be resolved at level 1 to the most appropriate source of support. It means that a specialized team of the Technical Support Department (TAC2) evaluates more in deep the issue trying to supply a solution. The team should be independent of Italtel and partner products. Alternatively, the problem resolution for TAC2 should be assigned to the possible non-partner vendor.

Again, if the TAC2 team and/or related vendor team cannot resolve the ticket, the level 3 support (TAC3) is engaged either within the Engineering Department for the Italtel assets or with the support teams of the collaborating vendors (partner and non-partner).

Finally, SPOC monitors the progress of all open tickets, prompting action on tickets that appear to be stalled, and closing tickets that have been resolved satisfactorily.

System Oversight for Management and Automation is an optional valuable task, which can be carried out by the Engineering Department, exploiting specific software tools for the active System monitoring. Complex solutions, as 5G System, gather multiple vendor parts and the evaluation of the overall performances is a priority for the team who has in charge the maintenance of the whole solution. Consequently, it is very important to correlate the behavior of each single part, monitoring the live assets and frameworks and proactively supporting the operations in production.

An additional activity undertaken during the Operate stage is the **Baby-Sitting** that is an extension of the Training phase, dedicating some Italtel skilled resources of Engineering Department for flanking on-prem the customer in gradual understanding of the provided solution. The duration of the Baby-Sitting phase depends on contract terms or specific agreement with customer.

Italtel offers also a set of **Managed Services** for the complete control of the solution in operation where the main activities of the Customer Operations are undertaken by Italtel Technical Support Department having full autonomy and managing completely the assigned portion of network. Managed Services improve operations, reduce costs, externalize risks, provide specific expertise and allow the customer to focus on its core business only.

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