

linfra

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LINFRA IS A LEADING INTERNATIONAL TELECOMMUNICATION SERVICE PROVIDER

INTRO

In a world of Telecommunications where challenges are permanently rising, Linfra has emerged as a reliable partner for operators and main telecom equipment suppliers rendering added-value services and developing a strong, skilled and cost-effective partnership to meet the targets and face the challenges of today's market in terms of complexity, time constraints and high competitiveness.

Our vocation is more than just providing services or products. It is actually to become a trustable and loyal partner ensuring the best assistance and respecting high standards of quality and technical skills.

Linfra's fast growing in the last years through developing its competences, widening its activities and expanding geographically, has proven it up to the ambitions and the goals it has set.

By strengthening its presence in the areas of its work and ensuring continuous technical training to keep its engineers and technicians up to date with the latest technologies, Linfra succeeded in securing a key presence on the market and among main players of telecommunications while still offering potential growth and expansion to new areas and partners.

Brief History

Linfra has been established in 1991 in Lebanon and has operated under different commercial names (ACD and ACD networks). It has expanded since to cover Middle East, Gulf and various African countries. Today, Linfra has branches in Saudi Arabia, Syria, Iraq, Morocco, Algeria, Nigeria, South Africa and has its headquarters based in Lebanon.



A DEDICATED PROJECT MANAGEMENT

Key of success in complex projects is in a dedicated management ensuring full respect of time, cost and objectives. Linfra draws on a pool of experienced project managers, supported by skilled technicians and a Back-Office in Lebanon providing human resources support, technical assistance, logistics and procurement facilities as well as financial services. From contract administration to cost follow-up, from reporting and scheduling to quality management, from technical support to operation management, the Project Management team assigned to each project covers and masters all the aspects in order to fulfill our clients milestones, requirements and budgets.

PROVIDING ENGINEERING SOLUTION

Whether it is for mobile networks or fixed ones, Linfra provide the most appropriate and cost effective engineering solutions that best fit the requirements of the project.

The range of engineering activities goes from radio network planning, line of sight (LOS), nominal cell plan and traffic dimensioning, frequency planning, propagation prediction, coverage validation, site structural design (foundations, towers, shelters...) for mobile networks and MW links, to installation engineering (IE) comprising hardware description (cabling, labeling, equipment layout,..) and data transcript for switching. Linfra also provide cable routing and equipment layout design for FO links and OSP networks as well as design for satellite earth stations.

DEVELOPING NETWORK INFRASTRUCTURE

Linfra enjoys a long term practical experience of project implementation delivering customized, integrated and high-speed deployment of telecom networks. This covers such activities as:

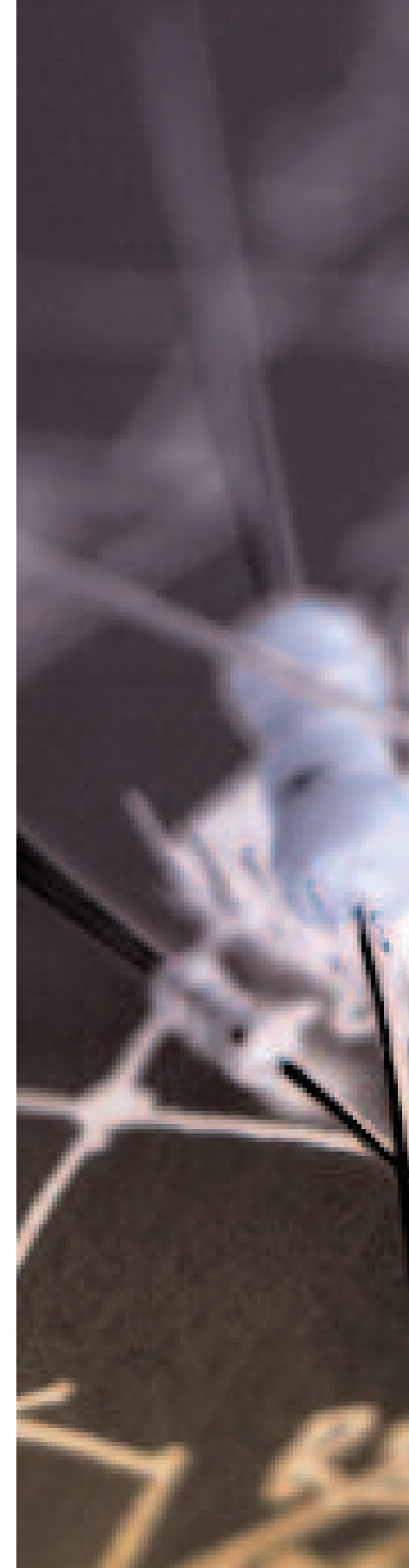
Mobile Networks

- Site Search and Acquisition that includes engineering preliminary study, administrative investigation and pre-negotiation for lease or acquisition;
- Procurement and transportation of all necessary products and material relative to site infrastructure;
- Site survey in order to establish construction plans.
- Civil works such as foundations construction for towers and shelters;
- Towers supply and erection, cable tray installation, earthing;
- Shelters supply and installation;
- Generators supply and installation;
- Electrical works comprising installation of power supply and back-up systems as well as air conditioning and security systems;
- Supply and install of fast-built sites solutions.

Cable Networks

- Procurement and transportation of cables and all necessary products and material;
- Cable routing survey checking cable path, manhole locations and existing conduits;
- Civil works such as trenching, manhole/handhole construction...

All these works are conducted by skilled teams using state-of-the-art methods while complying with the highest quality requirements and respecting environment conditions.



EXPERIENCE WITH TELECOM EQUIPMENT

Well trained, our engineers and technicians have a substantial track of record in multi-vendor telecom equipment installation, testing and commissioning.

Outdoor works include installation of antennas, feeders, waveguides, amplifiers, outdoor radio units for mobile sites and cable pulling and splicing for cable networks.

Indoor works include installation of rack equipment such as Radio Base Station, Base Station Controllers, switches, microwave and cable terminations and ODF/MDF for cable networks. Performance improvement and optimization of radio networks are done after commissioning.

This includes KPI analysis, drive tests and frequency plan optimization.

Linfra also provides preventive and corrective maintenance services for telecom sites and equipment.



OTHER VALUE-ADDED SERVICES

Linfra seeks to develop value-added services skills and has started to provide VAS for telephone operators such as Intervoice, provider of applications and technology that connect people with information (e.g. customer interactions solutions, open software solutions, speech servers...)



WIMAX

- New services in Linfra
- Engineering and Design
- Supply & Install of WiMAX solution (with leaders in the technology)
- Integration

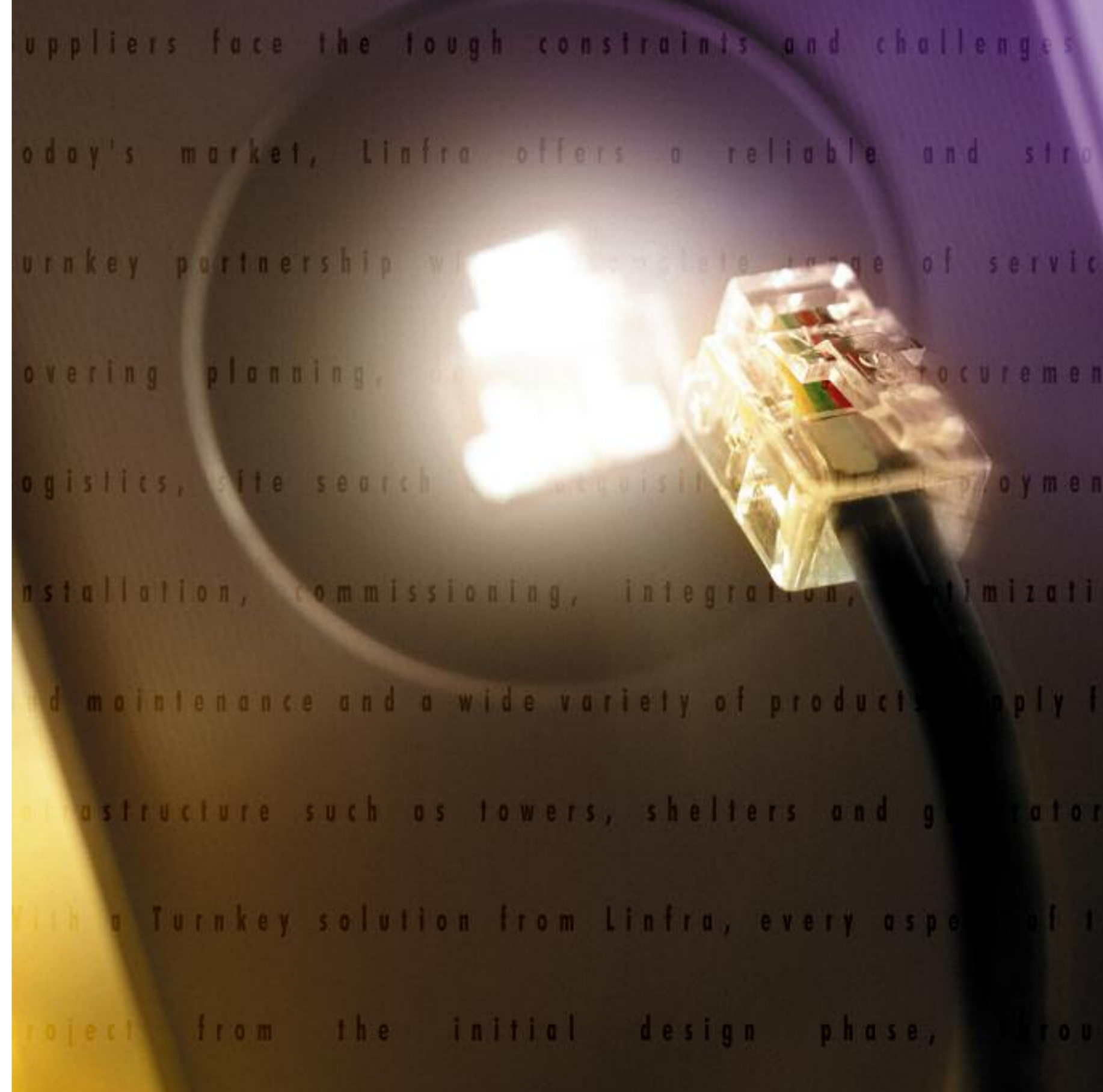
TURNKEY PARTNERSHIP

In order to help operators and telecom equipment suppliers face the tough constraints and challenges in today's market, Linfra offers a reliable and strong turnkey partnership with a complete range of services covering planning, design, engineering, procurement, logistics, site search and acquisition, site deployment, installation, commissioning, integration, optimization and maintenance and a wide variety of products supply for infrastructure such as towers, shelters and generators. With a turnkey solution from Linfra, every aspect of the project from the initial design phase, through implementation, to future support or maintenance, is in the hands of skilled experts and by sharing their risk, Linfra shows a full commitment to the customers concerns and expectations.

QUALITY & FIDELITY

Linfra understands that supplying quality services creates loyal and satisfied customers. Our teams are highly sensitive to quality assurance requirements and ensure a full respect of commonly agreed criteria and standards of Quality. All necessary preventive and corrective actions are taken during implementation to guarantee a full compliance of customer objectives and maintain a high level of quality.

By best responding to its customers needs and assuring their satisfaction, Linfra aims to build a strong and long term relationship based on availability, quality and fidelity.



REFERENCES & PROJECTS HISTORY

ALGERIA

Wataniya

- Line of Sight (LOS) for Microwave Installation (More than 2500 sites already performed with distance up to 60 km);
- Turnkey projects including site acquisition, civil works, shelter and power supply and installation, Radio Base station implementation and integration (type Siemens) of GSM sites. Over 80 sites (Greenfield and rooftop) already performed since mid 2004.

WEST AFRICA

BENIN, GHANA, GUINEA BISSAU, LIBERIA

Ericsson - Operator: Investcom

- Installation engineering (IE), data transcript (DT), implementation and integration were done for several SCP, MSC/BSC/OSS, MSC/VLR, MSC/BSC/HLR, BSC.

GAMBIA, SIERRA LEONE

Operator: Africell

- Civil works including supply and erection of shelters and towers (up to 90m), site preparation (over 20 sites), BTS installation, testing and commissioning;
- RF planning and Radio Optimization.

SYRIA

Operators: Areeba (Spacetel Syria), Syriatel

- IE, DT, implementation and integration were done for several MSC, BSC and R-BSC (Ericsson Equipment);
- **STE Syria**
- Implementation Management for Switching, Transmission and Fibre Optic projects.
- IE, Data Configuration, installation, testing and commissioning of Fiber Optic Links for Transmission Project (STM-1, STM-4), 25% expansion of Current Ericsson Network (over 120 sites) and for 10% expansion of Current Ericsson Network (over 30 sites).
- Installation, testing and commissioning of Switching Project, 250 Kline, 25% expansion of Current Ericsson Network (over 80 sites).
- Supervision of the 1100 km FO cable backbone project.

SAUDI ARABIA

Operators: STC

- GSM services including civil works, radio base station and microwave links installation, testing and commissioning for projects C&I (Ph 1,2,4 & 5), GSM E6 expansion, GSM E7 Expansion.
- Dismantling and reinstallation of telecom equipment (5 Million SAR)
- Telecom installation (MW and BTS) with ABL, ATS and Marco (more than 50 sites)

Operator: Mobili

With Ericsson

- Phase L+0: GSM services including site acquisition and site implementation (civil works, tower, shelter and power generators) for GSM II project (over 55 sites).
- Phase L+1: Full Turnkey including site acquisition, design and site implementation for GSM II project (51 sites).

With Motorola

- Turnkey solution for 44 sites (similar scope).

LEBANON

LibanCell

- Main contractor for turnkey implementation of GSM network (Motorola type BTS).

Ministry of Post & Telecommunications

- Implementation of OSP contracts including civil works, cable laying and splicing, fibre optic cable laying and splicing.

Miscellaneous

- PDH/SDH transmission systems installation for Siemens.
- Provision of digital satellite transmission system with MCII in Lebanon and north Saudi Arabia during Gulf War 1.

MOROCCO

Siemens, Motorola, Meditel, Ericsson and Miden

- Miscellaneous GSM services including site implementation, Radio Base Station and Microwave Links installation, testing and commissioning.

REPUBLIC OF SOUTH AFRICA

Cell-C

- Infrastructure work (Site implementation) for GSM network.

KUWAIT

- Operation of transportable digital satellite earth station.

IRAQ

Ericsson - Operators: Korek, Sanatel

- IE, DT, implementation and integration of several MSC / BSC, SCP
- **Asiacell (Wataniya)**
- Complete turnkey contract for GSM sites implementation including Site Acquisition, Site Implementation, Radio Base Station and Microwave Links installation, testing and commissioning.

JORDAN

Ericsson

- Implementation Management was done for the MSC, BSC, SOG and AXD-330;
- IE/DT was prepared for two SCP and HLR