

Radio Communication: System Concept Design



Prudent decision-makers do not wait to identify their future needs for radio-communication systems. Rapid growth in electronic communication and information transmittal have created a gap between the capabilities of existing radio systems and the needs of users. NYSTEC provides detailed conceptual radio-system designs to satisfy your current and future communication requirements.

By interacting with your organization and gathering detailed information about your requirements, NYSTEC can develop advanced radio-system design alternatives that will meet your needs. NYSTEC has in-depth experience with the predominate and emerging radio technologies and standards used nationally and internationally, including APCO P-25, ETSI TETRA, Data Radio, EDACS, OpenSky, ASTRO, and ASTRO-25. Our knowledge also encompasses the following areas:

- ▶ Vendor offerings for voice and data (in narrowband and broadband),
- ▶ Consoles,
- ▶ Air-interface protocols,
- ▶ Trunk and conventional radio technologies,
- ▶ Simulcast and multicast transmission architectures,
- ▶ The definition of functional requirements for the system,
- ▶ Legacy equipment and gateways, and
- ▶ Cost.



NYSTEC has experience with both the TIA (P-25) and ETSI (TETRA) standards working groups. We actively participate in international and national committees as independent technical advisors on subcommittees. Moreover, NYSTEC has extensive experience with Federal regulations pertaining to radio communications for railroads, public safety, and public works. We can advise you about the advantages and disadvantages of all existing radio-technology alternatives.

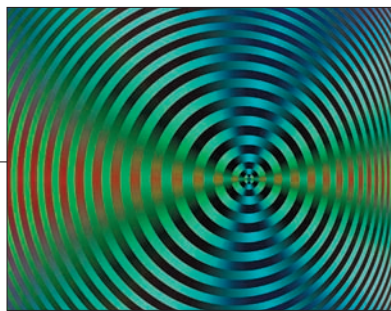
We have perfected our own methodologies to assist clients with design development for mobile-radio communication systems based on industry standards, available and emerging technologies, and best practices. The major steps that NYSTEC employs for design methodology are:

- ▶ Establishing and documenting the user's functional requirements for the design, and using the requirements as a basis to begin design considerations;
- ▶ Evaluating and documenting legacy equipment, and assessing its potential re-use;
- ▶ Performing a feasibility study and determining the best technology choices, such as APCO P-25 or not, frequency band, simulcast or multicast system, trunk or conventional, and vendor offerings;

- ▶ Performing a traffic engineering study to determine current and future capacity needs and identify channel requirements to support the current and projected number of users at an adequate grade-of-service (GoS) level;
- ▶ Carrying out a data-capacity engineering study to identify current and future data throughput requirements; and
- ▶ Conducting a first-order cost analysis to evaluate the viability of the conceptual design including cost of hardware, software, site development, testing, commissioning, training and maintenance.

NYSTEC delivers the results of all findings and provides conceptual system alternatives and radio-communication recommendations to our clients. Once we have identified an alternative that will fulfill your needs, we will detail the functional requirements package. The requirements serve as the basis for developing the conceptual system design and cost analysis. The Conceptual Design package will include:

- ▶ The design parameters;
- ▶ Conceptual engineering drawings, diagrams, and schematics;
- ▶ Traffic analysis;
- ▶ Preliminary frequency plan;
- ▶ Equipment life-cycle estimates;
- ▶ Implementation strategy; and
- ▶ Cost analysis.



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