

Public Safety Communications Products, Services, and Solutions

*Narrative for
Configuration/Design Services*

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Configuration/Design Services

We make our engineering teams readily available to customers and potential customers. They will review, comment, and make recommendations for existing customer designs to help optimize the solution and ensure the correct products are what will be ordered. They will also review and support configuration and pre-programming requirements and will validate FCC frequency licensure and other technical considerations that are part of ensuring there are no issues that can commonly delay deployments.

For customers that do not have existing designs and specifications, we will support the development of an appropriate, value engineered design. This is described further in our response provided in document *00318Technical-Performance-Exhibit_B3_Services-ConfigDesign-Codan_Communications* of this submission.

Codan offers extensive development capabilities for LMR systems. This includes the design and manufacturing of our core radio systems, equipment programming and interfaces, and supporting central systems integration. The following provides a summary description of the methods that Codan uses to execute, plan and manage, and test in support of our system deployment development activities.

Codan tracks, documents, and ensures version / operating parameter control of the configuration of all software, source code, plans, system documentation, and hardware using an effective configuration management process.

Codan will designate one of our senior system administrators as our Configuration Manager. Our Configuration Manager will develop and maintain the program's Configuration Management Plan. The Configuration Management Plan's development will be directly supported development teams and ultimately coordinated and incorporated into the deployment schedule managed by our assigned Project Manager and Alternate Project Manager.

Codan ensures that it thoroughly documents each product's functional and physical (required system infrastructure) attributes, customization and integration codebase, and all deliverables along with the product's performance specification and the testing required to ensure such performance. This serves as the baseline for production of the product over its life cycle, and is documented through our Product Baseline Description, and other supporting documents that include, but are not limited to, System Architecture Documents, Technical Documentation, and other configuration management documentation and artifacts.

Over the course of the contract, all changes to Codan systems will be governed by the Codan Configuration Management (CM) system. The system is a process that ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified. It encompasses the proposal, justification, evaluation, coordination, and disposition of proposed changes as well as the implementation of all approved and released changes into (a) the applicable configurations of a product, (b) associated product information, and (c) supporting and interfacing products and their associated product information. Product configuration is documented and a known basis for

making changes is established. This requires identification of all data and product elements managed by the CM, which includes, but is not limited to; plans, system architecture, software and hardware configuration specifications, interface specifications, documentation, and license tracking, as examples. These are summarized in Table 1, below.

Table 1: Example - Configuration Management Documentation and Artifacts

Document / Artifact	Description
Hardware and Software Inventory	Revision information for all installed equipment and all maintainable software.
Configuration Inventory	Documented configuration parameters; test, pilot, staging, production.
License Information	License tracking of all software.
Interface Specifications “as-builts”	Version control; test, pilot, staging, production.
Product Documentation	Product descriptions, installation, and training guides
O&M Manual / Procedures Docs	Version control - procedures; PM/Patch, O&M, DR/Restore, COOP, Optimization, Security Monitoring, log management, audit, production performance monitoring procedures.

Audits: Product configuration will be verified and validated against the required attributes. Audits verify:

- All functional requirements for the release / version have been met.
- Documentation matches the product.
- Product baseline configuration is accurately maintained.
- The as-built configuration of each system release / version is correct.
- The archival copy of all source elements for the release is correct and complete.

Testing and Quality Assurance Programs

Codan recognizes the necessity of establishing and executing quality management and control practices that will ensure the performance, to specification of all software, systems and interfaces deployed to support Codan products and deployments.

Quality controls cannot be focused solely on the product but must also take into account supported public safety organization workflow procedures and design that ensure the product is used as designed. This includes the need for effective configuration management, as configuration drives the initial conditions for all quality, functional and security testing for all test plans for the systems.

Our overall quality plan and controls will leverage a multi-faceted approach to quality management throughout the manufacturing and deployment process to ensure the quality and functionality of all solutions and their suitability for use by each NASPO customer.

Quality Plan: Our Team will bring exacting attention to quality control and continual improvement of quality controls used for the program.

- **Program Responsibilities:** Our quality plan will clearly define responsibilities at all levels within the organization and individual work processes. Quality is everyone’s

responsibility. We strive to ensure our personnel assigned to the project understand the importance of quality at all levels of work, which also includes the need to clearly understand and convey the business processes associated with the functional aspects of all products developed and implemented.

- **Effective Configuration Management:** Codan's Configuration Management system serves as the baseline for production of the product over its life cycle and will be tightly integrated with the overall Quality Plan as well as the iterative Test Management Plans.
- **Comprehensive Test Management Plans:** Test Management Plans will be developed and implemented by Codan and will include Test Case development and Test Results / Reports for factory test acceptance. The developed testing approach covers functionality testing, quality and performance tests, and radio programming / encryption testing, as described further below.

Test Management Plans, Including Radio Programming and Encryption Testing

The Test Management Plan will be prepared and maintained by Codan iteratively over the life of deployments. The Test Management Plan is updated to track and allow for iterative testing of changes to the system as proposed by Codan and approved by the customer. Table 12, below summarizes the major test areas for the program.

Table 2: Summary Test Areas Supporting Codan Systems Deployments

Test Area / Domain	Scope / Description
Functionality Testing	Testing of each function scheduled for release with the major version deployment. Test Cases and procedures are administered for each new feature and for existing features – the release is tested for regressive functionality / compatibility with prior product releases and versions.
Configuration Testing	Test and review of all configuration considerations, verification and validation of versioned equipment, software, deployment procedures and technical and quality review of all release documentation deliverables.
Interface and Integration Testing / Interoperability	Testing of all interfaces to Codan systems and external interfaces.
Installed Testing	End-to-end configuration and installation testing of functions and applications.