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**Federal Signal Codespear  
Product Solution Overview**

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## I. EXECUTIVE SUMMARY

### FEDERAL SIGNAL CODESPEAR - GENERAL INFORMATION

Division Headquarters:	Birmingham, Michigan
Ownership:	Acquired by Federal Signal Corporation (NYSE: FSS), January 2007
Director of Advanced Technology:	Greg Campbell
Director of Sales & Marketing:	John Von Thaden, <a href="mailto:jvonthaden@fedsig.com">jvonthaden@fedsig.com</a>
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### FEDERAL SIGNAL CODESPEAR – SOLUTION OVERVIEW

Codespear has developed a mission critical communications and nerve center platform, supporting secure communications interoperability, urgent alert notification, incident scenario management & execution, event monitoring, cross-agency data sharing and collaboration. Codespear's solution is a redundant system that can be rapidly deployed in stationary and mobile configurations, occupies a small and agile footprint, and requires only DC battery power to operate.

The application is designed to support and augment incident management, emergency preparedness & response, security & event monitoring and continuity of operations by enabling fully integrated two-way interoperable voice, data & video based communications, wide-area alerting and data sharing between agencies, communities, first responders and citizens, regardless of communication device.

This Open Systems Software-Centric Solution Provides the Following Key Capabilities:

- Communications Interoperability for All UHF, VHF, Digital Band & HAM Radio Systems
- Integrated & Interoperable Multi-Device Alert Notification & Acknowledgement Tracking
- VoIP based Convergence of Multiple Voice capable Devices including Radios, Phones (Cell, SAT, IP & PBX) & Computers
- Cellular Data, Satellite Data and Broadband Wireless Data Access Support
- Intelligent "Plug & Play" for Communications Interoperability, with Smart Recognition of Agencies and Radio Types Accessing the Network
- Automated Incident Scenario Management & Exercise Planning Tools
- Distributed, Scalable and Redundant Architecture
- Wireless Data and Wireless Video Collaboration Support
- Secure Voice & Data Sharing Across Agencies
- Geographic Information System (GIS) Integration & GPS Support
- Multi-Lingual Translation of Text & Text-to-Speech Communication
- Secure Audio & Data Recording and Logging for all Communications & Alerting Functions
- "Real-Time" Audio Buffering to Accommodate Individual Radio System Latency

### REPRESENTATIVE GOVERNMENT & COMMERCIAL CUSTOMERS

- Michigan State Police - Emergency Management & Homeland Security Division
- Wayne County, Michigan - Emergency Management & Homeland Security Division
- Michigan District 1 Regional Medical Response Coalition
- City of New York
- City of Phoenix – Sky Harbor Airport Authority
- NYCE Payments Network
- Ford Motor Credit
- Quicken Loans

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## SOLUTION HIGHLIGHTS

- *The Industry-Leading Interoperable Communications Solution* – SmartMsg's IP-based solution delivering voice and video over low bandwidth, wireless infrastructure supports interoperable communications, alerting and broadcast messaging across the broadest range of devices. SmartMsg employs a unique and powerful software-based distributed architecture, which provides real-time distributed database redundancy and intelligent software based routing for highly efficient communications. As an innovative market leader, Codespear has created a highly scalable platform with functionality that is unparalleled in the industry.
- *A Software-Centric Solution* – SmartMsg is a software-centric solution, not reliant on any significant hardware, except for Codespear's small footprint Radio Interoperability Unit ("RIU"), for interoperable communications. This means that current hardware can be utilized, leveraging current equipment investments and providing a cost-effective solution. The system is highly reliable because it is not dependent on any one individual device type or any single communication medium; public Internet, wide area network ("WAN"), 802.11b/g, virtual private network ("VPN"), cellular data, microwave, satellite and two-way radio are all supported transports. Furthermore, the life span and flexibility of the system is not limited as communication equipment evolves. Codespear's platform adapts as new equipment is purchased, resulting in a modular software solution, which does not become obsolete. Agencies are therefore not bound or limited by legacy and future hardware purchases.
- *A Proven Solution* – Codespear's SmartMsg solution is a proven solution that is not simply an idea, but actually in use. SmartMsg has been adopted by dozens of government and enterprise customers since 2003. Furthermore, SmartMsg has never experienced an operational issue in the field. SmartMsg has been adopted by numerous organizations, including Wayne County, Michigan, The State of Michigan, Emergency Management & Homeland Security Division, The North American International Auto Show, The City of New York, Quicken Loans and Ford Motor Credit Company.
- *Broad Range of Applications* – Codespear began with a focus on the commercial sector with Ford Motor Credit and Quicken Loans as initial customers, however the Company's platform has evolved into the government sector with broad and relevant applications at the federal, state and local levels. Codespear's solution is highly practical and functional and adds value to a variety of purposes. In addition to interoperable communications and alerting solutions for the public sector, SmartMsg offers technical and functional capabilities to address the needs of call center operations, help desk services, physical security monitoring, critical infrastructure monitoring and business continuity support. The application meets the needs of diverse industries including financial services, healthcare, logistics, petrochemicals and utilities.

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## II. PRODUCT OVERVIEW AND TECHNICAL ARCHITECTURE

### SMARTMSG PRODUCT OVERVIEW

SmartMsg, Codespear's flagship product, is a software-centric solution that provides comprehensive communications interoperability among multiple agencies and communication devices. Disparate, non-interoperable communication hardware has caused first responders and other public safety personnel significant difficulty in communicating with each other and there is still no real solution in place. In addition to the need for interoperable, live communications, public safety institutions must have the ability to broadcast time-sensitive alerts to both target groups and mass citizenry. Interoperability and alerting concerns need a more immediate solution and must be met in order for communities to have the best possible chance of minimizing catastrophe.

SmartMsg blends communications interoperability, alert notification, secure urgent messaging, and interactive data sharing into a single, stationary and / or highly portable, seamless software package. This approach to interoperable communications produces a complete solution which provides critical communications support for emergency preparedness and response, command and control, incident response, and continuity of operations across jurisdictions, agencies and first responders. Each of these capabilities can be used independent of one another, or, they can be used in conjunction to deliver a comprehensive, highly flexible, cost effective and easily expandable communications system.

Codespear's solution allows for fully independent and secure interoperable communications, alerting and information sharing that can effectively be "joined-together" based on pre-ordained incident and event declarations. In other words, an agency's radios, group and personnel profiles are not available to other agencies, until they are joined-together via pre-defined security settings and secure firewall ports.

SmartMsg employs a distributed software messaging architecture, providing scalability, redundancy and automated fail-over, meaning there is no single point of failure. Because SmartMsg is a software solution, not a hardware solution, it gives organizations the flexibility and capability to utilize and leverage existing legacy systems and infrastructures. As a result, SmartMsg provides on-demand convergence of voice and data devices, which leverage the power of urgent alert notification and instantaneous interoperable communications between any participating city, county, agency and first responders, or devices in the region.

Codespear's full integration of communication mediums is a truly unique and a-state-of-the-art-solution, when compared to disparate and traditional systems, 3rd party hosted phone notification services, VoIP hardware based routing switches and 3rd party hardware-centric and radio specific interoperability systems.

## SmartMsg Radio Interoperability

The SmartMsg RIU utilizes an embedded VoIP architecture to allow for the simultaneous text and voice broadcast of alert notifications to two-way radios, push-to-talk (“PTT”) enabled devices, PCs, phones, pagers and wireless PDAs. The radio interoperable module also allows for integrated real-time communication between two-way radio talk groups, PTT groups, phones and PCs. This solution supports radios from different manufacturers, across multiple bands / frequencies and pre-defined talk groups. The RIU consists of a compact hardware appliance and a standard PC configuration, which also can operate as a standard SmartMsg server. Once a radio is docked into the RIU appliance, the VoIP architecture effectively enables that radio as a secure virtual repeater.

Codespear’s RIU consists of a reduced footprint USB “plug-and-play”, VoIP appliance measuring approximately 4” (W) x 6 5/8” (D) x 1 3/8” (H) and weighing only 12.6 ounces. The RIU is powered from a standard PC based USB connection cable, has no heat displacement or venting requirements and does not require an AC power source for operation. An RIU’s “presence” and connected agency radios are recognized automatically by the SmartMsg application. Once an agency radio, PTT capable phone, mobile, or base station console is “docked” into SmartMsg via Smart Cables (identifying the cable’s chip ID, agency owning the cable, and radio model settings), the VoIP architecture effectively enables that radio as a virtual software based repeater, given the fact that this device can now operate locally at the local incident site and / or communicate thru a wired, or wireless “IP” connection, over a SmartMsg distributed server deployment.

Codespear RIU Appliance:

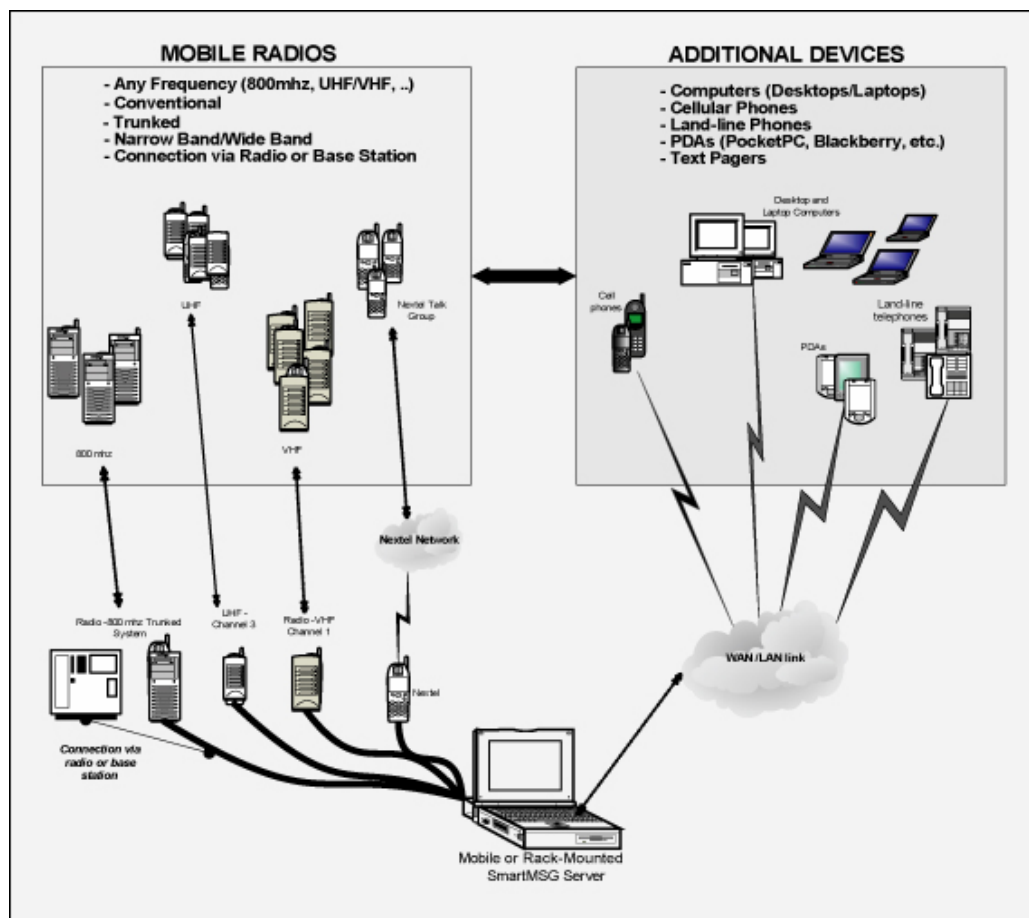


## SmartMsg Solution – Agile Mobile Configuration



### Codespear Multi-Device Communications Interoperability Deployment

The following diagram depicts an RIU within a distributed and redundant SmartMsg system, allowing communication between the PSTN, PTT capable phone network, computers and disparate radio systems. Codespear's deployment capabilities provide communications interoperability at local and / or geographically dispersed incident sites.



**Note:** Nextel is a registered trademark of Nextel Communications, Inc. All other product names noted herein are the trademarks of their respective owners.

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## SMARTMSG COMPONENTS

The SmartMsg application is built upon a distributed database and network architecture which provides reliable high volume capability through designed-in scalability, load balancing, redundancy and automated fail-over / fail-back processing. SmartMsg provides a secure, authenticated and encrypted application that can be implemented behind an organization's firewall, as a hosted system, and / or as a hybrid of the two options.

The SmartMsg interoperability solution provides for uniform alert notification across multiple devices and urgent command control communication relating to incidents and emergencies. The solution also provides for redundant, mobile and wireless operation, supporting multiple communications mediums and protocols.

- *SmartMsg Modules & Integration* – The SmartMsg architecture provides a modularized plug-in approach to achieve both specialized functionality and integration. Modules include functional areas such as: multi-lingual support, text-to-speech functions, VoIP session initiation protocol (“SIP”) dialing, radio interoperability and integration with industry standards. This modular design allows for great flexibility and vast integration options.
- *SmartMsg Alert Notification Modes* – SmartMsg can initiate alert notifications through pre-defined scenarios (templates), externally generated system events (sensors, panic switches, etc.), and thru ad-hoc intervention by an authorized user. Alerts can be generated from computer workstations, laptops and other handheld PC devices that support authenticated TCP / IP access.
- *SmartMsg Administrator Tool* – The SmartMsg Administrator Tool allows authorized users to send messages, create, modify and delete teams / groups, configure server settings and configure global settings and modules. The administrator tool also provides a view of all servers, message / event logs, users, client computers and devices, displaying online connection status. Remote administration is available over a LAN, WAN, VPN, public internet, cellular or satellite connection. Administrator functions can be accessed through installed administrator software, running in a centralized or remote access mode.
- *SmartMsg Client* - Windows client software can be installed on computer workstations to allow both sending and receiving alert notifications, editing individual device and user settings and participating in secure chat sessions. While idle, the SmartMsg client icon appears in the system tray. A user dialogue is initiated from this icon, which allows for viewing message logs, changing user settings, modifying device settings and escalation rules, initiating a chat session, sending an alert and viewing various contacts. Security settings govern the message privileges for a specific user or group. An hyper text markup language (“HTML”) web client pocket PC client and Windows Mobile5 SmartPhone client are also available.

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- *SmartMsg Dispatch Console* – Windows based Dispatch Console software can be installed on computer workstations to allow a “Dispatch Center” look and feel interface for two-way text and voice communications across users, devices and talk groups. This drag and drop interface allows the secured user to initiate alerts, “bridge” voice (radios, phones and PCs) and text devices, monitor converged users and devices in talk groups and record text and voice conversations to secure log files for incident archival.
  - *SmartMsg Scenario Manager* – Windows based Incident Planning & Execution Tool, which provides management, coordination and preparation for incidents through incident scenario planning and response plan execution tools. Scenario Manager allows for the graphical definition of "Tiered Response Plans", whereby Incident Scenarios can be chained-together, based on Incident Events and their dependencies with other Tasks, or Procedures that must be followed in a Step-by-Step, or "Decision Tree" (If -Then Logic) fashion. This integrated solution also enables "Electronic Mutual Aid", enabling secure, rules-based alerting, communication and collaboration across Federal, State & Local Agencies. Scenario Manager also aids agencies in achieving NIMS Compliance.
  - *SmartMsg GIS Module & Client* – A Windows based GIS console can be used with the SmartMsg system to send alerts based on geographical “Lat-Long” coordinates. The software allows for the configuration of area maps, which contain underlying contact information that is linked to the geographical information. A user can pinpoint an area on the map using the available mapping tools to draw circles, rectangles, freeform areas, select predefined areas or specific addresses to define the areas to alert. The area selected becomes the distribution list, which receives the alert. Supports ESRI and other industry standard mapping applications.
  - *SmartMsg GPS Client* – The GPS client is a Windows based client-side application that receives input from a NIMEA (standard) compatible serial GPS device, and outputs the results to the SmartMsg system at a specified interval. This allows the users coordinates / speed / heading to be tracked via the GIS Console application, while maintaining a connection to a SmartMsg Server. The client can be accessed via the Task-Bar to access settings and receive detailed GPS information. In addition, GPS based personnel, may also be automatically alerted based on their geographic location. “Geo-Fencing” capability is also supported.
  - *SmartMsg Radio Client* – A Windows based Radio Client Module, which establishes the interface between the USB based RIU appliance and the SmartMsg Server. An RIU’s “presence” and individual connected agency radios are recognized automatically by the SmartMsg application through the Radio Client interface. The Radio Client works in conjunction with Codespear’s Smart Cables (identifying the cable’s chip ID, agency owning the cable, and radio model settings), to automatically configure radio user security and communication settings, specific to the respective agency accessing the system.

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## SMARTMSG FEATURES

Both broadcast of urgent alert notifications and communications interoperability are essential for public safety. Today there is an abundance of communication devices available and modern technology affords a wide array of devices to fit various communication needs. The SmartMsg application has numerous capabilities to help leverage these devices effectively in order to facilitate public safety needs.

- *Full Communications Interoperability* - Integrated voice and data communication; PCs, radios and phones can communicate seamlessly. Multi-band radio interoperability with support for both one-way alerts and two-way communication.
- *Multi-Device Notifications and Communications* - Fully integrated alert notification across PCs, wireless Pocket PC, BlackBerry, cellular phones, land-line phones, pagers, video and radios.
- *GIS Map Based Alerting & GPS Tracking* – Integration with ESRI and other industry standard mapping applications enables SmartMsg system to send alerts based on geographical “Lat-Long” coordinates and GPS location.
- *Multiple Implementation Options* – Authenticated and encrypted application provides for security of confidential data with both hosted and non-hosted options.
- *Distributed Messaging Architecture* – Scalable, redundant deployment with automated fail-over; support for thousands of users across hundreds of servers.
- *Multiple Communication Mediums* – Support for public internet, WAN, 802.11b/g, 802.16, VPN, cellular, satellite and radios. A highly reliable system because it is not depend on any single communication media infrastructure.
- *Secure and Encrypted Communication* – Applicable for alert notifications, VoIP communication, radio linked talk groups and two-way text or voice communication; includes option for PIN-code authorization.
- *Active Directory / LDAP Integration* – Transparent automatic network sign-on authentication and user / group synchronization.
- *Multi-Lingual Messaging* – Real-time translation for over 12 languages for alert notifications and multi-language secure messaging, with auto-translation between users of different native languages.
- *Text-To-Speech Conversion* – Alerts and two-way communication across multiple voice and text based messaging channels, such as typed message on PC can message to PCs, phones, radios and PA system.

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- *Automated High Volume Phone Dialing* – Integrated VoIP SIP data-based phone dialing provides secure high-speed software based dialing capacity.
  - *Seamless Immediate Recovery* – Network disruptions are handled automatically thus providing transparent recovery for users.
  - *File Attachment & Multi-Media Support* – SmartMsg alerts can include file attachments and multi-media graphics, which can serve as viable back-up when email is unavailable.
  - *Alert Notifications with Integrated Links* – SmartMsg alerts can contain network file share links, web links, text / voice chat links and dial-in links.
  - *Pre-Defined Scenarios, Ad-Hoc and System Automated Alert Notifications* – SmartMsg alerts can be initiated from templates, ad-hoc generation by an authorized user or external system / event codes.
  - *Custom Response Options* – Provides for pre-defined data entry forms for custom responses, real-time data gathering, data export and acknowledgement tracking options.
  - *Intelligent Message Routing and Escalation* – Automatic routing and escalation of alert notifications based on pre-established rules profiles.
  - *Authenticated Messaging System* – Capability prevents the receipt of unauthorized and outside messages, spam or viruses into the SmartMsg Server.
  - *Secure Messaging Between Multiple Agencies / Entities* – Separate agencies and entities utilizing disparate SmartMsg systems can instantly share alerts and initiate secure communications through secure firewall connections.
  - *Real-Time User Status Indicators* – User, device and agency radio “presence” tracked across network, providing accountability and situation awareness.
  - *Video Capability* – Secure video conferencing and mobile video or picture viewing via handheld devices.
  - *Electronic White-Boarding* – Enables viewing and editing collaboration on images such as maps, floor plans, diagrams, etc.
  - *Secure Audio, Text & Video Recording and Logging* – All incident related voice, text and video events and cross-agency communication are logged and recorded for archival and incident reporting.
  - *Automated Alerts* – Data integration with external systems and sensor activity provides for urgent alerts, based on external events (motion, duress, heat, etc.).

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## APPLICATION SUITE COMPONENTS & MODULES

### Application Suite:

- SmartMsg Administration Tool
- SmartMsg Windows Client
- SmartMsg Server
- Scenario Manager
- Data Import / Export Tool
- Codespear External Video Viewer
- Dispatch Console
- GIS Console
- GPS Client
- Pocket PC Client
- Radio Client
- Security Camera Client

### Selected Module / Interfaces Examples:

- Text to Speech
- Language Translation (for both two-way communication and alerts)
- SIP
- H323
- PSTN
- SMS
- SMTP
- Pager
- Fax
- Pocket PC
- HTML
- Extensible Markup Language (“XML”)
- Incident management platforms:
  - E-Team
  - RamSafe
  - WebEOC (In Development)
- Microsoft Active Directory - LDAP
- Novell eDirectory - LDAP
- Panic Button
- Video
- Data Logger
- Sensors (motion sensors, contact switches, temperature, etc.)
- RFID
- GPS
- AOL Instant Messenger
- Common Alerting Protocol (“CAP”)
- GIS (e.g. ESRI)
- National Weather Service