



U.S. Department of Veterans Affairs

**RAXAR**<sup>TM</sup>  
TECHNOLOGY CORPORATION

**GRAIT**<sup>TM</sup>  
S Y S T E M

POWERED BY **RAXAR**  
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## GRAiT System Overview

Currently, tangible and intangible items of value (i.e. assets) such as equipment, infrastructure, employees, business documents, checklists and tasks are managed by either a legacy paper based method or an electronic asset management system. The most prominent asset management systems do an admirable job at managing one or many stages of the entire asset lifecycle, yet our basic physical and organizational structures and facilities (e.g. infrastructure, buildings, and equipment) are deteriorating at an alarming rate and businesses continue to struggle in achieving maximum return on assets (ROA).

Instead of focusing on one stage or a few stages of the asset lifecycle like the current systems in place, Raxar using the GRAiT System (**G**raphical **R**eal-Time **A**sset **I**nspection and **T**racking System), pronounced “Great System”, takes a holistic, integrated approach to optimizing the life cycle of assets beginning at a conceptual design, continuing through maintenance and decommissioning.

To begin this optimization, the GRAiT System’s mobile application enables users to easily inventory, track, inspect and maintain indoor and outdoor assets in real-time, where assets can be both tangible (buildings and roads) and intangible (contracts and design plans). Subsequently, the GRAiT System centralizes and organizes the collected information yielded from all stages of an asset’s lifecycle (figure on the right) in a unique database architecture and hierarchy. This enables different users within the same organization (ex. architects, engineers, construction and maintenance workers, management, etc.) to view and edit the same asset but only see the information relevant to them.



To further the ease of use, the GRAiT System is highly configurable, meaning that no IT infrastructure is needed to create and/or edit the system’s assets, checklists, icons and ultimately complete industry solutions.

GRAiT System leverages the latest in context and sensory technologies, a powerful secure cloud back-end, and a purpose driven user interface to offer solutions for a diverse and extensive amount of industry problems. The GRAiT System’s assets are highly configurable, automatically locatable, and instantly identifiable by sensor interfaces to offer a unique, effortless user experience.

A simple, yet powerful front-end user interface, the GRAiT System requires little to no training, minimal risk, and can immediately facilitate real-time communication and compliance amongst users, vendors, and management. The standardized data collected through inspections, quality control and organizations, is organized in a unique database architecture and can be instantly translated into highly configurable data sets, reports, dashboards and key-performance indicators. The magnitude of transparency that the GRAiT System offers its users, enables them to fully understand the quality of their assets in real-time, facilitate ROI and efficiency improvements, and ultimately make smarter decisions, faster.



## GRAiT System & U.S. Department of Veterans Affairs

### Problem

In March 2013, the VA Nebraska-Western Iowa Health Care System closed the hospital's operating room suite for about 10 weeks to perform emergency repairs to their air handling system. Facility engineers stated that the FCA identified the air handling system deficiencies at least 4 years prior to the critical failure. However, facility management delayed developing an NRM proposal to address the deficiency because it began design work to replace the medical facility in FY 2011. According to the VISN Capital Asset Manager (CAM), insufficient major construction funding delayed construction of the new facility by at least 8 years. At current major construction funding levels, construction will not begin before FY 2021. Due to the air handling system repairs, the facility is conducting risk assessments of other infrastructure deficiencies to prevent further system failures before the major construction project is completed. The facility estimated that they spent about \$2.4 million to perform 998 surgical procedures outside the medical facility during the 10 weeks that the operating room suite was closed.

In August 2013, the Martinsburg VA Medical Center found mold in an air conditioning system, which required the facility to close its domiciliary for over 5 weeks. This system was more than 10 years past its useful life. Facility engineers stated that the FCA had identified the deficient system more than 4 years before the critical failure occurred. Facility staff stated that they did not create a SCIP proposal to repair the system until FY 2013 because of competing priorities for NRM funds. The SCIP business case submitted by the facility did not highlight the safety issues associated with the maintenance need and the proposal was rejected. VA officials stated that if the safety concerns had been identified, the proposal would have significantly improved its chances for approval. The facility used emergency funds to address the breakdown, but did not address other deficiencies in the domiciliary that the proposed SCIP project would have addressed. During the 5-week shutdown of the domiciliary, the medical facility incurred about \$340,000 of hotel costs to house displaced veterans. In addition, the facility was unable to enroll 69 new veterans into the treatment programs provided by the domiciliary.

The VA's inspection and identification of deficiencies pertaining to safety and risk assessment requires a significant amount of documentation. This has traditionally been accomplished through extensive, paper-based documentation systems involving project journals, stamped plan sets, physical signatures on multiple document copies, and more. A paper-based system requires significant time and money to create, process and store documentation. In an era of instant communication, on-the-fly information access, and a tech-savvy workforce, this state of affairs is fast becoming obsolete.

### Solution

Identifying deficiencies with safety and assessing risks timely is critical to ensure VA medical facilities have enough time to correct the deficiencies before a system fails. FCA contractors are required to assign deficiency grades based on the likelihood of an infrastructure system failing but are not required to identify whether a system failure would result in risks to patient safety or access to care. VA's SCIP Board and VISN officials rely on VA medical facilities to provide project proposal to address the facilities' most significant maintenance needs. Officials evaluate the maintenance needs and approve proposed projects based on the project proposal descriptions.



However, according to a report by the VA Office of Inspector General, “Audit of the Non-Recurring Maintenance Program,” the majority of the project proposals reviewed reveal that descriptions were brief and that several were as short as a single sentence.

With such little information available, it is difficult for approving officials to quantify risks to patient safety, interruptions to care and to know the costs of alternative solutions. Although since these issues have arisen, VA officials state they have updated SCIP safety criteria and provide training to improve responses to business case safety question. However, VHA’s current NRM project prioritization process provides inadequate assurance that projects to address patient safety and access to care risks are submitted with proper documentation and approved.

As a result of VHA’s growing maintenance backlog, it is critical that the deficiencies, which have the greatest impact on patient safety and access to care, are identified, documented, tracked, addressed promptly and maintained. Without controls in place to assure patient safety and access to care issues are prioritized appropriately with proper documentation, VHA is at a high risk of unnecessary patient safety risks and potential interruptions to care to our nations’ veterans.

The GRAiT System includes all needed technologies to implement this initiative and is truly the all-in-one solution for inspecting, documenting and maintaining potential risks. Designed to serve as the up front data collection tool; the GRAiT System complements and can integrate with existing Asset Management and Computer Maintenance Management Systems (CMMS) such as CAM, CAI and SCIP. Examples of out-of-box GRAiT solutions for construction projects and the maintenance of current infrastructure include:

- Electronic photo, document, and plan management
- Mobile platform for field data collection that works online and offline
- Wirelessly connect to high precision measurement devices (RTK GPS, Total Station, Laser Measurement Devices)
- Real time model validations and as built spot checks
- Construction/Maintenance Issue Management
- Work across coordinate geometries (Lat/Long, State Plane, and Station Offset)
- Integrated communication tools (e-mail, mobile devices, interactive checklists, etc.)
- Configurable Inspections (spot-checks, periodic maintenance, etc.)
- Automated Reporting and Dashboards (ex. Electronic inspector daily reports (IDR))
- Electronic as-built drawings and quality assurance records
- Sensory technology for resource and asset tracking
- State-of-the-art Secure Collaborative Cloud Environment
- Electronic review and approval processes (digital signatures/reviews).

This system has the potential to increase the quality, efficiency, communication, environmental sustainability and productivity of the FCA assessments and the contractor’s ability to accomplish such work in a short time frame. Furthermore, according the VA Office of Inspector General, VHA’s FY 2013 maintenance backlog was about \$22.9 billion, approximately \$12.3 billion more than their current FCA estimate of about \$10.7 billion. Therefore, without accurate inspections and documentation, cost estimates are inaccurate and VHA is unable to provide reliable annual NRM budget request for resources needed to achieve their goal of reducing VHA’s maintenance backlog.

## GRAiT System & Aging Infrastructure

### Problem

The current state of VA medical facilities' infrastructure can be described as aging, inadequate, neglected which poses a risk to patient safety and access to care. VHA records show they have about 5,500 buildings with an average age of about 52 years, more than 2 years over their expected 50-year useful life. The FY 2013 FCA contains almost 57,000 poor or critical rated deficiencies. This makes it essential that VHA implement appropriate systems to inspect, track and maintain risk assessments of its maintenance issues and backlog to identify critical deficiencies and ensure that the NRM program fulfills its purpose of ensuring that VA's infrastructure is safe and efficient.

This issue presents a multitude of challenges including improving patient and staff safety, maintaining infrastructure condition, reducing cost, improving efficiency, protecting the environment, and reducing delays in project delivery.

### Solution

In accordance with recommendations set forth by the VA Office of Inspector General, procedures must be established to ensure VA medical facilities' projects address the Facility Condition Assessment deficiencies as approved under the Strategic Capital Investment Plan through thorough inspections, appropriate maintenance documentation and clear communication. Increasing project transparency and improving overall communication can address non-recurring maintenance initiatives that are not meeting milestones designated to mitigate patient risk and ensure timely corrective actions are taken. Lastly, it is imperative that universal standards for assigning risk levels to building infrastructure systems are established and reviewed by Facility Condition Assessment contractors.

The GRAiT System provides out-of-box solutions to standardize and centralize initiatives such as safety, data collection, asset management, operations and maintenance (O&M), and more. Example solutions include:

- Data Collection: real-time inventory, tracking, and inspection of indoor and outdoor assets, tangible and intangible (ex. Physical plant, high value assets, plan sheets, personnel, etc.)
- Asset Management: centralization and organization of information yielded from all stages of an asset's lifecycle; design, development/construction, qualification, operations and maintenance (O&M), retirement.
- Highly configurable data sets, reports, dashboards and key-performance indicators
- Autonomous and standardized record keeping about every asset, inspection, and/or checklist to mitigate compliance risk

## GRAiT Benefits & Features

With the GRAiT System, organizations have a plethora of key features available:

**Inspections:** This intuitive feature creates, monitors, and tracks inspections on items and/or checklists. GRAiT enables users to incorporate photos, documents, signatures, voice to text, and more to inspection items with a click of a button. These inspections over time can lead to educated decisions that can save your organization money while increasing efficiency. The ability to track vendor performance or manufacturer's quality assurance within departments is in the "palm of your hand."

**Flexibility:** Built on an Application Performance Interface (API)-based platform, the GRAiT System can integrate with your organizations current system seamlessly. Designed as a collaborative system, the GRAiT System is very configurable to the end users' needs and can be installed to meet the needs of a diverse and extensive amount of industry problems without having to program or customize. Industries include, but are not limited to, construction, healthcare, aviation, defense, manufacturing, property management, etc.

**Sensor and Geographic Information Systems (GIS) integration:** An organization's assets can be both tracked in real-time and also overlaid onto scaled blueprints or GIS maps. Users are connected to those assets through sensory technology including barcodes, GPS navigation, and iBeacon (Bluetooth sensor). Users also have the ability to find and identify individual assets simply and quickly, even when an organization includes millions of items. Lastly, high valued assets can be tracked and management is notified immediately when those assets are removed from their appropriate zone(s).

**Role based permissions:** Role based permissions allow members of multi-level clearance organizations to keep staff privy to only material necessary for their duties. This can be applied for security measures, and can also function as staff Key Performance Indicators (KPI) and accountability metrics. Furthermore, all asset information is centralized and rolls up into one organization enabling different users within different departments to ultimately see the same information.

**Risk based measurements:** GRAiT System "scheduling and notifications" engine updates the individual requirements of each asset and helps in the workflow requirements of daily operations. With all information available over the cloud for real-time analytics and reporting, your organization can stay informed about risk potentials. Hence, this gives your organization the ability to maintain quality standards by proactively minimizing discrepancies.

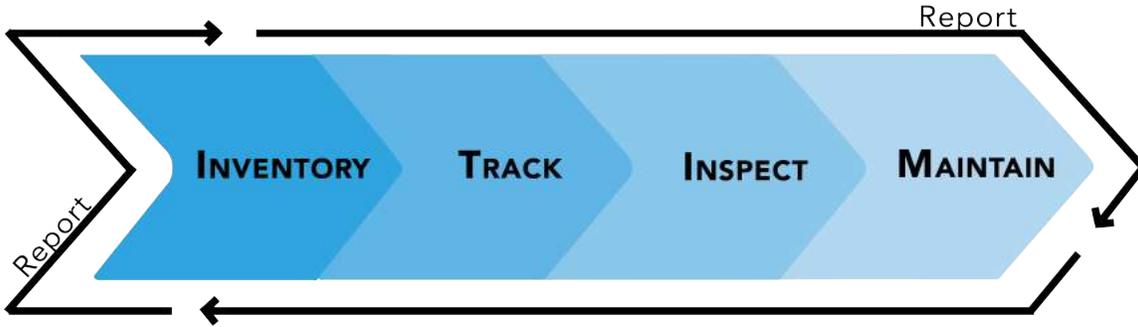
**Metrics (key performance indicators):** With the GRAiT System's status ranking ability, back-end analytics are continually measured on the overall performance condition of designated facilities. It allows the individual to be informed with alerts when assets drop below designated thresholds within specific departments. Over time, historical reporting and analytics of assets can track vendor and manufacturer performance standards. Trend analysis patterns concerning reliability, maintenance cost and depreciation are easily accessible. With such accuracy and transparency, KPIs can improve, vendor's accountability is measurable, and inferior assets can be identified and be replaced in the future.



**Security:** The Federal Information Security Management Act (FISMA) defines three security objectives for information and information systems: confidentiality, integrity, and availability, which are all, met and exceeded by the GRAiT System. The GRAiT System surpasses the federal requirements (140-bit encryption) for maintaining data integrity with its 256-bit encryption and is trusted by several large organizations including the United States Department of Defense and Department of Transportation.

**Cloud:** GRAiT System is a cloud based server system that allows all front users to communicate an organization's information from one to another instantly. Your staff will have the ability to access any asset or relevant processes from information such as stamped plan sets, design and construction submittals, user manuals, warranties, project journals, or Federal Regulations more efficiently than ever before. Additionally, with the GRAiT System, users can perform their inspections with or without an Internet connection. Even when wireless capabilities are unavailable, this ability lets the user continue their work offline, as the new information is automatically uploaded to the cloud as soon as the user accesses another point of connectivity.

**Mobile:** Current work order systems and asset management systems are slow and flawed transitioning to the mobile platform. This is generally due to two major reasons. First, the original system's software was designed for desktop hardware and now the software is being crammed into a mobile hardware device. Secondly, cloud servers are used minimally, with the majority of data storage coming from the mobile devices. Users are now physically limited to how much space their information is allotted. All previous data may not be accessible to the user, even though it is vital to their current activities. Conversely, the GRAiT System allows your staff access to all information available on their mobile device with software specifically created for a mobile device. Hence there is a lower cost and time spent training users GRAiT System's capabilities, and zero software inconsistencies upon implementation into an organization.



## Manage with GRAiT System

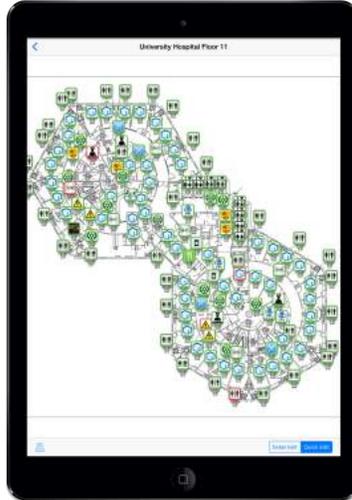
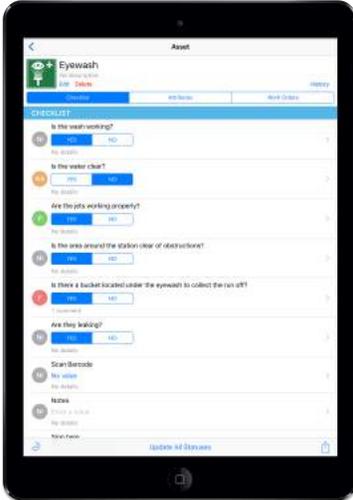
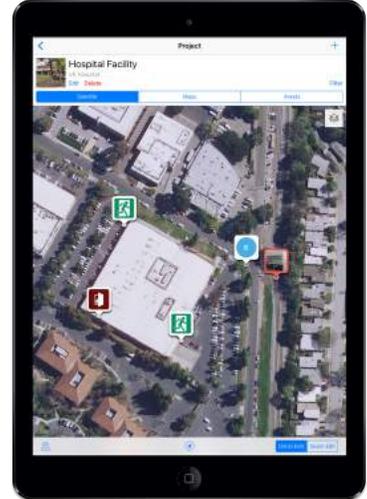
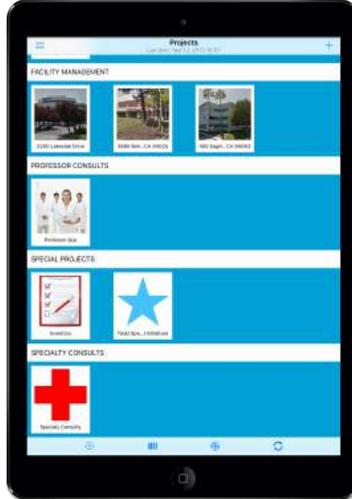
GRAiT Platform			
Highly configurable solution	✓	One location for all your assets and processes	✓
Easy integration through Rest API	✓	IT infrastructure NOT necessary	✓
Application (Mobile) and Web (Desktop)	✓	Gather data anywhere with online/offline capabilities	✓
GRAiT Features			
Asset inventory, tracking, inspection, maintenance	✓	Context & sensor driven smart actions (GPS, ODB-2, etc.)	✓
Asset specific work orders, checklists, attributes	✓	Configurable work orders and scheduling	✓
Alerts and notifications	✓	Photo and document library	✓
Inspections with photos, signatures, voice notes	✓	Real time view of assets and data	✓
Custom reports with reporting engine (NO coding required)	✓	Dashboard and chart/graph generator	✓
GRAiT Benefits			
Reduce training and operations times	✓	Facilitate Performance and outcome based measures	✓
Facilitate predictive analytics	✓	Improves reporting and analytics	✓
Increase transparency of assets and processes	✓	Reduce time in data and inventory collection	✓

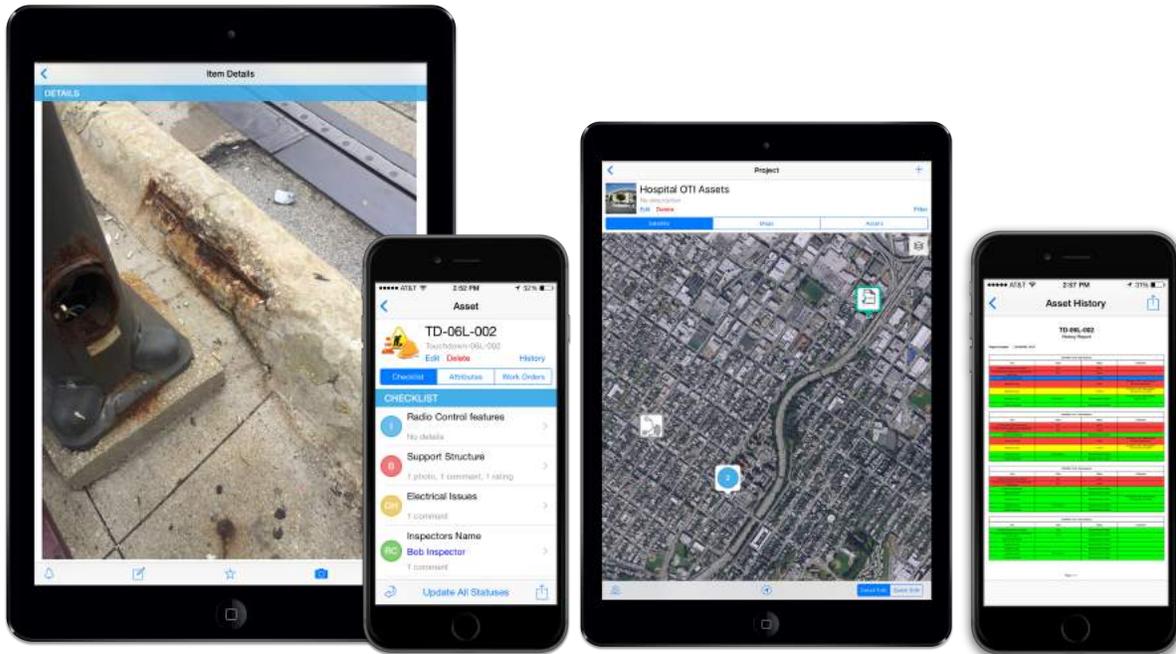
### Context Awareness

“The vision for context awareness is to expose as much of this sensory information as possible to business applications... It is something that can help people or other systems **make decisions faster**”

Chris Thompson, Senior Director, Cisco Systems Inc.

# Example Screenshots





# THANK YOU

FOR MORE INFORMATION PLEASE CONTACT:  
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