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# **A Team-based Approach to Continuous Improvement in Program, Project and Portfolio Management<sup>1</sup>**

## **The U. S. Government's Global Threat Reduction Initiative**

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### **Abstract**

The Global Threat Reduction Initiative (GTRI), financed primarily by the National Nuclear Security Administration (NNSA) within the U. S. Department of Energy (DOE), has a critical global mission to protect society from terrorist use of nuclear or radiological materials, from non-military sources, in an improvised nuclear device or bomb (IND) or radiological dispersal devices (RDD), commonly referred to as “dirty bombs.” This threat reduction effort presently comprises more than 1,000 projects in over 100 countries, including the USA. The GTRI includes portfolios of programs and projects involving many countries and organizational entities, both public and private. A broad and mature perspective is needed to develop, implement, and continually improve the management processes used for planning, authorizing, funding, executing, monitoring, reporting, and controlling such global programs. The physical results of many of these projects also require sustaining follow-up inspections, maintenance and corrective actions for the foreseeable future.

This paper summarizes the GTRI accomplishments to date, describes the complex management challenges encountered and how they have been overcome, and most importantly describes the unique Project Management Improvement Team that brings together key people from NNSA Headquarters, the eleven involved National Laboratories and national security facilities, and five independent project management experts (who are the authors of this article.) This team approach provides a model that can be useful to other large-scale initiatives involving government and industry to obtain continuous improvement of their management practices.

### **1. Introduction**

The Global Threat Reduction Initiative (GTRI)<sup>2</sup>, financed primarily by the National Nuclear Security Administration (NNSA)<sup>3</sup> within the U. S. Department of Energy (DOE), has a critical global mission to protect society from terrorist use of nuclear or radiological materials, from

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<sup>1</sup> Second Editions are previously published papers that have continued relevance in today's project management world, or which were originally published in conference proceedings or in a language other than English. Original publication acknowledged; authors retain copyright. This paper was originally presented at the 27<sup>th</sup> IPMA World Congress in Dubrovnik, Croatia in October 2013. It is republished here with the permission of the authors.

<sup>2</sup> NNSA GTRI Fact Sheet, Dec. 11 2012. <http://nnsa.energy.gov/mediaroom/factsheets/reducingthreats>

<sup>3</sup> <http://nnsa.energy.gov>

non-military sources, in an improvised nuclear device or bomb (IND) or radiological dispersal devices (RDD), commonly referred to as “dirty bombs.” This threat reduction effort presently comprises more than 1,000 projects in over 100 countries, including the USA.

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The NNSA is responsible for the management and security of the nation’s nuclear weapons, nuclear nonproliferation, and naval reactor programs.

This paper summarizes the GTRI accomplishments to date, describes the complex management challenges encountered and how they have been overcome, and most importantly describes the unique Project Management Improvement Team that brings together key people from NNSA Headquarters, the eleven involved National Laboratories and national security facilities, and five independent project management experts (who are the authors of this article.) This team approach provides a model that can be useful to other large-scale initiatives involving government and industry to obtain continuous improvement of their management practices.

### **1.1 GTRI Mission**

GTRI achieves its mission of reducing and protecting vulnerable nuclear and radiological materials located at civilian sites worldwide via three initiatives that provide a comprehensive approach to prevent terrorist access to nuclear and radiological materials. These three initiatives are:

1. **Convert** research reactors and isotope production facilities from the use of highly enriched uranium (HEU) that is relatively easy to use in a nuclear bomb to low enriched uranium (LEU) that is not usable in a nuclear bomb;
2. **Remove** and dispose of excess nuclear and radiological materials; and
3. **Protect** high priority nuclear and radiological materials from theft.

### **1.2 Accomplishments through 2012**

From its establishment in 2004 through 2012 GTRI has:

- Converted or verified the shutdown of 85 HEU fueled research reactors; removed more than 3,500 kilograms of HEU and plutonium – enough for more than 135 nuclear bombs;
- Removed and securely stored more than 775 bombs’ worth of HEU and plutonium associated with the BN-350 reactor in Kazakhstan;

- Protected over 1,500 radiological buildings around the world containing millions of curies – enough for thousands of dirty bombs; and
- Recovered more than 31,000 disused radiological sources in the United States containing more than 1 million curies.

GTRI has greatly accelerated its efforts to reduce nuclear and radiological threats since President Obama's pledge in Prague in April 2009 to secure all vulnerable nuclear material in four years. The urgency of this mission together with GTRI's track record, plus the visibility and accountability produced by the continual management improvements described below, has resulted in the U. S. Congress increasing the GTRI annual budget from \$97 million in FY2006 to \$466 million in FY2013, in spite of the great need to reduce expenditures recognized by the Congress and the Administration.

## **2. Management Challenges**

GTRI management set out to establish a well-managed, responsive, and accountable organization and to utilize best-in-class project management to improve cost and schedule performance. To meet these goals, GTRI initiated the development of a fully integrated program management process to promote organizational discipline, ensure effective and efficient use of resources, and maximize responsiveness to the mission of global threat reduction. The GTRI program office was faced with the following challenges:

1. Embracing and adapting global best-in-class program and project management (PM) practices.
2. Establishing a single program management information system in order to ensure that all projects are consistently well planned, managed and executed – with appropriate visibility to and accountability by GTRI management.
3. Integrating existing project management systems, data, and information used within a number of governmental and private organizations.
4. Integrating with the GTRI PM systems the functionality of the financial information systems in use at NNSA Headquarters in Washington DC and the eleven responsible national laboratories and other agencies<sup>4</sup> located in eight states.
5. Satisfying US governmental regulations and DOE policies and requirements for project management.
6. Facilitating budgetary and financial planning, management and reporting within DOE, to the U.S. Congress, and the Office of Management and Budget in the Executive Office of the President.
7. Providing the flexibility and responsiveness needed for GTRI management purposes.
8. Continually accelerating accomplishment of the mission while reducing its cost.

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<sup>4</sup> Albuquerque Complex, Argonne National Lab-ANL, Idaho National Lab-INL, Lawrence Livermore National Lab-LLNL, Los Alamos National Lab-LANL, Nevada National Security Site-NNSS, Oak Ridge National Lab-ORNL, Pacific Northwest National Lab-PNNL, Sandia National Lab-SNL, Savannah River National Lab-SRNL, Y-12 National Security Complex.

In addition, the program management information system had to be developed and implemented while the numerous security projects proceeded on schedule, and with a GTRI Headquarters staff that included a number of young, recently recruited professionals, many with diplomatic and institutional backgrounds rather than project management.

In early 2007, a project was initiated to develop a new GTRI Program Management Information System (Fig. 1) which became known as the G2 Project. A G2 system development team was organized, with a project manager reporting to GTRI management, comprised of representatives from various national labs and a technology development team located at the Oak Ridge National Lab (ORNL). The Project Management Institute (PMI) awarded this G2 system a Distinguished Project Award for 2010 (the first ever bestowed on a government organization), in recognition of the speed with which it was created, the uniqueness of the “Agile” development methods used in its creation, and the management usefulness of the resulting information system.



**Figure 1: GTRI’s web-based G2 Project Management System uses best-in-class business practices to manage scope, schedule, and cost.<sup>5</sup>**

<sup>5</sup> <http://www.pmi.org/en/About-Us/Press-Releases/PMI-Honors-National-Nuclear-Security-Administration.aspx>

### 3. Evolution of the GTRI Governance and Management Methodologies

#### 3.1 GTRI Organization

Fig. 2 shows the GTRI Headquarters organization within NNSA, with a total staff of approximately 40 people. Each of the three Office Directors is responsible for GTRI projects in their respective global areas, and each Office Director coordinates one of the three GTRI initiatives: convert, remove, and protect.

These Office Directors hold primary responsibilities for obtaining the necessary diplomatic agreements with the authorities in over 100 countries in which GTRI has operations, and they direct the funding and prioritization of all GTRI programs and projects within those countries. The 32 page *GTRI Strategic Plan* describes the mission, goals, structure, and expected outcomes of GTRI and outlines the fundamental strategies for achieving those goals, in compliance with the policies and directives of NNSA and the Department of Energy.



**Figure 2: GTRI Headquarters Organization, Washington, DC.**

Note: “FSU” means Former Soviet Union

Within the three Office Directorates, regional managers coordinate portfolios of projects within individual countries. Country Managers are assigned within each region with specific programs and projects assigned to technical managers at specific National Laboratories, where the technical expertise resides. The technical project teams are responsible for implementing the technical aspects of projects, while the country portfolio managers are responsible for budgetary management, diplomatic and legal coordination, oversight and program management. Local agencies and private contractors perform the field work under the close supervision of these GTRI and lab managers. An overriding concern is the safety and health of all individuals involved in the GTRI work, with strict compliance with NNSA’s established regulations for handling nuclear and radiological materials.

### **3.2 Management of GTRI Projects, Programs, and Portfolios**

While great technical progress was made in the early years, the program management processes and systems were still being developed and implemented. By the end of 2006, however, the GTRI Headquarters recognized the need for a more integrated and comprehensive program management approach and also the need for a supporting information system so that all GTRI projects worldwide could be managed more effectively.

### **3.3 Formation of the Technical Evaluation Team (TET)**

In 2007 Kenneth Sheely, as the GTRI Program Executive (see Fig. 2), created the TET to accelerate development of the 130 page *GTRI Program Management Plan*, which is updated periodically, and the G2 System, which also is continually improved to reflect user experience. (For example, in 2012 access to G2 using mobile devices was released for authorized users.) The TET was directed by Mr. Sheely and comprised two other senior people from GTRI Headquarters, one member from each of four national laboratories holding prime GTRI responsibilities, and five internationally recognized independent experts in project and program management with widely varied backgrounds (the authors). The charge to this diverse, experienced team was to critically evaluate the management concepts, processes, systems and tools in use and being developed for the GTRI, to participate actively in detailed discussions and open exchanges regarding these topics, and to provide practical guidance for both the near- and longer-term management improvements

### **3.4 The Program Management TET Reviews and Actions Taken**

Several two-day reviews were held in Washington, DC during 2007-2010. At the end of each review, a summary report with recommendations was presented to the GTRI Program Executive. GTRI considered each identified issue and implemented many recommendations, resulting in improvements in the overall program organization structure, project management documents, and maturing of the G2 system. Based on review comments, additional emphasis was placed on organizational development, delineation of roles and responsibilities, risk management, and communications.

## **4. GTRI Project Management Improvement Team (PMIT)**

### **4.1 Formation of the Team**

The TET meetings, plus annual Lessons Learned workshops that involved responsible managers and executives from the national laboratories, produced acceleration of the measurable, tangible results of the GTRI projects in all participating countries. Based on these results, in 2011 Mr. Sheely expanded and reorganized the TET as the GTRI PMIT. The 20 permanent PMIT members are Mr. Sheely plus the three Office Directors at GTRI Headquarters, one senior member from each of the eleven national laboratories and national security agencies, and the same five independent experts. PMIT members may not send alternate representatives to the PMIT meetings. Although most of the TET meetings had been held in Washington DC, the

PMIT began to meet quarterly for 2 or 3 days at one of the participating laboratories on a rotating basis.

At each PMIT meeting the host organization presents to the PMIT the details of its approach to project, program and portfolio management throughout the laboratory and specifically for its GTRI mission, and the PMIT then proceeds to carry out its charter: “Create a forum to network across labs, between labs and HQ, and between government and private industry to share successful practices to further improve GTRI management and business practices.”

The PMIT Charter spells out the process to be used:

- Bring together senior Federal executives, DOE National Laboratory leadership, and private industry to discuss management challenges and share successful practices.
- Will not score/rank lab performance/practices nor establish new requirements.
- Serve as a no-fault, non-attribution, safe forum for members to share experiences, deliver examples of successful initiatives, and provide opportunities to link participants to help one another improve their project, program, and portfolio management performance.
- Foster continual, self-driven improvement to insure that GTRI and each lab achieves the most cost-effective, timely, and measurable results and protect vulnerable nuclear and radioactive material located at civilian sites worldwide.
- PMIT members are encouraged to increase cross-communication and group-learning by openly sharing lessons – both ones that worked and the ones that didn’t work and why.
- Members are encouraged to influence change at their organizations.

#### **4.2 How the PMIT Operates**

The agenda of each PMIT meeting, which is always chaired by Mr. Sheely, and includes at least one team-building dinner, is:

- **Identify and prioritize GTRI management challenges:** This was primarily accomplished during the first two PMIT meetings in 2011. Later meetings reviewed and updated this list, which contained 15 challenges as of December 2012. While the primary focus of the PMIT is project management, any pertinent management process or practice affecting GTRI may be included.
- **Create and update the list of good management practices:** These are identified from team member presentations and action item reports. The first PMIT meeting produced a list of 5 good practices at 2 laboratories and one national security facility. The most current list cites 12 good practices. All PMIT members are encouraged to promote the adoption of these good practices in their organizations as appropriate.
- **Host organization presentations** of the current project, program, and portfolio management practices in use within the host organization, including GTRI and other projects and programs. (Usually during a working lunch.)
- **‘Open mike’ session:** Any member can present a topic, proposal, or question for information, discussion or further action by the Team.

- **Identification and assignment of PMIT Action Items:** Throughout the meeting Action Items are identified and assigned to specific Team members; due dates are typically at the next quarterly PMIT meeting. These are primarily related to the prioritized list of management challenges.
- **Updates on PMIT Action Items:** Final or progress reports are given by the responsible team members.
- **Case studies of GTRI programs** within the host organization are also presented during the meeting. Other PMIT members also present case studies related to a specific management challenge or action item.

#### **4.3 Independent Project Management Experts**

The presence of independent experts in project, program, and portfolio management on the PMIT has greatly benefitted its effectiveness. All of these team members are globally recognized authorities in this field of management: three of them have had significant experience with U. S. national laboratories or equivalent organizations in Europe; one is retired from 30 years of experience within the U.S. Department of Defense in this field, was President of the PMI College of Performance Management and advises the Government Accountability Office on program and project management; one has recently held the lead responsibility for the development of the 2012 ISO International Standard 21500 Guidance on Project Management, and also has been President of the UK Association of Project Management; and one is a widely published consultant and a founder of PMI, with experience in several industries, who has advised clients in 16 countries on four continents. Together they provide well qualified evaluation of, and recommendations for continued improvements to the GTRI management practices.

#### **4.4 Accomplishments**

Significant improvements have been achieved by the PMIT. Building on the results achieved in previous years with the TET, notable improvements have been made in GTRI's project, program, and portfolio management practices. There has been a remarkable development of effective teamwork and collaboration across organizational lines, with many examples of adoption of ideas and methods among the laboratories and the GTRI Headquarters. Significant management improvements have included:

- Engaged key stakeholders.
- Improved communications and teamwork.
- Identified and implemented process improvements.
- Shared good practices and lessons learned.
- Identified on-going issues and needs.
- Raised the profile of GTRI and project/program/portfolio management.
- Stimulated improvements and more project management maturity within the national laboratories.

The PMIT is now recognized as a best practice.

These results were achieved through:

- Implementation of leading edge project, program, and portfolio concepts;
- More comprehensive project planning and control processes;
- Improved identification and management of risks and opportunities;
- More attention to project management education, communications and team building;
- More rapid organizational project management maturity; and
- A more confident GTRI management team.

The resulting accountability and visibility has gained further support for GTRI with the U. S. Congress and the Obama Administration.

## **5. Benefits to the Global Public and GTRI**

In addition to acceleration of the reduction of the global threat, there is a consensus that the program management review process and the use of outside independent PM experts have resulted in significant benefits to the program and to other governmental and public stakeholders. These include

- Reduced risks, as the program planning has become more comprehensive with emphasis on program risk management;
- More comprehensive program and project planning;
- Program and project management policies, processes and systems more closely aligned and consistent with globally recognized project management standards and best practices; and
- Additional assurance that the conversion, removal, and protection projects will be planned, managed and completed on time, within the budgets allowed, and according to the high quality demanded for such a program.

The GTRI PMIT has proven to be a productive approach to assure continuous improvement in the management processes used on this large and complex initiative. This team approach might be highly effective for similar large, complex government-industry endeavours, including the use of independent experts as a part of the improvement team.

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