

THE PRACTITIONER

A monthly newsletter of the Energy Facility Contractors Group's
Project Delivery Working Group



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Sustainable Program and Project Management

Greetings Practitioners! Summer is almost here and its time to warm-up to your favorite summer activities, whatever that may be. Please be sure to plan safety into everything you do in your personal lives as you do in your professional life. Some may use a checklist for planning a road trip, vacation, or just a day trip to the lake or the beach. In almost all cases, your plans will include travel. Here is a link for how to plan a vacation with safety in mind, titled "[18 Tips for The Safety Conscious Traveler.](#)"

Just like the 18 safety tips in the article, we have plenty of industry focused "checklists" to help us professionally, as we travel the road to success with our programs and projects.

Today's fast paced environment often provides significant amounts of data that can sometimes feel overwhelming given the multiple tasks we manage with our program and projects every day. Fortunately we have internal policies, procedures, and management controls to help us stay focused on a compliant outcome.

When it comes to project management, we are fortunate to have additional external resources available to us to reinforce our planning and implementation approach, which can act as guardrails, helping to steer us in the right direction.

This month's *Practitioner* looks at three similar and helpful sets of project management guidance from:

- US Government Accountability Office (GAO)
- Department of Energy (DOE) 413.3
- Integrated Project Management (IPM)

GAO — To achieve desirable outcomes in meeting the Department of Energy (DOE) goals of +or – 10% within the original budget and schedule, practitioners are best served by tethering to the stable platform provided by the GAO "Leading Practices" found in the GAO-19-223 Report. "***DOE Could Improve Program and Project Management by Better Classifying Work and Following Leading Practices.***" This report includes 12 selected project management leading practices, that if implemented, increases the probability of project success. The GAO is an independent, nonpartisan agency that provides fact-based information to Congress on how to improve federal programs and policies.

12 GAO Leading Practices:

1. Establishing a performance baseline and tracking it from the beginning to the end of the project.
2. Conducting monitoring and controlling activities to measure performance at regular intervals.
3. Using an EVM system that is independently certified and continuously monitored to assess project performance.
4. Establishing a project execution plan with policies and procedures to manage and control project planning.
5. Clearly and completely defining the scope of a project so that its performance can be measured.
6. Developing a cost estimate using GAO best practices.

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7. Developing and maintaining an integrated master schedule using GAO best practices.
8. Conducting risk assessments throughout the life cycle of the project; prioritizing risks in a risk register; developing risk mitigation strategies; and determining the appropriate amount of contingency.
9. Capturing lessons learned throughout the continuum of a project in a database and disseminating them among projects.
10. Developing a root cause analysis and corrective action plan to identify and address the underlying causes of cost overruns, schedule delays, and performance shortcomings when a cost or schedule overrun occurs.
11. Conducting a variety of independent reviews throughout the life of a project, including at key decision points, and on multiple aspects of the project, such as the mission need, cost, earned-value management system, and baseline review.
12. Establishing project-reporting systems/databases to provide a clear picture of project performance to management and to keep the contractor accountable.

For the full report, follow [this link](#).

DOE — In addition to the GAO 12 Practices, DOE Order 413.3 "**Program and Project Management for the Acquisition of Capital Assets**," current version, provides a roadmap to DOE's prescribed method of project management, specifically the "Topical Areas" of Appendix C. This approach is viewed as an enhancement to ensure all stakeholders get the type of alignment that facilitates effective, efficient, and successful project delivery, on budget and schedule.

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There are 29 "Topical Areas" in Appendix C. Below are the first 10.

1. Project Management Principles.
2. Acquisition Strategy.
3. Analysis of Alternatives.
4. Baseline Clarity.
5. Climate Adaptation, Resilience and Sustainability
6. Cost Estimating.
7. Design Management.
8. Design Maturity.
9. Earned Value Management System.
10. Environment, Safety and Health Documentation Development.

For all 29 "Topical Areas" follow [this link](#).

IPM — Finally, in the May 2024 edition of the "DOE Project Management News", DOE adopts the "**...13 IPM principles based on best practices from the Project Management Institute (PMI) and the Government Accountability Office (GAO).**"

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“Integrated Project Management (IPM) is a structured approach to project execution that is enhanced by the Earned Value Management System (EVMS).”

“These principles range from establishing a culture of accountability and training for IPM proficiency to developing a detailed work scope and maintaining a schedule and budget through change control. You can learn more about the 13 IPM principles, all of which are critical for the successful management of capital asset projects, ...”

13 IPM Principles:

1. Establish a culture of shared values and accountability for project execution and self-governance.
2. Train for IPM proficiency. Effective IPM requires embedding training throughout the project lifecycle to leverage EVMS in anticipating and addressing performance variances.
3. Establish a project strategy and organization structure.
4. Establish project authorities and responsibilities.
5. Develop the schedule and establish the time-phased baseline budget plan.
6. Integrate project scope, schedule, and budget with the quality of work.
7. Authorize work for the baseline budget plan.
8. Maintain the schedule and baseline budget plan through change control.
9. Distinguish between maintaining the baseline budget plan and funds management.
10. Execute and evaluate performance against the baseline budget plan.
11. Accumulate costs for the baseline budget plan.
12. Forecast the future costs for the baseline budget plan.
13. Manage risks, make decisions, solve problems, and create opportunities by taking action.

With robust internal policies, procedures, and management controls, coupled with the external resources sampled above, projects, project managers, and contractors have a treasure trove of resources which act as guardrails, keeping your program or project on a compliant path to success!

It Is Not One World The Seven Coolest Construction Technologies for 2023

Considering that the Jetson's TV show debuted the first flying family car in 1962, it's a little disappointing that hover cars, teleportation, and other futuristic technologies still do not exist.

But even though it's not (yet) possible to teleport building materials, there are some very cool construction technology advances that we're looking forward to in 2023.

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Seven Coolest Construction Technologies

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The seven coolest construction technologies in 2023:

1. Self-repairing materials
2. Drones
3. 3D printing
4. BIM (Building Information Modeling)
5. Virtual reality in planning and design
6. Automated data collection and workflows
7. Sustainability technology

Read on to see why we think these futuristic construction technologies—that you can use today—are going to go big in 2023!

1. Self-healing Building Materials

Pothole, heal thyself.

In 2023, technologies like self-healing concrete made from fungi might not be as far-fetched as it sounds. Some technologies are being developed using bacteria or enzymes to create self-healing concrete (Concrete is estimated to be responsible for around 8% of global CO2 emissions.)

Other materials, like this synthetic construction building material developed by MIT that can strengthen and grow itself—meaning stronger and more durable structures, and longer time in between maintenance.

2. Construction Drones

Construction is already a top industry that is leveraging commercial drones to map, survey, inspect, and map worksite areas; and we think they're going to get even more broadly used in 2023.

Drones give contractors an overhead and close-up view with images and video, and collecting data with other technologies like thermal sensors and GPS tools. Advances in drone technology mean they are able to fly over building sites and install materials or components without human assistance: saving time and labor costs, reducing waste, and simplifying logistics.

Drone technology has the potential to improve safety on job sites when working in areas that may be difficult or dangerous for people to access. Drones also promotes efficiency on the jobsite because they require minimal manual labor.



3. 3D Construction Printing

3D printing has revolutionized construction technology in recent years, as new, more durable and lighter weight materials are replacing wood and stone. With the emergence of 3D printing for construction, construction workers have the capability to create forms with an accuracy and precision that was previously unheard of. This more efficient construction process helps to save time for construction projects, allowing for faster completion times.

Additionally, 3D printed construction materials are often cost effective due to the decreased need for labor and shipping costs associated with traditional construction methods. We expect this technology to become more widely available, and new building materials created, in 2023.

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4. BIM: Building Information Modeling

BIM, or building information modeling, is a resource for a common data environment that stakeholders can consult throughout the life of a project. BIM models include graphical information, non-graphical information, relevant documents, and other data that users will need to understand and carry out a project.



Using BIM allows everyone to work from the same models, which reduces errors, increases the accuracy of construction bids, facilitates better communication, and makes it easier to share audit history and other obligatory information.

5. Augmented and Virtual Reality Tools

Architects and construction workers now have access to virtual reality technology that enables them to accurately test out designs, plan projects and create virtual 3D models of their build specifications. Tools like Trimble Connect AR, for example, lets you see models onsite, in context with your mobile phone or tablet.

The virtual environment helps construction professionals in this field to undertake complex engineering tasks with stunning visuals, a wider range of materials than available in the real world and collaborative working options.

Augmented and virtual reality tools are starting to replace traditional methods like paper blueprints with interactive visualizations. It allows for a deeper exploration of the project compared to manual planning, leading to better results and a great deal of saved time. Therefore virtual reality tools are becoming essential for architects and construction workers in order to make sure that their work is planning out correctly.

6. Automated Data Collection and Cloud-based Workflows

Up-to-date information has always been critical for construction contractors: This need is as old as time. What's new is the huge volume of construction data that is being collected; and more importantly, turning all that data into actionable information that can be accessed by the right people.

The move to cloud-based construction technology like Trimble Construction One delivers connected, role-based information to different construction teams that may be in different locations and need different levels of access and types of information.

For example, with a cloud-based ERP, both accounting and project managers can see both the planned and actual budgets in real-time, so cost overruns can be spotted right away.

7. Sustainability Technology

Sustainability is a top of mind for many construction companies in 2023. Many of the cool technologies we've discussed already have the additional benefit of advancing sustainability; but there are many new technologies that make it easier to reduce emissions, waste, and use fewer resources and less energy. (The construction industry generates 39% of the world's carbon emissions.) Some of the coolest new sustainable technologies are:

- Solar panels generate power, reducing energy consumption and greenhouse gas emissions
- Biodegradable materials, like cork, bamboo, and even mycelium

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- Low-carbon cross laminated timber (CLT) is projected to more than triple in use by 2030
- Prefabrication and modular building materials, which lessen the environmental impact

It's an exciting time to be looking ahead at construction technology, even if hover-cars (hover-cranes? hover-bulldozers??) are still a few years away.

— From the [Viewpoint Blog](#)
Construction Technology/News
Posted by Charity Heller
January 3, 2023

Is your data and info **C**urrent, **A**ccurate, **C**omplete, **R**epeatable, **A**uditable and **C**ompliant[©]?

“Collaboration is important not just because it's a better way to learn. The spirit of collaboration is penetrating every institution and all of our lives. So learning to collaborate is part of equipping yourself for effectiveness, problem solving, innovation and life-long learning in an ever-changing networked economy.”

~ Don Tapscott, Canadian business executive, author, consultant and speaker

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Just for Fun: June's Notable Events and Famous Birthdays

EVENTS

- 1 — The *Superman* comic was first published (1938), and CNN made its debut (1980)
- 2 — The Civil War officially ended (1865), PT Barnum's circus made its debut (1871), and Grover Cleveland became the first U.S. president to marry while in office (1886)
- 3 — Ed White became the first American to walk in space (1965)
- 4 — The first recorded solar eclipse occurred (780 BC), World War II's Battle of Midway began (1942), and the Tiananmen Square Massacre took place in China (1989)
- 5 — The Six Day War between Israel and an Arab coalition began (1967), Sen. Robert F. Kennedy was assassinated (1968), and President Ronald Reagan died (2004)
- 6 — President Andrew Jackson became the first president to ride a train (1833), **the first drive-in theater opened in New Jersey** (1933), and World War II's D-Day began as the Allies invaded the north coast of France (1944) 
- 7 — Texas became the first state to make Juneteenth an official holiday (1979)
- 8 — The NFL and AFL announced their merger (1966)
- 9 — Donald Duck debuted (1934)
- 10 — Benjamin Franklin discovered electricity (1752), Alcoholics Anonymous was founded (1935), the ballpoint pen was patented (1943) 
- 11 — Actor John Wayne died (1979), and **the movie E.T. The Extra-Terrestrial was released** (1982) 
- 12 — The first perfect game in baseball was pitched (1880), and the Philippines declared its independence from Spain (1898)
- 13 — The Miranda rights were established (1966), and Thurgood Marshall was appointed to the Supreme Court (1967)
- 14 — The U.S. Army was organized (1775), Congress adopted the Stars and Stripes as America's flag (1777), sandpaper was patented (1834), and Walt Disney's *Bambi* was released (1942) 
- 15 — **The border between the U.S. and Canada was established** (1846) 
- 16 — The first roller coaster in America opened (1884), the Ford Motor Company was incorporated (1903), and cosmonaut Valentina Tereshkova became the first woman in space (1963)
- 17 — The Statue of Liberty arrived in New York City from France (1885)
- 18 — The War of 1812 began (1812), Napoleon was defeated at Waterloo (1815), and **Sally Ride became the first American woman in space** (1983) 
- 19 — The first Juneteenth celebration was observed in Texas (1866)
- 20 — West Virginia became a state (1863), the first jet plane was tested (1939), and the movie *Jaws* premiered (1975)
- 21 — The U.S. Constitution was ratified (1788)
- 22 — Donuts were invented (1847)
- 23 — The Secret Service was created (1860), and the anti-discrimination Title IX education act went into effect (1972)
- 24 — The Soviet Union began a blockade of West Berlin, Germany (1948)
- 25 — Gen. George Custer and the 7th U.S. Cavalry were wiped out in the Battle of Little Big Horn (1876), the Korean War began (1950), and **pop star Michael Jackson died** (2009) 
- 26 — The first U.S. troops arrived in France in World War I (1917), the United Nations was chartered (1945), and the Berlin Airlift began (1948)
- 27 — The Smithsonian Institution was established (1829), Mormon church founder Joseph Smith was killed (1844), the "Happy Birthday" song was first sung (1859), and President Truman ordered U.S. troops to Korea (1950)
- 28 — The Treaty of Versailles was signed, officially ending World War I (1919), and the first U.S. offensive of the Vietnam War began (1965)
- 29 — The Supreme Court ruled the death penalty as unconstitutional (1972)
- 30 — Daredevil Charles Blondin became the first person to cross Niagra Falls on a tightrope (1859), the novel *Gone With the Wind* was published (1936)

BIRTHDAYS

- 1 — Mormon leader Brigham Young (1801), actors Andy Griffith and **Marilyn Monroe** (1926), and Morgan Freeman (1937), model Heidi Klum (1973), and singer Alanis Morissette (1974) 
- 2 — Actor/comedian Dana Carvey (1955)
- 3 — Confederate President Jefferson Davis (1808) and TV personality Anderson Cooper (1967)
- 4 — Actress Angelina Jolie (1975)
- 5 — Sax player Kenny G (1956)
- 6 — Spiritual leader The Dalai Lama (1935) and tennis champ Bjorn Borg (1956) 
- 7 — Entertainer Dean Martin (1917), actor Liam Neeson (1952) and **musician Prince** (1958) 
- 8 — Football star and Supreme Court justice Byron White (1917), First Lady Barbara Bush (1925), actor Jerry Stiller (1929), comedian Joan Rivers (1937), and hip-hop artist Kanye West (1977)
- 9 — Sportscaster Dick Vitale (1940), and actors Michael J. Fox (1961), Johnny Depp (1963) and Natalie Portman (1981)
- 10 — Singer/actress Judy Garland (1922) and Olympic figure skating champ Tara Lipinski (1982)
- 11 — Undersea explorer Jacques Cousteau (1910), legendary football coach Vince Lombardi (1943), actor Gene Wilder (1935) and Hall of Fame quarterback Joe Montana (1956)
- 12 — President George H.W. Bush (1924), Holocaust survivor and author Anne Frank (1929), actor/singer Jim Nabors (1933), and **sportscaster Marv Albert** (1943) 
- 13 — Comedian Tim Allen (1953) and twin actresses Mary-Kate and Ashley Olsen (1986)
- 14 — President Donald Trump (1946), singer Boy George (1961) and tennis champ Steffi Graf (1969)
- 15 — Country singer Waylon Jennings (1937), actor Jim Belushi (1954), baseball Hall of Famer Wade Boggs (1958), actresses Helen Hunt (1963) and Courtney Cox (1964), and rapper Ice Cube (1969)
- 16 — Apache leader Geronimo (1829) and **boxing great Roberto "No mas" Duran** (1951) 
- 17 — Singer Barry Manilow (1946), actress Phylicia Rashad (1948), and tennis star Venus Williams (1980)
- 18 — Musicians Paul McCartney (1942) and Blake Shelton (1976)
- 19 — Baseball Hall of Famer Lou Gehrig (1903) and dancer/singer Paula Abdul (1963)
- 20 — Singers Brian Wilson (1942), Anne Murray (1945) and Lionel Richie (1950), actor John Goodman (1952), singer Cyndi Lauper (1953), and actress Nicole Kidman (1967)
- 21 — Actress Meredith Baxter and actor Michael Gross (1947)
- 22 — Singer/actor Kris Kristofferson (1936) and actress Meryl Streep (1949)
- 23 — **Supreme Court Justice Clarence Thomas** (1948) 
- 24 — Boxing champ Jack Dempsey (1895) and musician Mick Fleetwood (1942)
- 25 — Author George Orwell (1903), actor Clint Eastwood (1930) and singer Carly Simon (1945)
- 26 — Baseball inventor Abner Doubleday (1819), singer George Michael (1963), baseball star Derek Jeter (1974), and singer Ariana Grande (1993)
- 27 — Deaf/mute/blind author/lecturer Helen Keller (1880) and Bob "Captain Kangaroo" Keeshan (1927)
- 28 — Actor/director Mel Brooks (1926), **Hall of Fame quarterback John Elway** (1960), actor John Cusack (1966) and rich guy/inventor Elon Musk (1971) 
- 29 — Actor Gary Busey (1944)
- 30 — Boxing champ Mike Tyson (1966) and Olympic swimming champion Michael Phelps (1985)

Happy 4th of July!
From all of us at The Practitioner