

Delivering the Nuclear Promise with IRMMA

The **Integrated Risk Management and Mitigation Application** (IRMMA) for on-line, outage and shutdown safety risk aggregates schedule detail and logic with other plant and performance risk information, regardless of source and displays plant conditions in standard Green-Yellow-Orange-Red dashboard format with compounded risk exposure and mitigation pathways for those conflicts and risks displayed in customizable numerical weighting assignment to meet requirements of AP-913 and AP-928, past and current pending revisions.

This information is displayed on a hand held, mobile device which visually displays plant system drawings and interfaces in the current approved schedule information and related PID's. The logic and scheduling conflicts, material, part and personnel resource constraints and unplanned operational events are shown on the displayed plant system diagrams and safe shutdown system dashboards which are developed to plant license and specifications.

Touchscreen, real-time component simulation of equipment failures or changes of state bring field analysis of schedule performance as it occurs. Through the use of PRA based algorithms, constraint and barrier analysis and 'what if' scenario capabilities are enabled for the end user to determine comprehensive risk exposure and conflicts that exist in schedule logic which cannot be readily seen. Simulation of equipment failures with current plant data allows compensatory actions to be developed and optimization of response actions to mitigate the event.

Schedule development and fidelity are enhanced through being able to run full schedule scenarios as soon as the first project information is uploaded into the schedule; horizontal and vertical reviews, mitigation and compensatory action plans, resource demands and impacts from long-lead and critical parts can all be viewed and assessed through the patented analysis capabilities within IRMMA. The IRMMA platform for outage and schedule design eliminates information and program strategy silos to improve decision-making that supports shorter critical paths, cost effective operational excellence and financial predictability.

Safety

Describe how IRMMA enhances nuclear safety, radiation protection safety and/or industrial safety.

Barriers, conflicts and constraints that are identified in the earliest planning phases of schedule development using the interfaces of the tool to aggregate all risk information enables the plant to see tagging conflicts, resource scarcity and impacts to critical path and shutdown safety well in advance during the planning cycles and in real-time during execution. This information enables compensatory measures and prompt response plans to be developed and staged with very high fidelity.

During unanticipated or unplanned plant transients, the IRMMA tool can be used to run immediate plant scenarios based on the plant transient and determine the highest probable and safest pathway forward. From an outage control center or fleet perspective, monitoring of outage and schedule performance can be done whenever needed, and with endless look-ahead capabilities.

Cost-Savings Impact

How does IRMMA result in direct/indirect savings?

Knowing the impacts of resource demands, schedule conflicts and critical path / SDS profiles enables the plant to take action to eliminate or mitigate those conflicts, which results in predictable performance and reducing the need for expediting, rescheduling or deferring work and maintains defense in depth. The IRMMA platform utilizes current plant data for live analysis of Schedule Performance Index (SPI), Cost Performance Index (CPI), Resource Productivity and Project Budget tracking. This information enables plant management to develop and deploy pre-emptive (leading) mitigation strategies based on current performance information and live 'look ahead' scenario exercises.

Schedule optimization enables predictable and accurate cost and execution means, and measures, which are then utilized for PM scope reduction opportunities. Through the integration of risk assignment for critical and obsolete spares and long-lead materials, IRMMA enables the plant to know decision points for subsequent supplier notification for those items flagged by the software. IRMMA can be leveraged as a fleet supply and inventory management tool that is directly tied to project, outage and on-line dependencies on material availability and supplier delivery monitoring.

Productivity/Efficiency

Does IRMMA measurably increase employee/organizational productivity?

Schedule optimization and resource demand analysis enables decisions to be made on required work to be performed to best-industry PM strategies. Recognizing this and putting in place strategies and schedule logic in the planning phases better positions the plant to execute the schedule as designed, but with the ability to monitor changes in performance from a fully aggregated risk assessment.

Maintenance planning, Just-in-Time training and pre-job brief information, demonstrations and multiple file types (.wav, .jpeg, others) can be integrated to ensure plant personnel are appropriately prepared prior to doing work, or as a means to ensure compensatory measures and work plans / procedure steps are practiced for efficiency. The IRMMA platform is enabled such that photos, videos and taped instructions can be accessed as the plant would enable.

Innovation

Is IRMMA innovative in addressing a problem?

This technology is leading edge and currently deployed both in the US and internationally and in other energy sector industries. The platform brings plant system and interconnection drawings into a visual and interactive platform for immediate analysis and solution identification based in logic and modeling based in PRA methodology.

Two patents exist for the technology, with additional pending; IP for the outage and shutdown safety modeling is intellectual property owned by American Mergers & Manufacturing International, with additional platform IP secured for adjacent applications.

Sustainability

Is the change sustainable? Does IRMMA provide an on-going benefit.

Yes; the IRMMA platform maintains information in archives and supports outage and schedule baseline fidelity, historical maintenance resource data and can be integrated with industry information for optimizing maintenance which drives critical path scoping, baselining and capital project cost controls. The current work planning standards for the industry are fully enabled with direct impacts on knowledge retention initiatives, lessons learned and automating the now labor intensive efforts to scope, plan, develop and execute project and work schedules.

This platform is developed and supported through a teaming agreement in place between AMMI Nuclear and Atkins Engineering and meets the requirements of 10CFR50 Appendix B.