

Managing Piping Assets

Software Automation



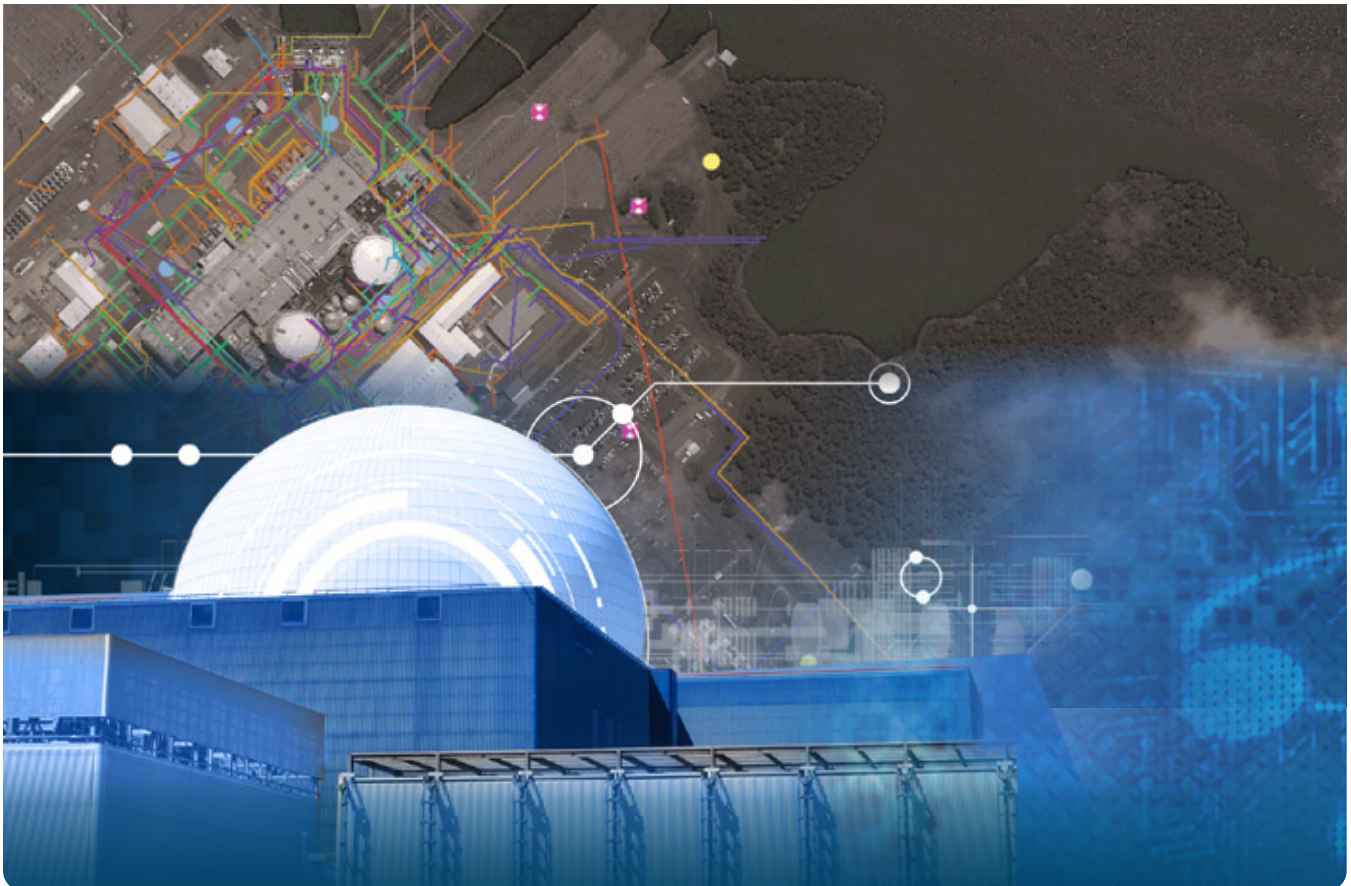
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Driving Forces for Digital Transformations:
Paper Reduction (68%)
Online Training (54%)
Risk Management/Prediction (39%)
Social Media Integration (63%)
IT Automation (50%)

From Tech Pro Research, %'s reflect rate of respondents who believe digital transformation will significantly impact indicated categories.



A fundamental tenant of engineering is that where inefficiencies exist, innovation is next. This is especially true in the ongoing era of digital transformation, as software-based automation eliminates mundane, trivial tasks and enables increased focus on value-add activities. A recent poll of workers in the tech industry found that 70% of their respective companies have either committed to or are

developing a transformation strategy, with varying emphases (see sidebar). The energy sector is no stranger to these innovations, and while the pace and scope of digital transformation may not appear to match that of driverless cars or moon rockets, its societal impacts are comparably widespread.

Historically, SI has been recognized as a leader in highly technical subject matter areas such as fracture mechanics, material degradation, and nondestructive examination. In many cases, this expertise is aided by digital or software innovations that enable efficient data handling, novel computer aided visualizations, and dynamic performance of complex calculations. In this vein, our MAPPro software is designed to aid in management of aging piping assets and has been an integral resource to the nuclear industry since its inception in 2009. In the period since, the software has supported asset owners in performing sophisticated risk analyses, managing and planning inspections, and prioritizing actions to maximize value and minimize cost. Select examples include an innovative compilation of data layers that helps plan inspections by identifying areas of concern based on a multitude of variables (Figure 1). Inspection planning is further aided by using GIS to effectively stack said layers to view planned inspection locations and eliminate redundancies (Figure 2).

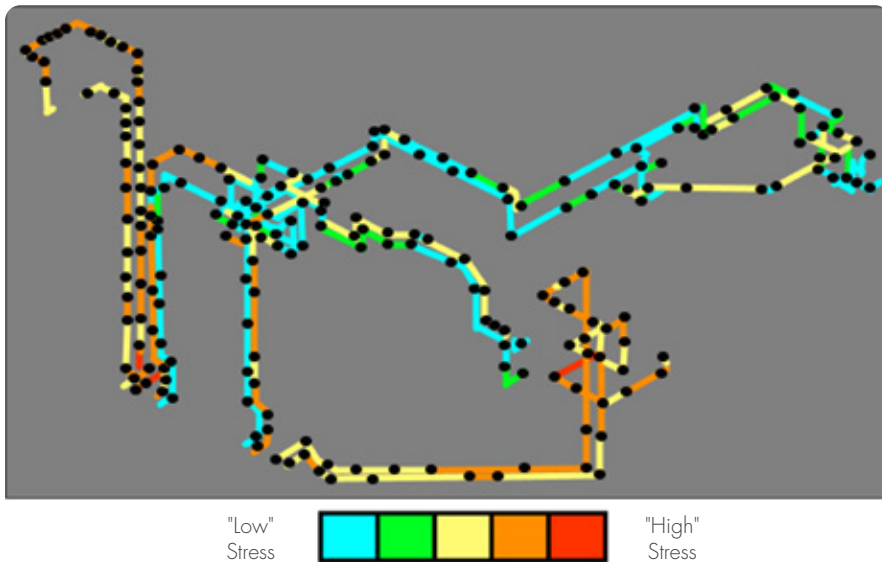


FIGURE 1. Risk and Stress Value Layers

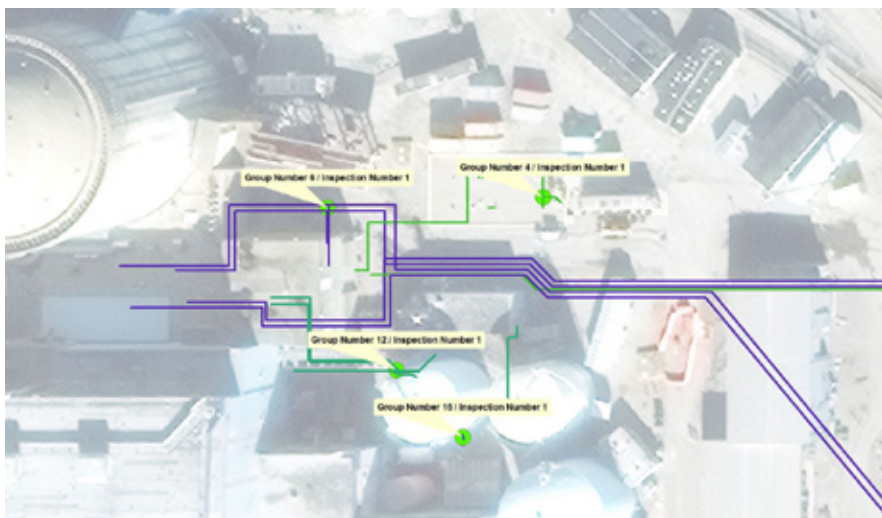


FIGURE 2. Inspection Grouping in Action

Recognizing the industry trend toward broad digitization, SI recently made significant investments in the MAPPro platform, transitioning it from a desktop application with a fixed toolset to a web-based platform with a significantly upgraded toolset and extensive customizability. The new user interface is simple and intuitive while maintaining all existing functionality. A growing number of tools and features are being added to simplify recurring tasks and encourage use beyond the traditional buried piping engineers.

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Examples of these new / upgraded features in MAPPro Version 4.0 are as follows:

- Widespread access to MAPPro’s data management and visualization features (read-only access can be granted to virtually anyone within a given domain).
- Easy import and population of tabular data for multiple locations / segments via new Microsoft Excel integration.
- Calculate piping fitness for service per applicable guidelines (e.g., NEI-09-14 Appendix-C), incorporating inspection results and corrosion projections.
- Efficiently store and retrieve inspection reports and results (including grid based NDE data).
- Automatic software updates occur in the background (nothing to install, ever!)

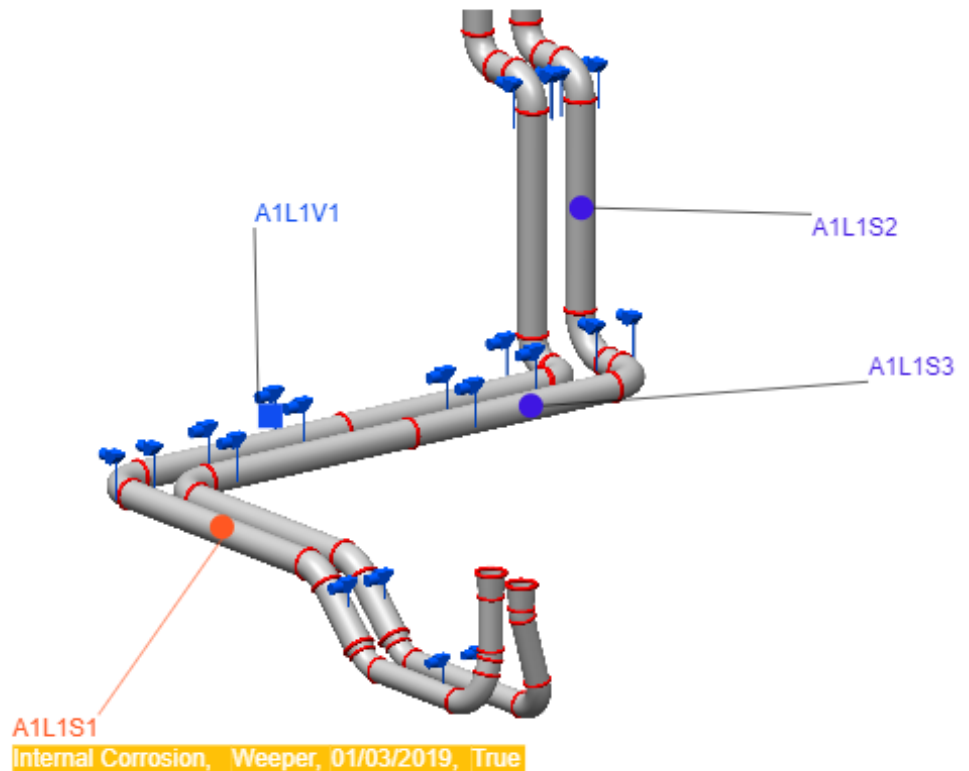


FIGURE 3. Forthcoming MAPPro Pipe Builder Tool

We’re proud of the enhancements made thus far and we have big plans for additional tools and features to make MAPPro the ultimate platform for management of piping systems. Most of our development plans are directly in response to feedback or suggestions from our user community.

One upcoming feature that we’re so excited about we can’t keep it a secret is our new Pipe Builder tool, which enables users to graphically add components to the MAPPro database piece-by-piece. This is a significant departure from the historical approach, which required SI to “digitize” information from existing drawings or stress models and provided an updated database image.

Now, individual pipe segments can be defined and graphically selected, then associated with various inspections or findings (see Figure 3). This approach streamlines communication by allowing anyone (i.e., engineers, technicians, managers) to reference the “location” of leak in an intuitive, repeatable fashion. The tool flexibly supports import of individual pipes / lines or more complex assemblies, and seamlessly handles back-end associations of inspection records, a process that was significantly more-involved under the historical approach which led to Figure-2. The resulting data can then be queried by various analytics libraries to make informed predictions about component / system life and future inspection needs.

SI’s goal for MAPPro development is simply to equip piping asset integrity management engineers with a robust platform to simplify common tasks and empower advanced decisions. We are actively engaged with numerous clients to support the upgraded platform and implement some of the new features, and we welcome all MAPPro users to engage with SI for that continued support. If you have any questions on these efforts or would like a demonstration of how MAPPro can help you accomplish your program objectives, please contact Adam Roukema (aroukema@structint.com or 303-542-1434).