that display the status of the work in the field using colors to demonstrate percentage complete for each area that was tracked. With all the issues and metrics in one database, the team was able to forecast completion dates and resolve issues quickly.

Also, Children's Hospital Los Angeles used the technology to develop reports to create transition plans while also detailing the workflow, including maps with various paths of travel, specific spaces important to workflow, placement of hospital equipment, fire and life safety equipment, and building access for staff, patients, and family.

Multiple time studies were conducted to produce minute-by-minute logistical plans for moving patients. The findings helped make the decision to relocate all patients in one day using four simultaneous routes, and ensure one main connection corridor did not become impacted. The move also included a place for families to gather as loved ones were relocated; visitors were also able to receive information that included the exact time-frame a patient would be moving.

When the day came to move the patients, the technology ensured a safe move of 197 patients within eight hours. Being able to relocate patients in one day resulted in significant savings in terms of staff resources.

TEAM AWARD

Kaiser Permanente
www.kaiserpermanente.org
Oakland, Calif.

Founded in 1945, Kaiser Permanente provides high-quality, affordable healthcare services to 8.6 million members in nine states and the District of Columbia. Kaiser's in-house design and construction team—NFS (National Facilities Services)—manages one of the largest healthcare building programs in the United States with a 10-year construction budget of $22 billion. The group also develops and uses intelligent technology to improve and support the design and construction of its large complex construction projects.

Kaiser Permanente is currently managing the construction of multiple hospital medical centers, including four in California: Fontana, Oakland, San Leandro, and Redwood City. The challenge? Managing the projects, which involves many regulatory agencies, hundreds of people, and thousands of documents and spreadsheets—all within a unique contractual environment. Different contract agreements were used to manage construction costs. Fontana followed a CRFF (cost reimbursable fixed fee) incentive-based contract, while the other locations used the more common GMP design-assist project contract. How did Kaiser Permanente manage all the documents and contract data? Through the use of technology.

Enter CAMS (Construction Analysis & Management System). The software tracks subcontractor SOV (schedule of values) using CSI Master Format and sets a target quantity and fixed unit cost for each sub and work type. The system also stores invoice costs and quantities, which allows users to create projected final costs for each work type. Also, with CAMS, the team is able to track budgets and contracts, match change order to SOVs, access drawings, and generate documents.

TECHNOLOGY TEAMWORK

In route to winning the team award, Kaiser Permanente assembled an impressive group of companies, made up of technology providers, subcontractors, general contractors, architects, and more.

AECOM	Marelich Mechanical
Autodesk	McCarthy Building Cos.
The Brady Co.	NBBJ
Control Air North	Pan Pacific Plumbing
Degenkolb Structural	Performance Contracting
F.W. Spencer	Profitable Solutions Institute
HMC Architects	Redwood Electric Group
HOK Architects	Rudolph & Sletten
HTS	

In addition to CAMS, Kaiser Permanente also uses FreightTrain from HTS (Healthcare Technical Services), www.freighttrain.com, Los Angeles, Calif. The technology is used to monitor the inspection success rate of each prime subcontractor as well as manage outstanding issues, the architectural punchlist, and commissioning deliverables.

CAMS and FreightTrain have allowed the owner to realize a number of benefits. For example, the combination of the technology allows Kaiser to mitigate risks and control contract and cost issues with all projects. The system collects data, and management can track change orders, expected values, and negotiated savings. Managers can also automatically generate projected final costs for each work type and generate detailed subcontractor report cards and analytics.

Kaiser Permanente has high standards for its subcontractors. For example, it has established a 90% inspection success rate for all subs. On one project, when contractors fell below the metric, they were required to implement corrective action to increase onsite quality until they were back at a 90% success rate. This has led to an inspection success rate of 98% for more than 8,800 inspections.

The organization has also seen significant ROI (return on investment) since implementing the tech on the projects. Fontana is currently on track to complete construction nearly eight months ahead of the original schedule and $120 million under budget. The schedule completion and cost improvements for the other locations will be documented as the projects approach completion in 2014.