

Turner International Middle East

Turner International Middle East uses Prolog® Manager to manage risk and reduce delays during construction of the world's tallest building: Burj Khalifa in Dubai, UAE

Company Background

Turner Construction Company is recognized as the leading general builder in the United States. During 2009, Turner completed US\$8.2B of construction. Turner is the only builder offering clients a nationwide network of offices across the U.S. Founded in 1902, the firm is a subsidiary of HOCHTIEF, a publicly traded company and one of the world's leading international construction service providers. According to Engineering News Record's 2009 "Top 400 Contractors Sourcebook," Turner is the leading builder in the healthcare, education, correctional facilities and commercial office markets and second in sports. The firm is also a leading builder of multi-unit residential buildings, airports and hotels, motels and convention centers, as well as a leader in the entertainment, pharmaceutical, telecommunications, religious and cultural, government and industrial facilities markets.

Turner International LLC, founded in 1965, is a subsidiary of Turner and is responsible for Turner's activities in Asia, Europe and Latin America and the Caribbean.

Internationally, Turner offers clients program, project and construction management services, including specialty services in predevelopment and material procurement.



Internationally, Turner operates in the same market segments as the Turner Construction Company; Turner provides their clients with the accessibility and support of a local firm with the strength, stability and resources of a global corporation.

Turner has been operating in the Middle East since 1975 and in 2006 teamed up with Dubai-based global property developer Emaar Properties PJSC to form a new entity - Turner International Middle East (TiME) - to jointly tap regional growth opportunities. Turner's current presence in the Middle East and North Africa (MENA) region includes the United Arab Emirates (UAE), Saudi Arabia, Egypt, Kuwait, Qatar, and Senegal.

TiME currently manages a project volume valued at US\$32B, including Burj Khalifa in UAE. Located in the heart of Downtown Dubai, the Burj Khalifa is the "crown jewel" of the 500-acre mixed-use development. After six years of construction, Burj Khalifa was successfully completed in January 2010 with homes and offices handed over in the tower.

Turner International Middle East

“ We consider Prolog Manager to be a reliable solution. It would fulfill all of our business needs on the project in terms of managing the documents, securing the data and meeting our reporting requirements.”

Tareq Al Masri, PCS Manager
Turner International Middle East Ltd.

Turner Takes on a Lofty Project

Turner took on a lofty job when they were awarded the role of project manager on Burj Khalifa. When construction was complete, the building would stand 828 meters tall and feature 160 stories of hotel, residential, retail and office space. The massive landmark project would require a great deal of coordination, and Turner was tasked with serving as the mediator between the building owner and all other parties on the job. The project engineers, consultants and construction management firms (contractors) all fell under Turner's oversight.

To track and manage the hundreds of thousands of documents that would be generated by the multi-billion dollar project, including submittals, requests-for-information (RFIs) and drawing packages, and reduce the risk of project delays, Turner needed a strong document management solution with flexible reporting capabilities. "The solution had to be capable of handling six years of records and a big number of different jobs within the overall project," explains TiME Project Control Systems (PCS) Manager, Tareq Al Masri.

The standard construction project management solution for Turner Construction Company and their subsidiaries, including TiME, was Prolog Manager. Turner's experience with Prolog Manager made it an obvious choice for the present project. "We consider Prolog Manager to be a reliable solution," Al Masri states. "It would fulfill all of our business needs on the project in terms of managing the documents, securing the data and meeting our reporting requirements."

A Swift Prolog Software Implementation

Implementing Prolog Manager on the Burj Khalifa project was swift due to Turner's expansive experience with the project management solution. Although the contractor purchased the project's Prolog software licenses, which is standard protocol in the Middle East, it was Turner's responsibility to implement and administer the software. "The technical implementation was very easy," Al Masri says. "Configuring the software to establish procedures for the documentation management processes took a bit more time. Yet all of this was achieved within a couple of weeks."

Turner took advantage of Trimble's Middle East resources to jumpstart training efforts, before bringing additional training in-house. "In our experience," explains Al Masri, "Prolog Manager operates easily and requires minimal back-of house support once the software is up and running. Eliminating ongoing support minimizes headaches."

While Prolog Manager was being implemented and configured, Turner tracked early documentation using Microsoft Excel logs. Once the project management solution was up and running, the Excel data was imported into Prolog Manager to create a complete project record, from design to closeout.

Reducing Risks and Project Delays

At the peak of Burj Khalifa construction, the project's total internal and external Prolog software users reached 175. Turner relied heavily on Prolog Manager's Document Management module, which was the primary Prolog software application used on the project, to ensure that the consultants and contractors communicated effectively. Turner handled much of the data entry, logging documents such as submittals and RFIs, monitoring response times and ensuring that drawing changes were distributed in real time.

"Our job as project manager is to try and avoid delays," Al Masri states. "Prolog Manager helped us to do our job in terms of following all the respective parties, making sure that documentation was flowing smoothly between them and rectifying situations before they caused delays." The threat of delays often arrived when a document needed to be reviewed by a second party. For example, a contractor might submit an inquiry that would need an action or response from the

consultant. Prolog Manager provided visibility into these interactions, which allowed Turner to step in and keep construction moving.

Early in the project, Turner established 21-day cycles for turning around information, such as submittal reviews. Over time, however, the logs and reports in Prolog software indicated that actual turn-around times were often significantly less than required. Armed with this information, Turner was able to reduce submittal approval cycles to just 10 days, thereby accelerating the schedule during a critical time in the project.

"Every project experiences delays at certain stages," Al Masari says. "By analyzing the logs in Prolog Manager, we were able to propose different ways to handle documentation. This was very helpful for speeding things up." Toward the end of the project, Turner leaned even more heavily on the Prolog Manager logs, using them on a daily basis to stay on top of the project and generate reminders to the contractors and consultants regarding outstanding issues.

Powerful Reporting Improves Accountability

Prolog Manager's reporting capabilities were also of significant benefit to Turner as they juggled their many responsibilities, including accountability to the project owner. "Prolog Manager is a very powerful reporting tool that we utilized in our presentations and in our management support," Al Masri says. In addition to basic reporting features, the software allowed Turner to create comprehensive, graphical accounts of the project's status. "Those kinds of custom reports were implemented at the beginning of the project, and we're still using them today."

Turner also utilized Prolog Manager's reporting features to analyze data during project disputes and claims. Having a historical record of the project, complete with documents, dates and responses, provided clarity around most issues to quickly put them to rest.

Turner International Middle East Project Profile

Burj Khalifa located in Dubai, UAE

Burj Khalifa is the "crown jewel" of the 500-acre mixed-use development, Downtown Dubai. At 828 meters, Burj Khalifa is the tallest building in the world. The 160-story tower has 185,000 square meters of residential space (1,000+ apartments) and more than 28,000 square meters (49 floors) of office space. Additionally, the tower contains the world's first 160-room Armani Hotel, in addition to the world's highest swimming pool, located on Level 76. Burj Khalifa also boasts the world's highest observatory deck with an outdoor terrace, on Level 124.

The total cost for the Burj Khalifa project was about US\$1.5B, with the entire Downtown Dubai having a development value of US\$20B. Burj Khalifa was designed to be the centerpiece of the development, which also includes The Dubai Mall, the world's largest shopping and entertainment destination. At the peak of construction, more than 12,000 people from over 100 countries were working on site. In total, 22 million labor hours were required to complete Burj Khalifa.

Owner: Emaar Properties PJSC

Project Manager: Turner International Middle East

Architect: Skidmore, Owings & Merrill, LLP

Project Start Date: January 2004

Project Completion Date: January 2010

Project Cost: US\$1.5B

Turner International Middle East

Prolog Software Keeps Turner on Target

Burj Khalifa, the world's tallest building, also features At the Top, Burj Khalifa, the world's highest observatory deck with an outdoor terrace, located on Level 124, providing breathtaking, unobstructed views of the city, desert and ocean below. An accomplishment such as this one is never without its challenges. But the right team, buoyed by the best software, helped bring the project to completion.

As Turner looks to its next international project challenge, they will naturally look to Trimble for technology solutions. Al Masri anticipates that Prolog Converge, which wasn't available when Burj Khalifa broke ground, will improve collaboration on future projects. "At the end of the day," Al Masri states, "Prolog Manager was a powerful tool that provided us with an automated system for real-time document management and put information at our fingertips. With Prolog software, we reached our target, which was to successfully finish the project."

Notable Features

- The Dubai Fountain, the world's tallest performing fountain, which is illuminated by 6,600 lights and 50 colored projectors, and shoots water 150m (490ft) into the air while playing music
- At the Top, Burj Khalifa, the world's highest observatory deck with an outdoor terrace located on Level 124
- Burj Park, the 3-hectare island set on the 12-hectare Burj Lake; at the heart of the park is a 1.5 hectare green park

The opening of Burj Khalifa was held on January 4, 2010. The ceremony featured an array of fireworks, choreographed light, sound and water displays and a short film depicting the evolution of the landmark building. In June of 2010, the Council on Tall Buildings and Urban Habitat recognized Burj Khalifa with the 2010 Best Tall Building Middle East & Africa award. Later that year, Burj Khalifa won the award for best project of year at the 2010 Middle East Architect Awards.

“ Our job as project manager is to try and avoid delays. Prolog Manager helped us to do our job in terms of following all the respective parties, making sure that documentation was flowing smoothly between them and rectifying situations before they caused delays. ”

Tareq Al Masri, PCS Manager
Turner International
Middle East Ltd.

NORTH AMERICA
10368 Westmoor Dr.
Westminster, CO 80021
buildings.trimble.com



www.trimble.com