

## Prolog On-Campus University Program Case Study: Lafayette College



### Lafayette College Utilizes the Prolog® On-Campus Program to Create Realistic Project Management Simulations that Better Prepare Students for Careers in Construction

Lafayette College was founded in 1826 by citizens of Easton, PA, and named for the Marquis de Lafayette in honor of his “talents, virtues and services in the great cause of freedom.” The liberal arts college offers Bachelor of Arts degrees in 32 fields and Bachelor of Science degrees in nine fields of science and four fields of engineering. The academic facility’s vibrant, 340-acre campus serves nearly 2,500 students and over 200 full-time faculty members. The Lafayette Experience allows undergraduate students to achieve the future they imagine by taking advantage of unique opportunities to customize their learning.

As part of Lafayette’s engineering programs, Associate Professor of Civil and Environmental Engineering, David Veshosky, Ph.D., teaches two construction-related classes: a Project Management course, which is taught each fall and is required for all civil engineering majors, and a Construction Management elective, which is taught every other spring.

To enrich the students’ learning experiences, Veshosky and other Lafayette professors frequently incorporate state-of-the-art, industry-related technology into the curriculum. Project management, scheduling, cost estimating and computer aided drafting (CAD) are some examples of software used in the engineering programs.

“We want our students to be technologically capable when they go into their field of professional practice,” Veshosky says. “We also use software in our classes because it allows us to give the students more real, challenging problems.” In his classroom, for example, using software to complete an assignment involving a change order that delays the project schedule by two weeks provides a more realistic experience than completing that same assignment theoretically on paper.

### A Market Demand for Prolog Experience

Veshosky had been using Oracle’s Primavera Project Manager and Expedition software for both scheduling and documentation in project management simulations. But feedback from several large construction firms that regularly recruit Lafayette College graduates prompted him to consider using Prolog Manager from Meridian Systems for some assignments. “Companies like Turner Construction were telling us that Prolog is better and more widely used for project management than Expedition, and that it would be helpful if our students had Prolog experience,” he explains.

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Meridian has a long history of providing free project management software to educators and their students through the Prolog On-Campus University Program, which gives colleges and universities online access to Prolog for use in the classroom. After contacting Meridian's education department, Veshosky and Lafayette's Director of Engineering Computing, Rebecca Rosenbauer, submitted the necessary paperwork to utilize Prolog through the program. With very little effort, Veshosky had a new teaching tool that would give the college's engineering students valuable exposure to the industry standard project management program.

### Easy to Deploy, Intuitive to Use

Nearly 30 schools across the country participate in the Prolog On-Campus University Program, which deploys the software via ProjectTalk, Meridian's Web-based version of Prolog. Meridian hosts the software, and handles all aspects of maintenance, so there is nothing to install or implement on the college or university servers. Professors and students simply access the program from any computer with Internet Explorer and an Internet connection.

As part of the program, Meridian provides instructors with a step-by-step training manual that outlines how to use Prolog as a collaborative project management tool. Instructors are also invited to attend Meridian's Prolog training course free-of-charge, which can help them better utilize the tool in the classroom.

"Meridian gives us a portfolio number, secure login and a preloaded sample project," Veshosky says. "After spending a couple of lab periods showing my students the software, I take them through that sample project to let them see how it is set up. Then I have them set up the simulated project that we utilize for our assignments."

Veshosky is careful to point out that his focus isn't on training his students to use the software. Instead, he introduces the software as a tool for helping his students solve problems. "Prolog is fairly intuitive and user-friendly," he says. "So when my students have questions about how it works, my response is, 'You're engineers, figure it out.'"

### Hands-On Experience with Construction Context

According to Veshosky, using Prolog in conjunction with project management assignments helps him teach students specific processes, such as how to create and answer a request-for-information (RFI) or execute a

change order, from both a contextual and experiential perspective. "I want them to understand these processes in terms of steps A, B and C," he explains, "but also how each step affects the organization and its project delivery system."

To mimic a project team environment, Veshosky breaks his student base into groups of four or five people who must work together to solve problems. For both of his classes, he uses detailed project simulations that utilize Prolog and other software. For example, an assignment might revolve around Project A, which involves construction of a warehouse using tilt-up construction methods and 10 activities scheduled for specified durations. The students are assigned a role, such as construction manager at-risk, and given a specific list of subcontractors on the project.

"When you start to understand the context in which project management takes place and experience things that are taken for granted on the construction site," Veshosky says, "you begin to truly understand the problem solving and communication skills that are required to complete the task. Understanding critical path scheduling is pretty straightforward. But understanding some of the tradeoffs involved, such as the length of the schedule, the number of resources available and the legal or regulatory issues, requires a context that is readily provided with programs like Prolog."

### Benefits for All Stakeholders

After completing his first project management course using Prolog as an instructional aide, Veshosky is convinced that Meridian's Prolog On-Campus University Program delivers value to all of Lafayette's stakeholders.

**Students.** The ability to add Prolog as a software skill to a student's resume opens up more opportunities for summer employment and permanent placement after graduation. "Prolog enhances the students' understanding of what a construction project is really like, which helps them succeed as engineers."

**Professors.** For Veshosky, Prolog allows him to create a richer learning environment. "Prolog is an industry leading program so it obviously reflects what people in construction are actually doing. From my point of view, that makes it easier to assign my students more realistic and complex problems."

**College.** The college benefits by building a reputation for delivering the quality education needed to thrive in today's job market. "The students getting better jobs today will spread the news as Lafayette alumni."

**Employers.** And for employers like Turner Construction, Whiting-Turner Construction and Clark Construction Group, the Lafayette graduates they hire will be better prepared to enter the workforce. "I think companies benefit by hiring our graduates because they don't have to spend a lot of time bringing them up to speed on the technology they have in place."

## An Excellent Educational Experience

Speaking for himself and the students who were fortunate enough to participate in his first project management course enhanced by Prolog, Veshosky says, "We had an excellent experience." As he creates more project management and construction management assignments that utilize the program, he remains optimistic. "Getting to know Prolog is good for our students," he states, "and I'm very pleased with the ProjectTalk deployment."



### Lafayette College Project Simulation

#### Warehouse and Office Located in Pennsylvania's Lehigh Valley

Working in small groups on a simulated project, students in Professor Veshosky's Spring 2010 Construction Management course assumed the role of Construction Manager At-Risk when they were "awarded" the contract to build a warehouse with attached office space in the Lehigh Valley area of Pennsylvania. After providing his students with details about the project, and using various assignments and software to guide them through project planning, cost estimating and contract negotiations, Veshosky created a project scenario that required the use of Prolog to create a change order and document a request-for-information (RFI).

**Students' Role:** Construction Manager At-Risk

#### Simulated Project Elements

- ▶ 150,000 sq.ft. warehouse constructed using concrete tilt-up walls
- ▶ Attached 3,800 sq.ft. office constructed with concrete blocks
- ▶ Site work and landscaping
- ▶ Excavation of the foundations for the columns and walls
- ▶ Paving for roads and parking

**Type of Contract:** Guaranteed Maximum Price (GMP) of \$9M

#### Assignment Examples

**Change Order No. 1** – The owner agreed to a change order that would add a cold storage area to the warehouse. The students were required to document the process in Prolog, and revise the schedule and budget to reflect the change.

**RFI No. 1** – To plan portable toilet placements on the job site, the landscaping contractor submitted an RFI that asked how many portable toilets would be brought in during construction. Keeping OSHA regulations in mind, the students had to calculate how many toilets were required and determine the lowest cost arrangement for providing toilets for the site. They also had to respond to the landscaping contractor's RFI and document the entire process in Prolog.

**Teaching Tip:** To keep the students interested and engaged in the project and corresponding assignments, when applicable, Veshosky incorporated local references into his project simulation. For example, since Lafayette's team mascot is the Leopard, he called the project owner/developer 'Pard Partners.



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