Seven Shades Of Yes – Transformix Engineering

The day was bright and sunny at Itapolis, a municipal town in the state of Sao Paulo in Brazil. It was a contrast to the sub-zero temperature of Kingston, a municipal town in the province of Ontario in Canada. But, Peng-Sang Cau knew that the meeting to take place soon at Itapolis with her counterpart, a senior director from the European head office of a multinational enterprise, would be cold, like the weather back home.
As CEO of Transformix Engineering Inc, a Kingston based industrial automation company, Cau had been a frequent visitor, of late, to Itapolis. Transformix was in the middle of carrying out a $30 million project for the Brazilian operations of the European multinational. The project, involving the design, development, and installation of 67 high-speed machines for a sugarcane processing plant being set up by the multinational at Itapolis, had run into problems.

At their core, the problems came from lack of personal compatibility at the ground level. Our engineers and their counterparts in the Brazilian unit have difficulty communicating with one another. They speak in English all right but are not on the same wavelength. The issues are cultural and subterranean. As a result, there are frequent deadlocks causing delays in getting machine prototypes off the ground. Notwithstanding an expansion in the scale and scope of the project, over time, there are overruns of costs, some of them three-fold.

We are accountable for things outside our core technical competence.

- Peng-Sang Cau, Transformix Engineering Inc.

The first round of negotiations leading up to the 30-month contract had begun over a year ago, in late 2009. The multinational was interested in stewarding sugarcane business in Brazil which was generating nearly 50% of global sugar output. The company's R&D had developed a chemical which would increase the sugarcane crop yield by 75% when it was applied to the seedling before being planted. The company was now looking for high-speed machines that would cut the seedlings from long sugarcane stalks at the rate of 15 seedlings per second to be treated with the chemical before planting.

A three-member team from Transformix – made up of the Director (Automation), the Vice President (Sales), and Cau – had set the stage during the initial talks held at the multinational's US office. The team from the multinational company was impressed at the Canadian vendor's technical knowledge and its confidence in guaranteeing deliverables.

Once the contract was signed, with clear deadlines, Transformix created two R&D teams, with around 5 and 10 engineers each, from its Canadian workforce. The teams would take turns every three weeks to travel between Kingston and Itapolis. The design and development had to be done in Brazil because the Canadian Customs would not allow imports of raw sugarcane which was very important to R&D. The company's Director (Automation) relocated to Brazil for the duration of the project with responsibility for product development. The VP (Sales) acted as both the head of production and logistics at Itapolis. The team stayed together in a house with a local caregiver who cooked and cleaned for them.

The problems started in early 2011 when the prototypes were ready for testing. The problems came up at the same time at three levels: engineers (involved in product development), technicians (involved in logistics), and vendors (involved in the supply chain).

Product development was happening through all of 2010. Sugarcane was being cultivated in a greenhouse for the purpose of getting live samples for R&D. Transformix engineers had continued with data provided by the Brazilian engineers who were more familiar with local crop conditions. The data was changing. But what confused Transformix engineers was that data, before being included in the prototype, was validated confidently by the Brazilian engineers without giving any clue that it might change. The pattern was getting repeated regularly each time with each change in specification. This was troubling because automation was only as good as the specifications behind it.

When the final prototypes were tested with the natural batch of sugarcanes, they did not work because the specifications did not match. A lot of time would have been saved and right prototypes would have been developed if the possibility of mismatch had been discussed openly. "Trying to get a straight answer is like pulling my tooth without anesthesia," a Transformix engineer said. "I never get a No. It is always a Yes. It may work elsewhere but is troubling in a rational, business setting."

Just as the prototypes were being tested, the civil engineering work on the new factory building, which was to house the new machinery, was nearing completion. As part of the logistics, Tranformix had to tie up loose ends. They included providing electrical connections that would guarantee power and ventilation to the building and laying the ground for machines installation. It involved discussions with the Brazilian unit's technician-employees. The pattern was similar: the Brazilian technicians would confidently promise a certain date and time for completion of a particular milestone and gave no clue that it might not get completed. Even when they knew that they could not commit to a particular date and time, they would rather say an enthusiastic Yes than talk about the reasons for a No.

On further questioning, they would change the subject into something unconnected with the issue on hand. “The distraction would be as unimportant as my parking the car at a wrong spot that day,” said a Transformix engineer. “After being brought back on topic, they would continue with Yes. They were never comfortable with saying No.”

The VP (Logistics) thought that a translator might be helpful. He brought in a young engineering graduate who not only spoke both languages – English and Portuguese – but understood the technical requirements. It turned out to be a remedy worse than the disease. The translator became a punching bag for both sides. Rather than using filters, the translator translated exactly word to word. Brazilians showed up in the translations as being less than truthful and unclear. Canadians showed up in the translations as being arrogant and blunt. Both seemed unable, in their own ways, to hold a dialogue.

The third area was related to suppliers of components which were required to assemble the machines. In dealing with them one-on-one, the Canadian engineers were face to face with the seriousness of small cross-cultural differences. The parties on both sides were offending each other without knowing that they were offending and without meaning to offend.

It is a cycle. The first Yes, at the time of signing the quotation, for example, for delivery in say ten weeks, would be spontaneous. The second Yes, at the time of confirming the terms, would be self-assured. The third Yes, at the time of our checking if there are any problems, would be confident. The fourth Yes, at the time of checking if things are moving, would be assertive. The fifth Yes, at the time of checking when the deliveries could be expected, would be cautious. The swagger is lacking in the tone but it is still a Yes. The sixth would be hesitant. The seventh would be the time for excuses. You then extend the deadline and revise the terms. But that is not the end of the story. The cycle begins all over again. An “Yes” from a Brazilian comes in seven shades unlike the definitive meaning it carries in the North American business context. It is an embedded trait that a “No” would make the recipient unhappy and the giver would not handle the discomfort.

- Peng-Sang Cau, Transformix Engineering Inc.

Industrial Automation

Industrial automation was related to “the use of control systems and software to independently operate and monitor a mechanized system of industrial processes.” The industry had two broad segments: Factory Automation and Process Automation.

Factory automation was the use of a controlled system in an assembly line leading to a finished product and involving frequent stoppages (as in shift changes). In the manufacture of a car, for example, it was carried out in stages like the robotic application of a door to the chassis or computer-controlled spray of paint to the exterior. It was characterized by high-volume output through repetitive, standardized methods. The key end markets for factory automation were automotive and packaging companies.

Process automation was the use of a controlled system in production processes which were continuous. The system used software and sensors to monitor various aspects continuously, in real time. It was characterized by high-volume output in an environment of high temperature and pressure. The key end markets for process automation were oil & gas, and pharmaceutical companies.

The practical applications involved a combination of both. In a bottling plant, for example, the capping of the bottle and its movement on a conveyor belt involved Factory automation while the flow of liquid to the bottle and mixing of its contents involved Process automation. Companies like Siemens and Rockwell Automation had a strong history in factory automation, and were expanding their share of the process automation market, while companies like ABB had a strong history in process automation, and were expanding their share of factory automation market.
The global demand for industrial automation products was valued at about $152 billion. The main product category in Factory automation was the distributed control system (DCS) while the main product category in Process automation was the programmable logic controller (PLC). The market was growing at about 6% since 2003. The margins in process automation were lower than in factory automation because it had project specific content and required development of customized solutions.

There are several customer-driven factors leading to the growth of industrial automation. Customers need to reduce their capital and recurring costs. They have to improve product quality and ensure consistency of output. They have to improve the quality of work for employees. They have to increase output. They have to reduce material wastage and increase yield. They need flexibility in product manufacturing. These are all best facilitated by industrial automation products.

- Peng-Sang Cau, Transformix Engineering Inc.

The demand was broad-based across all major geographies. However, emerging markets, which accounted for 50% of global manufacturing output, were a growth opportunity. The robot density (defined as the number of robots per 10,000

manufacturing employees) was 7 in emerging markets as opposed to 149 for the developed markets. The largest opportunity was in Non-Japan Asia, which accounted for 35% of the world's manufacturing output but had a robot density of 11. Factory automation in China was forecast to grow at 15% annually.

Transformix Engineering Inc. – Company Background

The company was founded in 1995 at Kingston, a university town in the Canadian province of Ontario, by four students – Peng-Sang Cau, Richard Zakrzewski, Ken Nicholson, and Martin Smith – who had recently graduated from Queens University. Cau had graduated in commerce, Zarkzewski and Smith in electrical engineering, and Nicholson in mechanical engineering. Cau's basement served as the office.
At first, the focus was on providing engineering design services. The benefit of integrating electrical with mechanical design was the company key distinction from its competitors. Transformix identified its core skill as "taking a blank piece of paper, create something from nothing, and have it work the first time, every time, under a budget and a time constraint." For the next decade, the company was providing integrated solutions to all types of industrial customers located within a 250 km radius of Kingston.
By 2005, Transformix had annual revenue of $4 million and employed 25 people, a majority in Engineering. But, the company was in the middle of a crisis on many levels. The local automotive companies, which were generating 40 per cent of the company's revenues, were too strict with their suppliers in meeting their unilateral business terms and conditions. The home market in Canada was not a source of growth opportunities because Canadian manufacturing was gradually moving out into the low-countries of Asia and South America. Transformix was close to bankruptcy.

As part of our recovery strategy, we asked ourselves two questions. First, how do we create a niche? The answer led to sharpening our business focus on high speed assembly technology and specialty tubes and pipes process. High speed assembly, specifically continuous motion technology, was an area in which only five or six service providers prevailed worldwide. We decided to specialize in custom-made machinery that assembled plastic parts at speeds up to 1,000 parts a minute. Second, Eastern Ontario, or even Canada, was a small market for what we are capable of offering. We decided to go global.

- Peng-Sang Cau, Transformix Engineering Inc.

Each decision opened up growth opportunities for the future. It also prepared the company to develop its innovative suite of products called CNCAssembly™ in 2012. CNCAssembly™ had several competitive advantages over traditional technologies. It took the best of robotic, indexing motion and continuous motion technologies. It gave clients high speed, flexibility and standardization. It reduced clients' need to invest capital for new product introductions by restricting the changeover to just retooling instead of the core machines. It improved usage of assets on the shop floor. Stepping out of Canada made sure that Transformix would become a 100% global revenue company.

The company used the funds provided by the Scientific Research and Experimental Development (SR&ED) program of the federal government for expansion. SR&ED was a tax incentive that allowed some expenses as tax deductible and provided an investment tax credit.

Issues

By end 2010, the multinational had appointed a senior director to supervise the project which had seen a lot of delays. The director had called a meeting with Cau at Itapolis to sort things out. Transformix was on firm ground with core issues like technology. But culture was becoming very important to project execution. Dealing with multinationals and operating in non-Canadian cultures was not new to the company. Transformix had taken a purposeful decision to go global in 2005. Its engineers were aware that they would need to understand local customs and adapt their methods accordingly. The appointment of a trainee translator was a step in that direction.

As she got ready to meet with her counterpart from the multinational, Cau wondered whether the issues were more fundamental.