# SG Legacy System Modernization Program T661

### What scientific or technological uncertainties did you attempt to overcome? (Maximum 350 words)

We were presented with a vast modernization project in Stargate Logistics. They sought an open consultancy on the modernization of their logistics and trucking operation.

We had to look at the business as a whole. What could technology do for the project, and what could modern data aggregation and analysis mean for them. There was an industry standard to achieve in the fusion between the Global Positioning System (GPS) and vehicle tracking.

Many vendors in the marketplace provide these services. The problem was that nobody had approached the logistics market as its own Enterprise Resource Planning (ERP) platform within an Internet of Things (IoT) functionality. We wanted to move everything onto the cloud. We wanted to harvest all their existing functionality and data schemes, and we wanted to bring in new devices to expand precision, capability, and analysis to the business with new tools and device-based data inputs. This entailed replicating everything on the existing logistics system in a new way in a cloud environment.

Many uncertainties existed about continuity of basic systems operation and data retention. Existing systems were calibrated to real-time data gathering. Many of the other systems operated in a real-time way, as is to be expected in transport and logistics.

Stargate was under constant pressure to remain competitive, deliver quality customer service, and find innovative ways to optimize operations. Modernization became necessary for survival. The challenges impacting the operations and profitability of the company included: increasing operational costs, manual business processes,  
outdated legacy systems,  
stricter regulations imposed by federal, provincial, state, and local authorities, environmental issues,  
driver shortage and retention, and — most important of all — the lack of a technology strategy and implementation.

We set about to achieve the following business objectives: fleet visibility and tracking, increase operational efficiency, decrease operating expenses,  
increase compliance and safety,  
modernize fleet management and maintenance.

Our strategy lay in planning an ERP system that modernized the logistics and transport capabilities for our client in such a way that we also created a process and tool set that could be resold in the same marketplace, a marketplace invariably going to IoT logistics systems. The uncertainties lay in planning and implementing the new system alongside the old system while maintaining the basic operational integrity of the existing system/process — it's a lot like the trick of getting the tablecloth out from under the porcelain tableware without breaking anything.

### What work did you perform in the tax year to overcome the scientific or technological uncertainties described in line 242?

To address the above challenges and meet the company’s business objectives, we established the SGL Modernization Program with the following scope: an end to end review and assessment of current business processes, technology, and organizational structure, an understanding and documentation of requirements for the future strategy, a design, development and delivery of integrated solutions for dispatch management,  
fleet management,  
human resource management, finance management,  
warehousing,  
repairs and maintenance.

For the SGL Modernization Program, we had to find a suite of technology vendors and proprietary software to integrate various APIs.

We had to research options for compatibility and performance. We selected Microsoft Azure™ for cloud services. The client existed in a Microsoft environment upon commencement. Staying with Microsoft was a logical choice for them. The Azure API allowed all needed hooks to integrate existing functionality. We selected Samsara™ for GPS Tracking devices. It had an open API that allowed us to blend with Azure. We selected IngramMicro™ for supply chain efficiency and tracking. They also had an open API that allowed us the freedom to work with Azure and Samsara.

We fully resourced the program team with the following key roles: business/systems analysts,  
solution architect,  
technical lead,  
software engineers,  
middleware/integration specialist, database administrators,  
test engineers,  
project manager,  
training lead,  
organization change.

The organizational effort involved was the bulk of the uncertainty overcome. The effort lay in timing, sequence, and constructive consecutive workforces meeting at milestones to transition from old to new, whether it be the database layer, the applications, mapping, tracking, timekeeping, and safety systems integrated,

We worked to mitigate workflow stoppages by anticipating issues of scope and timing. We ensured key decisions regarding scope, schedule, and budget were clearly understood, documented, and communicated to all parties. This helped to clear ambiguity around the extent of features and functionality that the solutions would deliver. We maintained steady and continual focus on stakeholder engagement at all levels. We maintained consistent and regular communication about the progress of the program to stakeholders with a clear identification of risk and issues along with accountable owners. We tailored communication styles to address various types of stakeholders — senior management versus front line staff —  
We applied a seek to understand attitude so solutions offered addressed pain points head-on.

Everything was done through a strong executive leadership presence. The project was governed by an steering committee comprised of Stargate and our company. The committee received frequent updates on the overall status progress of program deliverables.  
Any obstacles and challenges impeding progress were escalated through the appropriate channels for quick resolution.  
Strong collaboration and partnership with vendors, including frequent checkpoints to ensure vendors were meeting their target deadlines.

Our processes and methods for knowledge transfer focused on ensuring the cost of ineffective transfer is mitigated. To facilitate knowledge transfers from/to our IT experts to our clients’ permanent employees we employed a multitude of methods to meet each customer’s individual needs. We worked with the client to understand and document knowledge transfer requirements and agreed upon methods of delivery.

The client was responsible for ensuring adequate resources/time for knowledge transfer and associated tasks was allocated to ensure timely completion. Every step was taken to address gaps in knowledge requirements and approach was tailored to meet the unique needs of the knowledge recipients. Knowledge methods included, but were not limited to:  
training (classroom and virtual),  
shadowing, coaching,  
knowledge repository,  
desktop process and procedure updates,  
short-form content (job ads, quick reference guides).

### What scientific or technological advancements did you achieve or attempt to achieve as a result of the work described in line 244? (Maximum 350 words)

We created an ERP system in IoT space. We concatenated APIs into an operative cloud based logistics and transport framework: Azure, Samsara, and IngramMicro, combining the best of available technologies for a comprehensive cloud based system that operates with the robustness of an ERP with a focus on transport and logistics, replete with all the micro-management within those general parameters: supply chain integrity and rerouting, material safety data sheet logging and geographic location of all regulated materials. We took the transport and logistics industry as a whole and trimmed every unnecessary expense away by streamlining the chain of custody, reducing or in many cases eliminating lost time, and maintain optimal fleet operability by data driven analysis guiding maintenance and parts replacements based on kilometers traveled and conditions traveled in, including weather.

The planning itself was a milestone seamless operation, a change of culture so expansive the management plan included the delivery of knowledge transfer to in-house IT staff, training for employees, managers, and stakeholders, including comprehensive documentation, tutorials, and training.

We integrated Dispatch Management, GPS Tracking and Account systems together, reducing the billing and invoicing time by sixty percent.  
We provided real time access to load tracking,  
reduced the on-boarding time by eighty percent, and reduced the number of systems in the company from twelve to four.

Most importantly, we created a project map within the transport and logistics space that can be sold as specialized and experienced cultural renovators for new technology in an ever evolving business, transport and logistics.