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Digital technology: the waterfall effect of productivity improvements: case study

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Digital Technology Adoption Pilot Program

Digital technology:

The waterfall effect of productivity improvements

Case Study

October 2014



Conseil national de recherches Canada



Introduction

Within a decade of entering the hydrological data management and analysis arena, Aquatic Informatics has become a global leader in software solutions for the study and reporting of water resources. Among its clients are some of the world's largest environmental monitoring agencies, including the U.S. Geological Survey and Water Survey of Canada. Due to the unprecedented burden on worldwide water resources, the need for trusted hydrological systems and solutions has exploded. Along with the rising demand for such water data came rapid growth for Aquatic Informatics and its specialized products such as AQUARIUS.

According to David Ferguson, Vice-President of Finance and Marketing, the company had no choice but to adopt digital technology, effecting internal process improvements that would accommodate recent and anticipated growth, as well as allow the company to effectively scale operations along the way. "Aquatic Informatics is a typical small business that had been operating with manual systems on limited capital, time and employees," he says. "We were doing very little proactive process improvements—just investing in improvements when the need became absolutely critical."

Doug Conyers, Industrial Technology Advisor with the National Research Council Industrial Research Assistance Program (NRC-IRAP), points out that the company was able to zero in on a few key "pain points" to introduce the first of many productivity improvements with assistance from the Digital Technology Adoption Pilot Program (DTAPP). "Aquatic Informatics was already using a variety of disconnected tools to map processes, but their challenge was to streamline and co-ordinate them to improve tracking information, accelerate customer feedback, address software issues and collect business intelligence," he says. "They were pretty organized and clear on what they needed, but DTAPP provided support and guidance that helped them avoid some potential pitfalls and speed the adoption of digital technology."

"WE...NEEDED TO BE ON THE LEADING EDGE OF HOW WE RUN OUR BUSINESS."

— David Ferguson, Vice-president, Operations, Aquatic Informatics

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Ferguson acknowledges that, while Aquatic Informatics is on the leading edge of the hydrological monitoring industry, "we also needed to be on the leading edge of how we run our business." This called for implementation of enterprise-grade software solutions and integration into a single platform. In addition to introducing and customizing some new technology, it meant adapting and upgrading some existing systems and software.

Prescription for the Pain

The main roadblocks to the company's progress were manual systems and poorly integrated information. Data was housed in various locations, making it difficult for salespeople to track each customer's software products, give demonstrations and find up-to-date licensing details. It also hindered customer support teams when they needed to access information by preventing them from responding with timely information and support. This cost the company unnecessary time and expense, yielded inaccurate performance statistics and inhibited growth opportunities. The only choice if the company were to survive and grow was to adopt digital technology.



Aquatic Informatics' Mark Edwards provides training to customers on AQUARIUS software for water-data management.

The first "pain points" that digital technology needed to address were the disconnected processes for customer relationship management (CRM), software development and software licensing. The immediate goals were to increase efficiency and visibility of processes, reduce operational costs and apply new performance measurements. The prescription for easing and eventually eliminating the pain was to focus on:

- building a solid digital technology adoption plan with clear goals;
- identifying and assessing key challenges in advance;
- implementing effective change management, including staff training; and
- identifying internal and external resources that could facilitate the implementation.

Aquatic Informatics' success was marked not only by a turnaround in targeted problems, but also a cascade effect that led to improved operations across several departments, including sales, marketing, product development and customer support.

Customer relationship management (CRM)

Moving from a system where information was housed in different databases and held by staff members in different departments required automating the processes essential to CRM and others that feed into and out of it.

For example, when salespeople provided software trials and demos to clients, they had to manually search for the software products that their customers had bought, identify the versions customers were running and verify the status of their licences. Now that such data is integrated and up-to-the minute, staff can work much more efficiently by simply calling it up on their computer screens.

According to Ferguson, individual staff members could spend up to three hours per week on meetings and other communications just to exchange information scattered around the company. With the data now on a digital platform, the need for face time and related administration has dropped by an estimated 50 percent. The majority of customer cases are handled by phone, and average response time to customer inquiries has dropped from over eight hours to below four. This allows the company to have existing staff spend more time on customers rather than hiring new people to manage unnecessary administration as business grows.

These improvements spilled over into the way software licensing renewals were managed, thereby speeding up the sales cycle and increasing renewals. In the past, manual processes for notification and management of pending expiry dates had often delayed renewals beyond the due date. Since the period of the DTAPP project, automation of this process has sent renewals up by eight percent.

Stefan Lorimer, Manager, Strategic Marketing and Operations, points out that all investments in technology must provide evidence of an acceptable return on investment (ROI). One major step

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> — Stefan Lorimer, Strategic Marketing and Operations Manager, Aquatic Informatics

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toward gaining such proof was a new metric to measure customer and prospect responses to campaigns, webinars and other marketing tools. All marketing campaign influences that resulted in sales activity can now be measured and high-level campaign costs can be attributed across marketing channels.

Software licensing

As the core of the company's business, the sluggish proprietary software licensing process had to be improved since those sales and renewals go straight to the bottom line. The three parts of the process are issuing new licenses, updating and renewing them, and terminating expired ones. On the new licensing platform, each function now takes less than five minutes per case, whereas it previously took from 15 to 20 minutes. The cascade effect here has been to reduce time spent by sales and product development. For example, the sales team had been taking 60 minutes to create a targeted customer list for new license; with the improvements that has been reduced to five minutes.

Software development

Lorimer points out that the software development and customer support teams had also been meeting on a fairly regular basis to exchange information about "bugs" in the software that needed to be fixed. They had to identify which ones were



Handheld field computers are an important tool in water quality measurement.

part of the latest release and relay the information to the marketing department so they could quickly communicate it to buyers. "This was being done manually and wasn't very exact," he says. "Different departments spent a lot of time establishing where all the information was, and how to use it." Now integrated into the CRM system, this process has removed the requirement for the hour-long weekly meetings involving at least six people.

The company also wanted to reinforce its Agile software development model with a new project management workflow platform, in part to meet the needs of an important new client. "We won a major contract that restricted new feature development to a stringent list of requirements which was going to put considerable stress on the Agile model, so the team needed a common online platform and workflow to centralize the work and focus on project priorities," says Lorimer. "With DTAPP's help, we adopted a new platform, whose project management tools allow the development work to be done in small-module sprints and solidify visibility and measurement of the work."

This move has brought down production costs for developing products, and enabled earlier and more frequent releases that will generate additional revenue. Development team velocity can now be measured, and has improved by 30 percent in the past 12 months.

Lessons Shared



Monitoring sensors provide continuous data for water quality managers.

Conyers, Lorimer and Ferguson agree that successfully implementing digital technology takes commitment from the top, careful steering of the project through all phases, and identifying and assigning resources where they are needed.

1) Preparation and priorities

Underlying the success of the Aquatic Informatics digital technology adoption was careful preparation and priority-setting. "The DTAPP project was just the first step in a multi-stage improvement process, so it was critical to approach it systematically, addressing pain points in priority order," says Lorimer. "Fortunately, everything we did at this first stage had a positive effect on other areas—all of which are interlinked—and have led to efficiencies that sped up processes throughout the company."

2) Time and resources

Aquatic Informatics understood that the massive changes to their complex infrastructure could not be effected with in-house resources, so brought in outside expertise. For starters, Stefan Lorimer, hired for his experience in strategic marketing and digital technology platforms, became the project lead. His industry connections helped identify external resources that were needed to supplement internal staff. DTAPP also provided the company with a connection to an external contractor who could help them integrate the licensing engine from third-party platforms into the CRM system.

3) Change management

Lorimer says Aquatic Informatics knew that staff buy-in would make or break the project implementation, but admits that "it's inevitably a bigger issue than you think." New technology is not always understood and does not always work perfectly at first, so getting staff on side can be tough.

"Introducing modifications and custom workflow components to suit internal processes required multiple iterations that had to be tested and re-implemented to ensure that the workflow for employees was optimized," he adds. "While the process can be painful, employees saw that the improvements made the workplace better for everyone."

A big contributor to effectively managing the changes was having support cascade from top management to every part of the organization. In addition, carefully monitoring the use of the new technology, and ensuring staff were trained and understood the benefits of the technology to them were integral to success. "Everyone knew this was important and needed to pay attention when asked to participate," says Lorimer. "Getting staff to appreciate what technology can do for them as well as the company is critical to their buy-in."

Lorimer reports that it was gratifying to see the cultural shift as a result of the changes, pointing out that staff not only became less fearful of change, but also started embracing it. "They encouraged management to do even more as they realized how powerful these tools could be," he says. "It also made everyone aware that their job could be made simpler and more meaningful when the right tools were used."



An Acoustic Doppler current profiler (ADCP) measures water discharge and content from a remotely controlled boat.

Results: Measuring Corporate-Wide Impact

Initial indications during the digital adoption process were encouraging, and provided "early wins"— immediate measurable successes that engaged employees, spurred the company's forward movement and flowed into ongoing cost savings and revenue opportunities.

For example:

- CRM integration has increased customer support capacity by 25 percent. This means that the same teams can support more customers and more products.
- Revenues will increase due to improved CRM.
 Better tracking of existing customers will help staff track upselling opportunities, while a reduction in average time spent on administration will result in a measurable impact on revenues.
- Faster and more efficient development of new products is expected to double total annual sales for the company.

The additional capacity will lead to a lower overall cost of goods sold and fewer staff needed to provide after-sales support.

The Agile development process can measure the speed of team performance.
 Velocity targets are being measured and met, assuring the reduced cost of future product development.



Doug Schmidt, Aquatic Informatics, wades into a river to perform water flow and quality measurements.

- New products leveraging the changes will reduce the cost of going to market.
 This will allow the sales team to close a greater number of customers more quickly, with lower overall support costs.
- Internal resources can do more. Faster time to market will free up internal resources to work on feature improvements or new products in a shorter timeframe. Higher sales and revenues will also enable the company to hire new staff as the need arises. Since the implementation of the first stages of digital technology, the staff level has risen from 40 to 75 people.

Surfing Toward the Future

According to Lorimer, the company's "audacious" long-term goal is to "host the world's water data." The bottom line is that, by investing in digital technology to assure its global leadership, Aquatic Informatics is positioned to make a significant contribution to the environment and the future.

For now and into the future, the digital transformations continue at Aquatic Informatics. Savings and efficiencies affected by the first stage of adoption enable the company to do much more with existing resources. These are now being re-focussed on other areas (such as customizing software) that have been targeted to expand the scope of improvements throughout the organization and maximize the impacts from the digital technology investment.

New products will continue to be integrated into the new systems and processes and benchmarks for measuring output will continue to be established. The measurements will then be used to gauge future integrations of new and existing products—and allow Aquatic Informatics to stay ahead of the rising technology tide.

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> — Doug Conyers, Industrial Technology Advisor, NRC-IRAP

About the Digital Technology Adoption Pilot Program (DTAPP)

As part of the Government of Canada's Digital Economy Strategy, NRC-IRAP is delivering the Digital Technology Adoption Pilot Program (DTAPP). DTAPP was created as a pilot program to deliver support from November 2011 to March 31, 2014.

DTAPP represents a significant investment in the Canadian economy to increase the productivity growth of small and medium-sized enterprises (SMEs) in Canada across all sectors through the adoption of digital technologies.

An important component of DTAPP is to assess and measure the outcomes of digital technology adoption on the productivity of SMEs. DTAPP will utilize this aggregate knowledge and transfer successful practices and lessons learned to the broader SME community in order to:

- improve the rate of digital technology adoption by SMEs
- improve understanding of the link between digital technologies and productivity
- raise awareness of the benefits and importance of adopting these technologies

This information will be a critical tool to encourage prospective adopters of digital technologies and will continue to impact the potential productivity growth of the Canadian economy well into the future.