



July 1, 2010

Case Study: Ci&T's Path To Lean Methods

by Dave West

for Application Development & Delivery Professionals



July 1, 2010

Case Study: Ci&T's Path To Lean Methods

Ci&T's Lean Journey Started With Failure But Has Led To Competitive Advantage

by **Dave West**

with John R. Rymer and David D'Silva

EXECUTIVE SUMMARY

Application development professionals can learn about one path to a Lean approach from Ci&T, a Brazil-based midtier systems integrator that during the past four years has transformed its approach to solution delivery using Agile methods. Ci&T's journey to Lean was not easy — it started with a very visible failure. Ultimately, Ci&T's Lean approach is twice as productive as its original approach based on the Rational Unified Process, producing higher-quality software and greater customer satisfaction. Learning from its original failure, Ci&T built out a Lean culture coupled with an Agile delivery model that provides almost double the productivity as well as increases in both quality and customer satisfaction. Internally, Ci&T concentrates on Lean principles to build a strong firm that focuses on people, process, and measurement while supporting change. Externally, rather than delivering project deliverables to a plan, Ci&T engages with clients using value management and frequent delivery to ensure customer success.

TABLE OF CONTENTS

2 **Situation: Ci&T Was A Successful RUP Shop**

Customer Needs Drove Unsuccessful Process Change

Even After The First Failure, Ci&T Continued With Agile Adoption

4 **Transforming The Development Process**

Ci&T Moves From Agile To Lean

Ci&T Wants To Be A Partner Rather Than A Supplier

RECOMMENDATIONS

7 **Learn From Ci&T; Apply Its Principals To Your Own Lean Approach**

NOTES & RESOURCES

Forrester interviewed Ci&T to develop this case study analysis of its implementation of Lean and Agile.

Related Research Documents

["Agile Development: Mainstream Adoption Has Changed Agility"](#)

January 20, 2010

["Lean: The New Business Technology Imperative"](#)

September 29, 2009

["Best Practices: Software Development Processes"](#)

April 15, 2009

SITUATION: CI&T WAS A SUCCESSFUL RUP SHOP

Software development and delivery process drives a system integrator's bottom line. Systems integrators (SIs) invest large amounts of time and effort in developing an effective differentiated process both to help win deals and to ensure successful project delivery. Capability Maturity Model Integration (CMMI) and other certification models are popular with SIs because they provide evidence that a process is being followed and because they are inclusive of a certain number of process areas.¹

Ci&T was no exception; using the Rational Unified Process (RUP) as the basis, the firm built a CMMI Level-5-certified delivery process that was both iterative and based on a very prescriptive life cycle. In addition to implementing RUP, Ci&T's delivery process included the following:

- **A focus on and investment in people.** Ci&T invested in Project Management Institute (PMI) certifications for all of its project managers and in RUP certifications for the majority of its development teams.
- **Detailed project measures and corporate baselines.** Ci&T invested in productivity, quality, and customer satisfaction metrics and not only gathered data for individual projects but also aggregated that information to create corporate baselines. Senior management used these metrics to drive development capability across the whole company.

Customer Needs Drove Unsuccessful Process Change

RUP was working, so why did Ci&T decide to change its process? A customer asked Ci&T to use eXtreme Programming (XP) and Scrum on a project, but after 10 months, Ci&T and its client abandoned the project. What happened?

- **Ci&T's requirements methods fell apart.** Traditionally, using the RUP process, development work would not begin on a piece of functionality until a use case and a use-case realization had received sign-off. These requirement and design documents provided the Ci&T team with a clear set of acceptance criteria for the work and allowed it to streamline development based on these specifications. With Agile processes, the Ci&T development team never got these documents, and lacking the documented evidence the RUP artifacts provided made the team feel exposed to the risk of building the wrong software.
- **Ci&T's planning and costing methods were unreliable.** Like all SIs, Ci&T bases its business on detailed planning and costing for projects. From those plans, it is possible for the SI to build in a profit margin, manage resources, and keep the client happy. Without these detailed plans, however, it is impossible for Ci&T to effectively contract work. Agile projects follow the ethos that without a clear understanding, it is impossible to plan, and you only plan what you know. Thus, as the understanding of the project evolved and changed, so did the plans. The

conflict between the traditional SI business model and the Agile development process resulted in the engagement's management never really having a clear plan or approach. That resulted in confusion between the project team and the customer, with neither party feeling happy.

- **Ci&T's resource allocation approach broke down.** With traditional projects, Ci&T could effectively plan resources based on iterations, allocating the right resources at the right time. Agile projects required development to begin very early, requiring a different staffing model and changes to infrastructure requirements to allow development.
- **Ci&T's project staff lost faith in the Agile process.** Ci&T staff had confidence in its existing process, and this led to conflict when it found problems in this client-driven Agile adoption. Instead of looking for solutions to the Agile process' issues, the team followed the maxim "not my process, not my fault." The result was very little support for the use of Agile.

In short, the outcome of Ci&T's first Agile project was far from encouraging. Yet the firm decided to press on in the search for improvements and the ever-important competitive edge.

Even After The First Failure, Ci&T Continued With Agile Adoption

Another client pressed the issue with Agile, and this time Ci&T's use of Agile methods produced a resounding success with increased customer satisfaction and improved contract performance. Many factors influenced Ci&T's Agile turnaround:

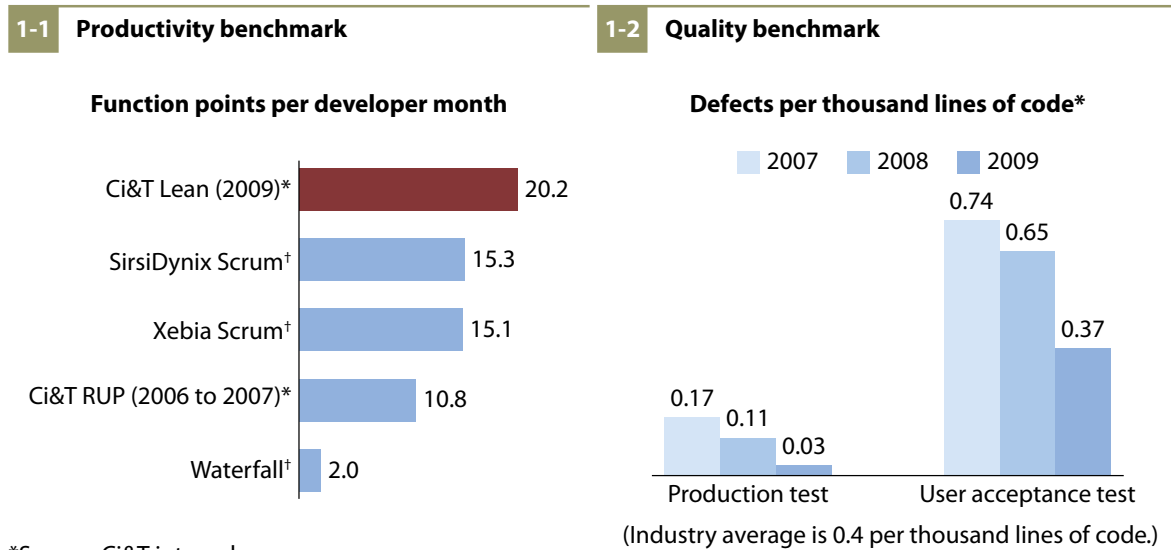
- **The second client had Agile experience.** Ci&T's first experience with Agile methods was also its client's first experience. This time, Ci&T's client was experienced in XP and Scrum. Ci&T, though it had little experience, agreed to support this development approach.
- **Ci&T gave the development team responsibility for the method.** In Ci&T's first engagement, management dictated that the development team use Scrum and XP. In this second engagement, Ci&T made Agile adoption the development team's responsibility, encouraging it to push back on practices it did not support and adopt the practices that made the most sense for project success.
- **The business owner had an active and real project role.** In this second project, Ci&T built a direct line from its project team to the business decision-maker and involved that person throughout the project, resulting in clear and quick lines of communication between the technical team and the business users.
- **The Ci&T team was more open-minded.** In Ci&T's first Agile project, the team contained strong RUP advocates; the second project featured staff members committed to making the Agile methods work. Rather than looking back to RUP when encountering problems applying XP and Scrum, the team figured out a new solution.

- **Ci&T made project success job No. 1.** In the first project, successful application of XP and Scrum were goals along with the project deliverable. The second project had no such confusion between means and end: Agile was a foundation, not an end goal. The project's end goal was delivering business value to the client.

TRANSFORMING THE DEVELOPMENT PROCESS

After the second Agile project, Ci&T began to encounter more demand for Agile methods, and momentum for the new methods increased in the firm. Because measurement was a part of the culture at Ci&T, management started to take note as Agile projects delivered real customer and business value (see Figure 1).² But keeping that momentum going was crucial to long-term success.

Figure 1 Productivity And Quality Benchmarks Reveal That Agile Projects Deliver Real Value



*Source: Ci&T internal survey

†Source: Jeff Sutherland, "Practical Roadmap To Great Scrum," October 20, 2009

Ci&T Moves From Agile To Lean

Though Ci&T project teams were using Agile in many projects, they were executing these projects in isolation and without any overall company strategy. But what should that overall strategy be? Instead of looking inward to answer this question, Ci&T evaluated the Lean approach that one of its manufacturing customers followed. The result was a tempering of Ci&T's Agile experience with the Lean Manufacturing approach called "Kaikaku."³ The resulting new methodology's hallmarks are:

- **Understand the business process.** Ci&T incorporated into its method an iterative and incremental approach to business process modeling. Development teams define a broad, shallow process model followed by more detailed process modeling as needed within the development sprints.

Ci&T's process proves that, when used together productively, business process modeling and Agile development practices are not mortal enemies.

- **Map the process to the portfolio.** Adding Lean's value management concept, Ci&T teams review the business process and solution in the context of a strategic view. Business process is one part of the overall project context; the other part is how the system fits into the broader application portfolio. Considering the system from this broader view allows the team to understand the true value of the project work and helps it prioritize the backlog.
- **Value both features and the effort to create them.** Ci&T combines value measurement with the estimation of development options.⁴ Why? Valuing both helps teams decide whether a particular feature is of value to the project as well as whether the feature's value justifies a given amount of effort. Coupling this approach with an experimentation-oriented Agile method allows teams to re-assess value throughout the project as experience increases.

The new methodology also required substantial changes in how Ci&T operates. Ci&T made changes to its operations and reward structures to accompany the new methodology; it:

- **Flattened the organization.** By implementing a Lean approach to decision-making, Ci&T pushed authority down to the lowest possible level. This allows teams to make decisions and the client to appoint business decision-makers who work closely with the team. Gone are Ci&T's prior many layers of managers whose sole function was to provide financial and project visibility. Ci&T's decision-making is now simple and streamlined, and more-frequent delivery and observation enable the environment of trust. By working in an iterative way, the development team provides CI&T management and the customer with evidence of progress as well as assurance that the team understands the problem.

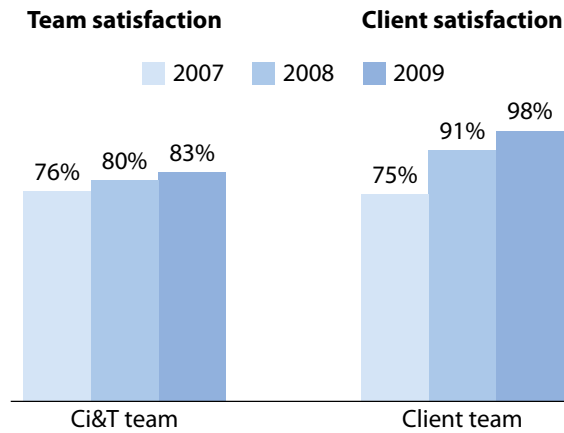
- **Instituted transparent reporting and communication with the client.** Many SIs encourage their teams to hide the real status of work to avoid unhappy or doubtful clients. Ci&T put in place a set of dashboards for each project to give clients complete visibility into the good, the bad, and the ugly of their projects, and Ci&T project teams are highly motivated to solve problems surfaced to clients.
- **Redefined the career path.** Lean practices require strong, experienced people. Thus, it was incumbent on Ci&T to retain staff and develop their skills. To do so, Ci&T had to fundamentally change its career development and seniority models so it could keep teams intact rather than moving people around in direct response to customer demand. Many SIs have high attrition rates and move individuals from project to project in response to demand.

Ci&T Wants To Be A Partner Rather Than A Supplier

Not all of Ci&T's clients become partners, but Ci&T continues to try to build long-term relationships with its customers, moving from cost and resource arbitrage to a relationship based on business value and client success. Changing the trust model yielded positive results for Ci&T (see Figure 2). Moving from a supplier model to a partner model requires firms to:

- **Engage in frequent planning.** Traditional approaches encourage teams to undertake planning at the start of the engagement, pursue sign-off on those plans, and then use them as the “yard stick” throughout the project. Project status is recorded in terms of how closely the project is following the plan and if the team produces the planned interim deliverables on time. Agile requires a different sort of plan, calling for the initial plan to be focused on project objectives, with some rough estimates. The team then refines the plan as it executes, delivering more-detailed estimates but also actual results. The team feeds this information into a broad project dashboard that allows it to determine if the project is still on track regarding the final outcome or if the project work thus far necessitates re-evaluation of the final outcome.
- **Treat the end as more important than the means.** The traditional focus on interim deliverables needs to be replaced with a more flexible approach that encourages the team to make decisions on what needs to be produced based on the problem it is solving and the environment it is working in. For example, use cases might be a great way of describing a complex transaction in one instance, but they hold no value when developing CRUD features.⁵ By focusing on the objective of a requirement, the team can adapt to the situation and reduce waste.
- **Build cross-organizational teams.** Providing a great solution requires a team comprising both Ci&T and the client. Traditional approaches often meant that Ci&T was nervous to engage frequently outside formal meeting structures. Agile approaches require that teams blur the line between client and vendor, introducing frequent collaboration and flexible working practices.

Figure 2 Ci&T's New Agile Delivery Model Has Yielded Increased Team And Client Satisfaction



Source: Ci&T internal survey

57216

Source: Forrester Research, Inc.

RECOMMENDATIONS

LEARN FROM CI&T; APPLY ITS PRINCIPALS TO YOUR OWN LEAN APPROACH

It is not surprising that Ci&T invests heavily in the process of software development; it not only increases the success of projects but also has a direct impact on the bottom line. Application development professionals can learn from Ci&T's experiences by applying the following principles:

- **Invest in life beyond Agile development methods.** Agile provides a great way of creating a team, engaging with the client, and reporting on progress and status. But this is not enough to effectively create and then manage an engagement with a client, and it is not enough to develop an effective long-term business. To this end, Ci&T extended its use of Agile with a clear internal focus on skills and staff development coupled with value engineering to prepare for Agile development.
- **Involve the business.** One of the primary reasons why Ci&T's first Agile project was cancelled was the customer's lack of business involvement. Ci&T has learned from this initial failure; it has put in place a clear set of customer roles as well as a more formal approach to requirements scoping with the use of business modeling and portfolio mapping.
- **View metrics as important — even when teams are moving fast.** Conforming to Drucker's maxim of "what's measured improves," Ci&T installed measures in its new Agile approaches that capture information on productivity, quality, and customer satisfaction. These measures form the basis for estimation and planning as well as for process improvement and retrospectives that allow the team to review activities in the context of facts.

- **Invest in people.** It comes as no surprise that the most successful projects have the best people on them, but those people do not need to be the best at the beginning. By mentoring and training staff, organizations will reap long-term benefits. Empowering individuals to make decisions both encourages them to push their comfort zone and makes for a great learning environment.
- **Push responsibility down.** Instead of having complex governance and control processes, Ci&T introduced a lightweight governance model coupled with team accountability. It allows teams to decide how they work and encourages them to push the envelope in terms of techniques and practices. Sometimes that means that teams make mistakes, but those mistakes are greatly outweighed by the learning that comes from them.
- **Build a learning organization.** This is much easier to say than do, but by combining measures with frequent inspection and retrospectives, it is possible to learn from both your successes and mistakes. Ci&T was not successful with its first Agile project, but by harvesting what went wrong and ensuring that did not happen again, it turned that failure into long-term success.
- **Engage with the business differently.** Value engineering is one example of a different engagement model that focuses not on the process of the project but instead on the intent or objective the business is trying to achieve. Application development professionals should work closely with the business, exploring different techniques to expose value and intent for all functionality.
- **Move away from a project culture.** Resource management does not work well with Agile and Lean approaches, as these approaches shift the focus from resource optimization to team effectiveness. Having the same teams and businesspeople work together for long periods of time reduces the investment required in each project to provide business context and effective value management. Ci&T tries to do this with both client-partner strategies and team structures, but application development professionals can also apply sensible approaches to how they structure work and connect with the business.

ENDNOTES

- ¹ CMMI was created by the SEI. A detailed description can be found at Software Engineering Institute Web site (<http://www.sei.cmu.edu/cmmi/>).
- ² The figures shown in this diagram are provided by Ci&T. They compare Ci&T productivity and quality with sample published figures such as the work by Jeff Sutherland. Forrester research has not benchmarked Ci&T's figures for accuracy, and they are included to show the results of the introduction of Lean at Ci&T.
- ³ Kaikaku is a Lean production term, which in Japanese means to radically change an activity or process to reduce and eliminate waste. A good description of Kaikaku in practice can be found in: Norman Bodek, *Kaikaku: The Power and Magic of Lean — A Study in Knowledge Transfer*, PCS, 2004 (<http://books.google>).

com/books?id=vIT9WWgatHwC&printsec=frontcover&dq=Kaikaku&source=bl&ots=1XwSgBPYxs&sig=lOLoSBaxxxxzJU2o6tYE43Ol54Y&hl=en&ei=rf7zS_P_DYP-8AaZs-zNDQ&sa=X&oi=book_result&ct=resul&resnum=2&ved=0CBwQ6AEwAQ#v=onepage&q&f=false).

- ⁴ Value engineering is a set of principles created by General Electric during World War II to manage the issue of shortages in labor and raw materials. A good description of value engineering can be found in: Richard J. Park, *Value Engineering: A Plan for Invention*, CRC Press, 1999 (http://books.google.com/books?id=kTuMHcT9s04C&printsec=frontcover&dq=value+engineering&source=gbs_similarbooks_s&cad=1#v=onepage&q&f=false).
- ⁵ CRUD stands for create, read, update, delete. It is the nature of these types of features that they make for very boring use cases.

FORRESTER®

Making Leaders Successful Every Day

Headquarters

Forrester Research, Inc.
400 Technology Square
Cambridge, MA 02139 USA
Tel: +1 617.613.6000
Fax: +1 617.613.5000
Email: forrester@forrester.com
Nasdaq symbol: FORR
www.forrester.com

Research and Sales Offices

Forrester has research centers and sales offices in more than 27 cities internationally, including Amsterdam; Cambridge, Mass.; Dallas; Dubai; Foster City, Calif.; Frankfurt; London; Madrid; Sydney; Tel Aviv; and Toronto.

For a complete list of worldwide locations visit www.forrester.com/about.

For information on hard-copy or electronic reprints, please contact Client Support at +1 866.367.7378, +1 617.613.5730, or clientsupport@forrester.com.

We offer quantity discounts and special pricing for academic and nonprofit institutions.

Forrester Research, Inc. (Nasdaq: FORR) is an independent research company that provides pragmatic and forward-thinking advice to global leaders in business and technology. Forrester works with professionals in 20 key roles at major companies providing proprietary research, customer insight, consulting, events, and peer-to-peer executive programs. For more than 26 years, Forrester has been making IT, marketing, and technology industry leaders successful every day. For more information, visit www.forrester.com.