Net Objectives
LEAN-AGILE
case study

Information-Driven Agility Brings Success to Fujitsu

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THE CHALLENGE

The Fujitsu Network Communication business unit, a mid-sized, multi-site software organization, is the "last mile" in providing Fujitsu communication networking equipment, software and services to major carriers. To better fulfill its role within the Fujitsu value chain, as of 2014 FNC has generally been following the tenets of Scrum. However, it has been doing Scrum within a larger Waterfall development life-cycle in which FNC was often gated on the availability of both hardware, hardware simulators, and embedded software. This setup made fulfillment of customer requirements, adherence to contractually binding delivery dates, and changes along the way quite tricky. FNC, being the last link in an overall Waterfall chain, often found itself needing to compensate for errors and slippages that had taken place before it had the hardware, the embedded code or the hardware simulators required for running the software it was developing.

Compounding the effects of doing Scrum as the last phase in an overall Waterfall development cycle, FNC had to cope with a very high level of change. The business dynamics of Fujitsu's relationships with major carriers inevitably led to numerous change orders throughout just about every Scrum iteration as well as during the final user acceptance testing. Consequently, FNC found it hard to maintain a healthy product vis-a-vis project/solution balance. Fundamentally, FNC's business design was optimized for products. However, the volume and frequency of change orders by the carriers FNC was serving inevitably pushed FNC toward project-oriented and solution-oriented software development techniques. Consequently, reconciling product margin and profitability targets with the inevitable costs associated with a growing number of projects and solutions proved a difficult challenge: the more one-time type deals FNC closed, the higher its overall costs of development and maintenance became. The business unit was thus becoming the victim of its own success.

In Q1 2016, Net Objectives discussed with FNC how to improve their software process to cope in a more effective and efficient manner with the two challenges described above. Three consultants worked closely with FNC in Q2 and Q3 2016 to design and implement a custom-tailored process that suits FNC's business challenges and constraints.

DEEP DISCOVERY

With so many Lean-Agile frameworks readily available for the picking these days, it would have been easy to choose one of them as the "standard solution" for FNC and implement it there. We preferred not to do so in order to be doubly certain that the framework we implemented would indeed be custom-tailored to satisfy the diverse needs of FNC.

A deeply held belief is that, "*one size does not fit all.*" The simplifications and generalizations that one needs to make in order to develop a standard framework that will suit multiple customers can easily lead to throwing the baby out with the bath water. For example, an organization that requires five levels of operation to fulfil its mission is likely to find itself quite constricted if it adopts a three-tier software framework.

To address this, we recommended conducting a deep discovery process. This discovery process included:

- Meeting in person and interviewing all key FNC stakeholders
- Meeting in person and interviewing numerous specialized Scrum functionaries (POs, SMs) and organizational leaders (SMEs, directors, managers)

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- Meeting in person and interviewing about 30% of individual contributors in the business unit
- Attending multiple group ceremonies and meetings

During this deep discovery, we identified 191 methodical issues worthy of attention/fixing at one point in time or another. To cope with this amount of potential change, we spent a lot of quality time with Mr. Igor Bergman, the General Manager leading the business unit. Understanding his needs, constraints and the metrics he was measured on enabled us to "walk in his shoes" and focus on the most important pieces of the discovery. The crisp understanding of where the engagement needed to ultimately be from his perspective was critical to our keeping the engagement coherent and focused. The rest, as they say, was a "mere matter of implementation...."

INFORMATION-DRIVEN AGILITY

Our over-arching conclusion from the deep discovery, as well as from the discussions with FNC's General Manager, was that effective flow of information was the key to success. The common denominator in many of the 191 methodical issues we identified was that the required information was hard to get, let alone getting it in a timely manner to the hands of the appropriate recipients. FNC's Scrum implementation might have worked reasonably well for one individual team or another except for the following:

- Major misunderstandings, queuing delays and suboptimal resource allocation existed across multiple teams.
- The team structure in use was too constrictive for the kind of business FNC was pursuing. It did not support addressing issues at enough levels of hierarchy nor at multiple levels of granularity.
- It was next to impossible to determine whether a task that did not naturally fit into the standard team structure was really done.

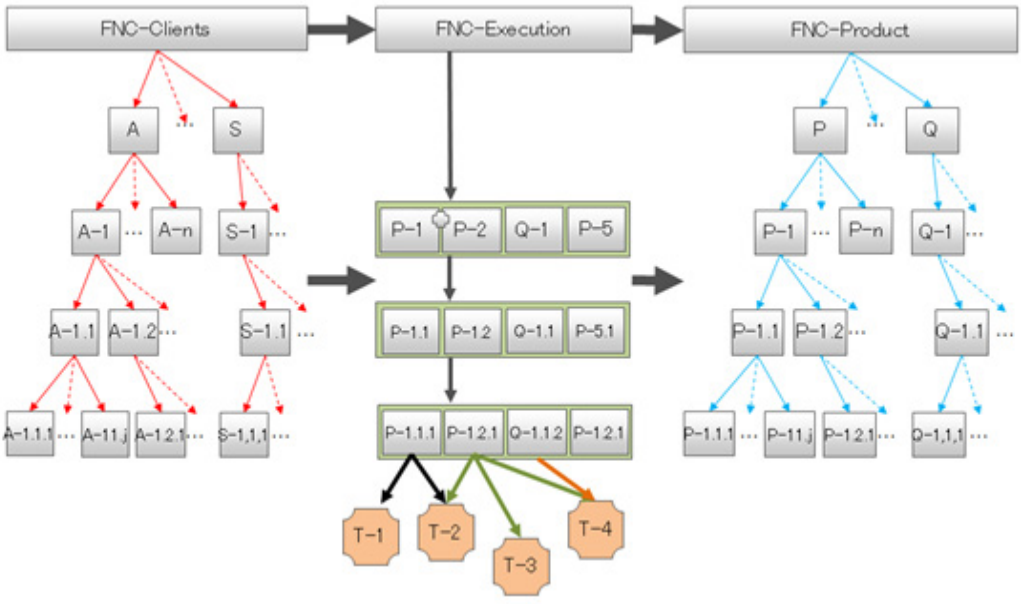
To address these challenges and to enable effective decision-making wherever and whenever needed, we applied the Information- Driven Agility (IDA) model. Key aspects of this model in the Fujitsu context included:

- Tying things together through mapping definition of "*Ready*" to a corresponding "*Definition of Done*" at any level.
- "Given-When-Then" ATDD constructs, syntax and semantics to carry this out in a manner that is unambiguous to all participants (in this case, every relevant employee at any level in the FNC business unit).
- A V-shaped responsibility-transfer model to ensure that decomposition as well as corresponding synthesis, worked not only horizontally but vertically as well.

> *"This is incredible achievement and amazing success. We are changing the way industry and our own company is perceiving our software solutions. You can already see first positive impacts of the success. I don't know what is your experience, but every day I walk into the customer office, or internal Fujitsu meeting, I see and feel respect we are rightfully receiving."*
>
> ***General Manager of FNC** (upon delivering on an "impossible" target date)*

One of the most effective aspects of the IDA model is that at any level of operations it enables doing as little or much of any task at hand. This was critical to its success at Fujitsu. Figure 1 illustrates this property. The tree on the left side of Figure 1 represents the totality of user requirements (as known and understood at a certain point in time.) The one in the middle depicts the subset of requirements that one might choose to actually implemented, fully or partially. Finally, the tree on the right side of Figure 1 illustrates in which ways the implementation could be productized. Please note that the determination what will, or will not be executed, and what will or will not get productized, is done 'real time.'

Figure 1. Selectively Traversing IDA Trees



For example, the decision to productize the {P-1, P-1.1, P-1.1.1} configuration is essentially no different from the possible decision to productize the {P-1, P-1.1, P-1.1.3} configuration instead, or any other configuration that generates value. Moreover, the configuration {P-1, P-1.1, P-1.1.1} might be the right solution for customer X, while {P-1, P-1.1, P-1.1.3} might be the right one for customer Y.

IDA combines the rigor of watefall planning with the nimbleness of real-time selectivity through Lean-Agile methods.

It is this ability to choose how much to "bite" at the times of executing and productizing that makes IDA so powerful: it combines the rigor of Waterfall-like planning with the nimbleness that 'real time' selectivity (what to execute and productize and, perhaps more importantly, what not to execute) through Lean-Agile methods enables. IDA provides the best of two worlds: Waterfall and Lean-Agile.

Information-Driven Agility naturally addresses Fujitsu's product vis-à-vis project/solution dichotomy highlighted in the Introduction. Extending/expanding a release to carry out a project that will produce a solution specific to a single customer is straightforwardly flexible using the IDA approach.

BALANCING TEACHING WITH COACHING

Our experience in numerous software development engagements has indicated time and time again that full-day teaching is ineffective. Obviously, most students lose their ability to assimilate complex methodical subjects after a few hours of traditional classroom type teaching. Moreover, during a typical day just about every student needs to find some time to attend to urgent business issues that inevitably distract from learning.

With these considerations in mind, we split our days on premises at Fujitsu to two distinct parts – coaching of teams that had already gone through teaching in the morning; and, teaching new teams in the afternoon.

> *"I am so impressed with all the work that has been done since July 31. We have a complete service activation API, a notification service, integration of the FPM/DPM components, a fault notification API, dynamic config changes, support for the latest Open ROADM models, and updated simulators."*
>
> ***Release Planner** (upon delivery of a release rich in functionality)*

A typical daily schedule for any of the three of us would look something like the following:

- 8:30-10:00 Coach Team 1
- 10:00-11:30 Coach Team 2
- 1:00-5:00 Teach Team 3

Once we finished teaching all FNC teams, we reverted to coaching both in the morning and in the afternoon in accord with the needs of the teams and the availability of our consultants. At this stage, a consultant would typically coach three or four teams a day.

We worked in the manner described here for the better part of Q2 and Q3 2016. Both the teams and the consultants felt this arrangement was optimal in these four ways:

- Assimilation of know-how
- Learning through doing (i.e. coaching was rendered on real projects)
- Minimizing cost
- Addressing (unrelated) urgent business needs in a timely manner without losing the continuity of teaching

THE BOTTOM LINE

A tangible benefit of this approach is that, at the end of the July release, only three defects escaped the process. This was a dramatic improvement in quality!

An engagement between Net Objectives and a client is, of course, a financial transaction. While the inter-company financial contract is of importance, it is secondary in our opinion to the success of the client. Great success of a client warms our hearts.

PARTING THOUGHTS

Identifying the 'secret sauce' that really made an engagement successful is a time-honored obsession of many consultants. It is a particularly strong in software development engagements as the innate fluidity of software makes meaningful comparisons across development projects a very tricky business. Controlled experiments, in the traditional sense practiced in the scientific community, are notoriously tricky to construct in a meaningful manner across diverse commercial software projects. Hence, isolating, and thence replicating the 'secret sauce' in future engagements, remains a matter of craft, often characteristic of a specific consultant, rather than a science.

Examining the FNC engagement a couple of months after its successful completion, we are gratified that we had not tried to implement a standard framework at Fujitsu. The risk of missing, misunderstanding, or failing to accommodate some critical nuances in the way a certain FNC customer conducts business would have been too high given Fujitsu's needs to carry out products, solutions, and projects under strict timelines.

The bottom-up push in FNC combined with relentless top-down intentionality about using IDA as a competitive differentiator proved to be especially effective. Between the enthusiasm of the folks in the bottom about the day-to-day clarity IDA provided and the deep understanding of the FNC General Manager at the top how to use IDA as an integral part of his go-to-market strategies, all levels in the business unit galvanized around IDA, getting over the immense tactical, operational and cultural changes required to do so in less than six months, and leaving us thankful to each person in the business unit.

Luniel de Beer is a talented and accomplished Senior Program Manager with extensive experience in online search and eCommerce, and proven ability to lead technology operations. Adept at overseeing program management, solutions architecture, software development, and process improvement functions. Luniel's background includes Fortune 100, 500, and 1000 organizations. He has a consistent record of controlling costs, leading technology development and implementations, and facilitating profit growth through the effective alignment of technical and business operations.

Dr. Israel Gat's executive career spans top technology companies, including IBM, Microsoft, Digital, and EMC. He has led the development of products such as BMC Performance Manager and Microsoft Operations Manager, enabling the two companies to move toward next-generation system management technology. Dr. Gat is also well versed in growing smaller companies and has held advisory and venture capital positions for companies in new, high-growth markets. He was presented with an Innovator of the Year Award from Application Development Trends in 2006.

Dr. Gat focuses his consulting and writing on technical debt, large-scale implementations of lean software methods and agile business service management ("devops"). His recent e-book, *The Concise Executive Guide to Agile*, explains how the three can be tied together to form an effective software governance framework.

Dr. Gat holds a PhD in computer science and an MBA. He is a member of the Trident Capital SaaS advisory board and a Fellow of the Lean Systems Society. In addition to publishing with Cutter and the IEEE, he posts frequently at The Agile Executive and tweets as **agile_exec**.

Amir Kolsky is a Senior Consultant, coach and trainer. He has been in the Computer Sciences field for over 25 years. He worked for ten years in IBM Research, and spent nine more years doing Chief Architect and CTO work in assorted companies big and small. He has been involved with Agile since 2000. He founded MobileSpear and subsequently XPand Software which does Agile Coaching, Software Education and Agile Projects in Israel and Europe. Amir brings his expertise to Net Objectives as coach and trainer in Lean and Agile software processes, tools, and practices, Kanban, Scrum, XP, Design Patterns, ATDD and TDD.