Stopping the negative spiral [e-book excerpt]

Lean IT in large: Overcoming distribution and bridging the gap between business and IT

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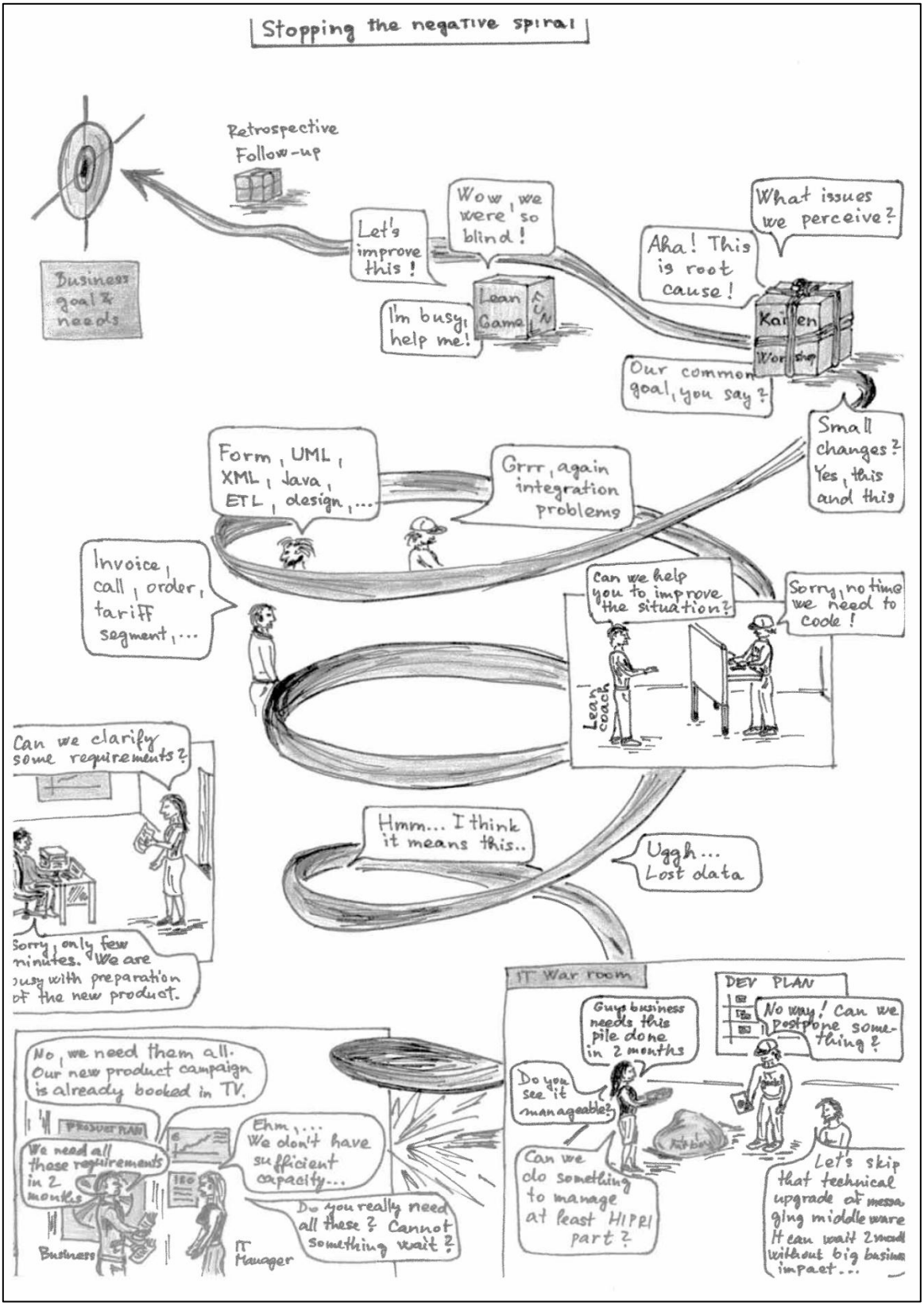
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Are you locked in a dead spiral?

You know you need to change something to improve the current situation, but you have absolutely no time to do it, deadlines are approaching and you already work overtime, therefore you postpone any effort or workshop focused on improving the current situation… Does this sound familiar to you?

Or is your IT disconnected from business, you want to bridge the gap and do not know how?

IT and business people use different languages causing misunderstandings and blaming. Business measures IT as manufacturing that does not respect its nature. Or you are seen as a cost and your IT budget is smaller year by year?

Or do you deal with weak software/service quality?

Do you deal with low productivity and people motivation?

I would guess you want to change some of the things mentioned above, otherwise, you would not be reading this e-book, right? ;) This e-book outlines some of the possible solutions to the problems mentioned above. It describes our story from a small local guerrilla Agile implementation team towards a Lean core team co-driving the whole 18,000 people corporation to change towards the Lean (improvement) culture. It describes the evolution, approaches and tools we use, the problems we solve, the typical reactions of people and many others. If you would like to be inspired and know more about how we did it and what we have achieved, continue reading!

Manufacturing assembly lines are visible and tangible and produce tangible results. You can enter the plant and see the physical line and touch the car in different stages of evolution. It is easy for us people to work with such tangible systems. It is also easier to implement Lean, measure the tact time, observe wastes, etc. Our brain ***works the best if we can see, touch and experience the system*** (for more on why see the chapter Human IT). Unfortunately, ***IT processes are not like this***. They are intangible and not physically present and visible. Software is also an intangible thing. Therefore it is much harder to observe problems, waste or measure it without sophisticated tools[1].

Let me emphasize the difference again:

1. In ***manufacturing or services*** both, the assembly line (process) and the result (e.g., car), are ***visible and tangible***.
2. In ***IT*** (software development, support, maintenance) ***both***, the process and product, are ***intangible***.

This is a big difference and it is probably the root cause why manufacturing or service companies with Lean processes, environment and thinking ***fail to implement Lean IT***.

[1]For more on this topic read also the Brooks classic: *Mythical Man-Month: Essays on Software Engineering. Anniversary Edition*. Addison-Wesley. (originally printed 1975)

STORY MOTIVATION

We, people in the Western culture, are nowadays driven by a strong rationality (logical, rational, scientific, verifiable facts matter) and forget the irrational aspects and emotions in human decision making(,) that are more important than rational facts. If humans were rational, why the hell would they buy things for free they do not need? ;) The same statement is valid for stories and their power. Stories have been part of our cultures for many thousands of years and they are the best way to transfer (the) knowledge (see sociological, psychological or cognitive studies, e.g. *Campbell: The Hero with a Thousand Faces* or *Turner: The Literary Mind*). You know, all the old epics, the Bible or the story of Buddha, are stories that are attractive for us, we would like to hear the same variations of the hero's journey again and again. And these are the ***stories*** that can ***differentiate us, our service, product or company*** from many other vendors providing the same. ***Stories matter***.

Another application of stories in business is in the ***knowledge management and sharing*** domain. Be honest, how often do you use your logical-structured-fact-based Knowledge base? How easy is it to remember such record content, steps and outcomes in the longer term? And now, compare it with the story of your colleague dramatically describing the same situation (you can hear it in the kitchen, during lunch or in the pub)? Which one is easier to remember and follow? Big and respected companies like XEROX[2], 3M or NASA use stories as an approach to store and share knowledge inside the company. Story telling is also part of modern leadership.

The next motivation factor that was the trigger for us to write this e-book is the ***different interpretation of Lean in the IT context*** than in manufacturing and services and also just ***a few case studies*** about Lean IT. Many implementations claiming Lean IT are ***just Scrum with the Kanban board***. This is great and works well, but this is not Lean IT, nor is it a whole value chain focus (e.g. sales, HR and management are missing, sometimes also operations). This example is Agile (Scrum) with just one Lean tool called Kanban. Lean IT is much much more, it is cultural change affecting the whole system.

The goal of this e-book is to share the lessons we experienced during our complex Lean IT journey in the story form. It provides our interpretation of Lean thinking and principles in the IT context together with our implementation approach and tools, so you can compare it with others and get inspired.

[2] For more see http://choo.fis.utoronto.ca/mgt/KM.xeroxCase.html or http://www.kmworld.com/Articles/Editorial/Feature/Best-Practices-Eureka!-Xerox-discovers-way-to-grow-community-knowledge.-.-And-customer-satisfaction-9140.aspx

DOES LEAN REALLY WORK IN THE IT CONTEXT?

When we participate in relevant Lean and Agile conferences and read blogs and scientific papers we always see comments related to

1. The inapplicability of Lean in the IT context, mostly in its distributed form.
2. Lean IT understood as Scrum and the Kanban board (or other Lean tools).

What do you think, is it really like this? Is Lean thinking applicable in a distributed IT environment? How do you understand Lean IT? Is it just Agile with some Lean tools?

We start the text with two examples (out of many) of short term as well as long term results to motivate you to further reading. These results have been achieved in selected IT services, projects and products where we use our version of Lean IT to overcome the distribution and build one team delivering customer value. We hope this will be convincing enough that Lean can work in a distributed IT environment and that there exists at least one way how to achieve it.

Results1: Server Implementation service – quick wins

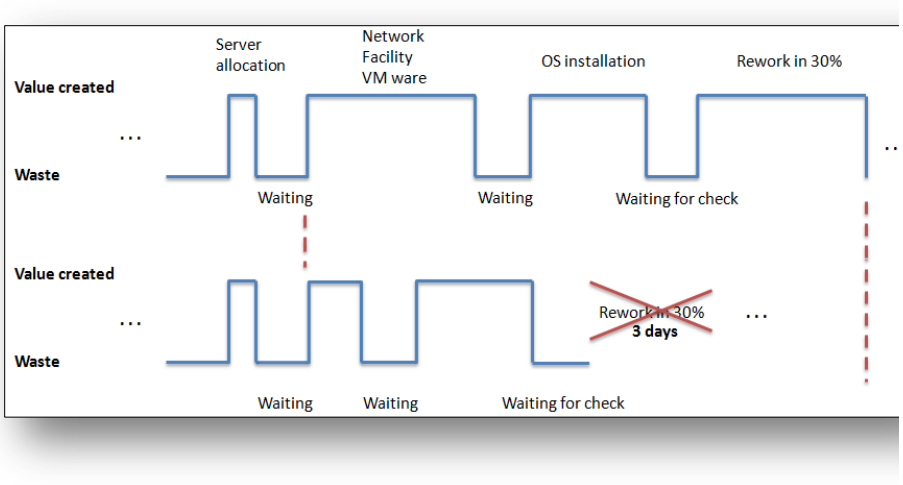
The first mini story covers results achieved in distributed server implementation service. The involved teams were seated in 3 locations and experienced two main key obstacles:

- Remote cooperation causing prolonged delivery times (as well as local cooperation of the Server Implementation and Networking team).
- Rework caused by weak communication, assumptions and misunderstandings.

The managers of the respective teams were not blind and tried to solve those issues many times but with none or only (a) small progress. What was different in this case? Why did we manage to change this situation? Well, we stopped the spiral by conducting several mini-Kaizen workshops among those cross functional teams (server implementation, network, monitoring). We mapped the current value stream (process), identified the root causes causing rework and long lead time and generated the ideal solution. The specialists and managers could then agree on small steps leading towards this ideal solution. Because the actions were really small, they implemented them in seven weeks with the following results:

- The ***Lead time*** of the Server Implementation process was shortened by ***20%***!
- Typical ***rework*** in 30 % of the cases was ***removed***
- ***New Net sales*** and ***saved money*** because of reduced rework and waiting in this part of the process were estimated to ***~48.000 EUR monthly***!

The situation is described by the Value Stream Map before our involvement (top picture) and after 7 weeks of team effort (picture below):



All actions leading to these quick wins took just a couple of minutes, half an hour or an hour at the maximum. This is why they could happen. To bring you more insight into the strategy, we will list the actions taken:

- Changed order of the steps in the flow (process) – we only slightly reorganized the flow in the way that the steps previously made at the beginning and at the end of the process by the same team/person are now made at once at the beginning. It removed two handovers and waiting and reduced the rework to 0.
- Additional check at the end of the task before sending the job to another team.
- Definition of done – a list of necessary steps was defined and appears as part of the work log for one sub-team.
- One shot sharing with other teams – this sharing covered what the team does (the tasks and their meaning) and why they need other team(s) to perform their tasks in a required way.

A few comments of the participants of the workshops and follow-ups:

- *I was surprised **how powerful small steps are**. Change does not need to be a big corporate program with a big investment plan only. Small steps really matter!*
- *Hey, this is common sense, isn't it? ;)*
- *It is great to see the whole process even when we are only a small part of it. Now we understand why we should do our tasks (meaning behind) and we can also propose improvements to the process and its steps!*

Of course, the story now continues with a much bigger audience, full value stream scope and other areas to be continually improved. Lean is not about quick wins or one shot improvements, but as you will see later on, sometimes you need convincing arguments and results to show there is a fish in the lake where you are going to fish. Strategies to gain quick wins always need to be derived from the system perspective (the whole process considered) to avoid sub-optimization and potential worsening in another part of the chain. Value stream mapping helping to understand the big picture should be the first step.

Read also other stories in the full e-book version.

A SHORT INTRODUCTION TO LEAN

How do we understand Lean? Lean is a way of thinking. It is a way of living, the glasses through which we see the world around us. Of course, Lean is about principles and tools. But very often we see only the tools taken and used in the same old environment with the old mindset and people are surprised that it does not work. Principles is what makes it hard. You can apply one principle in many ways depending on your experience, your personality traits, the company organizational structure, technologies used and many others. But the principles are often skipped and only tools are used. We try to follow the principles with a key focus on people, coaching and long term thinking. Also the Lean tools we use and develop further respect our context and the Lean principles we follow, see chapter ***"Our approach to implement Lean thinking"*** to understand more.

We understand Lean as a way of thinking and improving. ***It is not a set of tools or practices*** implemented in a traditional environment with a traditional old mindset. It is neither Scrum with Kanban, even though it can be a good starting point. Implementing the practices in an old school environment will not improve the situation. It can even make it worse. But implementing just Lean tools (e.g. Kanban, A3, 5whys) in the right open and trustworthy environment can already improve the current situation. Why? Because it is the environment Lean thinking builds. The key point of the Lean approach is hidden in the right environment supporting continuous improvement. This is what makes it hard – to build a new continually improving environment supported by leaders, see chapter ***"Our approach to implement Lean thinking"*** and also chapter ***"Human aspects in IT"*** to comprehend more.

The goal of this e-book is not to introduce Lean. It is out of the scope[3]. But to understand our practical way and approach, we need to provide a quick insight into "our Lean IT".

Lean thinking originated in Japan in the last century. The Lean boom started mostly after the Second World War, where Japanese companies needed to adapt quickly to the changing needs and conditions in the newly emerging market. The most known and one of the contributors to Lean thinking in Japan was Edward Deming. Toyota is the most known representative of the Lean approach among the companies due to their Toyota Production System – TPS.

Our understanding of Lean can be simplified into two key principles:

- Respect the people with coaching as the main tool to foster leaders
- Continuous improvement with a long term perspective

Respect the people means respecting others, their opinions, needs, constraints, ideas, thoughts and it does not matter whether it is a colleague, subordinate, manager, specialist, customer, business partner. We have chosen coaching as the main technique. We do not tell people what to do, how to do it or when to do it. We just provide the tools and ask questions leading to the root causes and possible solutions (which we could even know). People doing the job already know the solutions in many cases but usually do not share them because they fear rejection, comments, envy or something else depending on the maturity of the working environment. We encourage people to find solutions by themselves. If you design the solution on your own you feel much more

[3] For Lean introduction read first some of the books like: *The Toyota Way* by Liker; *Implementing Lean Software Development: From Concept to Cash* by Marry and Tom Poppendieck or *Lean Thinking: Banish Waste and Create Wealth in Your Corporation* by Womack and Jones. More can also be found in blog posts at en.differ.cz

committed to its implementation than if it is told to you. Is it not so? Of course, in some cases we also use mentoring to share our knowledge and provide hands-on support to the people, but the key approach is to help the people to find their own ways and solutions.

Continuous improvement with a long term perspective is in our case translated into the following sentences. Only if we are open and honest and provide the customer insight into our processes, only then can partnership emerge. ***Openness and insight*** builds (the) trust and together with the focus on quick customer value delivery with expected quality ***builds (the) partnership***. Quick delivery also means flexibility with minimal waste in the process. This can only be achieved when we apply the culture of immediate problem solving. We stop the flow and try to solve the problem immediately when it occurs. People have the context, are involved and the root cause can be found more easily. Hiding the problems is one of the symptoms of an immature company culture.

Lean is about continual learning. We are also continually learning and adjusting our approach based on the lessons we learn during our involvement in the transformation. The statements, approach and tools are valid for October 2012, and you can bet they will evolve further in the near future.

Let us also introduce classical Lean wastes and their corresponding meaning in the IT context:

Classical Lean wastes	Lean IT wastes
Waiting	Waiting
Over-producing	Extra features and gold plating
Revising / rewriting	Defects
Over elaborating	Big work in progress
Movements	Context and task switching
Transports	Handovers
Stocks	Variation and std. services
Unutilized creativity	Reinventing the wheel

Lean is sometimes reduced to waste mapping and reduction, but it is only a very limited part. It is not only about reducing waste, it is mostly about:

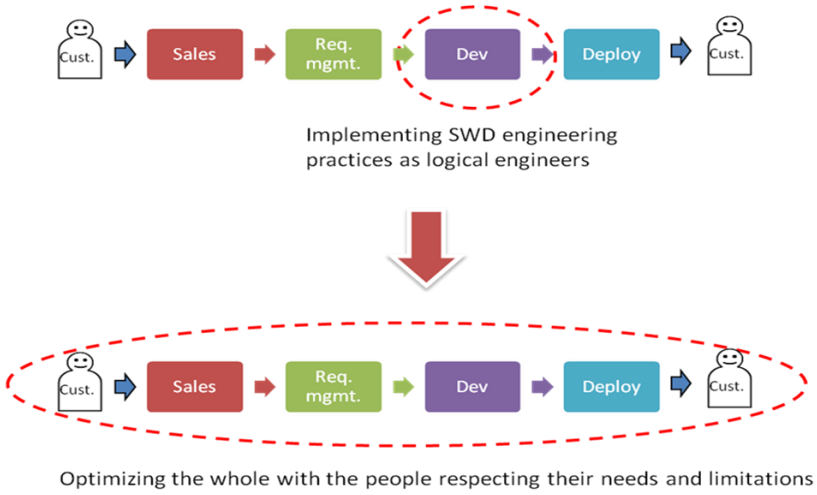
- respecting the people and their strengths, ideas, experience
- leaders, leadership and self-leadership
- defining and understanding standard versus nonstandard orders
- seamless workload
- teaching people to fish, not fishing instead of them (the long term approach).

Having fun at work is one of our key principles as well. Lean is defined by the principle *“Develop exceptional people following the company strategy”*. Can you imagine an exceptional person without a sense of humour, unwilling to have fun? If so, then it would be an exceptionally boring person, right? Would you like to transform your company with such a person? Of course we are professionals, but do not want to be “poker face consultants”. In fact, we believe that if people do what they like to do, when they want and how they want, then they usually feel higher satisfaction and consider the work more as fun or a hobby than hard daily routine work.

This is why we use tools like ***games*** to introduce the Lean and Agile principles. Our games are quite sophisticated and simulate real conditions, situations and working environment, but do not get me wrong – I do not have anything against the Scrum ball game ;) Real life experience is the best way to remember new things (up to 70%). Compare it to the approximately 10-20% you can remember from training and reading. See more in chapter ***"The tools we use and develop further"***.

OUR TEAM STORY – FROM LOCAL MENTORS TO COACHES OF COACHES

To understand the background and the way we got to the existing approach, we need to introduce our team story first. We started in 2006 as a local team in a nearshore location in the Czech Republic. Our role was to mentor and locally share successful Agile practices from one project. We implemented specific software design practices such as Agile planning, continuous integration, test driven development (TDD), or pair work. Today, we are coaches from a core team driving corporate change towards a learning organization. This evolution has had a significant impact on the way we deal with change in teams and units. Most significantly, our mindset has shifted from trying to enforce a solution we see, to enabling change in a learning organization; from *"the solution is obvious, why don't they implement it?"* to human change management optimizing the whole process *("what would you change and how to improve the whole flow?")*, as is shown in the following figure:



The shift of our mindset and implementation approach (from local mentoring to global coaching).

Our nearshore software centre was at that time just a delivery centre employing developers, testers and operations specialists. IT projects and IT services were managed remotely, mostly by exhausting single task delegation. We started to share our experience from successful Agile projects with the local teams. Mentoring and advising was the natural approach taken. The approach was also formed by our mindset and assumptions as well as by the limited sphere of influence. Thus we focused on engineering practices like:

- TDD,
- component architecture,
- code conventions,
- continuous integration,
- definition of done,
- pair work.

We thought that problems were caused by onsite people managing the projects. We also pushed our ideal vision towards the teams. We did not want to apply any work around or agree on a trade-off because we saw them as a loss. A typical example of our approach is depicted by the following story:

> Developer: *"I'm asked by my project manager for estimates."*
>
> Our answer: *"Ok, let's focus on improved estimations using prototypes and iterations that help us to understand the problem in more detail."*

The first lessons learnt after some time providing the service in the described context were as follows:

- improving estimations is sub-optimization (as one of the examples of sub-optimization),
- onsite people making decisions lacks Agile knowledge and project insight; we were not able to explain ideas over the phone or video conference,
- our proposals were seen as obstacles to the traditional (but no longer working) way of working.

Our conclusion based on the lessons we gathered was to conduct Agile training courses onsite ***to share the knowledge and learn the experience and constraints of others***. We learnt that problems can always be solved. We just need to extend the context.

So the context was expanded to whole delivery teams in 2007.

Read the details how we get there in the full e-book version.

And this is what our Lean focus and scope looks like nowadays. We ***create the culture of change*** so that people change their mindset towards change from *"uuuuh, again some change"* to *"change is a normal part of our life"*. Namely we do it together with the customers, sales, management and specialists. We synchronize over the different perspectives, focus on a common goal, design a seamless flow and set up continuous improvement by regular follow-ups and by coaching. By this, we:

1. ***bridge the gap between business and IT,***
2. ***and overcome the distribution.***

Lean focus on the End-2-End flow: bridging the gap between business and IT and overcoming distribution.

The key lesson and recommendation is ***not to focus on detailed*** software development or maintenance ***process*** pushed from the top. Rather focus on ***learning and improving the process***. Learning and improving the process is also longer term investment ensuring sustainability under future

changing conditions as well[4]. Key parts of learning in software development, maintenance and support area would be following:

- having quick feedback (demonstration to customer, developers testing, continuous integration, frequent testing as part of each iteration/sprint or Kanban flow);
- having definition of done (DoD) stating customer expectations as well as expectations of succeeding team in the process;
- establishing improvement framework – approach how and where to gather, store and prioritize improvement proposals from the teams; it has to be open and visible with no access obstacles;
- regular retrospectives to learn what went well and what can be improved; it also serves as improvement generator;
- granted time for learning (retrospective, generating and implementing improvements).

[4] Where process need to be updated by some dedicated group. By learning and improvement process we ensure that team itself can do the changes and updates as people see the need. We don't need to wait for approval or updated process from any central unit. Such response to change is the quickest possible and also allows team to feel the responsibility for the result.

HOW DO DIFFERENT MANAGEMENT PARADIGMS AFFECT THE WORKING ENVIRONMENT?

Before we introduce the human aspects related to every single person that need to be considered when implementing change, we recap two existing management paradigms that exist in companies and create the basic building block for the Lean culture.

Traditional corporations apply the scientific management approach introduced by Frederick Taylor and practiced by Henri Ford in the 19th and 20th century. Thanks to these men we have "cheap" and affordable cars nowadays but such an approach needs to be revised in the 21stcentury with different (mostly creative) types of tasks. ***Taylor's scientific management paradigm*** is defined by the following assumptions[5]:

- People are lazy by nature → they need direct control at work and external motivation
- People do not know how to proceed with their tasks → they need to be told how to do it
- These are both the manager's tasks

Symptoms of this traditional management approach in IT are:

- People/teams considered as replaceable components.
- Not achievable/unrealistic goals set every quarter.
- Micro-management (people are told what to do, how to do it and when to do it).
- Strong focus on processes and auditing.
- Great specialists nominated to management positions.
- Virtual quality improvement programs with not many visible benefits performed by a special improvement team, not by the workers doing the job.
- Stressful environment (frequent incidents, too many requirements to manage, too much high work in progress).

Modern management approach presented by companies with an open and free culture like Gore, Google, Facebook, IDS is based on different assumptions. They are as follows:

- People are good by default, context forms us and our behavior
- People know the best how to do their work
- People are motivated to work by default if they do what they are good at and feel the purpose
- People are most productive, happy and creative if they do what they like, the way they want and when they want

By the way, these assumptions are confirmed by 30 years of research, see e.g. the work of Dan Ariely, Ryan and Deci, Mihaly Csikszentmihalyi or also popular work by Dan Pink. Our experience says that it is harder to implement Lean practices in a traditional scientific management environment. Lean is built on top of respect to the people. But if you treat people as replaceable components with low trust, Lean will not work for you. The change of (not just management) culture needs to go hand in hand with Lean implementation. Or said vice versa, Lean is about the change of environment, nothing less.

Read more facts and evidence in the full e-book version.

[5] McGregor: *The Human Side of Enterprise*, 1960

HUMAN ASPECTS IN IT

Software and IT system development, operations and maintenance are engineering disciplines performed by technical people following formal processes. We ***engineers*** are heavily trained in mathematics, logic, programming but ***often miss communication, psychology and intercultural skills education***. Technical universities do not train engineers in these subjects. But nowadays software systems are developed, maintained and operated by distributed teams from all over the world and communication is not a key to success but a must. People live in a ***different context, have different goals, needs and internal motivation to do quality work***. Therefore the awareness of basic cognitive and psychology aspects, leadership, team work and typology is necessary. Bringing the awareness is the goal of the following chapter.

People are afraid of changes. It can be a change of the job, moving to a different city, leaving a not working relationship or the implementation of Lean. The reaction to all these changes is driven by our biology – how our body and brain work. The natural human reaction to such an upcoming change is fear and worries. Why is it so? ***We use old brain parts and mechanisms*** (namely the amygdala and front brain lobes) to sort out and react to what is happening around us. This mechanism is connected to our emotions and took over tens of thousands years to evolve. This is what helps us to quickly react to a snake, rival hit or fall by fighting or running away. This quick response is ***accompanied by worries about the perceived risk*** with a focus on finding a positive solution; everything else is skipped at this moment. The described mechanism is still working in the current (office) conditions although there are no snakes or rival fights around us. The reaction and its mechanism remains the same. It cannot be changed over dozens of years.

But fear also comes from overstepping our comfort zone. ***We fear of losing our habits and existing comfort***. There are only a few people inviting the change and living on their comfort zone borders. The rest of us are satisfied within our comfort zone. But the growth and evolution lives outside those borders and outside of our habits.

What do we consider as human aspects? We emphasize understanding of our own as well as the team's needs, the principles of internal (how do we motivate ourselves) and external motivation and basic brain functioning. The industry revolution and knowledge economy have been in existence for only a few hundreds of years. Such a long time means nothing in the human evolution period. Our daily environment has changed rapidly but was not followed by the appropriate evolution in our brain, thus every day we still fight with lions, rivals, etc. ***These facts need to be respected when designing a new way of working or implementing the change***.

Soft (or human) aspects like leadership, communication, motivation, emotional intelligence EQ are default by definition, which causes different understanding and ideas among people. The soft aspects are also hard to measure or at least harder than financial figures or number of orders. From the design perspective, the brain part is responsible for emotions closest to the brain stem and nervous system. Neural excitations from this brain layer need to travel just a short distance to transfer the information or reaction. Excitations from the neocortex representing logical thinking need to travel a much longer distance[6].This is why we sometimes react as if we were mad even though we logically know all the consequences.

The main goal of this chapter is to answer the following questions accompanying all changes:

[6] This is also one of the reasons why it is sometimes so hard to control our emotions. But it is this *"run or fight"* mechanism that has helped us to survive from prehistoric times until today. To control our emotions we need to become aware of the difference between thought, emotions and our self. Emotional signals are always quicker than the logical thoughts and justifications coming from the neocortex.

- Why does the scientific management not work for creative types of tasks?
- Why is the scientific management not sustainable in the longer term?
- Why do we fear change?
- Why do your people not understand and do not follow your proposed change?
- Why do others hear something else than I am telling them?

Let us start with the basic communication premise. ***Every human being is different, has a different context, goals and motivation***. Having the same context or understanding the context of the communication receiver is the key to successful communication. But at the same time it is impossible to have 100% the same context as the communication receiver due to a different childhood, life experience and personality types. Therefore we need to understand the context of the other person in communication first.

Typology can help us with this task as well as to avoid assumptions. Assumptions are a typical mechanism we use to construct the unknown part of the receiver's context. And guess what, ***assumptions are the root cause of many (or all?) misunderstandings***.

The story of two typical assumptions:

Imagine a situation where your manager overloads you with tasks so you decide to process some tasks at home instead of discussing your load with the manager. Your manager gets used to it because you have the tasks ready the next (day) morning and you do not object. He assumes you are so productive and do this in the working hours. ***You assume he must know*** *you do not manage at work…*

You come home one afternoon and your wife is so pissed off with the situation so that she argues and gives you an ultimatum. Either you stop working at home or she stops the relationship. You are appalled. Nothing seemed to be so bad. You assumed your wife accepted your way. You are so shocked that you cannot finish the sales presentation for tomorrow's customer meeting organized by your manager.

Your manager assumes you will deliver it as always and waits in the morning just a few minutes before the meeting. You arrive late, still shocked by the ultimatum without any presentation...

Just two typical assumptions that were not communicated and you can foresee quite big damage in the relationship and business in this story.

The same problem can happen in software development when interpreting requirements. The analyst or developer can say *"I assume this requirement means…"* instead of asking or verifying the implementation by a prototype or customer demonstration. Such an assumption can mean an unusable feature, business losses or maintenance problems in the production. All these examples emphasize the knowledge of the receiver's context as the most important communication aspect. As we have already said, we cannot know 100% of the receiver's context – his exact feelings, knowledge or assumptions. Therefore ***we need to know about this limitation and lead the communication accordingly***:

1. ***State your assumptions*** after opening the communication.
2. ***Ask about the assumptions*** behind the receiver's statements and decisions.

The tools we use to understand the strengths, working preferences and limitations of others is the Belbin team roles inventory and the Myers-Briggs Type Indicator (MBTI).

Read the full e-book version to learn more about it.

And what about the motivation to change?

Motivation is quite an interesting topic. The common approach to motivation is that we can motivate somebody. Our HR systems are based on this, how we treat our children is based on this, but the truth is we cannot motivate anybody! More than the last decades of modern research in the motivation area confirm that you can only inspire others but motivation is something internal that causes your action, your motion. Motivation is about why you do what you do, why you decide and act like you do. We talk about internal motivation and the so called hygiene factors. The first one represents real motivation, the second is more of an environmental aspect supporting or hindering its daily smooth manifestation. Herzberg defines the following satisfaction and dissatisfaction factors[7]:

Factors for Satisfaction	***Factors for Dissatisfaction (hygiene)***
Achievement	Company Policies
Recognition	Supervision
The work itself	Relationship with Supervisor and Peers
Responsibility	Work conditions
Advancement	Salary
Growth	Status
	Security

It is important to stress that the opposite of satisfaction is not dissatisfaction and also vice versa. If you remove the dissatisfaction factors people do not become satisfied automatically. They will not be dissatisfied. But satisfaction can only be achieved by different factors and actions. So, you need to focus not only on ***removing the dissatisfaction factors (hygiene), but also on improving the satisfaction factors***.

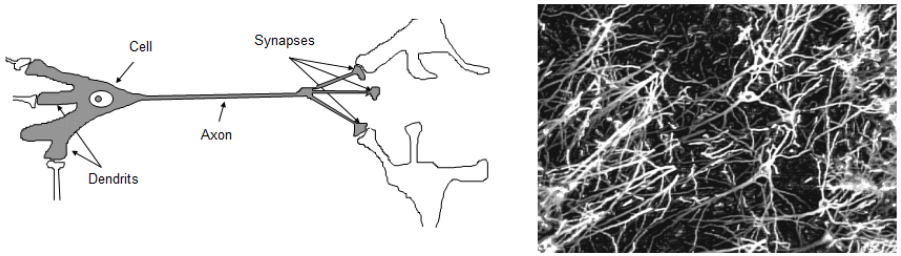
And why did we introduce this theory? ***A part of the Lean transformation also has to be the focus on removing the dissatisfaction factors as***

[7] Herzberg: *One More Time: How do You Motivate Employees*.

well as improving the satisfaction ones. We hope this introduction has provided you the aspects to focus on different levels.

The basics of cognitive science

Typology, the communication context and motivation factors are just the basics. To understand why people react to changes as they do and how to overcome it, we need to dig deeper into cognitive science and outline how our brain works. I am not an expert in this area, but I refer to the many sources I used to summarize this chapter[8]. There can be some semantics and terminology mistakes in the text due to conscious or unconscious simplification on my side. But it should be good enough to understand the principles of our brain to be respected when implementing the change.



The neuron model and neural network of our brain.

The basic unit of our neural system is called a neuron. A human neuron looks like a tree and consists of neural axons transferring neural excitements. An axon is not involved in decision making; this is performed by neural cells and dendrits. The next part of a neuron is a branch called the dendrit. It is used for sending and receiving impulses among other neurons. Every single neuron is connected to and communicates with

[8]Trojan (2003) *Medical physiology.*
Rinpoče, Y. M. (2008) *The Joy of Living: Unlocking the Secret and Science of Happiness*.
Varela, Hayward (2009) *Gentle Bridges: Conversations with the Dalai Lama on the Sciences of Mind.*

thousands of other neurons. The mutual communication among neurons is ensured by synapses. When an action potential is reached, neurotransmitters are released. We all know different kinds of neurotransmitters, namely serotonin (connected with anxiety and depression feelings), dopamine (connected with happiness, satisfaction) or adrenalin (connected to stress). The communication among neurons can be seen as electricity transmission. It is still unknown exactly how these impulses are processed, e.g. which signal is passed to other neurons. The only thing we know is that a neuron does not contain any decision making table known from description logic.

Neural activity represented by electric brain transmitting is measured by an EEG (electroencephalogram). The EEG shows neural activity as different curves. It is different for sleeping, thinking or for resting. Neurons need to communicate on a regular basis to keep neural connections. Such basic communication is represented by:

- gathering new sense inputs (information, experience, practice),
- solving problems on a daily basis,
- recalling memories.

This behaviour (or way of communication) is quite natural for our brain and thinking. It keeps the connection up and running. But our consciousness is not represented by thinking only, although current science presents it this way. Consciousness also includes recalling memories, gathering new inputs or an extended state of consciousness experienced during hypnosis or meditation.

Almost every being's brain contains innate brain circuits. These circuits predefine basic behavioural patterns. What is interesting is that every being, but mostly mammals, has a ***learning ability***. Mammals can recognize objects and perform actions that they did not know before. Our brain does not create new circuits in such cases but rather alternates the synaptic contacts of existing neural connections. This is what we call learning and this is what slightly changes the tuning of brain circuits. A very important finding of cognitive science is something called neural plasticity. ***Neural plasticity*** is defined as a small alternation of the brain's responses changed by repeating experience on a molecular level. Using human language, we can simply say that ***we can change our habits, behaviour and the way we think***. These findings have very significant importance leading to the following conclusions:

- Our thinking patterns and the way we work is just a ***mental habit*** (existing neural connections) that ***can be changed by regular repetition of new behaviour*** (the so called neural plasticity).
- Mental habits define the way we react to people, situations, taste or thoughts. It is similar to reflexes – unconscious reactions not driven by logical thinking, like e.g. meeting a person in a specific place can trigger pleasant or unpleasant feelings without even knowing them.
- We can change our reactions, feelings as well as the way we think. We can remove fear from specific situations (e.g. speaking in front of a big audience, fear of not knowing all the answers, fear of failure) or even sadness and negativism (e.g. *"this will never work"*, *"I can never ever achieve something"*, *"nobody loves me"* or *"our company cannot work better"*).

This slight introduction is elaborated more in the full e-book version where we also discuss the impact on transformation, people and their behaviour and where we define the necessary steps to overcome possible rejection.

The theory of constraints – overcoming the resistance to change

Let us also introduce the last tool we use in order to successfully change something. Let us assume we have a team and one person sees the problem. This problem most likely touches the whole team. The problem is a joint problem even if the rest of the team do not see it. You know what people say: *"If you do not see the problem then you are part of it"*. It often happens that the problem identifier does not know how to present the problem so that it is understandable for others. Here *Eliyahu M. Goldratt's Theory of Constraints* and its *Layers of Resistance to Change* can help. It explains why we humans resist to changes:

1. We do not agree with the ***extent or nature*** of the problem.
2. We do not agree with the ***direction*** **or** ***completeness*** of the solution.
3. We can see additional ***negative outcomes***.
4. We can see ***real obstacles***.
5. We ***doubt the collaboration*** of others.

To successfully overcome objections and fear of change, also consider the following steps:

1. ***Visualize the problem in context***, e.g. using Value stream mapping and analyze the problem root cause so that everyone sees and understands the problem and its nature.
2. Brainstorm together a solution ***attacking the root cause***, not the symptom, so that everyone understands why exactly these actions will solve the problem. This way all the people will take the same direction and accept the solution.
3. Identify and visualize the ***potential negative outcomes*** of the solution as risks and handle them as "known unknown" problems. Either you accept them or you can plan actions to mitigate them.
4. Ensure ***executive support*** for the change from the leaders so that if any obstacle comes, somebody will take care of it.
5. Appoint an ***owner of the action*** and an executive group of people who will support the change implementation. Then it will most likely not happen that the solver will end up alone with its solution. Others will help.

The Kaizen workshop, which is one of the tools we use already, counts on these resistance layers. For more about the Kaizen workshop see chapter "The tools we use and develop further".

Other sources used for these chapters:

- Milgram (1974): *Obedience to Authority*.
- Zimbardo (1971): *Stanford Prison Experiment*.
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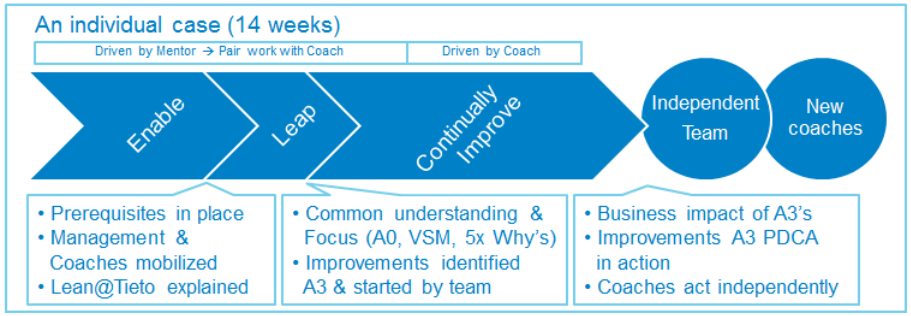
- Darley, Baston (1973): From Jerusalem to Jericho: The Study of Situational and Dispositional Variables in Helping Behavior, *Journal of Personality and Social Psychology*, vol. 27, pp 100-119
- Csikszentmihalyi: *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*, 25th anniversary edition, Jossey-Bass, 2000
- Gladwell (2002): *The Tipping Point*.
- Ariely (2010): *Predictably Irrational*.
- Ryan and Deci: Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development and Well-Being, *American Psychologist 55* (Jan 2000): 68
- Deci and Ryan: Facilitating Optimal Motivation and Psychological Well-Being Across Life's Domains, *Canadian Psychology* 49 (Feb 2008): 14

OUR APPROACH TO IMPLEMENT LEAN THINKING

All the previously introduced chapters were important for one reason. They form a sound basis for the transformation approach we designed and use to implement Lean thinking. It reflects our team evolution and incorporates all the necessary outcomes of the soft aspects we called “human IT”. So, the approach reflects the following:

- People first – our approach is not about redesigning processes, but about investing in people, teaching and supporting them daily with the change implementation.
- Touching intrinsic motivation – involving people by solving problems perceived by them.
- Changing habits and our behaviour step-by-step – incremental adoption.
- Applying small actions (small implementation, the so called Kaizen steps) to avoid the amygdala run-or-fight reaction.
- Overcoming layers of resistance by the structure of the used workshops.
- Visualization to make it easier for our brains to grasp the system we are part of.
- Coaching as the main facilitation method to avoid the “not invented here” syndrome.

We packaged all these building blocks into the so called ***14 weeks transformation approach***[9]. It is a proven and ready-made packaged solution leading to significant improvements in Lead time, quality and EBIT, see some examples in the first chapter. It has the following structure and phases:



The packaged 14 weeks approach with its phases and components.

It is the last evolution step of our coaching way of working based on 6 year coaching and mentoring experience in the Agile and Lean field, internally but also externally with many of our customers. Among others, this framework contains the following tools that will be elaborated in the following chapters:

- ***Introduction games*** to learn the principles and tools by experiencing them in a live interesting form[10].
- The ***Kaizen workshop*** helping us to stop the negative spiral and start the necessary improvements.
- ***Value stream mapping*** and the ***root cause analysis*** as part of the Kaizen workshop and short regular follow-ups.
- The ***A0*** and ***A3*** concept. A3 is a known Lean tool, but A0 is our invention helping to uncover perceived issues quickly, sort them out according to the potential impact and needed investment and generate A3s out of them.

[9] We have already presented it in several conferences; check e.g. the video from the Lean IT Summit 2011: http://www.youtube.com/watch?v=V-pVvvqJnzU or materials from ICGSE 2010 at http://www.slideshare.net/xprochaz/coaching-in-distributed-environment

[10] We have Agile, Lean and ITIL games in our portfolio, but the key in the Lean transition is the Lean game. Other games are optional based on the area to improve and people’s knowledge.

- ***Agile*** and other ***Lean principles and practices*** that we live in our daily life. We also walk the talk and try to be role models for people.

It is important to mention that the Lean transition ***does not take 14 weeks in all the cases***. It is a ***selling and marketing package*** that is understandable and can easily be communicated towards managers and decision makers. These people need to know ***what we need from them*** (their support, time of people, possibly budget for investments, etc.) and ***what they could expect*** (typical achievements). The time and money invested into the Lean transformation needs to pay off. Managers also have their bosses that will ask for the results ;) Therefore the framework states approximately how long the team can be needed for extra activities and when approximately the team can be independent and generating tangible results. We usually stay with the teams for something between 7 weeks[11] to several years[12]. Let me also outline the ***time consumption*** we communicate to our stakeholders when selling the Lean transformation. The transformation requires the following extra time from the team and internal coaches:

- 1 to 2 days in the Enable phase for initial discussions, hand shaking and mostly for games.
- 2+ days in the Leap phase for the Kaizen workshop with some necessary preparation time to gather data and facts for perceived problems.
- ½ day bi-weekly for synchronization and follow-ups. The implementation of improvement activities (the Kaizen steps) is considered as normal daily work, because you should not just perform the task, you should also improve it on a daily basis based on your proposals and understanding of the situation.

We also check the team independence using our ***Lean self-check*** answered regularly by the team.

Read more about games, our adjusted Lean tools (A3, A0, A3 Navigator, Kaizen workshop, Value Stream Maps and bodystorming), their usage and context (the core of the book) in full e-book version. Part of this is also e.g., usage of A3 in IT services as Service Improvement Program (SIP).

[11] The shortest case we experienced with one team that generated impressive results (40 kEUR monthly saved and newly earned with a 20% lead time shortage).

[12] In this case we do not stay longer due to no results. The reason is usually different. When the leaders see how their team has changed their behaviour, how long lasting issues have been fixed, they usually want to focus on other areas and continue further with a set continual improvement with our support.

THE LIMITATIONS OF OUR APPROACH

Every approach and way of working has its strengths and weaknesses as well as critical success factors. Our approach is not an exception. The ***existing risks and costs*** can be summarized in the following points:

1. ***Support and facilitation by an experienced coach, mentor***
2. ***Environment and team readiness for the change***
3. ***Quite low costs of the change***
4. Although we apply such an efficient approach, the team needs to consider a decrease in productivity during the initial weeks. It is caused by learning the new way of working. But the new productivity was in all our cases much higher than the original one.

Limitations and prerequisites are discussed more in the details in full e-book version together with typical implementation issues and checklists. Check at least short following excerpts of these.

TYPICAL LEAN IMPLEMENTATION ISSUES

Let me summarize the typical issues you can face during your Lean implementation:

- Not having a clear owner
- ***Not having a common goal***
- ***Missing a clear explanation*** of why behind (the goal).
- Not selecting the right people for Kaizen workshops and follow-ups.
- Lacking role models
- Implementing Lean over dead bodies
- Laying off people whose positions were reduced by improvements.

And do not forget. It is mostly about the culture and people, not about using Japanese tools ;)

CHECKLIST EXCERPT FOR LEAN IMPLEMENTATION

- ✓ First ask yourself why you want to change, what is the reason?
- ✓ Agree on a common goal.
- ✓ Identify and understand peoples' needs and issues, then connect the transformation to them.
- ✓ Prepare a unified transformation approach you will use
- ✓ Prepare a selling package.
- ✓ Start with pilots.
- ✓ …

CHANGE HISTORY

Version	Date	Author	Change history
V1.0	December 2012	Jarek Procházka	First English version of e-book excerpt created

You can find more details in context, examples, checklist, tools we use in the full e-book version.

Check http://www.differ.cz/en/category/ebooks/

Eye opening game sessions

Do you want to open your eyes and see the improvements possibilities in your (not only) software development, maintenance or support process? ***Book your Lean game session*** at jarek@differ.cz or use the contact form http://www.differ.cz/en/contact/

Other e-books coming soon

- **Agile and Lean IT support and maintenance** covering interesting topic on connection between SW development, maintenance and support we presented earlier with more than 1300+ views in slideshare, check http://www.differ.cz/en/agile-and-lean-support-and-maintenance-of-it-services-and-information-systems/
- **Human aspects in IT** – this e-book can be interesting for business people cooperating with IT as well as IT people cooperating with business (it is basically all nowadays ☺). It presents human and soft aspects in IT context and explains things like why short iterations and regular feedback is a must, why we react to some situations as we do, why we do not share our objections, how assumptions can hinder delivery success, why we get along with some people and do not with others and many others. Some of the ideas was already covered in this e-book and also in http://www.differ.cz/en/agile-lean-practicess-happiness/
- We finalize also e-book on **Agile testing with the whole software development team** but this one will be available in Czech language only.
- In the progress is also promised 2nd part of **ITIL story**. It describes usage and context of ITIL concepts and processes in story form. The first version covered Operational and some Transition concepts and processed. The 2nd part will focus mostly on Strategy and Design.

Is there something ***you are interested in or what to read*** in these e-books? If yes, please, let us know[13]. Based on our knowledge and experience we try to incorporate the answers in text.

[13] You can use contact form at http://www.differ.cz/en/contact/

DIFFER!

STOP THE NEGATIVE SPIRAL AND CONTINUOUSLY IMPROVE YOUR (NOT ONLY IT) DEVELOPMENT, SUPPORT, MAINTENANCE AND OPERATIONS USING AGILE AND LEAN IT PRACTICES

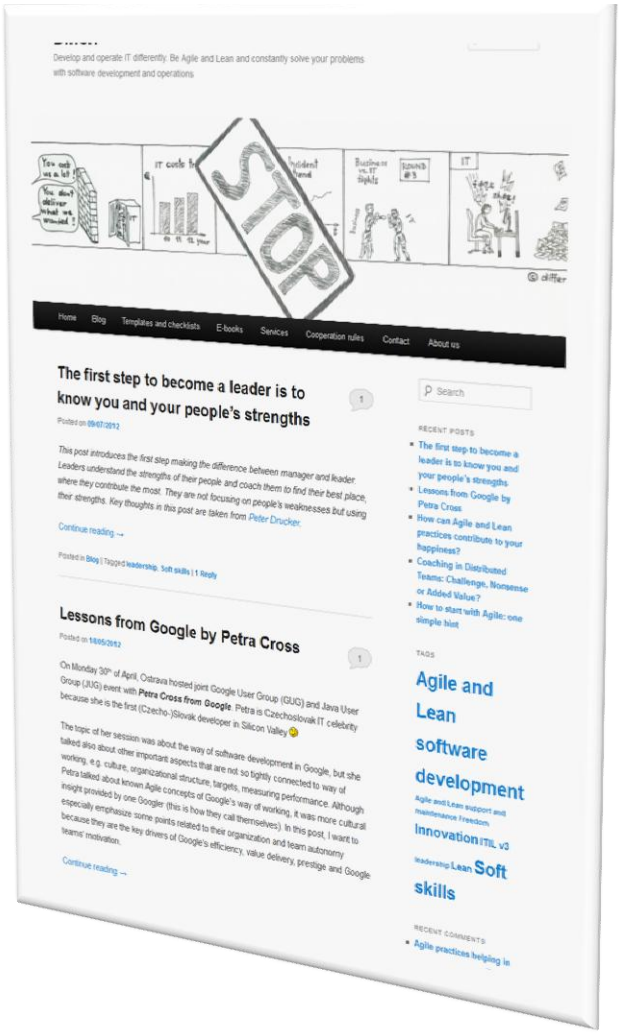
- **Articles and experience**
- Agile and Lean IT development
- Agile and Lean IT support and maintenance
- Human aspects in IT
- Agile and Lean IT management

- **Free e-books**
- Lean IT experience
- ITIL in practice
- Experience from projects

- **Practical templates and checklists**

- **Services**
- Creative workshops
- Lean IT and Agile games
- Problem solving workshops
- Agile/Lean IT/ITIL consulting

- **Interesting resources**



STOPPING THE NEGATIVE SPIRAL [e-book excerpt]

Lean is not a new paradigm. “Why should I care?” you can ask. Of course, there exist companies implementing and using Lean for decades, but at the same time we can observe some struggles with Lean effort in IT environment, mostly in its distributed form. Why is it so? Manufacturing and service companies deal with tangible processes and products.

Unfortunately, IT products and processes are both intangible and this need to be respected. Lean is also not limited to Scrum with Kanban as we usually see in Agile teams.

This e-book summarizes our experience with Lean IT. By Lean IT we mean using IT as a source of innovation to business as well as an approach removing the typical tension between IT and business. Lean IT can sound like sub-optimization to Lean experts, but we do not sub-optimize (do not focus on IT only). Our experience comes from IT industry. We are not all industry experts therefore we start with IT and optimize the whole business using IT.

Jaroslav Procházka

I work as Agile and Lean IT coach and mentor in distributed context. I share my experience in many ways. I’m running Differ! blog (en.differ.cz) where I share my experience with Agile, Lean IT and ITIL implementations and all related aspects like human and soft aspects, coaching, leadership as well as innovation. You can also find e-books on various topics there.

Another way I share my experience is presenting together with my colleagues at International conferences like Lean IT summit, XP, ICGSE or ISD.

I try to play in my life and enjoy it, not only in my spare time but also time at work or during travelling. I also inspire others to enjoy their lives by leading creative courses on this topic. Besides writing, travelling, sharing and inspiring others I love drawing, painting, drumming and being in the nature (skialpinism, cross country skiing, MTB, climbing, hiking or just quietly observing and listening).