

# Agile is in essence a development of systems thinking

Paul Turner's keynote at DREAM15 was about systems thinking. He currently is retiring from his work at Assist Knowledge Development. His colleague Debra Paul answers some questions we sent her by e-mail.

by Geertje Appel

1. *Paul told the story of the blind men and the elephant, which shows that if you only look at the parts, you will never see the whole elephant. Software engineers are highly trained in systematic thinking. They are used to splitting up complex problems into smaller, less complex ones. A technique they often use is loose coupling and high cohesion. Are there similar techniques that will help us to come from a too narrow view on the problem to the bigger picture without making the picture too big and complex?*

A business activity model will provide an overview of what the organisation is about and what are its most important business activities. This model is also based upon an understanding of the world view which provides the underlying rationale for the business system. Keeping this world view in mind and developing a BAM on this basis, means that the overview model is focused on why the business system exists and the analysts know what needs to be done to achieve this. This model also provides a high-level view which gives a context for decomposition and drilling down into the detail. As an alternative, a context diagram also provides an overall context for the individual features to be provided within a system (business or, at a more detailed level, IT) and helps to identify the full range of actors whose needs have to be satisfied in the solution.

2. *Paul did an exercise and asked us during his talk to take position between two other people of the audience. We weren't able because everyone was moving. This was a very good illustration of things that often happen in big IT projects. We have a very clear picture of the end state, but the way to come there is nearly impossible. Each system depends on other systems which depend on*

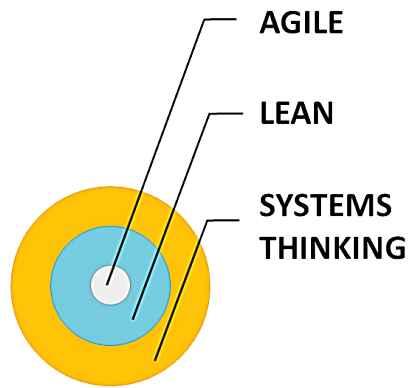
*others and so on. How can System thinking help in those situations?*

Again, having an overall view of the underlying rationale for the business system (its *Weltanschauung* or world view) helps to keep all the developments and projects in line with this and focuses attention on what the desired results/outcomes are. In addition, the very process of investigating these world views uncovers areas of agreement and difference between key stakeholders which, if not recognized and managed, can derail projects and programmes.

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3. *On the same subject. The fact that there is a connection between everything, your project influences other projects, and will be influenced by the other projects as well could lead to a paralyzing effect, trying to control all influencing effects. Is there a way to avoid or to control this paralyzing effect. How can you run a successful project, being aware of your surroundings without being stuck trying to keep track of everything around you?*

Programme and portfolio management are the key here



– ensuring that individual projects operate within a wider context of other projects contributing to the same goal (programme management) and are within the overall series of activities (projects and business-as-usual) undertaken by the organisation. One of the benefits of programme/portfolio management is that the effects of one project on others is explicitly recognized and managed. In addition, programme/portfolio risk, issue and change logs should provide a mechanism to raise and investigate issues that have a broader impact than on an individual project. However, systems thinking and the approaches discussed in earlier responses, provide the overall world view and model that are against which actions may be benchmarked and checked for continuing alignment with the desired result.

*4. Most of our readers are working as a requirements engineer and not really as business analyst. How could they incorporate system thinking in their work?*

Requirements need context and we have to know WHY stakeholders have requested these requirements and what overall business goals they serve. Otherwise, there is a danger that requirements are identified, documented and even implemented that do not contribute to the overall goals of the organisation (or, in extreme cases, are even opposed to them). So, building on the answer to question 1, having an understanding of the consensus world view and creating an overall BAM/Context diagram helps requirements engineers to understand the wider context for their work. We can see this particularly in the development of a hierarchy of requirements where the business requirements are linked to the overall world view, objectives, CSFs/KPIs and drive the more detailed functional/non-functional requirements.

*5. At the moment everybody is moving to agile development. How does systems thinking relates to agile development? What lessons could the agile community pick up from systems thinking?*

Agile is in essence a development of systems thinking – the Agile philosophy is based upon holding a particular world view and the most effective Agile practitioners understand this. Further, and in line with the response to

question 1, an overview understanding of the nature and desired activities of the business system, allows Agile practitioners to understand priorities, recognize the nature of the increment to be released, ensure there is a cohesion to any solution release. One of the dangers on Agile development is that everyone immediately gets consumed by the detail working out responses to individual user stories. Allying Agile with systems thinking ensures that the ‘big picture’ is visible at all times and that the ‘trees’ do not obscure the ‘wood’. A context diagram derived from an understanding of the world view and the activities from the BAM that are being addressed, is a great start for an Agile development. Agile is about delivering ‘the right thing’ which would not be possible without understanding why or what, in the context of the wider system of interest.

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*6. The relation between systems thinking and mental models went a bit quickly, could you explain the relation between systems thinking and mental models, or how mental models help in this process?*

*7. Paul reminded us that communication is really tricky without a shared mental model. I suppose a glossary of terms should be at the basis of a shared mental model. In many projects the glossary is a dead or dying. Are there techniques to make a mental model and to keep it alive?*

Mental models are really useful to be able to ‘see’ the holistic view. Too often IT professionals focus on elements of the problem – usually those where IT is the ‘answer’ or the users have identified specific problems - and omit to consider other factors or the root causes. If an analyst thinks holistically, a mental model is very important to enable the analyst to perceive how the individual issues, stakeholders, processes, etc work together to create the situation under investigation. The importance of a glossary of terms is often underestimated and the process of compiling one forces BAs/requirements engineers to actually analyse what is meant by particular terms or concepts; for instance, what do we really mean by an apparently simple term such as ‘customer’ in this organisation? Creating the context diagram referred to above also compels us to think hard about our stakeholders and whether there are, in fact, actors and user roles that are not obvious from a study of the organisation chart.