Systems Thinking and Agility; Think Big, Act Small

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Abstract

The focus in agile methods is on useful and feasible increments. The architecture is evolving by refactoring. Refactoring steps are only taken if needed for the increment. The longer term result of this approach is an emerging architecture, where every small step makes sense, but the overall architecture is not satisfying.
In this article we propose a time-boxed investment to create the big picture as a complement to the incremental agile approach. An investment of a few days is sufficient to create a big picture that provides useful insights for incremental steps.

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1 Introduction

Agile methods stress the importance of early feedback as a means to cope with real-life uncertainties and unknowns. Craig Larman[4] shows that this strategy has been applied for several decades, before we started to use *agile* as the identifying buzzword. Several agile methods are promoted ranging from *extreme programming* by Kent Beck[1] to evolutionary project management *EVO* by Thomas Gilb[3]. All methods share the emphasis on verification and testing, and hence on the importance of measurability of requirements. At the same time these methods struggle with the architecting aspects. Many promotors of agile methods have traumatic experiences with up-front architecture efforts that afterwards prove to have addressed non-existing problems for non-existing needs.

In this article we postulate two statements:

- agile methods benefit from the guidance provided by the big picture
- the big picture can be made in time boxes, with an accumulated duration of days or a few weeks

We will discuss a process and a method to create the big picture in these small time boxes. The process is based on the use of workshops (Section 19.3 in [6]). The method is based on the CAFCR viewpoints[6]. The workshops as proposed have been used in the Boderc[2] project. Although we promote the agile philosophy in the Boderc project, the project itself is *not* an agile project itself.

References

[1] Kent Beck. *Extreme Programming Explained: Embrace Change*. Addison-Wesley, Reading, MA, 2000.

[2] Embedded Systems Institute. Boderc project. `https://www.embeddedsystems.nl/Boderc`, 2003.

[3] Thomas Gilb. The evolutionary project managers handbook. `http://www.gilb.com/Download/EvoBook.pdf`, 1997.

[4] Craig Larman and Victor R. Basili. Iterative and incremental development: a brief history. *IEEE Computer*, pages 47–56, June 2003.

[5] Gerrit Muller. The system architecture homepage. `http://www.gaudisite.nl/index.html`, 1999.

[6] Gerrit Muller. CAFCR: A multi-view method for embedded systems architecting: Balancing genericity and specificity. `http://www.gaudisite.nl/ThesisBook.pdf`, 2004.

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