

Chapter 2

From First to Second Edition

Abstract In the introductory chapter of the first edition of this book, published in 2008, we asked questions such as what is agile software development? Why is an agile perspective at software engineering needed? What are the main characteristics of agile software development? What can be achieved by agile software development processes? Does agile software development form a pleasant and professional software development environment? Such questions are now irrelevant since during the past decade, agile software development has become a mainstream approach for managing software development processes. A new trend we witnessed recently is agility anywhere—in many organizations, agility is used today in many areas, not only in software development processes. This is the message of this Brief. We highlight the perspective that agility is not limited anymore to software projects, but rather, it is a lifestyle. Therefore, we decided to call the second edition of our book *Agile Anywhere*. In this chapter, we present our Human–Organizational–Technological (HOT) framework which we extensively used in our first edition and show how it also fits the *Agile Anywhere* point of view (Hazzan and Dubinsky 2010); specifically, by replacing Technological with Thematic, the HOT framework deals with all change scenes (software, human resources, research, education, climate, and more). We illustrate this idea using the theme of education and analyze the Finnish education system, known to be one of the best in the world, from the agile perspective.

Keywords Agile software engineering • Agile environments • Agility anywhere • Agile projects • Agile lifestyle • Human–Organizational–Technological framework • Human resources • Research • Education • Finnish education system

2.1 Three Perspectives of Software Engineering

Software engineering is the profession that applies scientific knowledge in the construction of software products needed by customers. The scientific knowledge in the case of software engineering is mathematics, computer science, and the specific domain that the developed software deals with. In order to achieve their targets,

software practitioners should be provided with professional tools for how to apply their knowledge. Different approaches toward the application of software engineering processes exist; among them, *Agile Anywhere* focuses on the agile approach.

One of the basic tools that practitioners need in order to accomplish their task is a well-defined engineering process laid out by a software development method. A software development method is a set of activities and practices, as well as roles and norms of behavior, derived from a set of professional aims, which are carried out in a logical and specified order.

A software development method should address not only technological aspects, but rather, it should refer also to the work environment and the professional framework. Accordingly, agile software engineering is reviewed in our book *Agile Software Engineering* (Hazzan and Dubinsky 2008) within the HOT framework by following the three perspectives given below:

- The **H**uman perspective, which includes cognitive and social aspects and refers to learning and interpersonal (teammates, customers, management) processes.
- The **O**rganizational perspective, which includes managerial and cultural aspects and refers to the workspace and issues that spread beyond the team.
- The **T**echnological perspective, which includes practical and technical aspects and refers to how-to and code-related issues.

Specifically, we explain how the attention that agile software development gives these aspects helps coping with challenges of software projects. Figure 2.1 presents schematically the HOT analysis framework in the theme of software engineering.

Following our *Agile Anywhere* approach, we updated this framework to be Human–Organizational–Thematic (HOT) framework which can be applied to all projects with any theme, e.g., technology, education, discipline (e.g., medical, mechanics), and research, as shown in Fig. 2.2.

Fig. 2.1 The HOT analysis framework for software engineering (as in our first edition)

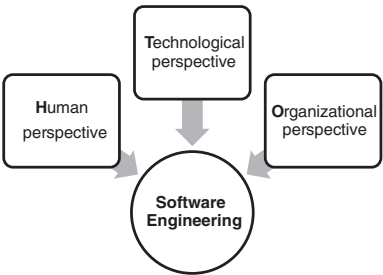
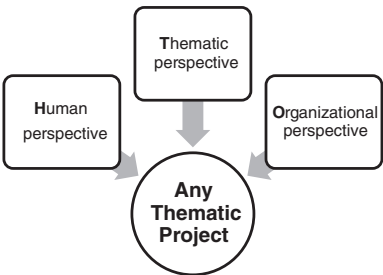


Fig. 2.2 The HOT analysis framework for any theme



2.2 Education in Finland from the *Agile Anywhere* Perspective

The Finnish education is known to be one of the best in the world. In this section, we show how the Finnish education system is managed as an agile project. Specifically, we illustrate some of the principles of the Finnish education system from the agile perspective according to the above three perspectives: Human, Organizational, and Thematic. In addition, we ask whether the success of the Finnish education system can be explained by the claim that it applies agile principles.

2.2.1 *Thematic Perspective*

Teachers as researchers: Finnish teachers are committed to a continuous improvement of teaching. Thus, they spend only a few hours per day teaching, and during the remaining hours of their work day, engage in research, self-examination, reflective processes, and preparation for the next day. This organization of the work day also enables teachers to complete their school work at school, and so they do not have to continue working at home. The agile approach involves a similar process: Working time itself is restricted to a certain number of hours per day that are utilized in an optimal manner. The rest of the time is spent for learning, analyzing the process, and conducting reflective processes in which the team analyzes both the process itself and ways to improve it.

Peer teaching: Part of the learning process in Finland is conducted by students who teach other students, so that the teachers are not, in fact, the sole and main source of knowledge. This is the case in agile projects as well: Each and every member of the team specializes in a certain subject or area and teaches it to the other team members so that all team members are both learners and teachers. In other words, mechanisms exist both in the Finnish education system and in agile environments that support the sharing and management of knowledge, whereby the students (in Finnish schools) and team members (in agile projects) share their knowledge with their peers.

Team work: Team work is one of the basic principles of Finnish education; it is also one of the basic principles of the agile approach. The entire team sits in a single room that contains all of the information required for the project. It seems that this teaching method enables the Finnish education system to turn the profession of teaching, from an “industrial” profession that is based on imparting a certain amount of material within a certain number of hours to as many students as possible, into a profession that is more “clinical” in nature, in which each student receives a greater amount of personal attention.

2.2.2 Organizational Perspective

Fewer school hours: Children in Finland spend fewer hours at school than do children in many other Western countries, yet they achieve better results. These results are apparently attained by utilizing the school hours in a way that encourages significant learning processes. Indeed, it is apparent that in Finland, students are active, they improve their skills, and they teach each other in classes of 15 students and two teachers—another feature that enables the teachers to give each student more personal attention. This is also the situation in agile projects. Efficient time management in agile environments supports the production of higher-quality deliverables in a limited, relatively smaller number of working hours per day, as opposed to the practice of working long hours under other management methods.

Self-managed teams: In Finland, the teachers determine how to achieve the objectives of the education system and develop curricula designed to attain these goals; the education system provides them with the required means to do so. Agile teams conduct themselves in a similar manner: The objectives are defined, but the manner in which tasks are allocated and the course of the process itself are not pre-dictated. In other words, the teams manage themselves. This concept is based on the working assumption that team members are professionals and that their work does not need to be supervised. In Finland, teachers do not need to be supervised either. This approach, which eliminates the supervision tier and minimizes administration and bureaucracy, enables to better utilize resources. In Finland, this is manifested also in social justice, small social gaps, and a society that grants everyone the same right to education.

Early identification of problems: In Finnish education, this concept refers to the early identification of struggling students who are then allocated special resources. This approach enables problems to be addressed before they are aggravated and require even greater resources. Early identification of problems is also one of the more important principles of the agile approach and is manifested in testing that begins already as much as possible at the early stages of the process. In fact, the importance attributed to early identification of problems reflects a serious attitude toward risk management: A failing education system can affect the future of a country; poor-quality deliverables can affect the profitability of a company.

2.2.3 Human Perspective

Trust: The Finnish education system has trust in its students; for instance, homework is not checked. In addition, Finnish teachers trust their colleagues, principals trust their teachers, and in general, the education system is based on trust relations that encourage everyone involved in it, both students and teachers, to assume responsibility. Similarly, one way to explain the success of the agile approach is that by making the project environment transparent to all—clients and team members, management and teams, and team members and one another—this management method enhances

the trust that the various interested parties have in one another. It seems that this behavior pattern ultimately leads to better results, whether it is applied in the Finnish education system or in other projects that are managed in an agile manner.

2.2.4 Agile Education and Development

Thus, several characteristics of the Finnish educational system are similar to the principles of the agile approach, and at the same time, both systems—the Finnish educational system and the agile management approach—are considered to be successful. The question raised is: Can the success of the educational system be explained by the agile approach? Or maybe it is the other way around: Maybe the success of the Finnish educational system can explain the success of agility in development processes.

In this context, it is interesting to note that in Finland, like in other Scandinavian countries, agile software development is very common. When one understands the Finnish educational system, it is easier to understand why agile work methods are so easily assimilated there.

In the spirit of the agile approach, it should be remembered that not everything is perfect in the Finnish educational system and that the education “recipe” that works so well there should not simply be copied and applied elsewhere without review and examination. In fact, the same recommendation is valid when adopting the agile approach: Organizations wishing to adopt the agile approach must adapt the practice to the place and time in which it is applied.

2.3 Summary

In this chapter, we convey the message that agile principles can be applied in any environment that wished to deliver quality, let it be an education system, research project (Tozik and Hazzan 2014), or human resources project. Thus, we establish our assertion that *Agility Anywhere* is applicable even in systems that traditionally are not conceived as projects.

References

- Hazzan, O., Dubinsky, Y.: *Agile Software Engineering*. Springer, New York (2008)
- Hazzan, O., Dubinsky, Y.: A HOT: human, organizational and technological—framework for a software engineering course. In: *Proceedings of the ACM/IEEE 32nd International Conference of Software Engineering (ICSE 2010)*, pp. 559–566. Cape Town, South Africa
- Tozik, S., Hazzan, O.: Agile research, InfoQ. http://www.infoq.com/articles/agile-academic-research?utm_campaign=infoq_content&utm_source=infoq&utm_medium=feed&utm_term=global. Accessed 14 May 2014



<http://www.springer.com/978-3-319-10156-9>

Agile Anywhere

Essays on Agile Projects and Beyond

Hazan, O.; Dubinsky, Y.

2014, VII, 72 p. 5 illus., Softcover

ISBN: 978-3-319-10156-9