



Aalto University
School of Science

Master's Thesis.

Role of the Scrum Master in Capstone Projects

Jhosimar Aguacia Fisco

jhosimar.aguaciafisco@aalto.fi

02.10.2019

Today we will talk about.

1. Research Questions.
2. Scrum Master (SM) as a Servant Leader.
 - a. Servant Leader.
 - b. Servant Leader Model.
3. Teamwork within the Development Team (DT).
 - a. Teamwork.
 - b. Teamwork Model.
4. Scrum and Scrum Activities.
 - a. Scrum
 - b. Questionnaire and Codes.

Then...

Today we will talk about.

5. Interviews with the SMs.
 - a. SM Orientated
 - b. DT orientated
 - c. SM and DT orientated

RQ - Role of the SM on Capstone Projects

RQ1. What responsibilities does the Scrum Master assume in a Capstone software project?

RQ2. How are the teaching methods for becoming a Scrum Master perceived by students?

RQ3. How do members of the Development Team perceive their teamwork?

Some numbers.

Number of participants.

Team.Identifier	Size.Of.The.Team	Developers	Scrum Master
Team K	8	6	1
Team R	6	5	1
Team P	8	6	1
Team H	7	6	1
Team G	7	5	1
Team Q	5	4	1
Team D	8	7	1
Team C	7	5	1
Team J	8	7	1
Team F	7	6	1
Team X	6	6	1
Team T	8	6	1
Team L	8	6	1

Some numbers.

The number of questions asked in the survey:

Developer: 91

(Mahembe, 2010) **Instrument 1** = 9 questions - Not in use

(Moe et al., 2009) **Instrument 2** = 18 questions

Own **Instrument 3** = 23 questions

Own **Instrument 4** = 17 questions

(Van Dierendonck and Nuijten, 2011) **Instrument 5** = 25 questions

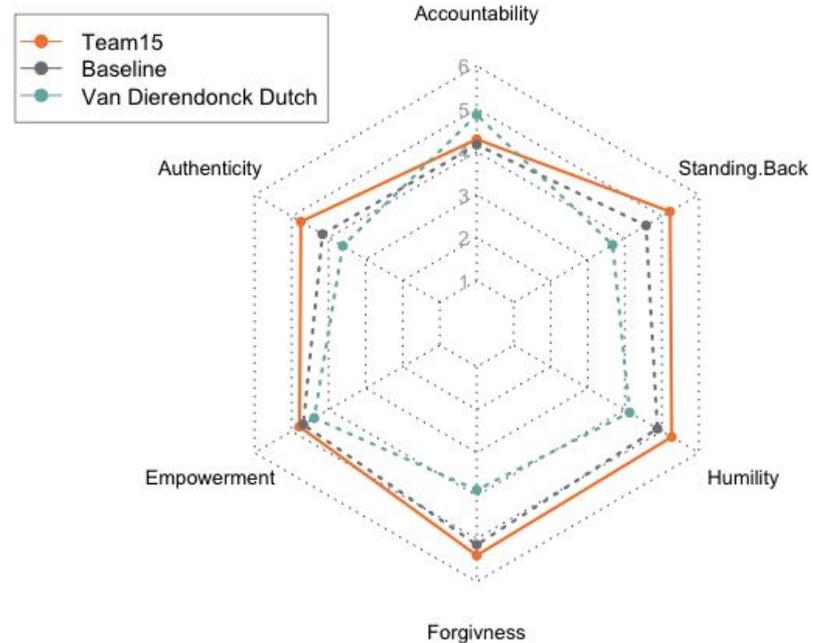
SM: 47

(Mahembe, 2010) **Instrument 1** = 9 questions - Not in use

Own **Instrument 2** = 39 questions.

Scrum Master as a Servant Leader

An instrument developed by *Van Dierendonk and Nuijten (2011)*, to measure the servant leadership.



Servant Leader

Greenleaf (1997) said that the central characteristic of servant leadership is 'going beyond one's self-interest'.

Luthans and Avolio (2003) said that the servant leader is governed by the creation of opportunities to help followers grow. Servant leaders do not use their power to get things done but use persuasion to convince people.

Servant Leader Model.

Accountability ensures that people know what is expected of them, which is beneficial for both employees and the organization (*Froiland et al., 1993*).

Standing Back is about the extent to which a leader gives priority to the interest of others first and gives them the necessary support and credits. (*Van Dierendonck and Nuijten, 2011*)

Humility in leadership focuses on daring to admit that one is not infallible and does make mistakes (*Morris et al., 2005*).

Forgiveness is simply about accepting the other person (Autry, 2004).

Scrum Master Model.

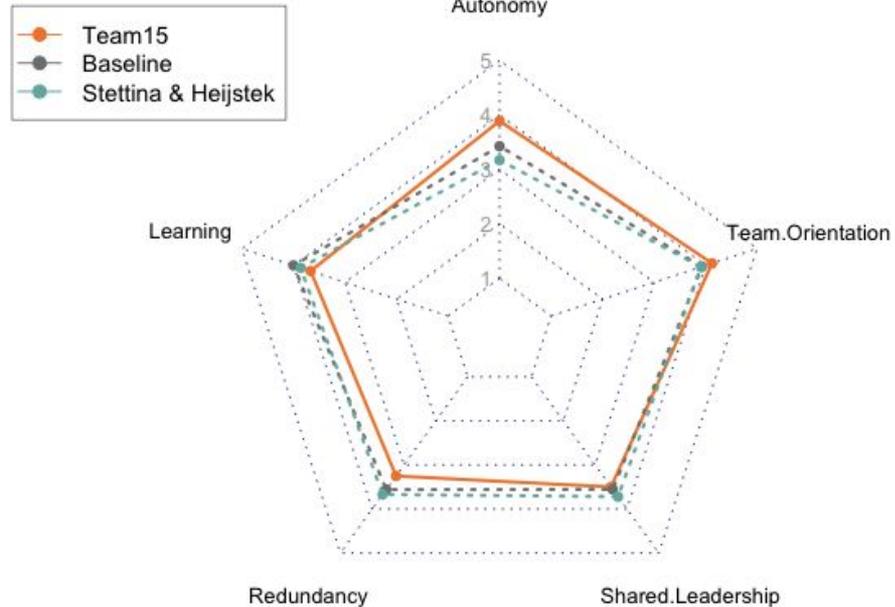
Empowering leadership behavior includes aspects like encouraging self-directed decision making, information sharing, and coaching for innovative performance (*Konczak et al., 2000*).

Authenticity is closely related to expressing the ‘true self’, expressing oneself in ways that are consistent with inner thoughts and feelings (*Harter, 2002*).

Results.

Teamwork within the DT.

An instrument developed by *Moe et al. (2009)* to empirically assess and improve Agile Software development.



Teamwork.

Salas et al. (2005) inferred that team performance is related to the results of the teams regardless of how the team managed to accomplish any task. Conversely, team effectiveness consider not only whether the team achieved a task. It also consider the interactions required by the team in order to achieved the team outcome, such as team processes and teamwork.

It is impossible to define what teamwork is. Nevertheless, different models have been developed to discuss different factors that promote or detract from effective teamwork.

Teamwork Model.

Shared leadership all team members should also jointly share decision authority, rather than a centralized decision structure where one person makes all the decisions or a decentralized decision structure where all team members make decisions regarding their work individually and independently of other team members. (*Hoegl & Parboteeah, 2006*).

Team Orientation is often described as giving priority to team goals over individual goals. (*Salas et al., 2005*).

Autonomy is defined as the influence of management and other individuals (outside the team) on the team's activities. (*Hoegl & Parboteeah, 2006*).

Teamwork Model.

Learning is reflected in the fact that the development team is able to develop a common picture of the problems faced and, thus, is able to find solutions that improve team performance. (*Poženel, 2013*).

Redundancy In psychologically oriented small-group research the concept of redundancy is often described as backup behavior (*Salas et al., 2005*). If backup is to occur effectively, teammates need to be informed of each others' work in order to identify what type of assistance is required at a particular time (*Marks, 2001*).

Results.

Scrum Activities.

Scrum.

Scrum is presented in the Scrum Guide™ (*Schwaber & Sutherland, 2017*). This guide addresses different aspects of what is Scrum about (Roles, Events, Artifacts and Rules). However, there are several guides that teach or present case studies on how to apply Scrum effectively, such as, Do better Scrum by Agile 42 (*Hundermark, 2014*), The Scrum Primer by infoQ (*Demer et al., 2010*) and plenty of books.

However, I want to analyse some of the activities mentioned in the Scrum Guide™ (*Schwaber & Sutherland, 2017*), and some other mentioned by Noll et al. (2017) in his article called “A Study of the Scrum Master’s Role”

Scrum Questionnaire and Codes.

Questionnaire and codes.

<https://docs.google.com/spreadsheets/d/1A-qWLBser-FeG1uyxxOtxWmvH-XsX5dpXXIf9LSd1BA/edit#gid=0>

Paste image....

Results.

Interviews with the Scrum Masters.

SM orientated. (12 points)

1. A well thought out team formation will avoid many problems.
2. Some people will be more motivated than others.
3. Two roles could be excessive, and it could confuse you. Be an SM in the Scrum events.
4. Encourage everyone to participate in Scrum events actively. Keep the meetings dynamic. For example, read about how to hold a Scrum retrospective (*Agile Retrospectives: Making Good Teams Great*). But, do not forget the other Scrum events.
5. The last scrum retrospectives might be different.
6. Ask the client for support.

SM orientated.

7. Help team members to find the solution themselves.
8. Detect micromanagement and use it wisely. For example, quick reminders about upcoming events could benefit the team.
9. Integrate your project management tool with software development tools.
10. You should also teach the PO.
11. Coach the team in aspects related to software engineering. (Software Architecture, Software requirements, UX, Software Testing).
 - a. Plan workshops.
 - b. Request support from the client.
12. The role of the SM will fade away towards the end of the project.

DT orientated. (5 points)

1. Do what you think is best. Make your own decisions and solve problems.
(Self-organizing and self-managed team).
2. Team cohesion is important. It will help you to solve technical problems faster and learn more.
3. You are a team. You will fail or succeed as a **TEAM**.
4. How will you deal with your work experience?
5. Identify dependencies among tasks during the Sprint Planning and throughout the Sprint.

DT and SM orientated. (8 points)

1. Have a Kick-off meeting and build some type of Skill Matrix.
2. The PO won't tell you what to do, or maybe he does not know what he wants. Yet, you can ask for feedback.
 - a. PO has the answer.
3. PO is another team member, and you should support him.
4. Refine("grooming") the PB continuously.
5. Everyone should be aware of the "**documentation**".
6. DoD should support your processes.
 - a. Pull request, Automated testing, Lint...

DT and SM orientated.

7. Keep the communication active. It will evolve but activate it as quickly as possible. (Face-to-face and digital communication)
8. Team building activities are important, and those activities will foster team spirit.

References

Autry, J. A., 2004. The servant leader: How to build a creative team, develop great morale, and improve bottom-line performance. New York: Three Rivers Press.

Cohn, M., 2014. The main benefits of story points. Available at: mountaingoatsoftware.com/blog/the-main-benefit-of-story-points (Accessed: 30 September 2019).

Harter, S., 2002. Authenticity. In C. R. Snyder & S. J. Lopez (Eds.), Handbook of positive psychology (pp. 382–394). New York: Oxford University Press.

Hoegl, M., Gemuenden, H.G., 2001. Teamwork Quality and the Success of Innovative Projects: A Theoretical Concept and Empirical Evidence. Organization science 12, 435–449

Hundermark, P., 2009. Do better scrum. Serum Sense.

References

- Katzenbach, J.R. and Smith, D.K., 2008. The discipline of teams. Harvard Business Press.
- Konczak, L. J., Stelly, D. J., & Trusty, M. L. 2000. Defining and measuring empowering leader behaviors: Development of an upward feedback instrument. *Educational and Psychological Measurement*, 60, 301–313.
- Marks, M.A., 2001. A temporally based framework and taxonomy of team processes. *The Academy of Management review* 26, 356
- Moe, N.B., Dingsøyr, T. and Røyrvik, E.A., 2009, May. Putting agile teamwork to the test—an preliminary instrument for empirically assessing and improving agile software development. In *International Conference on Agile Processes and Extreme Programming in Software Engineering* (pp. 114-123). Springer, Berlin, Heidelberg.

References

Morris, J. A., Brotheridge, C. M., & Urbanski, J. C. 2005. Bringing humility to leadership: Antecedents and consequences of leader humility. *Human Relations*, 58, 1323–1350.

Noll, J., Razzak, M.A., Bass, J.M., Beecham, S., 2017. A Study of the Scrum Master's Role, in: Felderer, M., Méndez Fernández, D., Turhan, B., Kalinowski, M., Sarro, F., Winkler, D. (Eds.), *Product-Focused Software Process Improvement*. Springer International Publishing, Cham, pp. 307–323.

Poženeš, M., 2013. Assessing teamwork in a software engineering capstone course. *World Transactions on Engineering and Technology Education* 11, 7.

Salas, E., Sims, D., Burke, C., 2005. Is there a big five in teamwork? *Small Group Research* 36(5), 555–599

References

- Sutherland, J. and Schwaber, K., 2013. The scrum guide. The definitive guide to scrum: The rules of the game. Scrum. org, 268.
- van Dierendonck, D., Nuijten, I., 2011. The Servant Leadership Survey: Development and Validation of a Multidimensional Measure. J Bus Psychol 26, 249–267.