1st International Workshop on Essence in Education & Training (WEE&T 2020)

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***Abstract*—The workshop connects to the central theme "Educating for the Future" of CSEE&T 2020 and thus explores opportunities to improve Software Engineering education and training by using Essence. Essence, an OMG Standard, delivers essential, universal elements found in all Software Engineering (SE) endeavours and a language to describe and extend these elements and their use in concrete practices to tailor SE methods to teams' needs. Its Kernel separates the stable *What* and *Why* from the more adaptable *How*. That way, it provides an essential thinking framework facilitating the adoption and customization of practices and methods. As such, it supports multiple ways of educating SE students as well as training practitioners for the future. The first deployments of Essence in industry and academic courses around the globe show promising results. But since it is an entirely new way to think about SE practices, methods, and their building blocks–it requires some effort and thought to dive into the standard. This workshop facilitates the adoption by sharing experiences, best practices, and lessons learned.**

Keywords—SEMAT, Essence, software engineering, software process, SE methods, SE practices, education, training

I. Introduction

Essence, an OMG Standard, is a relatively new approach that delivers essential, universal elements found in all Software Engineering (SE) endeavours (Essence Kernel) and a language to describe and extend these elements and their use in concrete practices to tailor methods to teams' needs [1]. Essence can be utilized to structure SE courses and curricula as well as facilitating course and capstone projects. Practitioners, as well as educators around the world, have presented first encouraging results on its adoption in industry and SE education [2]-[7]. However, Essence is still a new standard that embodies a massive change in perspective on SE methods, practices, and processes. New strategies for implementations, tools, and productive learning material that facilitate the understanding and application of concepts are needed to support its adoption.

II. Workshop Objectives

This workshop provides a unique opportunity to connecting researchers, educators, and trainers to report on their experiences and lessons learned using Essence.

This workshop offers the opportunity to:

- Present and explore the latest developments in the field of Essence adoptions, both in education as well as in training,
- Showcase effective and successful implementations and experiences as well as lessons learned,
- Connect members of the members of the Essence community,
- Connect academic researchers with educators and trainers,
- Enable and foster collaboration of people engaging in the field of SE education and Essence adoption,
- Foster communication between participants to find extension points and needs for exchange,
- Discuss and define future research needs and directions,
- Present preliminary work, also in early stages, to foster collaboration and discussion in early research stages, and
- Discuss ideas and positions.

The workshop serves as an opportunity to establish and consolidate collaboration between researchers, educators, and trainers to raise common issues and to identify and agree on future research directions. By presenting state of the art as well as promoting future research, this workshop is likely to have a lasting positive impact on the SE community's work.

III. Invited Audience

The workshop invites researchers, educators, and practitioners who are interested in:

- Organizing and running course and capstone projects with a focus on sustainable and highly transferable competences,
- Connecting methodological elements of SE courses in a systematic and flexible way,
- Teaching their students with a thinking framework paving the way for their long-lasting SE career,
- Coaching and training fundamentals of Essence in industry as well as academia,

- Accelerating the integration of Essence into their SE courses and curricula, e.g., by using existing rich learning material,
- Revolutionizing the methodological landscape by seeing the rigid limitation of existing SE methods, i.e., agile or traditional in meeting future industry requirements,
- Tool creators and practices publishers who offer supportive material, as well as new and existing members of the Essence community.

A diverse audience is anticipated to initiate exciting discussions from various perspectives on the contributions presented, as well as the overall subject.

IV. Contributions

The workshop has attracted articles spanning a variety of topics including:

- Approaches integrating Essence in training and academic software engineering courses,
- Utilizing Essence to structure courses as well as SE/CS curricula,
- Utilizing Essence kernel or tailored methods in a course or capstone project,
- Tools and tool development initiatives supporting Essence adoption in education and industrial practice, and
- Educational exercises and games facilitating the acquisition of Essence's concepts.

All contributions were reviewed by at least three reviewers from an expert program committee representing industrial practice as well as academic research and education on four continents.

Four papers were accepted that were identified to have the potential to initiate lively interactive discussions.

In the first paper, "Teaching the Essence of software development," Marcello Missiroli and Paolo Ciancarini present their plan to introduce Essence in their SE courses, including a strategy to evaluate learning outcomes and to develop Essentialized tools.

The second paper, "A board game to simulate the software development process based on the SEMAT Essence standard" by Carlos Mario Zapata Jaramillo, Grissa Vianney Maturana González, and Johnathan Mauricio Calle Gallego, describes the design and development of a board game for simulating the adoption of SEMAT Essence in SE projects. The authors summarize existing experience with teaching SEMAT Essence and propose a game that is tested with students and refined to a simple, intriguing, and joyful game.

In the third paper, "Project-oriented Course of Software Engineering Based on Essence" by Denis Zmeev and Oleg Zmeyev, the authors present their teaching experience of SE knowledge in a business-oriented environment. There, SEMAT Essence is used to combining student's knowledge with their experience in project courses. The authors report the impact of SEMAT Alphas on teaching and point out some challenges.

The fourth paper, "Extending the SEMAT Kernel for the practice of designing and implementing Microservice-based applications using Domain-Driven Design," was written by Parthasarathi Ray and Pinakpani Pal. This contribution proposes an extension of the SEMAT Kernel for microservice adoption, addressing the Feature, Microservice, and Domain Model perspective.

V. Format

This workshop is developed in the context of CSEE&T 2020, and it is also influenced by the worldwide Covid-19 pandemic. As with the leading conference, our half-day workshop will be entirely virtual. The sessions will be organized by using a tailored *ConverStations* approach. This approach allows the workshop to respond to needs for communication channels which enable cooperation in distant locations by using virtual communication environments [8]. The objective is, nevertheless, a high level of interactivity and discussion.

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References

[1] Object Management Group (OMG), "Essence - Kernel and Language for Software Engineering Methods, Version 1.1." Dec-2015.

[2] I. Jacobson, P.-W. Ng, P. E. McMahon, I. Spence, and S. Lidman, *The Essence of Software Engineering: Applying the SEMAT Kernel*, 1 edition. Upper Saddle River, NJ: Addison-Wesley Professional, 2013.

[3] J. S. Park, P. E. McMahon, and B. Myburgh, "Scrum Powered by Essence," *SIGSOFT Softw. Eng. Notes*, vol. 41, no. 1, pp. 1–8, Feb. 2016.

[4] P.-W. Ng and S. Huang, "Essence: A framework to help bridge the gap between software engineering education and industry needs,", in *Proceedings of the 26th Conference on Software Engineering Education and Training (CSEE&T 2013)*, pp. 304–308, 2013.

[5] C. Péraire and T. Sedano, "State-Based Monitoring and Goal-Driven Project Steering: Field Study of the SEMAT Essence Framework,", in *Proceedings of 36th International Conference on Software Engineering (ICSE 2014)*, 2014.

[6] J. Pieper, O. Lueth, M. Goedicke, and P. Forbrig, "A case study of software engineering methods education supported by digital game-based learning: Applying the SEMAT Essence kernel in games and course projects," in *2017 IEEE Global Engineering Education Conference (EDUCON 2017)*, pp. 1689–1699, 2017.

[7] J. Steghofer, "Using Essence in a Software Development Methodologies Course: An Experience Report", in Proceedings of the 2nd Workshop on Innovative Software Engineering Education (ISEE 2019), pp. 7-10, 2019.

[8] M. Leppälä, "Trust in Internal Social Media Conversations", in Proceedings: CCI Conference on Corporate Communication, pp. 230-237, 2016.