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A Letter from the SEMAT Leadership

In the first phase of SEMAT during 2009-2014 Essence was developed as a new foundation for software engineering and adopted as OMG standard. We started 2015 as the first year of the second phase of SEMAT. Many companies around the world set out to “essentialize” software development practices and methods—viz., describe existing and new practices and methods using Essence kernel and language, and use the essentialized methods in planning, conducting and tracking software development projects. To name but a few, they are:

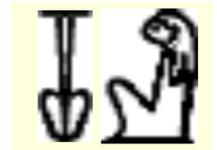
- Red Hat has adopted Essence as a standard framework to manage and govern their engagement methods,
- Fujitsu uses Essence for development practices including business engineering,
- DSDM Consortium is essentializing their agile project framework, and
- A group of experts is essentializing an Internet of Things (IoT) method.

SEMAT Inc. also grew adding four industry members to its Executive Committee coming from Red Hat, Tata Consultancy Services, Fujitsu and Munich-Re. Ste Nadin from Fujitsu motivated his interest in SEMAT in many different ways by saying the following:

“I believe that having SEMAT is vital to being able to deliver great solutions.”

“It’s a great way for communicating to end customers and across governance and assurance reviews the state of projects and allowing gaps to be quickly identified and closed in the teams.”

continued on page 2



A Letter from the SEMAT Leadership, continued

"I strongly believe that this [Essence] now needs to be brought into industry and embedded as a gold standard."

All this provides clear evidence that SEMAT is starting to penetrate the industry, even if we still have a way to go.

In 2015, a SEMAT-wide initiative for strengthening Essence education has started as well, working on developing an Essence-based software engineering textbook and e-learning materials. Three international conferences were held on SEMAT Essence: one in the ICSE in Florence in May, another in the OMG Technical Meeting in Berlin in June, and a third in the IFIP WCC in Daejeon in October.

Several keynotes, talks and seminars on Essence were given around the world, for instance, (1) the keynote by Ivar Jacobson in Beijing on "*Are you ready for Internet+?*", (2) the keynote by June Sung Park in Kolkata on "*Essence-Based Adaptive Software Engineering*", (3) the keynote by Mira Kajko-Mattsson on "*Minimal Effort and Maximal Output*" in Russia and (4) the keynotes by Paul McMahon on "Essence and Patterns" in South Africa and Columbia.

In 2016 we will continue the work already started in 2015 and accelerate the development of essentialized practices, a practice library and marketplace, Essence-supporting tools, Essence-based software engineering education materials, empirical studies measuring the effect of Essence in industrial projects, and more case studies of successful application of Essence in industry and universities. With the growth of such intellectual assets, we are sure that more and more companies and universities will adopt Essence as a foundation for practicing and teaching software engineering.

We would like to invite all of you to participate in this journey of making SEMAT Essence an essential concept and tool for 20 million software engineers worldwide who are working hard every day to improve the world we live in. We wish that this New Year be the best ever for all the SEMAT friends!

Ivar Jacobson, June Sung Park and Paul McMahon



SEMAT Books

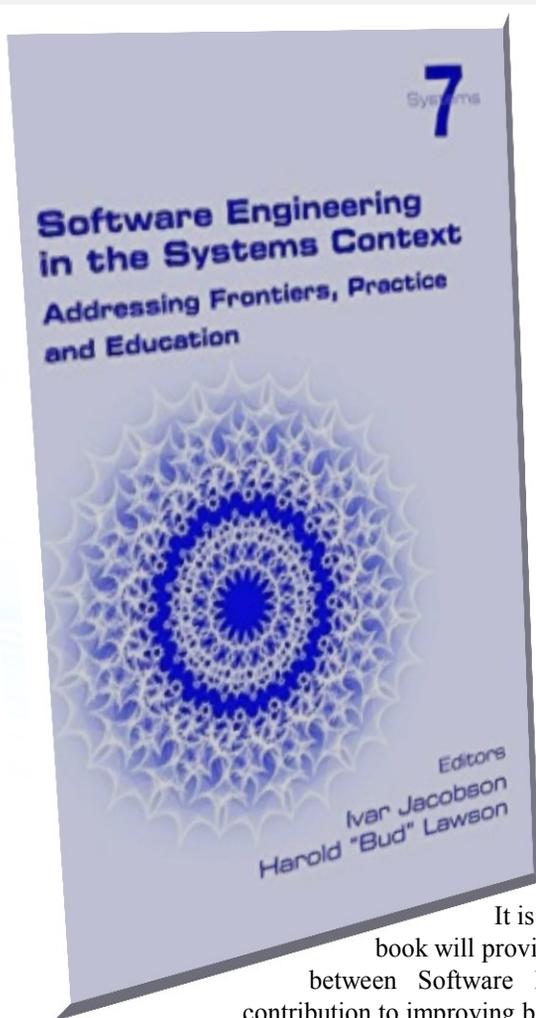
Software Engineering in the Systems Context

edited by

Ivar Jacobson & Harold “Bud” Lawson

contributors

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A new book has been created to provide various perspectives concerning the problems and opportunities presented by the increasing central role of software in the world’s systems. In particular, the role of and relationship between Software Engineering and Systems Engineering in the provisioning of software systems and their integration into system environments. There are on-going efforts to both understand and improve these two professions individually and collectively. One major effort is SEMAT (Software Engineering Method and Theory) that has led to the development of a method and practice independent approach called Essence that has become an Object Management Group standard. While aimed specifically at Software Engineering, the generality of the approach can be applied in systems contexts. Further, it is clear that many Software Engineers lack an understanding of and appreciation of the wider system context into which their software systems are integrated. Thus, there is a strong motive to develop the ability to “think” and “act” in terms of systems in order to improve the capabilities of both Software and Systems Engineers to understand and communicate individually and collectively.

The book presents various perspectives, provided by internationally known software and systems engineers on concepts and principles, guidance on selecting development approaches, issues of complexity, stakeholder concerns and requirements, the vital role of architecture, agility, governance, resilience, trust, risk, acquisition, supply chains, technical debt, socio-technical aspects, standards, as well as the fundamental aspects of improving communication and understanding.

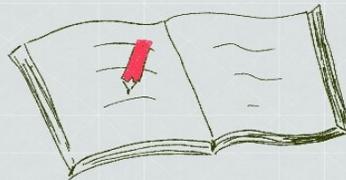
It is the editors (Ivar Jacobson and Harold “Bud” Lawson’s) hope that this book will provide a starting point to improving the understanding of the relationship between Software Engineering and Systems Engineering and make a significant contribution to improving both professions and the world of systems.

The book is Volume 7 in the Systems Series published by College Publications, Kings College, London. <http://www.collegepublications.co.uk/systems/>
Available from amazon.uk for 21 UK Pounds and amazon.com for 32 US Dollars
For bulk orders contact: Jane Spurr jane.spurr@kcl.ac.uk

Breakfast Seminar at which the book was launched: <https://www.youtube.com/watch?v=JUWg6byCzTU>.



Education Area Report



SOFTWARE ENGINEERING ESSENTIALIZED

The Education Area is now focusing on a new book preliminarily titled '*Software Engineering Essentialized*'. Fifteen people from SEMAT are working on a project called Software Engineering Education with the intention to develop teaching material including book, slides, teacher notes, exercises and examination. The primary target group are newcomers to software engineering. The book however also provides a new highly motivated approach to Software Engineering for experienced practitioners.

This book introduces the reader to software engineering through the common ground view provided by Essence. Essence draws together the past experience of accomplished practitioners and sets the scene for new entrants to the world of software engineering. The newcomers will be inspired to find practices that, when properly applied, will lead to successful software systems. Experienced practitioners will broaden their perspective of the profession and will undoubtedly invoke their known practices as they learn to apply Essence.

Extract from the Preface:

You have in front of you a book that will take you on a remarkable journey into the complex world of developing, deploying and sustaining software. We wrote this book to present a new and exciting way of looking at the fundamental properties of software engineering. The book is inspired by considerable vision, yet is eminently practical. We describe things you can do today to make a difference between successful and unsuccessful software system endeavors.

On the surface this book looks like most other books in software engineering (and there are many of them; some are excellent books). It describes many important aspects of software engineering and how a typical software engineering initiative resulting in a new or improved software product takes place. However, underneath the surface, this book is fundamentally different. The things being described are key aspects that are selected because they are prevalent in every software engineering initiative. They are the things you work with, the things you do, and the competencies needed when you develop software. They are not just examples of things or typical things. They are selected because they are the things that underpin all recognized ways of developing software. The selection is not just done by the authors of this book but by an international standard group called Object Management Group that gave rise to the Essence standard.

However, the primary purpose is to teach software engineering and not to directly teach Essence. Instead Essence provides a comprehensive summary of the essential aspects of software engineering. As a result you will learn software engineering in a generic way. Up-front you don't have to learn any specific way of doing it as suggested by the popular methods of today, but you will learn what is the essence or the common ground of all these methods. You will also learn some very useful practices that are not standards, but have become close to de facto standards in the software industry. Every chapter is accompanied by exercises.



Practice Area Report

The Practice Area currently has two active working groups making good progress. A Scenario Working Group is very close to completing a Competency Scenario that demonstrates how a team can use Essence to assess their own competencies and determine if their team has the right competencies for their software endeavor. The objective of the scenario working group is to develop scenarios that can be used to help both industry practitioners and university software engineering students learn practical ways the Essence kernel can be used to help software practitioners and teams. The group plans to release this new scenario as an update to the Essence User Guide early in 2016.

The Essence User Guide is available to the public and can be accessed from the SEMAT web site (www.semat.org) practice area. The purpose of the Essence User Guide is to explain some interesting scenarios in which Essence can be used. A quick reference guide along with frequently asked questions can also be found in the guide.

There are also interesting discussions going on in the Practice Development working group related to using the kernel alphas and additional alphas outside the kernel when developing Essence practices. This group is hoping to have some guidance available early in 2016 to help guide Essence practice development.

In the coming year the practice area is implementing a practice discussion thread on the new SEMAT web site. This will provide an opportunity to get more industry-wide participation in developing, sharing, discussing and comparing Essence practices.

We are also planning an update to the Frequently Asked Questions (FAQs) section of our User Guide. We would like everyone to review our FAQ section of our User Guide, as well as the other sections of the guide, and provide any feedback on potential improvements or areas they would like to see our working groups focus on during the coming year.

Several organizations around the world are now using Essence to describe their existing practices. IJI has published a number of practices. For instance seven agile practices are published on www.iverjacobson.com in a package called Agile Essentials. Moreover there are these practices: *Architecture Essentials*, *Component Essentials*, *Iterative Essentials*, *Process Essentials*, *Product Essentials*, *Team Essentials*, *Test Execution Essentials*, and *Use-Case 2.0 Essentials*.

Paul McMahon



Chapter Report

Work with Essence Chapters Chugs Ahead as Usual!

Work within SEMAT Chapters is in full swing ranging from meetings, to translating SEMAT books and articles, arranging conferences and workshops, and to finally, spreading Essence within industry and academia.

SEMAT Chapters are occupying more and more space on various international conferences and workshops worldwide. Some examples of them are IFIP World Computer Congress, Agile Africa in South Africa, Latin American Software Engineering Symposium (LASES) and Russian Software Engineering Conference and International Conference.

Korea Chapter of SEMAT held a SEMAT Essence Conference on October 7, 2015 in the 23rd IFIP World Computer Congress which was held in Daejeon, Korea, during October 4-7, 2015. SEMAT executives including Michael Goedicke, Ivar Jacobson and June Sung Park presented talks on the conference. Members of the Korean Chapter including Eunjeong Lee in 2e Consulting presented on how her company had rewritten their IT consulting methodologies in Essence and used them profitably in customer engagements. Rick Jinyoung Jang in uEngine Solutions presented how Essencia, an open source tool that is under development, supports describing methods in Essence and enacting them as project workflows.

There was also a panel discussion on how effectively educate software engineering based on Essence. The event was sponsored by Korea Software Technology Association (KOSTA) which has been delivering Essence-based software engineering courses to industry practitioners. KOSTA is planning on requiring the application of Essence to action learning projects carried out on its courses for software engineering beginners from 2016.

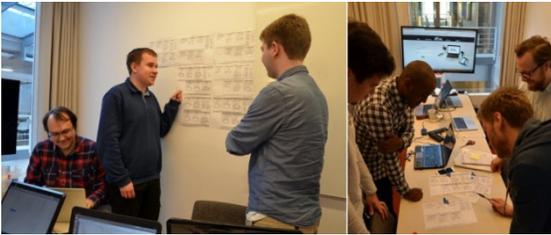
Russian Chapter carried out conference "Actual problems of system and software engineering" including plenary article of and keynote by Mira Kajko-Mattsson presenting on how one can put minimal effort into developing holistic software engineering beginner courses with minimal effort.

The Japan Chapter is now in the process of translating the new Essence book "The Essence of Software Engineering" into Japanese. The translation is chaired by Prof. Hironori Washizaki, Waseda University. The Japan Chapter members are in the process of initiating a project employing SEMAT Essence Kernel for describing and reusing project (anti-) patterns.

Regarding the South African Chapter, at this year's Agile Africa Conference, Paul McMahon presented a workshop: "**Essence: A Thinking Framework to Power Software Development Team Performance**" which was very well received. The conference also facilitated contact with people from the Standard Bank of South Africa and subsequent contact has confirmed their willingness to be involved in the revival of the South African Chapter and possibly also a South African Essence User Group. This interest will be confirmed early in the New Year when a public workshop is to be held: "**Essence Application Workshop**".



Opinions of KTH Students about ESSENCE



KTH Royal Institute of Technology Essence has now been teaching ESSENCE for four years on an elective software engineering course belonging to the bachelor *degree programme in Information and Communication Technology (CINTE)*. Below, we list some of the opinions of the students as collected in the years of 2013-2015.

- ESSENCE is a minimalistic standard supporting continuous project evaluation. It proves to be superior to the existing methods thanks to its full coverage of the essential things inherent in all software projects.
- ESSENCE provides a stable platform to stand on irrespective of whether it is used in small versus large projects and irrespective of whether it is used by experienced or unexperienced professionals. It gives a feeling of assurance that different project steps are well balanced and that all the essential things get considered.
- The time to learn ESSENCE should be regarded as a well invested effort. The gains are manifold. ESSENCE helps structure project work and makes it more systematic. It points out details that may be easily neglected, it helps identify early problems and next steps to be chosen, and thereby, it saves effort throughout and at the end of the project.
- By following the Alpha checklist items, we could make sure that we did not miss any essential thing within our projects. The ESSENCE was insurance that the projects got well-defined and that all the essential things got considered.
- ESSENCE facilitates communication. All projects require communication and communication is especially vulnerable if you do not know what to communicate about.
- ESSENCE facilitates project follow and follow up. It also enables the distribution of work. Their monitoring could be easily distributed among the project members. In this way, the overall effort of managing all the Alphas was decreased.
- ESSENCE made the projects more visible and thereby, it contributed to the increased awareness of the complexity of the project work. It encouraged us to reflect on our projects, and thereby, it substantially contributed to the improved job performance and satisfaction.
- ESSENCE can help improve existing projects by increasing knowledge of the project members and by pointing out what needs to be improved within the project.
- ESSENCE is especially important in projects lacking any working methods. It helps project members avoid many problems or gaps of which they otherwise might not be aware of.
- Essence was highly valued by both the experienced and unexperienced students. They valued ESSENCE for mapping out the vital project issues. With their help, the students having some industrial experience could analyze their former industrial projects and point out problems within these projects. *“Had these projects had access to the Alpha checklists, had they definitely become more successful”* – was the opinion of one of the experienced students. The inexperienced students, on the other hand, valued ESSENCE for the provision of the checklist items that aided them in managing their respective projects. *“Having a list of items to be checked off was definitely much better than having nothing and trying to figure out what to do next”* – was the opinion of one of the inexperienced students.

Mira Kajko-Mattsson