


Chapter 10

Compliance and Regulation in Green Software Projects

S. Ida Evangeline

 <https://orcid.org/0000-0003-2997-7897>

Government College of Engineering, Tirunelveli, India

ABSTRACT

With the rate of digital transformation speeding up in various industries, environmental concern surrounding software systems is defying closer regulation and organizational consideration. The chapter will analyze the issue of compliance and regulation that play a crucial part in determining the green software development in business project management schemes. It examines the impact that global sustainability requirements, industry standards and regulatory vehicles, including ISO 14001, IEEE 1680, the Green Deal, and ESG disclosure requirements have on software project lifecycles. The chapter can serve as a helpful road map and transfer a practical set of skills to incorporate environmental compliance into projects and Agile, DevOps processes, procurement, quality assurance and reporting. It examines carbon accounting, energy profiling and automated compliance monitoring tools, and presents realistic ways of developing software in line with environmental objectives and legislative requirements.

INTRODUCTION

Sustainability has become one of those breaking frontiers in the ever-changing world of digital shift, not only in physical infrastructure, but also in the software that forms the base of businesses running operations. As companies rush to use

DOI: 10.4018/979-8-3373-4652-6.ch010

digital technologies, the environmental consequences of a software system which is in some instances not prominently included in conventional steps on sustainability have moved to the forefront (Assoratgoon & Kantabutra, 2023). The practice of green software engineering no longer remains on the fringe, as the focus of the field has centered on the design, development and deployment of software systems that have the least environmental impact and footprint. It is also becoming an operating necessity because of global climate goals, evolving consumer demands and a more demanding regulatory environment (Matthew et al. 2024).

The chapter begins with an investigation on how sustainability relates to software development and, in this case, through the prism of compliance and regulation. Although a large part of the ongoing discussion on green software lies in its technical efficiency, optimization, and focused rules concerning ethical coding, the program could not be truly effective until it is framed in a right regulatory framework. Adherence cannot be treated as a simple act of bureaucratic compliance, but rather a tool of achieving a desired software project-scientifically justified environmental alignment, e.g. minimizing greenhouse emissions of greenhouse gases, limiting energy use, and addressing digital waste.

Business enterprises are increasingly taking-on the agenda of sustainability in their corporate operations and are facing an increasingly elaborate ecosystem of laws, policies and standards that influence how software is developed. Whether it is international treaties such as the Paris Climate Accord or regional initiatives such as the European Union Green Deal and regional approaches like those of the United States on energy efficiency in IT, the compliance environment is becoming very complicated and far-reaching in terms of consequences. These directions are increasingly applied directly to software development, or indirectly via procurement policies, environmental reporting practices and calls by stakeholders to improve environmental, social and governance (ESG) performance (Ogotu et al. 2023).

Here, compliance and regulation evolve to be not only two levers in project management but would be a lever creating constraints that the acceptable environmental impact should be based on, as well as a lever that encourages innovation within the constraints. The complex part of this is how the project managers can turn these abstract policy objectives into project deliverables. This will entail inculcating the aspects of sustainability into each of the stages of software lifecycle, including planning and design, implementation, testing, deployment and the after-release monitoring. Importantly, such an integration should adhere to the technical standards, as well as the organizational processes, the procurements procedures, the risk management processes, and the reporting procedures (Gangai et al. 2024).

The chapter sets out regulatory compliance as a non-reactive or standalone activity but one that is also strategic to green software project management. It examines the way compliance is built into different methodologies. Agile, DevOps

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/compliance-and-regulation-in-green-software-projects/394150

Related Content

JavaSPI: A Framework for Security Protocol Implementation

Matteo Avalle, Alfredo Pironti, Davide Pozza and Riccardo Sisto (2011). *International Journal of Secure Software Engineering* (pp. 34-48).

www.irma-international.org/article/javaspi-framework-security-protocol-implementation/61152

Construction of Fuzzy Database and Analysis Interface Using Fuzzy Graphs for Management System Operation Analysis

Yasunori Shiono, Toshihiro Yoshizumi, Takaaki Goto, Tadaaki Kirishima and Kensei Tsuchida (2022). *International Journal of Software Innovation* (pp. 1-16).

www.irma-international.org/article/construction-of-fuzzy-database-and-analysis-interface-using-fuzzy-graphs-for-management-system-operation-analysis/307014

Exploring the Perceived End-Product Quality in Software-Developing Organizations

Jussi Kasurinen, Ossi Taipale, Jari Vanhanen and Kari Smolander (2012). *International Journal of Information System Modeling and Design* (pp. 1-32).

www.irma-international.org/article/exploring-perceived-end-product-quality/65560

Multiple Multimodal Mobile Devices: Lessons Learned from Engineering Lifelog Solutions

Daragh Byrne, Liadh Kelly and Gareth J.F. Jones (2014). *Software Design and Development: Concepts, Methodologies, Tools, and Applications* (pp. 2014-2032).

www.irma-international.org/chapter/multiple-multimodal-mobile-devices/77788

The Role of Business Process Reengineering in the Modern Business World

Kijpokin Kasemsap (2015). *Achieving Enterprise Agility through Innovative Software Development* (pp. 87-114).

www.irma-international.org/chapter/the-role-of-business-process-reengineering-in-the-modern-business-world/135224