

Privacy mindset of software developers

Motivation (why is this important)

Privacy has become a top concern in software development because it is an increasing concern from users about their personal data privacy and due to the recent obligation of organizations to comply with privacy laws (e.g. General Regulation of Protection of Data - GDPR). Aligning software to meet privacy needs is a challenging task because there is still no unified view on privacy engineering. Also, many developers do not have sufficient knowledge and understanding about privacy, nor do they sufficiently know how to develop software with privacy. This can result in much confusion regarding privacy requirements between designers and stakeholders during software development, which can lead to wrong design decisions.

Aim and Requirements (what we need from you)

We conduct a study that aims to investigate how privacy is perceived and understood by software developers and to discover what practices they use to develop privacy-sensitive software systems (Figure 1). The objective of this study is to provide a deep analysis of (i) developers' perceptions of privacy and their interpretation of this concept (Personal factors), (ii) how the work environment of the developers, namely the organization in which they operate, help them deal with its privacy-related characteristics (External Environment), and (iii) developers' (self-reported) behavior when encountering informational privacy concerns during software development (Behavior). In order to achieve this objective, we require access to conduct in-depth interviews with software developers (~1h/each interview). Anonymity of both company and interviewee is preserved throughout this study.

Deliverables (what do you get short term)

We will analyse the data collected with interviews to achieve an understanding of the phenomenon under investigation, i.e., how developers perceive, interpret and handle privacy concerns in software development projects. This analysis will result in a qualitative theory related to this phenomenon. Concrete deliverables are:

- An understanding of the personal, external environment and behavioral factors that

influence developers (of your company and of other companies) when developing privacy-sensitive software systems;

- A seminar in which the theory results are presented and related to the challenges of developing successful privacy-sensitive software systems;
- A report detailing both the overall theory and the results per company (anonymity preserved), to provide individual views and a comparison among them regarding how they deal with privacy concerns in software development.



Fig. 1: Privacy perceptions of software developers.

HADAR, Irit et al. Privacy by designers: software developers' privacy mindset. Empirical Software Engineering, v. 23, n. 1, p. 259-289, 2018. DOI <https://doi.org/10.1007/s10664-017-9517-1>

Long-term Benefits and Vision

Participating companies can use the theory, which emerged from the study, to elaborate effective practices that promote proper privacy-sensitive software development. For example, these practices may include training in privacy principles which can help spreading privacy culture in the organization.

Our long-term vision is to develop a requirements specification method and tool to support (both agile and non-agile) developers who are not well aware of how to elicit and specify privacy requirements in software projects.

Research Team

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