

# Guidelines adopted by agile teams in privacy requirements elicitation after the Brazilian General Data Protection Law (LGPD) implementation

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**Abstract Context:** The Brazilian General Data Protection Law (LGPD) implementation has impacted activities carried out by the software development teams. Due to it, developers had to become aware of the existing techniques and tools to carry out privacy requirements elicitation. **Objectives:** Extending our previous work, we have investigated the actions taken by organizations regarding the LGPD, specifically in software development, considering the perception of agile development teams after two years of the LGPD implementation. In addition, we also investigated the perception of an agile team regarding the practices, techniques, and tools previously cited by practitioners as potential solutions for use in this context, along with techniques already in use in the current context. **Methods:** We have conducted a systematic literature review (SLR) and selected 36 primary studies. Furthermore, we have conducted a survey with 53 IT practitioners and semi-structured interviews with ten practitioners. **Results:** The LGPD principles are known by most agile teams and are being implemented by the organizations, although the existing tools to support privacy requirements elicitation are still underused by agile teams. Moreover, agile teams consider that software requirements and software construction are the most impacted areas of knowledge by the LGPD, and most of them use user stories in privacy requirements elicitation. **Conclusions:** Our findings reveal that agile teams and Brazilian organizations are more concerned with user data privacy issues after the LGPD became effective. However, agile teams still face challenges in privacy requirements elicitation.

**Keywords** Privacy Requirements Elicitation, Agile Teams, Techniques, Perception, LGPD

## 1 Survey

We designed a survey to investigate and understand how software development teams using agile methodologies are performing the elicitation of privacy requirements after the LGPD came into effect. The survey was divided into three parts and contained 36 questions, as presented in Table 1.

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ID	Question	Question Types
P1	Please let us know what is your Country, State and City where you are working in the industry.	Open-ended
P2	How old are you?	Closed-ended
P3	What is your degree of education?	Closed-ended
P4	How long have you been working in ICT?	Closed-ended
P5	In which area of your organization did you participate/participate in a software development project?	Closed-ended
P6	Do you work or have you worked with agile development teams?	Closed-ended
P7	What was the main role (roles) you perform/performed in a software development project?	Closed-ended
P8	Do you work or have you worked on developing software functionality that had data privacy concerns?	Closed-ended
P9	My organization has implemented or is implementing changes due to the LGPD.	Closed-ended
P10	My knowledge about the Brazilian General Data Protection Law (LGPD), which was implemented in 2020, is sufficient for the development of my activities in the projects I am participating in.	Closed-ended
P11	Which of the principles of the Brazilian General Data Protection Law (LGPD) do you know?	Closed-ended
P12	Which of the LGPD principles does your organization use/implement?	Closed-ended
P13	Which data privacy solutions have you worked or currently work with?	Closed-ended
P14	In your perception, the changes proposed by LGPD impact which knowledge area in the software development process?	Closed-ended
P15	Select the tools used by your software development team to elicit and document privacy requirements.	Closed-ended
P16	Do you think the organizational environment interferes with data privacy practices?	Closed-ended
P17	The organization I work for has informed all of its employees about the Brazilian General Data Protection Law (LGPD) and its implementation in 2020. In addition, discussions were held with the teams regarding possible changes that would be required to current and future systems.	Closed-ended
P18	After the LGPD came into effect, the way my organization's teams work has changed.	Closed-ended
P19	Organizational procedures related to user data privacy should be known to all employees in the organization, including the software development team.	Closed-ended
P20	Do you think that the criteria used to determine which work items are critical with respect to data privacy should be based on data protection objectives?	Closed-ended
P21	Defining a set of privacy requirements before the requirements elicitation stage can compromise the agility of the software development process.	Closed-ended
P22	The data protection set initially defined by the development team must be evolved/changed throughout the software development process.	Closed-ended
P23	Using documents from traditional methodologies, e.g. data flow diagram, architecture overview, data model, class diagram, etc., to identify the flow of data privacy-related information can facilitate the identification and documentation of privacy requirements.	Closed-ended
P24	The data model or class diagram can be used to identify and document the privacy requirements of a piece of software.	Closed-ended
P25	Specifying the privacy requirements of the system can be done using use cases or user stories.	Closed-ended
P26	If your software development team performs the specification of privacy requirements using user stories, at what point and how are data privacy related aspects (purpose, adequacy, consent, documentation, accountability, among others) inserted?	Closed-ended
P27	If your development team (and you) uses user stories, what difficulties do you identify, regarding the implementation of data privacy principles (purpose, adequacy, consent, security, prevention, documentation, accountability and others) in the agile software development process?	Open-ended
P28	Do you think that outdated user stories can be a threat to the correct implementation of privacy requirements? Please justify your answer.	Open-ended
P29	Do you think that specifying privacy requirements using user stories or use cases in the requirements specification phase (early design phase) is sufficient for correctly ensuring the privacy of users' data?	Closed-ended
P30	What other practices do you think can be used by agile teams to implement LGPD principles? Could you please describe them?	Open-ended
P31	Does your organization use any software to ensure compliance with LGPD? If so could you please describe the name of the software and its purpose?	Open-ended
P32	After the LGPD came into effect and the penalties were charged for non-compliance starting in August 2021, could you describe to us whether your organization has modified the software development process to address privacy requirements? If so, could you describe to us what modifications were made to address privacy requirements during software development?	Open-ended
P33	Does your organization use an LGPD compliance guide? Or have you created a guide? If so, could you please describe which one and if available what is the link to access it?	Open-ended
P34	Are you interested in participating in an interview about data privacy and LGPD in agile projects?	Closed-ended
P35	What is your contact? (Phone or e-mail)	Open-ended
P36	What is the best time to contact you?	Open-ended

Table 1 Survey Questions

## 2 Semi-structured Interviews

To complement the survey's answers, we conducted semi-structured interviews with some practitioners from different Brazilian organizations. The interview participants were contacted based on the information they provided in

the survey. All the practitioners who informed that they would like to participate in an interview were contacted. In total, we had 10 practitioners interviewed. During the interviews, we adhered to the following questions:

- Q.1: How many years of experience do you have in software development?
- Q.2: What is your current role in your software development team?
- Q.3: How has your organization implemented or is implementing changes due to the LGPD?
- Q.4: Do you think you have the necessary knowledge about the Brazilian General Data Protection Law (LGPD) to develop your activities in the projects you are participating in?
- Q.5: Which of the LGPD principles does your organization follow and implement?
- Q.6: Which of the LGPD principles are you currently working on and why?
- Q.7: Which data privacy solutions are you currently working with?
- Q.8: In your perception, the changes proposed by the LGPD impact which phases of the software development process?
- Q.9: What techniques or tools does your software development team use in privacy requirements elicitation and their documentation?
- Q.10: Do you think that defining a set of privacy requirements before the requirements elicitation stage can compromise the agility of the software development process?
- Q.11: Could you describe how your team goes about the specification of privacy requirements? Please also describe how you choose the techniques and/or tools the team will use.
- Q.12: Do you think that the specification of privacy requirements for software can be accomplished using use cases or user stories?
- Q.13: In your perception what are the biggest challenges in specifying privacy requirements?