1. Introduction

- **Goal:**
  - Understand the perceptions of software development professionals and clarify the problems they face
  - Utilize the findings to design security measures that can be easily adopted in development projects.
  
- **RQs in this work:**
  - How the characteristics of a development project affect software security?
  - How the roles of people involved in a project development, such as developers and managers, affect security behavior and awareness?

2. Methodology

- Online survey for software development professionals (developers and managers)
  
  
<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development method</td>
<td>The development method of your project is ...</td>
</tr>
<tr>
<td>User scope</td>
<td>The software being developed is for use by ...</td>
</tr>
<tr>
<td>Contractual relationship</td>
<td>The contractual relationship of your projects is ...</td>
</tr>
</tbody>
</table>

3. Results

3.1 Factor Analysis

- Grouping questions by exploratory factor analysis
- The answer of questions belonging to the same factor was averaged (+2: Strongly agree to -2: Strongly disagree)

### Extracted Factors (Security constraints)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Resources</td>
<td>Security constraints caused by a lack of various resources (time, budget, people, etc.)</td>
</tr>
<tr>
<td>Unconcerned about security</td>
<td>Security constraints caused by unconcern about security in development projects.</td>
</tr>
<tr>
<td>No authority/Conservative</td>
<td>Difficulty of changing the current development process and how lack of decision-making authority interferes with security</td>
</tr>
<tr>
<td>Difficulty of introducing sec. measures</td>
<td>Difficulty of introducing new security measures into the development project.</td>
</tr>
</tbody>
</table>

3.2 Comparison between contractual relationships

- **Lack of resources**
- **Unconcerned about sec.**
- **No authority/Conservative**
- **Difficulty of introducing sec. measures**

4. Implications

- **Supporting security-related decision-making**
  - Decision makers need to be assisted in the decision-making process.
  - Interventions to bridge the gaps between developers’ and managers’ perceptions should be conducted.
    - e.g., sharing the security issues that developers are concerned about to decision makers

- **Designing appropriate user study**
  - Researchers must consider the characteristics of developers and managers and select appropriate participants who suit the purpose and content of a survey.