

## 1. Research on Third-Party Libraries in Android Apps: A Taxonomy and Systematic Literature Review (Open Access)

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**Source:** *IEEE Transactions on Software Engineering*, 2021; **ISSN:** 00985589, **E-ISSN:** 19393520; **DOI:** 10.1109/TSE.2021.3114381; **Publisher:** Institute of Electrical and Electronics Engineers Inc., Article in Press

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**Abstract:** Third-party libraries (TPLs) have been widely used in mobile apps, which play an essential part in the entire Android ecosystem. However, TPL is a double-edged sword. On the one hand, it can ease the development of mobile apps. On the other hand, it also brings security risks such as privacy leaks or increased attack surfaces (e.g., by introducing over-privileged permissions) to mobile apps. Although there are already many studies for characterizing third-party libraries, including automated detection, security and privacy analysis of TPLs, TPL attributes analysis, etc., what strikes us odd is that there is no systematic study to summarize those studies' endeavors. To this end, we conduct the first systematic literature review on Android TPL-related research. Following a well-defined systematic literature review protocol, we collected 74 primary research papers closely related to Android third-party library from 2012 to 2020. After carefully examining these studies, we designed a taxonomy of TPL-related research studies and conducted a systematic study to summarize current solutions, limitations, challenges and possible implications of new research directions related to third-party library analysis. We hope that these contributions can give readers a clear overview of existing TPL-related studies and inspire them to go beyond the current status quo by advancing the discipline with innovative approaches. IEEE

**Main heading:** Libraries

**Controlled terms:** Android (operating system) - Ecosystems - Taxonomies

**Uncontrolled terms:** Android - Android apps - Literature reviews - Mobile app - Security risks - Systematic - Systematic literature review - Systematic study - Third parties - Third-party library

**Classification Code:** 454.3 Ecology and Ecosystems - 723 Computer Software, Data Handling and Applications - 903 Information Science - 903.4.1 Libraries

**Open Access type(s):** All Open Access, Green

**Database:** Compendex

**Data Provider:** Engineering Village

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