

## Privacy-respecting digital investigation

### ABSTRACT

The forensics investigation requirements are in direct conflict with the privacy rights of those whose actions are being investigated. At the same time, once the private data is exposed it is impossible to undo its exposure effects should the suspect is found innocent! Moreover, it is not uncommon that during a suspect investigation, private information of other innocent parties becomes apparent to the forensics investigator. These all raise the concern for development of platforms for enforcing privacy boundaries even to authorized forensics investigators. To the best of authors' knowledge, there is no practical model for privacy-respecting digital investigation which is capable of considering different jurisdictions requirements and protecting subjects' data privacy in line with investigation warrant permissions and data-origin privacy requirements.

Privacy-respecting digital forensics as an emerging cross-disciplinary research area is moving toward addressing above issues. In this paper, we first establish needed foundations and describe details of "privacy-respecting digital investigation" as a cross-disciplinary field of research. Afterwards, we review main research efforts in different research disciplines relevant to the field and elaborate existing research problems. We finalize the paper by looking at potential privacy issues during digital investigation in the light of EU, US, and APEC privacy regulations.

The main contributions of this paper are first establishing essential foundations and providing detailed definition of "privacy-respecting digital investigation" as a new cross-disciplinary field of research, second a review of current state of art in different disciplines relevant to this field, third elaborating existing issues and discussing most promising solutions relevant to these disciplines, and forth is detailed discussion of potential privacy issues in different phases of digital forensics life cycle based on EU,US, and APEC privacy regulations. We hope this paper opens up a new and fruitful avenue in the study, design, and development of privacy respecting forensics investigation as an interdisciplinary field of research.

**Keyword:** Privacy; Digital investigation; Digital forensics