ScR Documentation

Trial Searches - 09/11/2022

Scopus

- Search string: TITLE-ABS-KEY ("privacy impact assessment*" OR "data protection impact assessment*")
- Total: 317

IEEE Xplorer

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 57

ACM

- Search string: [All: "privacy impact assessment*"] OR [All: "data protection impact assessment*"]
- Total: 131

Web of Science

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 208

1st Round - All Searches - 17/11/2022

Scopus

- Search string: TITLE-ABS-KEY ("privacy impact assessment*" OR "data protection impact assessment*")
- Total: 318
- Note: there were no difference using the '*' symbol in the search string.

IEEE Xplorer

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 53

ACM

- Search string: [All: "privacy impact assessment*"] OR [All: "data protection impact assessment*"]
- Total: 135
- Note: there were no differences using the '*' symbol in the search string.

Web of Science

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 210

Removing Duplicated Entries - 18/11/2022

After importing all the records into Rayyan, we used the system feature to automatically detect duplicated entries coming from all databases. A total of 244 entries were removed, marked as duplicated.

- Initial entries (+): 716
- Duplicated entries (-): 244
- Unique entries (=): 472

Pilot of Selection Criteria

Two reviewers went over first 87 (18.5%) entries using Rayyan double-blind and discussed their decisions. There were no disagreements, with both reviewers selecting 2 studies and excluding 85 studies.

Screening Process

Initial results (Jan, 10, 2023)

Reviewer 1	Reviewer 2
Included: 47 Maybe: 17 Excluded: 408	Included: 41 Maybe: 31 Excluded: 400
Conflict: 18	

“Conflicts” and “Maybe” were settled through consensus between the two reviewers after discussion.

A total of 56 studies were included after the screening process using Rayyan.

Download Full-Texts and Quick Check

We searched for the full-text PDFs of all the 56 preliminary selected studies and performed a quick screening to see if the publications are relevant, consistent to the previous screening process.

A total of 5 publications were removed because they are not scientific studies, but reports that were included as part of a book. They are the following:

- [*No Author*] Privacy impact assessment for the use of unidirectional social media applications communications and outreach (2012)
- [*No Author*] Privacy impact assessment for Einstein 2 (2012)
- [*No Author*] Privacy compliance review of the Einstein program (2012)
- [*No Author*] Privacy impact assessment Einstein program: Collecting, analyzing, and sharing computer security information across the federal civilian government? (2012)
- [*No Author*] Privacy impact assessment for the initiative three exercise (2012)

One publication was excluded because we were not able to access the full-texts, even after emailing the authors of the study:

- Croll, P.R.; Ambrosoli, K.M..Privacy with emergency medical information used in first response, Stud. Health Technol. Informatics - Volume 178, Issue 0, pp. 7-13, 2012

Phase 2 – Selection of Studies

After reading all the selected studies, another 12 studies were excluded for the following reasons:

- **Not actually addressing PIAs/DPIAs**
  - Parker, D. (Regulatory) Impact assessment and better regulation 2012
  - Mascia, C. and Ranise, S. and Aimeur E. and Laurent M. and Yaich R. and Dupont B. and Garcia-Alfaro J. Asset Sensitivity for Aligning Risk Assessment Across Multiple Units in Complex Organizations 2022
  - Fernández, A.P. and Sindre, G. Software Assisted Privacy Impact Assessment in Interactive Ubiquitous Computing Systems 2020
- **No practical component**
  - Tang, Feiyang and Østvold, Bjarte M. Assessing Software Privacy Using the Privacy Flow-Graph 2022
  - Pearson, S. Privacy management in global organisations 2012
  - Seto, Y. Application of privacy impact assessment in the smart city 2015
  - Dashti, S. and Ranise, S. and Obaidat M.S. and Obaidat M.S. and Samarati P. A Tool-assisted Methodology for the Data Protection Impact Assessment 2019
- **Hypothetical case study only (not real practice)**
  - Gbadeyan, A. and Butakov, S. and Aghili, S. IT governance and risk mitigation approach for private cloud adoption: case study of provincial healthcare provider 2017
  - Makri, E.-L. and Georgiopoulou, Z. and Lambrinoudakis, C. Utilizing a privacy impact assessment method using metrics in the healthcare sector 2020
  - Bisztray, T. and Gruschka, N. and Mavroeidis, V. and Fritsch, L. Data protection impact assessment in identity management with a focus on biometrics 2020
- **Authors stated that the PIA is unnecessary for the analysed system**

    - Alejos, A.V. and Cuiñas, I. and Expósito, I. and Sánchez, M.G. From the farm to fork: Information security accomplishment in a RFID based tracking chain for food sector 2012

- **Found to be duplicated**
    - Henriksen-Bulmer, J. and Faily, S. and Jeary, S. and Slamanig D. and Krenn S. and Pierson J. and Kosta E. and Fischer-Hubner S. Implementing GDPR in the charity sector: A case study 2019

At this point, the studies were all read in full and data was extracted using a standardised template. The steps of forward and backward snowballing were also applied to these studies.

Backward snowballing revealed 3 publications, but we were not able to find them or download them anywhere, even after contacting the authors. They were:

- **[Later Excluded – Not available]** Kroener, I. and Wright, D., 2015. Privacy impact assesment policy issues. In Hacia un nuevo derecho europeo de protección de datos (pp. 959-981). Tirant lo Blanch.
- **[Later Excluded – Not available]** Wadhwa, K., 2011. SAPIENT project supporting fundamental rights, privacy and ethics in smart surveillance technologies. Biometrics, 18.
- **[Later Excluded – Not available]** Sakamoto, M., Yoichi, S., Okazakim, M., Okamoto, N., Kawaguchi, H. and Nagano, S., 2016. Assessment of effectiveness of personal information impact assessment. J. Digital Pract, 7(1), pp.52-60.

Forward snowballing revealed 3 publications, of which one of them was excluded after full reading and two were included. They are:

- **[Later Excluded – No practical component]** METİN, B., ERKAN, S., ATASU, İ. and YILMAZ, E., 2019. Privacy Impact Assessment as a Tool for GDPR Compliance Preparation. Kişisel Verileri Koruma Dergisi, 1(2), pp.75-86.
- **[Later Included]** Vandercruysse, L., Dooms, M. and Buts, C., 2021. The DPIA: Clashing Stakeholder Interests in the Smart City?. Data Protection and Privacy, Volume 14: Enforcing Rights in a Changing World, 2016(679), p.245.
- **[Later Included]** McKee, L., 2022. Privacy Assessment Breakthrough: A Design Science Approach to Creating a Unified Methodology. PhD Thesis.

In the end, a total of **40 studies** were included in the scoping review. All studies were carefully read and pertinent data was extracted, allowing for data charting and narrative synthesis of the body of literature.

2nd Round - All Searches - 01/11/2023

Scopus

- Search string: TITLE-ABS-KEY ("privacy impact assessment*" OR "data protection impact assessment*")
- Total: 376
- Note: there were no difference using the '*' symbol in the search string.

IEEE Xplorer

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 59
- One record was removed when exporting the RIS file because it was marked as “Courses” type of publication in IEEEXplore.

ACM

- Search string: [All: "privacy impact assessment*"] OR [All: "data protection impact assessment*"]
- Total: 165
- Note: there were no differences using the '*' symbol in the search string.

Web of Science

- Search string: "privacy impact assessment*" OR "data protection impact assessment*"
- Total: 146
- There seems to have been a reduction on the number of results when using WoS. Previous search had 208 results for the same string.

Removing Duplicated Entries - 01/11/2023

After importing all the records into Rayyan, we used the system feature to automatically detect duplicated entries coming from all databases. A total of XXX entries were removed, marked as duplicated.

- Initial entries (+): 746
- Duplicated entries (-): 193
- Unique entries (=): 553
- 60 completely new studies identified that were not in the past search.

Screening Process

2nd Round Initial results (Nov, 01, 2023)

Reviewer 1	Reviewer 2
Included: 56 / 6 Maybe: 0 / 0 Excluded: 424 / 54	Included: 56 / 6 Maybe: 0 / 0 Excluded: 424 / 54
Conflict: 0 / 3	

“Conflicts” and “Maybe” were settled through consensus between the two reviewers after discussion.

Download Full-Texts and Quick Check

We searched for the full-text PDFs of all the 6 preliminary selected studies and performed a quick screening to see if the publications are relevant, consistent to the previous screening process.

One publication was excluded because we were not able to access the full-texts, even after emailing the authors of the study:

- Magalhães, M., Pereira, T.C., Costa, E., Pinto, A.S., Braga, J.L. and Borges, I., 2023. DPO Framework for Canvas GDPR Model. In Advances in Tourism, Technology and Systems: Selected Papers from ICOTTS 2022, Volume 2 (pp. 93-109). Singapore: Springer Nature Singapore.

Phase 2 – Selection of Studies

After reading all the selected studies, another 1 studies were excluded for the following reasons:

- **Not actually addressing PIAs/DPIAs**
  - Prokhorenkov, D., 2023, April. Toward Compliance Implications and Security Objectives: A Qualitative Study. In 2023 IEEE 39th International Conference on Data Engineering Workshops (ICDEW) (pp. 138-145). IEEE.

Backward snowballing revealed 1 publication, which was included after full reading. It was:

- **[Later Included]** Alaqra, A.S., Kane, B. and Fischer-Hübner, S., 2021. Machine learning–based analysis of encrypted medical data in the cloud: Qualitative study of expert stakeholders’ perspectives. JMIR human factors, 8(3), p.e21810.

In the end, a total of **5 additional studies** were included in the scoping review after the second round of searches, raising the total to **45 studies**. Again, all studies were carefully read and pertinent data was extracted, allowing for data charting and narrative synthesis of the body of literature.