



# **Industry 5.0 Concepts and Enabling Technologies, Towards an Enhanced Conservation Practice: Systematic Literature Review Search Strategy Checklist**

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# 1 Preferred Reporting Items for Systematic Review Literature Search (PRISMA-S)

## 1.1 Introduction

Systematic reviews quality heavily relies in the search strategy implemented for the information retrieval process. Nevertheless, search strategies are commonly not adequately reported. This document presents the search strategy adopted with the aim of exploring how the Architecture, Engineering, Construction, Management, Operation, and Conservation (AECMO&C) industry can adapt and be better prepared to embrace novel Industry 5.0 principles and enabling technologies, ultimately resulting in enhanced conservation practices for the built cultural heritage environment. It follows the PRISMA-S [1] checklist.

## 1.2 Search strategy

The recommended items to address in a search strategy according to the PRISMA-S checklist are presented in Table 1, Table 2, Table 3 and Table 4. This search strategy has been developed and documented to ensure transparency of the systematic review and facilitate its reproducibility.

Table 1. Information sources and methods.

<b>Database name:</b>	The following electronic database was searched: <ul style="list-style-type: none"> <li>• Scopus.</li> </ul>
<b>Multi-database searching:</b>	Not applicable.
<b>Study registries:</b>	Not applicable.
<b>Online resources and browsing:</b>	Not applicable.
<b>Citation searching:</b>	In case a relatively small number (20<) of records is finally included, both forward and backward citation searching will be conducted to increase this number with relevant records.
<b>Contacts:</b>	No further details will be searched by directly contacting authors, experts, manufacturers, or others.
<b>Other methods:</b>	In case a relatively small number (20<) of records is finally included, further records will be searched throughout the extensive bibliographic resources of ICCROM.

Table 2. Search strategies.

<b>Full search strategy:</b>	<p>Three different search queries were run implementing the specified eligibility criteria and combining the various keywords of interest identified. The full search queries were:</p> <ol style="list-style-type: none"> <li>1. TITLE-ABS-KEY ( "industry 5.0" AND (heritage OR conservation) ) AND PUBYEAR &gt; 2019 AND PUBYEAR &lt; 2025 AND ( LIMIT-TO ( SRCTYPE , "j" ) OR LIMIT-TO ( SRCTYPE , "p" ) OR LIMIT-TO ( SRCTYPE , "k" ) OR LIMIT-TO ( SRCTYPE , "b" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "re" ) ) AND ( LIMIT-TO ( SUBJAREA , "COMP" ) OR LIMIT-TO ( SUBJAREA , "ENGI" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "DECI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "ENER" ) OR LIMIT-TO ( SUBJAREA , "ENVI" ) OR LIMIT-TO ( SUBJAREA , "MATE" ) OR LIMIT-TO ( SUBJAREA , "ARTS" ) OR LIMIT-TO ( SUBJAREA , "MULT" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )</li> <li>2. TITLE-ABS-KEY ( ( human-centr* OR resilien* OR sustainab* ) AND ( "cultural heritage" AND conservation ) ) AND PUBYEAR &gt; 2019 AND PUBYEAR &lt; 2025 AND ( LIMIT-TO ( SRCTYPE , "j" ) OR LIMIT-TO ( SRCTYPE , "p" ) OR LIMIT-TO ( SRCTYPE , "k" ) OR LIMIT-TO ( SRCTYPE , "b" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "re" ) ) AND ( LIMIT-TO ( SUBJAREA , "COMP" ) OR LIMIT-TO ( SUBJAREA , "ENGI" )</li> </ol>
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	OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "DECI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "ENER" ) OR LIMIT-TO ( SUBJAREA , "ENVI" ) OR LIMIT-TO ( SUBJAREA , "MATE" ) OR LIMIT-TO ( SUBJAREA , "ARTS" ) OR LIMIT-TO ( SUBJAREA , "MULT" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )
	3. TITLE-ABS-KEY ( ( human-centr* OR human-machin* OR bio-inspired OR "smart material*" OR "digital twin*" OR "cyber safe" OR "artificial intelligence" OR "energy efficien*" OR "trustworthy autonom*" ) AND ( "cultural heritage" AND conservation ) ) AND PUBYEAR > 2019 AND PUBYEAR < 2025 AND ( LIMIT-TO ( SRCTYPE , "j" ) OR LIMIT-TO ( SRCTYPE , "p" ) OR LIMIT-TO ( SRCTYPE , "k" ) OR LIMIT-TO ( SRCTYPE , "b" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "re" ) ) AND ( LIMIT-TO ( SUBJAREA , "COMP" ) OR LIMIT-TO ( SUBJAREA , "ENGI" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "DECI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "ENER" ) OR LIMIT-TO ( SUBJAREA , "ENVI" ) OR LIMIT-TO ( SUBJAREA , "MATE" ) OR LIMIT-TO ( SUBJAREA , "ARTS" ) OR LIMIT-TO ( SUBJAREA , "MULT" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) ).
<b>Limits and restrictions:</b>	The search was limited to the search fields of title, abstract and keywords.
<b>Search filters:</b>	The following filters were applied: <ul style="list-style-type: none"> <li>• Years: 2020-2024</li> <li>• Document Type: Articles, Conference Paper, Book Chapters, or Review.</li> <li>• Source Type: Journals, Conference Proceedings, Books, or Book Series.</li> <li>• Language: English</li> <li>• Subject Area: Computer Science, Engineering, Business Management and Accounting, Decision Sciences, Social Sciences, Economics Econometrics and Finance, Energy, Environmental Science, Materials Science, Arts and Humanities, and Multidisciplinary.</li> </ul>
<b>Prior work:</b>	The search strategy adopted has been created specifically for this systematic review. No search strategies from previews literature reviews have been adopted.
<b>Updates:</b>	No update method will be used (although Scopus allows the use of search alerts) as the final manuscript will be completed shortly after the search had been performed.
<b>Dates of searchers:</b>	The search was conducted on 16/02/2024.

*Table 3. Peer review.*

<b>Peer review:</b>	The search strategy document will be made available online along with the systematic review protocol in the OSF website. Both documents are available to receive open peer reviews under the Resources tab of the project Registry website [2].
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*Table 4. Managing records.*

<b>Total records:</b>	The total records found will be reported in accordance to the PRISMA 2020 flow diagram for systematic reviews [3]. The number of records identified with each of the search queries reported were: <ol style="list-style-type: none"> <li>1. 13.</li> <li>2. 777.</li> <li>3. 117.</li> </ol> A FAIR bibliographic database has been created with all the records identified at this stage [4].
<b>Deduplication:</b>	The deduplication process was conducted automatically through the EndNote software. The number of records for each one of the search queries after deduplications were: <ol style="list-style-type: none"> <li>1. 13.</li> <li>2. 776.</li> <li>3. 83.</li> </ol>



## References

1. Rethlefsen, M.L., et al., *PRISMA-S: an extension to the PRISMA Statement for Reporting Literature Searches in Systematic Reviews*. *Systematic Reviews*, 2021. **10**(1): p. 39 <https://doi.org/10.1186/s13643-020-01542-z>.
2. Jiménez Rios, A., et al., *Industry 5.0 Concepts and Enabling Technologies, Towards an Enhanced Conservation Practice*. 2024 <https://doi.org/10.17605/OSF.IO/GPY6B>.
3. Page, M.J., et al., *The PRISMA 2020 statement: an updated guideline for reporting systematic reviews*. *BMJ*, 2021. **372**: p. n71 <https://doi.org/10.1136/bmj.n71>.
4. Jiménez Rios, A., et al., *Bibliographic Dataset for the Systematic Literature Review on Industry 5.0 Concepts and Enabling Technologies, Towards an Enhanced Conservation Practice*. Zenodo, 2024. <https://doi.org/10.5281/zenodo.10671411>.

# Annex A

*Table 5. History of changes.*

<b>Version</b>	<b>Publication date</b>	<b>Change</b>
1.0	26/03/2024	Initial version.

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