

# Archaeology 4.0: Archaeology in the Third Era of Computing

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## Abstract

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*Key words:* Cicero; Catiline; orations.

## 1 Archaeological Evolution

Today, in 2019 we are living in the center of the Digital Transformation era. The digital transformation affects all kind of 'humanoid' and 'machine' communities: individuals and society, state, companies and science (research/teaching). In archaeology, researcher develop and use new digital technologies. This results in positive effects on science and archaeology itself. The state promotes (e.g. funding by the Federal Ministry of Education and Research - BMBF) and uses these digital technologies and serves as a regulator. Also the society is using more and more digital technologies. Companies are developing and using new digital technologies as well.

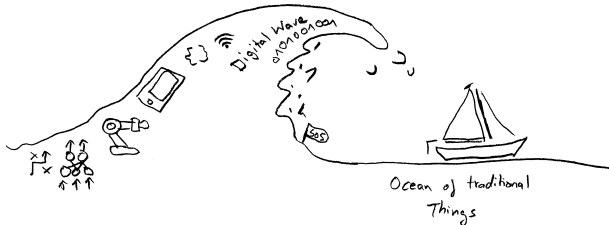


Fig. 1. The Digital and the Ocean of Traditional Things, Florian Thiery [CC BY 4.0]

Thus, science and archaeology should seek collaboration with companies to positively influence the state and society through digital technologies. But does the digital wave overtake us? (Fig. 1)

Surfen auf der Welle, erste Welle der Digitalisierung, zweite Welle Digitalisierung

Archologische Evolution (A 1.0 bis A 4.0)

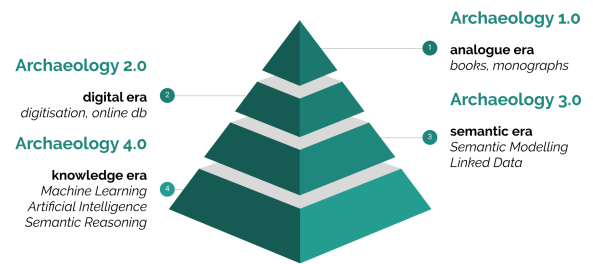


Fig. 2. Archaeology 4.0, Florian Thiery [CC BY 4.0]

Analogue Era to Knowledge Graph Computing (Fig. 2)

### 1.1 Archaeology 1.0

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Fig. 3. Archaeology 1.0 Symbol, pixabay [Pixabay License]

1.2 Archaeology 2.0

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Fig. 4. Archaeology 2.0 Symbol, pixabay [Pixabay License]

1.3 Archaeology 3.0

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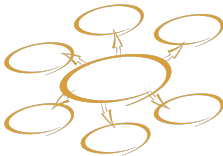


Fig. 5. Archaeology 3.0 Symbol, pixabay [Pixabay License]

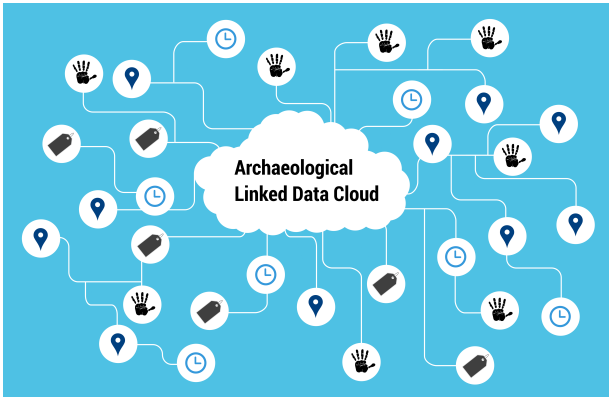


Fig. 6. Archaeological Linked Data Cloud, Florian Thiery [CC BY 4.0]

1.4 Archaeology 4.0

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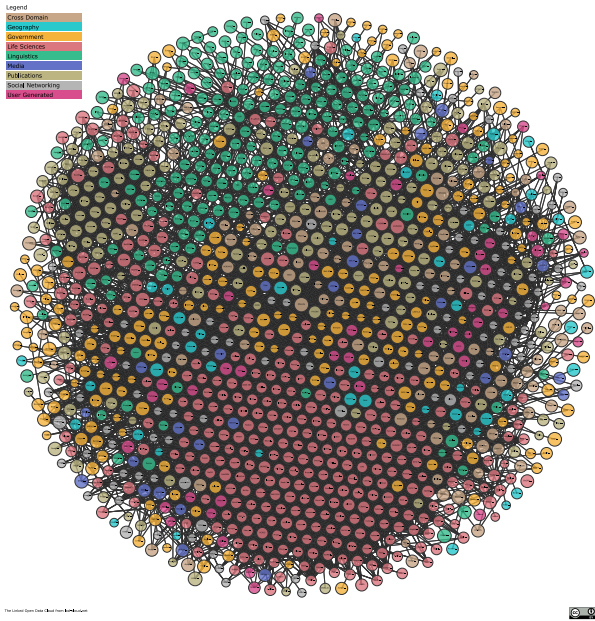


Fig. 7. Linked Open Data Cloud 2019-03-29, lod-cloud.net [CC BY 4.0]

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Fig. 8. Archaeology 4.0 Symbol, pixabay [Pixabay License]

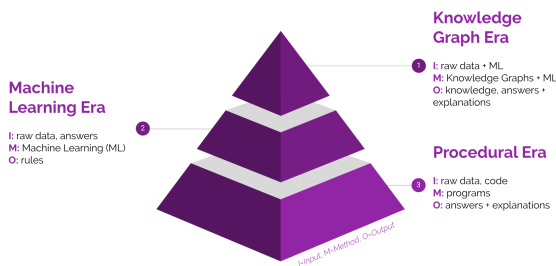


Fig. 9. Era of Computing, Florian Thiery [CC BY 4.0]

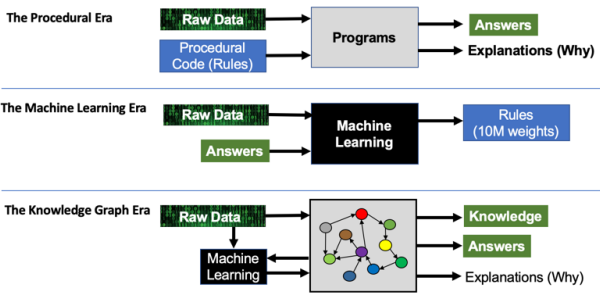


Fig. 10. Era of Computing, Dan McCreary [5]

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## References

- [1] Tim Berners-Lee. Linked Data - Design Issues, July 2006.
- [2] Michael Hausenblas and James G. Boram Kim. 5-star Open Data, August 2015.
- [3] Anthony J. G. Hey and Gyuri Ppay. *The computing universe: a journey through a revolution*. Cambridge University Press, New York, NY, USA, 2015.
- [4] Leif Isaksen. *Archaeology and the Semantic Web*. phd, University of Southampton, December 2011.
- [5] Dan McCreary. Knowledge Graphs: The Third Era of Computing, March 2019.
- [6] Florian Thiery. *Semantic Web und Linked Data: Generierung von Interoperabilität in archäologischen Fachdaten am Beispiel römischer Toepferstempel*. master thesis, Fachhochschule Mainz, December 2013.