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Shedding Light on Enclosed Cuneiform Tablets Using a Mobile X-ray Tomography Setup at the Museum

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Cuneiform represents the earliest form of writing developed by the Sumerians in Mesopotamia in the second half of the fourth millennium BCE. It was used for more than three millennia all around the Middle East. To protect the clay tablets from damage and ensure confidentiality, tablets were encased in clay envelopes. Reading the message required breaking the envelope and, consequently, the artistic seal. However, some letters never reached their recipient and remained within their clay envelopes.

To investigate the inner structure of such historical artefacts non-destructively, a mobile tomographic X-ray scanner (ENCI) has been developed during the last years. It became operational for the first time in a recent measurement campaign at the Louvre Museum in Paris. In this contribution, we introduce the new tomographic X-ray scanner and the data evaluation pipeline from data acquisition, tomographic reconstruction, image segmentation and the final 3D data visualization. In this way, we gain a detailed insight into the materiality and fashioning of cuneiform clay tablets and make cuneiform writings visible that remained hidden and unread for thousands of years.

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