xCTing - Enabling X-ray CT based Industry 4.0 process chains by training Next Generation research experts

First-time-right and zero-defect manufacturing of customized lot-size-one products are essential elements of the Industry 4.0 paradigm shift to reinforce Europe's global leadership in manufacturing. X-ray Computed Tomography (CT) metrology has a key role to play in this transition, since it is the only known technology that can certify non-destructively the quality of internal complex structures, such as those produced by additive manufacturing or found in assemblies.

However, CT largely remains an off-line technology, due to the unsolved trade-off between scan speed and scan quality, and the need for extensive expert user input. xCTing will therefore focus on significantly increasing autonomy, robustness and speed in CT metrology in order to support its transition towards a fully in-line quality assurance technology as required in Industry 4.0 environments. Meeting these challenges requires the integration of a broad range of interdisciplinary expertise, including physics, manufacturing, dimensional metrology, machine learning, as well as efficient and reliable big data analytics and visualization. In order to achieve the envisaged innovation breakthrough in the European industry, Europe is in dire need of young innovators who can combine this variety of competences with entrepreneurial skills. The xCTing project is a pan-European industrial-academic initiative committed to provide the unique and encompassing training environment required to foster this new generation of innovation-minded research engineers, that will act as catalysts in the further transformation of Europe's manufacturing industry towards global technological leadership. The overall aim of the xCTing project is to train 15 young and promising researchers (ESRs) that will take the lead in conceiving the next generation of European Industry 4.0-ready CT technology. The xCTing consortium consists of 9 beneficiaries and 6 partner organisations.

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