

Module Code	TGI_M07
Module Title	Anonymisation and Privacy
Host Institution/ Contact	Maynooth University, Ollie Mason
Pre-requisites	none
ECTS	5
Chief Examiner	Prof. Josep Domingo-Ferrer
Teaching Staff	Prof. Josep Domingo-Ferrer
Delivery	24 Formal Lecture Hours plus approx 80 hours independent study
Aims	To present the principles of privacy by design and the array of state-of-the-art privacy techniques, with a special emphasis on anonymisation techniques.
Learning Outcomes	To become familiar with the legal basis of privacy To become familiar with the principles of privacy by design To learn which privacy techniques exist to address which privacy problems To gain detailed knowledge of data anonymisation techniques To learn the basic use of anonymisation software
Syllabus	<ol style="list-style-type: none"> 1. Basic privacy concepts 2. Deriving privacy and data protection principles from the legal framework 3. Key criteria in privacy by design 4. Privacy design strategies 5. Privacy techniques <ol style="list-style-type: none"> a. Authentication b. Attribute-based credentials c. Secure private communications d. Communications anonymity and pseudonymity e. Storage privacy f. Privacy-preserving computations g. Transparency-enhancing techniques h. Intervenable-enhancing techniques i. Owner privacy in databases: privacy-preserving data mining j. User privacy in databases: private information retrieval k. Respondent privacy in databases: anonymisation. 6. Private information retrieval (PIR) and relaxations <ol style="list-style-type: none"> a. Shortcomings of strict PIR b. Standalone PIR relaxations c. P2P PIR relaxations d. Rational behaviour in P2P PIR. 7. Anonymisation in databases <ol style="list-style-type: none"> a. Concepts b. Statistical databases c. Privacy models (k-anonymity, differential privacy, etc.)

	<ul style="list-style-type: none"> d. Tabular data protection e. Interactive database protection f. Microdata protection g. The permutation model of microdata protection h. Evaluation of anonymization methods i. Anonymisation software
Assessment	Test with short questions to determine how well the students have understood the rationale and the applicability of the presented techniques
Bibliography	<ul style="list-style-type: none"> • G. Danezis, J. Domingo-Ferrer, M. Hansen, J.-H. Hoepman, D. Le Métayer, R. Tirtea and S. Schiffner, <i>Privacy and Data Protection by Design – From Policy to Engineering</i>, European Union Agency for Network and Information Security-ENISA, 2015. • A. Hundepool, J. Domingo-Ferrer, L. Franconi, S. Giessing, E. Schulte Nordholt, K. Spicer and P.-P. de Wolf, <i>Statistical Disclosure Control</i>, Wiley, 2012. • Several research papers available from http://crises2-deim.urv.cat/articles
Website	