

**Scuola di Dottorato del Politecnico di Bari**

**Ph.D. School**

**Middleware and architecture for Industry 4.0**

**CFU: 3 (24 ore)**

**SSD: ING-INF/05**

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| **Goal** | To address main issues of design and modeling of software and system connectivity in Internet of things for Industrial processes. To study main risks and opportunities of the Industrial Internet of things from a software development point of view |
| **Program** | The program will cover the following topics:   * Industrial Internet: the Industrial Internet of Things * The Internet technology into production process * Industrial IoT (IIoT) Reference Architecture * Middleware Software Patterns * Software Design Concepts * Middleware Industrial Internet of Things Platforms * IoT in the production process: connecting machines, products and systems * Events and Streaming: Complex Event processing * Products and services: open standards and solutions |
| **References** | * K. Ashton. That 'internet of things' thing. RFiD Journal, 2009. * L. Atzori, A. Lera, and G. Morabito. The Internet of Things: A survey. Comput. Netw. , 54(15):2787-2805, October 2010. * L. Da Xu, W. He, and S. Li. Internet of Things in Industries: A Survey. IEEE Trans. Industrial Informatics, 10(4):2233-2243, 2014. * J. Gubbi, R. Buyyar, S. Marusic, and M. Palaniswami. Internet of Things (IoT): A Vision, Architectural Elements, and Future Directions. Future Gener. Comput. Syst., 29(7):1645-1660, September 2013. * D. Miorandi, S. Sicari, F. De Pellegrini, and I. Chlamtac. Internet of things: Vision, applications and research challenges. Ad Hoc Networks, 10(7):1497-1516, 2012. * Fersi, G.: Middleware for internet of things: A study. In: Distributed   Computing in Sensor Systems (DCOSS), 2015 International  Conference On, pp. 230{235 (2015). IEEE   * Razzaque, M., Milojevic-Jevric, M., Palade, A., Clarke, S.: Middleware   for internet of things: a survey. Internet of Things Journal, IEEE PP(99) (2015) |