

# INFORMATION SYSTEMS

## DESCRIPTION

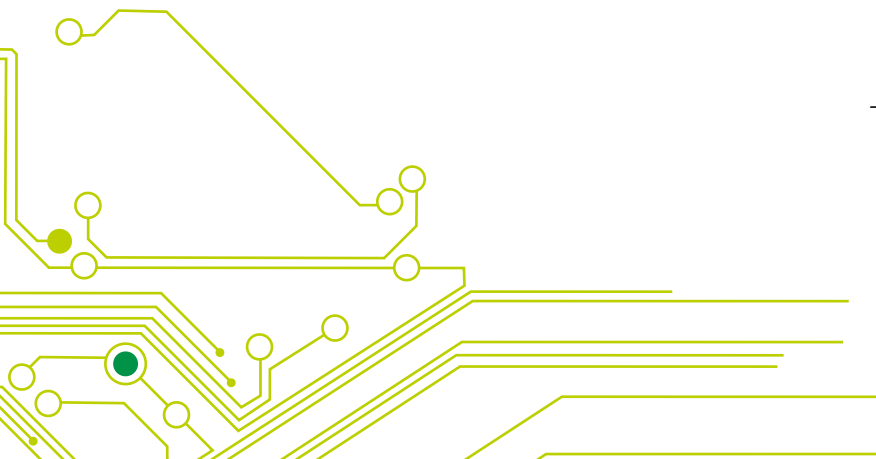
The Information Systems group aims to develop and experiment new approaches regarding the information representation, manipulation and processing considering information systems contexts of different application areas. Theoretical studies are carried on in spatial, temporal and semistructured databases, but also in process modeling with particular emphasis on data and process modeling, query processing, data mining and data visualisation, when space and time are involved. Case studies and application contexts are mainly focused on information systems in medicine, geographical information systems and process-aware information systems. The activities of the lab are focused on temporal analysis for medical data and research activity in the field of geographical systems. In particular the lab has established fruitful collaborations with the department of Pharmacology of the University of Verona and the SITAVR, the Archaeological and Territorial Informative System of Verona.

## LABORATORIES

**STARS:** Semistructured Temporal clinical Geographical Systems Laboratory

## PROJECTS (2012-2016)

- **PHARMACOVIGILANCE:** The project aims at providing tools for supporting the pharmacovigilance activities of the Italian Ministry of Health. In particular, we are designing and managing a Business Intelligence platform to allow analyst to investigate suspected relation between drug administrations and adverse reactions reported in Italy. The objective is to point out peculiar temporal behaviour and find hidden temporal patterns in the data.
- **BURUNDI:** Design, deployment and management of system for provide remote medical assistance (telemedicine and teleconsulting) between Ngozi hospital (Burundi) and the Azienda Ospedaliera Universitaria Integrata di Verona.
- **INTER-SITAR:** The project regards the mapping of the SITAR and NIOBE data models towards the standard CIDOC-CRM-Archeo with data transformation into RDF format. In order to obtain a first level of interoperability between the database of the SITAR and NIOBE projects on one side and the databases of other partner of the european project ARIADNE on the other side, it is necessary to define the mapping of their corresponding conceptual models (SITAR e NIOBE) towards the model of CIDOC-CRM-Archeo. After this phase of conceptual alignment we will be able to transform the data of SITAR and NIOBE into the model of CIDOC-CRM-Archeo and produce the RDF files for supporting the interoperability.
- **SMART CITY:** The project aims at providing a reference architecture for an application on mobile phones and tablet which present to the user some information about the events occurring in the space and time where the user is located. The case study will be the tourist information regarding the events and monuments of Verona.



## SELECTED PUBLICATIONS (2012-2016)

- M. Dellamico, D. Carra, P. Michiardi. PSBS: Practical Size-Based Scheduling. IEEE Transactions on Computers. 65(7), pp. 2199-2212, 2016.
- C. Combi, P. Sala. Mining approximate interval-based temporal dependencies. Acta Informatica. 53(6-8), pp. 547-585, 2016.
- A. Belussi, S. Migliorini, M. Negri, G. Pelagatti. Snap Rounding with Restore: an Algorithm for Producing Robust Geometric Datasets. ACM Transactions on Spatial Algorithms and Systems. 2(1), pp. 1-36, 2016.
- A. Cimatti, L. Hunsberger, A. Micheli, R. Posenato, M. Roveri. Dynamic controllability via Timed Game Automata. Acta Informatica. pp. 1-24, 2016.
- A. Belussi, S. Migliorini, M. Negri, G. Pelagatti. Impact of Data Representation Rules on the Robustness of Topological Relation Evaluation. Geoinformatica. 19(2). pp. 1-44, 2015.
- C. Combi, P. Sala. Interval-based temporal functional dependencies: specification and verification. Annals of Mathematics and Artificial Intelligence. 71(1-3), pp. 85-130, 2014.
- C. Combi, M. Gambini, S. Migliorini, R. Posenato. Representing Business Processes Through a Temporal Data-Centric Workflow Modeling Language: An Application to the Management of Clinical Pathways. IEEE Transactions on Systems, Man, and Cybernetics: Systems. 44(9), pp. 1182-1203, 2014.
- D. Carra, M. Steiner, P. Michiardi, E. Biersack, W. Effelsberg, T. En-Najjary. Characterization and Management of Popular Content in KAD. IEEE Transactions on Parallel and Distributed Systems. 24(4), pp. 662-671, 2013.
- C. Combi, B. Oliboni, E. Quintarelli. Modeling temporal dimensions of semistructured data. Journal of Intelligent Information Systems. 38(3), pp. 601-644, 2012.
- C. Combi, B. Oliboni. Visually defining and querying consistent multi-granular clinical temporal abstractions. Artificial Intelligence in Medicine. 54(2), pp. 75-101, 2012.
- C. Combi, M. Gozzi, R. Posenato, G. Pozzi. Conceptual modeling of flexible temporal workflows. ACM Transactions on Autonomous and Adaptive Systems. 7(2), 19, 2012.

## PEOPLE (2017)



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