

# Projects A.A. 2012/2013

Main topics for projects and thesis



# Progetto di Ingegneria Informatica

- I crediti associati al Progetto di Ingegneria Informatica prevedono attività progettuale e di sperimentazione che possono essere svolte sotto la guida di **tutti i docenti** di Ingegneria Informatica
- Sono associabili ai crediti della tesi per gli studenti dell'ordinamento 509
- I progetti sono illustrati sul sito <http://pii.dei.polimi.it/>
- Le docenti Antola e Tanca sono incaricate di registrare **tutti** i progetti (suddivisione alfabetica)
- Di seguito illustriamo i progetti del nostro gruppo, non tutti ancora presenti sul sito
- Questi lucidi verranno pubblicati anche sulla pagina del corso di BD



# Basics

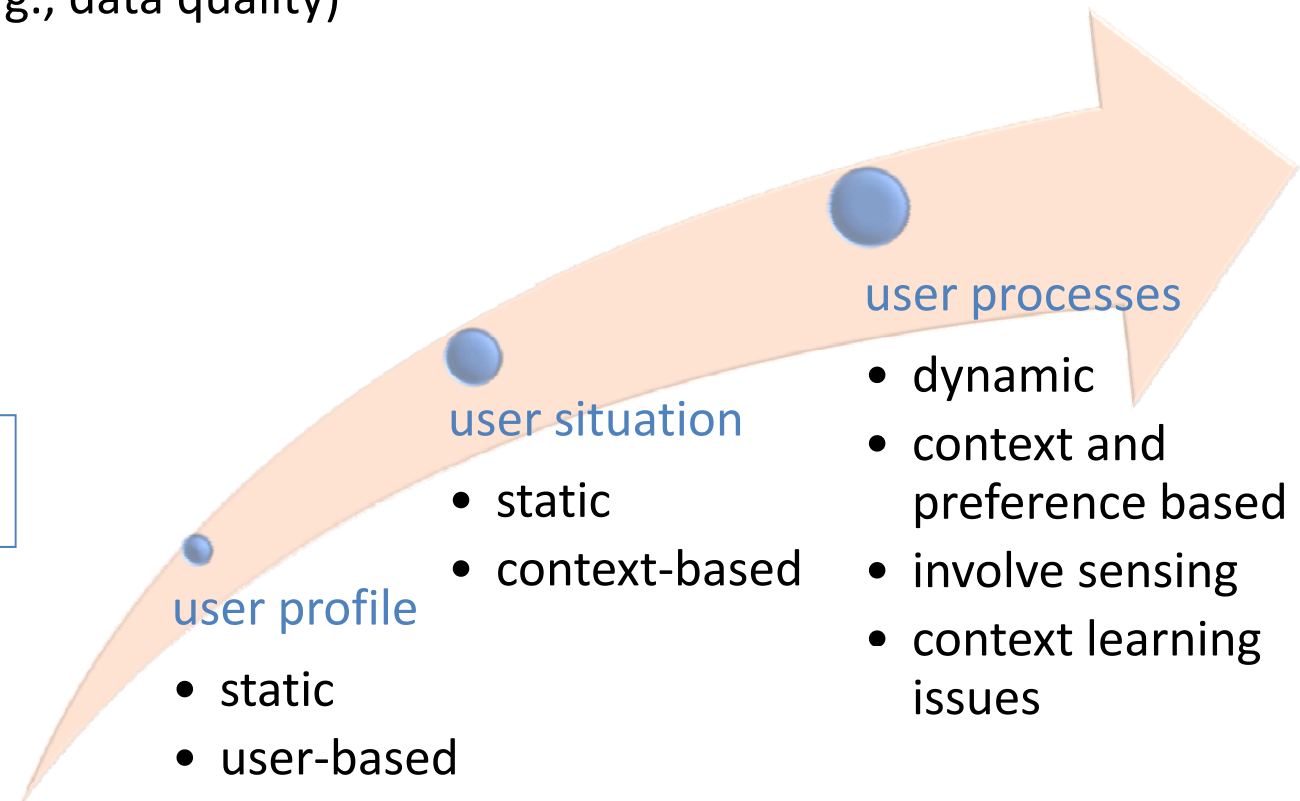
- A number of ongoing projects
- There is room:
  - for design/implementation or
  - for more theoretical research, or
  - for experiments
- For first level (bachelor) students: see <http://pii.dei.polimi.it/>
- For second level (master) students: **projects can be performed as master thesis projects (tesina) or, within the same research area, as research master thesis (tesi)**

# Information Overload and Noise:

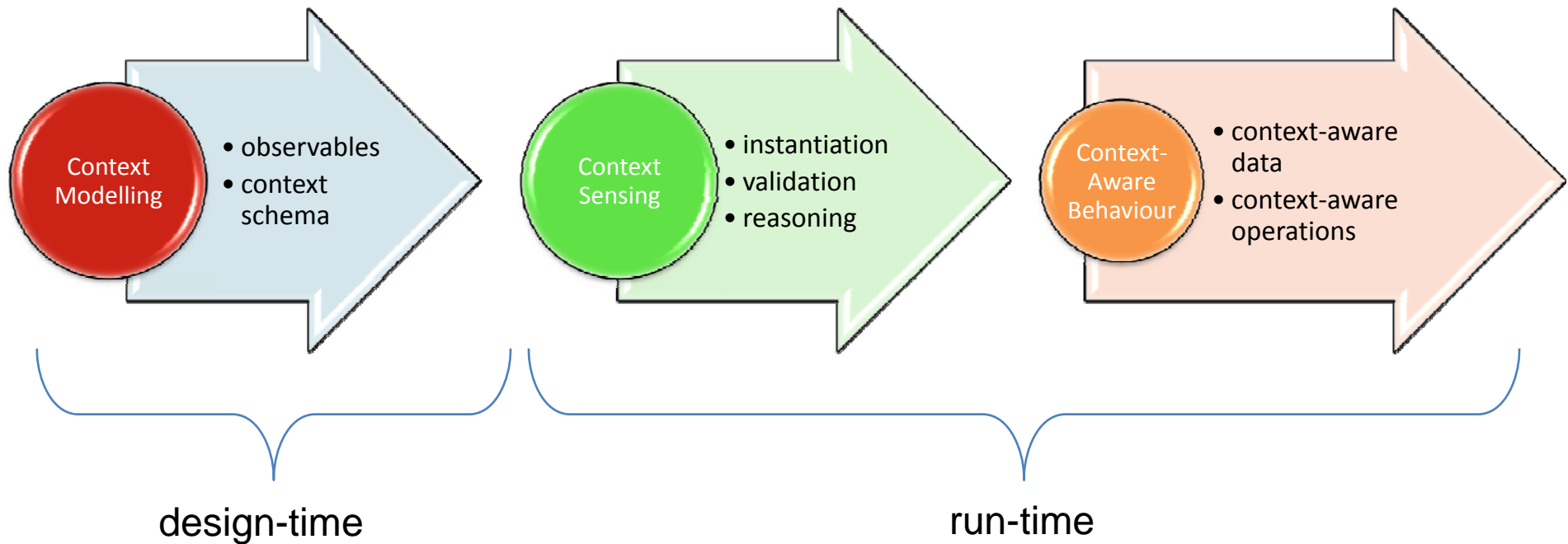
## Personalization and context-awareness

- **Context-based personalization:** shaping answers (to queries) according to the user's preferences and situation (i.e., **context**).
  - model and collect **characteristics** of the users (or groups of)
  - mostly implicit (behavioral analysis, sensing, ...)
  - non-functional (e.g., data quality)

evolution of  
personalization

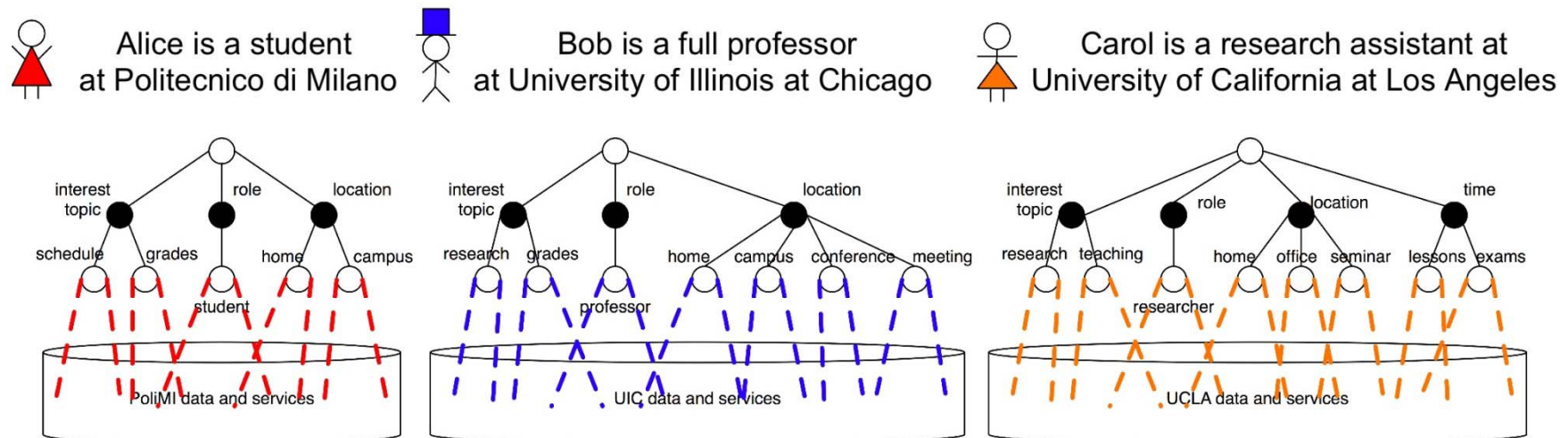


# Information Personalization: Context-aware *data tailoring*



# Context representation

- The notions of context and personalization have acquired a lot of attention in the last years; context-aware systems are pervading everyday life.
- The system uses the knowledge of the current user context to focus on the data that are really useful
- Contextual and personal aspects need to be modeled so that the system can use them for information tailoring and focus



# Projects

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- Context-aware services and APIs
- Context sharing and the evolution between different context representations
- Context-aware preferences and recommendations
- Contextual non-functional properties (e.g. data quality)

All the above projects propose design and implementation or experiments

More theoretical:

- *Logic-based frameworks for contextual systems*



# Projects (continued)

## Contacts:

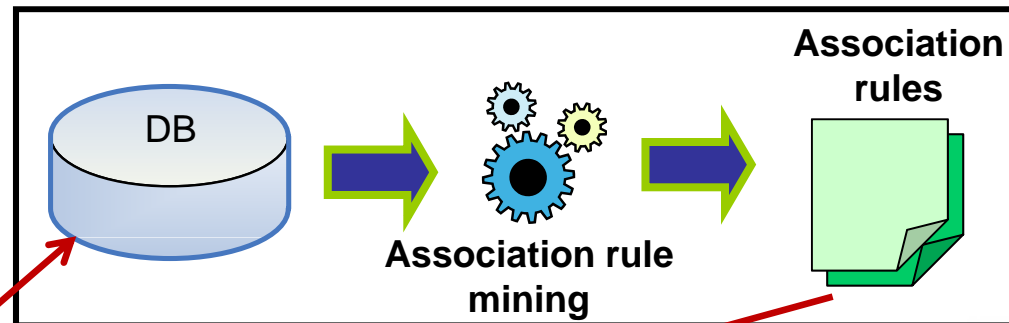
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- GREEN MOVE: electric car-sharing
  - In this project we have designed the whole database and the context-awareness layer. Possible evolutions on the data mining issues
- SENSORI: monitoring energy consumption in a neighborhood
  - In this project we need to design the service ontology and the context-awareness layer





# TreeRuler project



Query

Intensional  
answer

- 1) Mine frequent association rules from a global database
- 2) Store mined rules
- 3) Learn from frequent rules “common” properties of co-related information
- 4) Use the **inferred knowledge** to provide faster and summarized (intensional) answers to user’s queries. **Summarized answers** are also useful for refining queries (and answers).



# Projects

## Contacts:

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- Using the system within new language frameworks (e.g. RDF)
- Optimizations
- Database scouting on the web for providing data for experimenting the system
- Data abstraction for schema induction
- Application to finding regularities in biological data



# Context-aware Wireless Sensor Networks

- PerLa: a middleware and a context-aware language to query WSN (see **prof. Schreiber's web site**)
- Extension of the language towards full distribution
- Usage of this language for monitoring various phenomena: energy-awareness, cars' and production systems' behaviours, etc.
- Applied also in Green Move and Sensori



# Projects

Many more ongoing project proposals

