Towards Integrating Human-Centric Characteristics into the Goal-Oriented Requirements Language

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Context

- Goal Modeling is an important early activity in requirements engineering.

- Goal-Oriented Techniques model stakeholder's goals and the means to achieve these goals.

- Current goal-oriented modeling frameworks lack an in-depth understanding of human-centric requirements during the design and modelling of the system.

- Human-centric characteristics (HCC) are related to user's gender, culture, language, age, personality traits, emotions, and any special requirements stemmed from physical and/or mental impairments.

Challenge

- Different HCC➜ different perspectives, attributes, and expectations,

- HCC play an essential role in the acceptance and usage of the developed systems.

- Neglecting HCC could lead to ineffective and hard to use systems for some end users.

  – Not fit-for-purpose software may cause inefficiency, economic costs, or life-threatening, accessibility and usability issues, etc.

Proposed Solution

- Propose a vision for integrating HCC into goal modeling
  - GRL in particular
- We aim to characterize the different aspects of HCC+ goals stemming from HCC (User profiles),
- Provide a framework for the systematic integration of user profiles with goal modeling.
- This in turn will help identify and prioritize critical HCC of end users, which will affect the design, modelling, and development of HCC-aware systems.
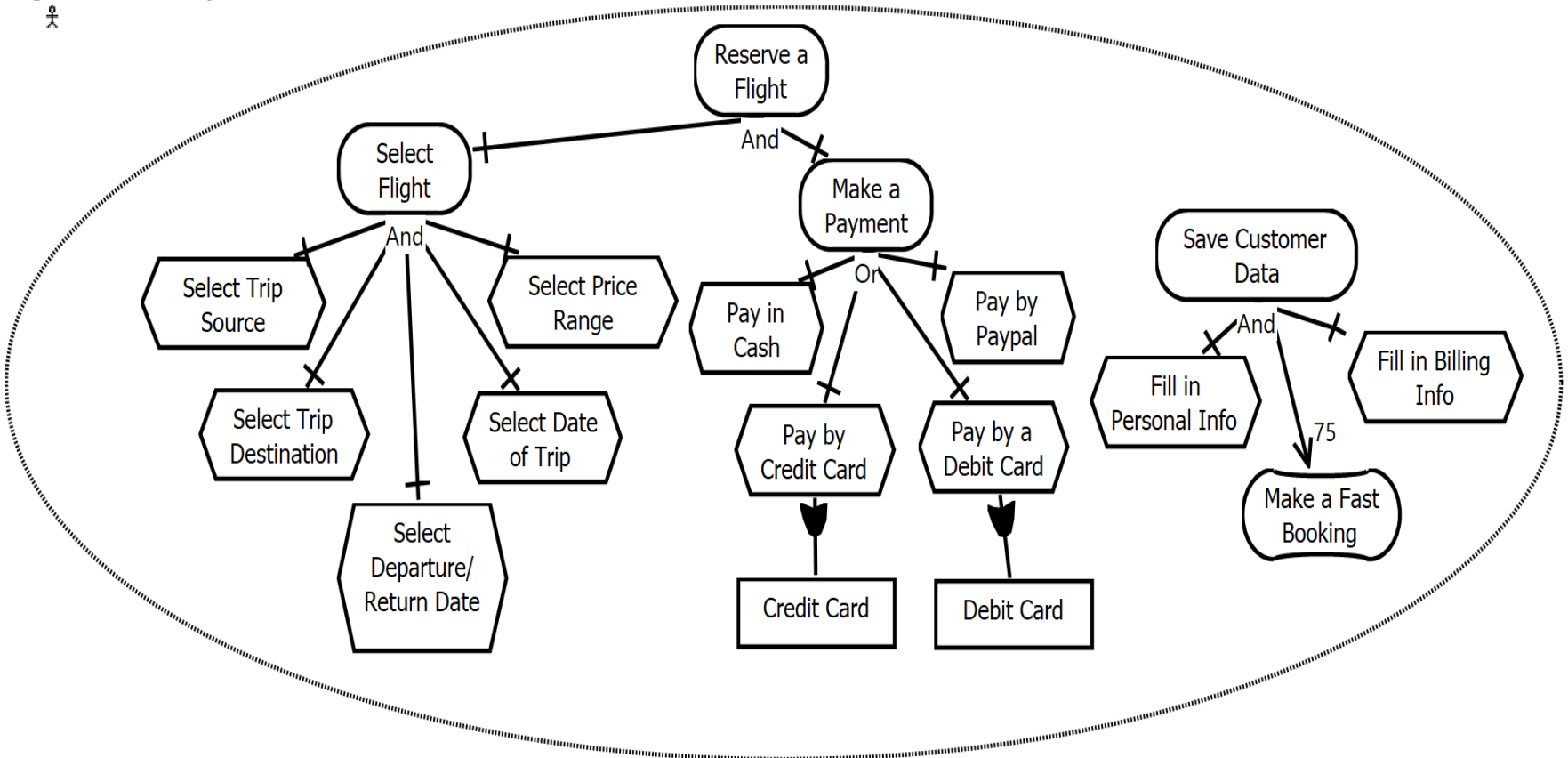
Motivating Example

Fig. 1. A GRL goal model for flight reservation system

Motivating Example (Cont.)

Characteristics	Age: 72
	Nationality: French
	Spoken Language: French
	Health conditions: Diabetic
	Financial status: Flexible
Goals	G1: Reserve the shortest flight to France
	G2: Receive vegan food
	G3: Reserve a front line aisle seat
	G4: Upgrade into a business class ticket with discounts
	G5: Receive assitance at the airport and during the flight
	G6: Receive regular Insulin doses
	G7: Receive translated Instructions

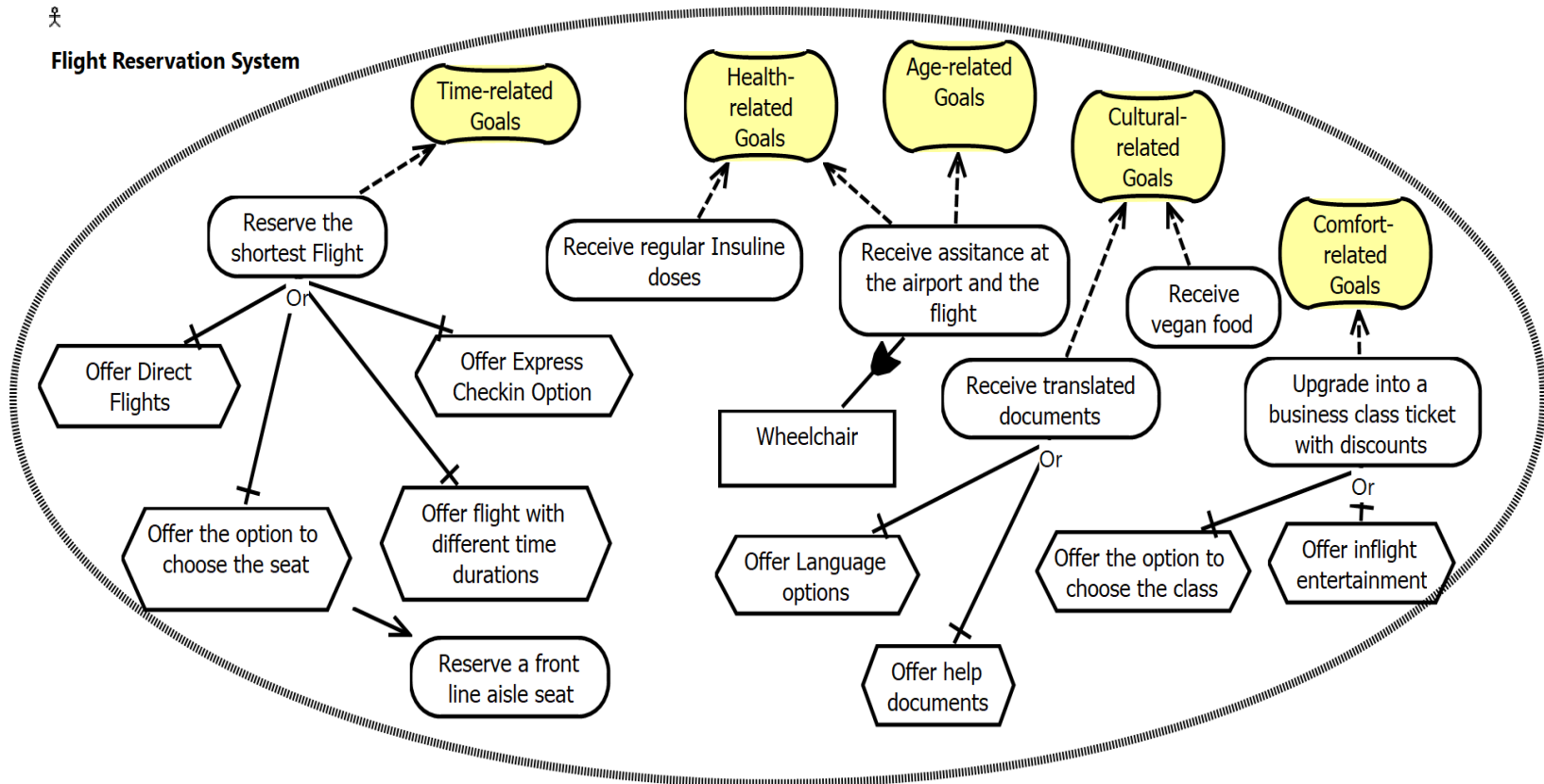Fig. 2   A User Profile Example

Motivating Example (Cont.)

Fig. 3. A GRL goal model with user profile for flight reservation system

In Progress Work

- Investigate the need for extending the GRL with unique symbols and notations to represent the user profiles and the human-related goals

Research Agenda

- Draw inspirations from the PRocess to support iStar Extensions (PRISE) guidelines to extend the GRL to support HCC.

Research Agenda

- The process of extending GRL language with HCC will include:
    1. Analyze the need for GRL extension.
    2. Describe concepts of the GRL extension.
    3. Develop GRL extension.
    4. Evaluate and validate the GRL extension.
    5. Check other new constructs to be introduced
    6. Conduct user evaluation studies
    7. Publicize the GRL extension

Conclusion

- Consideration of HCC since the early stages of software development.

- Human-centric characteristics refer to any individuals' specific aspects related to age, gender, culture, health state, financial state, physical/mental impairments, to name a few.

- To this end, we propose the concept of user profiles to reflect stakeholder's HCC along with their goals that stem from these characteristics.

- Our vision towards extending the GRL language (following a set of guidelines similar to the PRISE guidelines used to extend iStar language) to model user profiles, represented by particular human-centric characteristics and goals.

- Extending goal modeling with user profiles would have the potential to identify and capture human-centric characteristics, and the goals that are tightly associated with these characteristics.

Thank you!

Questions?