Specifying Workflow Requirements for Holistic Care

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Presentation Themes

- Holistic Care Workflow Specification
- Our Approach
- The Case Study
- Concluding Remarks
Holistic Care Workflow Specification

• Currently, many countries are faced with the need to improve health and social care functioning and, especially, with regard to meeting comprehensive care needs required by such people as the elderly and those with multiple illnesses.
Holistic Care Workflow Specification

• Health and social care resources need to be used more efficiently and efforts should be devoted towards enabling effective coordination and collaboration among health and social care organizations
Holistic Care Workflow Specification

• To this end, a holistic approach is required that takes a horizontal, process-oriented view of health and social care delivery whose activities are integrated to form cross-organizational health and social care processes
Holistic Care Workflow Specification

- Inter-organizational health and social care processes should be interfaced with the organizations’ existing and diverse record systems where patient health and social care information is stored in order to enable access to patient information by authorized, cooperating individuals and the patient
Holistic Care Workflow Specification

• What is required, prior to systems development is to elicit process support requirements especially since those processes usually span different organizations with different socio-cultural constraints and diverse information systems and since process activities are executed by many individuals with different skills and background knowledge
Our Approach

• Our approach uses business process modeling (BPM) as a means for organizing discussion, debate and argument among users from both organizational domains so that to provide insights that enable early identification of possibilities and limitations of alternative holistic care process designs and that are used to elicit process support requirements.
Stage 1: Develop “as-is” process models

Stage 2: Develop goal models

Stage 3: Redesign process models

Stage 4: Map holistic care goals with process activities

Stage 5: Examine organizations existing ISs and PHRs

Stage 6: Examine organizations security policies

Stage 7: Develop workflow models - Validate
Our Approach

• **Stage 1** is concerned with developing process models at several levels of resolution in order to represent the interactions among health and social care organizations under review ("as is" models)
Our Approach

• **Stage 2** is concerned with developing a hierarchical goal model to represent holistic care goals as specified through iterations with users.
Our Approach

- **Stage 3** is concerned with redesigning the models of existing processes ("as is" models) through iterations with the users in order to achieve the holistic care goals identified in Stage 2
Our Approach

• **Stage 4** focuses on mapping the holistic care goals to the processes or process activities of the redesigned process models.
Our Approach

• **Stage 5** seeks to examine the existing, diverse ISs of health and social care organizations in order to evaluate which application functionality can be exposed as services and linked with process activities and the new services that should be developed.
Our Approach

- **Stage 6** seeks to examine participating health and social care organizations’ security policies and elicit workflow-based security requirements with regard to process activity executions and patient information accesses.
Our Approach

- **Stage 7** focuses on defining workflow models corresponding to the redesigned process models and on validating these models through iteration with the users.
The Case Study

• In order to specify process-support requirements for holistic care processes the proposed approach was implemented to specify process support requirements for redesigning and automating emergency healthcare processes so that to create and empower collaboration and coordination among participating health and social care organizations and improve patient outcomes.
The Case Study

• The emergency healthcare process under review is concerned with emergency medical cases requiring both medical and social care and consists of pre-hospital and in-hospital care sub-processes performed by:
  – Emergency Medical Service (EMS) agencies, and
  – Hospital emergency departments (EDs), accordingly
The Case Study

• In Stage 1 the process models were developed at different levels of resolution to represent the current state of the cross-organizational emergency care process

• In Stage 2 a goal model was created to represent the holistic care goals in the context of emergency care as resulted through iterations with users
The Case Study

• In Stage 3 the redesigned emergency healthcare process models were developed.
• In Stage 4 the redesigned process models were mapped to the holistic care goals identified in Stage 2.
The Case Study

• After a number of iterations of Stages 3 and 4 of the proposed approach all the high level goals were finally met by the redesigned process activities
The Case Study

• In Stage 5 existing application functionality was exported as services and used as process activities implementations. Also, new services were created to retrieve/transform/store patient information in the Holistic Care Record (HCR) central repository.
The Case Study

• In Stage 6 it was decided to use the existing security policies of EMS agencies and hospitals for controlling accesses to locally store patient data and to develop a global workflow-based security policy in order to control:
  – process activities executions, and
  – accesses to patient data existing at HCR repository
The Case Study

- Finally, in Stage 7 the workflow models were developed from the redesigned process models and were validated through iterations with the users based on process simulation and service prototypes.
The Case Study

Diagram:
- Accept Emerg Call
  - Triage Case
    - Select Amb-Notify
    - Select Hosp-Notify
    - Retrieve Pat Health/Social Profile
    - Retr Treatm Prot
  - Arrive At Place
- Provide Care
  - Arrive At Hosp
  - In-Hosp Care
Concluding Remarks

• The approach promotes active user participation with the objectives:
  – to provide guidance for controlling a dynamic and diverse domain, such as that of health and social care with multiple interacting processes and diverse information systems
Concluding Remarks

• The approach promotes active user participation with the objectives:
  – to elicit process support of redesigned, holistic care processes and
  – to interface process activities with a centralized patient-managed HCR system
Thank you for your attention!