

An Approach for Hospital Planning with Multi-Agent Organizations (Extended Abstract)

Abstract. The background for this paper is a development that the Danish hospitals are undertaking which requires the establishment of a common emergency department.

It is uncertain exactly what and how many resources the department needs and so resources are assigned dynamically as seen necessary by the staff.

Such dynamic adjustments pose a challenge in predicting what consequences these adjustments may lead to.

We propose an approach to deal with this challenge that applies simulation with intelligent agents and logics for organizational reasoning.

Stages (1,2) and conventions (a,b,c) of patient treatment

1. *Triage*: A nurse carries out the triage process on the patient.
2. *Diagnosis and Treatment*: A doctor performs a diagnosis and initial treatment on the patient.
 - a. Nurses fill out a triage form for the patient as part of the triage.
 - b. Doctors in the specialized departments take care of scheduled treatments.
 - c. Initial treatment of patients may require assistance from doctors from different specialized departments.

AORTA

Predicate

$role(Role, Objs)$

$cond(Role, Obj, Deadline, Cond)$

Informal meaning

Role is the name of a role and *Objs* is a set of main objectives of that role.

When the condition *Cond* holds, *Role* is obliged to complete *Obj* before the objective *Deadline*.

AORTA metamodel for patient treatment

$role(nurse, \{triage(Patient)\})$

$role(acute_doctor, \{acute_treatment(Patient), treatment_plan(Patient)\})$

$role(specialized_department, \{scheduled_treatment(Department, Patient)\})$

$role(specialized_doctor, \{scheduled_treatment(Department, Patient)\})$

$cond(nurse, fill_form(Patient, Nurse), triage(Patient), admission(Patient))$

$cond(acute_doctor, specialized_treatment(Patient, specialized_doctor),$

$acute_treatment(Patient), specialistNecessary(Patient, specialized_doctor))$

Full paper.

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