DECISION-MAKING: HOW TO DO IT IN A SPECIFIC SCENARIO

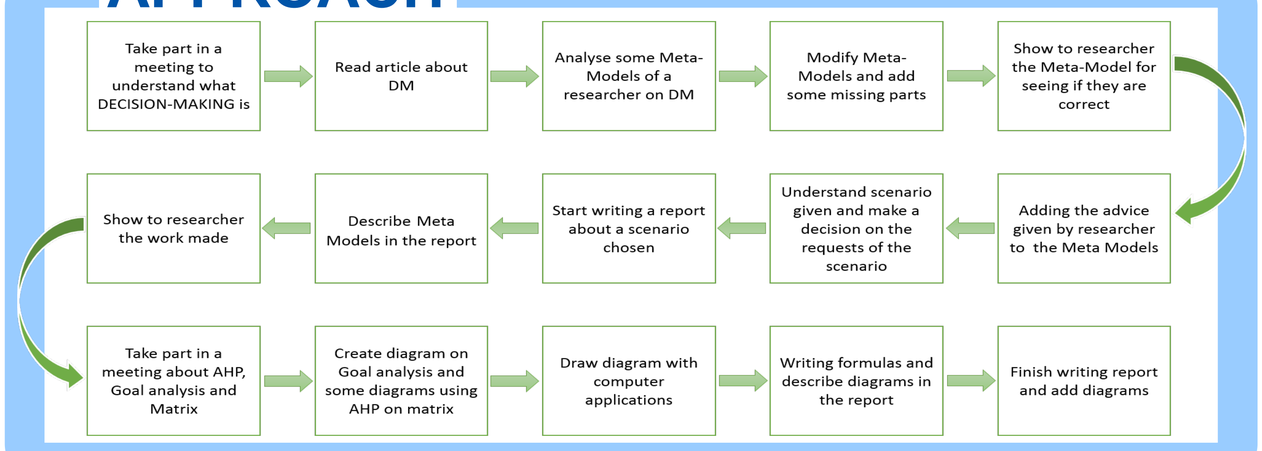
Kendi Kolila e Giulia Bellabarba, Liceo Linguistico S.Scholl e Liceo Scientifico Da Vinci

FONDAZIONE BRUNO KESSLER

THE PROBLEM

Be able to make decisions taking into account various goals, soft goals in order to evolve a previous system of a firm.

APPROACH

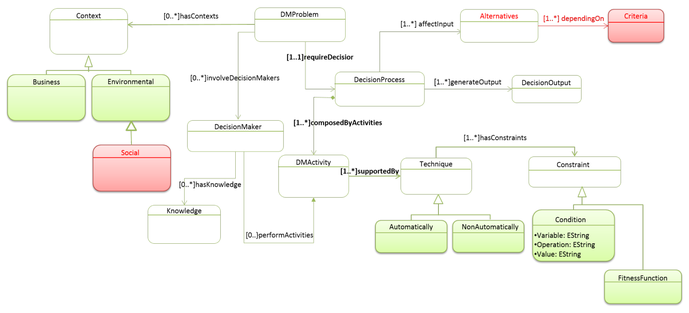


METHODOLOGY

Step 1

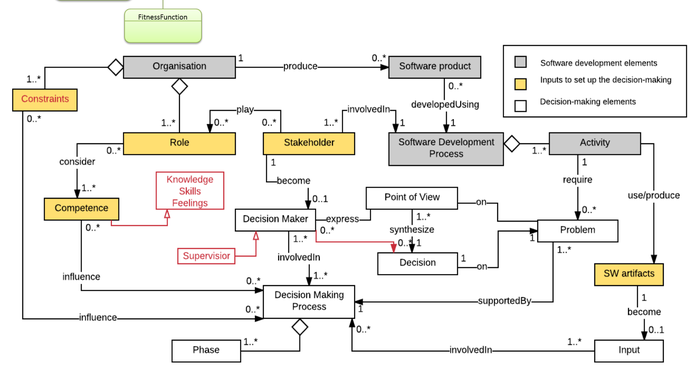
1.1 DM Concepts

- To make a decision is relevant to synthesize a Point of View expressed by a Decision Maker, more precisely a Supervisor, who can be a Stakeholder.
- Each organization have some Constraints which influence the Decision Making Process.
- The organization produces Software Product which is developed using Software Development Process including the stakeholder.
- This artefacts become Input for the DM process.



1.2 DM Meta model

- The main part is the Decision-Making Problem, which has a Context.
- Then there is the Decision-Maker(s), who has a Knowledge to decide between various Alternatives for the succeed of the Decision-Making Process.
- The process is composed by some Activities performed by the decision maker(s) and supported by some Techniques, Automatically or Non, which have Constraints.
- When a decision comes up, a Decision Output is generated.

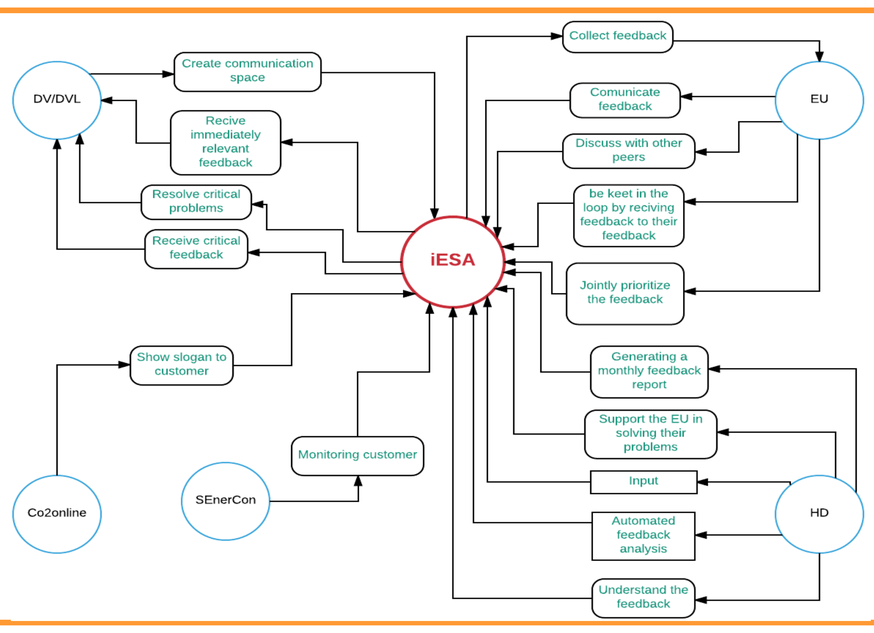


Step 2

2.1 DM Specific Concepts

The requirements are the following:

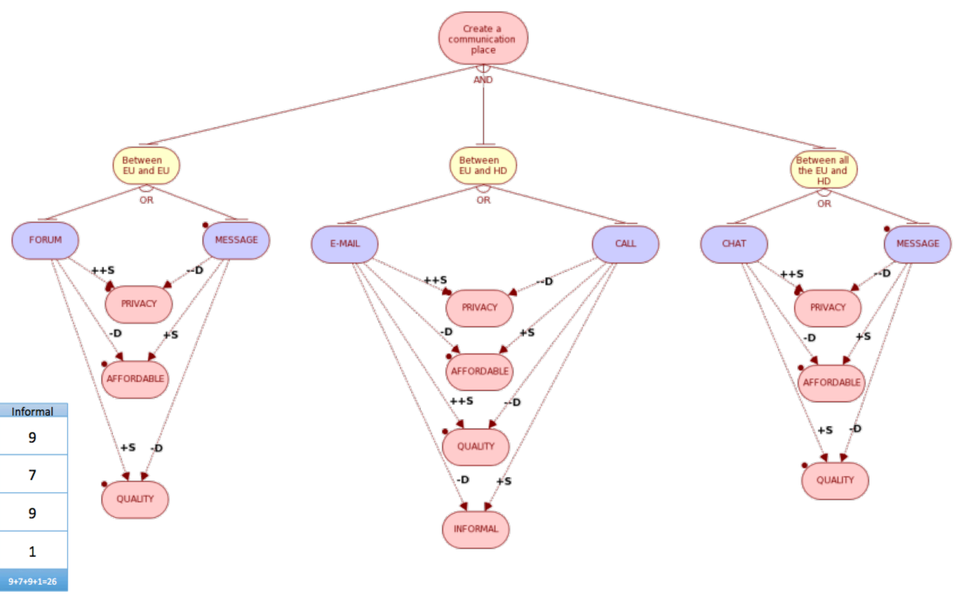
- Communicate feedback in order to give some requests and needs about the evolved system. At the same time, they don't want only to communicate with the HD but also with the other end-user.
- They want to be kept in the loop by receiving feedback to their feedback and to jointly prioritize the feedback.
- The HD needs to analyse the feedback given by the EU, so in this way, the they can support the EU in solving their problems, requests an automated feedback analysis to the system and generating a monthly feedback report.
- For the company the request is to monitoring the costumers for helping them to know their quantity of energy consumed.
- In addition, the DV/DVL delegate to the HD the relevant feedback issues, in order to solve it.
- The system delegate to the DV/DVL the goal: solve critical problems. To make this work easier, they have to create a communication space, where they can collect all feedback from the EU.
- The system needs to plan the releases/maintenances with their costs and support project planning.



Step 3

3.1 Goal Analysis

- We divided the goal “discuss with other peer”, in an and-composition.
- Then, we split this subgoals in an or-decomposition, giving to each of them two alternatives.
- We produce a diagram where we concentrate on the goal create communication space. To make this we use the goal analysis giving some alternatives and criteria.
- Therefore, we use a goal analysis application, called "Gr-tool”.The Gr-tool is used to make goal analysis using and/or decompositions, in a hierarchic way. In every decomposition there are some goals, if it is an and-decomposition all hardgoals are satisfied whereas if it is an or-decomposition only one is necessary to satisfy the previous goal. To do this, it is necessary to use some plus and minus, which can be one ore two.
- In order to choose the alternative that best fits, we put three same criteria for each subgroup, they are: privacy, affordable and quality.
- For the communication between a single EU and an HD, we also add another criteria: informal.



3.2 Criteria Matrix

- We put into comparison all the criteria, in order to choose which one is the more important.
- When a criteria/alternatives is better than another one, the decision maker
- must use one of the integer positive number, but when one is worst than the other one, the DM must use a fraction.
- We believe that privacy is more important than quality and informal, but affordable is more important than quality, privacy and informal.

	Privacy	Quality	Affordable	Informal
Privacy	1	1/5	5	9
Quality	5	1	5	7
Affordable	1/5	1/5	1	9
Informal	1/9	1/7	1/9	1
SUM	1+5+1/5+1/9= 142/45	1/5+1+1/5+ 1/7=54/35	5+5+1+1/9= 100/9	9+7+9+1=26

	Privacy	Quality	Affordable	Informal				
Privacy	(1)/(142/45) =45/142	(1/5)/(54/35) =7/54	(5)/(100/9) =9/20	(9)/(26) =9/26	SUM	1.25	NORM	1.25/5.7=0.22
Quality	(5)/(142/45) =225/142	(1)/(54/35) =35/54	(5)/(100/9) =9/20	(7)/(26) =7/26	SUM	3	NORM	3/5.7=0.53
Affordable	(1/5)/ (142/45) =9/142	(1/5)/(54/35) =35/54	(1)/(100/9) =9/100	(9)/(26) =9/26	SUM	1.25	NORM	1.25/5.7=0.22
Informal	(1/9)/ (142/45) =5/142	(1/7)/(54/35) =5/54	(1/9)/(9/100) =1/100	(1)/(26) =1/26	SUM	0.2	NORM	0.2/5.7=0.03
						5.7		1

CONCLUSIONS

In conclusion we express our point of view by adding some part to the meta model.
We also had to use DM to try to find a solution to several problem of a well-know company.
We were able to find a way to improve the system of the company.

REFERENCES

- Paolo Bresciani, Anna Perini, Paolo Giorgini, Fausto Giunchiglia, and John Mylopoulos. Tropos: An agent-oriented software development methodology. Autonomous Agents and Multi-Agent Systems, 8(3):203-236, 2004.
- János Fülöp. Introduction to decision making methods. Report 05-6, Laboratory of Operations Research and Decision Systems, Computer and Automation Institute, Hungarian Academy of Sciences, 2005.
- Paolo Giorgini, John Mylopoulos, Eleonora Nicchiarelli, and Roberto Sebastiani. Reasoning with goal models. In Conceptual Modeling - ER 2002, 21st International Conference on Conceptual Modeling, Tampere, Finland, October 7-11, 2002, Proceedings, pages 167-181, 2002.
- Angelo Susi, Anna Perini, John Mylopoulos, and Paolo Giorgini. The Tropos metamodel and its use. Informatica (Slovenia), 29(4):401-408, 2005.