

Requirements as the basis for software transparency

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Support from



Main Goal

Achieve Software Transparency

Definition (Wordnet)

“(n) transparency, transparence, transparentness
(the quality of being clear and transparent)”

“(adj) transparent [Related to: transparency]
(easily understood or seen through (because of a
lack of subtlety)) "a transparent explanation"; "a
transparent lie"" ,

antonym: “(adj) unobvious [Indirect via obvious]
(not immediately apparent)”.

Transparency (Social Sciences)

Holzner and Holzner [1] states that transparency is:

"the social value of open, public, and/or individual access to information held and disclosed by centers of authority."

Henriques [2] states:

"...transparency cannot be purchased wholesale. One thing it requires is painstaking attention to detail. Yet transparency is not just a technical issue of communications. The fundamental argument of this book is that transparency is required wherever power is exercised."

Lord [3] says: *"Transparency is a condition in which information about the priorities, capabilities, and behavior of powerful organizations is widely available to the global public."*

Fung et al [4] uses the concept of target transparency: *"Instead of aiming to generally improve public deliberation and officials' accountability, target transparency aims to reduce specific risks or performance problems through selective disclosure by corporations and other organizations. The ingeniousness of target transparency lies in its mobilization of individual choice, market forces, and participatory democracy through relatively light-handed government action"*.

[1] Holzner B., Holzner L., Transparency in Global Change: The Vanguard of the Open Society. University of Pittsburgh Press; 1 edition, 2006.

[2] Henriques A., Corporate Truth The Limits to Transparency, EARTHSCAN, UK, 2007.

[3] Lord K. M., The Perils and Promise of Global Transparency, State University of New York Press, 2006.

[4] Fung A., Graham M., Weil D., Full Disclosure, the Perils and Promise of Transparency, Cambridge University Press, 2007.

Transparency

Transparency has been, for long, a general requirement for democratic societies. The right to be informed and to have access to the information has been an important issue on modern societies.

However, as software permeates several aspects of our society, at some point in the future, software engineers will need to deal with yet another demand: transparency. In such foreseen environment, engineers will need to have methods, techniques and tools to help make transparent software.

Information Transparency



Process Transparency



The Rationale

Software is deemed transparent if it makes the information it deals with transparent (information transparency) and if it, itself, is transparent, that is it informs about itself, how it works, what it does and why (process transparency).

Transparency → Open Source

Jean Camp [5] notes that “That laws and computer programs are both called ‘code’ is not a coincidence”. Camp cites Stallman “...*computer code controls and enables the actions of users, and for users to have true autonomy they must be able to examine, alter, and redistribute the code*” and stresses that this statement is key when government activities are embedded in computer code. “*The critical feature of open code is that it can be read by humans. Open code enables informed discourse about digital process application, and the assumptions underlying both.*” [5]. However, as Camp observes: open code does not guarantee transparency.

[5] Camp L. J., Varieties of Software and their Implications for Effective Democratic Government. Proceedings of the British Academy, Vol. 135, pp. 183-185, 2006.

Transparency → Open Source

Weaving scenarios in the code together with a lexicon oriented ontology.

Some work done already.

<http://pes.inf.puc-rio.br/cel/>

But

The role of Requirements Engineering

“Transparency is an interesting quality because it makes it necessary to attach requirements models to software”

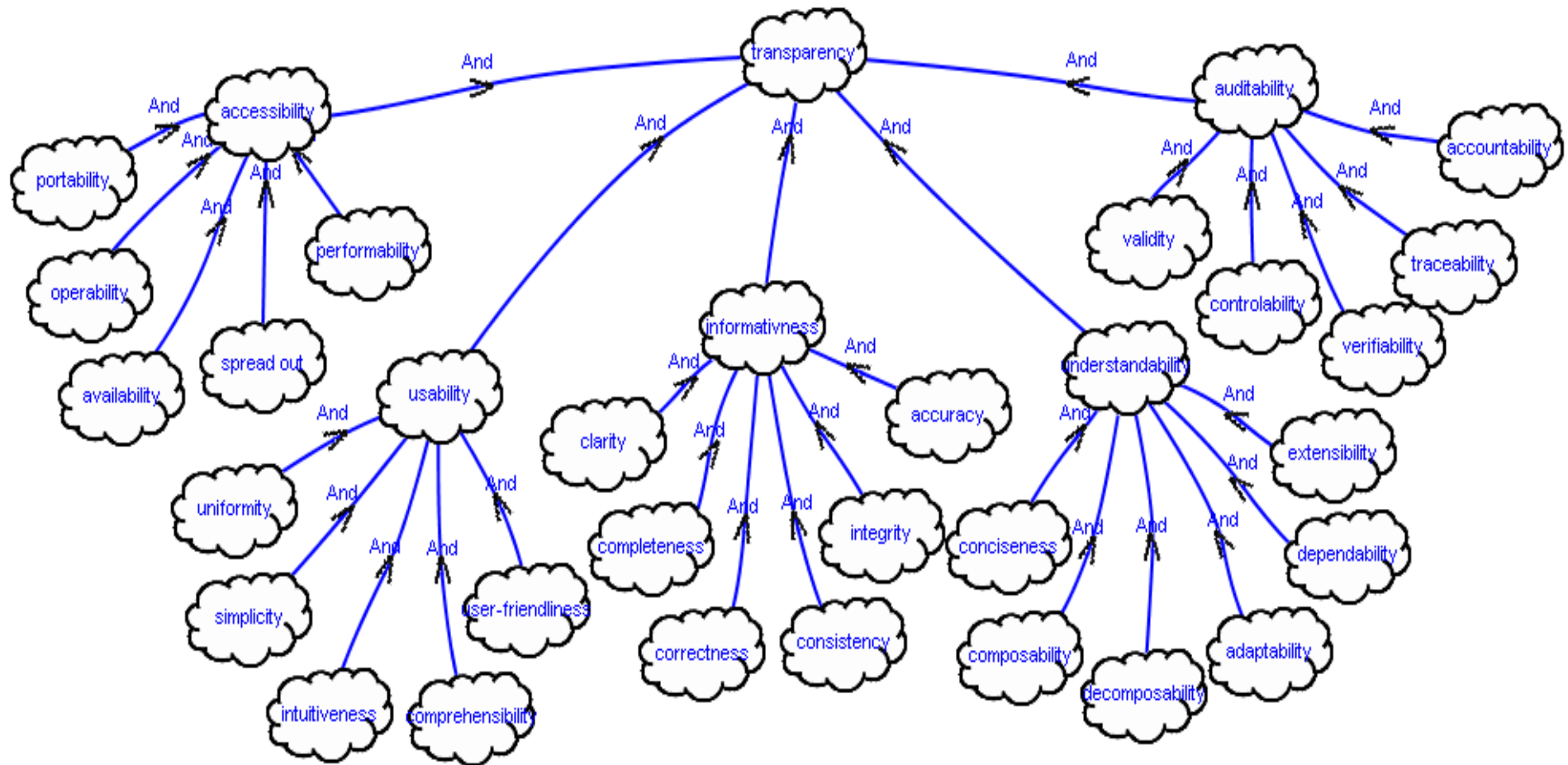
Professor John Mylopoulos

Our Work

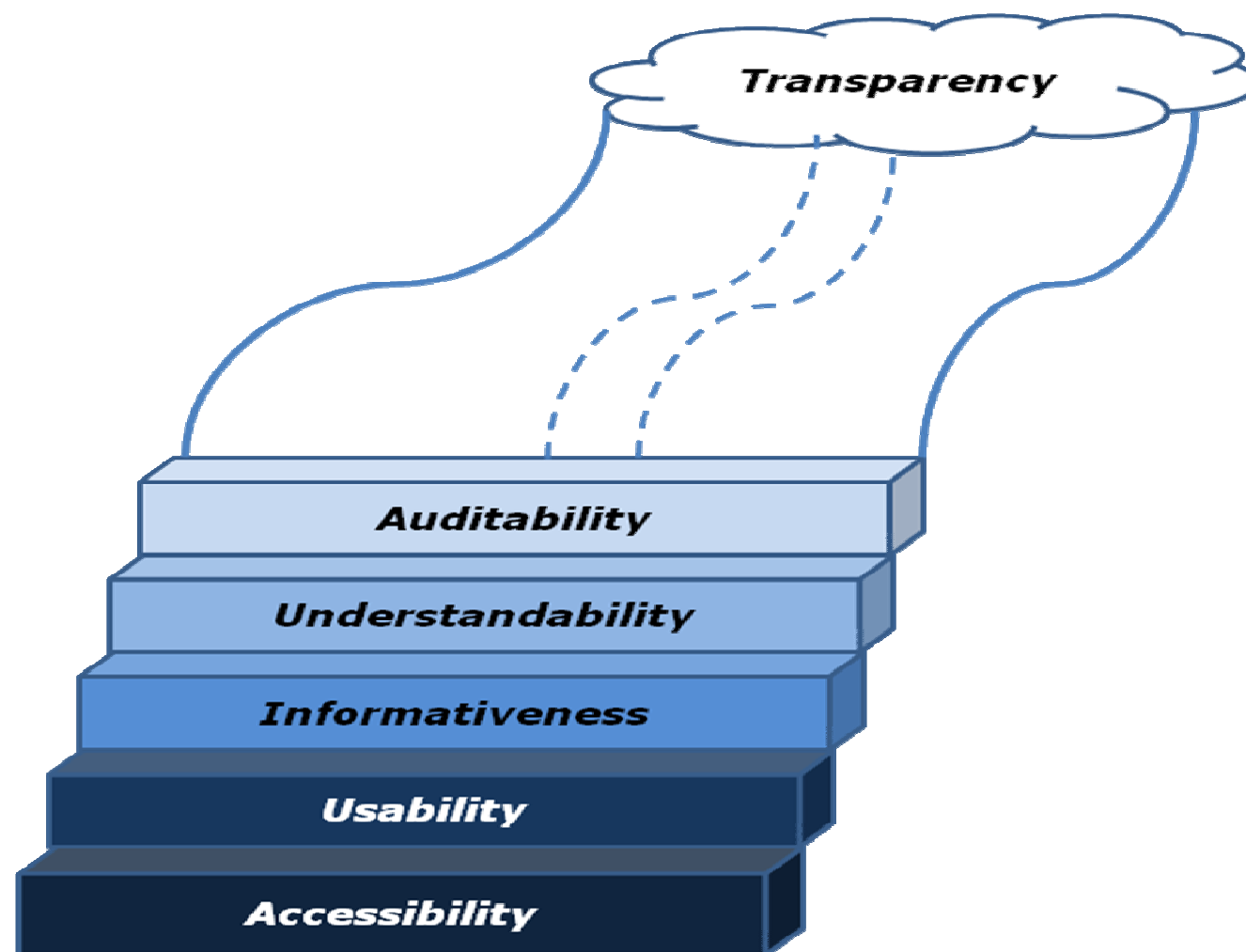
Software must be developed using a requirements baseline. As such, the requirements need to be transparent for both general stakeholders and developers' stakeholders.

We assume i^* is a strong candidate to be the main representation for this transparent baseline

Transparency Network

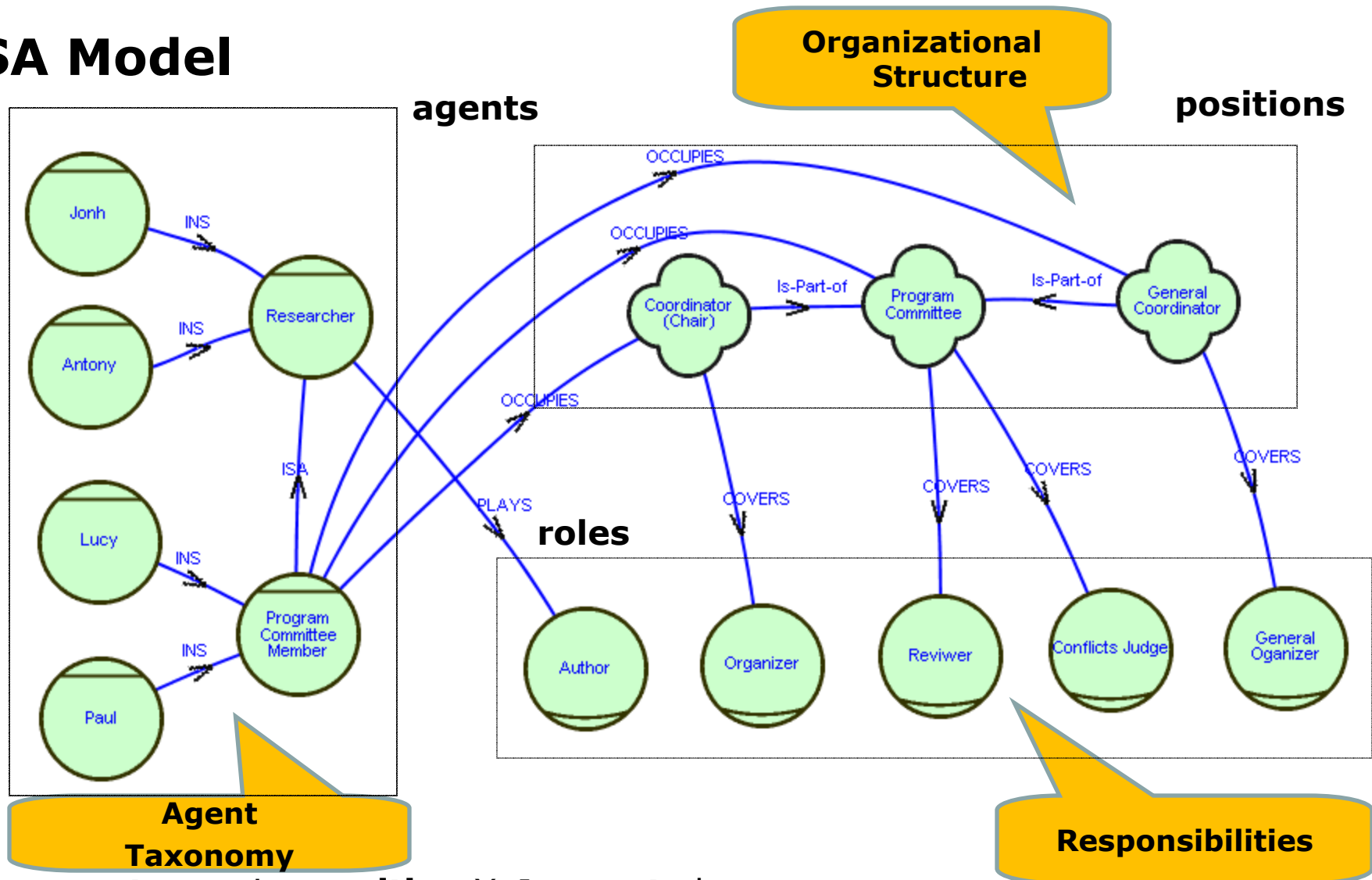


Transparency Ladder



Strategic Actors Transparency

SA Model

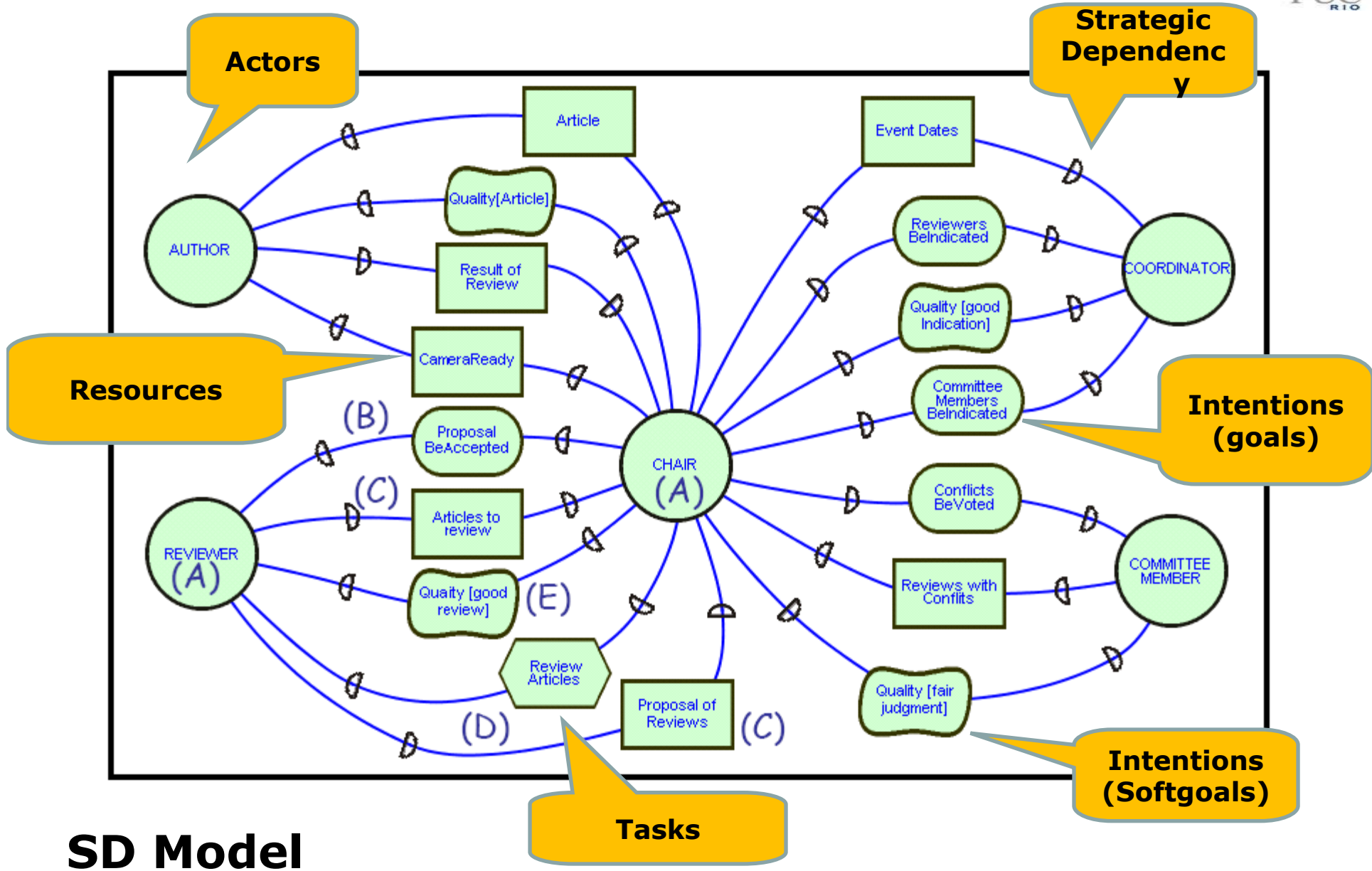


- ∇ **agent** occupies **position** X → **agent** plays
- ∇ **role** covered by **position** X.

Softgoals that can be satisfied (SA)

- 1 - Organizational Structure: a) conciseness [understandability] – *the organizational structure is easily depicted (diagram)*, b) verifiability [auditability] – *it can be verified against the SD diagram*, c) validity [auditability] – *there is a link to the "real world", that is it refers to structures usually present in an organization*, d) accountability [auditability] – *it indicates responsibility*, e) traceability [auditability] – *there is a link to the "real world"*, f) clarity [informativeness] – *identifies the link from a position to a role*.
- 2 - Agent Taxonomy: a) verifiability [auditability] – *it can be verified against the SD diagram*, b) validity [auditability] – *links to the "real world", by the identification of the real agent (human or device)*, c) accountability [auditability] – *indicates responsibility*, d) clarity [informativeness] – *identifies the real agent*.
- S3 - Responsibilities: a) conciseness [understandability] – *presents the organizational structure in a easy way (diagram)*, b) Verifiability [auditability] – *it can be verified against the SD*, c) validity [auditability] – *it links to the "real world", as it identifies roles which are usually associated with tasks in organizations*, d) accountability [auditability] – *it makes sure that a position has a given responsibility by stressing its role in the organization*, e) traceability [auditability] – *a role is identified in the "real world" by means of the tasks that are being performed*.

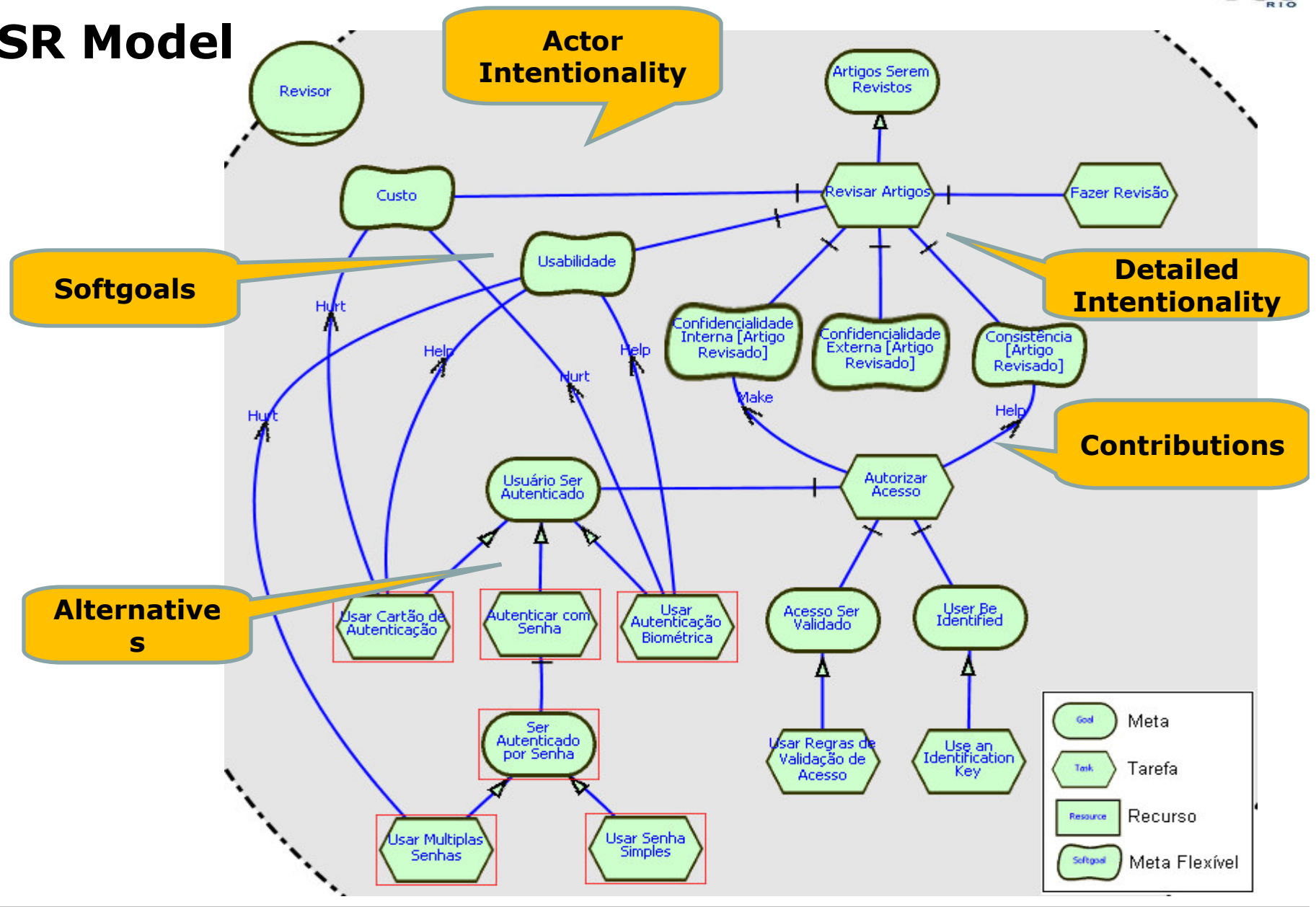
Strategic Dependency Transparency



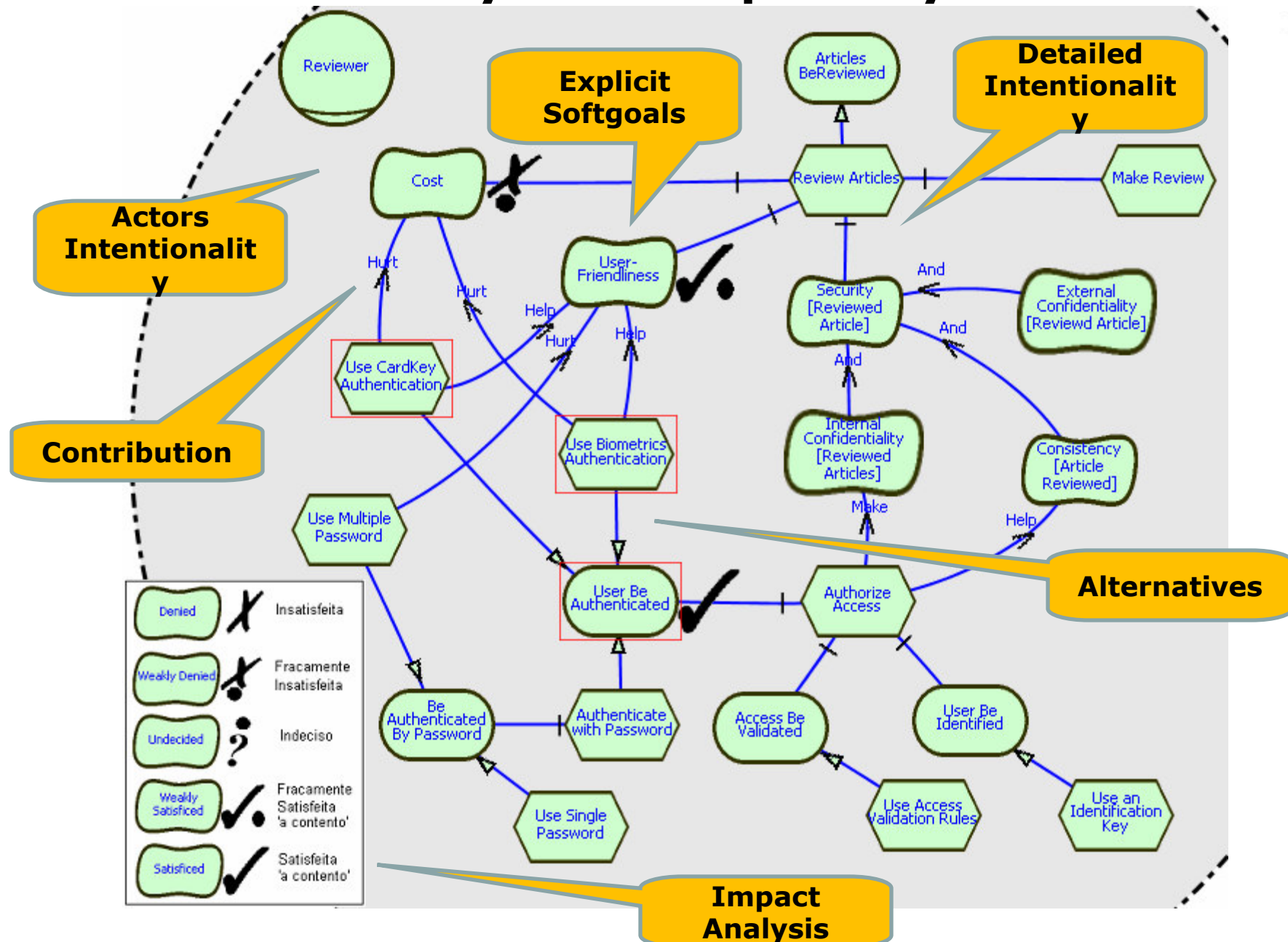
SD Model

Strategic Rationale Transparency

SR Model



Alternatives Analysis Transparency



Please help us..... (From Claudia Cappelli)

4 QUESTIONNAIRE



Question 1 - Do you agree with the ladder (Figure 2) or do you believe the requirements are all at the same level ?

Objective: Identify the necessity of a ladder

Rationale: Ladder existence assurance

- Yes. I agree with the ladder.
- No. I think all the requirements are at the same level.

Question 2 - Given that there are steps in this ladder, do you agree with the ordering?

Objective: Identify if the step order is correct and complete

Rationale: Steps correctness and completeness assurance

- Yes.
- No, I would propose the following order (use 1 to 5 in the list below to indicate your classification)
 - Accessibility - The quality of be accessed
 - Usability - The quality of being able to provide good service
 - Informativeness - The quality of increase knowledge or dissipate ignorance