

[ACM SAC 2018 – RE Track]

A Gamified Requirements Inspection Process for Goal Models

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that's me



[agenda]

- 1) Context and Motivation
- 2) Proposal (gamified process)
- 3) Evaluation

Inspection is an effective verification approach

Bosu, A., Greiler, M., & Bird, C. (2015, May). Characteristics of useful code reviews: An empirical study at microsoft. In Mining Software Repositories (MSR), 2015 IEEE/ACM 12th Working Conference on (pp. 146-156).

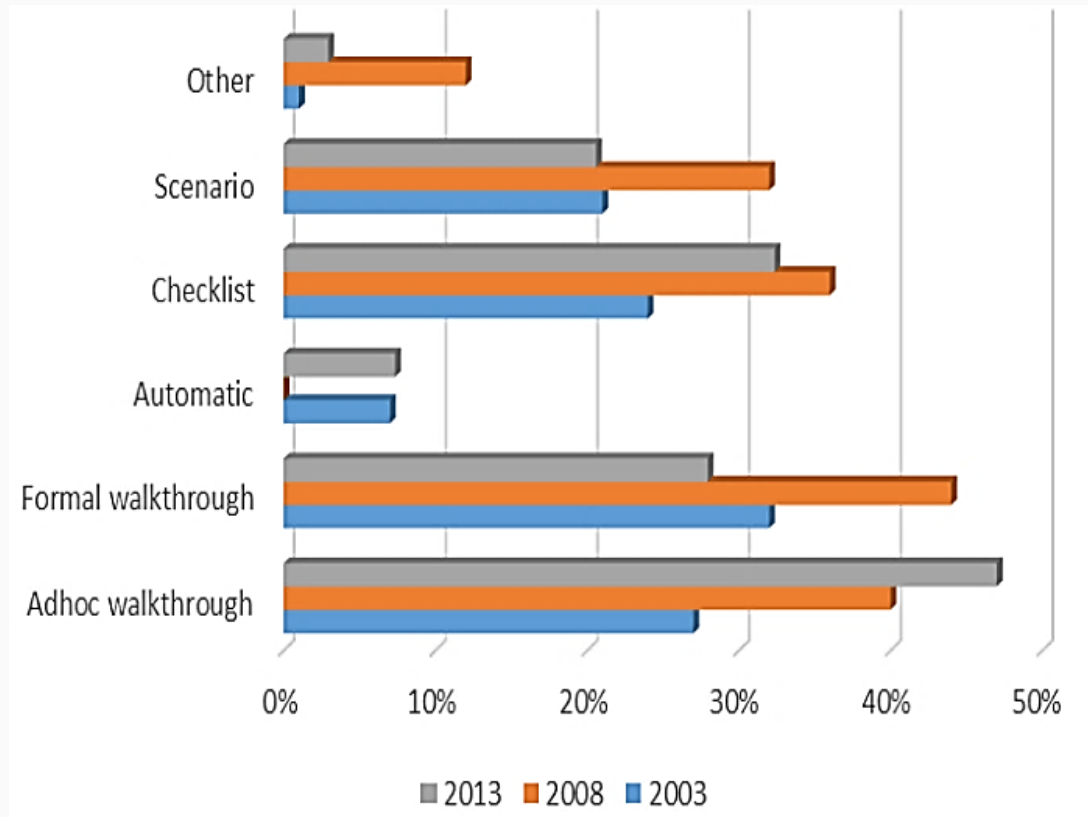
VI. Conclusions

Our empirical data clearly show that the rumored "requirements problems" are a reality. Information needed for design and implementation of both small and large systems is often incorrect, ambiguous, inconsistent, or simply missing. The requirements for a system, in enough detail for its development, do not arise naturally. Instead, they need to be engineered and have continuing review and revision.

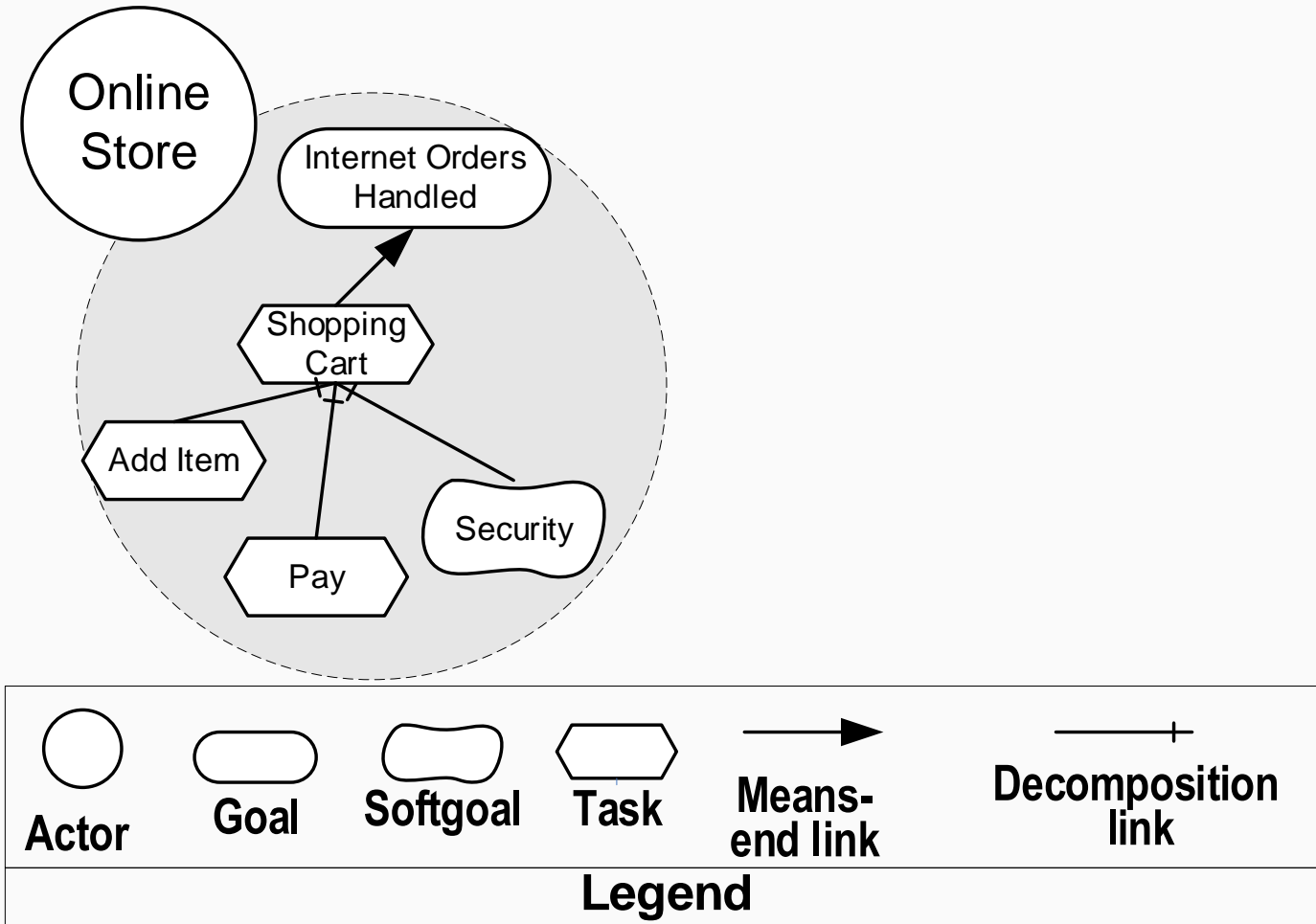
Bell, T. E., & Thayer, T. A. (1976, October). Software requirements: Are they really a problem?. In Proceedings of the 2nd international conference on Software engineering (pp. 61-68). IEEE Computer Society Press.

2015
Survey with 247 practitioners

55% of participants declared to
perform some form of
requirements review



Kassab, M. (2015, August). The changing landscape of requirements engineering practices over the past decade. In Empirical Requirements Engineering (EmpiRE), 2015 IEEE Fifth International Workshop on.



Is there an inspection
process for i^* goal
models?

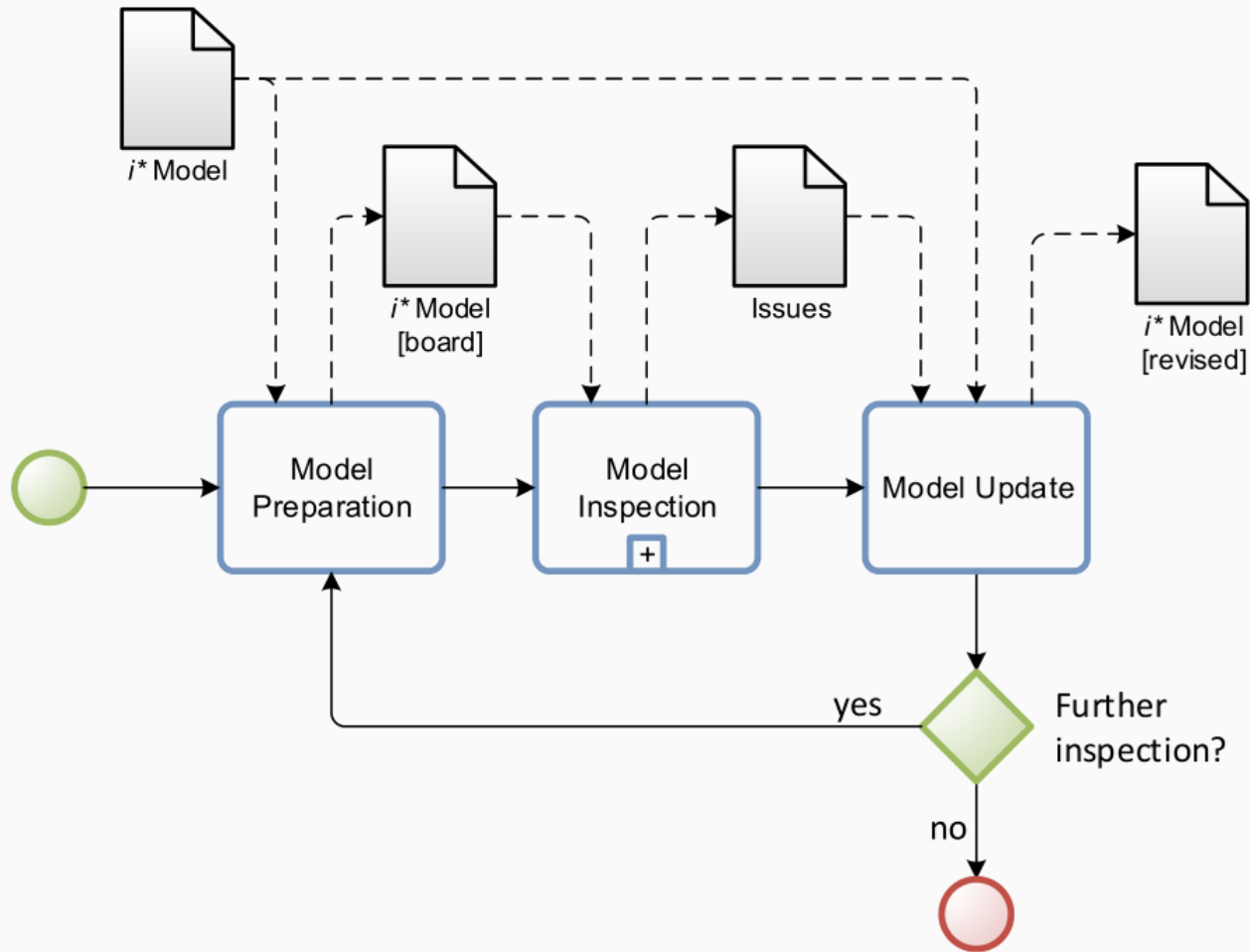
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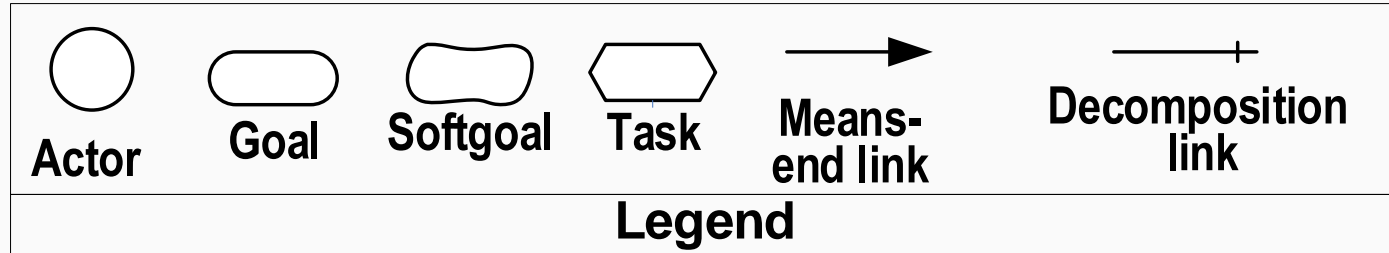
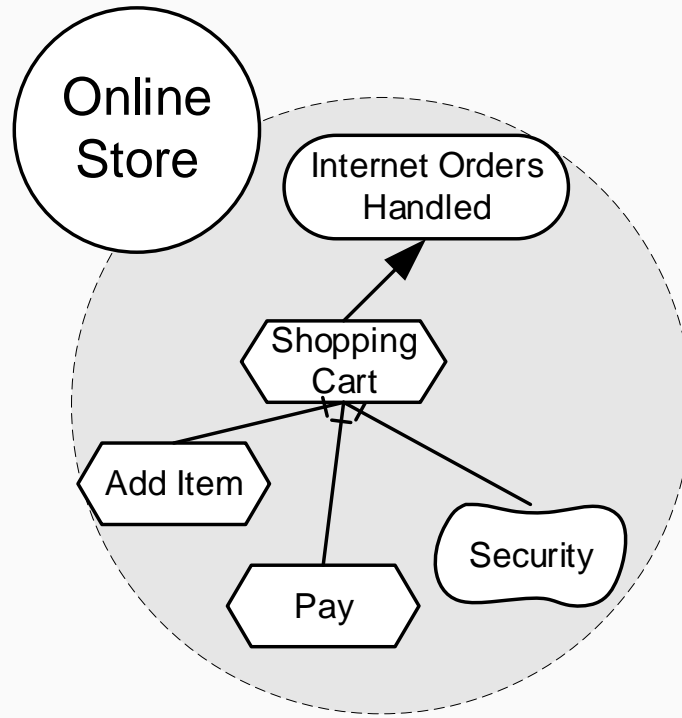
NO*

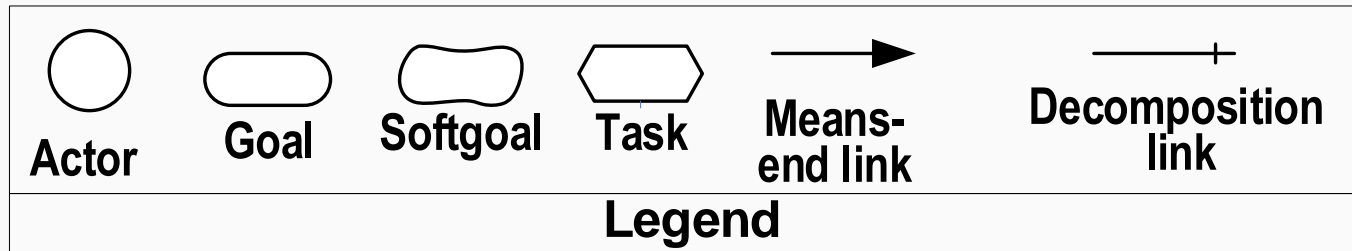
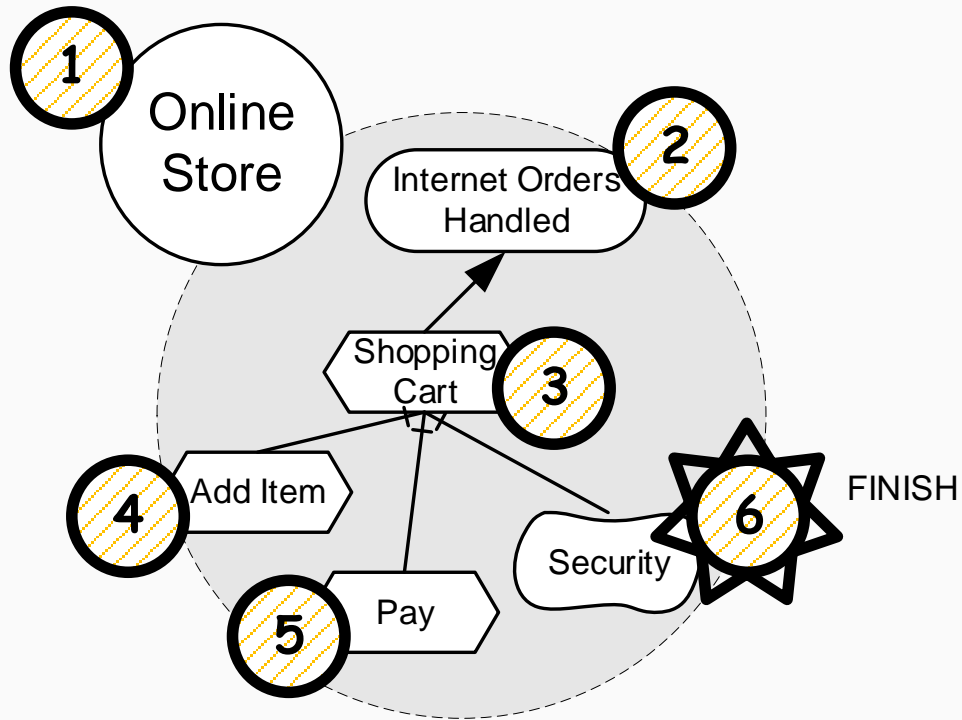
*to the best of our knowledge

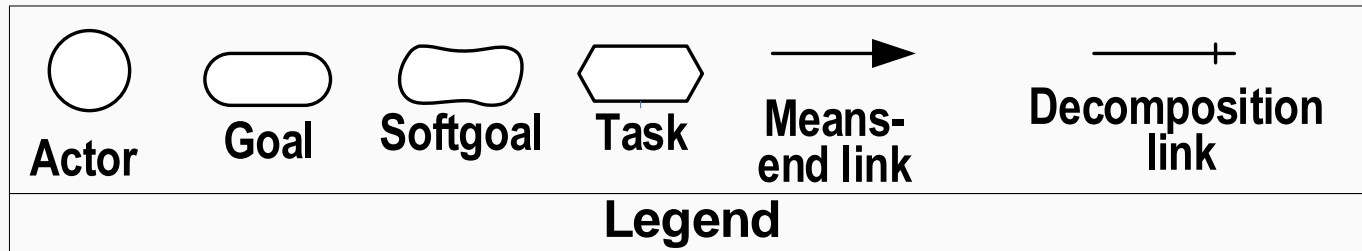
Ring-*i*

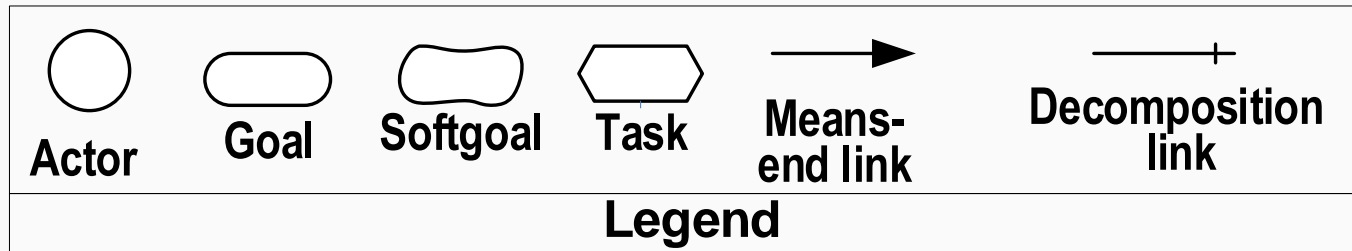
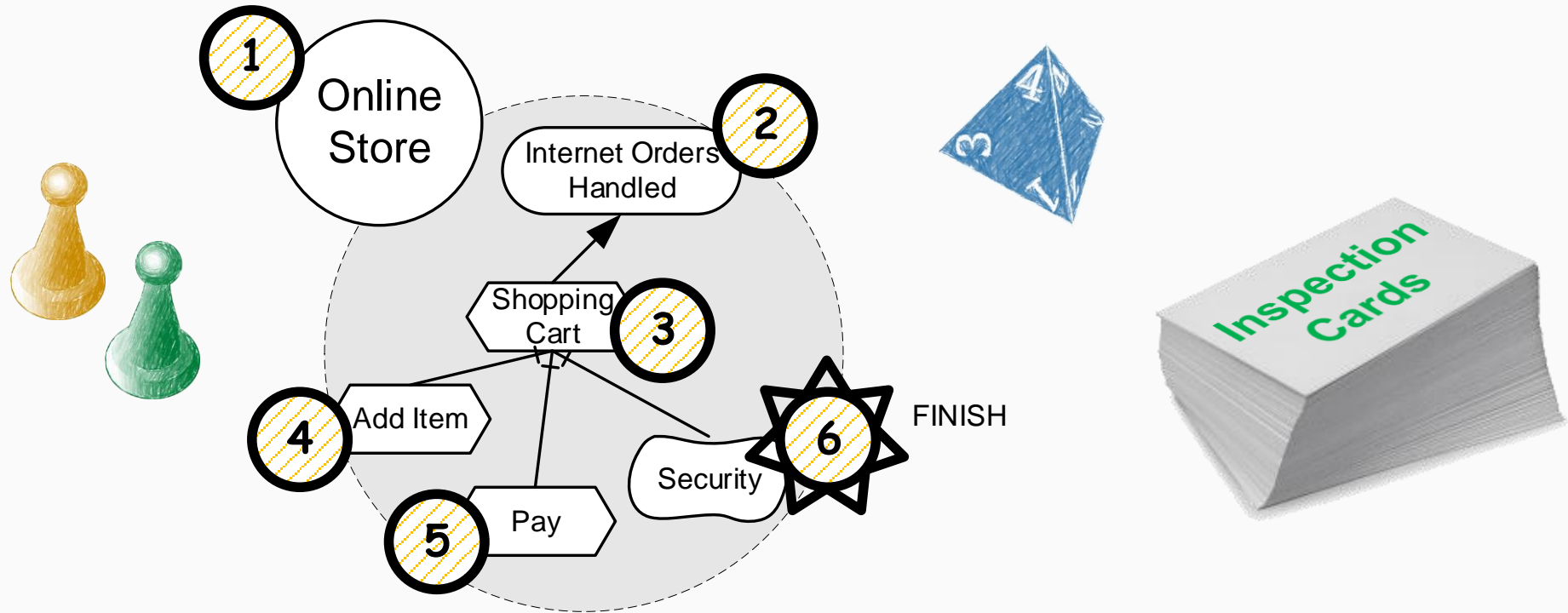
Requirements Inspection Gamified process for *i** Models

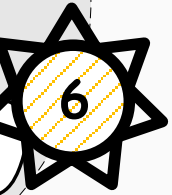




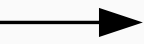




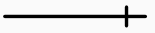




FINISH



Means-
end link



Decomposition
link



GOAL



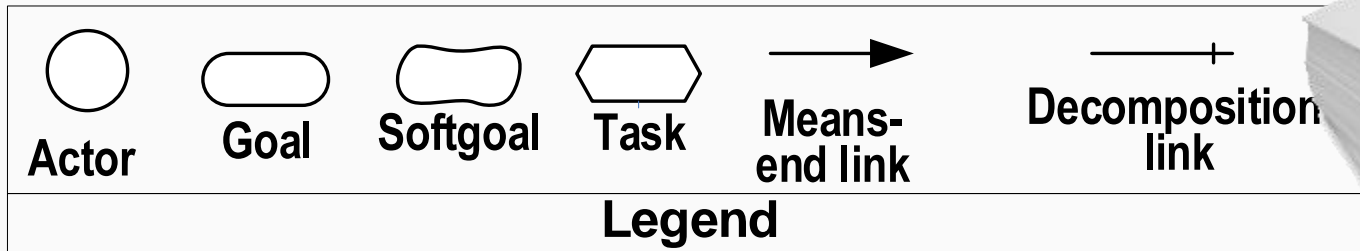
ACTOR

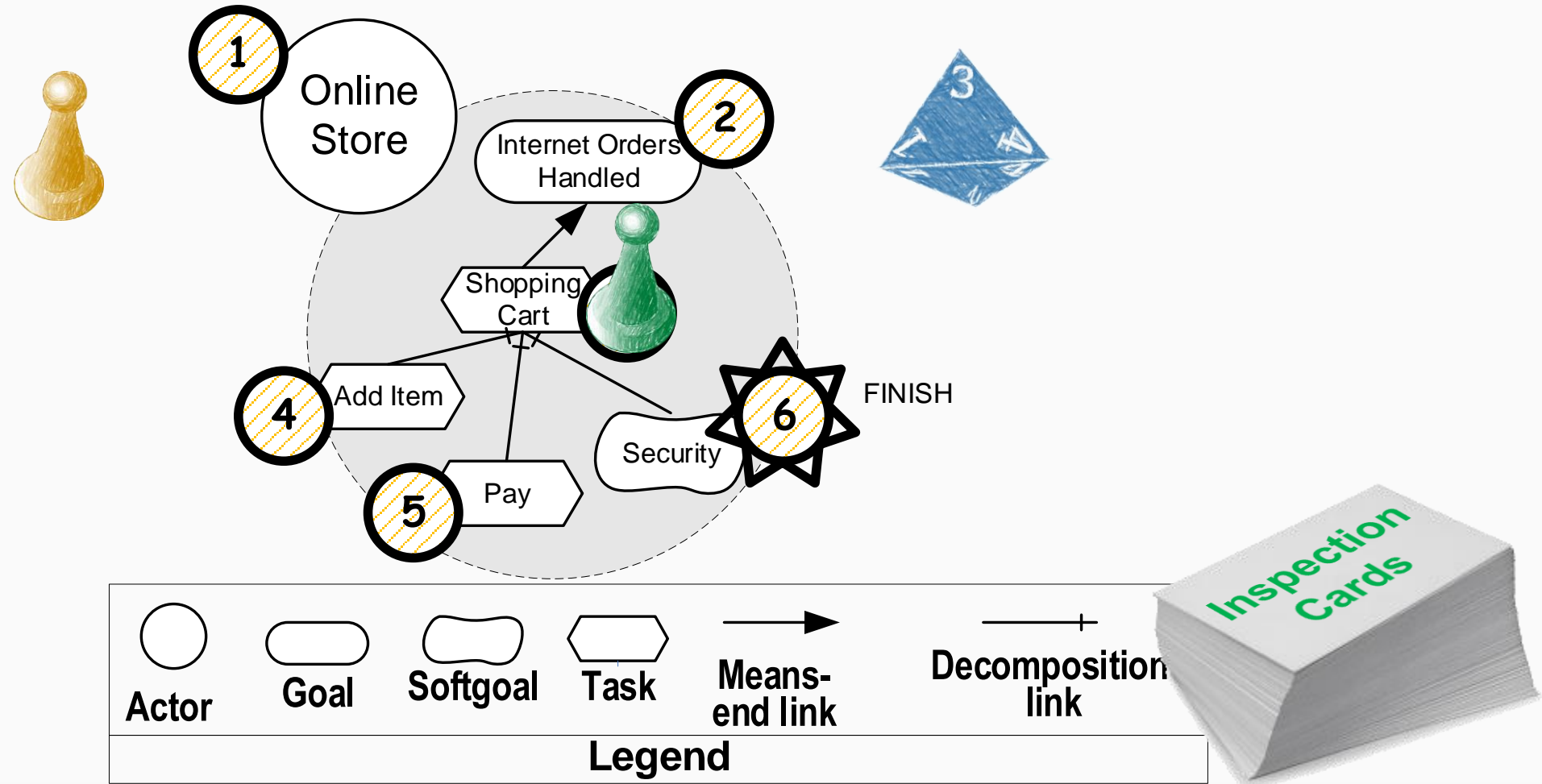


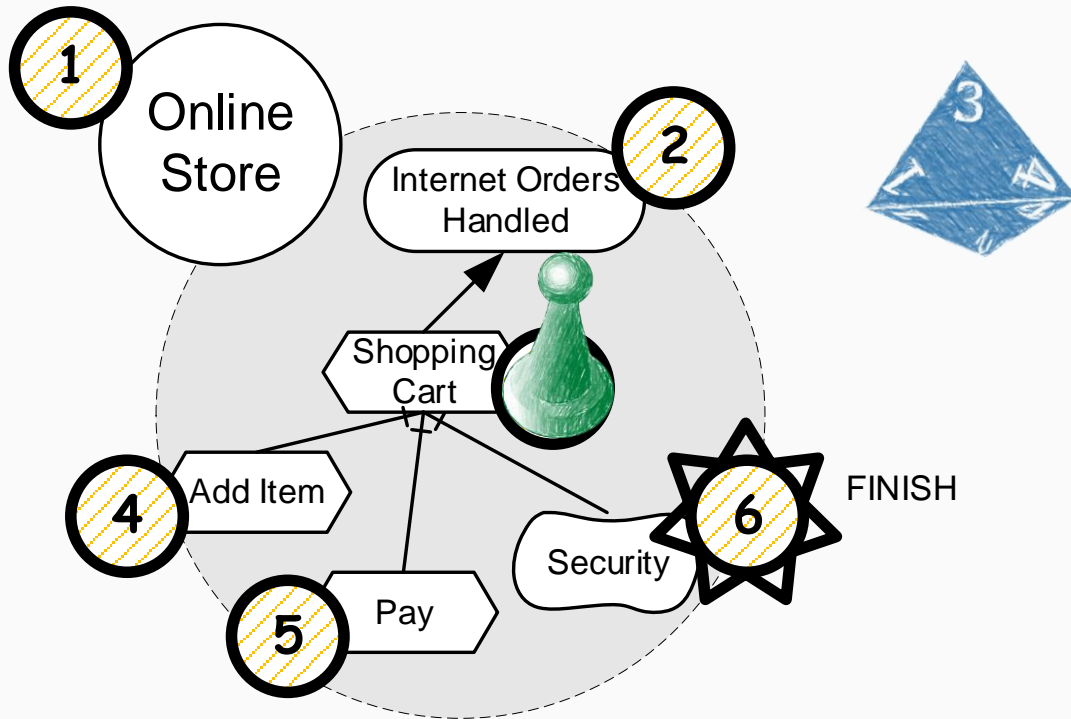
SOFTGOAL



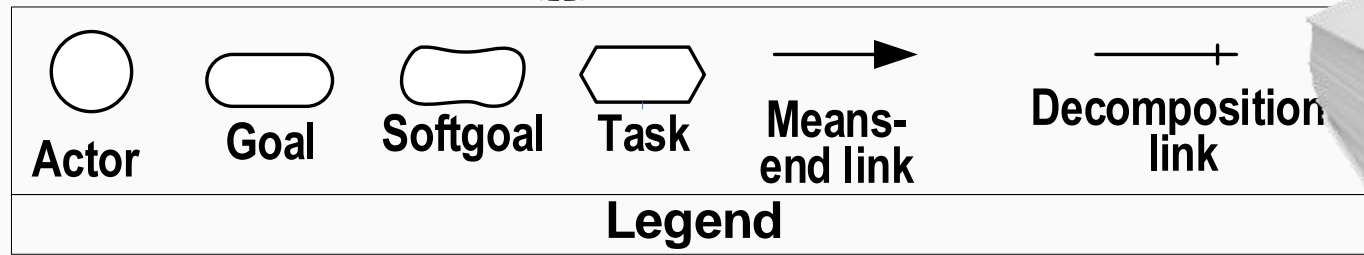
TASK

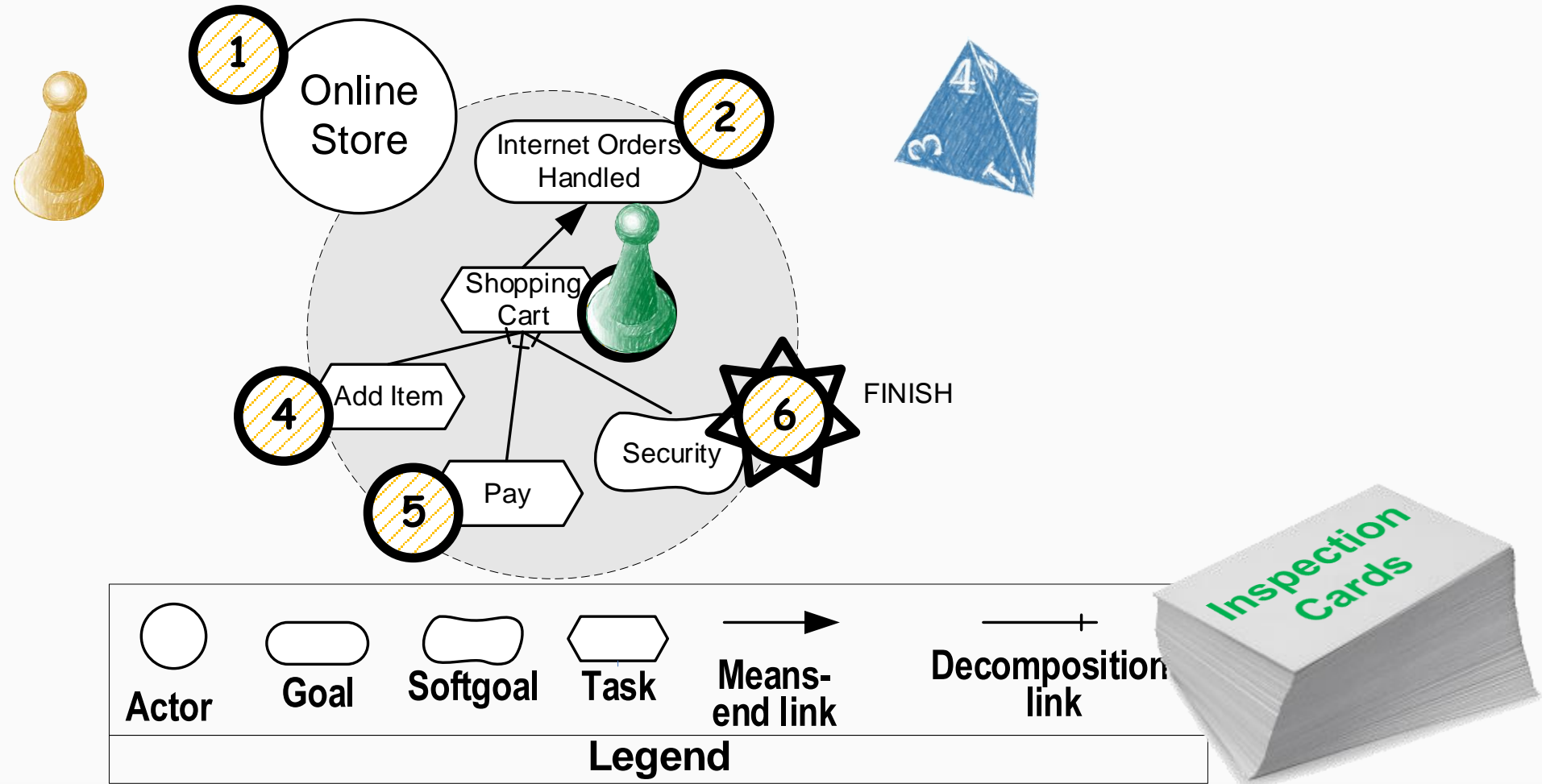


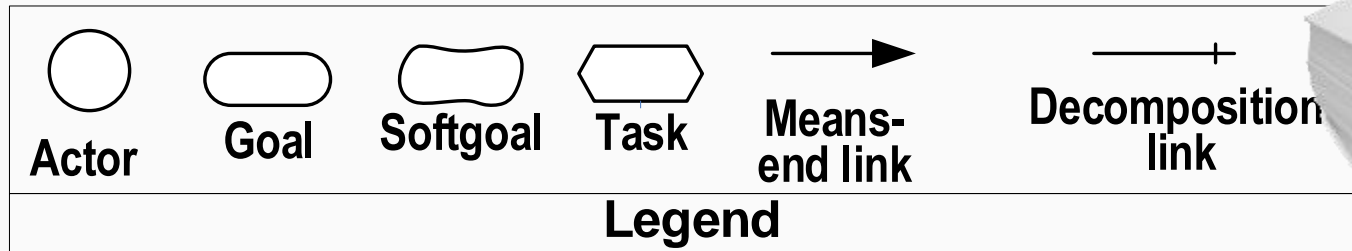
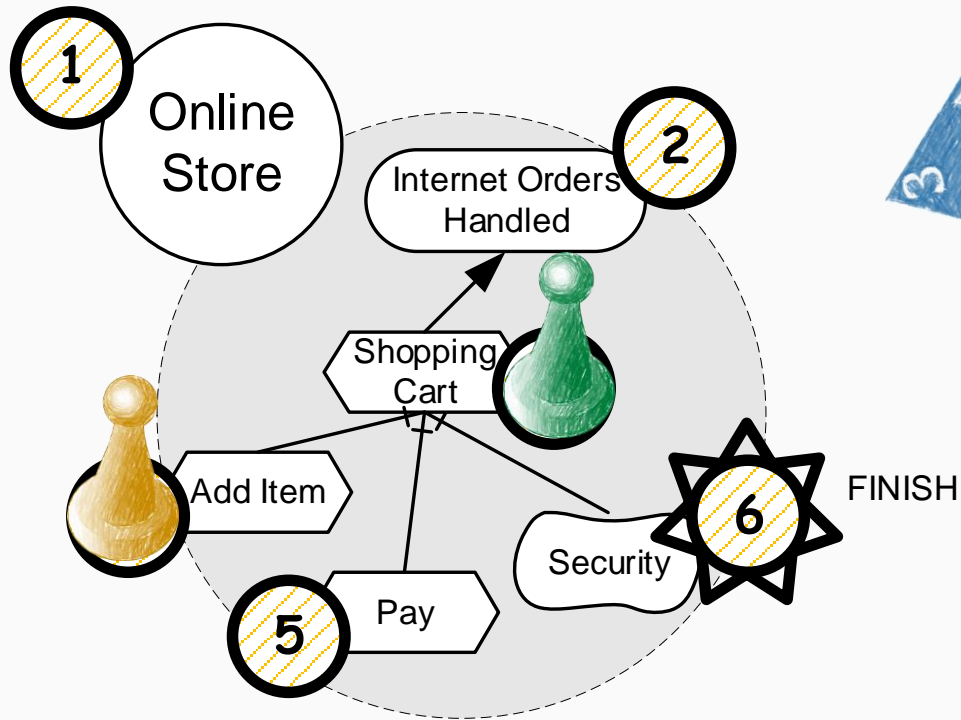


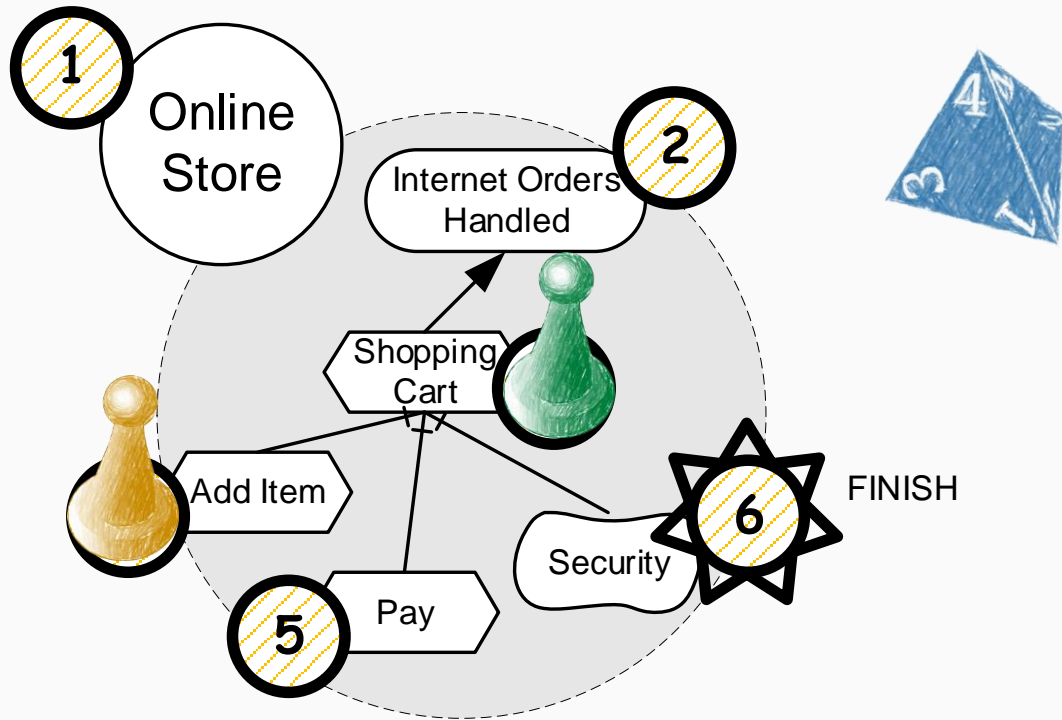


TASK	Task or Goal? If there are different ways to perform this task, may be it is a goal.
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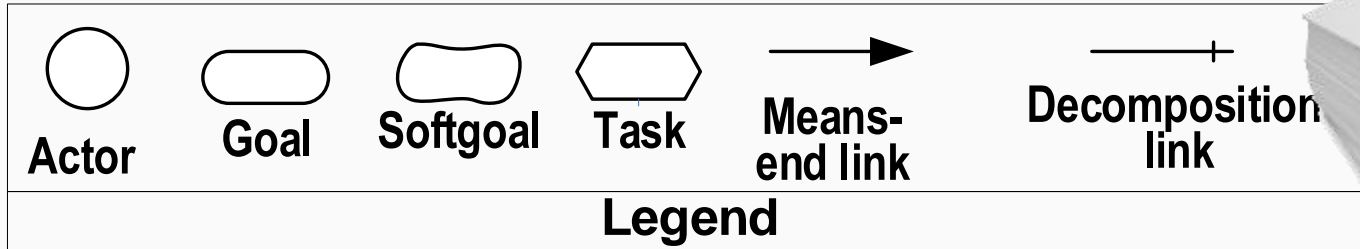








TASK This task should be performed by this actor or delegated to another one? You can not be a handyman.

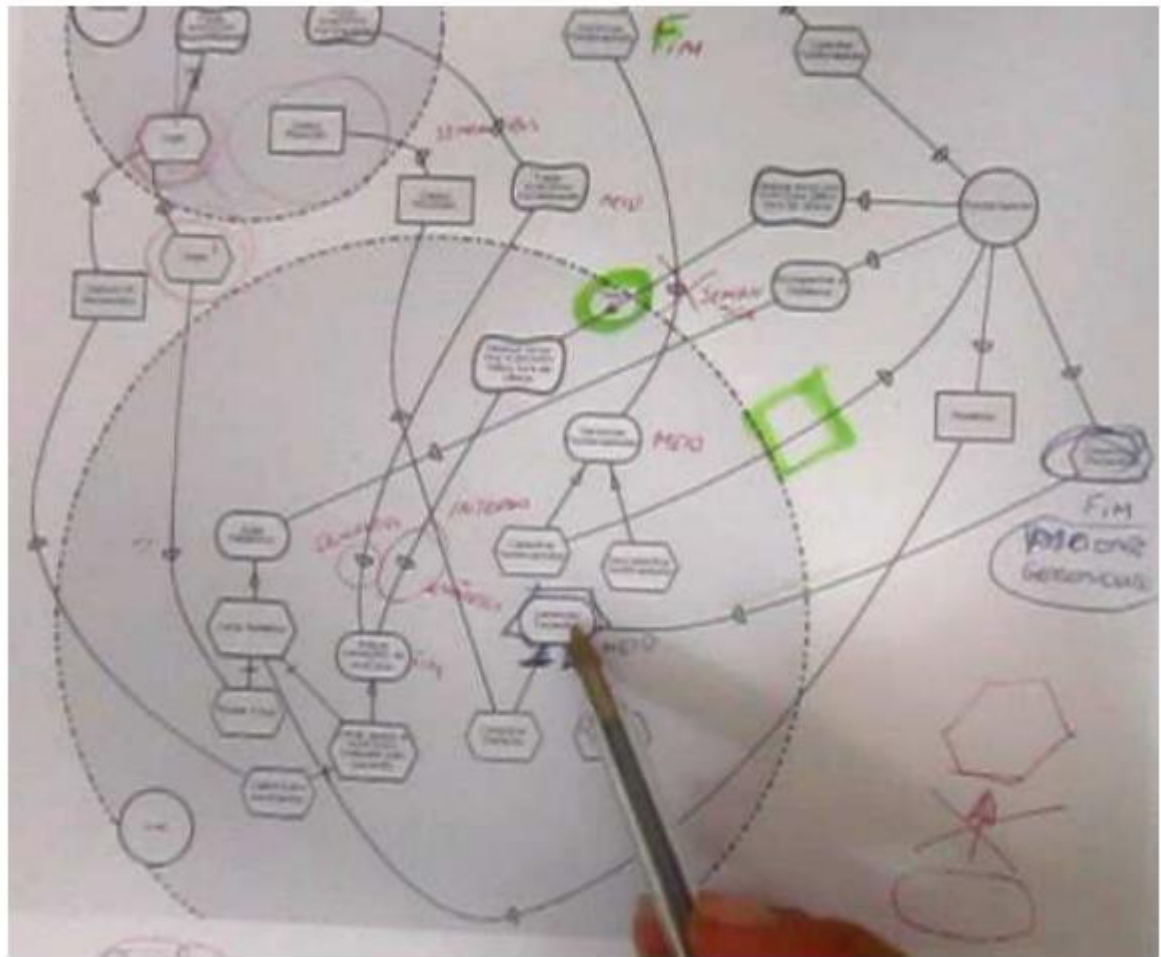




123 different cards

Based on

- Literature
- Interviews
- Protocol analysis

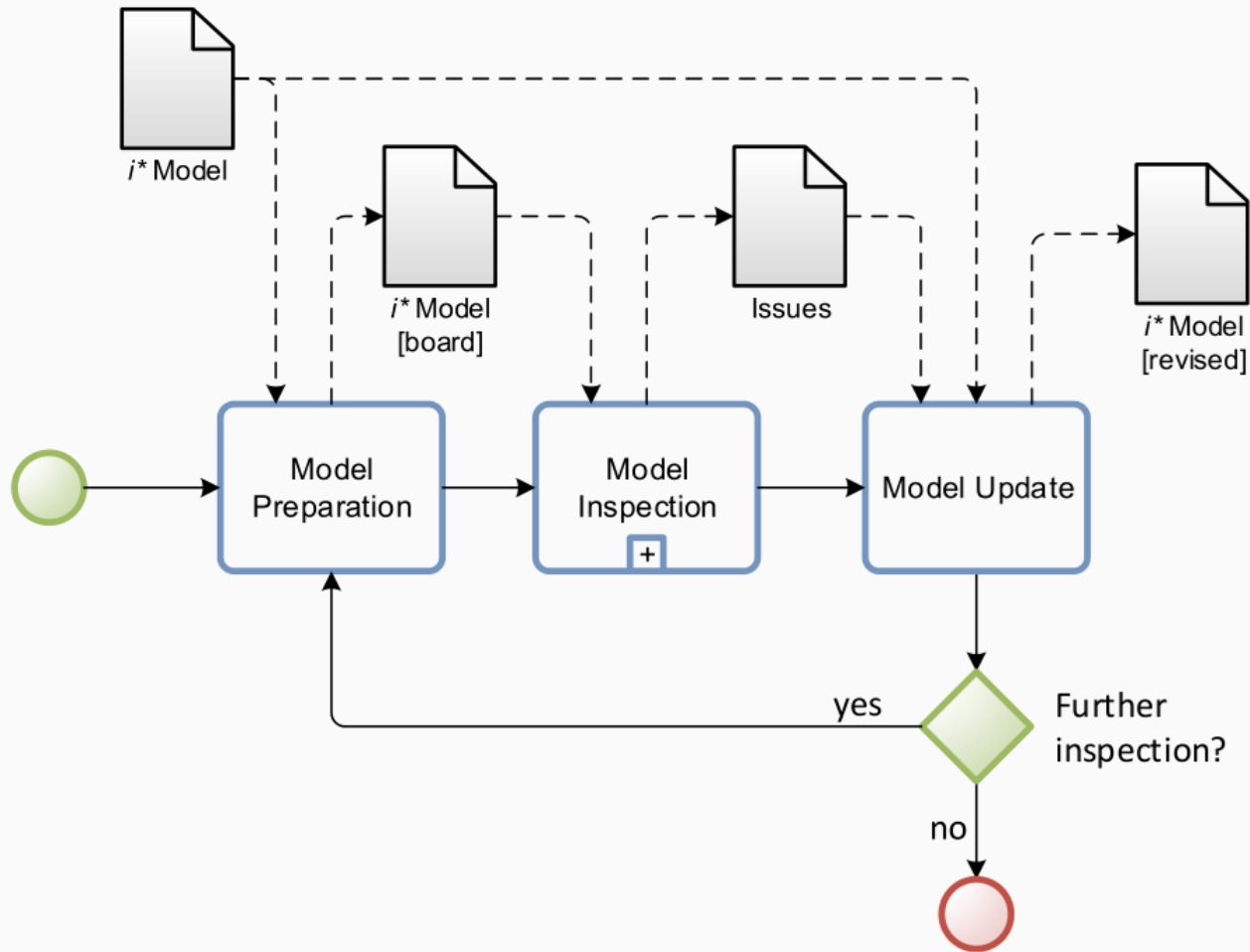




Some cards are not actual 'inspection'

TASK	Field observation user interviews, competitor analysis... you did it all, this project is going to be a blast! Jump 2 spaces forward
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TASK	Drawing time! Pick a word or expression in this domain and draw it so that your colleagues find out what you are drawing!
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[agenda]

- **Incomplete coverage**
 - Not every element is inspected
 - Not every inspection heuristic is applied
- Does it make sense to continue after a big change?

Empirical Evaluation

18 students
5 groups

*i**
training



*i** project



Ring-*i*
session



Questionnaire

EASE OF USE

Able to execute the process
without training

Perceived as easy to use

Perceived as fun

FUN

USEFULNESS

Perceived as useful

Would recommend

Would use it again?

ACCEPTANCE

	I will use it next time
1 - Totally Disagree	0 (0%)
2 - Disagree	1 (5.56%)
3 - Indiffer- ent	10 (55.56%)
4 - Agree	6 (33.33%)
5 - Totally Agree	1 (5.56%)
Median	3 (Indiff.)

Limitations of this evaluation

- Students as subjects
- Small sample size
- Lack of control group for comparison

Future work & conclusion

Future work

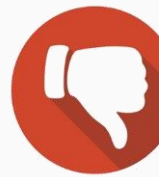
- Expand and update the inspection cards
- Test different game mechanics (e.g. RPG)
- Validate with industry and i* experts
- Create a non-gamified version



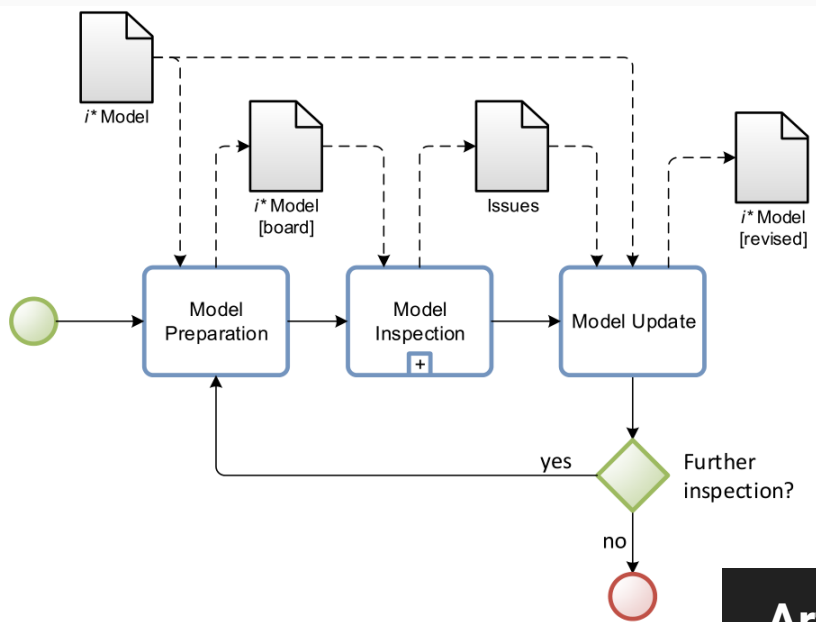
Requirements inspection

[context]

RE goal models inspection



Ring-i [proposal]



[evaluation]

EASE OF USE

Able to execute the process without training

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FUN

USEFULNESS

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Would use it again?

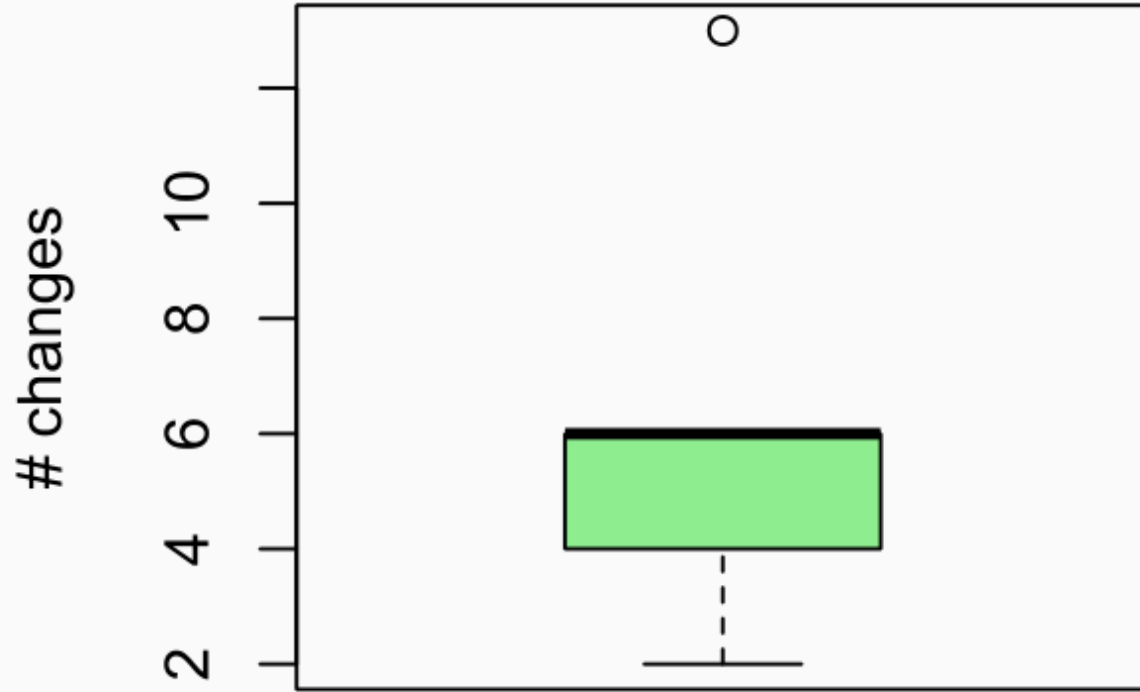
ACCEPTANCE

Artefacts: www.cin.ufpe.br/~ler/istargame

Thank you!

Analyze the Ring-i process;
for the purpose of evaluation and improvement;
with respect to its use by non-experts on i^* ;
from the point of view of software engineers;
in the context of students applying the process on their own projects.

Distribution of changes resulting from the Ring-i process



Questionnaire answers regarding error discovery

	I discovered errors	I haven't discovered errors
1 - Totally Disagree	0 (0%)	10 (55.56%)
2 - Disagree	0 (0%)	4 (22.22%)
3 - Indifferent	0 (0%)	1 (5.56%)
4 - Agree	9 (50.00%)	3 (16.67%)
5 - Totally Agree	9 (50.00%)	0 (0%)
Median	4.5	1

Questionnaire answers regarding improvements to the model

	I identified im- provements	It contributed to improving the model
1 - Totally Disagree	0 (0%)	0 (0%)
2 - Disagree	0 (0%)	0 (0%)
3 - Indifferent	1 (5.56%)	1 (5.56%)
4 - Agree	9 (50.00%)	10 (55.56%)
5 - Totally Agree	8 (44.44%)	7 (38.89%)
Median	4 (Agree)	4 (Agree)

Questionnaire answers on whether respondents learned more about i^* with the process

	I learned something about i^*
1 - Totally Disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Indifferent	1 (5.56%)
4 - Agree	8 (44.44%)
5 - Totally Agree	8 (44.44%)
No answer	1 (5.56%)
Median	4 (Agree)

Questionnaire answers regarding usefulness, directly

	It is useful
1 - Totally Disagree	0 (0%)
2 - Disagree	0 (0%)
3 - Indifferent	0 (0%)
4 - Agree	9 (50.00%)
5 - Totally Agree	9 (50.00%)
Median	4.5 (between Agree and Totally Agree)

Questionnaire answers regarding process enjoyment

	Had fun during the process	Haven't had fun during the process
1 - Totally Disagree	0 (0%)	7 (38.89%)
2 - Disagree	0 (0%)	8 (44.44%)
3 - Indifferent	3 (16.67%)	1 (5.56%)
4 - Agree	8 (44.44%)	2 (11.11%)
5 - Totally Agree	7 (38.89%)	0 (0%)
Median	4 (Agree)	2 (Disagree)

Questionnaire answers regarding ease of use, directly

	The process is easy	The process is difficult
1 - Totally Disagree	0 (0%)	6 (33.33%)
2 - Disagree	0 (0%)	11 (61.11%)
3 - Indifferent	4 (22.22%)	1 (5.56%)
4 - Agree	9 (50.00%)	0 (0%)
5 - Totally Agree	5 (27.78%)	0 (0%)
Median	4 (Agree)	2 (Disagree)

Questionnaire answers regarding ease of use, indirectly

	I understood how to use the process	I could explain the process
1 - Totally Disagree	0 (0%)	1 (5.56%)
2 - Disagree	0 (0%)	1 (5.56%)
3 - Indifferent	0 (0%)	2 (11.11%)
4 - Agree	10 (55.56%)	9 (50.00%)
5 - Totally Agree	8 (44.44%)	5 (27.78%)
Median	4 (Agree)	4 (Agree)

Questionnaire answers regarding acceptance of the proposal

	I wish I learned before	I will use it next time	I will recommend it
1 - Totally Disagree	0 (0%)	0 (0%)	0 (0%)
2 - Disagree	0 (0%)	1 (5.56%)	1 (5.56%)
3 - Indifferent	2 (11.11%)	10 (55.56%)	4 (22.22%)
4 - Agree	11 (61.11%)	6 (33.33%)	10 (55.56%)
5 - Totally Agree	5 (27.78%)	1 (5.56%)	3 (16.67%)
Median	4 (Agree)	3 (Indiff.)	4 (Agree)