NOVALINCS
LABORATORY FOR COMPUTER SCIENCE AND INFORMATICS

FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

What is the impact of bad layout in the understandability of social goal models?

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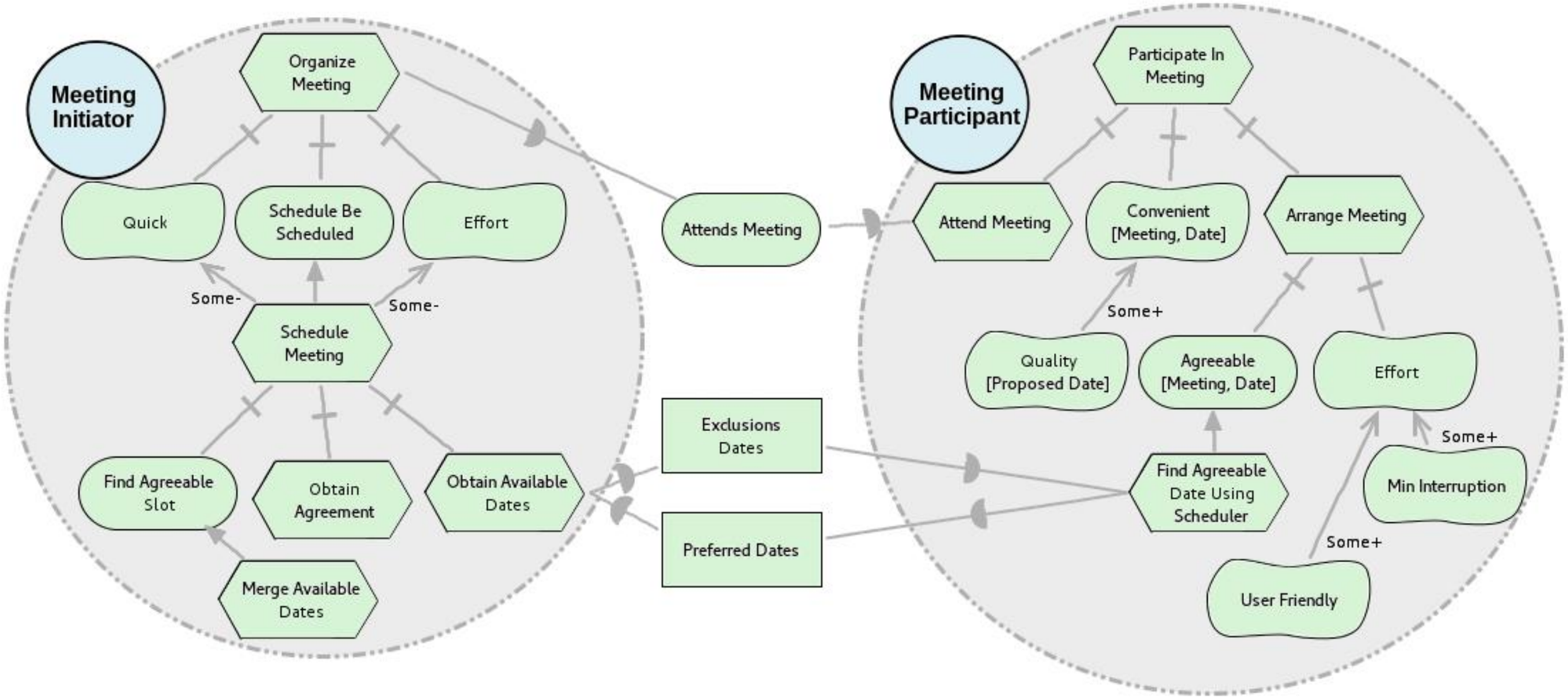
microlina.github.io

February 17, 2017

Social goal models: *i** (iStar)

Approach focused on the system stakeholders and in their (social) relationships

Developed for modelling and reasoning about organizational environments



Research questions

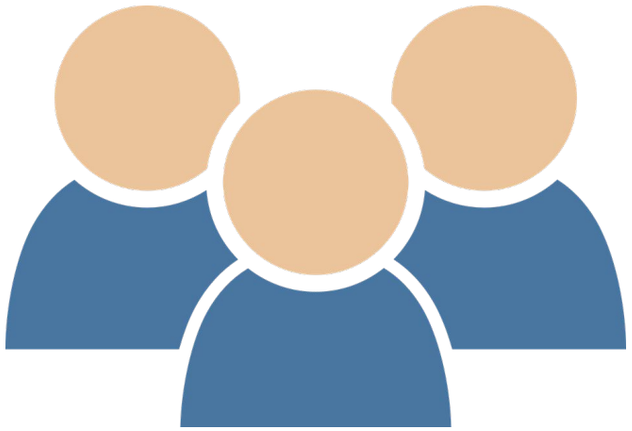
1 Does adherence to **layout guidelines** influence the **understandability** of *i** models?

2 Does adherence to **layout guidelines** influence the **ability to review** *i** models?

Study method: quasi-experiment with a combination of measures

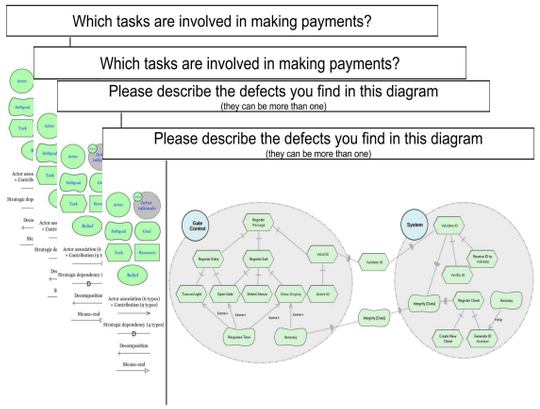
Success level	Precision	Recall	F-Measure	
Effort	Duration	Perceived complexity	Eye-tracking data	Average fixation duration
				Fixation rates

Experimental materials and participants



18 participants

1 eye-tracker



4 domains

Protocol of the experiment

Consent information letter

Information to participants

This experimental work is conducted withi
Informatics (NOVA LINCS). NOVA LINCS is
network in the area of Computer Science
hosted at the Departamento de Informá
Universidade NOVA de Lisboa (DI-NOVA),

All information stated as part of this exper

Prof. Miguel Goulão is responsible for
mgoul@fct.unl.pt; +351 21 294 85 36 (ext.

We would like to emphasize that:

- your participation is entirely volunt
- you are free to refuse to answer any

Demographic Data

*Obrigatório

Gender *

- Male
- Female

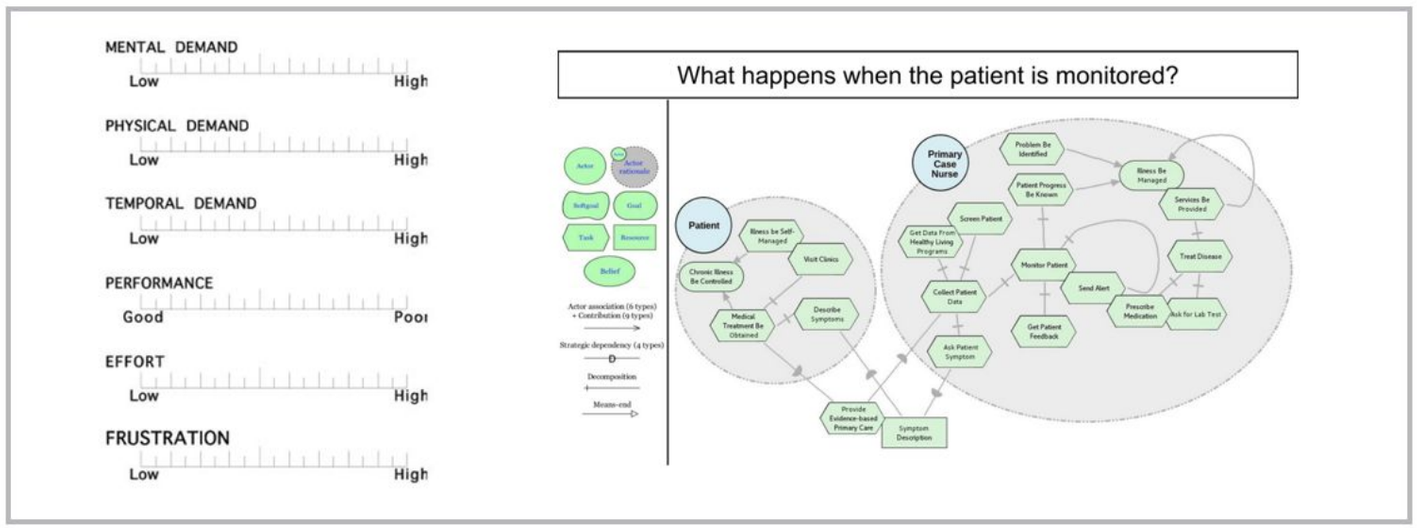
Age *

A sua resposta

Nationality *

A sua resposta

Field of Studies *



Read the consent information letter

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MENTAL DEMAND
Low High

PHYSICAL DEMAND
Low High

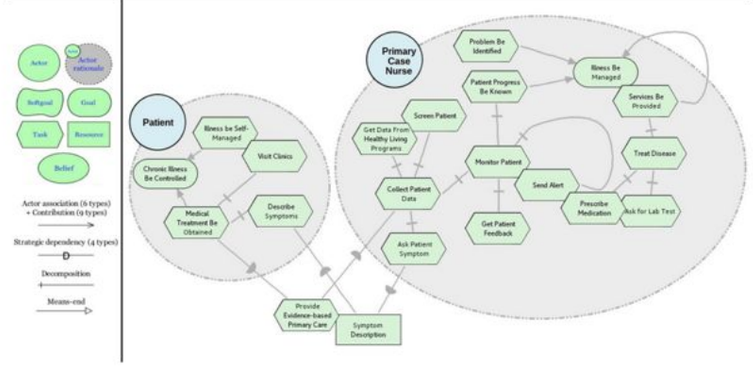
TEMPORAL DEMAND
Low High

PERFORMANCE
Good Poor

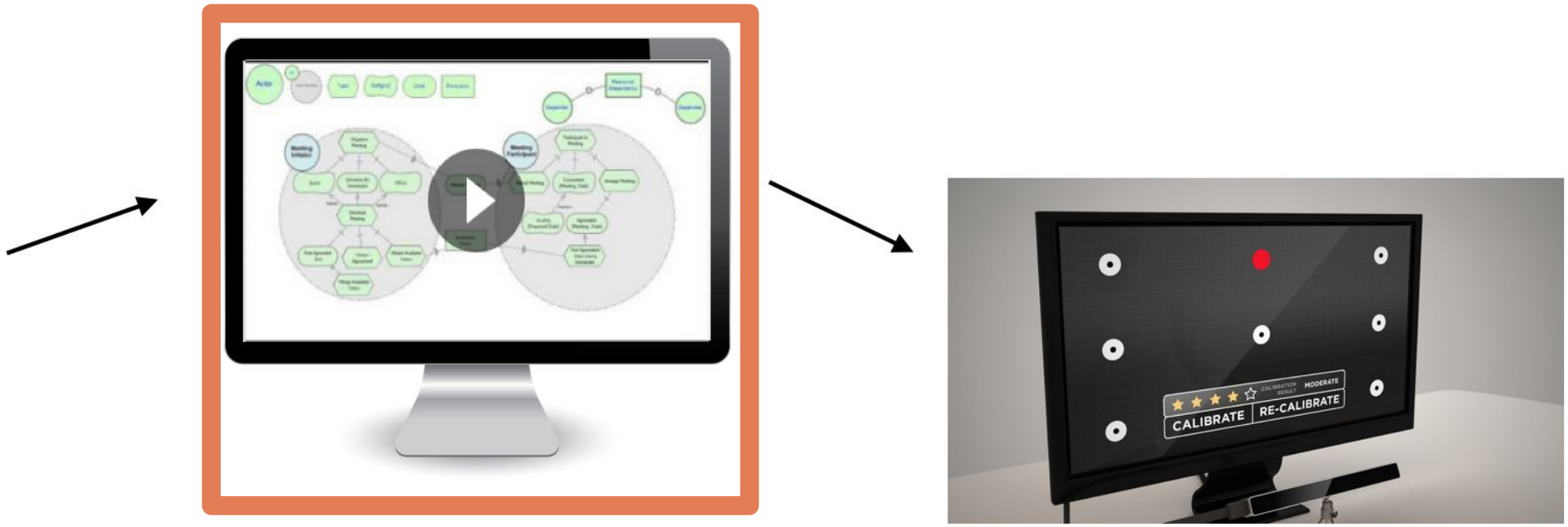
EFFORT
Low High

FRUSTRATION
Low High

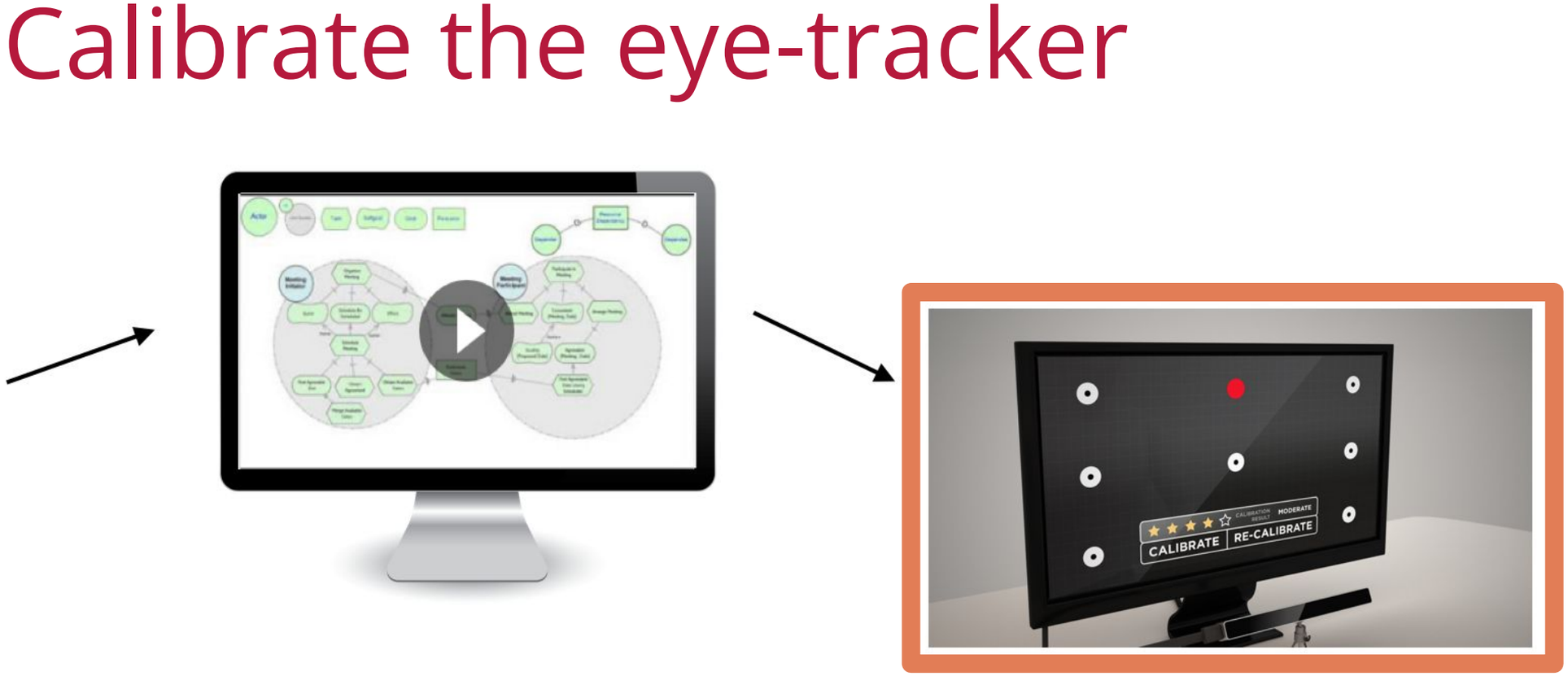
What happens when the patient is monitored?



Watch a video tutorial about *i**



Calibrate the eye-tracker



Answer a question about a model

Answer a NASA TLX questionnaire

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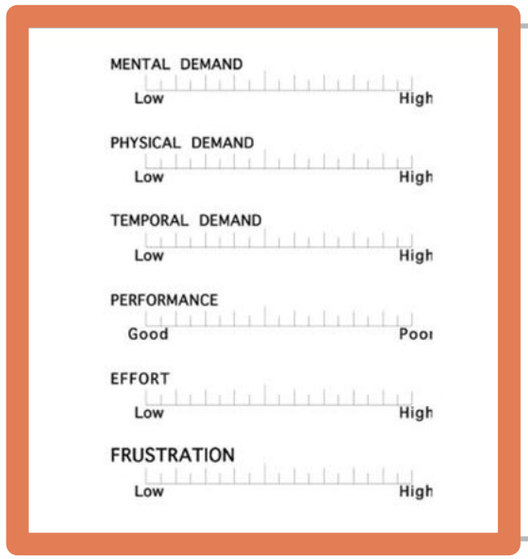

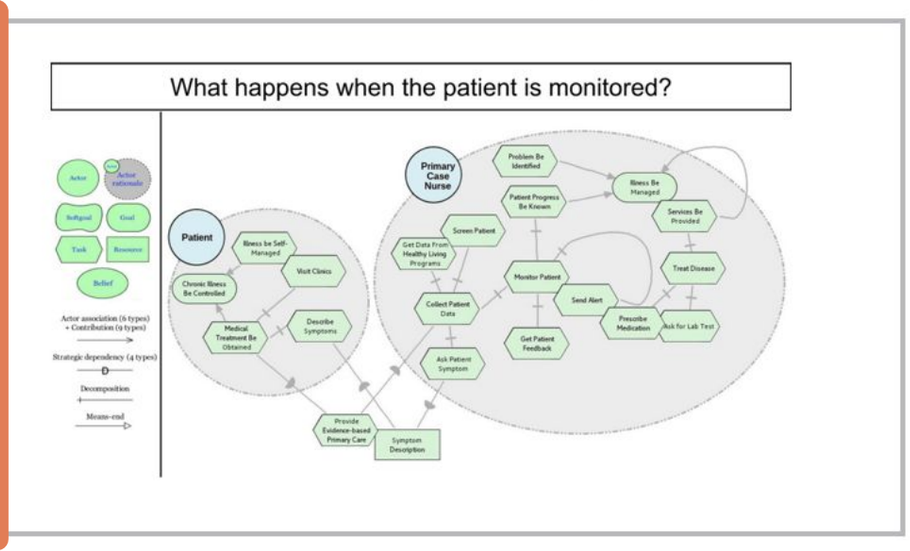

Answer to demographic questions

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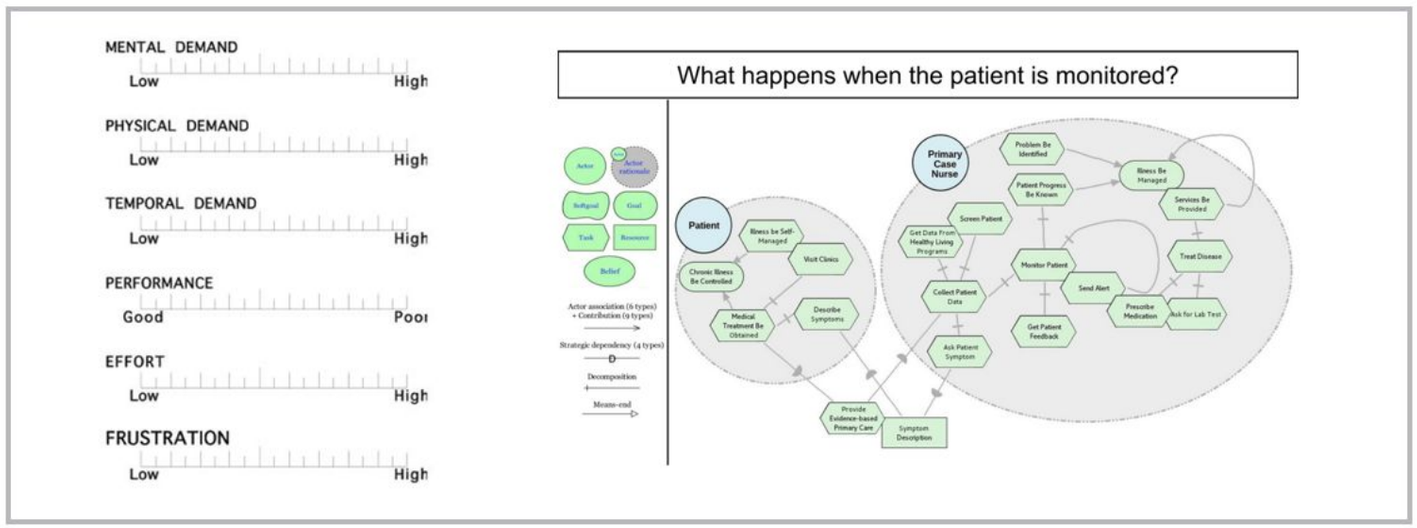
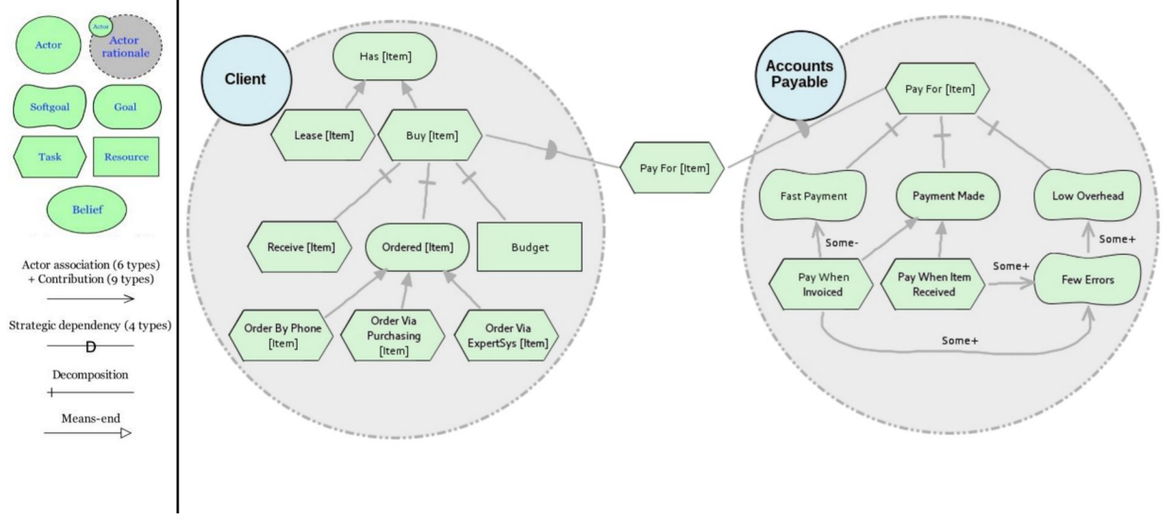


Two understanding and two review tasks, both with good and bad layout

Which tasks are involved in making payments?



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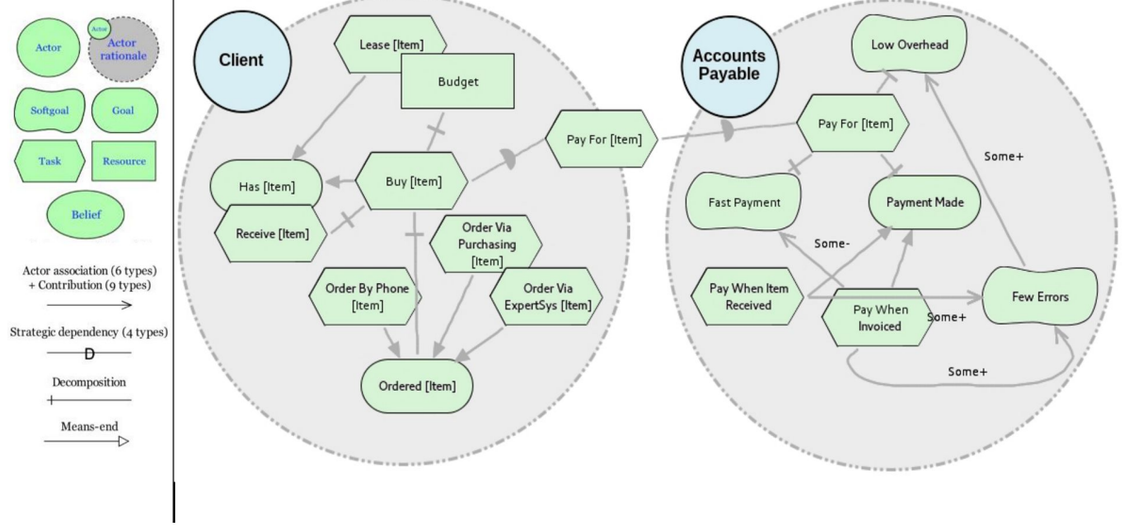

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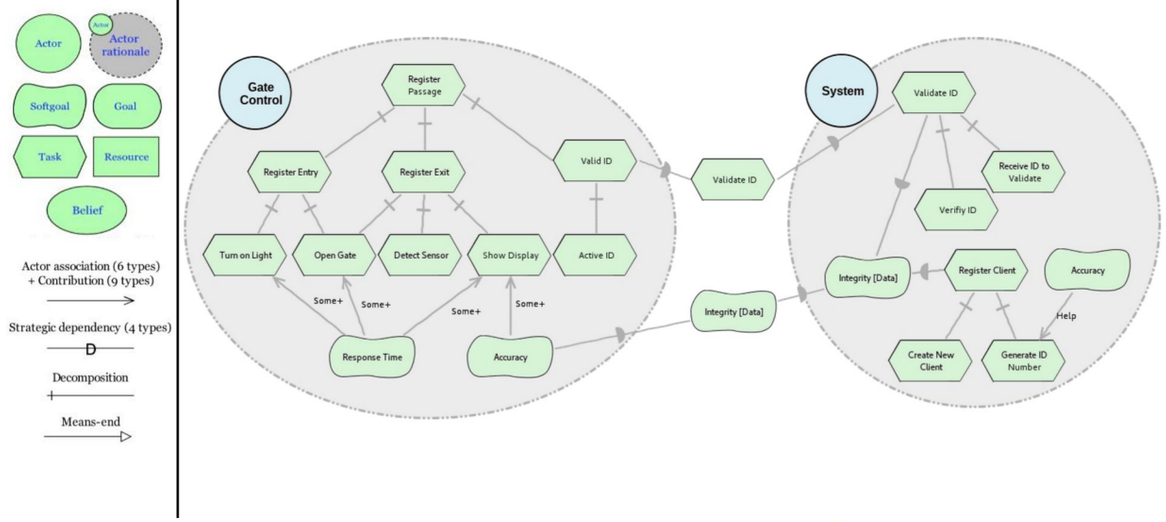

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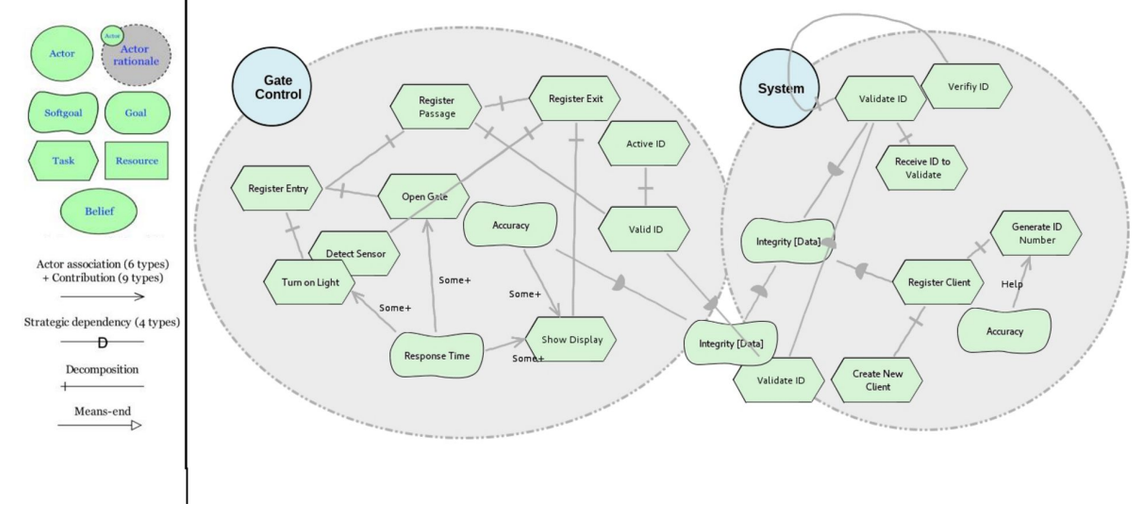

Two **understanding** and two review tasks, both with good and bad layout

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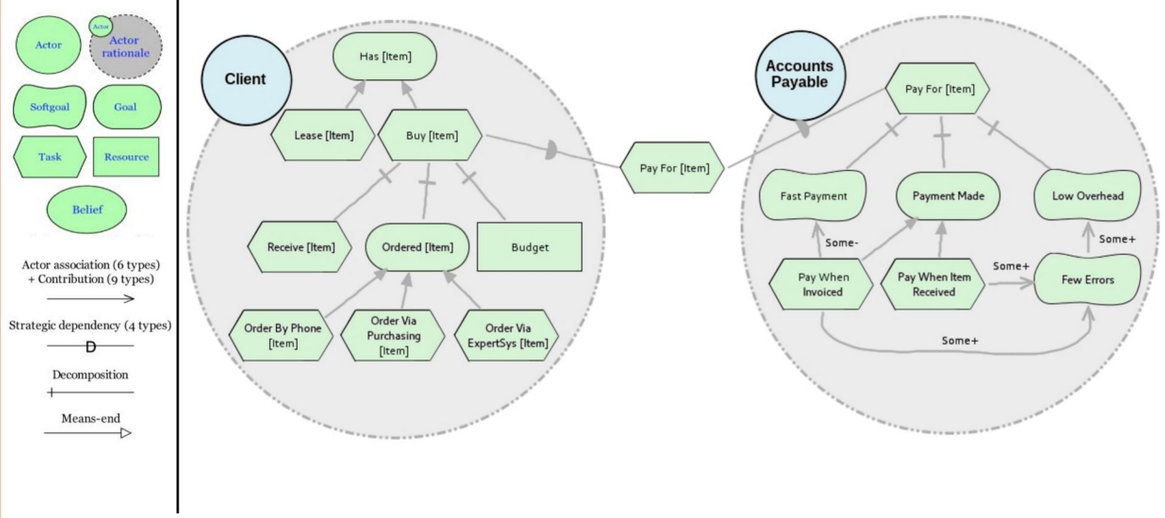

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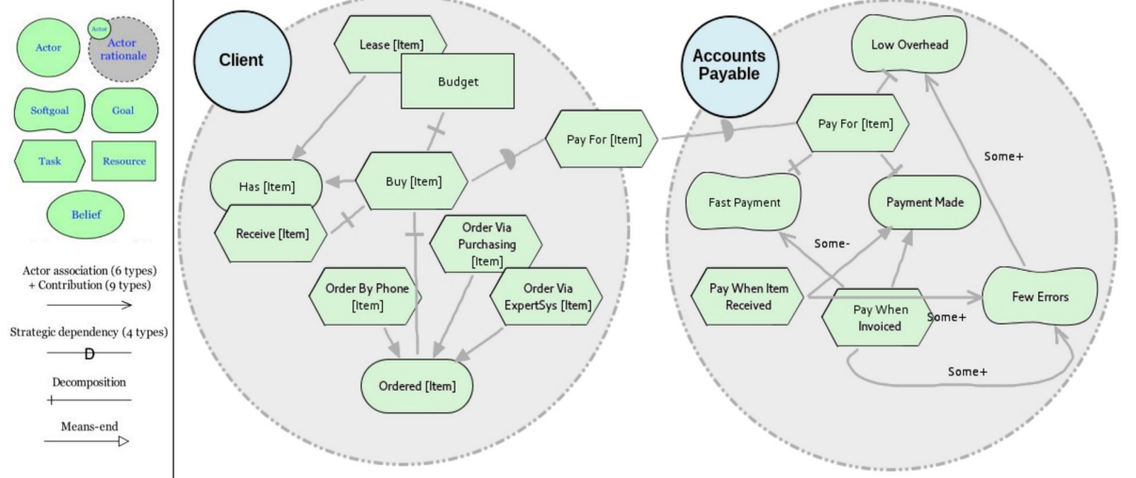

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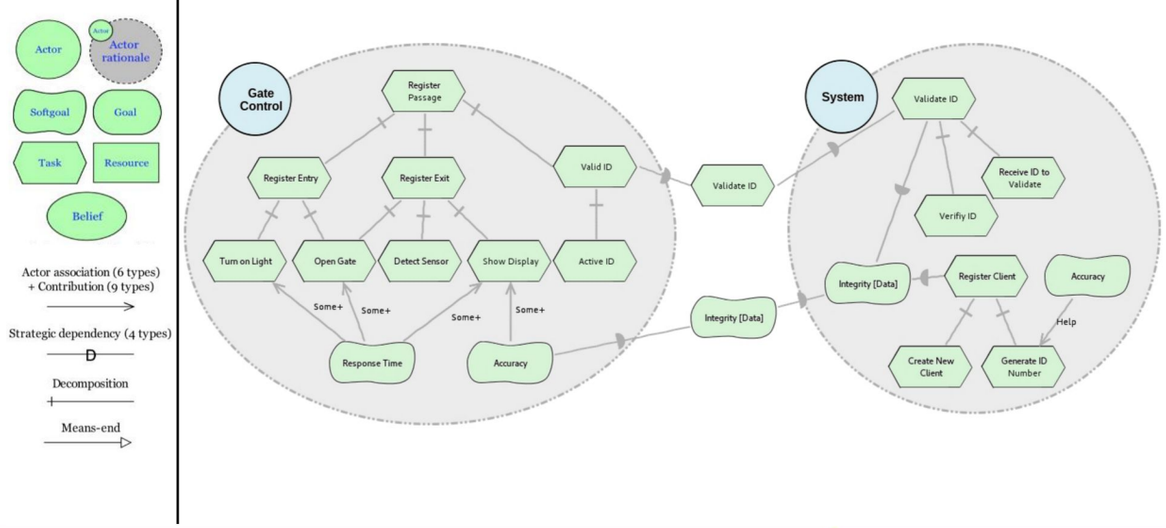

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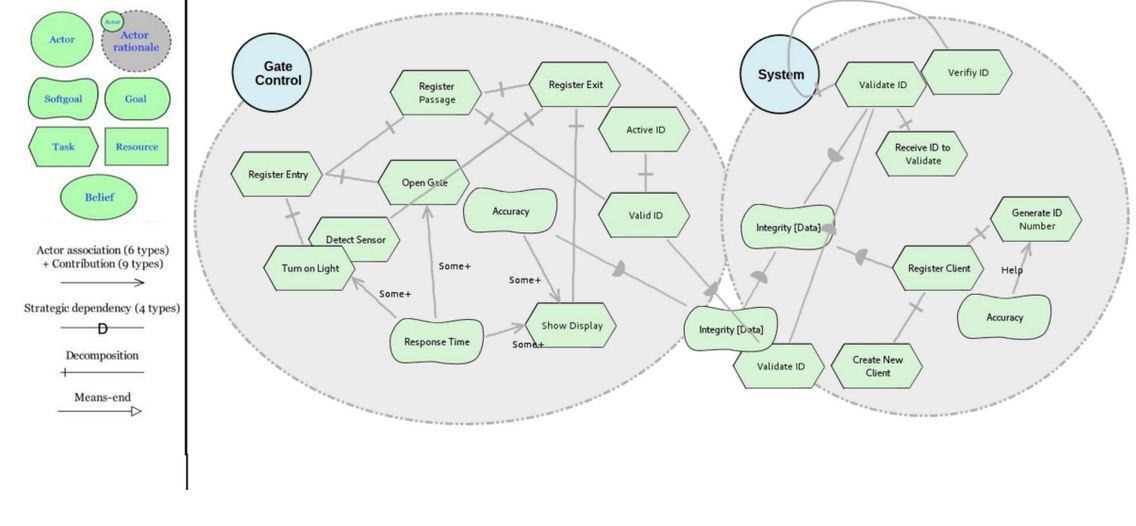

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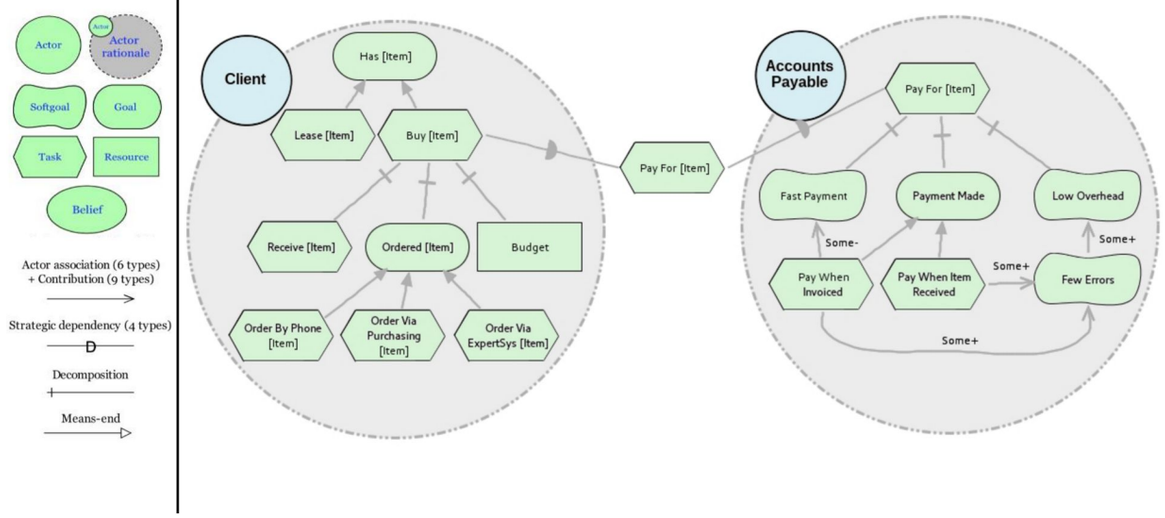

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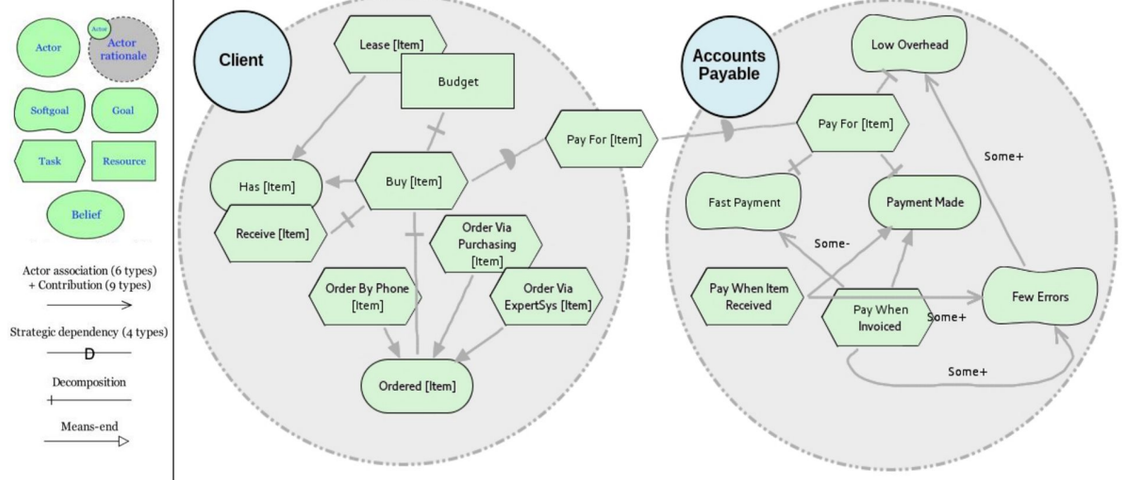

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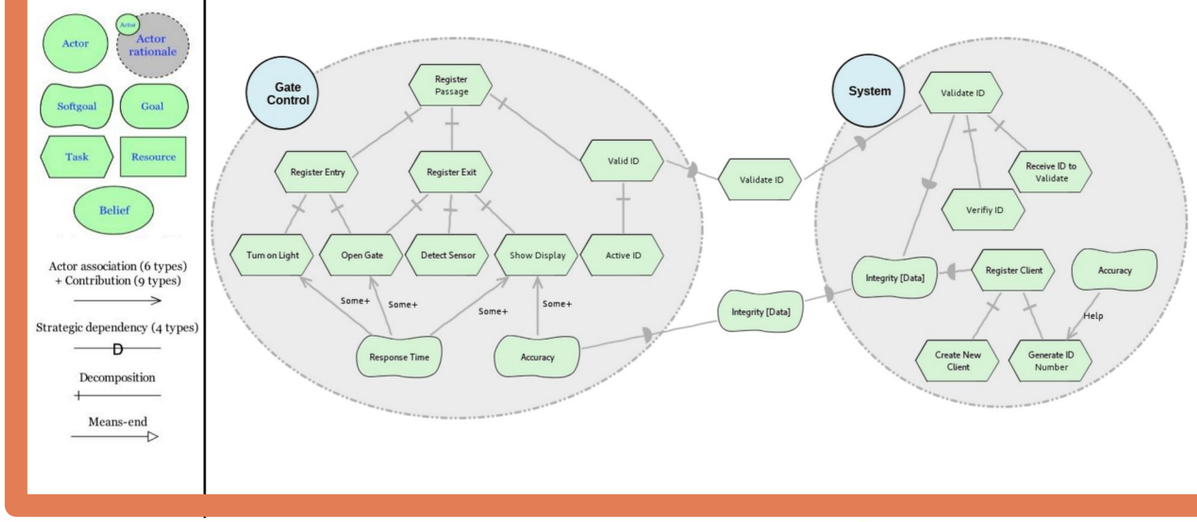

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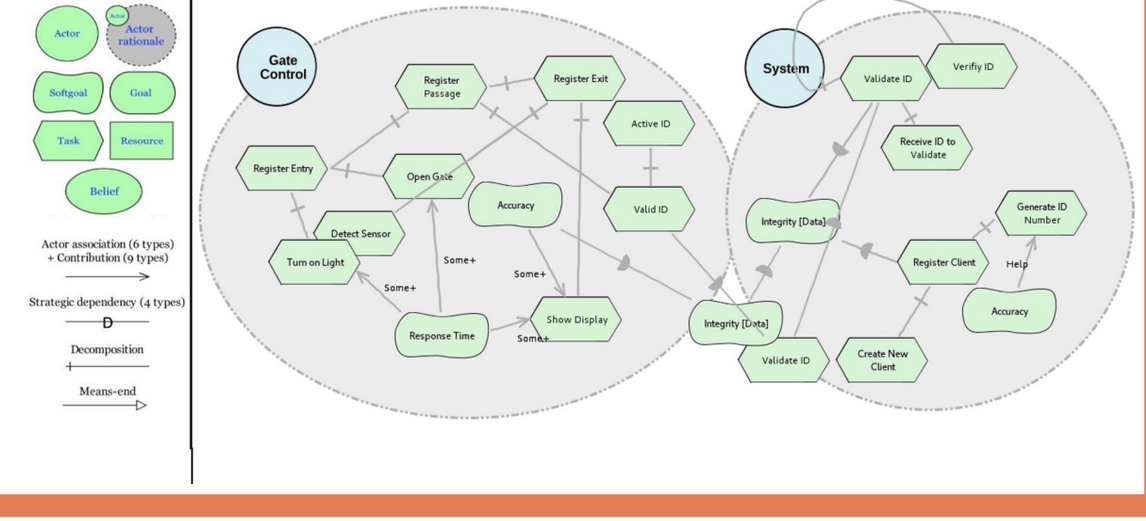

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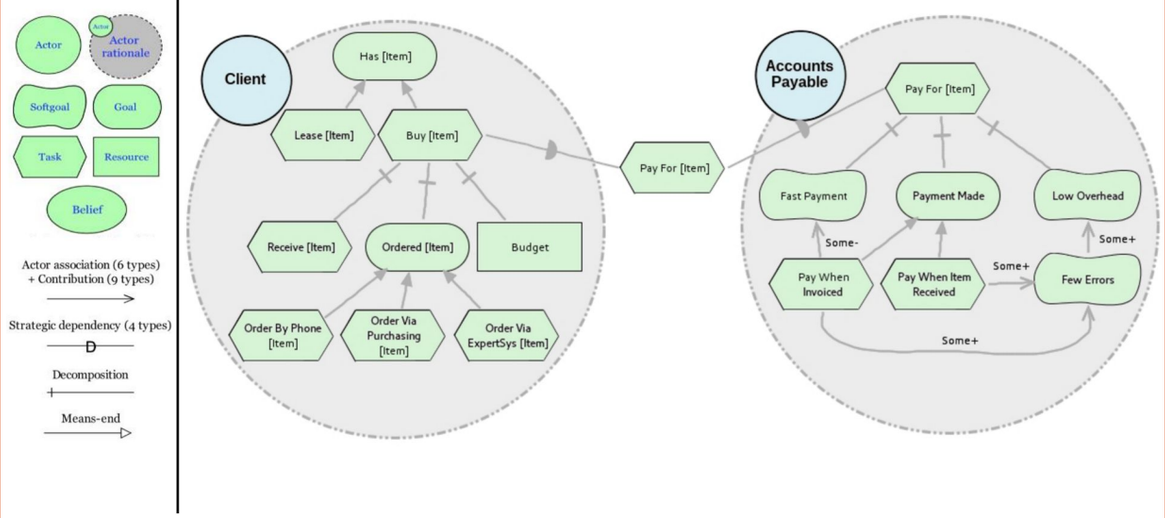

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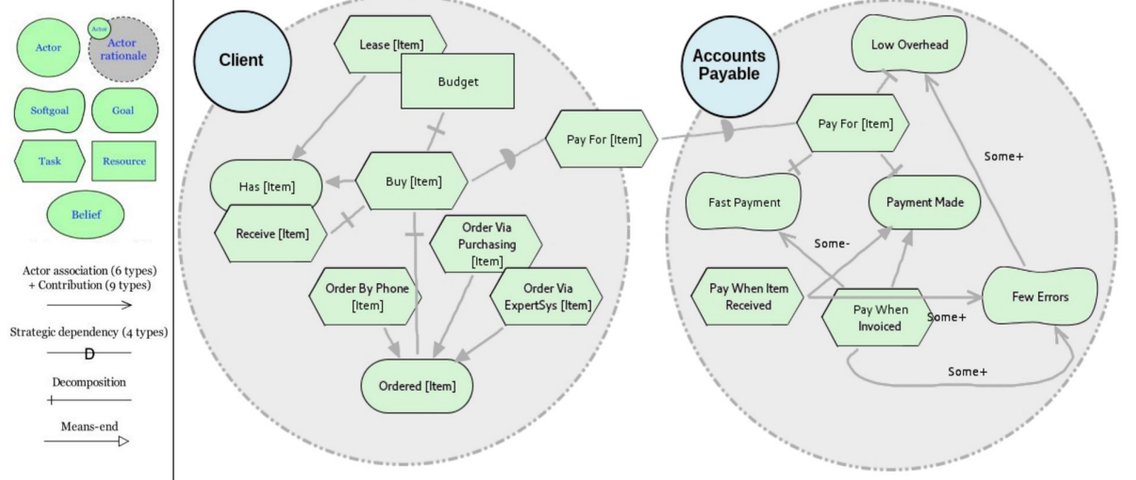

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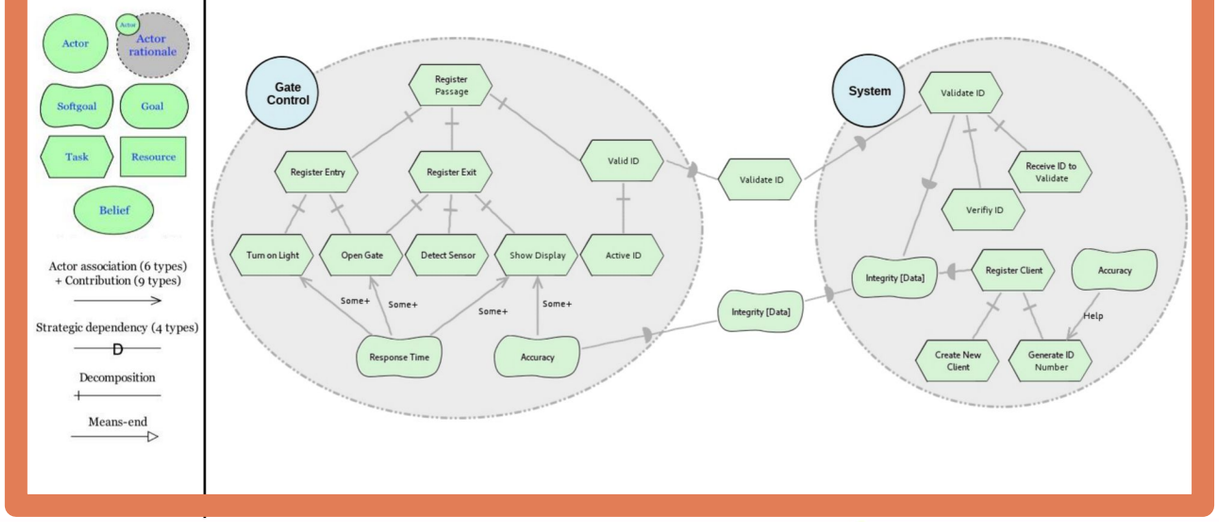

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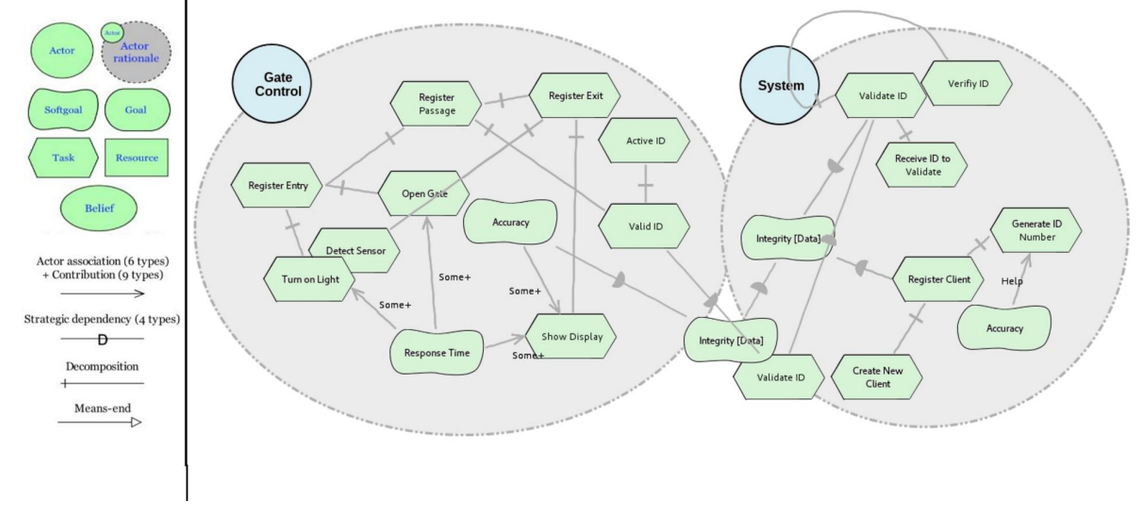

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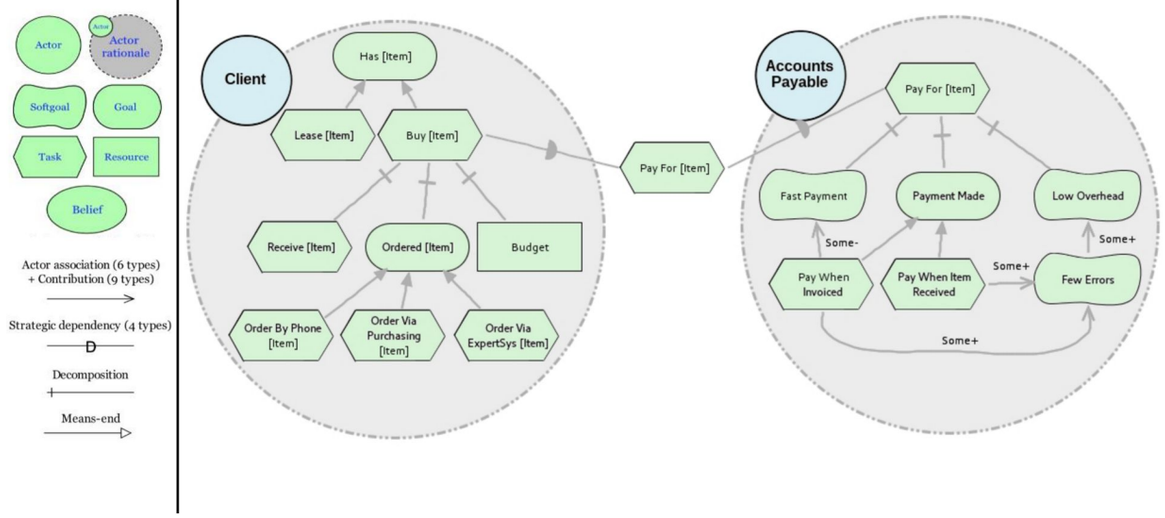

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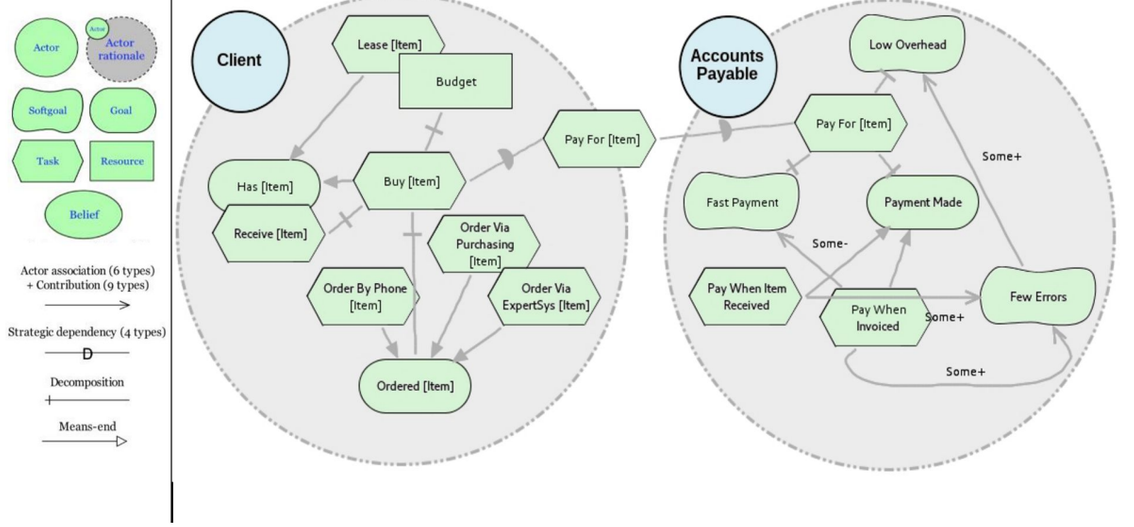

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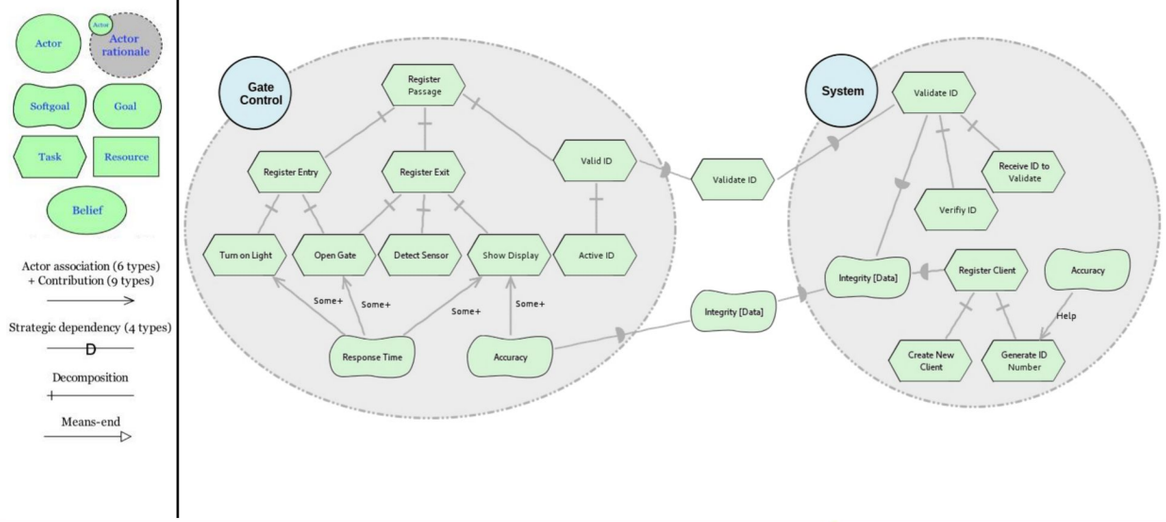

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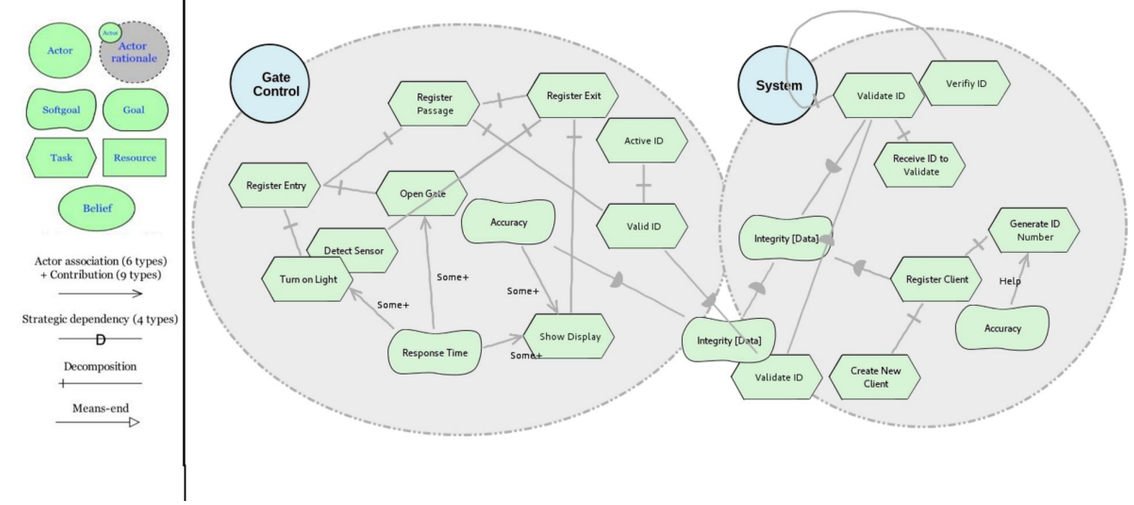
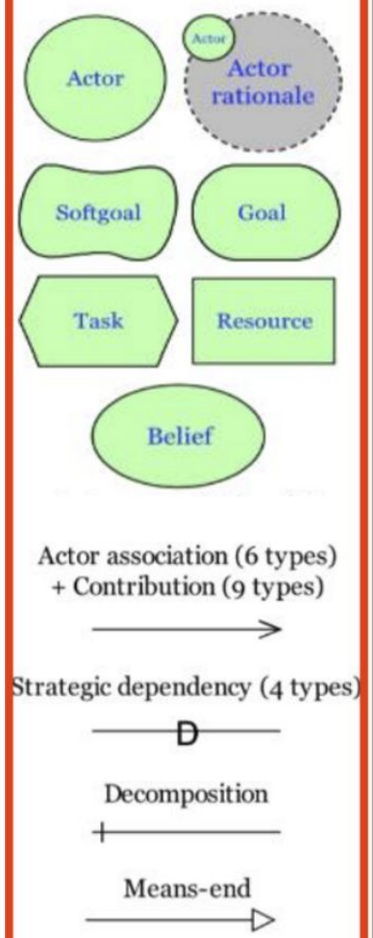


Areas of interest: question, key and model

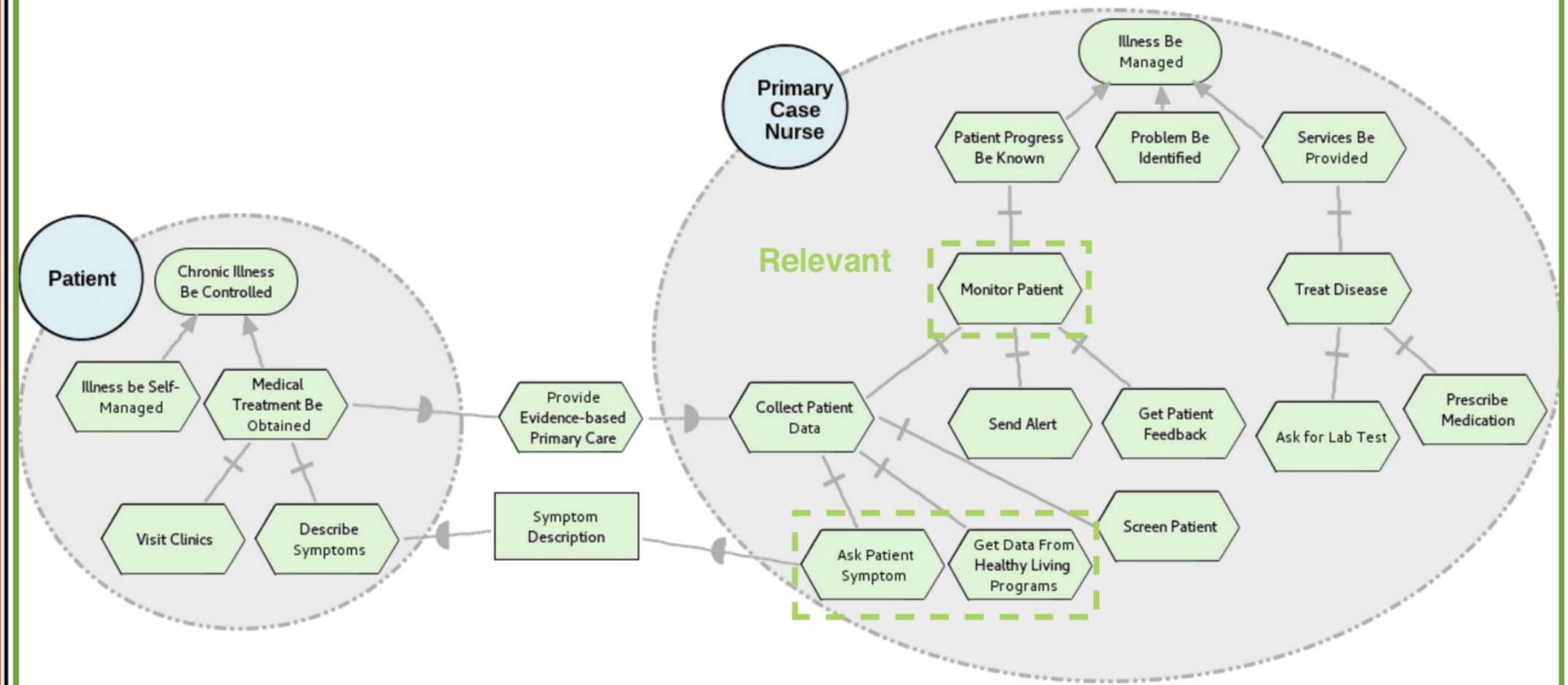
Question

What happens when the patient is monitored?

Key

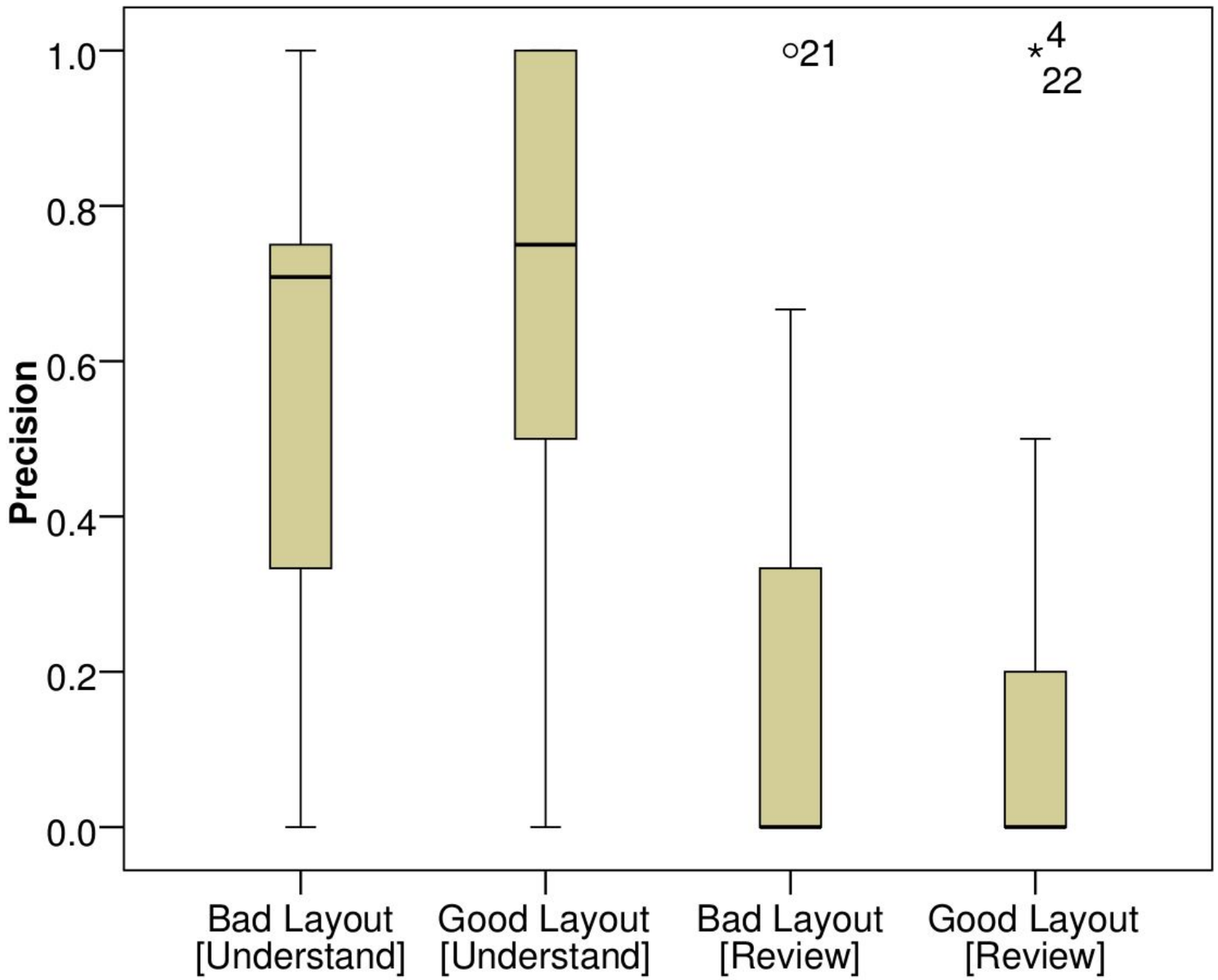


Model

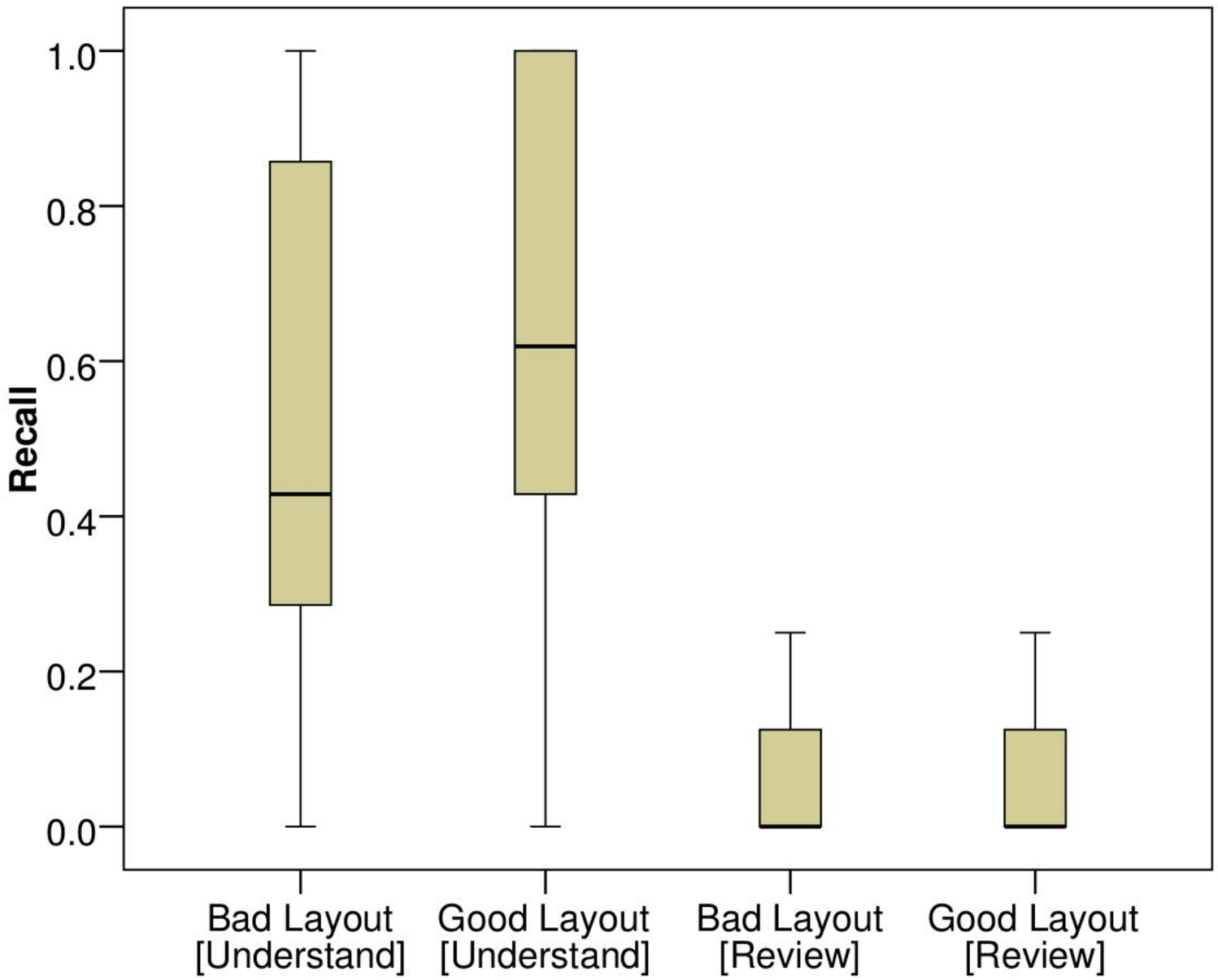


So what was the impact of good and bad layouts in understanding and reviewing *i** models?

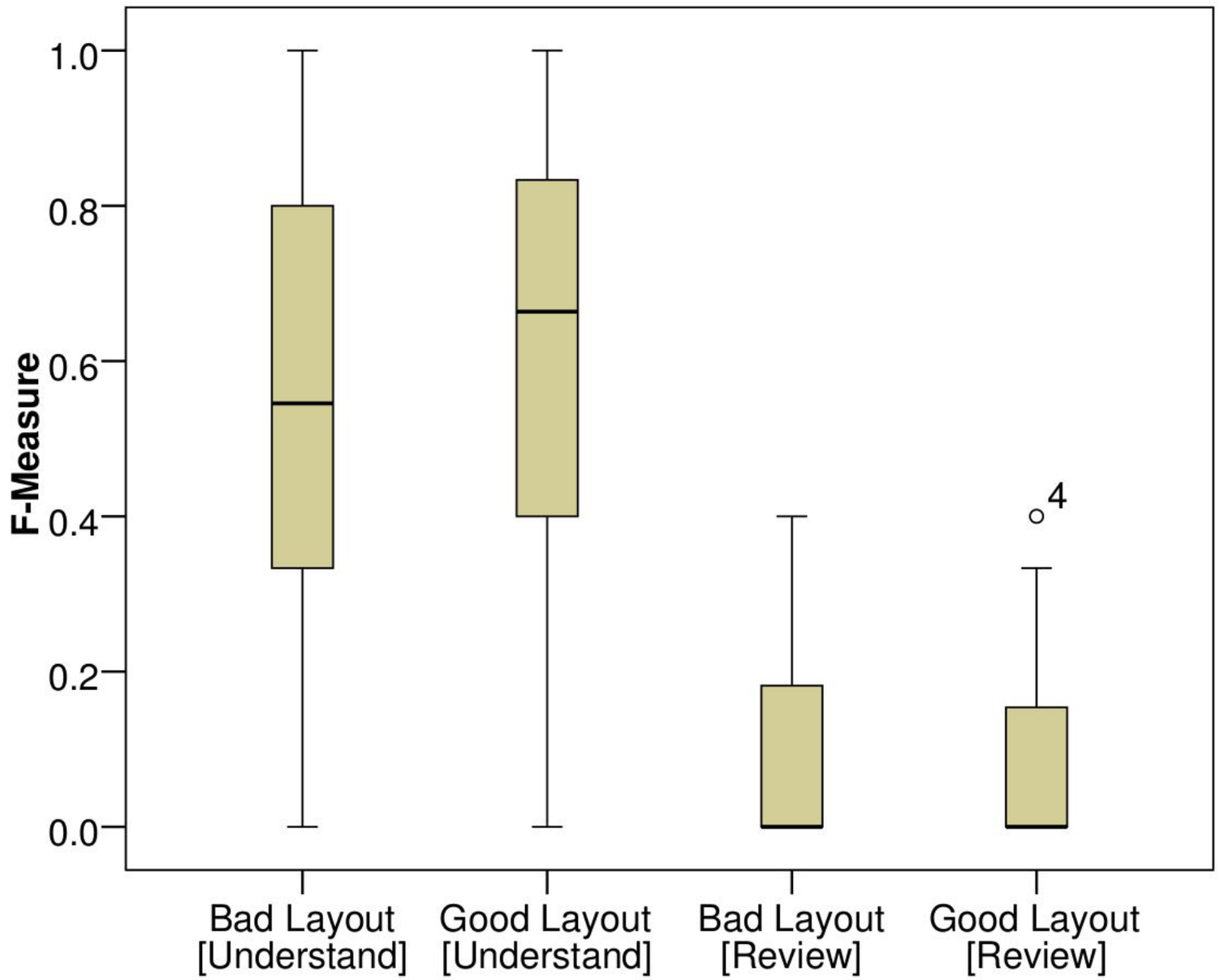
Precision is higher for understanding tasks, but there is no statistically significant difference between layouts



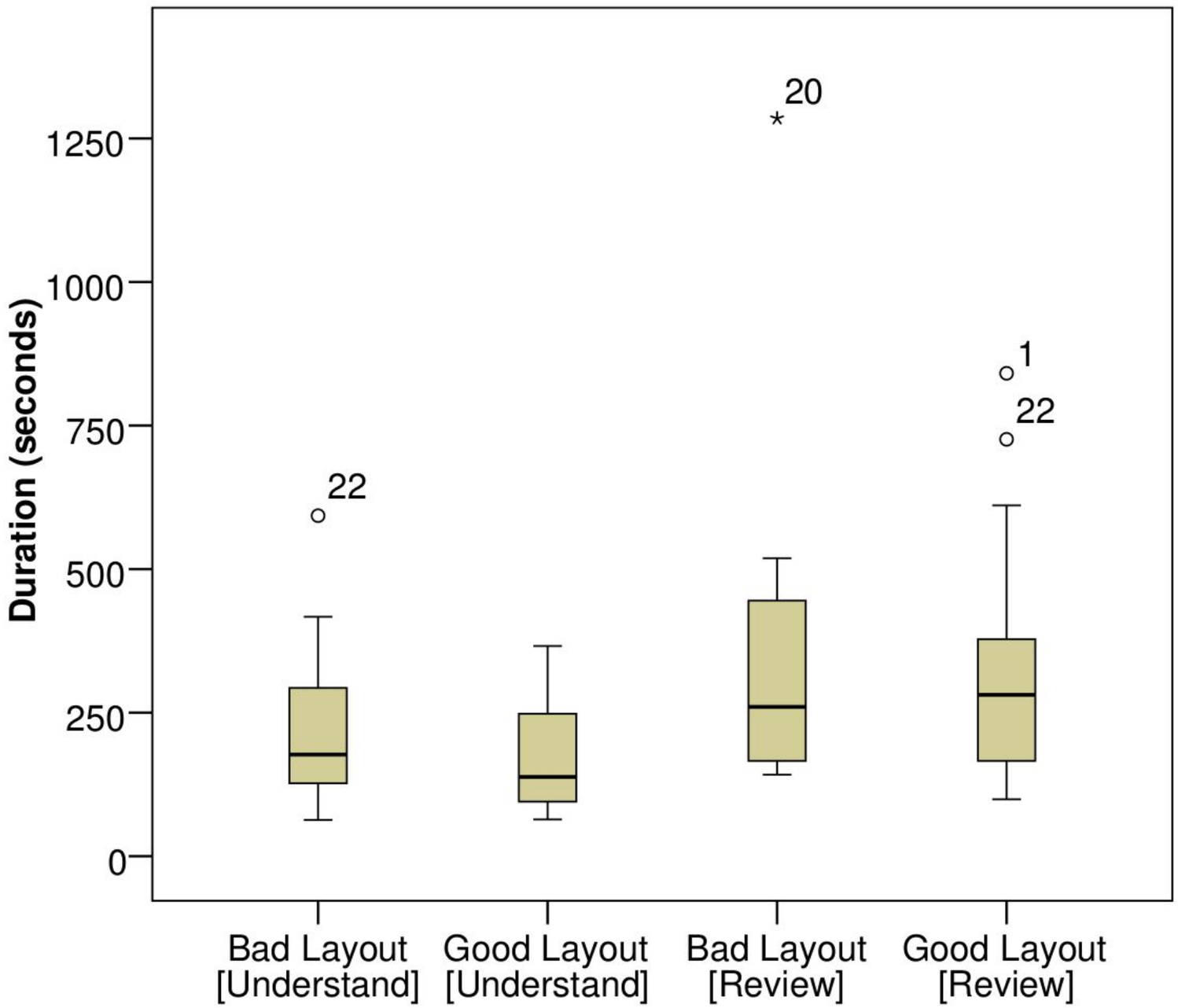
Recall is better for understanding tasks with good layout, but the difference is not statistically significant



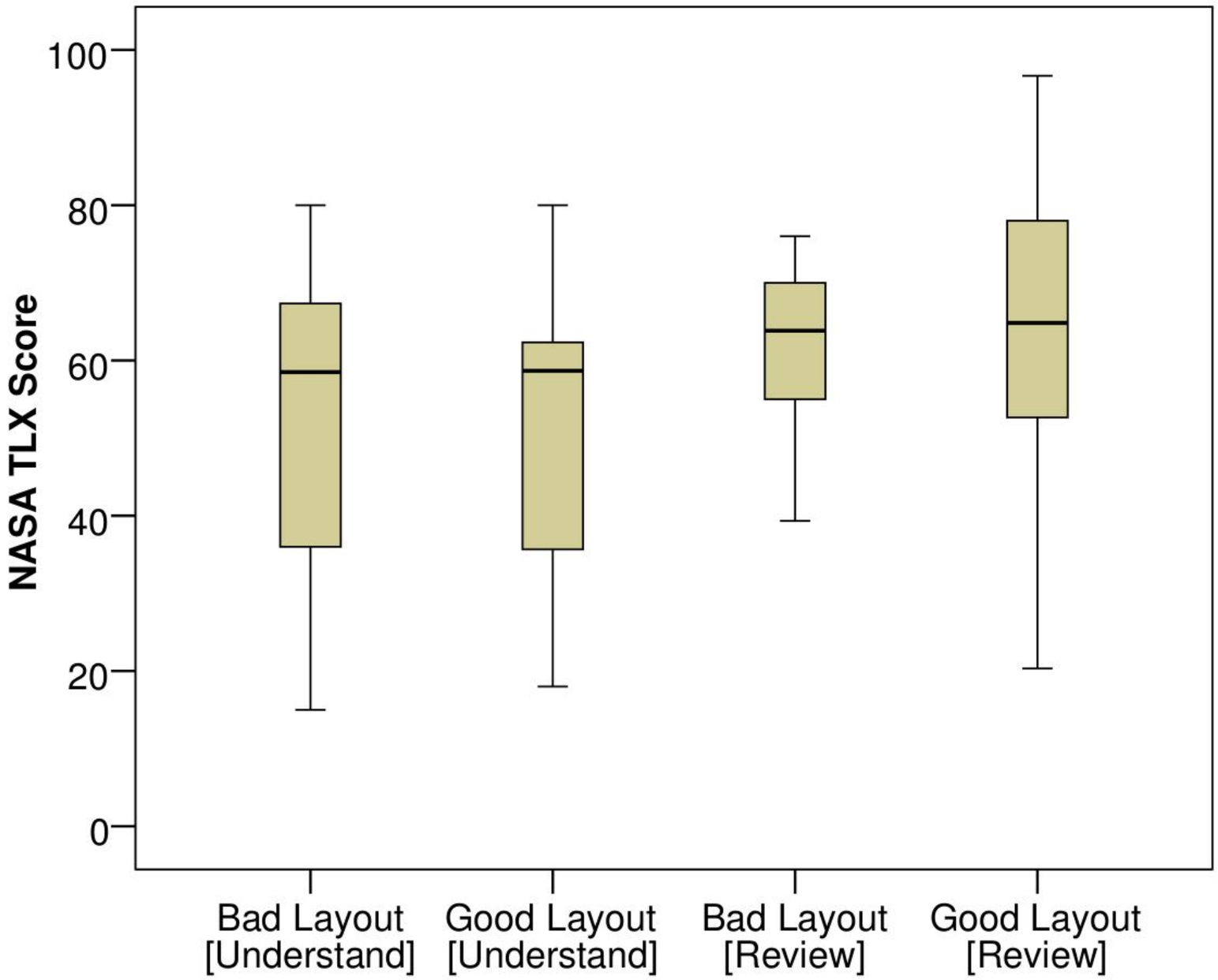
F-Measure is better for understanding tasks with good layout, but the difference is not statistically significant



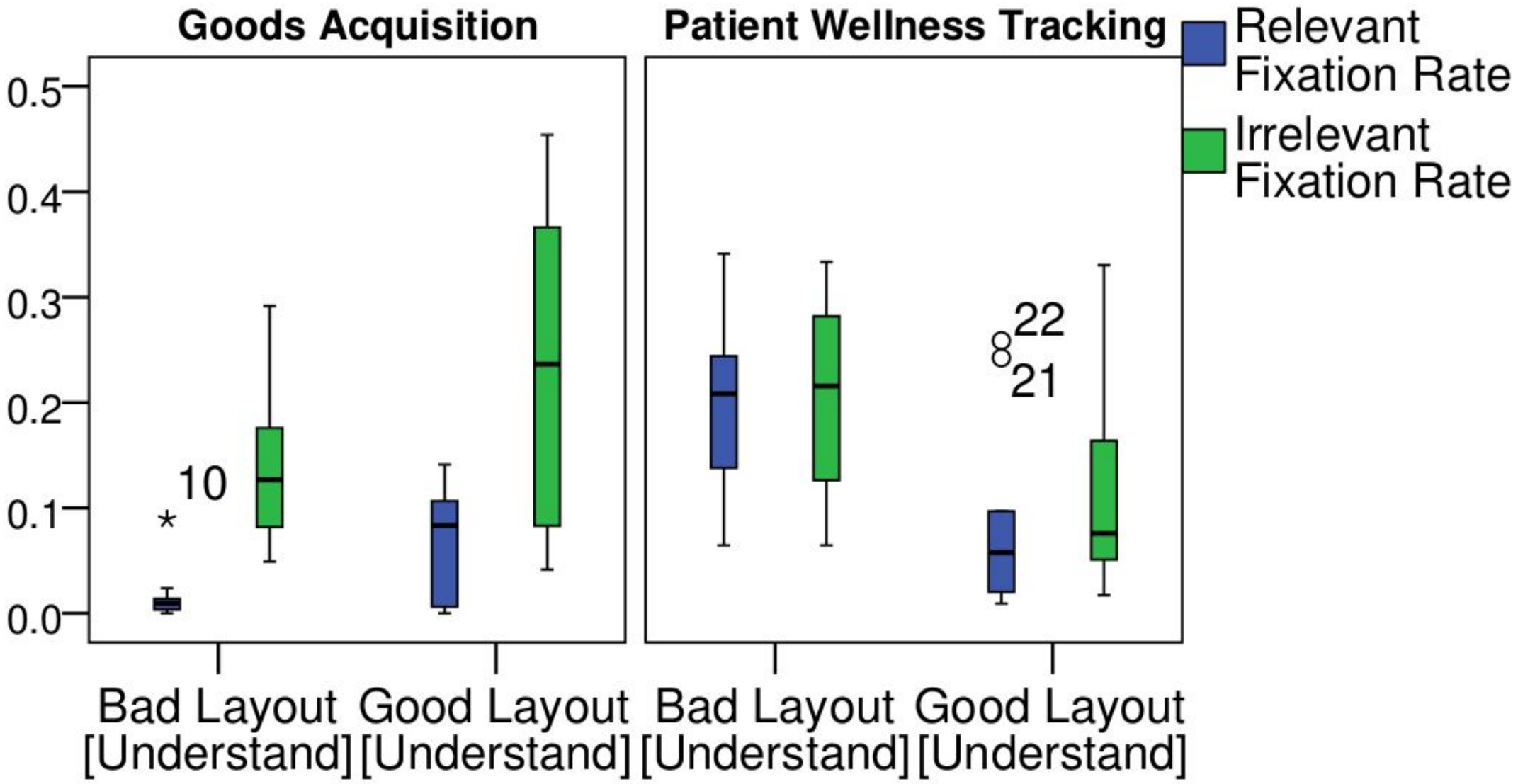
There is no difference in terms of **duration**, between good and bad layouts for both tasks



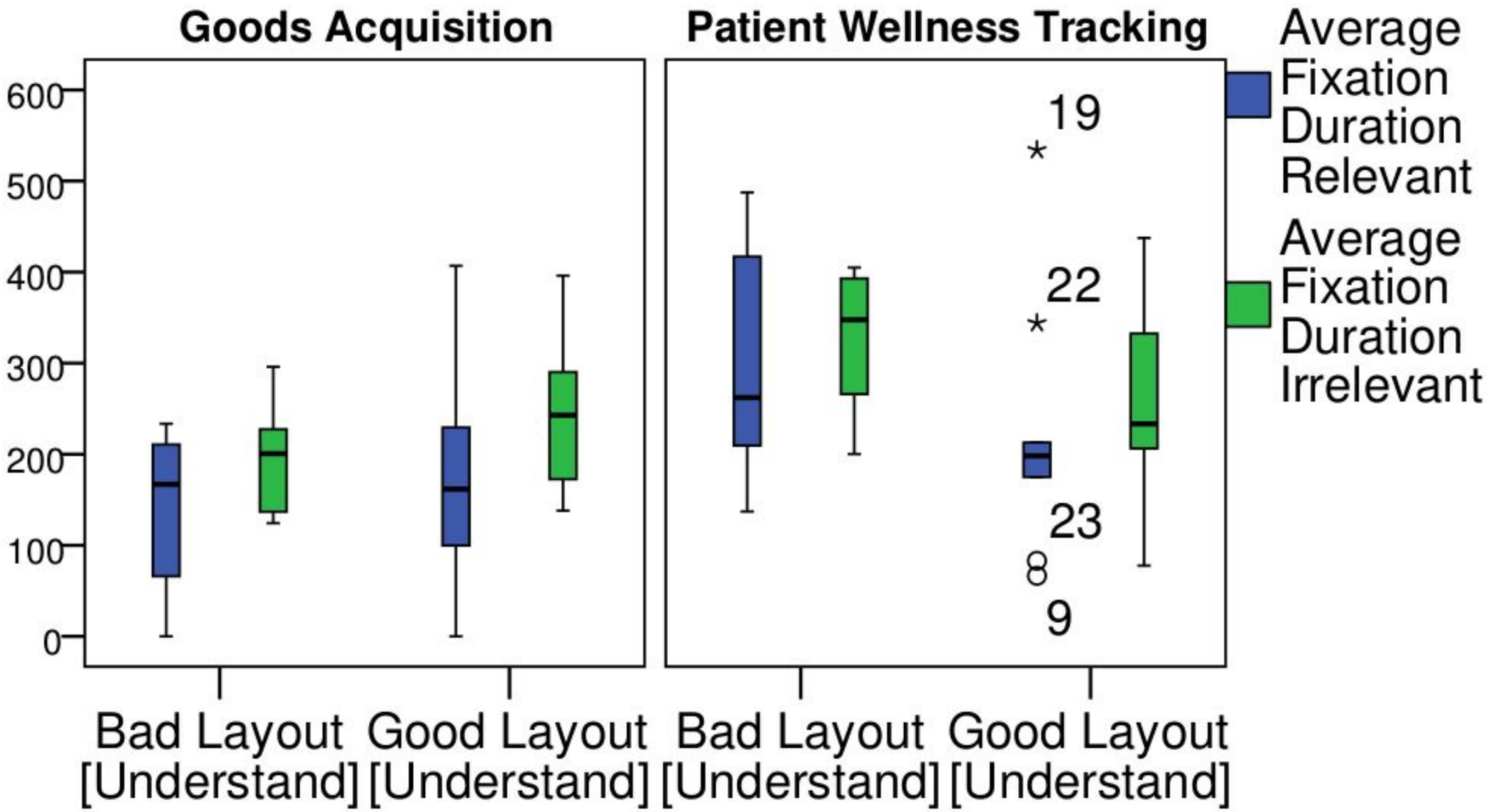
There is no difference in the **perception of complexity** of the tasks, for both layouts



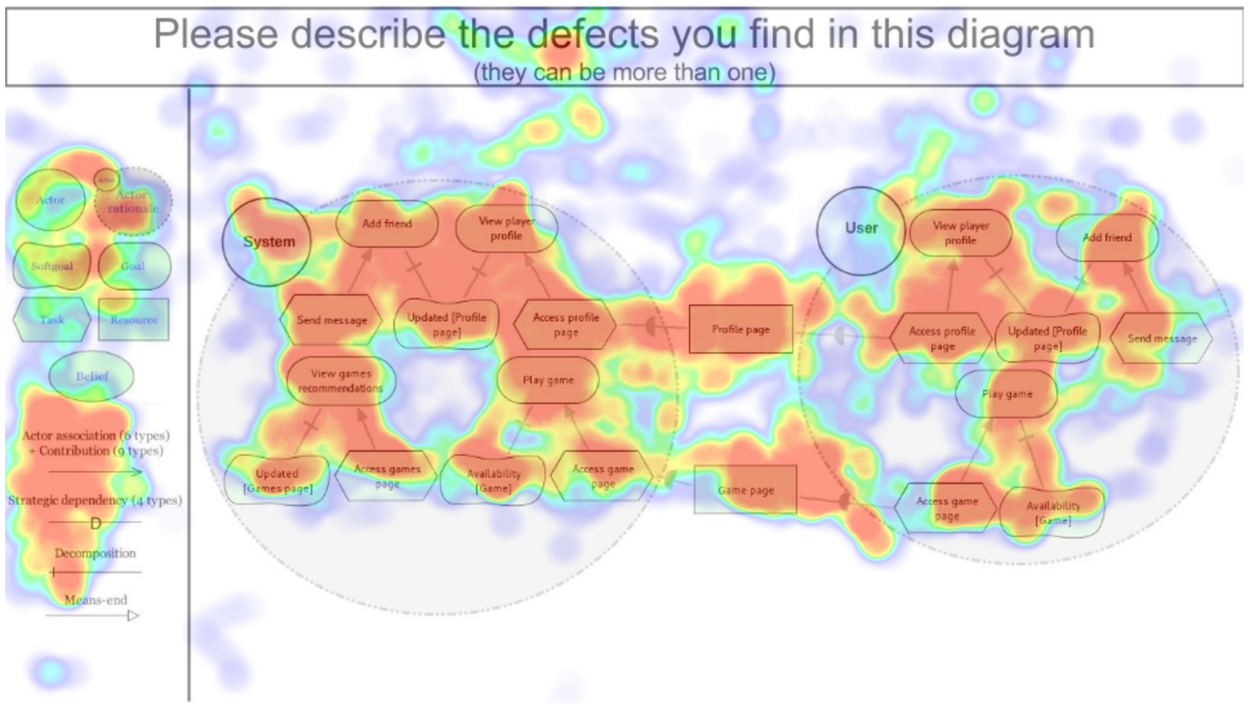
Relevant **fixation rates** were superior in understanding tasks, but the difference for layouts is not statistically significant

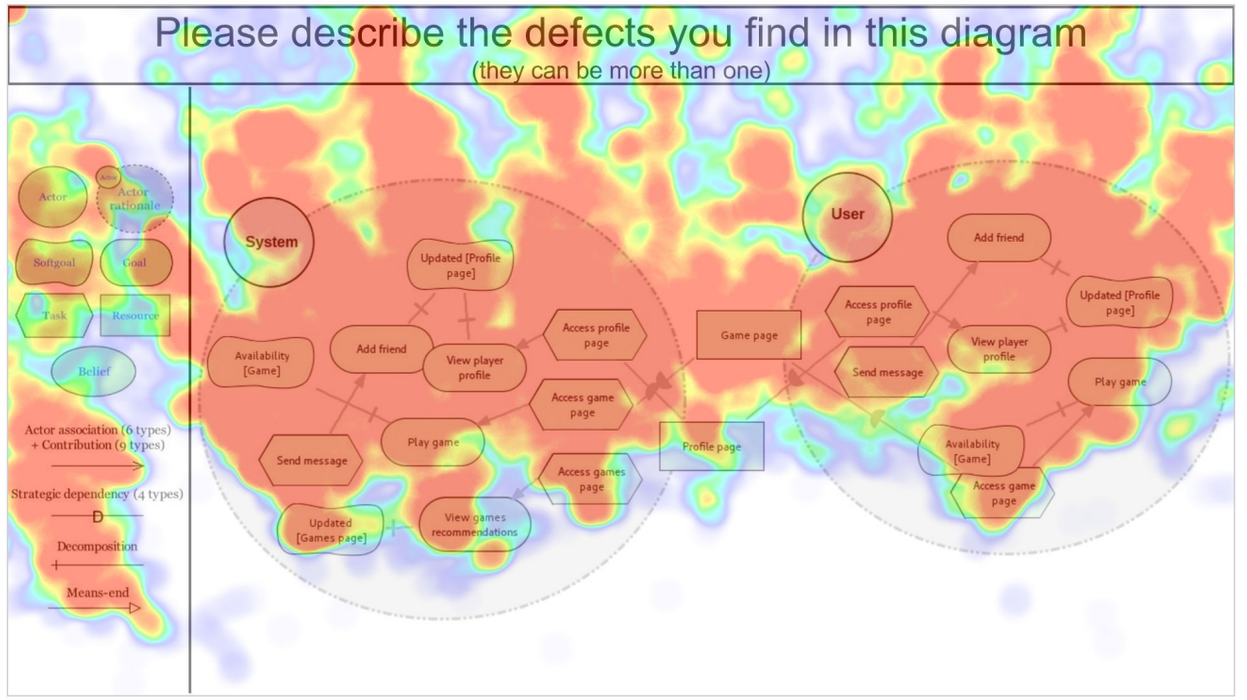


Average fixation duration varies depending on the model, but the difference is not statistically significant



Heat map for the good layout is less scattered than the one for bad layout





Conclusions

Understanding tasks were more accessible than reviewing tasks

The layout was not a significant factor for any of the measures, for both understanding and review tasks

In heap maps for the review tasks, participants' gaze seemed more dispersed by the noise cause by bad layouts

We expect layout quality to have a stronger impact as diagrams increase in size and complexity

Thank you!

Questions?

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