

# STUDYING HUMAN-ROBOT COLLABORATION IN AN ARTISTIC CREATIVE PROCESS

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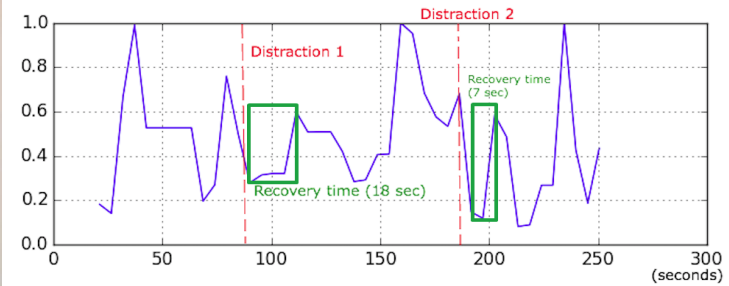
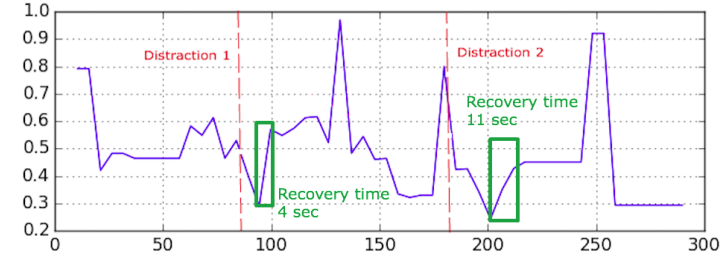
*Aalto University, Finland*

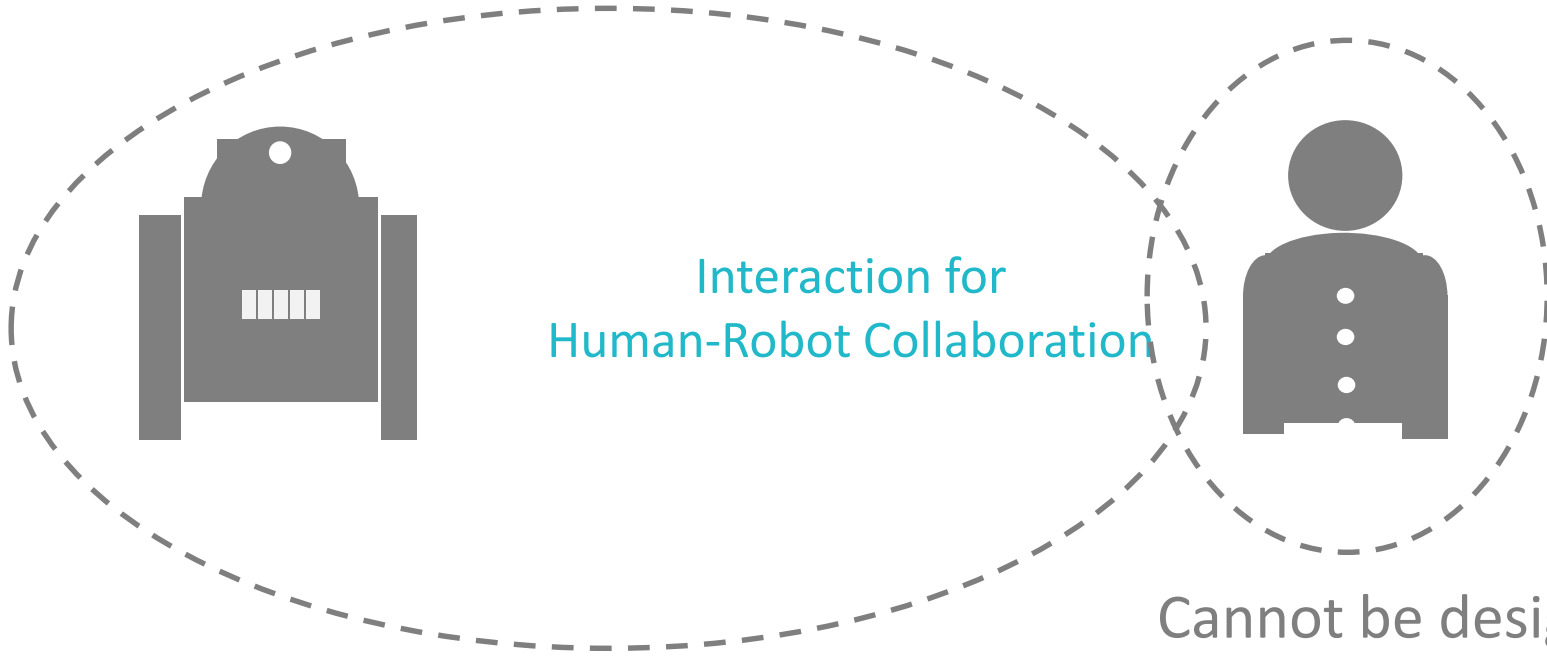




## Network of Interactive Sonic Agents (NOISA)

- The **robotic instrument observes** the performer and **learns** about the piece being composed
- The **robotic instrument monitors the level of engagement** of the musician with the performance activity
- The **robotic instrument observes a drop in engagement, it decides to make interventions coherent with the musical discourse in progress, until performer's engagement recovers.**





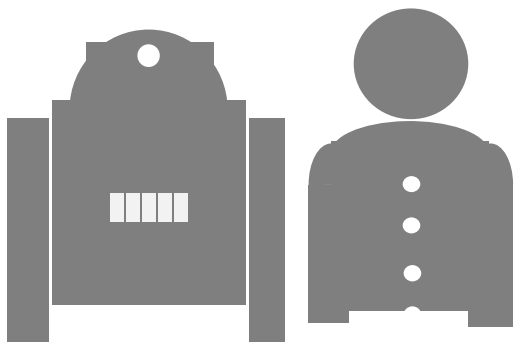
Interaction for  
Human-Robot Collaboration

Can be designed

Cannot be designed,  
only studied and  
understood

*A user-centred design process*

## SOURCES OF REQUIREMENTS



Interaction Design for  
Human-Robot Collaboration:  
*A user-centred design process*

### TECHNOLOGY FACTORS

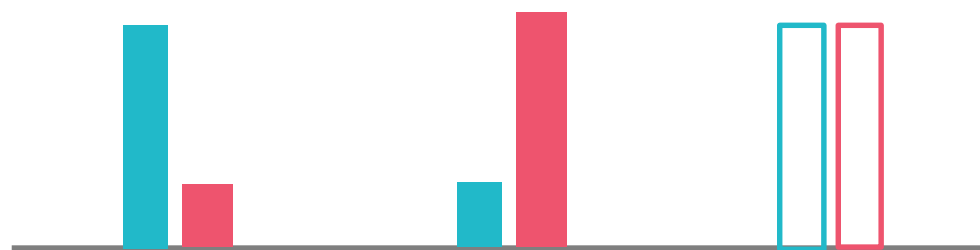
Availability  
Affordability  
Versatility  
Complexity...

### HUMAN FACTORS

Cognitive  
Perceptual  
Emotional  
Socio-cultural...

### APPLICATION -DOMAIN FACTORS

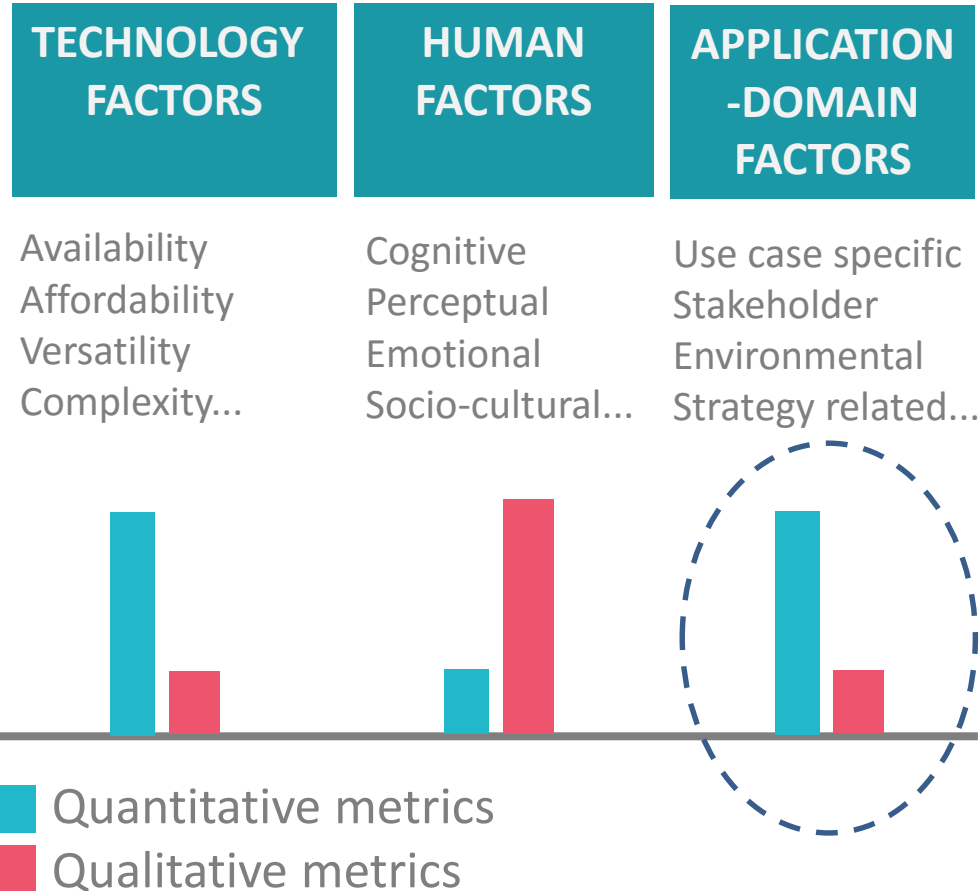
Use case specific  
Stakeholder  
Environmental  
End -goal related...



Select "mix of metrics" to  
evaluate requirements

 Quantitative metrics  
 Qualitative metrics

## SOURCES OF REQUIREMENTS



## PRODUCTIVITY

### APPLICATION DOMAIN:

*E.g.: "Collaborative*

*assembly of a product, from its components"*

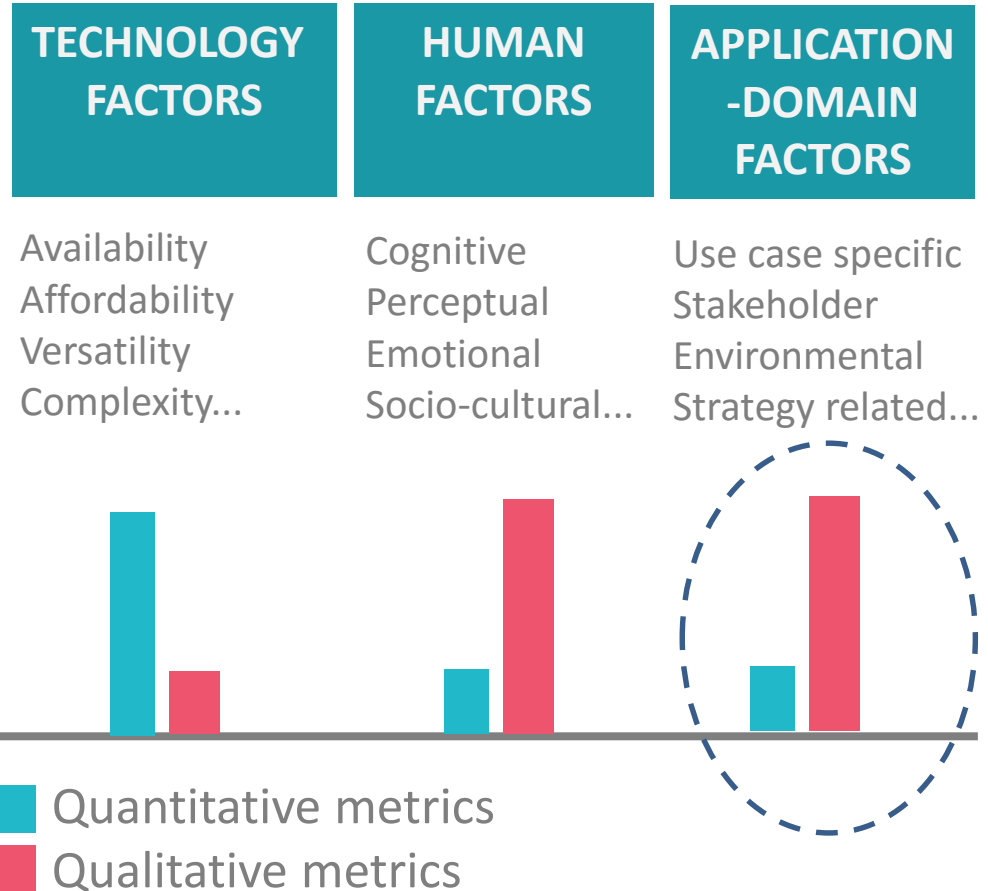
- **Person and robot share same exact target model**
- **Productivity metrics mostly**

## ARTISTIC CREATIVE APPLICATION DOMAIN:

*E.g.: "Collaborative musical  
creation through live  
improvisation"*

- **An exact target model does not exist, only intentions on the artist's mind**
- **Largely qualitative metrics of an aesthetic and heavily subjective nature**

## SOURCES OF REQUIREMENTS



PARKE TEKNOLOGIKOA  
C/ Iñaki Goenaga, 5  
20600 EIBAR GIPUZKOA  
SPAIN  
[www.tekniker.es](http://www.tekniker.es)

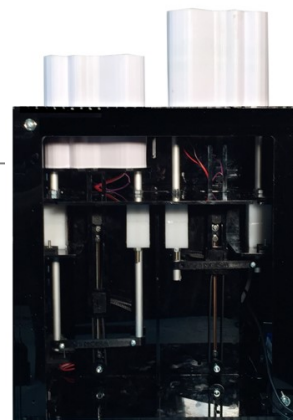


# THANK YOU

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