

# Enabling Socially Competent navigation through incorporating HRI

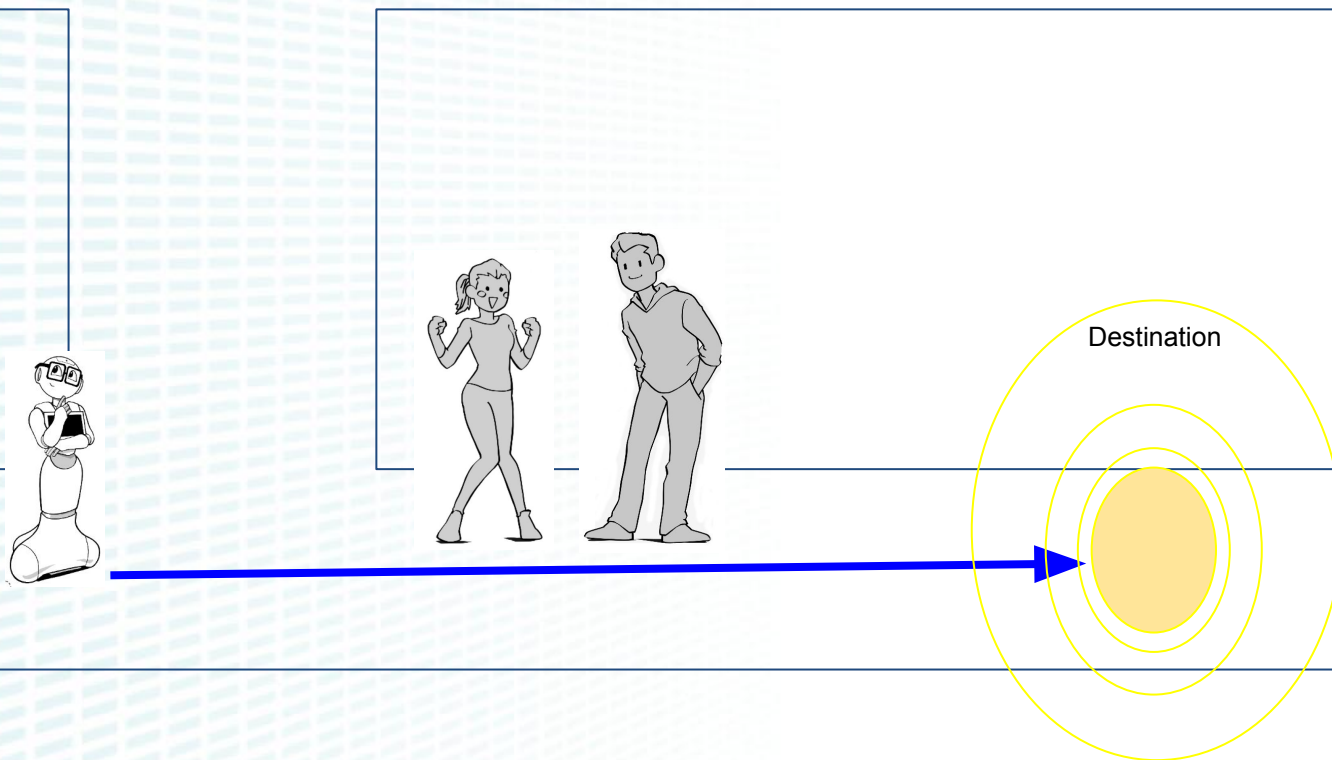
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Softbank Robotics Europe

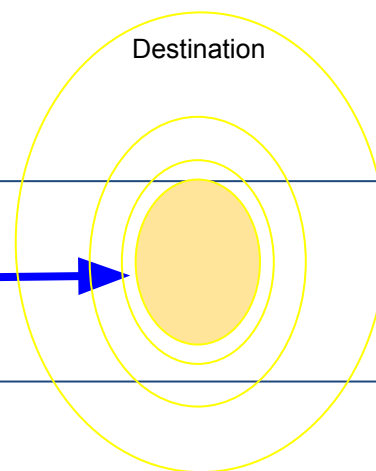
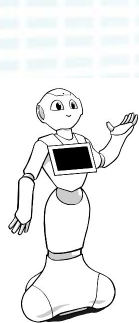
Paris, Ile de France

March 11, 2019

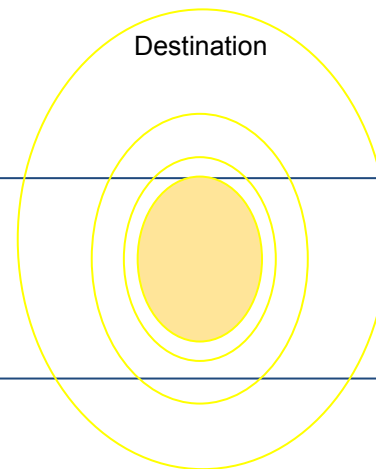
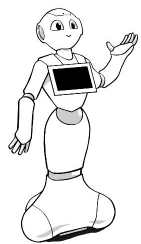
# Motivation



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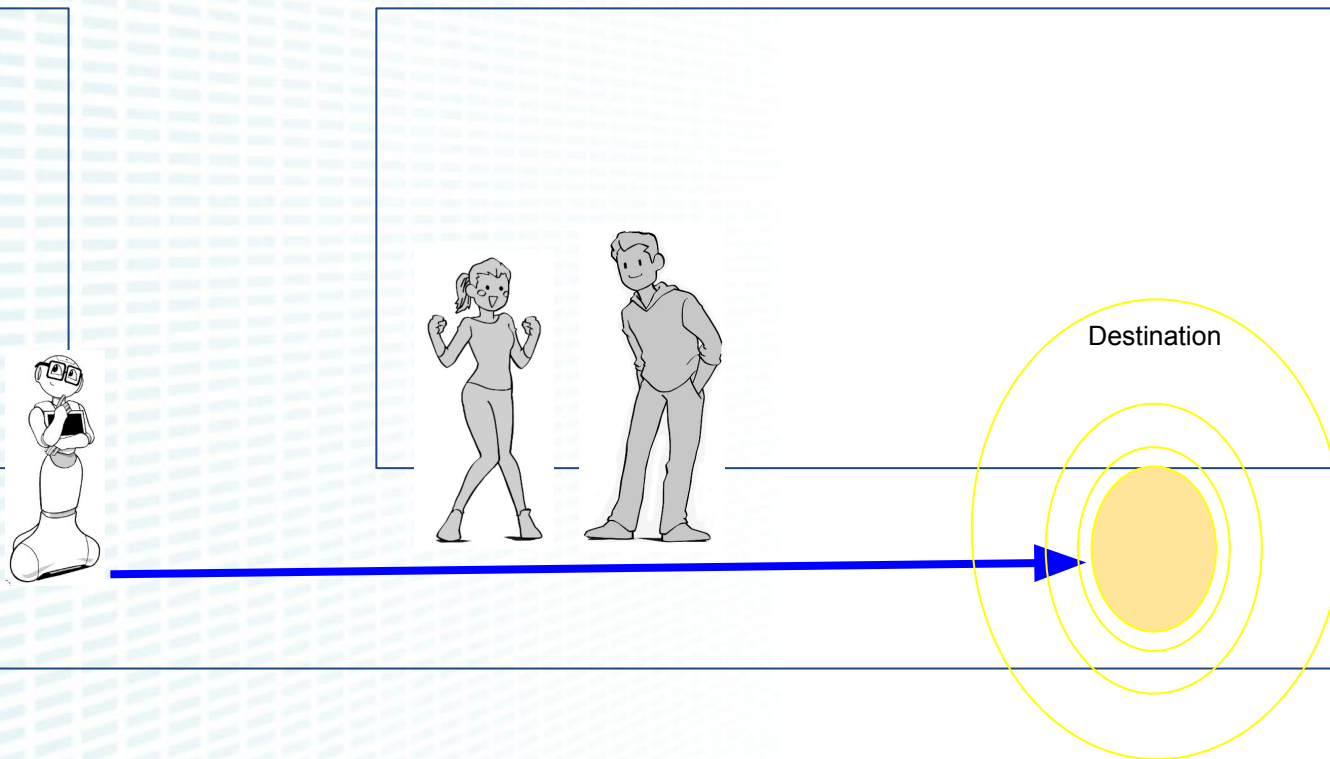


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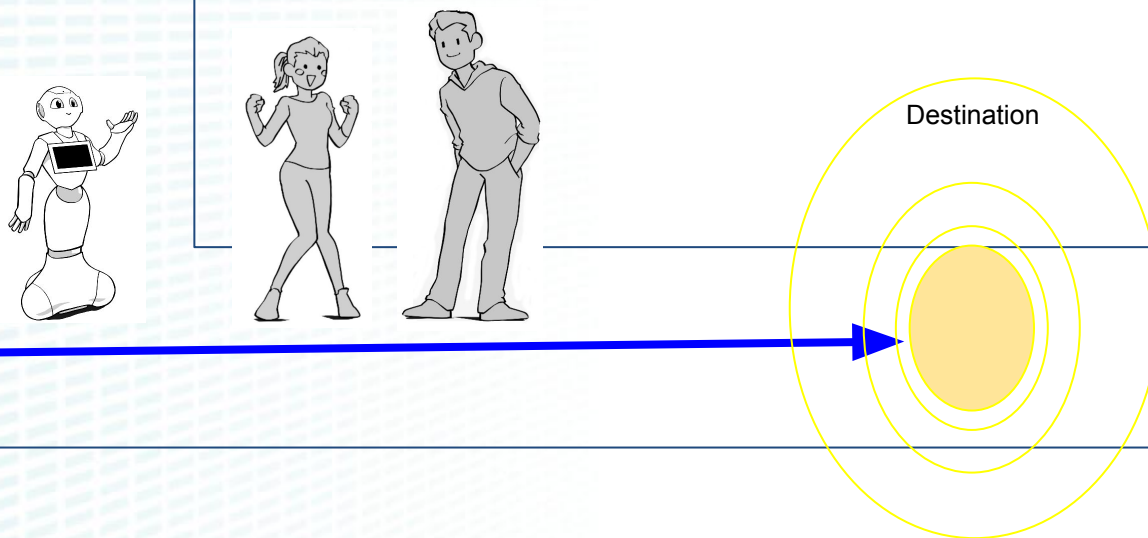




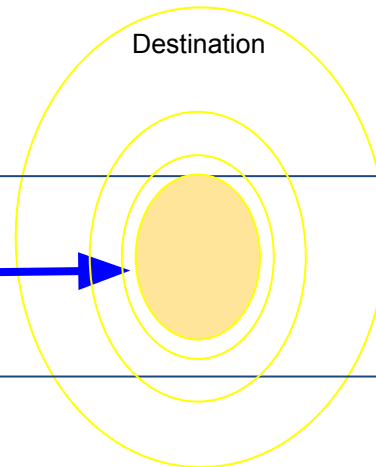
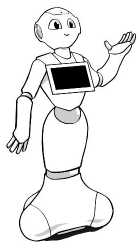
# Approach



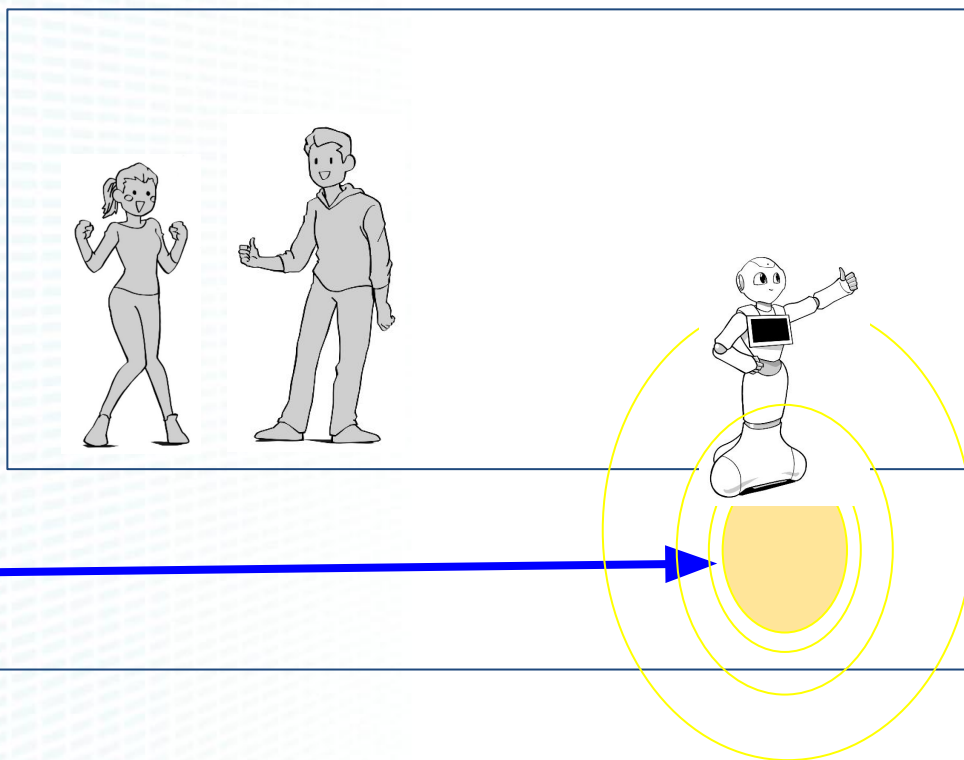
# Approach



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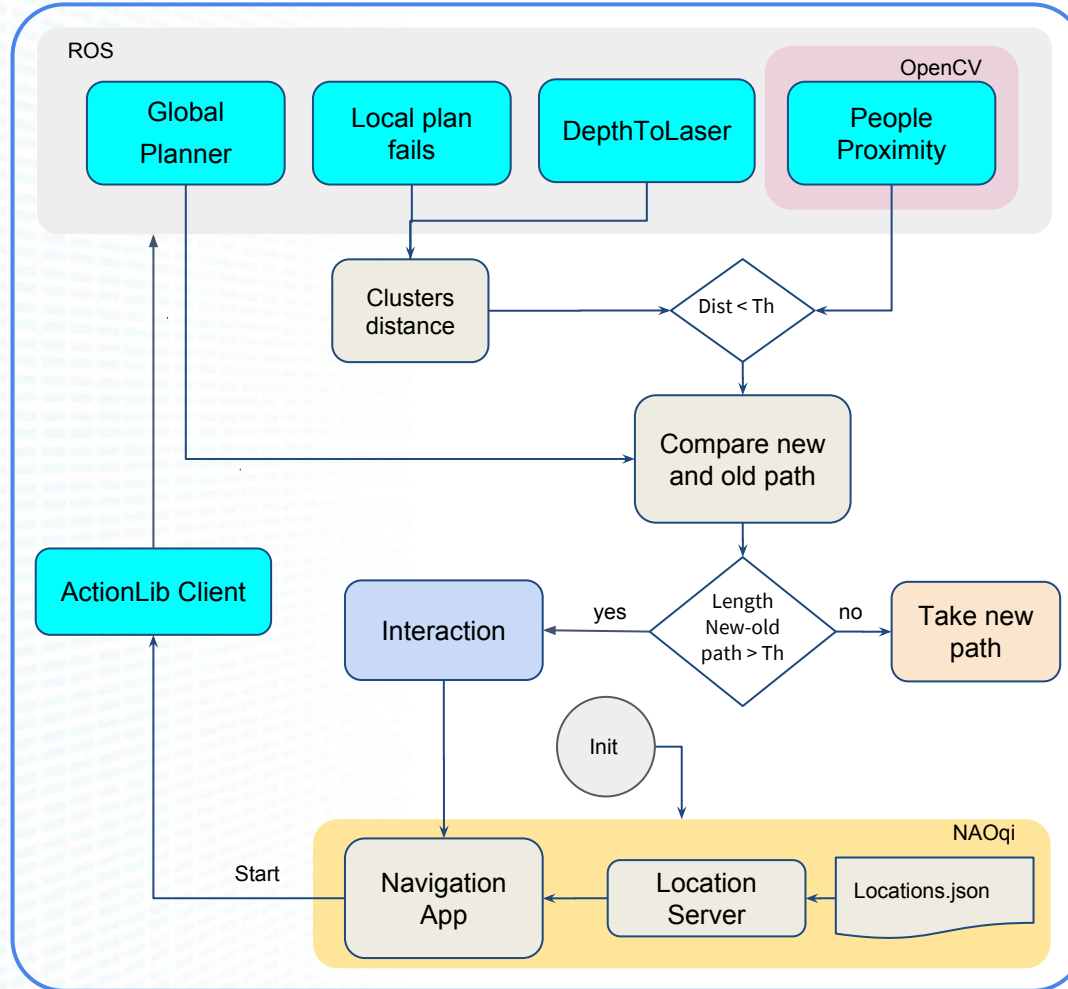


# Approach





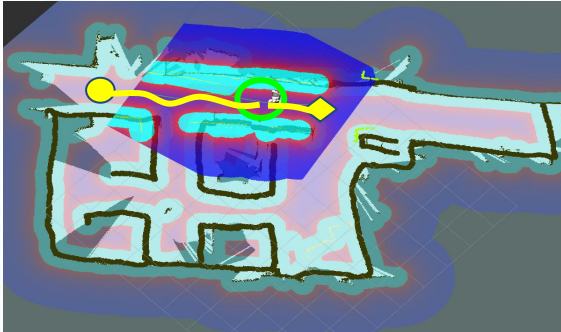
# Situation Assessment Workflow



# Results

## Conventional Navigation

**Currently the robot FREEZES or REPLANS**



No obstacles

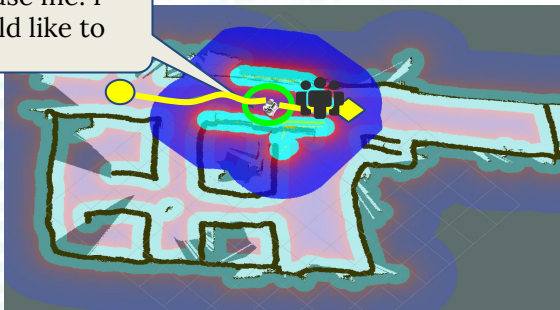


People considered as obstacles

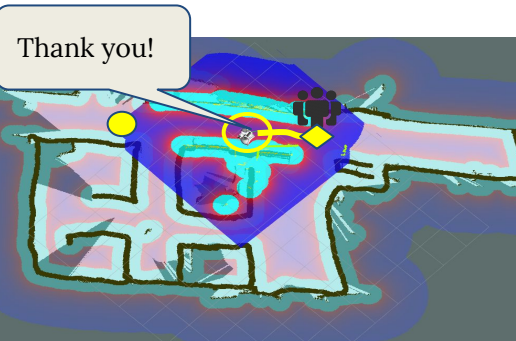
## Human-Aware Navigation

**Robot can continue its initial plan**

Excuse me! I would like to pass



People blocking the path



Human and Interaction-Aware Navigation

Initial Point ●

End Point ◆

# Limitations & Next Steps

- Due to off-board computation, the segmentation of the network penalizes the performance of the people perception module.
- The situation assessment working principle is not embedded into the local planner; an integrated consolidated approach could be provided.
- Further implementation needs to be done in order to include the use of social and individual situations to modulate the specified threshold or *degree of consideration*.