

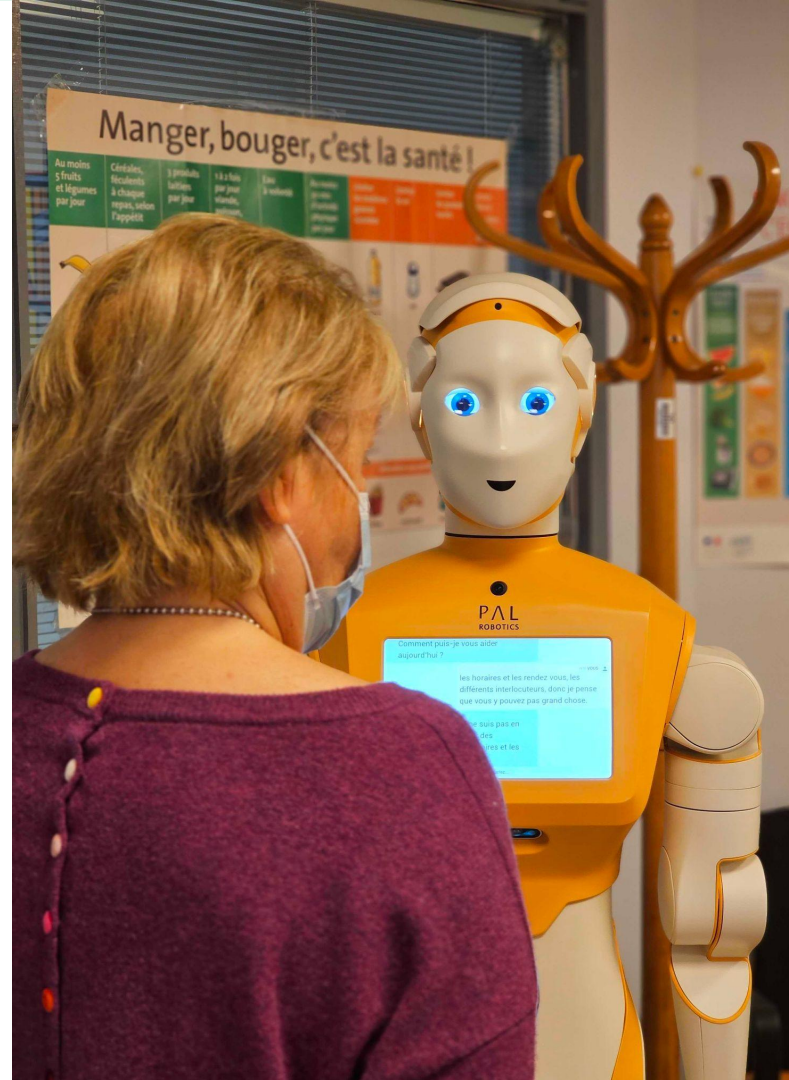


SPRING Architecture Overview

Séverin Lemaignan - PAL Robotics
SoRAIM Winter School - Grenoble, Feb 2024



What does it take to build an autonomous robot?





"Cognitive" architecture?

Principles and
Mechanisms
(developmental,
computational
constraints, etc)



Computational
Implementation



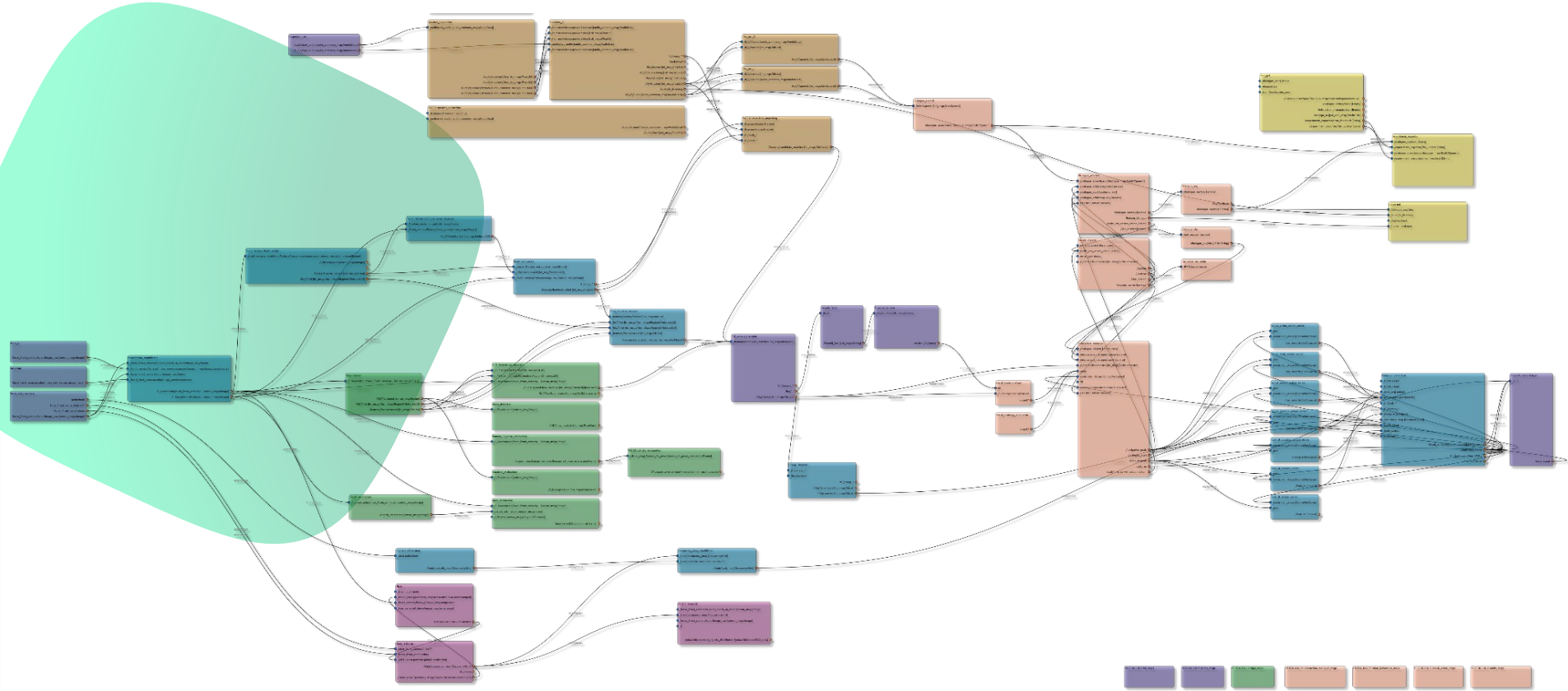
Experiment



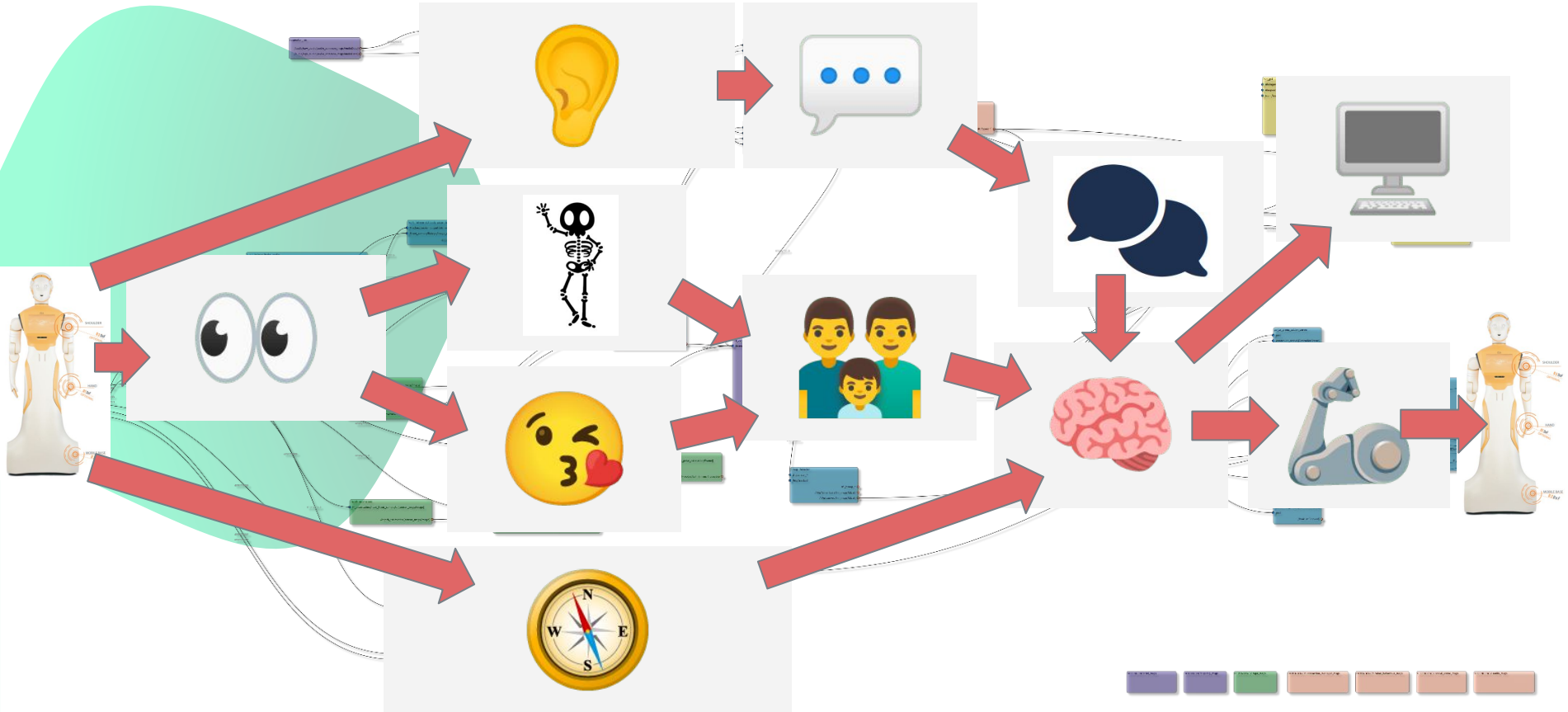
Computational Implementation



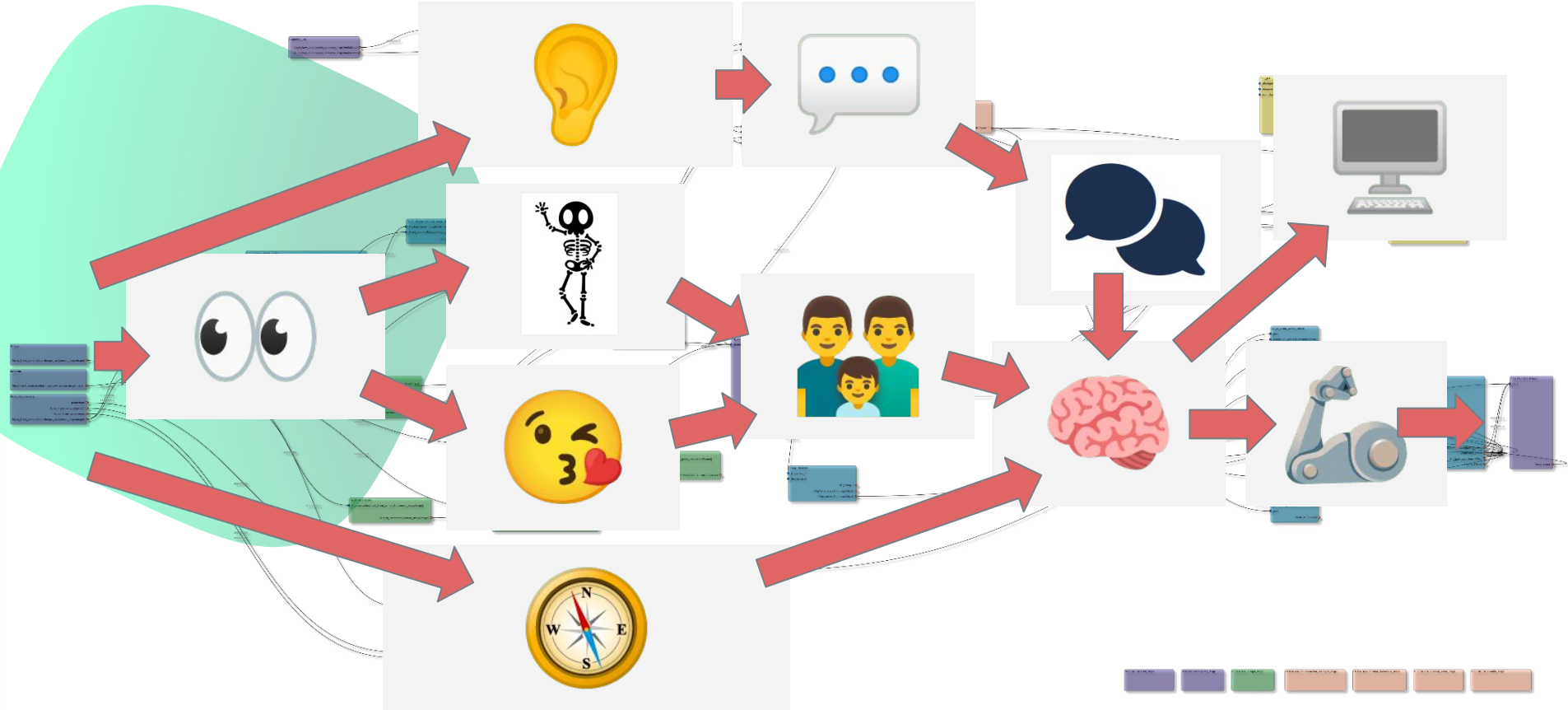
SPRING architecture



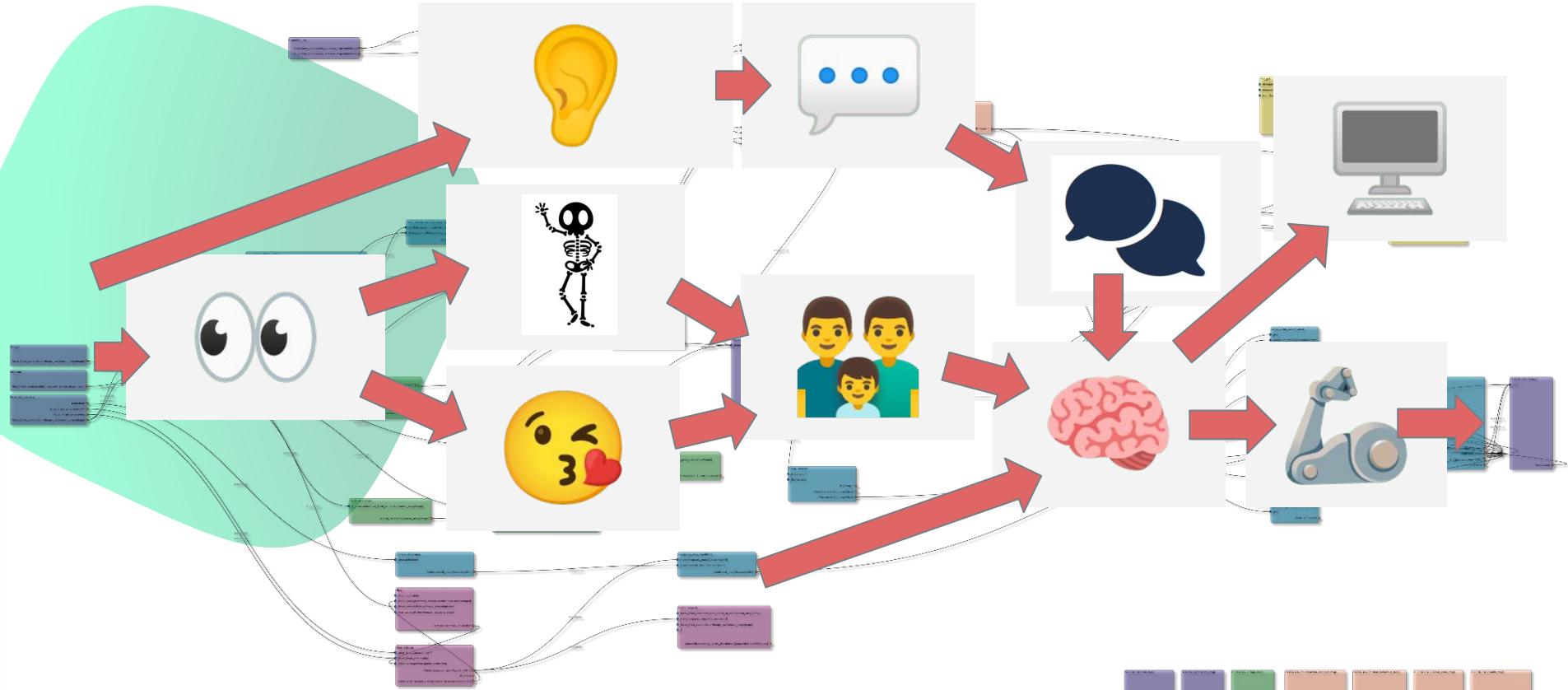
SPRING architecture

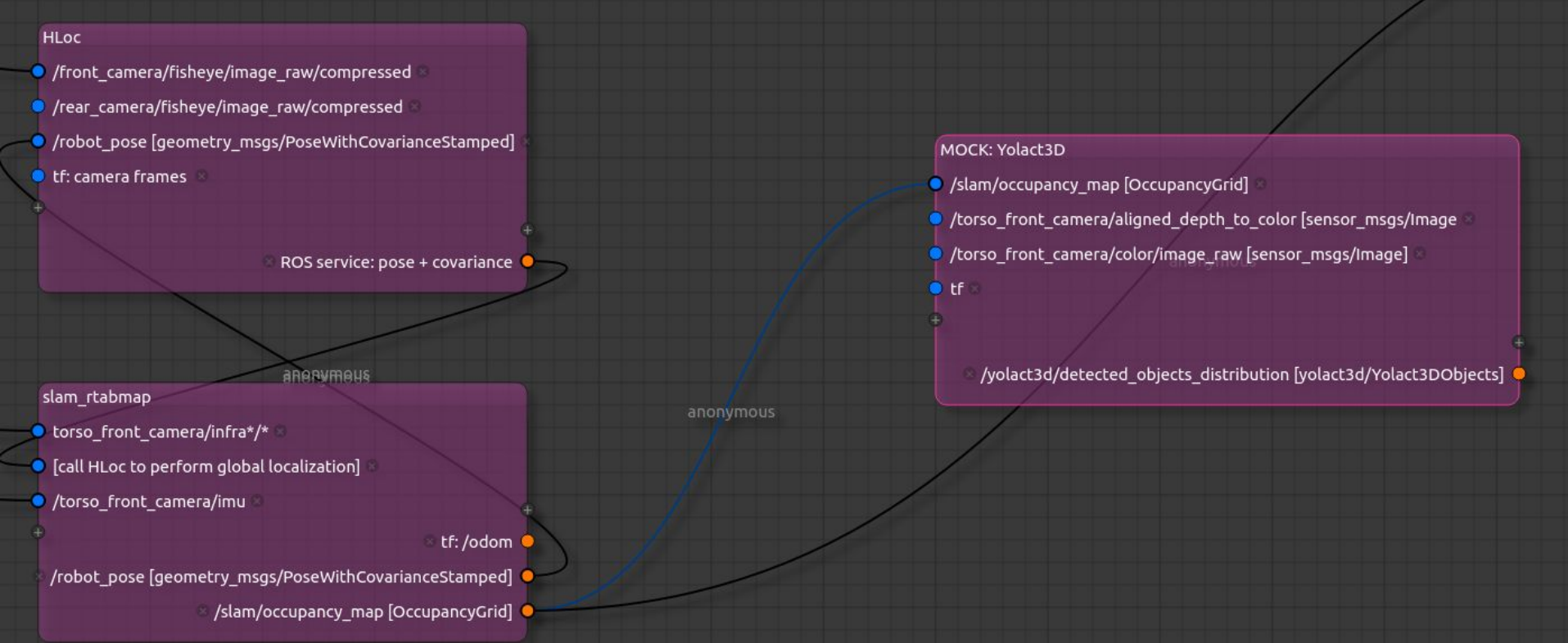


SPRING architecture



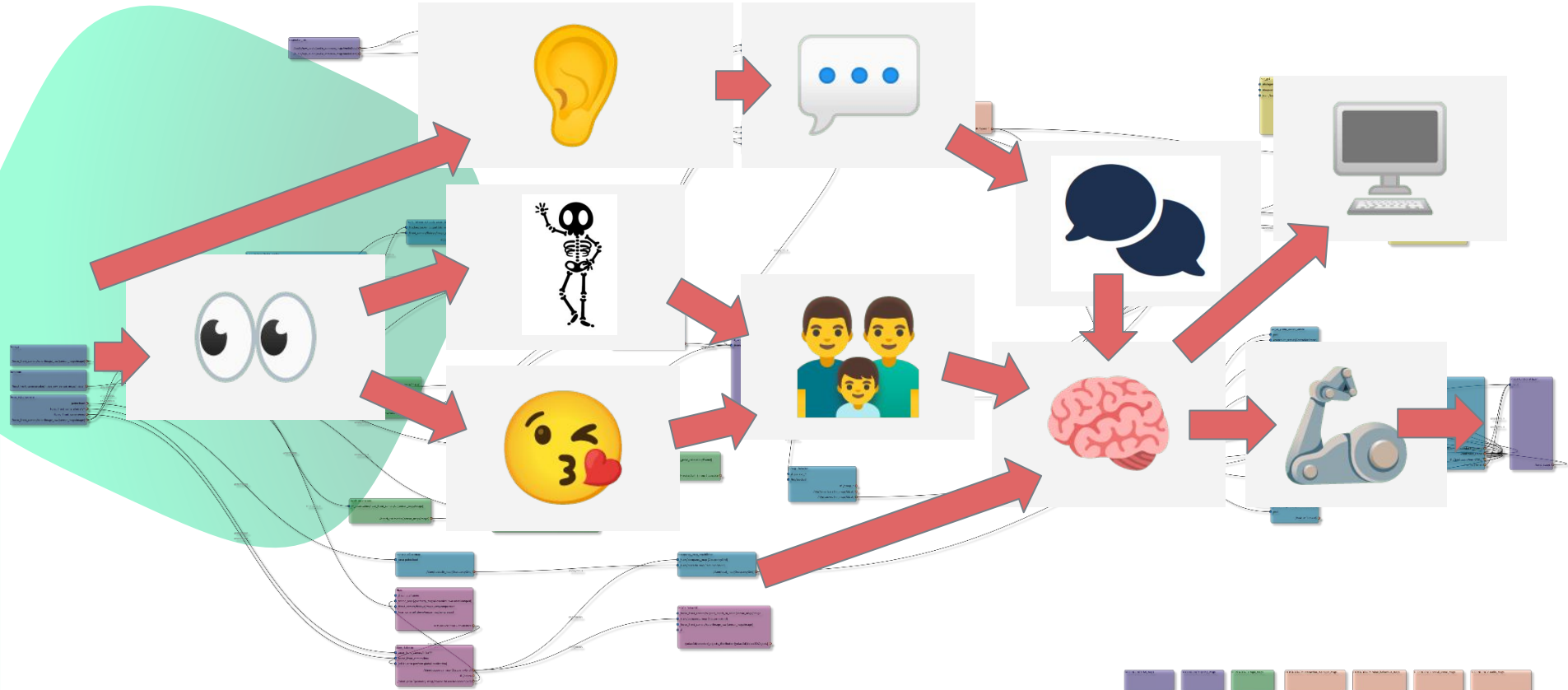
SPRING architecture



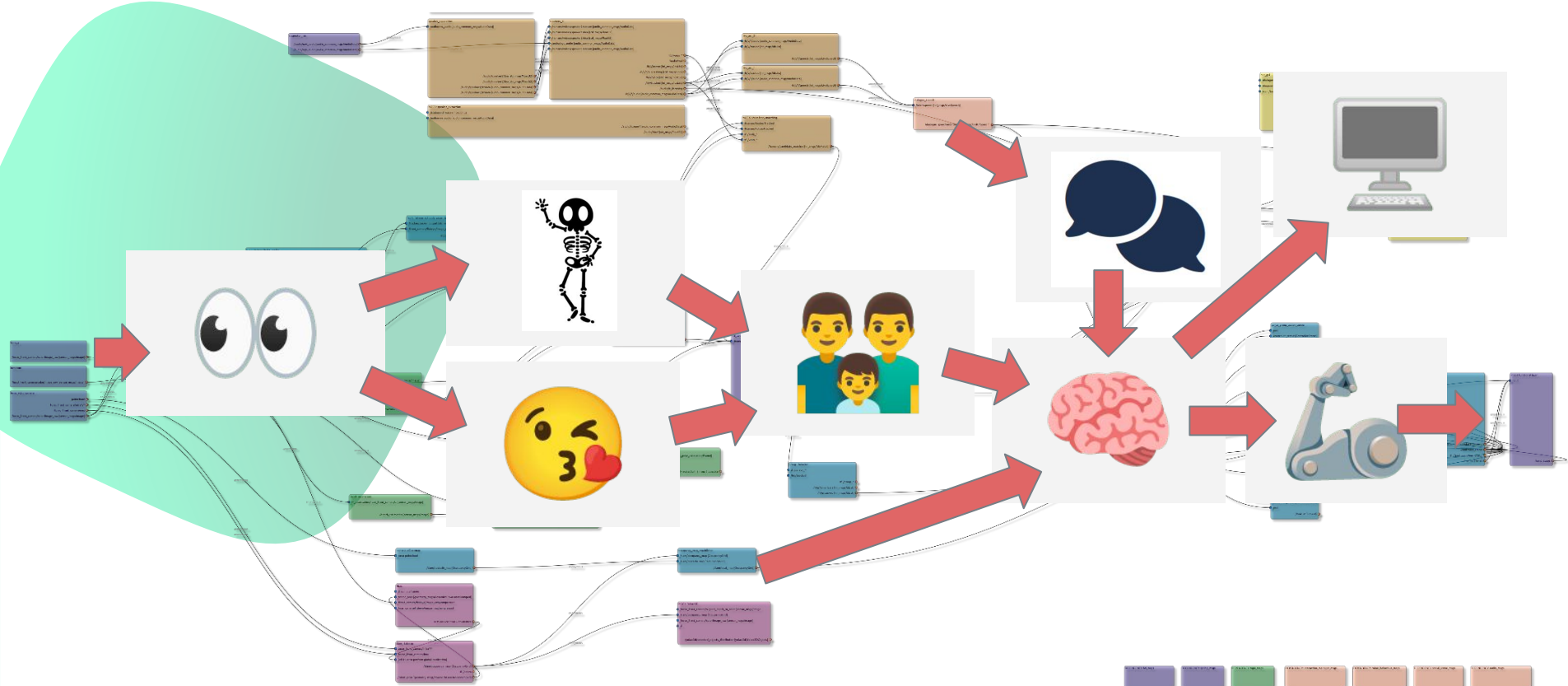


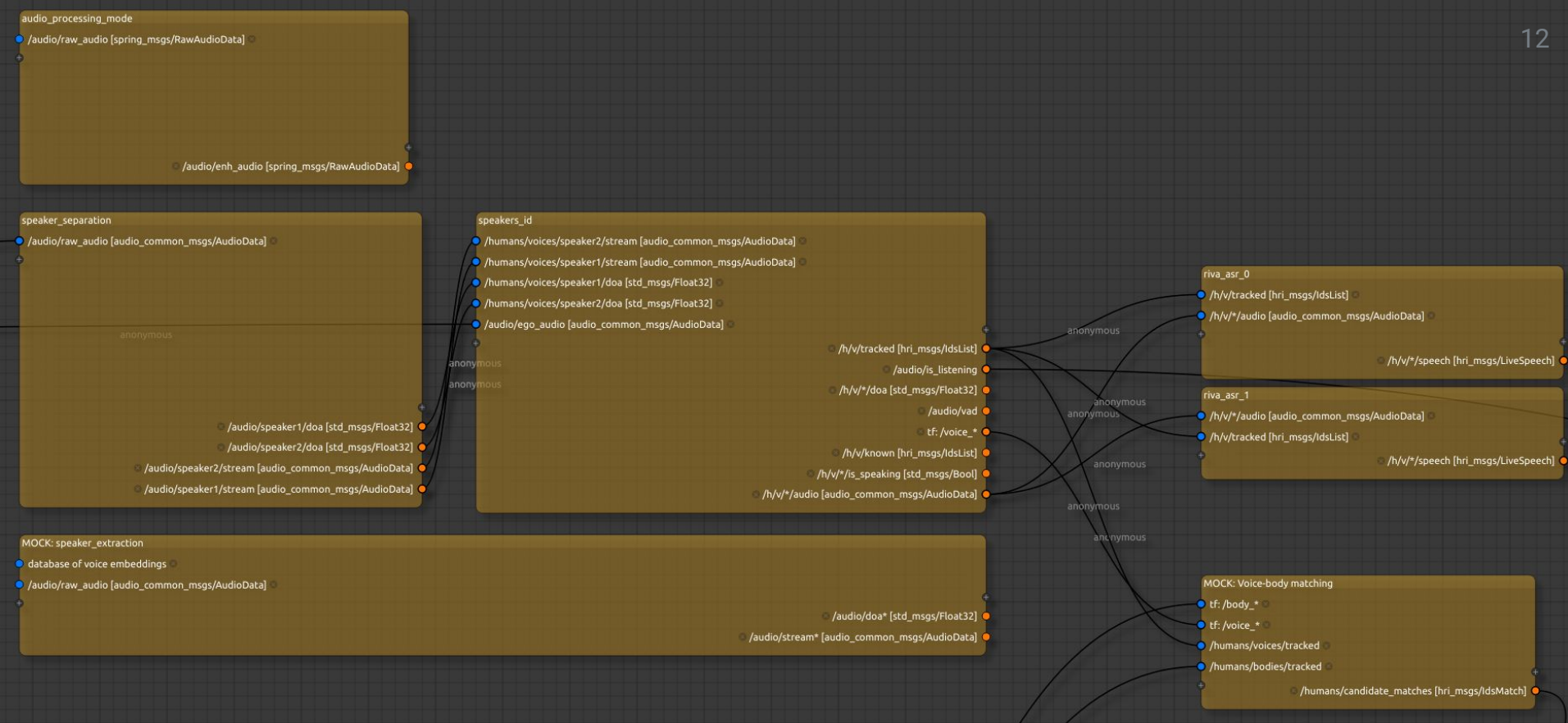
Scene perception and understanding

SPRING architecture



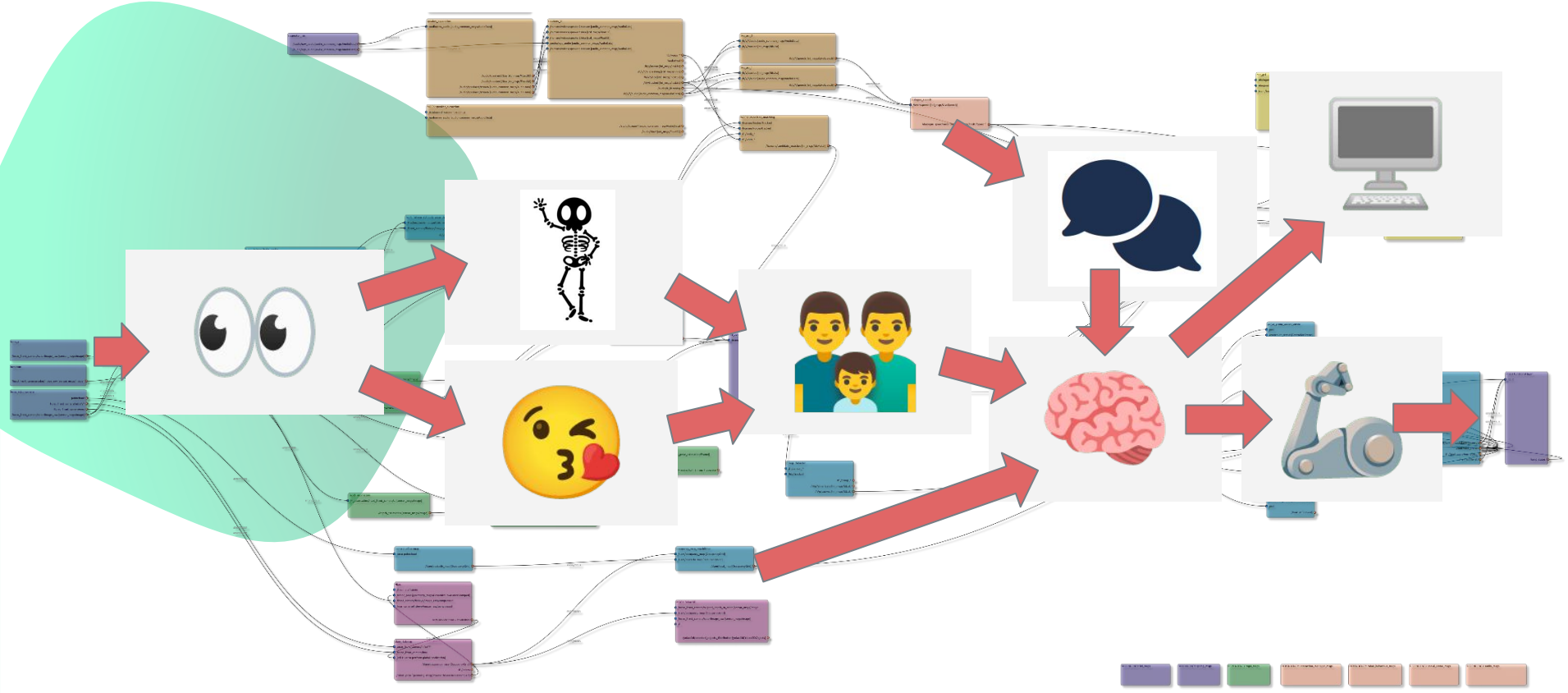
SPRING architecture



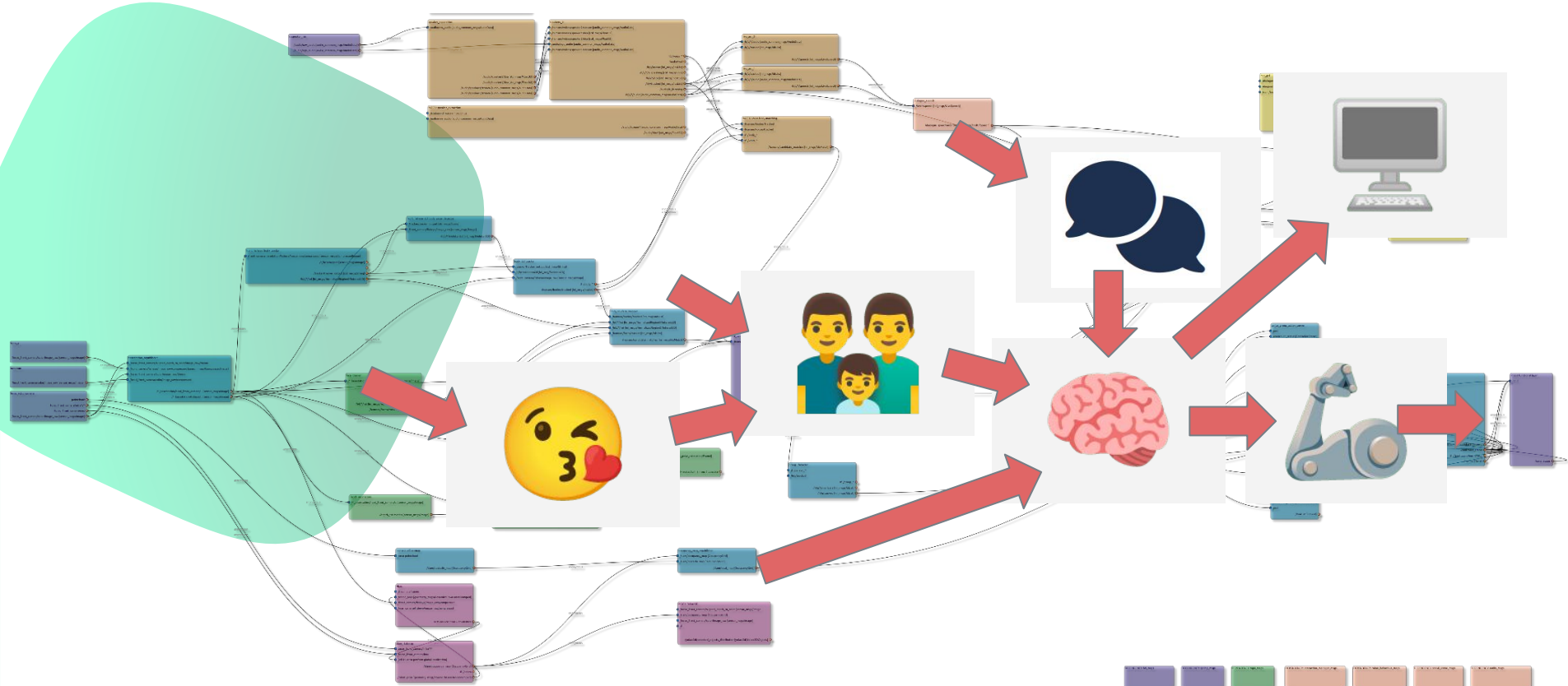


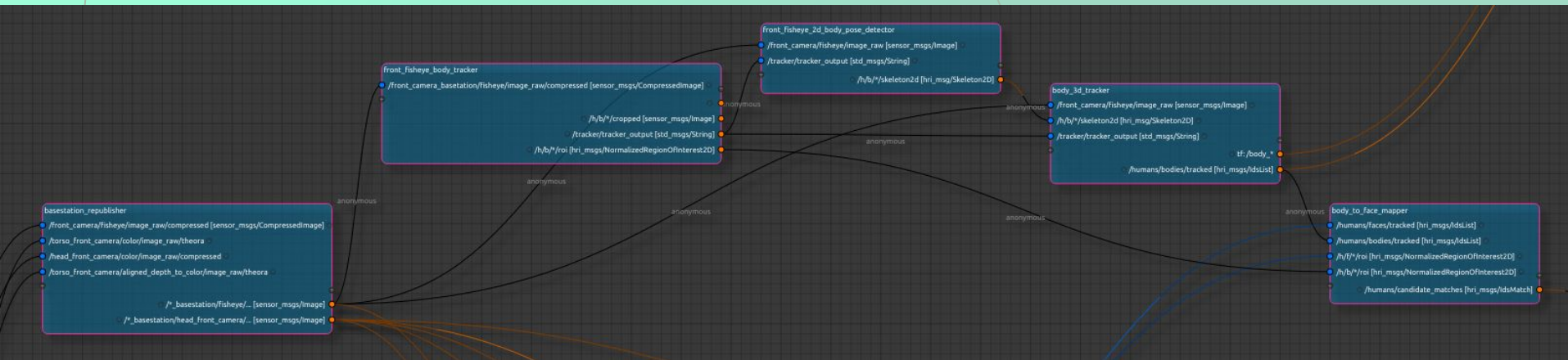
Audio processing and speech recognition

SPRING architecture



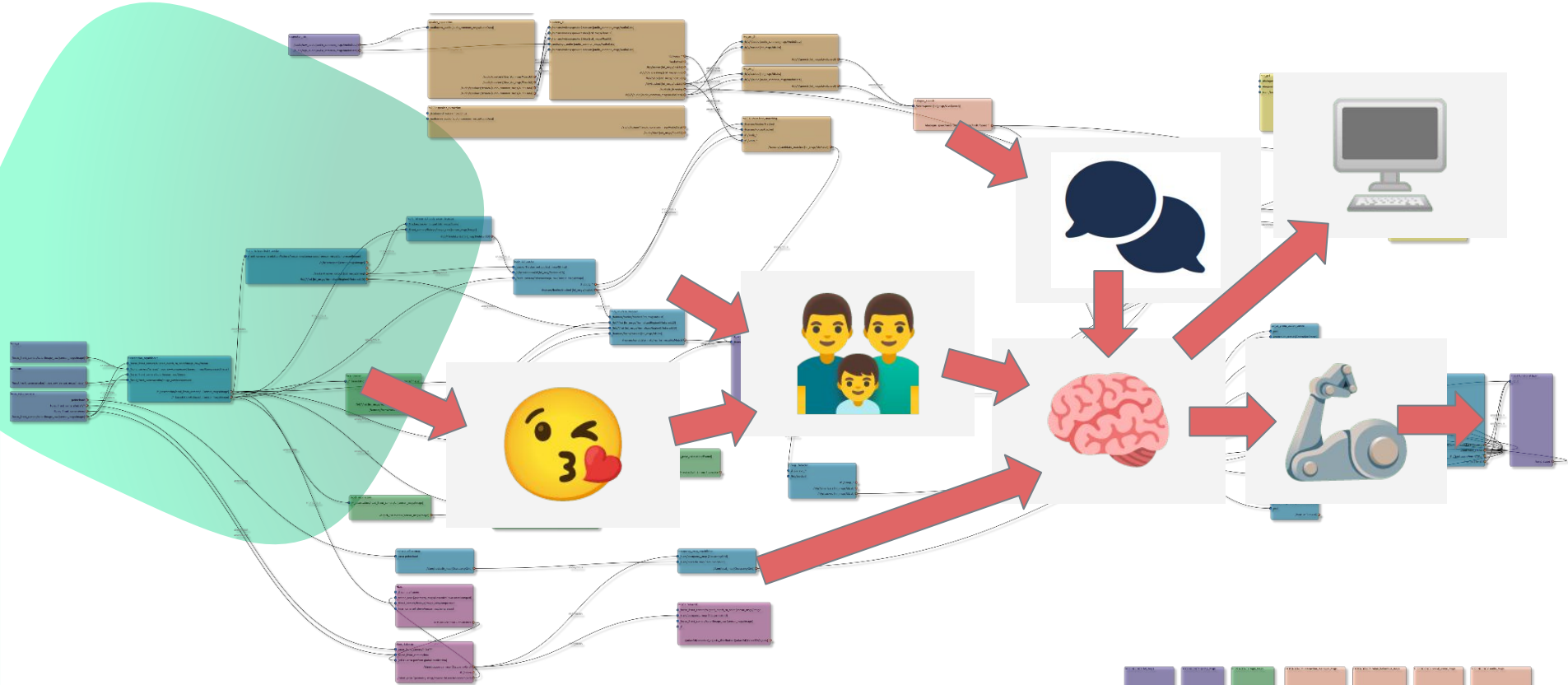
SPRING architecture



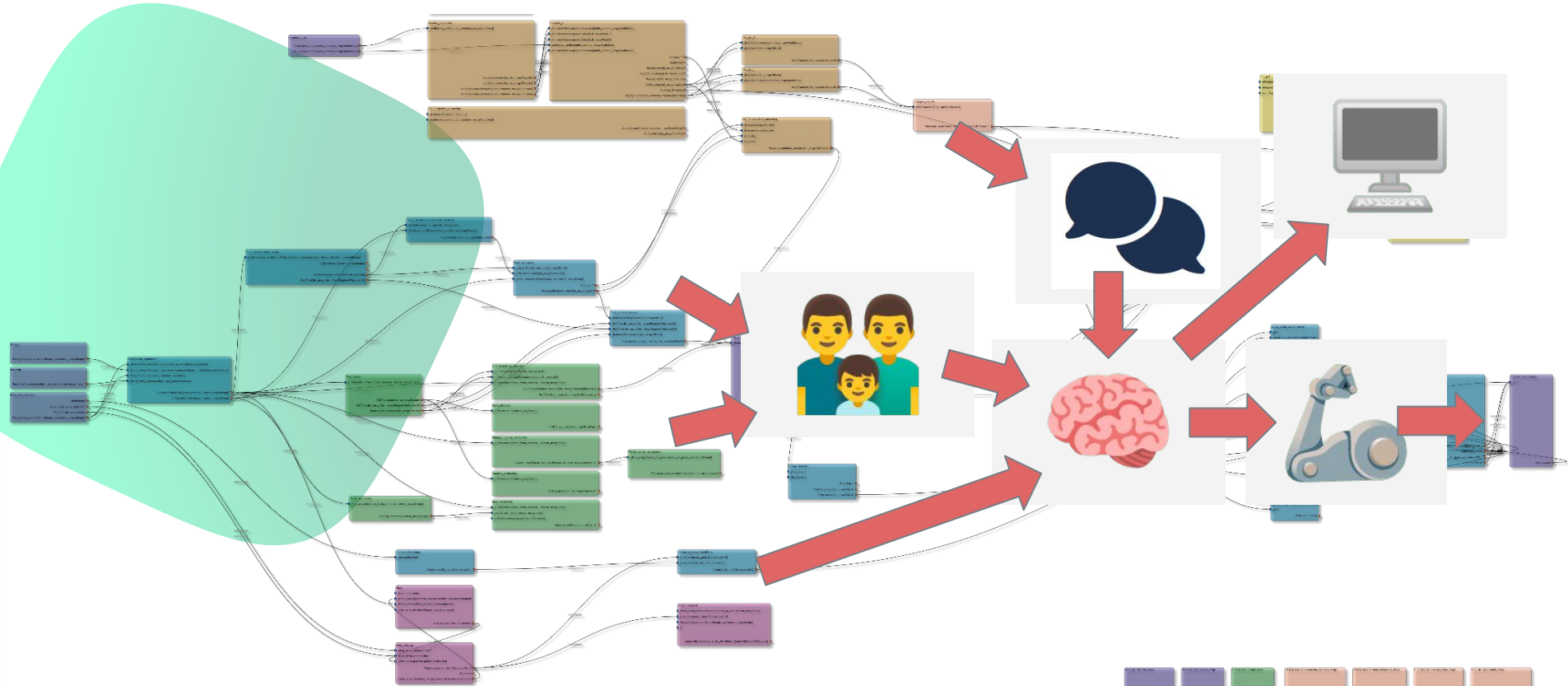


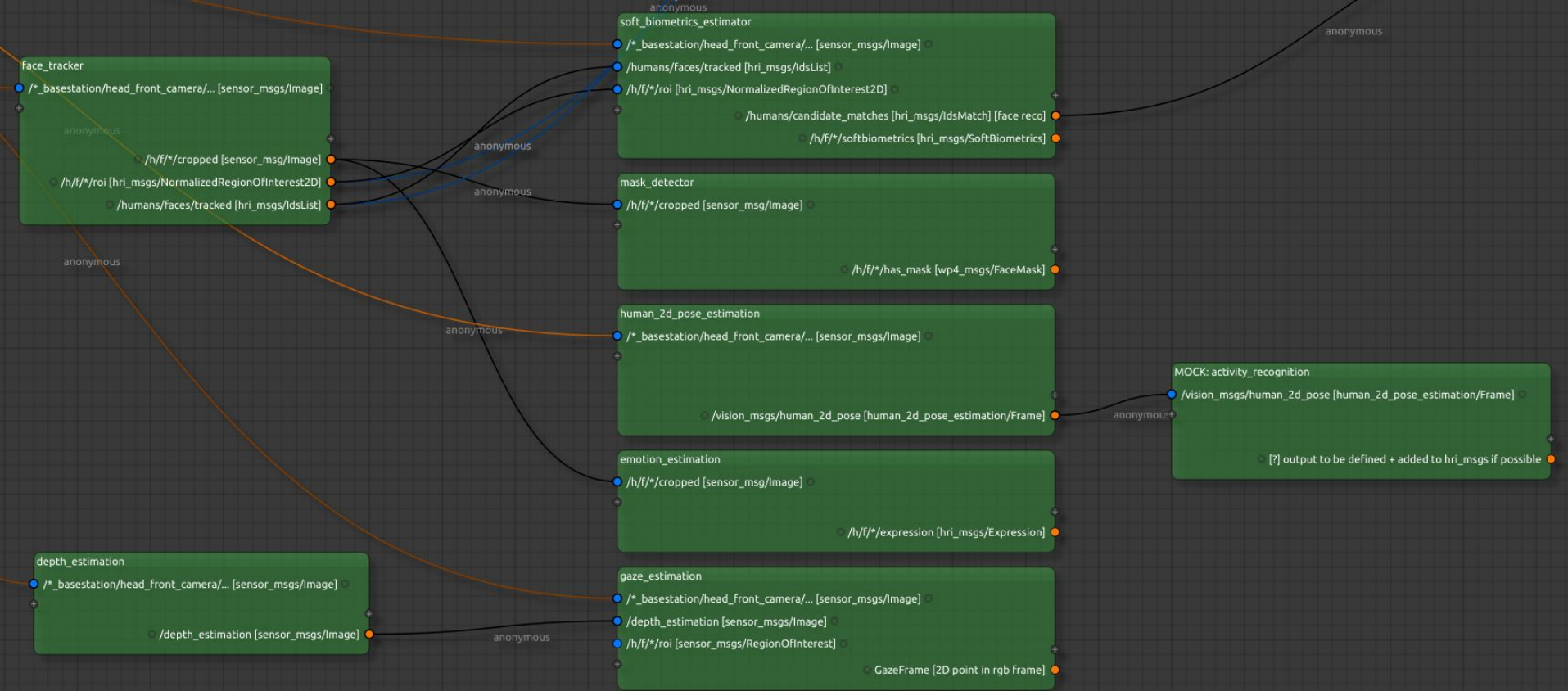
Multi-person visual tracking

SPRING architecture



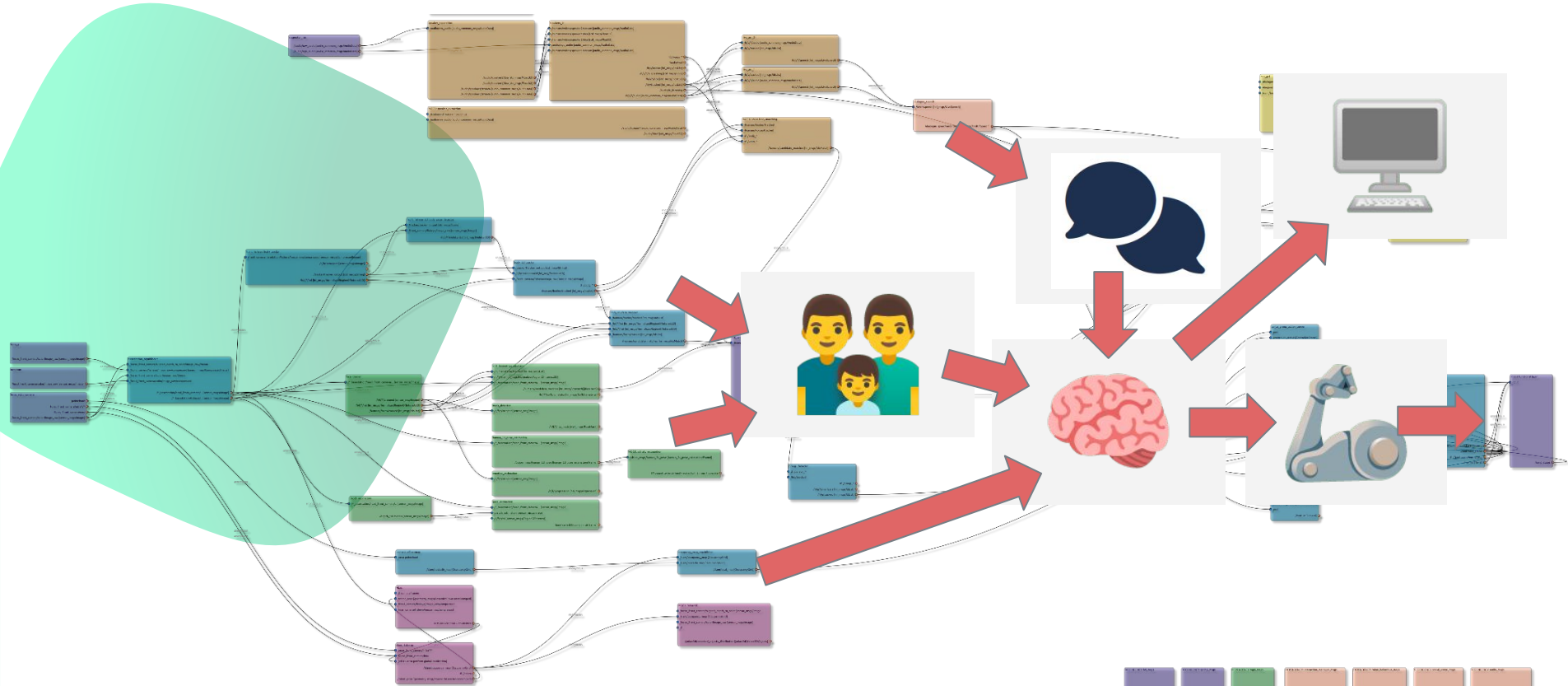
SPRING architecture



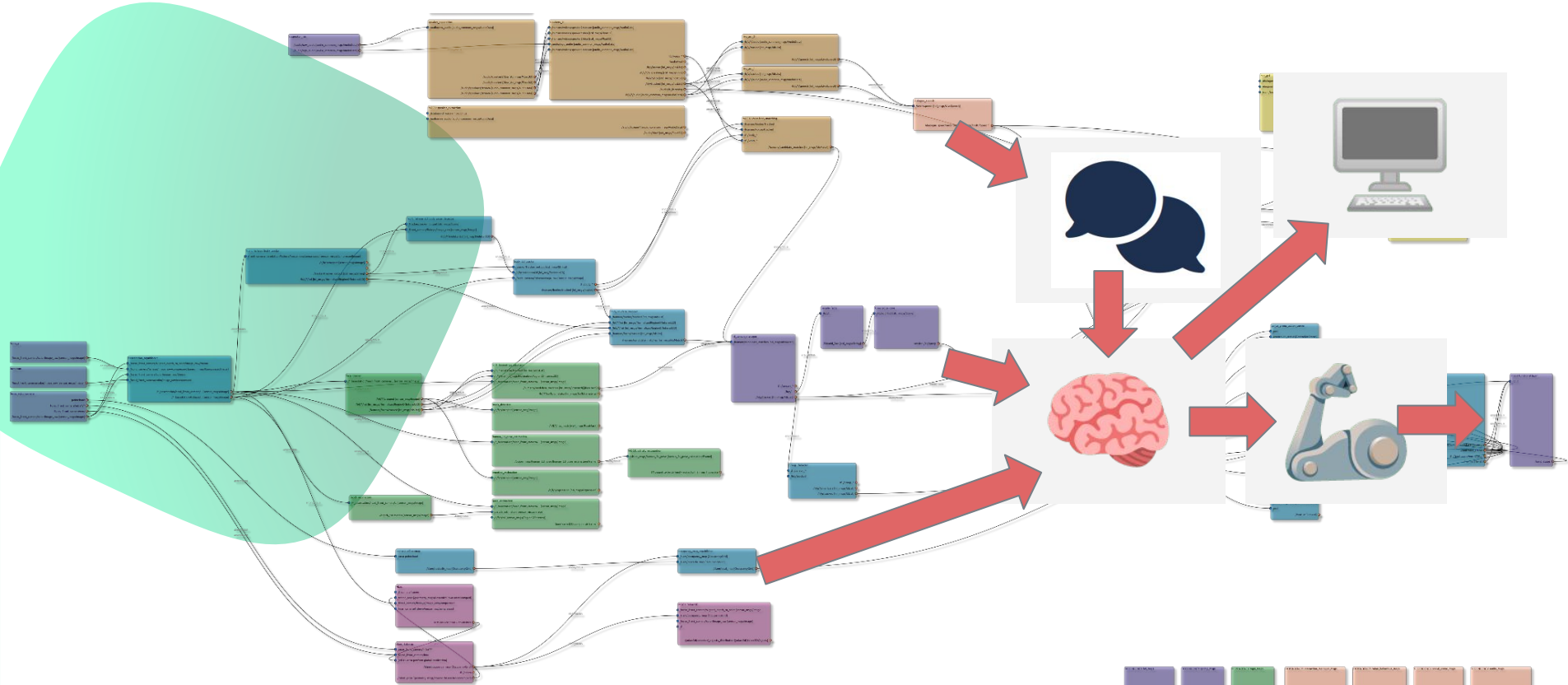


Face & Behaviour recognition

SPRING architecture

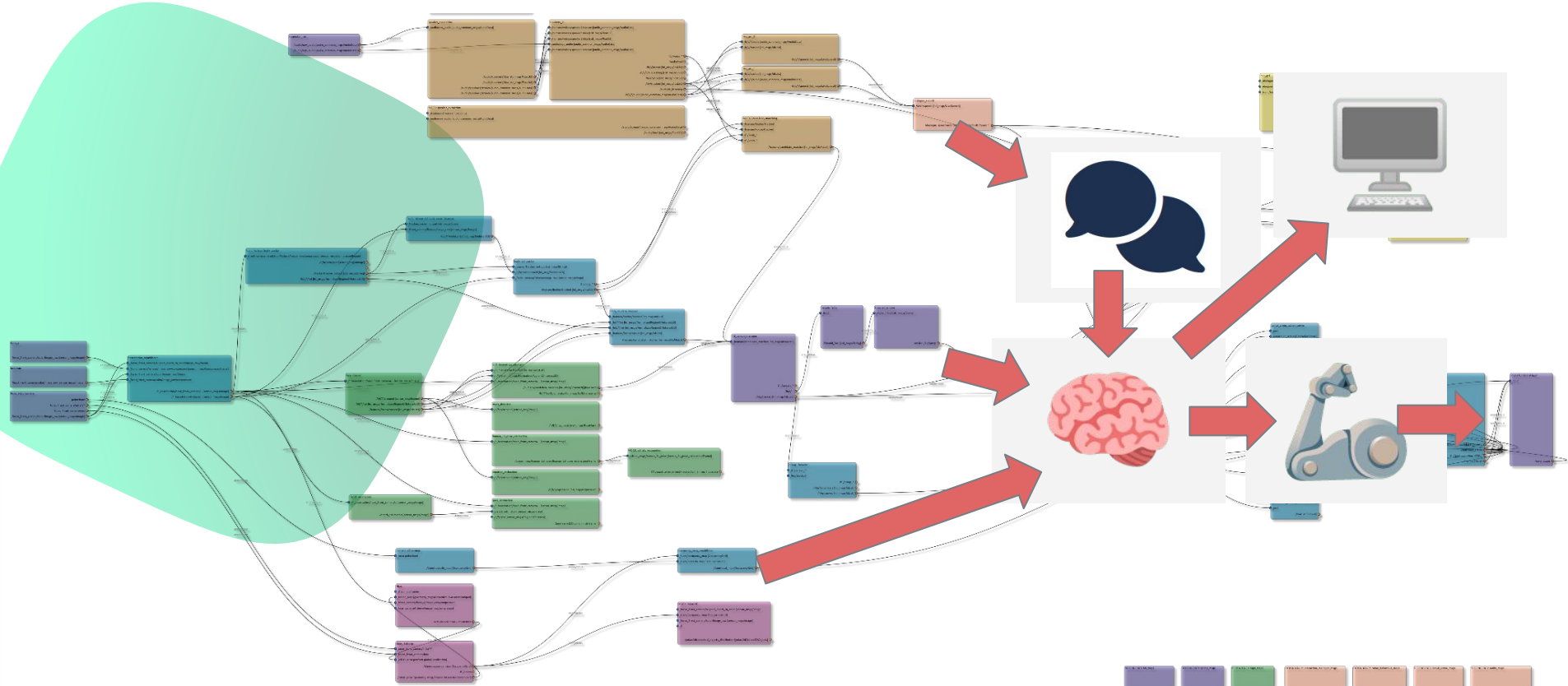


SPRING architecture

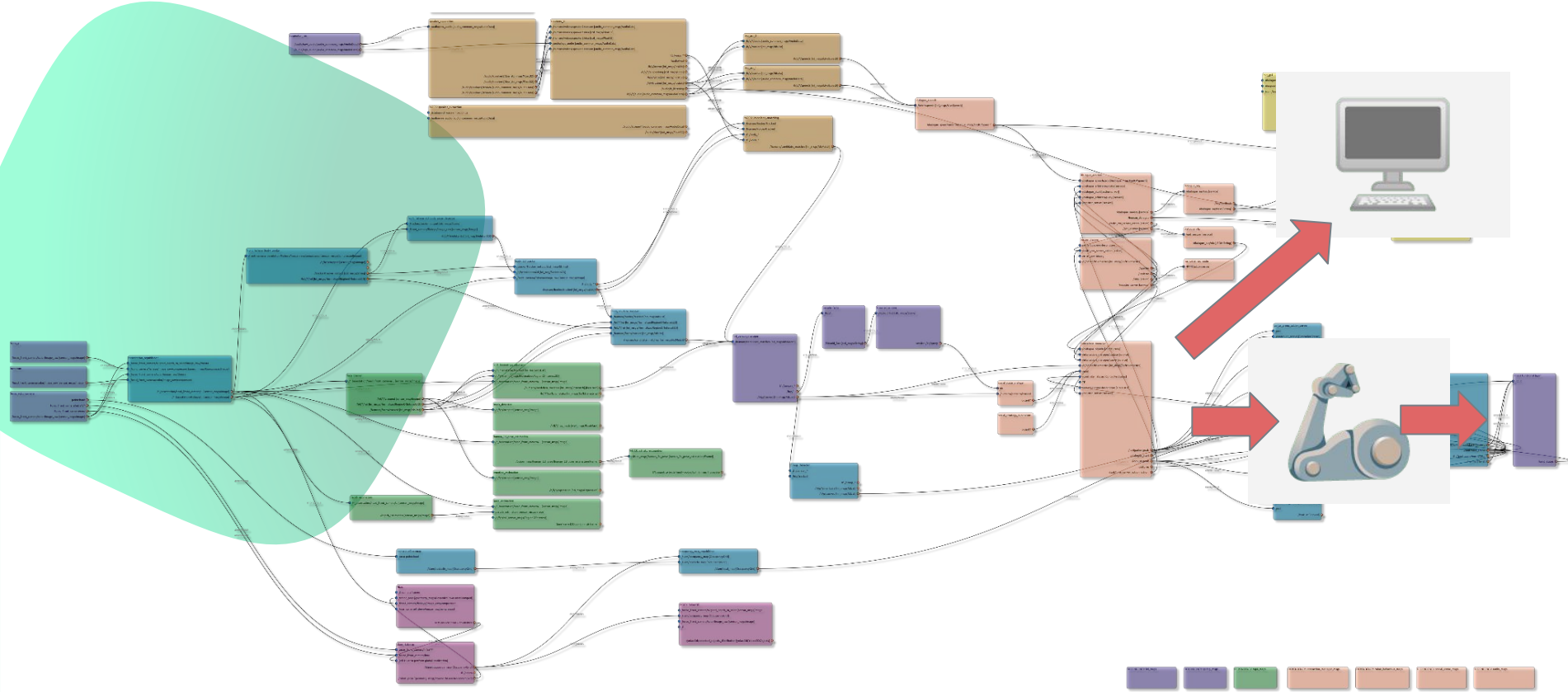


(surprise for Friday!)

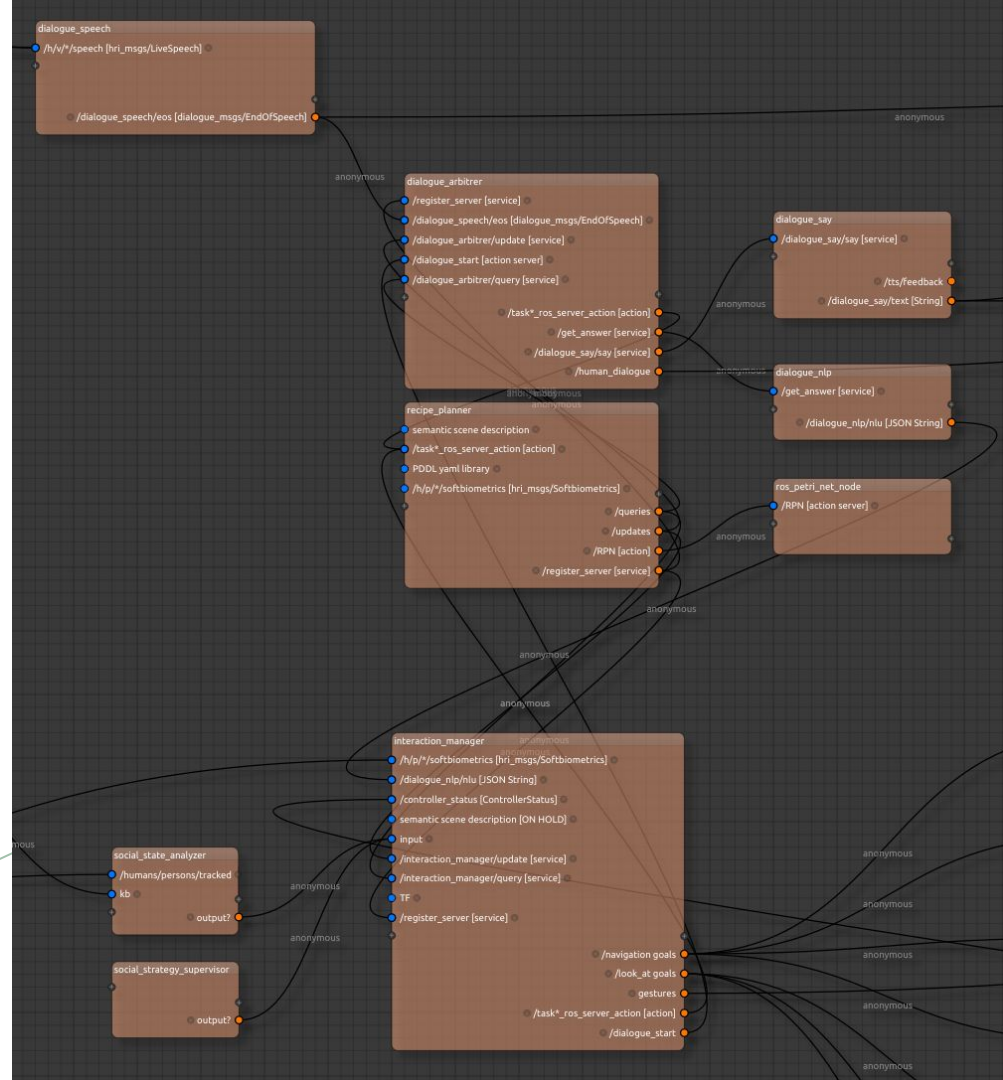
SPRING architecture



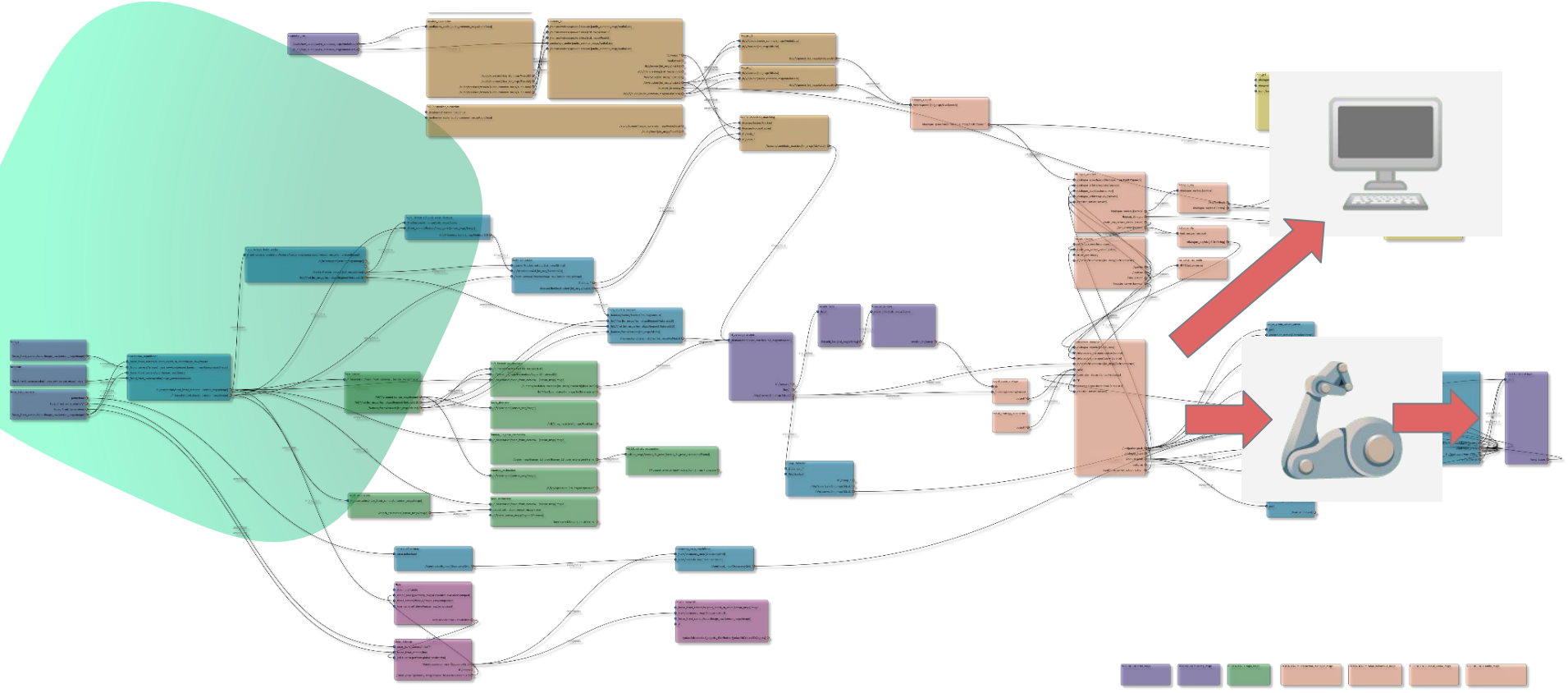
SPRING architecture



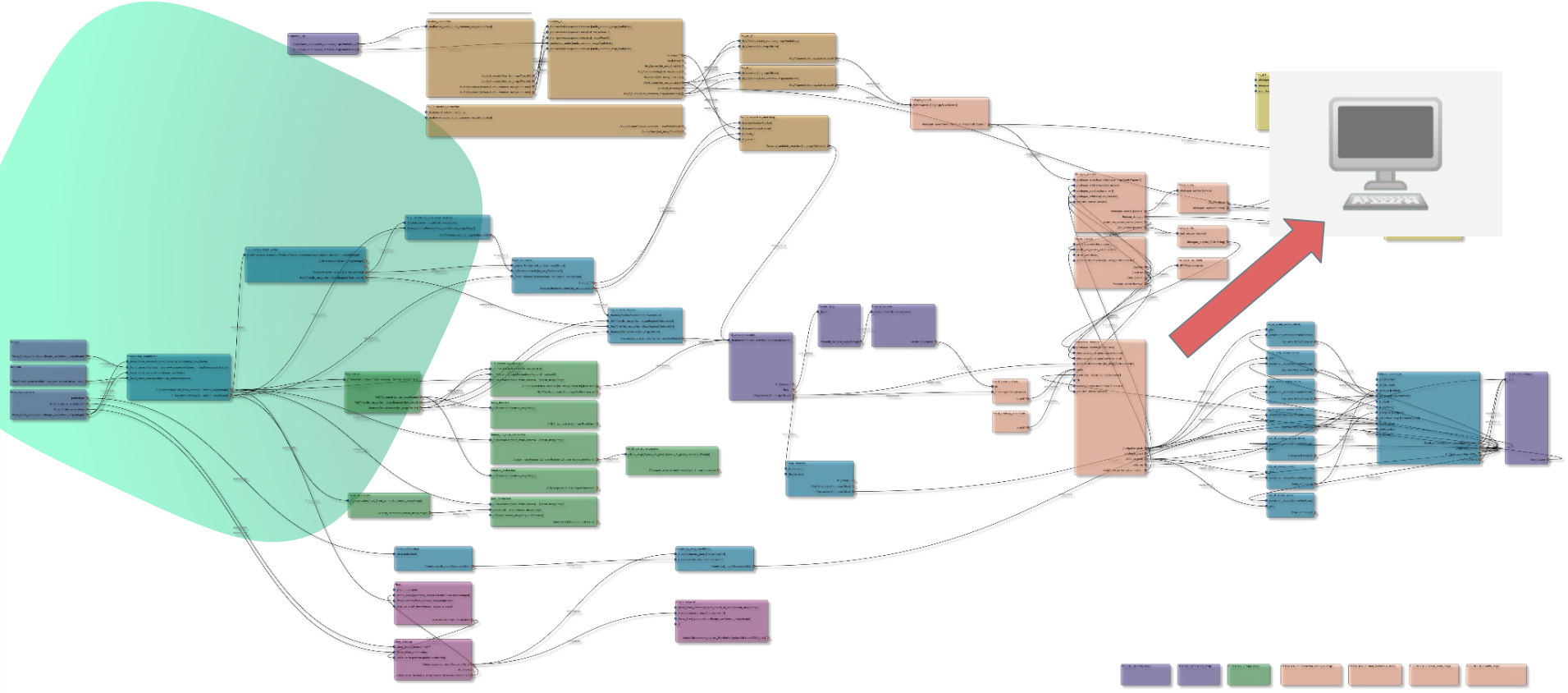
Multi-party spoken conversation



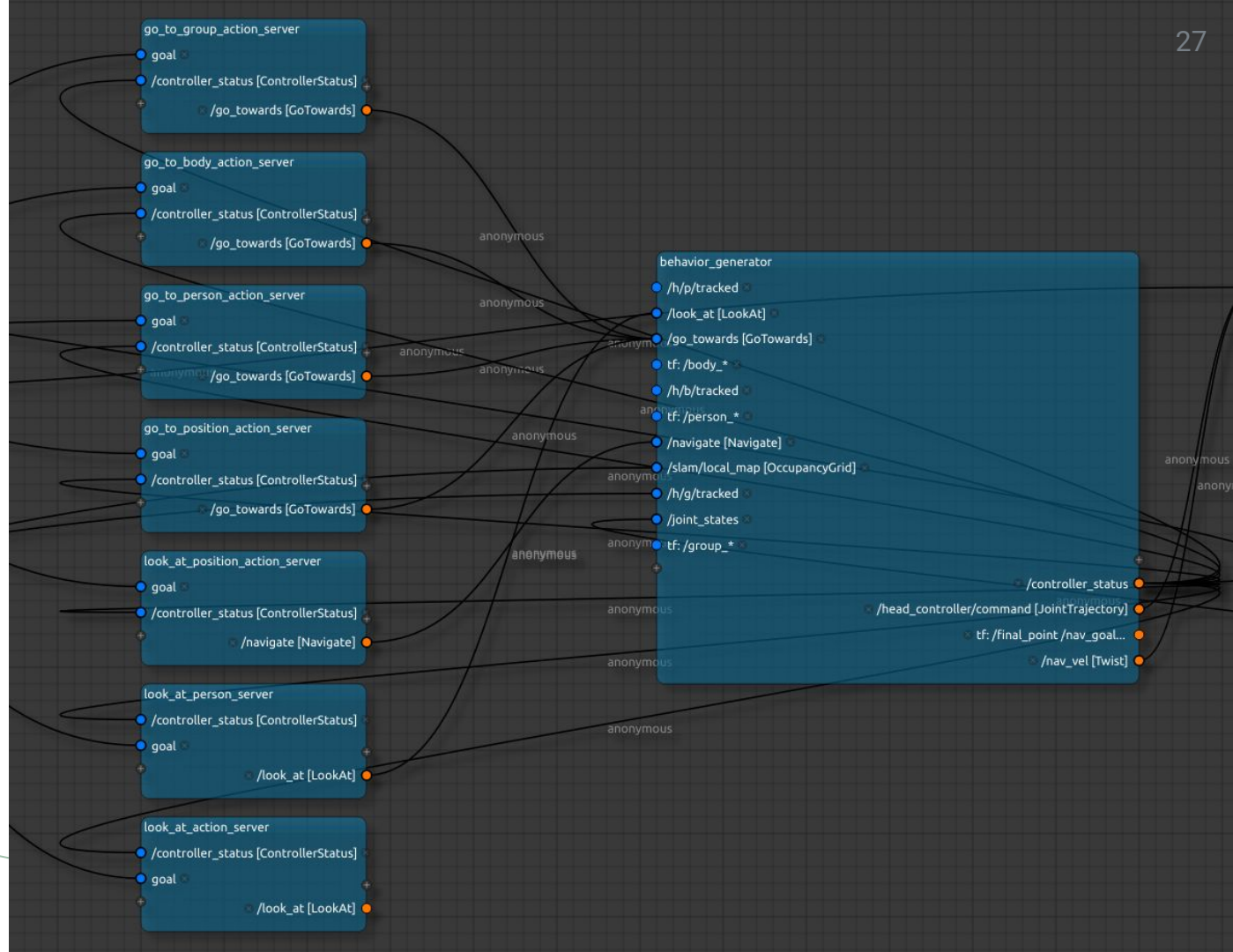
SPRING architecture



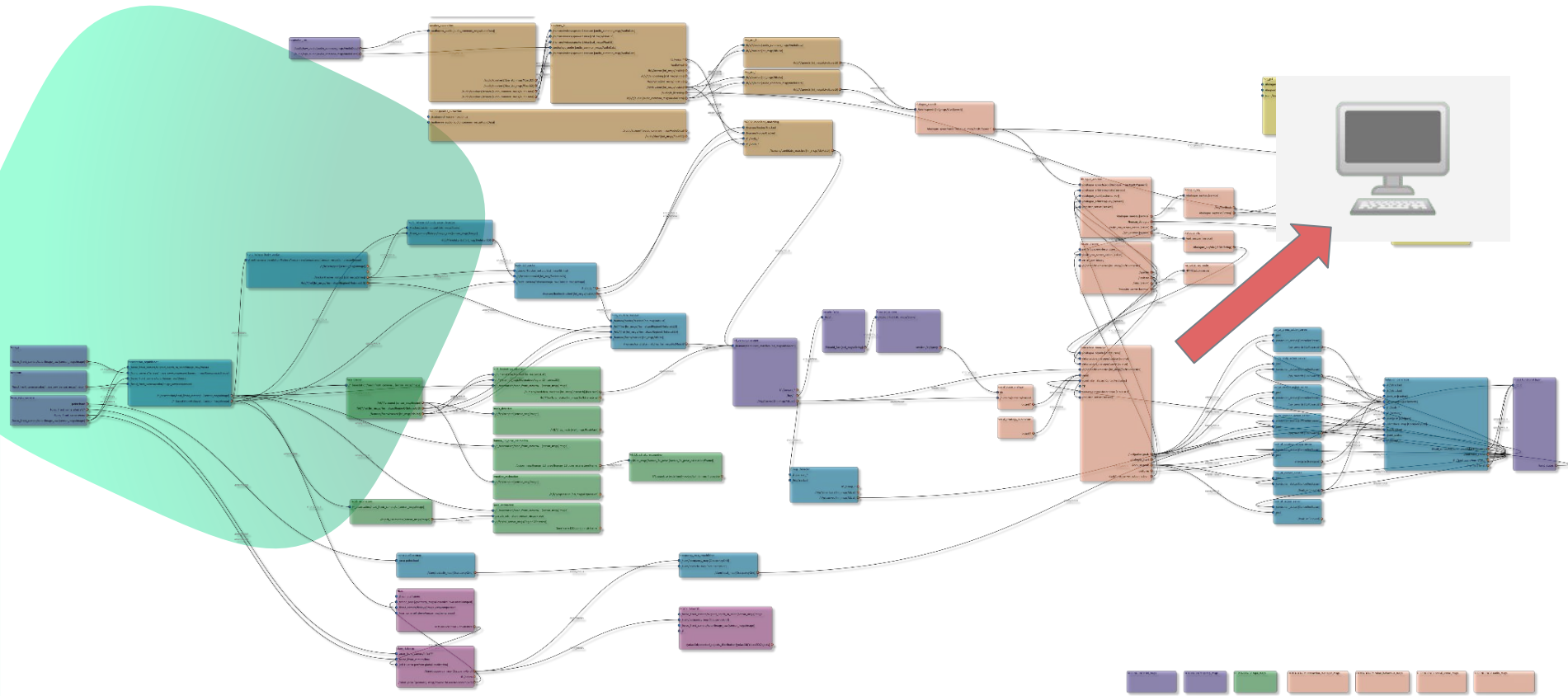
SPRING architecture



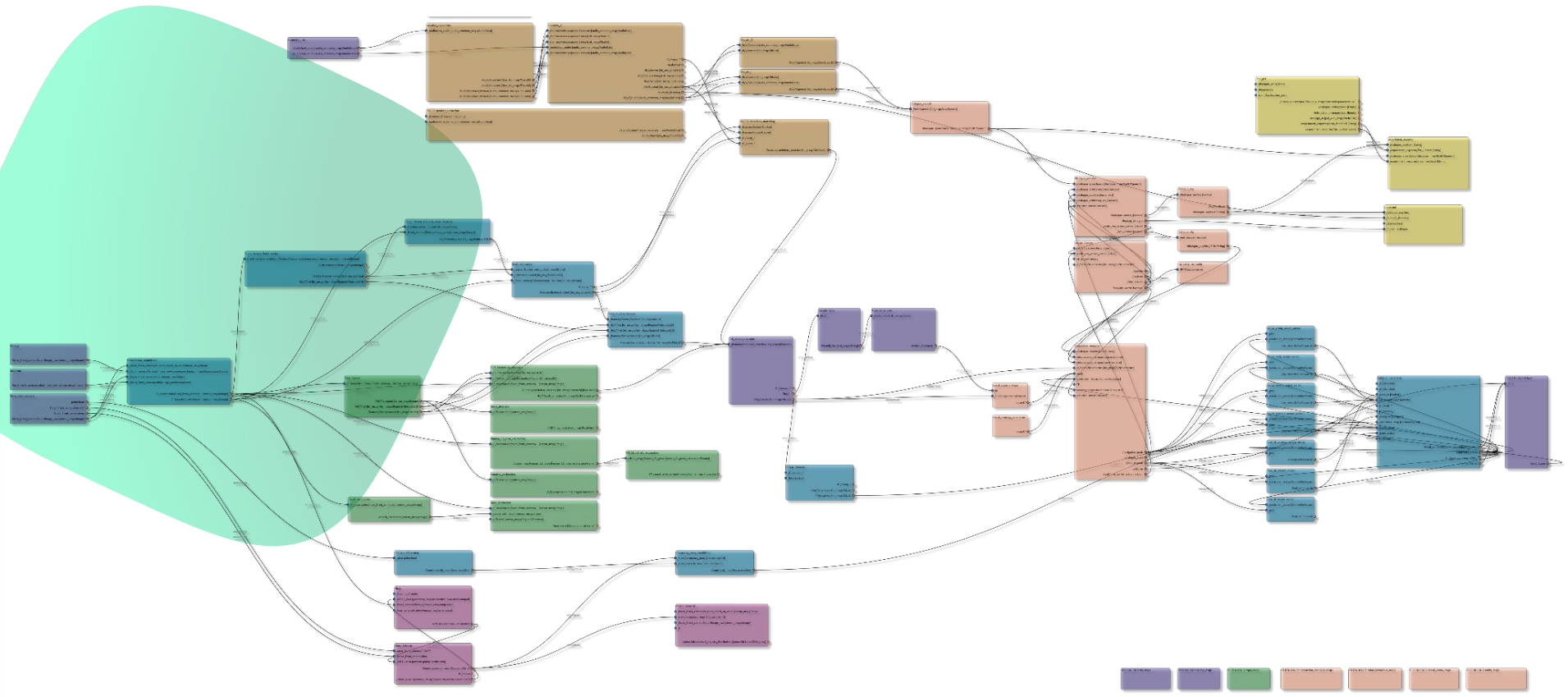
Robot's behaviours

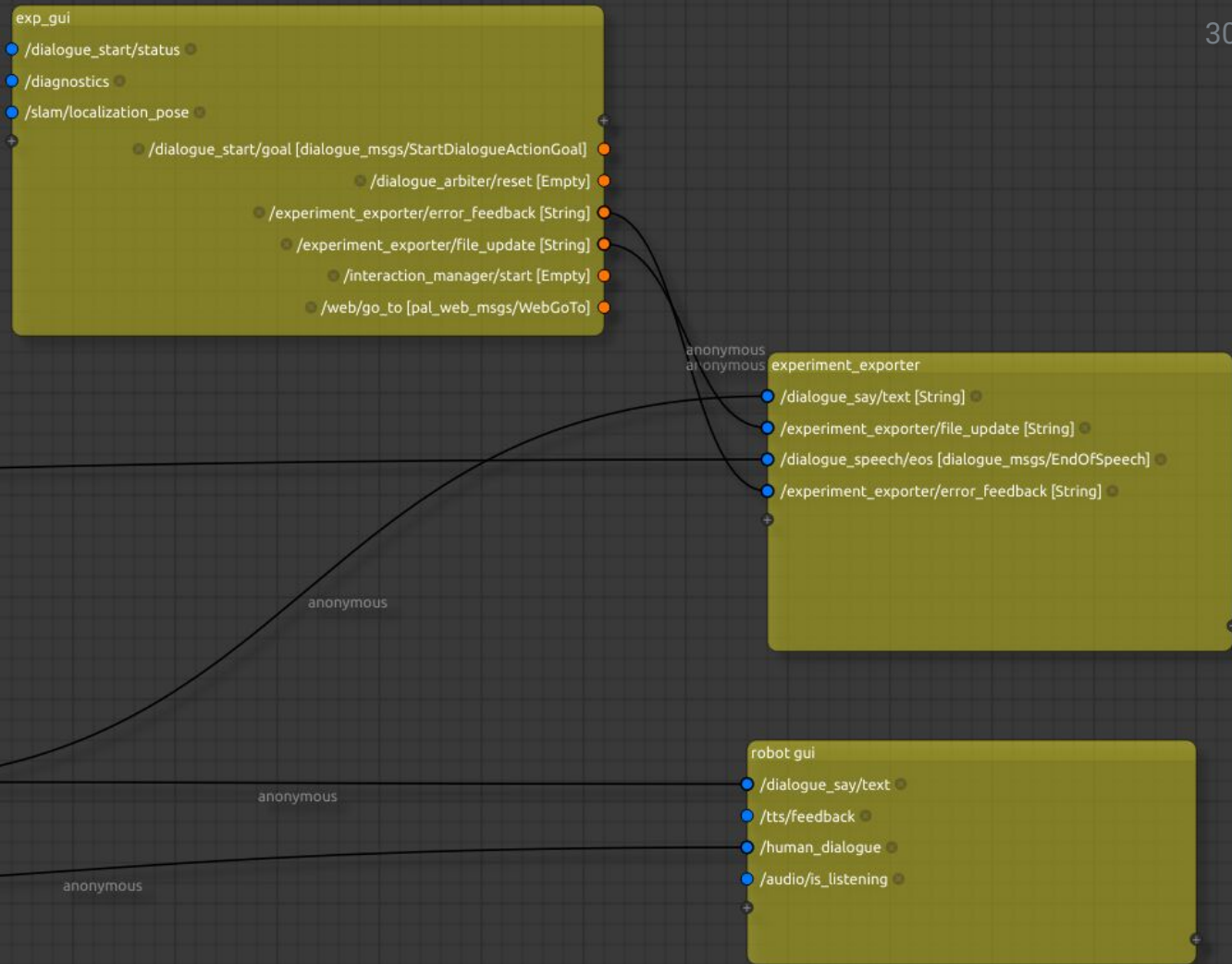


SPRING architecture



SPRING architecture

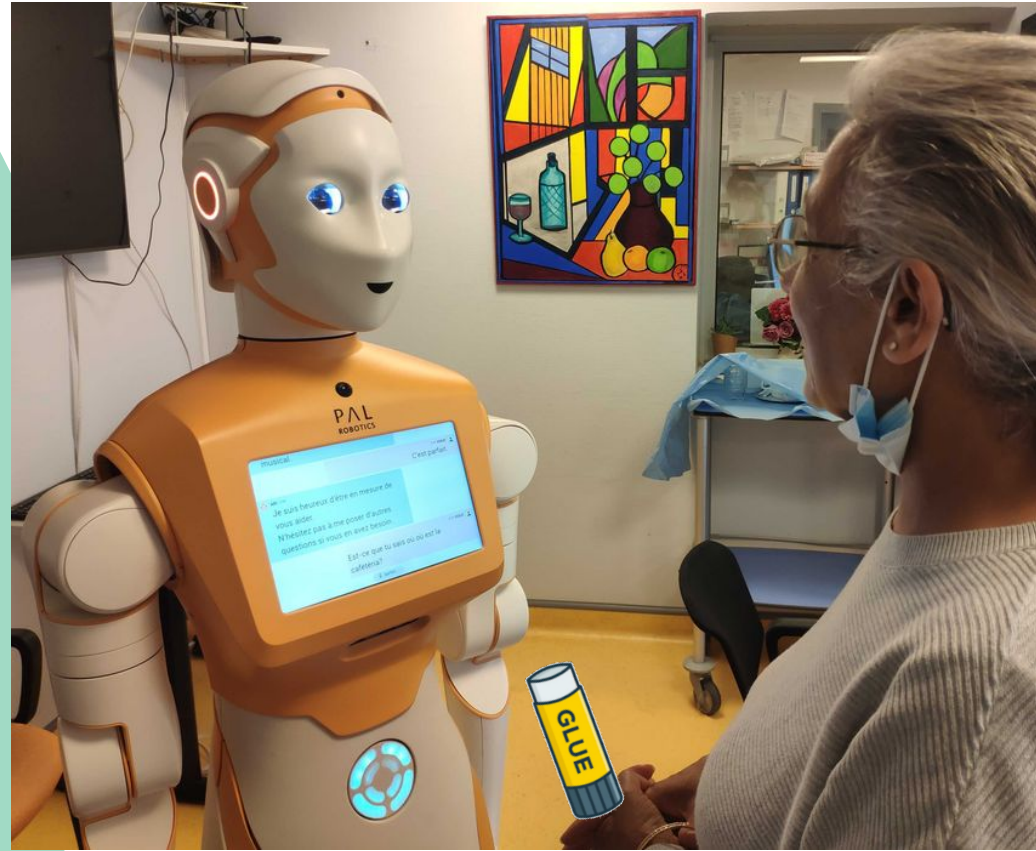




Tablet UI



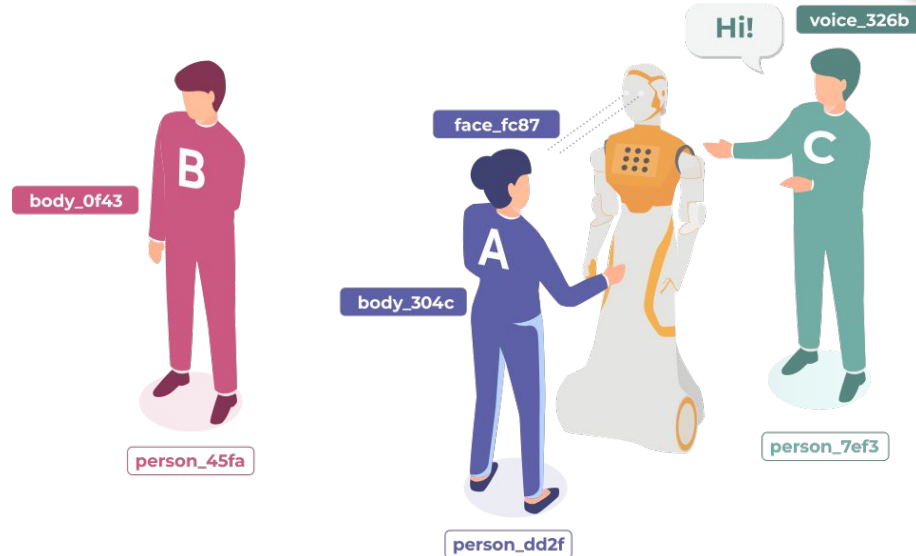
And the glue?





ROS4HRI

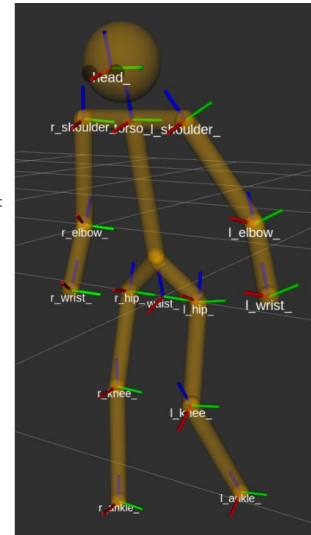
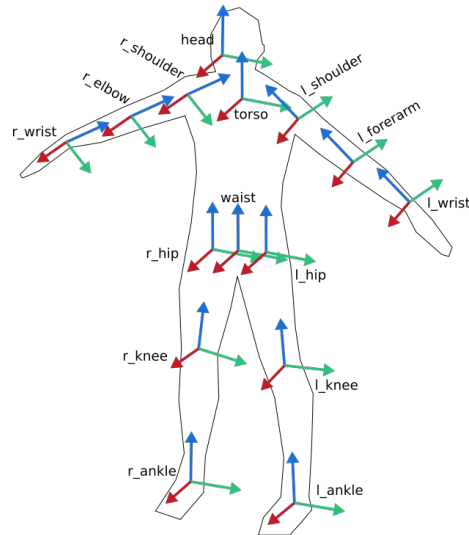
- **REP-155:**
<https://www.ros.org/reps/rep-0155.html>
- Plenty of open-source components
 (and you can contribute your own!)
<http://wiki.ros.org/hri>

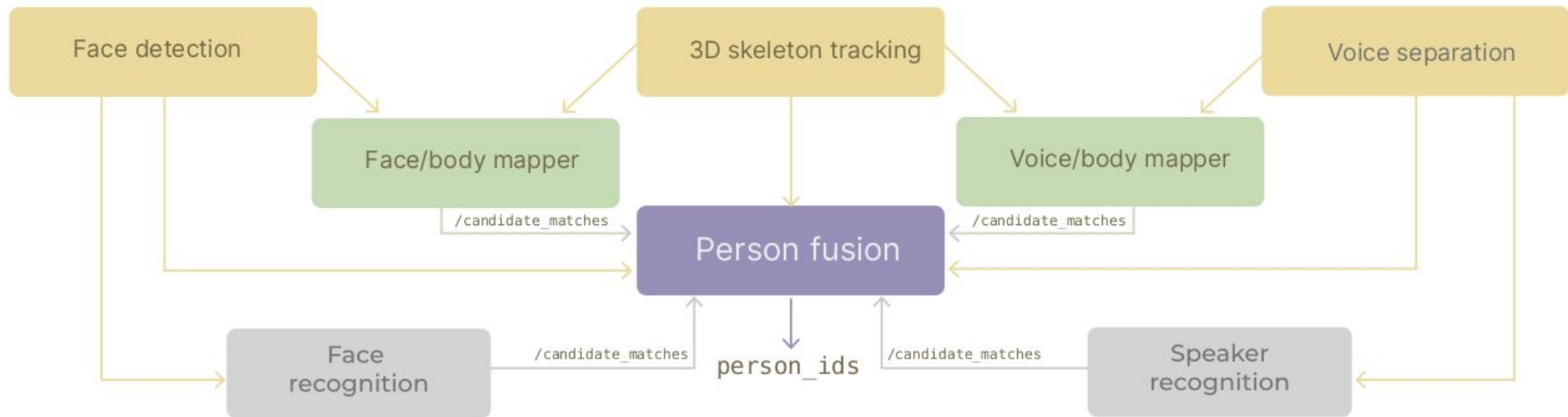




ROS4HRI

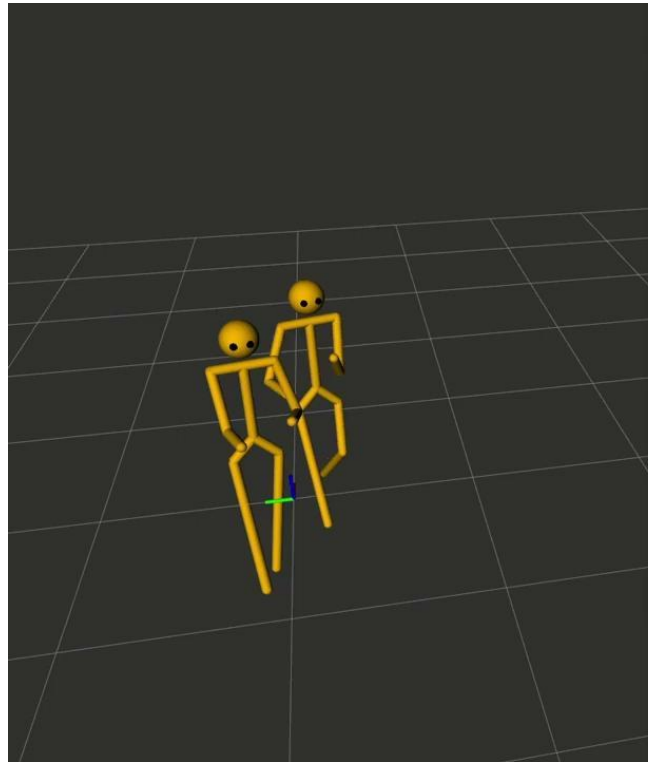
- **REP-155:**
<https://www.ros.org/reps/rep-0155.html>
- Plenty of open-source components
 (and you can contribute your own!)
<http://wiki.ros.org/hri>







ROS4HRI





And now, for Marc Hanheide



- Professor of Intelligent Robotics & Interactive Systems at Lincoln University
- One of the few to actually do long-term, real-world deployments of social robots
- He is (relatively) funny/easy going: you can go and talk to him as if he was not *actually* a famous professor. Do!