

Activity: Represent a functional flow given the N2 chart (40min)

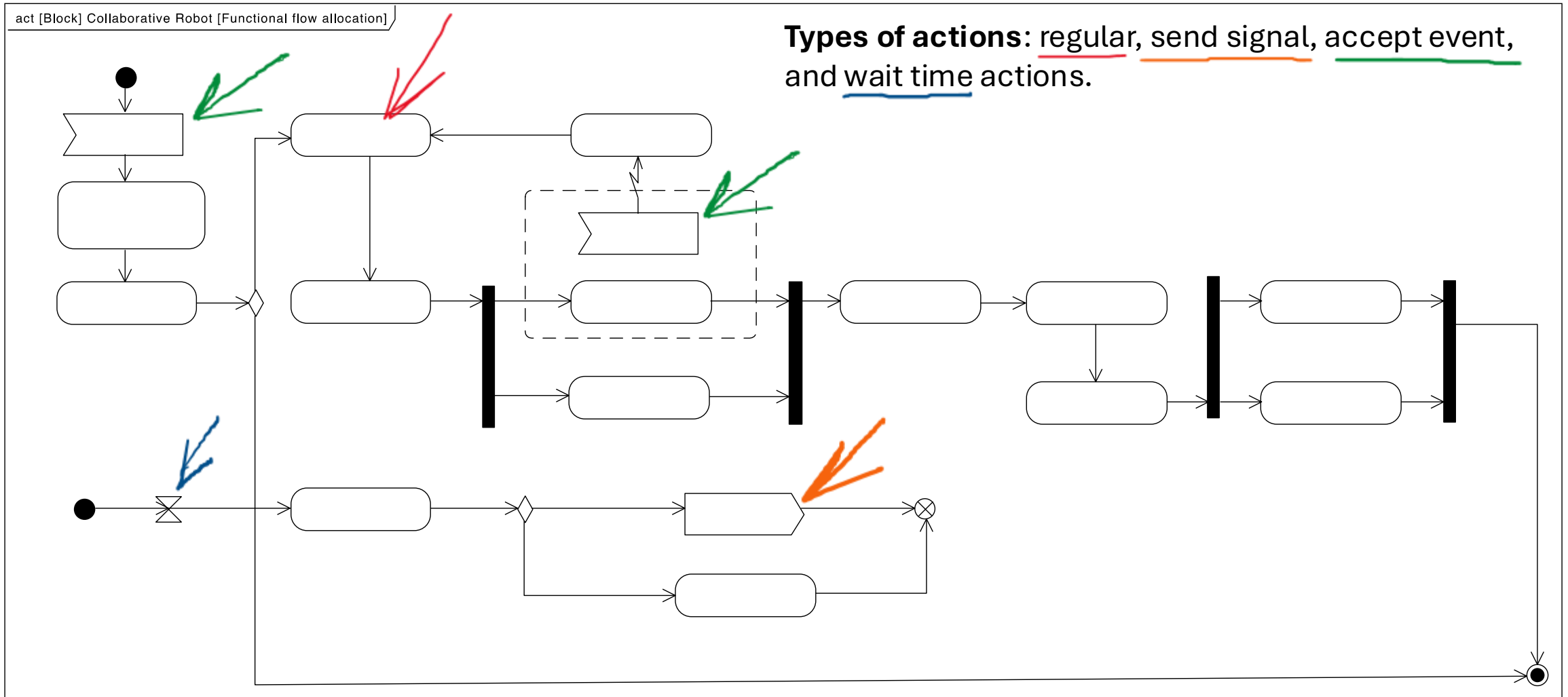
Objective: get familiar with MBSE modelling methods and how they relate to traditional SE

- **What:** propose a specification of the behaviour of our robot as a **functional flow** (only activation) represented in a SysML activity diagram.
- **How:** use the **functions** and their **interfaces** defined in the N2 chat provided. The functions should be the nodes in your diagram.
- **Expected outcome:** SysML activity diagram
- **With your team,** discuss and elaborate the diagram (20min)
 - Use the whiteboards and flipovers to draw your diagrams
- **All together,** discussion of solutions (20min)

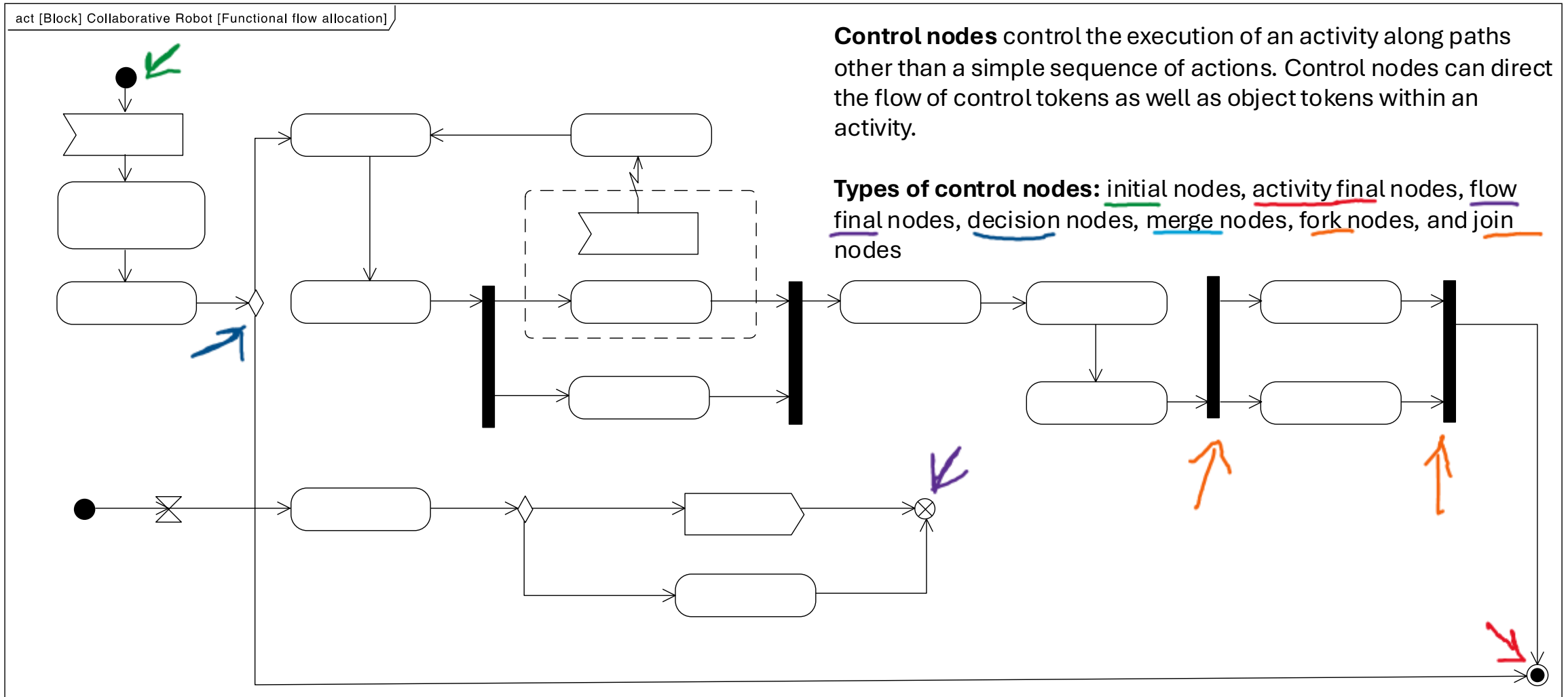
N2 chart for “Cognitive Navigation” Day 3 system

INPUTS						OUTPUTS
↓ 3d_image						
yolo_ros /Detect3dNode. process_detections	• /yolo/detections_3d					
	UPDATE KB SymbolicNode. add_perception	• Updated ontology				
	• /symbolic/room_inference	INFER SymbolicNode. get_room_type	• /symbolic/room_inference			
			Maintain beliefs (update, decay)	• /knowledge/beliefs		
				Manage goals (check, activate)		→ change goal

SysML Activity Diagram Cheatsheet (1)



SysML Activity Diagram Cheatsheet 2



N² chart cheatsheet

- **Diagram** that represents **interfaces** between architecture elements (functional or physical)
 - multiple names: *N² matrix*, *Coupling Matrix*, *Design Structure Matrix (DSM)*
 - **matrix** form
 - **N elements** in the **diagonal**
 - **inputs** - **column**
 - **outputs** - **row**
- additionally N+1
- **external inputs**: upper row
 - **external outputs**: rightmost column

