

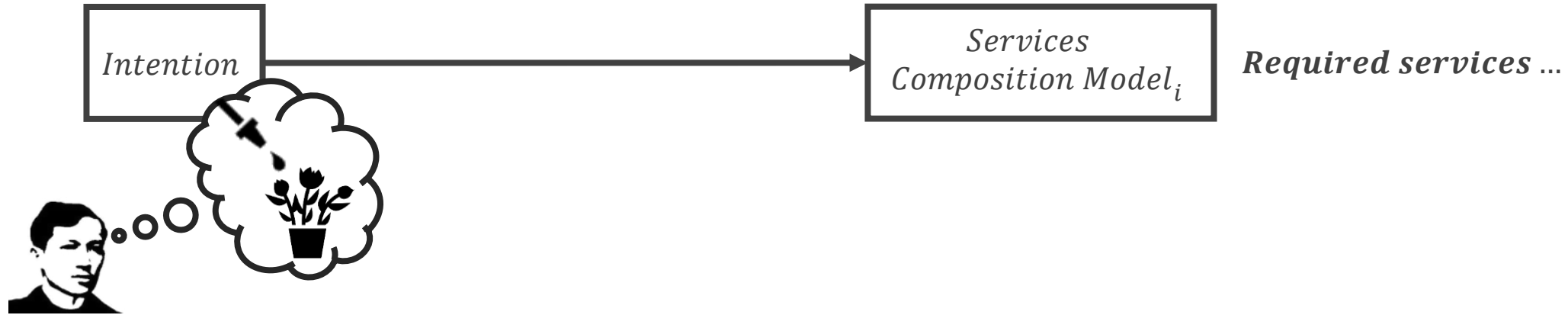
Services-based software composition

Challenge : « Selecting the right services at the right time »

- ➔ Rahma Daikhi, “*Semantic reasoning for reactive services composition*”. 2014, Master 2 end year project.
- ➔ Gérald Rocher, “*Semantic-based services for devices selection : knowledge base dynamic management*”. 2015, Master 2 end year project.

Services-based software composition

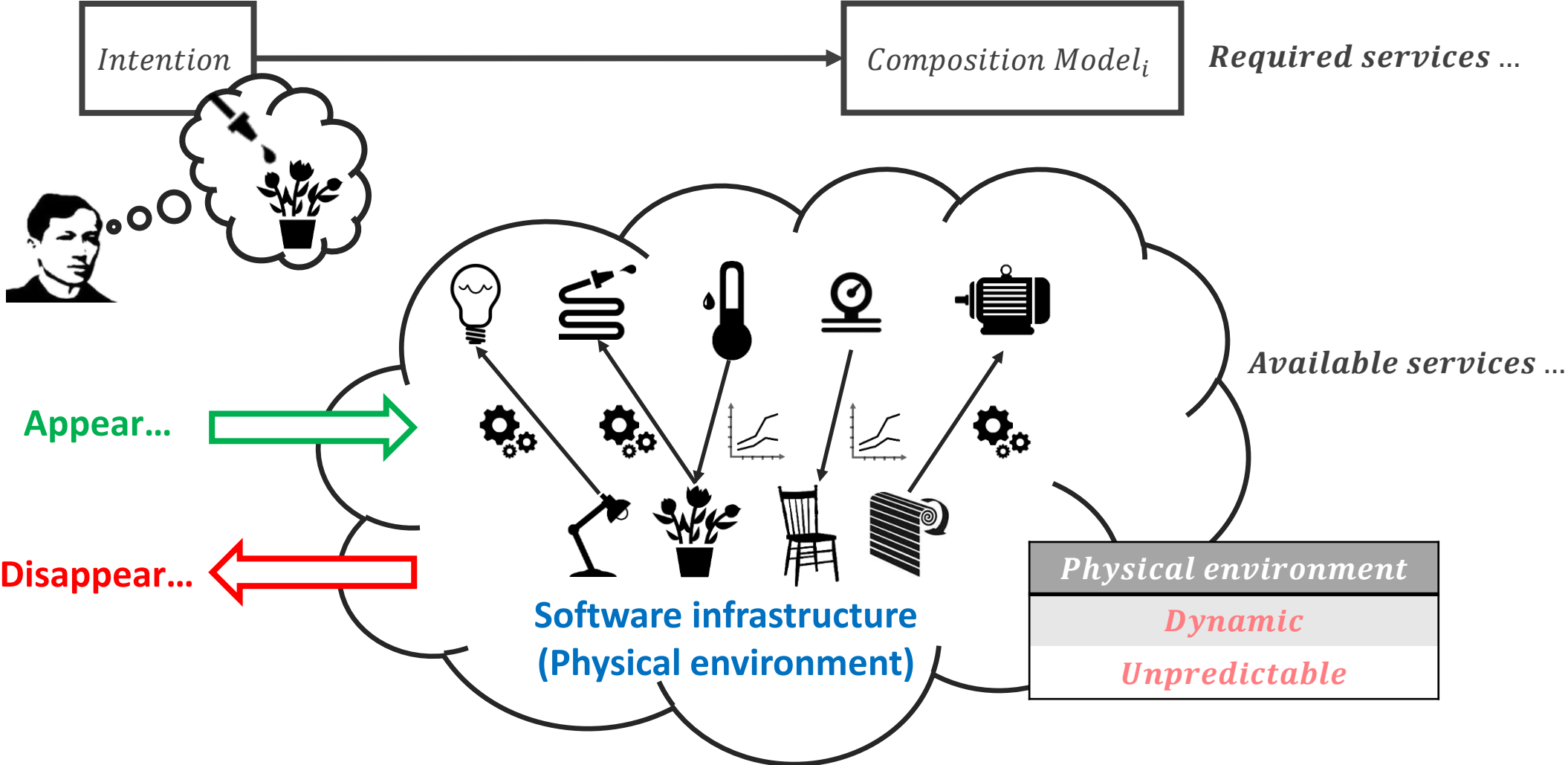
« *Selecting the right services at the right time* »



→ Software designer defines a composition model defining the **required services** and glue logic.

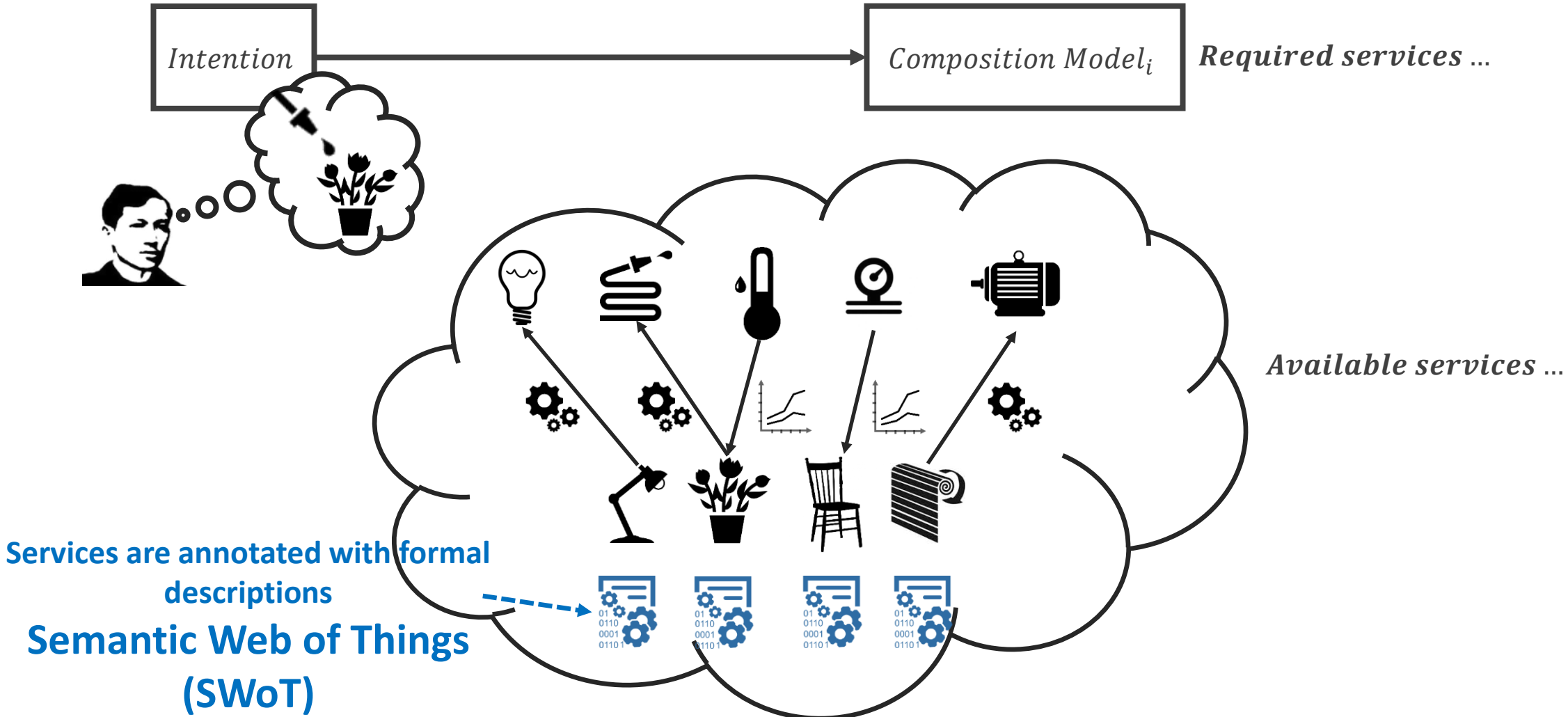
Services-based software composition

« Selecting the right services at the right time »



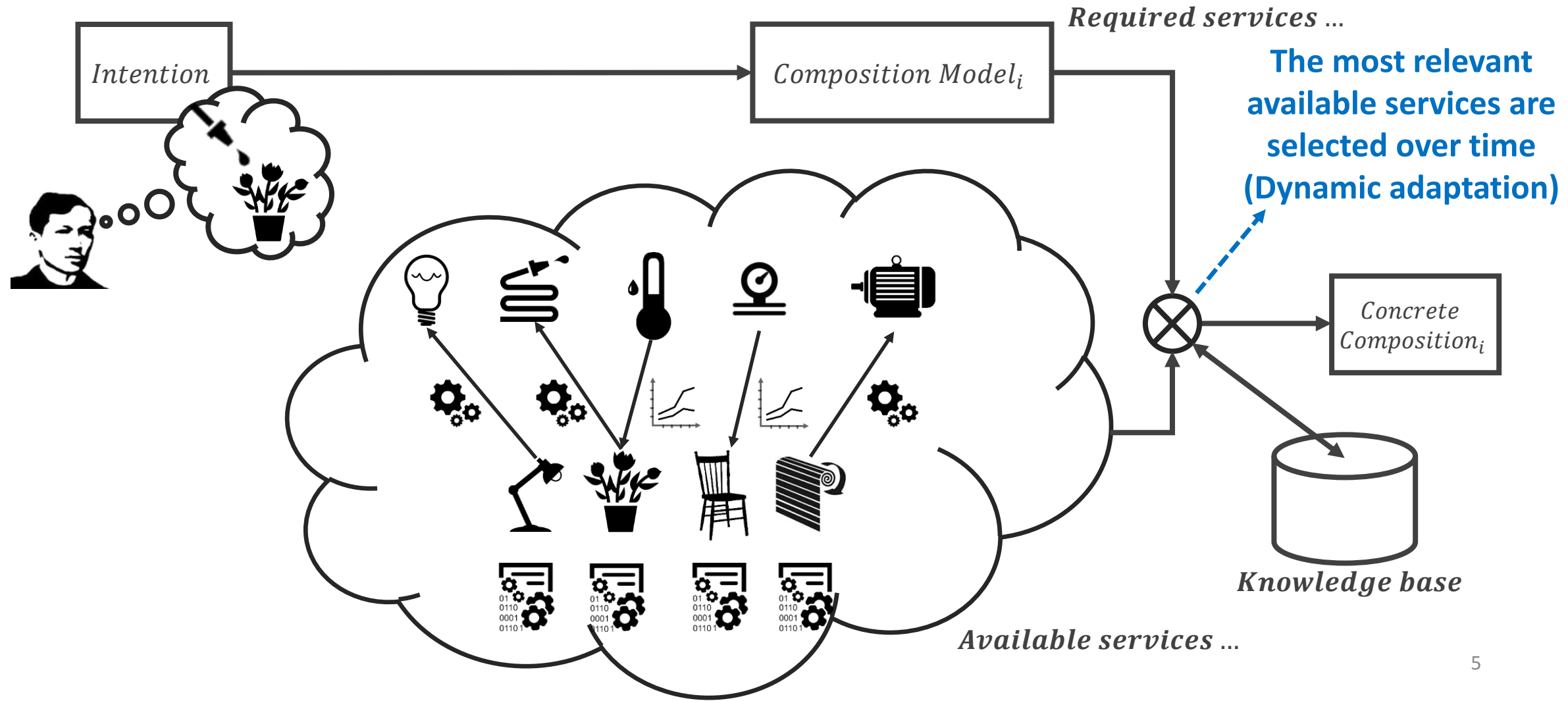
Services-based software composition

« *Selecting the right services at the right time* »



Services-based software composition

« Selecting the right services at the right time »



Services-based software composition

« *Selecting the right services at the right time* »

Challenge : Semantic gap between the required and available services

1. A comprehensive semantic model of the world is unlikely to happen...
2. Devices manufacturers will rely on their own formal semantic model

→ **SEMANTIC HETEROGENEITY**



Proposed approach : Leveraging system interactions with the environment

- Devices appear/disappear over time bringing ****NEW**** knowledge unknown @design-time,
- Semantic model is enriched over time (alignment)...
- ... Possibly improving devices selection relevancy.

Services-based software composition

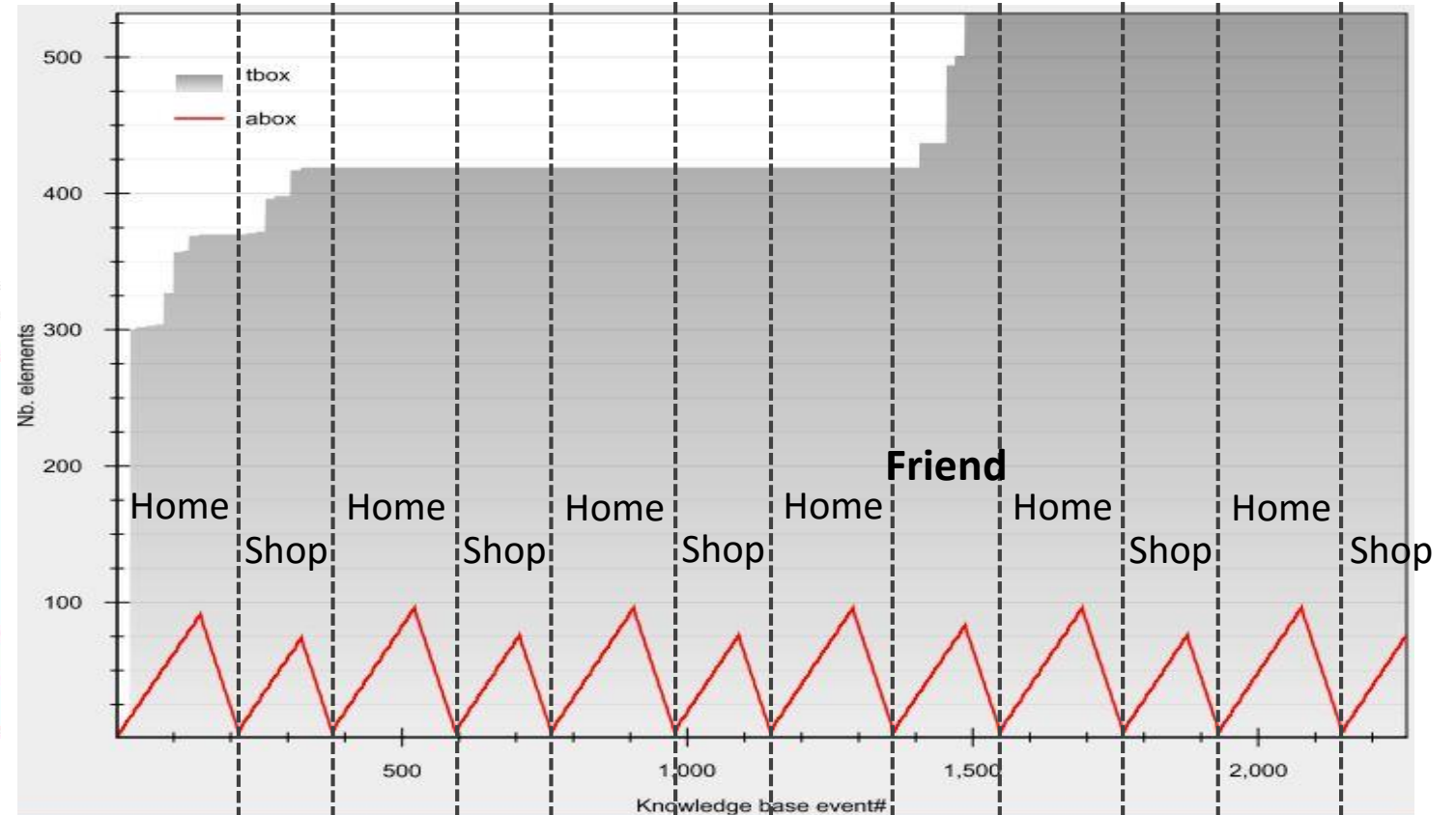
« Selecting the right services at the right time »

Initial results

Simulation of a person always evolving in the same environment. Exceptionally, he visit a friend...

Concepts	Nb classes						
	Cyc#0	Cyc#1	Cyc#2	...	Cyc#7	Cyc#8	...
Boiler	100	...	...	...	...	...	...
Clock	13	...	...	...	24	...	...
Computer	24	...	...	...	...	...	...
Cooker	48	...	...	...	88	...	...
Deepfreezer	48	100	...	...	...	...	...
Dishwasher	38	...	...	...	97	...	...
Fan	24	...	...	...	...	...	...
Oven	109	...	...	...	...	...	...
Printer	24	...	...	...	...	...	...
Coffee maker	...	24	...	...	...	...	...
Entertainment	...	11	...	...	24	...	...
Fridge	...	44	...	...	109	...	...

Knowledge base content evolution over time



Publication:

Gérald Rocher, Jean-Yves Tigli, Stéphane Lavirotte, and Rahma Daikhi. «Run-time knowledge model enrichment in SWoT: A step toward ambient services selection relevancy». Long paper, plenary session in the 5th Int. Conf. on the Internet of Things (IOT) 1, Seoul, September 2015, pages 62–69. IEEE.