

# A dynamic SCA-based system for smart homes and offices

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## PROBLEM IDENTIFICATION

Nowadays, many standards exist to handle heterogeneous and dynamic devices (UPnP, XMPP, etc), but they lack software architecture support. Meanwhile, technology-agnostic software engineering standards (SCA, etc) does not cover dynamism problems.

## OBJECTIVE

In this demonstration, we present a dynamic and heterogeneous system infrastructure which enables the interoperability between two service-oriented component models (SOCMs), one targeting Java/OSGi applications, and the other Python applications.

## DEMONSTRATION

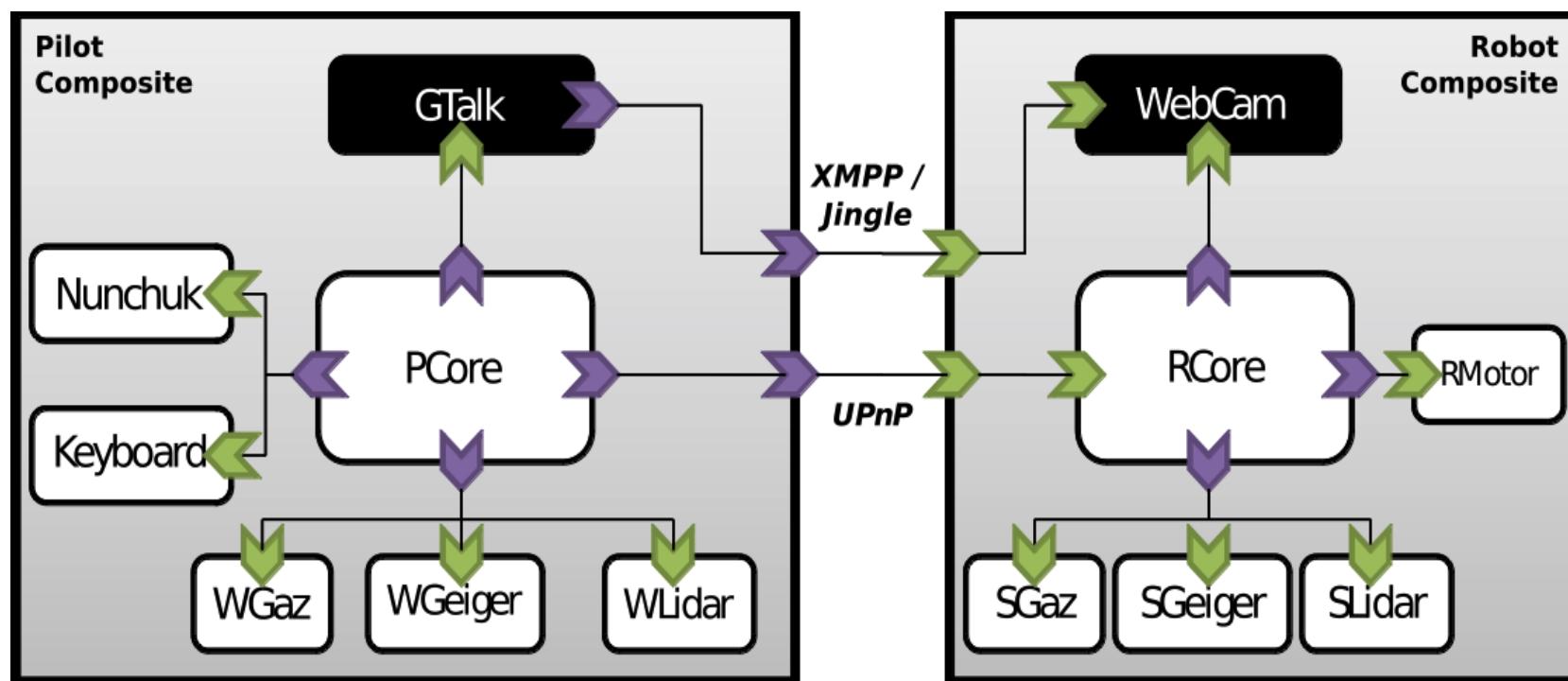
The demonstration is based on a robot onto which multiple sensors can be plugged. The robot can be remotely control using the XMPP protocol. It hosts both a Java/OSGi and a Python/iPOPO [1] application. iPOPO components control the robot and collect data from some of the sensors. Java iPOJO components are used for communication and to collect sensors data. Human operators can read data and control the robot using different devices, each one being handled by a Java component in the Pilot Composite. Java components bundling is done using NaSCAR [2]. Service discovery is performed by UPnP.

## CONCLUSION

RobAir integrates Java and Python components in a dynamic way. Heterogeneity limits the interactions between Java and Python components. RobAir is used as a pedagogic platform for teaching both ambient intelligence and service-oriented technologies.

## MAIN REFERENCES

- [1] Calmant, T., Américo, J.C., Gattaz, O., Donsez, D., and Gama, K.: *A dynamic and service-oriented component model for Python long-lived applications*. In Proceedings of the 15th ACM SIGSOFT Symposium on CBSE (2012) pp. 35–40.
- [2] Américo, J.C., and Donsez, D.: *Service Component Architecture Extensions for Dynamic Systems*. Accepted for the 10th Int'l Conference on Service-Oriented Computing (2012).



SCA representation of RobAIR Pilot and Robot composites

