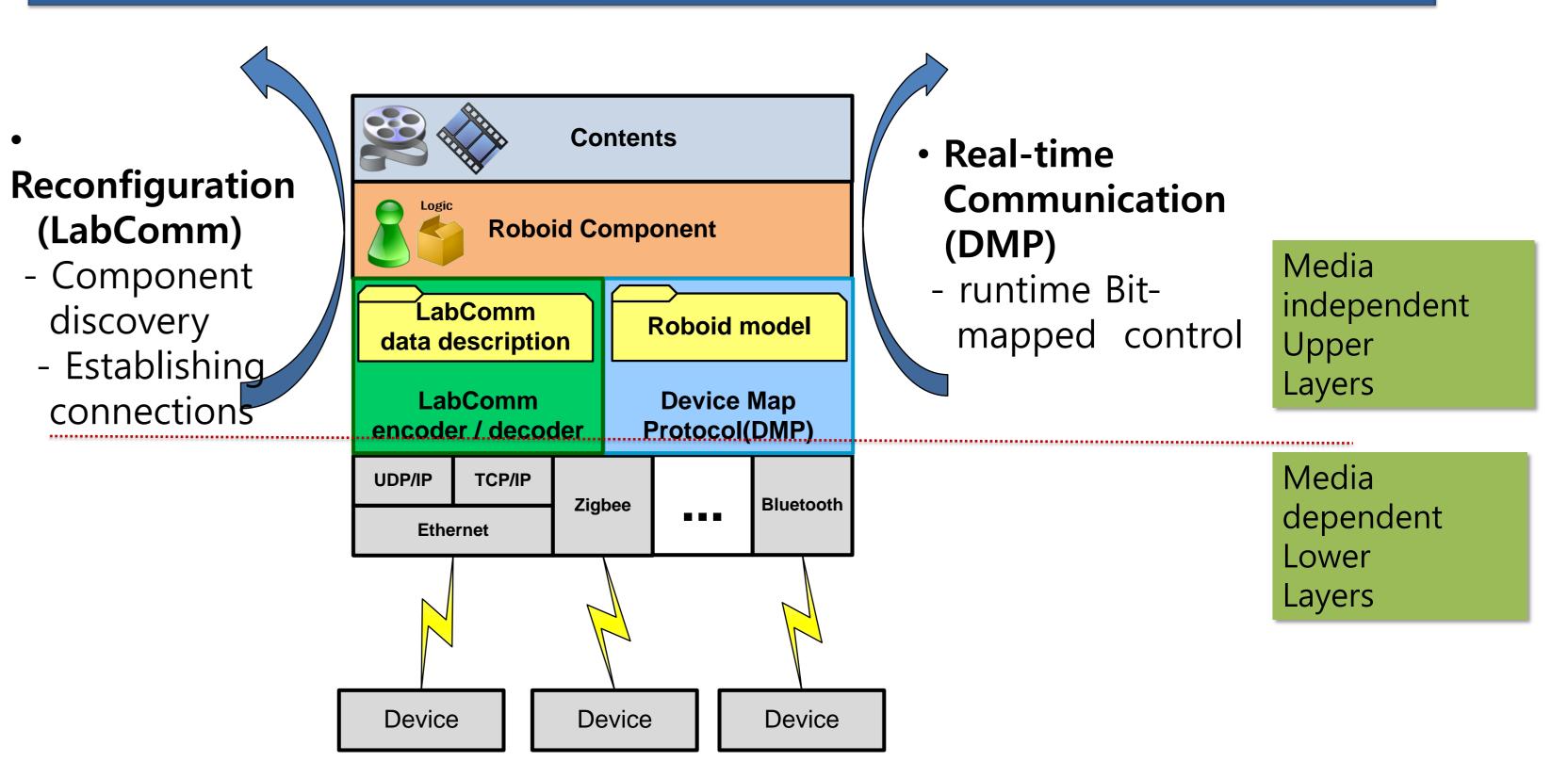
Contents-oriented Dynamic Service Composition Framework for Networked Cognitive Robots

Woo Young Kwon¹⁾, Gi Hyun Lim¹⁾, II Hong Suh¹⁾, Kyoung Jin Kim²⁾ Klas Nilsson ³⁾ ¹⁾ Department of Computer & Communication Engineering Hanyang University, Korea ²⁾ Robomation Co., Korea All correspondence should be addressed to I. H. Suh (ihsuh@hanyang.ac.kr) ³⁾ Department of Computer Science, Lund University, Sweden

Introduction & objective

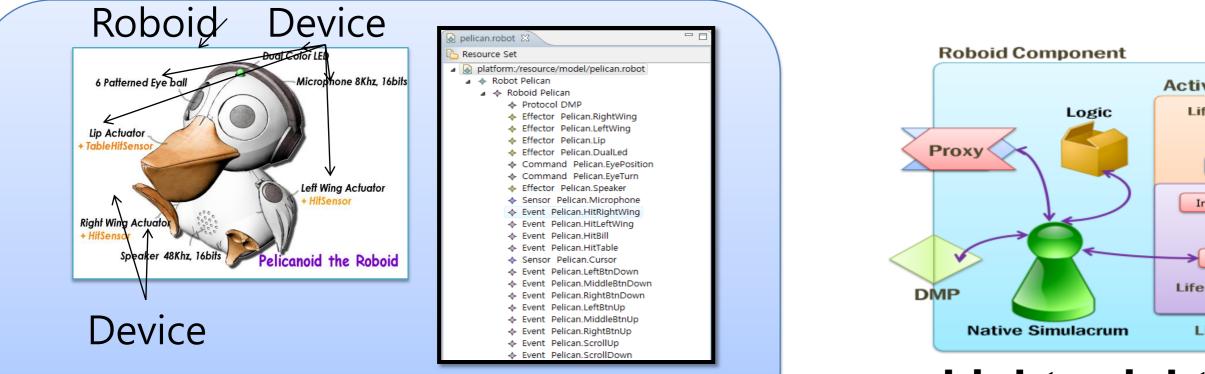
- Users need highly intelligent service robot at low cost
 - intelligence can be realized by using many of perception and actuation devices.
- Robot can not be equipped with all sensors for intelligence because of cost of sensors and spacing problems

LabComm on DMP: Dynamic service discovery protocol



Lightweight, Real-time **Communication method Exogenous Sensors** Heterogeneous Devices Image based control **User friendly services Component Oriented** Approach **Contents based service Knowledge Abstraction** of Sensors and Intelligent devices

Roboid Framework



Robot-device Description model

Activity Life-cycle controlled by OSGi Start Stop Resolved Initialize Finalize Activate Deactivate Execute Life-cvcle controlled by

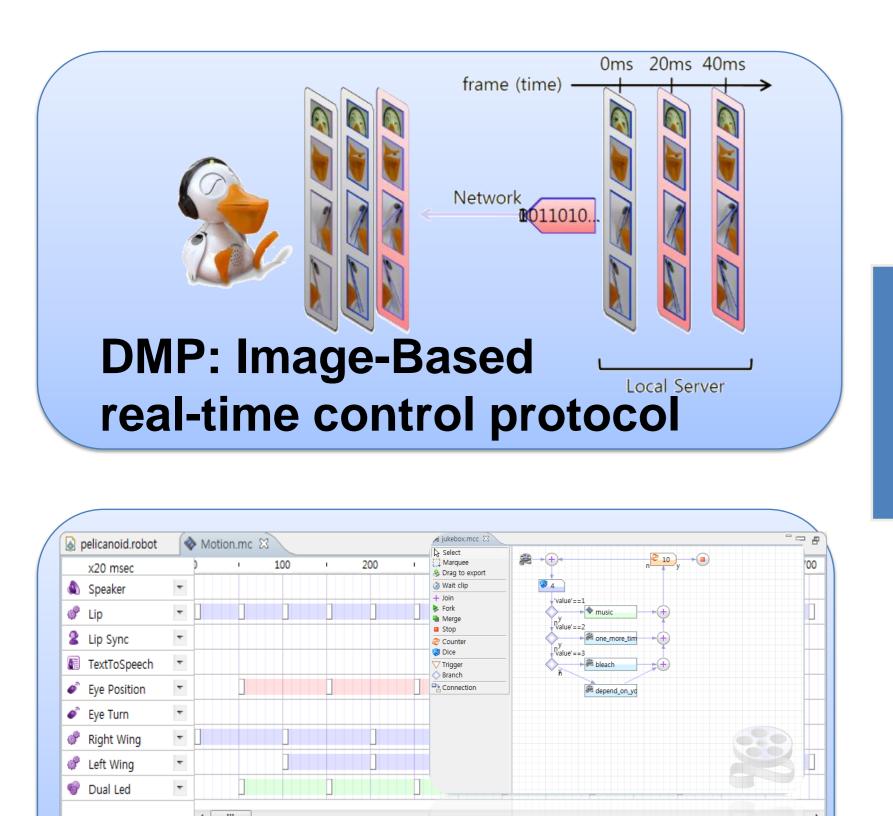
Lightweight **Component Model**

DMP(Device Map Protocol)

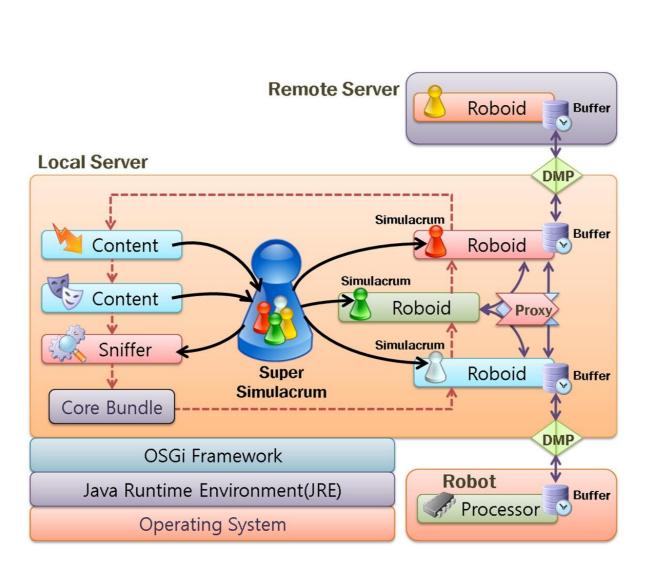
- The real-time protocol for synchronizing multimedia and control data simultaneously
- Support real-time and low latency communication for small devices
- Support bit-mapped control

LabComm

- Including a small language which can define a protocol
- Including a compiler that generates encoder/decoder routines
- Compact an Media/language independent



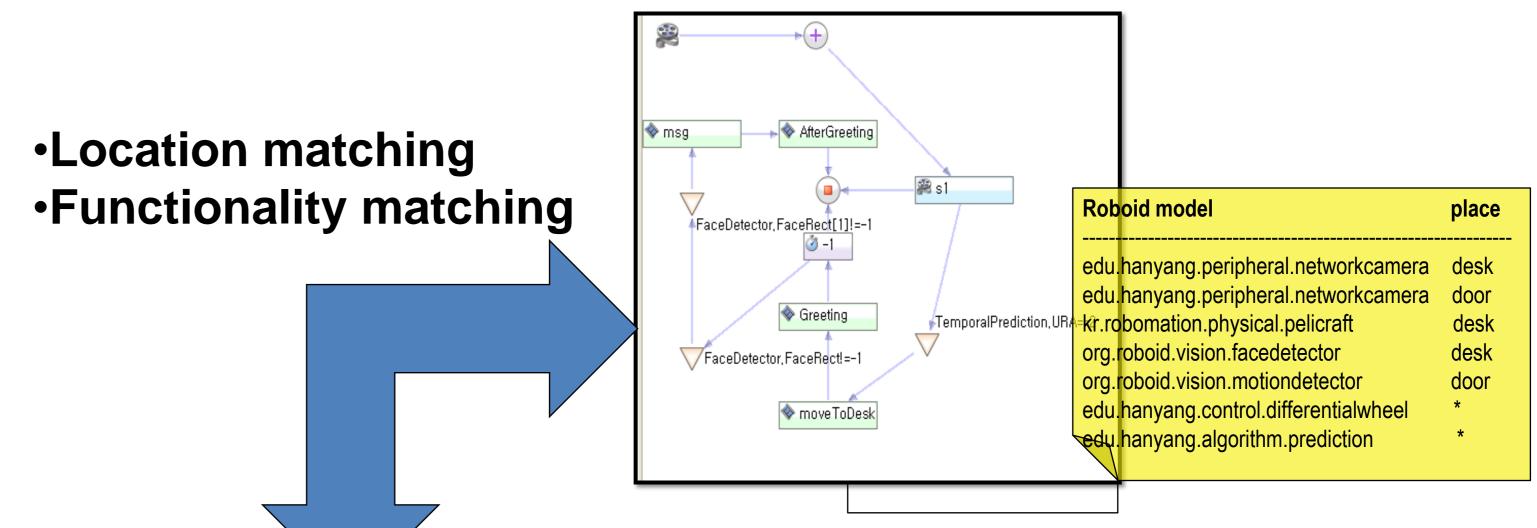
Contents authoring tools



Roboid Framwork



Contents-oriented Service Composition



Service consumer(contents) : **Required service-description of a content**

Activity

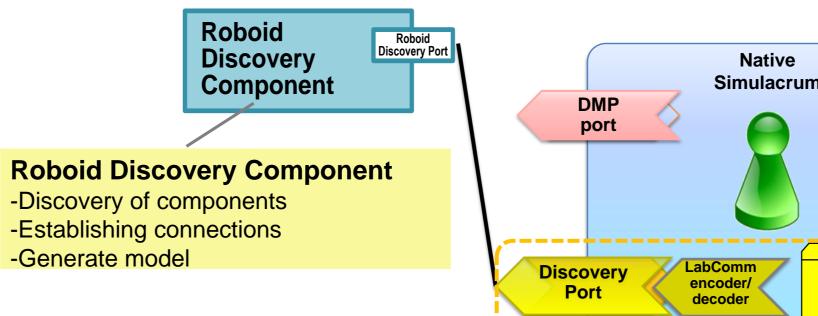
Life-cycle controlled by OSGi

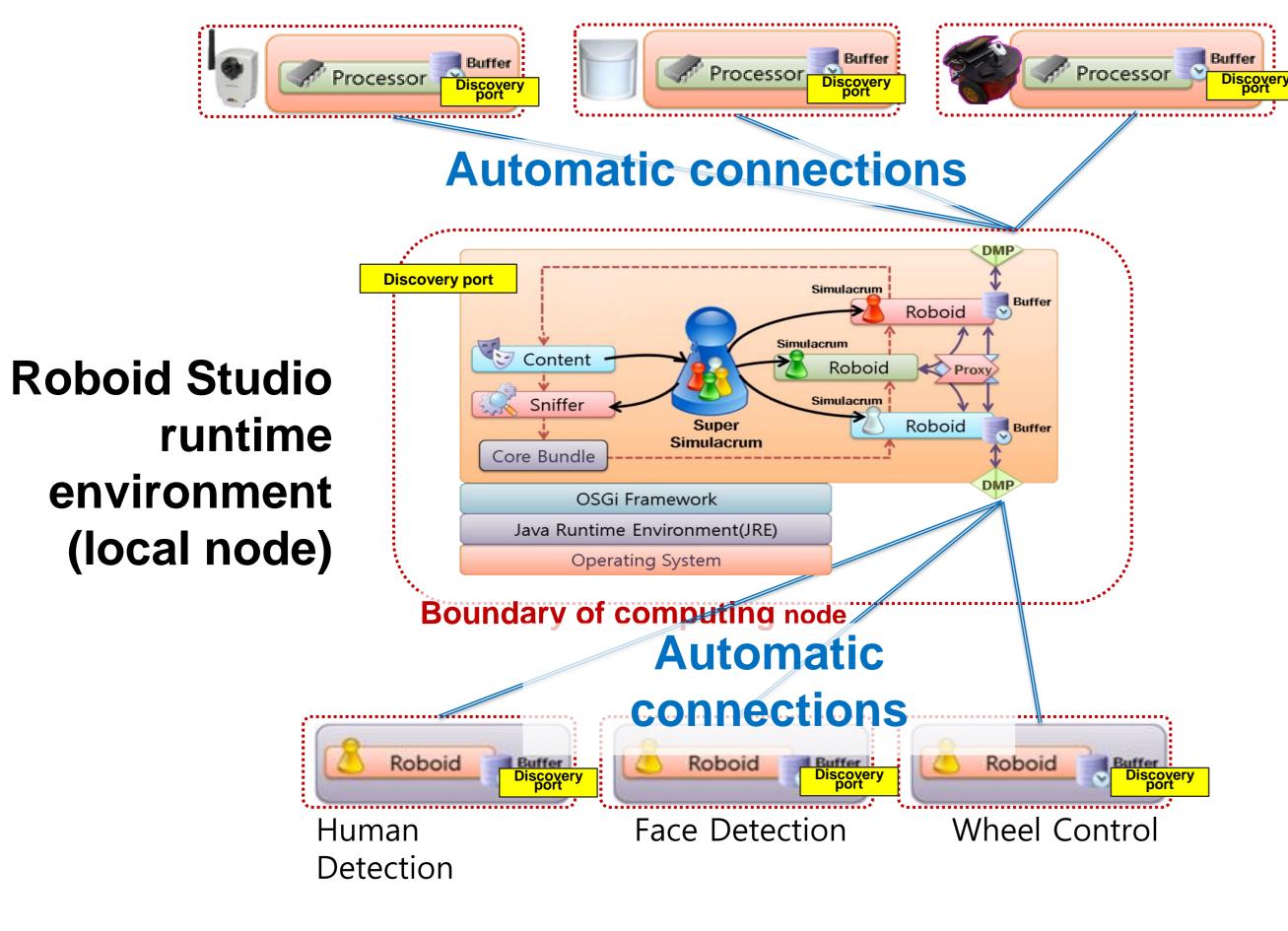
Start

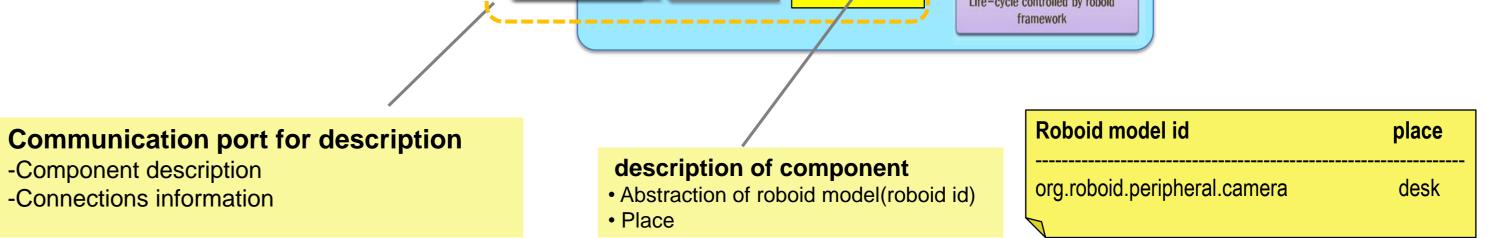
Stop

Finalize

Resolved







Service provider(component) : **Functionality-description of a component**

Future Works

 Ontology-modeling for functionality of components • World modeling for service-discovery among components General Description of the location