

Model-Driven Software Design for Robotics

The Challenge of Resource Awareness

University of Applied Sciences Ulm

Prof. Dr. Christian Schlegel

Realtime Systems and Autonomous Systems

<http://www.hs-ulm.de/schlegel>
<http://www.zafh-servicerobotik.de>



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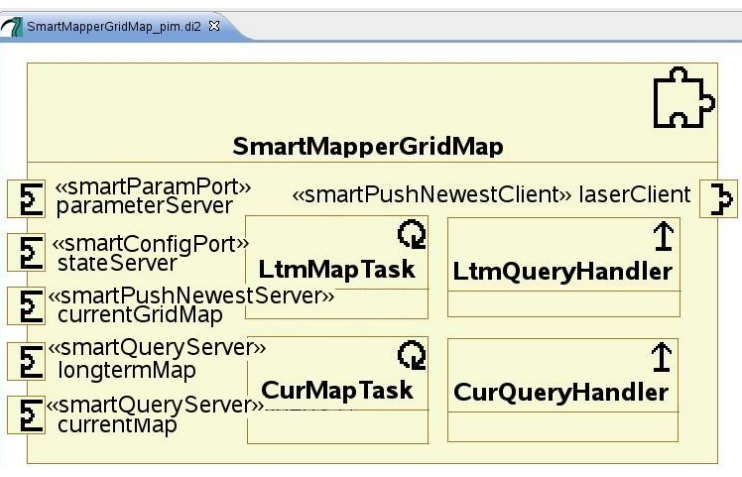


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Model Driven Software Development Workflow Example (User View)

PIM

SmartMARS – Metamodel (Modeling and Analysis of Robotics Systems)

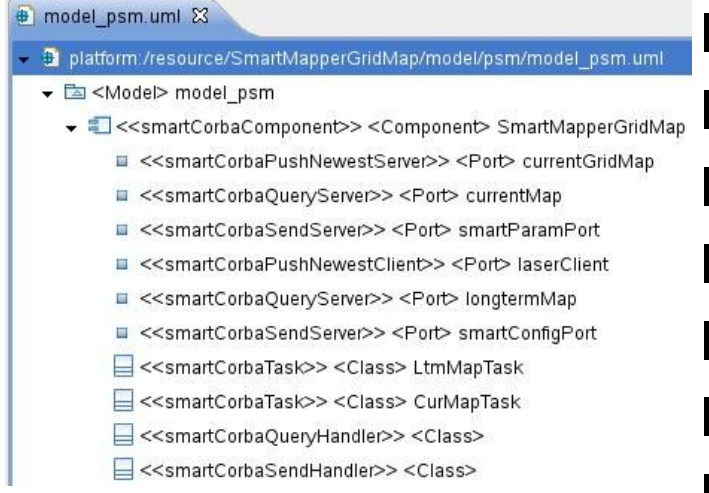


user models component hull
 - requested/ provided services
 - required resources
 - QoS parameters
 (key towards composability and resource awareness)

M2M
oAW
xTend

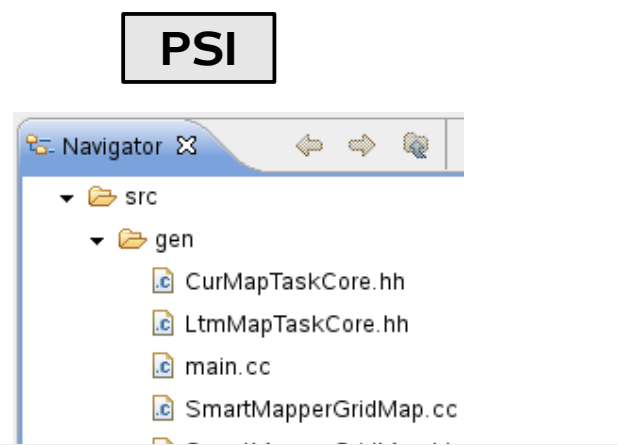
PSM

CorbaSmartSoft
CORBA based SmartSoft implementation



middleware and platform specific mapping from PIM to PSI
 - interface to verify QoS parameters
 - oAW workflow selects predefined and platform specific code blocks

M2T
oAW
xPAnd



```
#include "SmartMapperGridMap.hh"

// constructor
SmartMapperGridMap::SmartMapperGridMap() {
    std::cout << "constructor SmartMapperGridMap\n";
}

void SmartMapperGridMap::init(int argc, char *argv[]) {
    try {
        component = new CHS::SmartComponent("SmartMapperGridMap", a
        loadParameter(argc, argv);

        // create ports
        laserClient = new CHS::PushNewestClient<Smart::CommMobileL
        smartParamPort = new CHS::SendServer<Smart::CommMapperParam
        currentMap = new CHS::QueryServer<Smart::CommGridMapRequest
        currentGridMap = new CHS::PushNewestServer<Smart::CommGridM
```

freedom to use any kind of library/ user code within component



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