



Vision and Opportunities

Introduction to SeRoNet



Digitale Technologien für die Wirtschaft

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aufgrund eines Beschlusses
des Deutschen Bundestages

- SeRoNet is
 - an IT platform
 - for cooperative software development
 - in service robot applications



Mission Statement



Objective:

- Growing market for automation components and service robot applications
 - Visibility (in the market) for suppliers, increased competitiveness
 - Economically feasible service robots
 - Driving a new „robotic economy“

Approach:

- Build on industry standards: OPC UA
- Platform for all market participants
 - Connecting stakeholder
 - Improve visibility of suppliers for services and technology
- Cooperative development
 - Definition of compositions structures, definition of interfaces and properties
 - Component and system development based on such structures

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SeRoNet – Vision: Service brokerage platform



- Facilitate B2B contacts
 - System integrators find component suppliers
 - Service robot user find solution providers
- Through semantic descriptions
 - Component suppliers describe their products
 - End-user describe their automation challenges
 - Solution providers describe their competencies and offers
- By matching of challenges, solutions and components
 - Shows options and gaps, involves suppliers in application development
 - Reduces development efforts

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B2B platform – Robotics: Flourishing market?



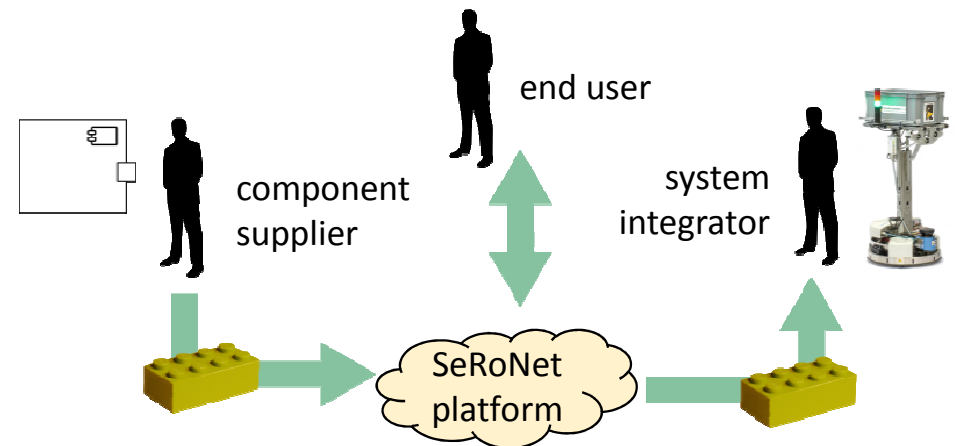
Current state:

- Market fragmentation
 - Multiple incompatible frameworks
- Vendor “lock-in”
 - Weak or no standardisation for system building
- High development costs
 - Significant integration effort
- Poor adaptability to changed requirements
 - Change often equals re-development

B2B platform – SeRoNet offers



- Online market place / catalogue for
 - Service providers
 - Component supplier
 - Service robot users
- Allowing to
 - Find partners for industrial projects
 - Find and offer (partial) solutions, components, services
 - Jointly consolidate state of the art

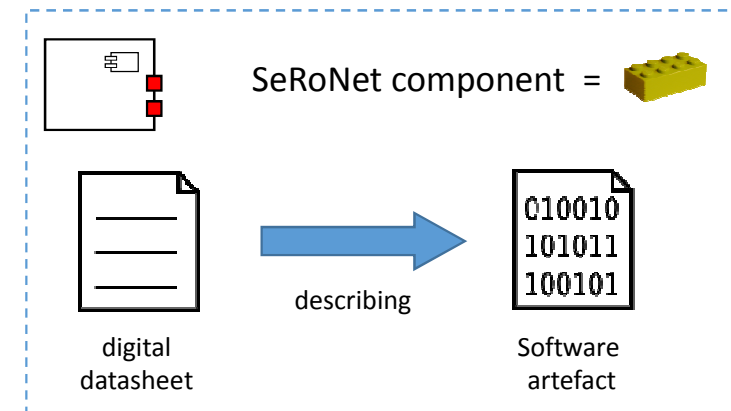


B2B platform – SeRoNet offers



Composable software components

- Common, industry-backed interfaces
 - common representation of device types
- common, OPC UA based infrastructure
 - Defined information models and services
- Machine-readable technical description
 - System composition from well-defined components
 - Model-based development approach
- Structured functional description
 - Taxonomy of components
 - Mix-and-match systems and components



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SeRoNet :=

B2B platform for

- component suppliers
- system integrators
- service robotic users

+

Common technological base

- runtime platform, tools

(*) Excluding explorers, early adaptors etc.

No one^(*) goes,
where no one is.

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No one^(*) goes,
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Two pillars for bootstrapping

- Initial content from SeRoNet consortium
- Funded early adaptors

Funding opportunity: Two calls

Call for components

- Target: Component supplier
- Funding: 100% up to 50,000 €
- Time: **August 2019**, 8 months
- Task:
 - Create new SeRoNet components
 - Adapt own (existing) components

Call for systems

- Target: system integrators, end users
- Funding: up to 100%, to be negotiated
- Time: **Early summer 2020**
- Task:
 - Implement novel robotic solution using SeRoNet tools & components

Call modalities – for components



- Call publication: August 5th
- Mode: Continuous call
 - one batch every 8 weeks
 - 1st cut-off likely September 1st
 - 3 batches planned
- Time to contract:
 - 8 weeks (planned)
 - Acceptance / rejection decision 4 weeks after cut-off
- Application:
 - Template based
 - Description of proposed components
 - Work plan + Budget
 - Approx. 10-15 pages max. in total
- Project runtime:
 - max 6 months

What we expect



New SeRoNet components 😊

Participation

- Attending workshops
 - Kick-off
 - 2 weeks after contract
 - SeRoNet tools and concepts
 - 2 intermediate status meetings
- Contribution to SeRoNet community
 - User forum, ...
- Regular feedback
 - Tools
 - Processes
 - Component models
- Deliverables:
 - Success Story / Lessons Learned

Technical work

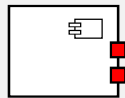
- Developing new SeRoNet components
- Wrapping legacy SW / HW components as SeRoNet components
- Contribution to SeRoNet Ontologies / model definitions
- Use and evaluation of SeRoNet tools

Examples for components



SeRoNet components:

- *Sensors*
 - *laser Scanner,*
 - *3D object recognition*
- *Actuators*
 - *gripper, robot arms*
 - *mobile base*
- *Software components*
 - *path planner*
 - *task planner*
 - *fleet management*
 - *Human machine interface*
- *... and many more*



What we offer



For participation & development

- Workshops
 - SeRoNet modelling and development approach
 - Training with SeRoNet tooling
- (Video) tutorials
- E-Mail support
- Fixed contact point / coach per project

General / long term

- Early access to new technology
- Opportunity to shape SeRoNet
- Visibility at the market

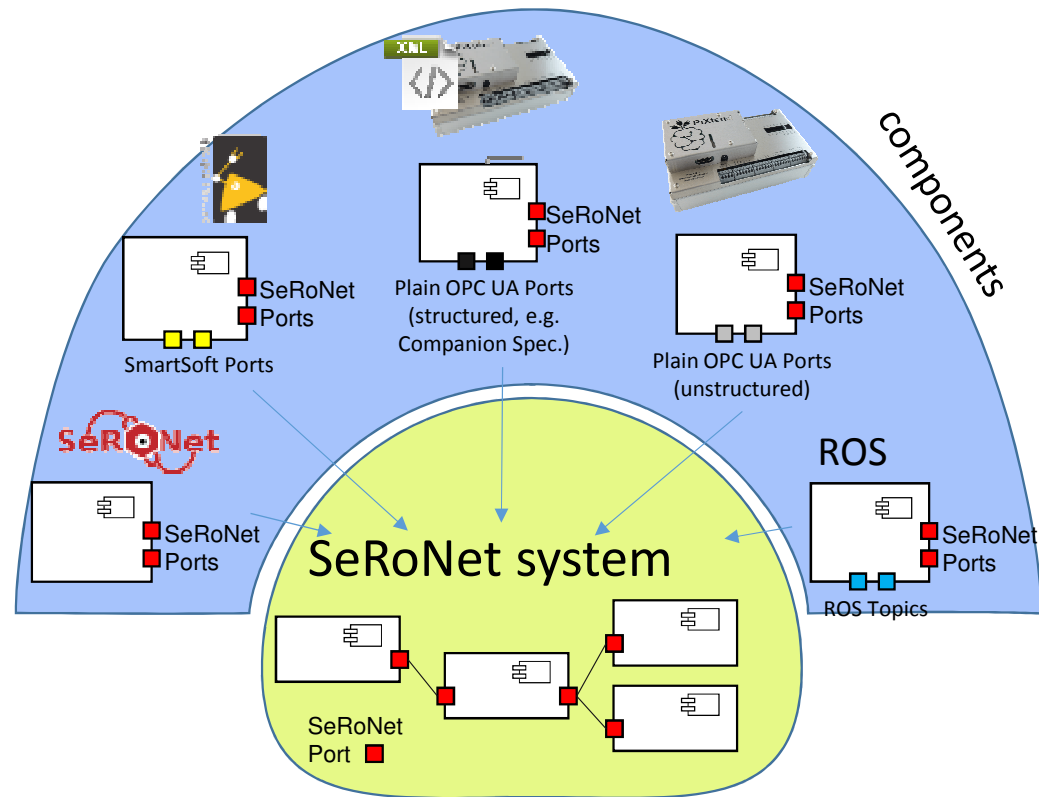
What to expect, if you apply?

Quick technical preview:
Tools & concepts

Runtime compatibility using SeRoNet-Ports



- Vendor neutral
- Open for innovation
- Service oriented

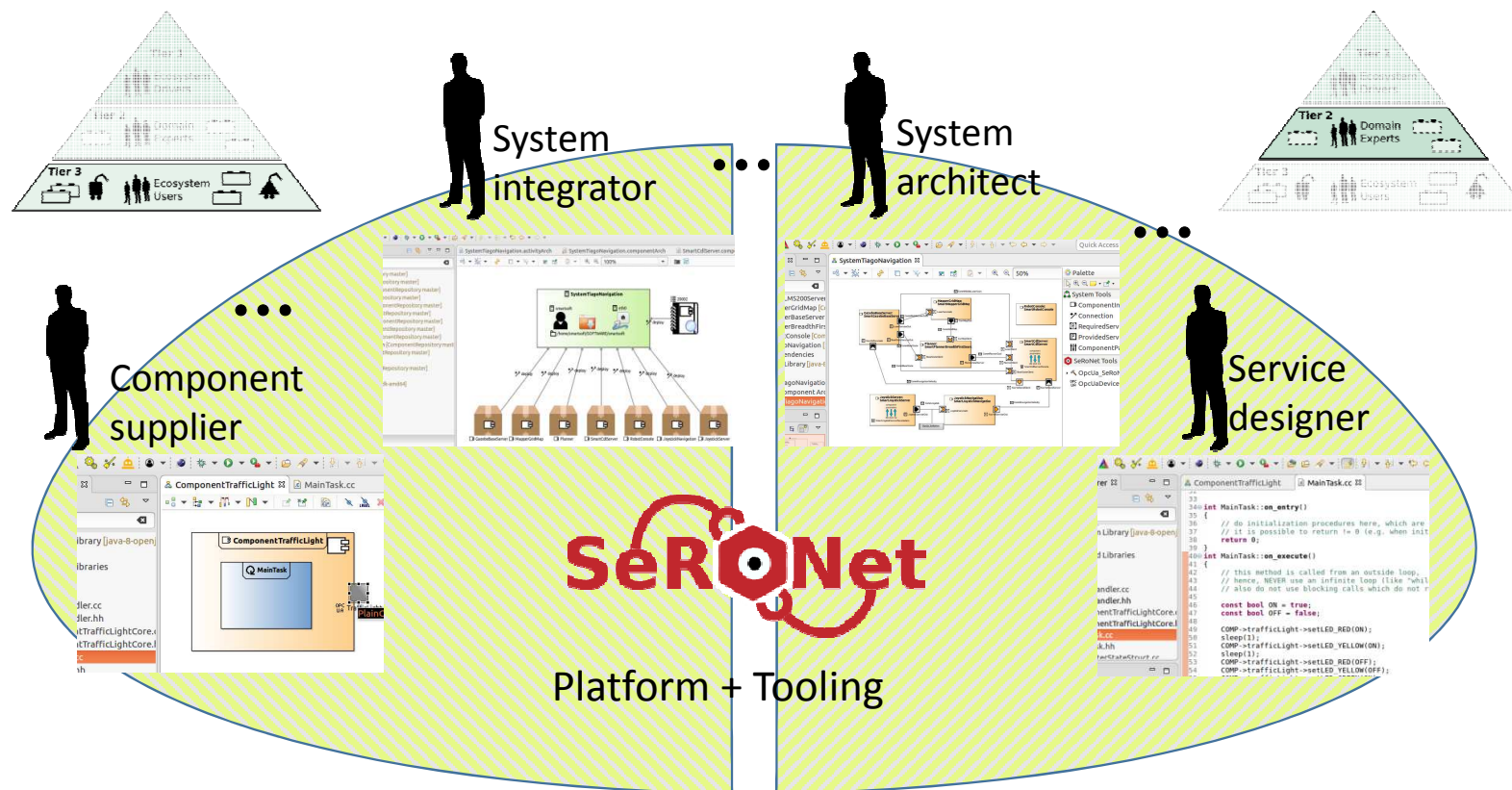


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Tooling for cooperative development



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18/12/2018

PAiCE - Digitale Technologien für die Wirtschaft

18/12/2018

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Laufzeit 1.3.2017 – 28.2.2021

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Approach to modelling

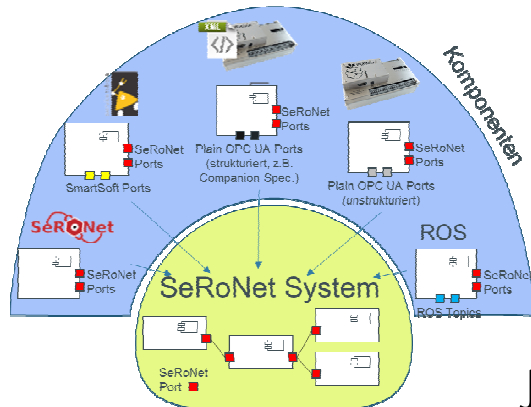


Two aspects

Technical modelling

Objective: composition

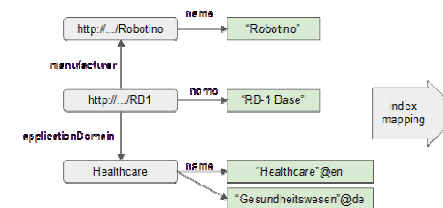
- Communication pattern
- Data model
- Runtime properties



Semantic modelling

Objective: Finding components

- Features of a component
- Application domain
- Usage restrictions
- Performance parameters



Faceted Search

Id: <http://.../Robotno>
manufacturer: Robotinc
app_domain_en: Healthcare
app_domain_de: Gesundheitswesen

Search

Id: <http://.../Robotno>
name: RD-1 Base
manufacturer: Robotinc
app_domain:

- Healthcare
- Gesundheitswesen

Jointly the „Digital Datasheet“

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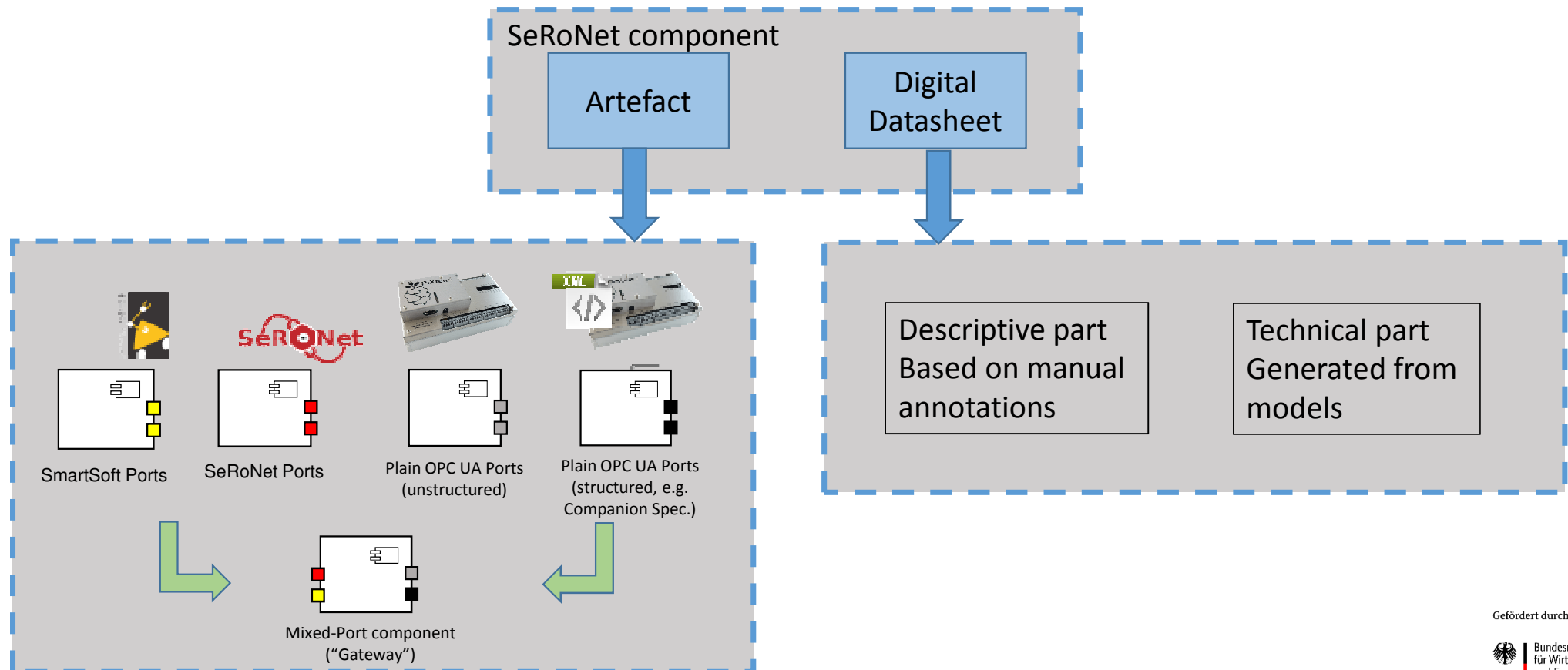


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External view of SeRoNet component



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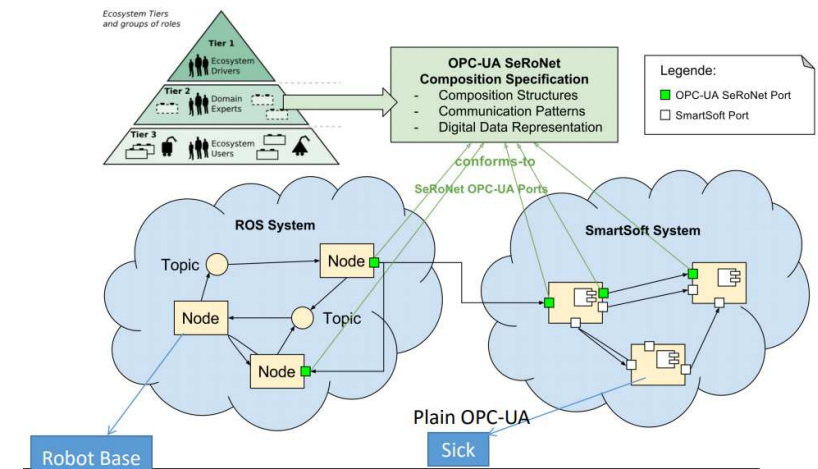
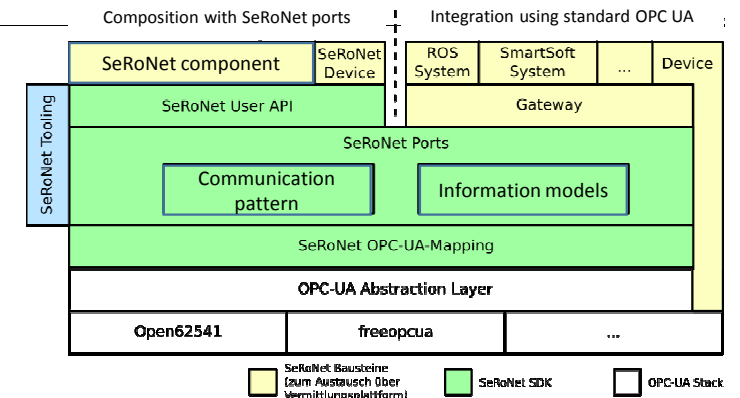
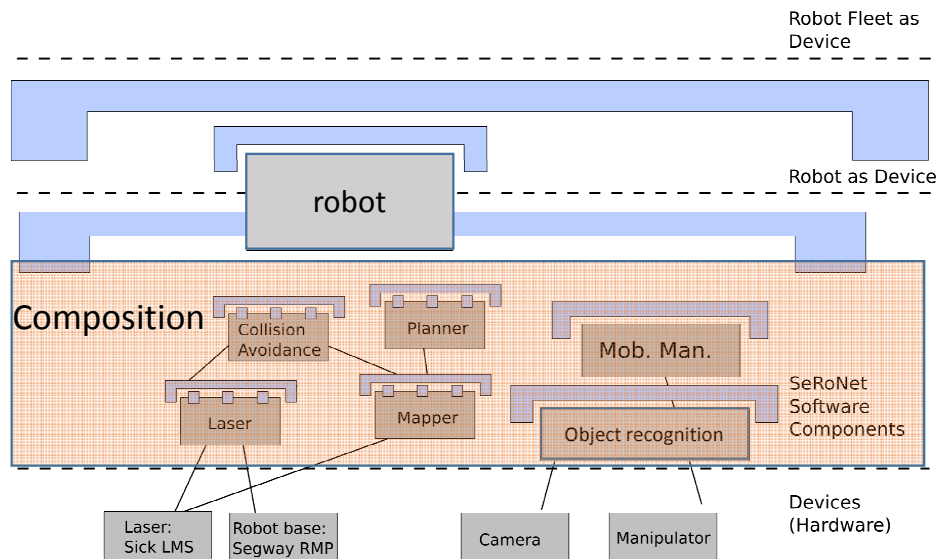


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Composition of components



- Composition on system level
- Mapping of SeRoNet communication pattern to OPC UA
 - Use SeRoNet components in other contexts
 - Maintain SeRoNet communication semantics between components





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