Vision and Opportunities
Introduction to SeRoNet
• 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
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
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
SeRoNet := B2B platform for
• component suppliers
• system integrators
• service robotic users

+ Common technological base
• runtime platform, tools
SeRoNet bootstrapping: The platform dilemma

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

(*) Excluding explorers, early adaptors etc.
SeRoNet bootstrapping: The platform dilemma

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

Two pillars for bootstrapping
• Initial content from SeRoNet consortium
• Funded early adaptors
Call for participation

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
Technical foundation

What to expect, if you apply?

Quick technical preview: Tools & concepts
Runtime compatibility using SeRoNet-Ports

- Vendor neutral
- Open for innovation
- Service oriented
Tooling for cooperative development

Component supplier
System integrator
System architect
Service designer

Platform + Tooling

SeRONet
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

Jointly the „Digital Datasheet“
External view of SeRoNet component

SeRoNet component

Artefact

Digital Datasheet

Descriptive part
Base on manual annotations

Technical part
Generated from models
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