Commercial exploitation with ROS-Industrial and Introduction into FTP session

Jon Azpiazu, Tecnalia
ROSIN Project
www.rosin-project.eu
4 years, ~8 million EUR

• Speed-up the industrial uptake of advanced robotics applications in EU
• Robot Operating System (ROS) for an open-source EU Digital Industrial Platform for Robotics
• ROS-Industrial Europe community: self-sustaining and leading world-wide

3+ Million EUR funding
• For ROS-I devel. and education.
• 4 calls a year:
  Nov 16

Software Quality Assurance
• Community involvement
• Continuous Integration
• Code scanning
• Model-in-the loop

ROS Education
• Academy for professionals
• School for students

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement no. 732287.
FOCUSED TECHNICAL PROJECTS

What service?
- Finance ROS open source development
  - Concrete industry need: driver, algorithm, application template, license or code audits…
  - We fund 1/3 of the development efforts
  - Up to EUR 100K ~ 1 year duration

Who can benefit?
- Robot software developers and users: companies, research centers…
  - EU H2020 program eligible entities (small consortiums)

How to apply?
- 4 selection cut-offs per year http://rosin-project.eu/ftps
- Simple application template (~5 pages):
  - What / How / Proof of commitment
FTP selection process

Open call
Submit any time
http://rosin-project.eu/ftp

ROSIN pays 60% of M1

ROSIN pays remaining 40% of M1
### Evaluation criteria

<table>
<thead>
<tr>
<th>Criteria (0 to 5)</th>
<th>Min.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Does it contribute to ROS-Industrial Europe?</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>2 Impact</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
<td>3 Market</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
<td>4 Technology</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
<td>5 Team</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>6 Work implementation</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>Overall score</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
ROSIN FTP Contract

- TU Delft financially responsible as ROSIN Coordinator.
- Obligation by the applicants to execute the development planned in the FTP in time, specifically **Milestone 1**.
- Milestones and payment schema.
- **Lump sum** schema for costs.
- The FTP results need to be open source under appropriate **open-source** license.
  - **Apache 2.0** license recommended
    - Business friendly, standard in ROS-industrial community.
  - Background IP defined.
Milestone 1 report for applicants
- Template focusing on QA aspects
- Evaluated by ROSIN experts
- ROSIN Monitoring workgroup (Tecnalia, TUD, ITU):
  - ROSIN support upon FTP request
  - QA monitoring of FTPs
  - Adopters ROSIN QA tools
  - One to one
  - Joint workshop with several FTPs

E.g. Coverage report by “Robotics Language”
Scope of FTPs

- ROS (1) and ROS2.0

- HW-related components,
- ROS Enhancement Proposals (REPs):
  - algorithms: e.g., a SLAM algorithm
  - application templates,
  - improvement of existing components
  - process-related work, e.g. code security audits.
  - improvement of documentation
  - integration with other software frameworks
  - ...

© ROSIN – ROS-Industrial Quality-Assured Robot Software Components
FTP RESULTS

http://rosin-project.eu/results

DRIVERS & APPLICATIONS

ROS
IMC drives interface
IMC drives
Champion Beta Robotica, Spain

AEROSTACK 3.0
AEROSTACK 3.0: Aerial robotics framework for the industry
Champion Universidad Politècnica de Madrid, Spain
https://github.com/vision4uav/aero

Rvis2AR
Champion Awesome Technologies Innovationslabor GmbH, Spain

ZIVID-ROS
Champion Zivid Labs, Norway

ARViX: Augmented Reality Visualizer for ROS2
Champion Robotics Group of Rey Juan Carlos University, Spain

ROS End-Effectors
Champion Institute Italiano di Tecnologia, Italy

Universal Robots ROS-Industrial Driver
Champion Universal Robots A/S, Denmark

ROBIN
Champion INESC TEC, Portugal

ROS Integration Service
Champion eProsima - Proyectos y Sistemas de Mantenimiento SL, Spain

Ensens-ROSIF
Champion Ensensa GmbH, Germany
http://wiki.ros.org/ensens_driver

HRIM: The Hardware Robot Information Model
Champion EeRobotics S.L., Spain
https://github.com/ee_robot/HRIM

ROS Control
Champion PAL Robotics S.L., Spain

ANDROS
Champion DroneOwl, Greece

MOVE-RT
Champion University of Bologna, Italy

ROS2AR
Champion UTCN, Romania
FTP RESULTS

http://rosin-project.eu/results

TOOLS

- **ROL**: Robotics Language
  - Champion: Robot Care Systems, Netherlands
  - Website: https://github.com/robotcorexsystem

- **ROS-I**: RedROS-I
  - Champion: ALIAS ROBOTICS, Spain

- **ROS-MDD**: ROS-MDD
  - Champion: IEA LIST, France

- **roScan**: Prognostics and Health Management Tool for ROS
  - Champion: Innovent Mahadisak Ltd, Sri Lanka

- **CalibROS-FTX**: Robot supported calibration of F/T sensors
  - Champion: ME-Meßsysteme GmbH, Germany

ALGORITHMS

- **PAL ROBOTICS**: PAL Statistics Framework
  - Champion: PAL Robotics, Spain
  - Website: https://github.com/palrobotics/pal_statistics

- **ROSindustrial indoor positioning system**: ROSindustrial indoor positioning system
  - Champion: Innovent Mahadisak Ltd, Sri Lanka
  - Website: https://github.com/iea-list/iea-list

- **ROSps**: ROBUST AND RELIABLE GPS-FREE LOCALIZATION ALGORITHM FOR AERIAL ROBOTS APPLIED TO INDUSTRIAL APPLICATIONS
  - Champion: Advanced Center For Aerospace Technologies (TADA-CATEC), Spain

- **ROS dyn**: Coverage Path Planning and Control
  - Champion: MobiProjects BV, Netherlands

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  - Champion: MobiProjects BV, Netherlands

- **ROS weld**: ROSWELD – ROS based framework for planning, monitoring and control of multi-pass robot welding
  - Champion: PPM AS, Norway
FTPs statistics

Geographical distribution

FTPs granted

Con tecnología de Bing © GeoNames, HERE, MSFT, Microsoft, Wikipedia
FTPs statistics

Organization type

- University: 5%
- Research Centre: 11%
- Company: 3%
- SME: 16%
- System Integrator: 16%
- OEM: 16%

Project categories

- Hardware: 21%
- REP: 15%
- Improvements: 18%
- New algorithm: 12%
- Application template: 7%
- Other: 10%
- Security audit: 1%
- Code review: 4%
- Documentation: 12%

Proposals per round

- Chart showing proposals per round from 2017-07 to 2019-09.
FTP presentations today

- ROBIN
  - Rafael Arrais (INESC TEC)
- ROS End-Effector
  - Luca Muratore (IIT)
- ROSWELD / Blackbox
  - Trygve Thomessen (PPM Robotics)
- Cross-platform ROS simulation for mobile manipulators
  - Olivier Michel (Cyberbotics)
- Large 3D Inspection / Robust and reliable gps-free localization algorithm for aerial robots applied to industrial applications
  - Paloma Carrasco Fernández (CATEC)