New Challenges for Mobile Service Robots conceived to Work in Industrial Environments

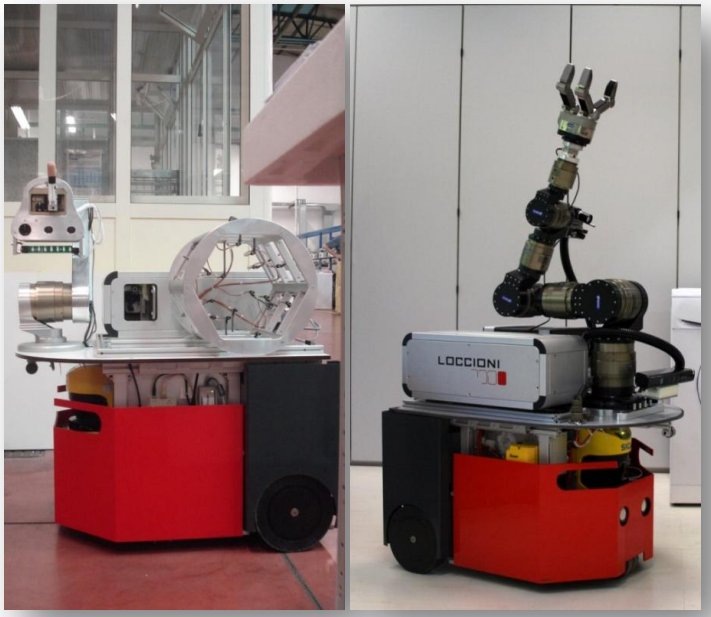
Luca Lattanzi | Loccioni Group | Italy

LOCCIONI

www.loccioni.com

*A growing trend in modern manufacturing is the need for **deeper inspections** and **more accurate controls** on a **limited set of products**, in addition to the "classical" quality controls performed on 100% of the production along the assembly line.*

***More accurate** (and so more expensive…) **sensors** are required, that **cannot be replicated** for every fixed testing station.*



Solution

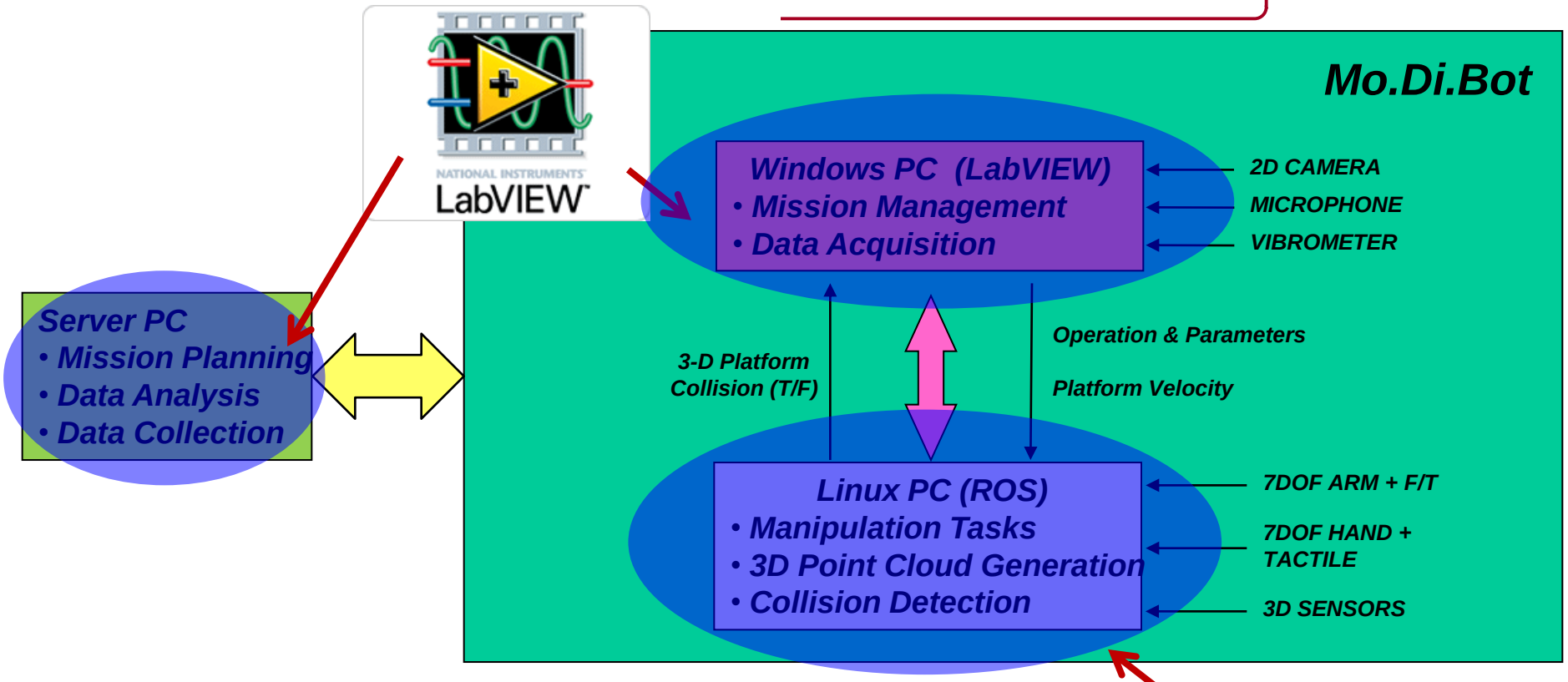
*A **mobile testing station** equipped with **advanced measurement sensors**, able to*

- ✓ *autonomously move in the environment (**flexible measurement**)*
- ✓ *perform inspections on products when required (**measurement on demand**)*

*The developed solution is a **Mobile Diagnostic roBot** (MoDiBot).*

The research leading to these results has partially received funding from the European Union Seventh Framework Programme within the research contract FP7 –ICT–ECHORD.

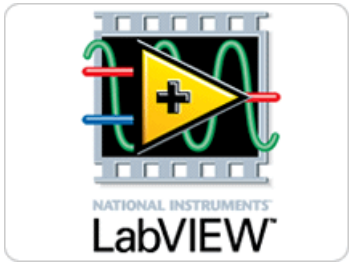
Software Architecture



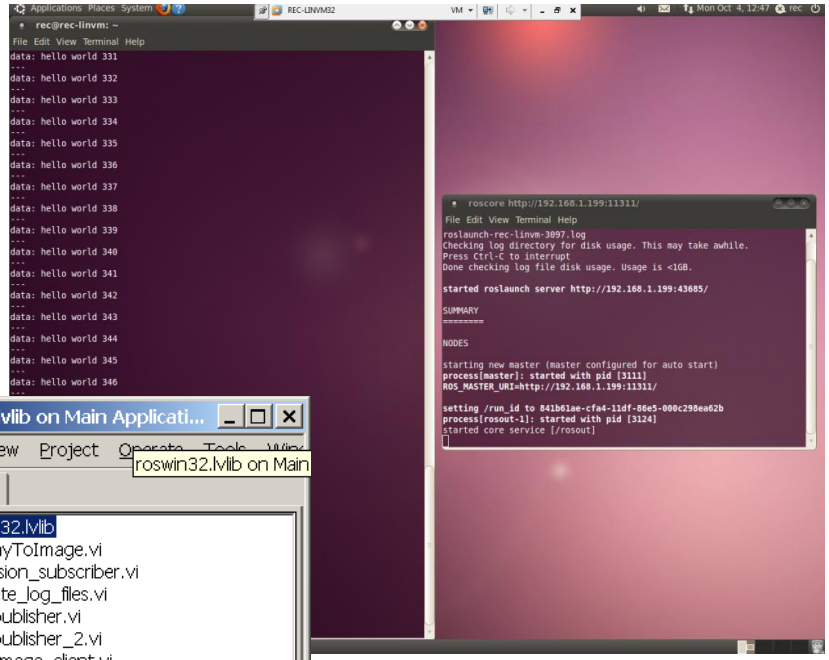
- *2D Camera Acquisition*
- *3D Sensor Acquisition*
- *Measurement Sensor Acquisition*
- *User Interface*
- *Mobile Platform Control*
- *SCHUNK 7DOF LWA Arm Control*
- *SCHUNK 7DOF SDH Hand Control*
- *3D Sensor Acquisition*

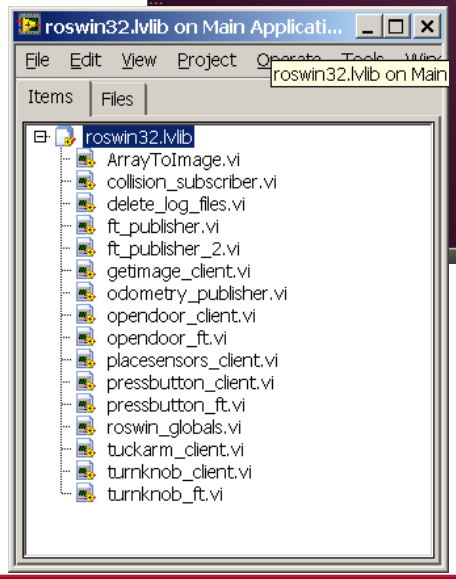
ROS

LabVIEW-ROS Communication



- ✓ ***Customized*** *for the specific* ***robot application***
- ✓ *Mainly based on* ***ROSWIN32 package*** *(REC Gmbh)*
- ✓ ***Added additional ROS structures:***
  - ✓ *actionlib – interface for preemptible tasks*
  - ✓ *tf – coordinate frames tree*
- ✓ ***Extended for "ROS Electric"*** *support*
- ✓ *Efficient and effective exchange of:*
  - ✓ ***Sensor Data***
  - ✓ ***Task Commands***
  - ✓ ***Task Acknowledgements***





Thank You!!

Luca Lattanzi
Research for Innovation
l.lattanzi@loccioni.com

Loccioni Group | AEA srl
Angeli di Rosora | Ancona | ITALY
Phone +39 0731 816 377
www.loccioni.com

research.loccioni.com