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b3M33MKR: Introduction to Robots

Karel Košnar, Gaël Écorchard

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Turtlebot 2

- Kobuky base
  - Control
  - Odometry
  - Bumper
  - ...
- NUC PC
  - SSH
  - Wifi
  - ROS
- RGBD Sensor
  - Intel RealSense
  - Orbex Astra

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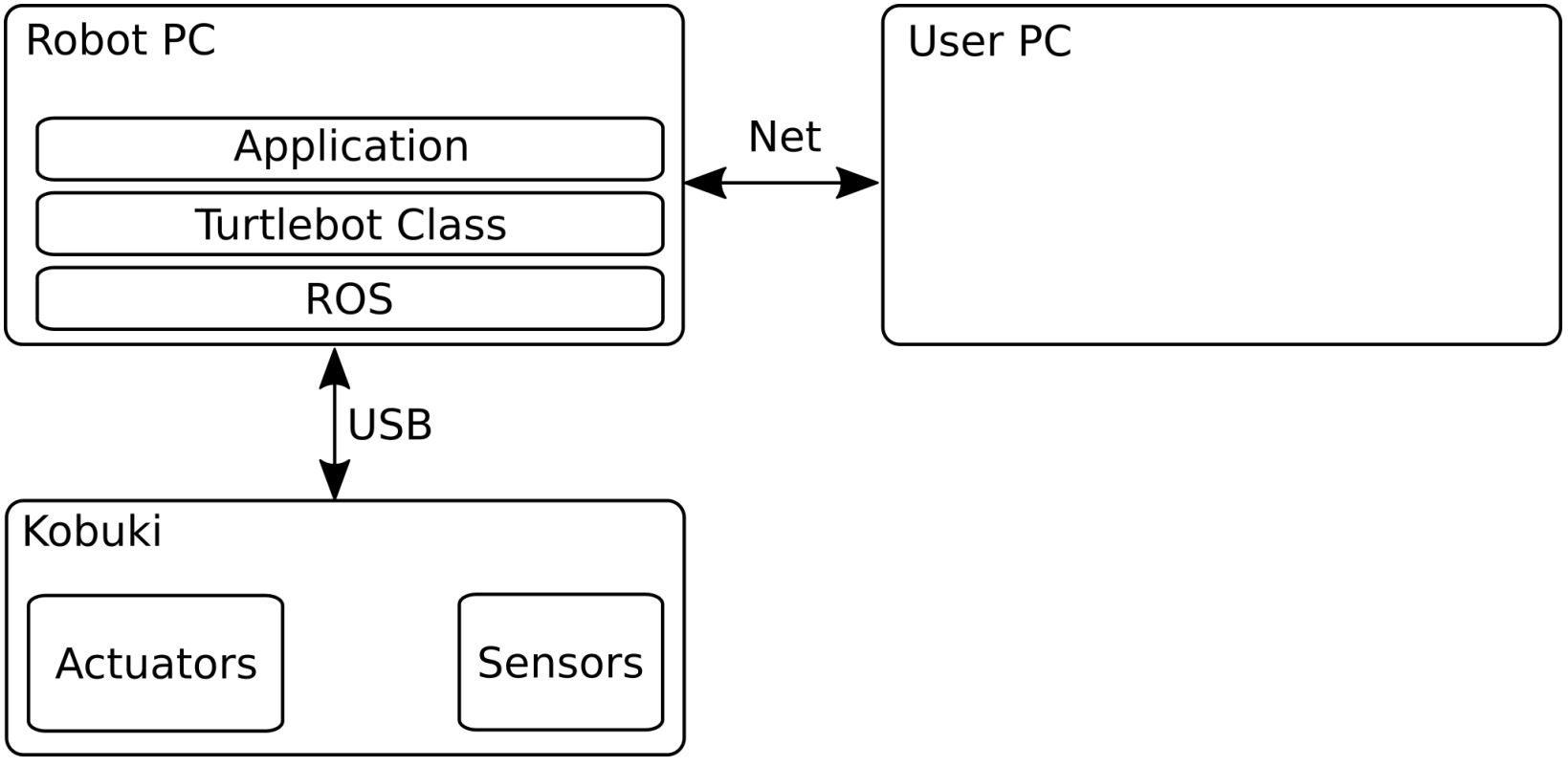
System overview



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Robot Operating System (ROS)

- Middleware that integrates, sensors, robots and logic into modular system.
- In barebones it provides communication layer between processing units.
- Suports multiple language and multiple machines.
- The main building blocks are Nodes, Topics and Services.

- Node - building block of robotic system (camera driver, robot controller, image filter ...)
- Topic - named stream of data with same type (rgb camera image, odometry, robot commands ...)
- Service - named function, with specific request and response (reset odometry, open gripper, compute ik ...)

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Connect to robots

- **Network in the KN:E130 essid: e210bot, key: j6UsAC8a**
- **Using ssh:** `ssh ros@turtle01` **pass: r0sr0s**
- **Using ssh with ip address:** `ssh ros@192.168.210.21` **pass: r0sr0s**
- **Start robot driver:** `turtle_start`

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Resources

- **Turtlebot**
  - https://gitlab.fel.cvut.cz/wagnelib/turtlebot
  - http://www.turtlebot.com/turtlebot2/
  - http://wiki.ros.org/Robots/TurtleBot
  - http://wiki.ros.org/kobuki
- **ROS**
  - http://www.ros.org
  - http://wiki.ros.org
  - https://answers.ros.org