The Intuitive ROS UI: FlexGui 4.0
introduction and industrial applications

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PPM AS
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PPM AS

- International high-tech robot-system integrator and software house
- Making robotization user friendly, highly flexible and cost efficient
- Developing cutting edge industrial robot installations and software for industrial robots
- Full member of ROS Industrial Europe
PPM AS – R&D network
PPM AS – Industrial experience
Users know your software through the UI

Best software ever made

Windows Mobile 2003

Best software ever made

iOS 1.0

Touch screen phones are totally hopeless!

I must preorder two month before anyone has seen it!

I rather take a Blackberry with full QWERTY keyboard...

Let’s wait in a line overnight!
R&D + Industry → FlexGui
FlexGui Applications

Graphical Program Editor

Welding Monitor

List view  Detail view  Graph view

Date: 2014.05.30. 18:21  Weld history: 1001

Welding result:
- Normal term

Welder No: 1  Gun No: 1  Trans ratio: 75.0

Program: 7777  Step: 4

Weld Cond: 1  Sequence: 1

Step: 1  Count: 1  Up Rate: 100%

Voltage: 23.4 V  Freq: 50.1 Hz

Weld current: W1 0.0 A, W2 0.0 A, W3 0.0 A, Avg 0.0 A

Layer editor - New layer 2

Graphical Palletizing
Industry 4.0 → FlexGui 4.0

- Transparent access to all devices on a production line
- “Mobile phone” like interface
- Drag’n drop GUI to any application
- Open source (the source is on the ROS GitHub)
- Platform independent
- Based on ROS
#### FlexGui 4.0 Components

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Components by Connections

- FlexGui
  - Tablet PC
  - Phone
- Alarms Fidget
- Messenger Fidget
- Factory Designer
- Remote View
- Camera Fidget

FlexGui Node
- Hyundai Link
- FD Link
- Alarm Management
- Expert Site Link
- Camera HUB

- ROSbridge

Linux PC
- Raspberry Pi

- Web Server
- Alarms service
- Online Expert Site

- MODBUS driver
- ROSbag+
- ROScore
- ROSSupport

- Optimized Core
- Advanced Robot Node Support
- Drag & Drop
- Messenger Fidget
- Factory Designer
- Camera Fidget
- Lamp Fidget

- Video / Audio / Text Messaging

- Internet of Things

- UI layer
- Service layer
- ROS layer
- Hardware layer

Robot
- Network Camera
- Network Camera
- Network Camera

Robot
- PLC
- PLC
Connecting a robot to a lamp

UI layer
Service layer
ROS layer
Hardware layer

FlexGui
Expert PC
Alarms Fidget
Messenger Fidget
Factory Designer
Remote View
Camera Fidget

FlexGui
Web Server
Alarms service
Online Expert Site

Linux PC
Raspberry Pi

FlexGui Node
Hyundai Link
FD Link
Alarm Management
Expert Site Link
Camera HUB

Robot
Network Camera
Network Camera
Network Camera

Robot
FD RT 5ms

ROScore
ROSbag+
MODBUS driver

ROSbridge

Network Camera
Network Camera
Network Camera

Robot
PLC
PLC

Alarms
…

turning innovation into flexible automation….
Demo 1: Binding lamps to a robot
Demo 1: Switch to edit mode
Demo 1: Select the robot’s node
Demo 1: Pick the variables from the list
Demo 1: See the topics created
Demo 1: Give them a short „friendly name”
Demo 1: Place a lamp from the right belt
Demo 1: Edit the lamp: text and value
Demo 1: Copy and paste to have teach mode
Demo 2 – Building a Factory Screen

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 2 – Place robots or other devices

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 2 – Set up the screen links

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 2 – Place obstacles

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 2 – Draw the fences

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 2 – Adding cameras

Factory Designer
- Simplified Overview
  - Devices, Cameras
  - Fences, Obstacles, etc.
- Shortcuts to screens
- Customizable
- Adding a new device takes a second
Demo 3 – Scriptable Alarm Definition

Custom Scripts
- Full JavaScript logic
- Kept simple
- Combine parameters
Demo 3 – FG ExpertSite Multiple Factory Management

Widget System
- Factories
- Alarms
- Multimedia Messages
Demo 3 – Diverse Alarm Possibilities

Push Messages

SMS messages
Demo 3 – Inspect the problem

Remote Access
- Over VPN
- All device variables
- Camera images
- History Mode
- Real Time Synchronization
Demo 3 – Prepare a solution

Remote Access
- Over VPN
- All device variables
- Camera images
- History Mode
- Real Time Synchronization

Recovery Screen
- Please press the buttons from left to right
Demo 3 – Wait for the call

Remote Access
- Over VPN
- All device variables
- Camera images
- History Mode
- Real Time Synchronization
Demo 3 – Amaze the customer with 5s response time

- Emergency Line
- Not even an expert is required
FlexGui 4.0 – case setup

• **level 0**: Multi-factory monitoring and control
  (example: View status of factories, remote control, contact the local operator (audio, video, text))

Only 1 button press!

I need assistance
FlexGui 4.0 – case setup

• **level i**: Factory monitoring and control

(example; View status of the factory and get access to any device by double click on the icon)
FlexGui 4.0 – case setup

• **level ii**: Device monitoring and control
  (example; View status and manufacturing data of one of the robots in the production)
FlexGui 4.0 – case setup

• **level ii: Device monitoring and control**
  (example; View the current status of the robot program being executed)
FlexGui 4.0 – case setup

• level ii: Device monitoring and control
  (example; View / playback error messages and synchronous video from the production)
FlexGui 4.0 – case setup

• **level iii**: Device operation – std interface
  (example; Safe remote monitoring / operation of the robot to assist the local operator)
FlexGui 4.0 – case setup

- **level iii**: Device operation – FlexGui interface
  
  (example; Programming and operating the robot by FlexGui)
FlexGui 4.0 licenses

- **Free of charge**
  - Optional Packages Trial

- **Optional Packages**
  - Application Packages
  - Support Packages

- **Enterprise**
  - Professional Package
  - ROS Industrial Package
  - High Performance FlexGui Core

- **ROS Industrial**
  - ROS Industrial Package

- **FlexGui Core**

- **ROS Device Drivers**
  - Advanced Drivers Trial
  - Advanced Drivers

Turning innovation into flexible automation...
How to get FlexGui 4.0?

• Homepage: [www.ppm.no/flexgui4-Home](http://www.ppm.no/flexgui4-Home)
  • Product description, documentation, on-line trial

• ROS: [github.com/ros-industrial/flexgui_industrial](https://github.com/ros-industrial/flexgui_industrial)
  • Open source download
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