FZI Forschungszentrum Informatik

Robot Folders

Your favorite meta-workspace manager

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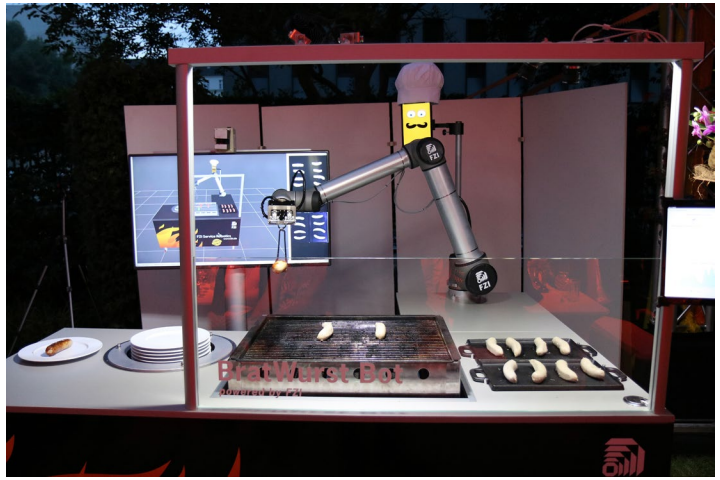
ROSCon Odense

When we think of robots…



Many robots – many workspaces

- As ROS developers we love our workspaces, right?

RIGHT?

How do we manage different workspaces?

```
> $ ls ~/checkout
autonomy_stack          kuka_ros2               ros2_control_rolling_jammy
cad2path                lauron_vi               ros2_motion_pipeline
cartesian_controllers   mopi                    ros_bt_py
catkin_testing          mopi2                   schunk_description
enrich_bs_ros2          moveit_humble           shared_workspace_tests
esa_base_station        moveit_rolling          shop4cf_ros2
euroc                   msg_store_ros2          space_assembly
euroc_showcase          nav_action              spot_ros2
euroc_usecase           navpi                   svh_github
fkie                    navpi_ros2              svh_ros2
flexbe_app              nimbro_network          ur_doc
follow_me               node_exploration        ur_humble
ganresirob_test         plexnav                 ur_iron
gazebo_ros2             pylon_camera            ur_jazzy
grasping_workspace      ret_bridge              ur_noetic
hand_eye                ret_ros1                ur_rolling
hollie                  ret_ros2                ur_rolling_jammy
holliecares             robdekon_husky          vfb_mapping
husky                   robotiq                 vfb_mapping_ros2
husky_gazebo            robotiq_2f_urcap        window_gluing_demo
husky_gui               robotiq_gripper         xmas_2018
husky_ros2              robotiq_ros2            xmas_2019
husky_sim               robotiq_urcap_ros       zenoh
ids_robot_guis          ros2_control_humble
jugr_nuc                ros2_control_rolling
```

The painful story of a ROS developer

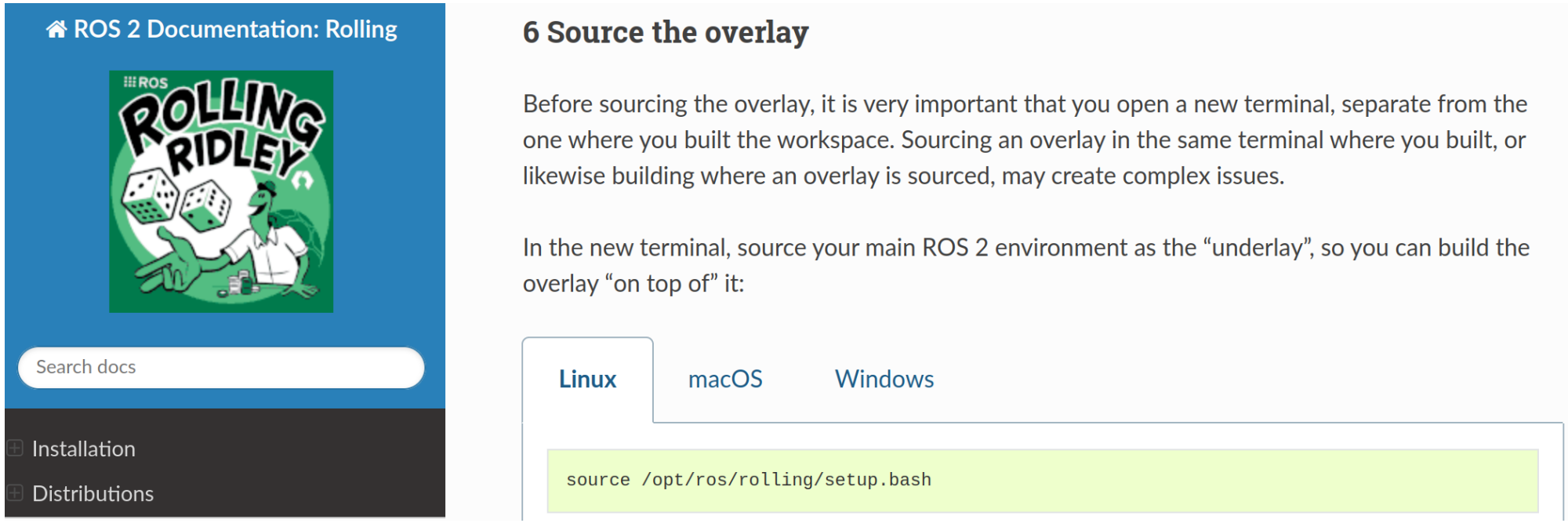
- Vincenzo has a couple of workspaces

```
checkout
├── ros2_control_rolling
│   └── colcon_ws
├── ur_noetic
│   └── catkin_ws
├── ur_jazzy
│   └── colcon_ws
└── ur_rolling
    └── colcon_ws
```

- In a new shell

```
source ~/checkout/ur_rolling/colcon_ws/install/setup.zsh
```

Building a workspace



https://docs.ros.org/en/rolling/Tutorials/Beginner-Client-Libraries/Creating-A-Workspace/Creating-A-Workspace.html#source-the-overlay

Building a workspace

To build his workspace Vincenzo has to

- Open a new shell
- Source the correct ROS distribution
- Source any underlay
- Navigate to the colcon root
- Trigger the build

```
source /opt/ros/rolling.setup.bash
source ~/checkout/ros2_control_rolling/colcon_ws/install/local_setup.bash
cd ~/checkout/ur_rolling/colcon_ws
colcon build
```

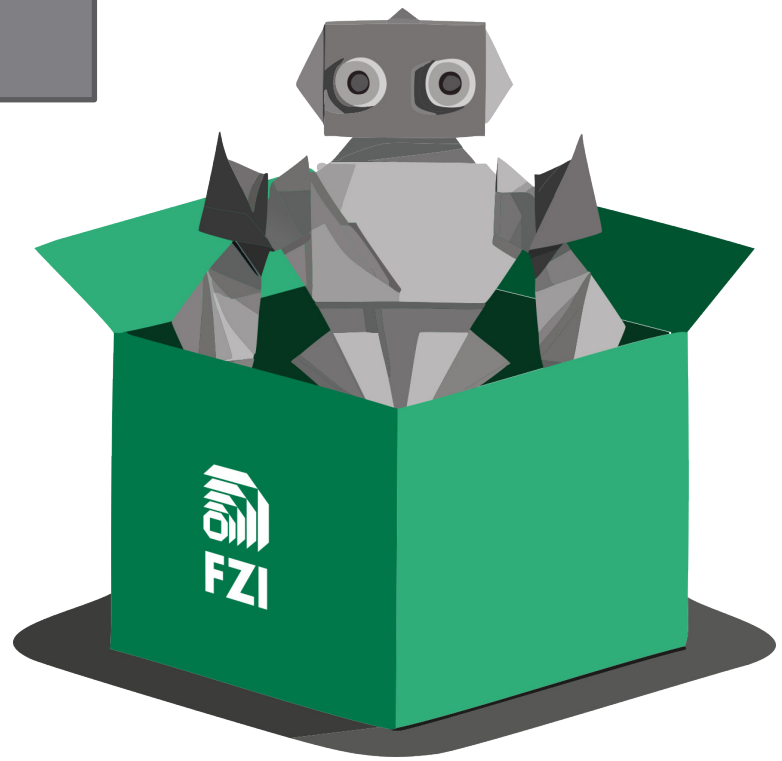
There‘s got to be a better way!

- Source the workspace in a new shell:

```
ce
```

- Build the workspace in **any** sourced shell

```
fm
```



robot_folders

```
$ fzirob
  [...]

Commands:
  add_environment         Add a new environment
  change_environment      Source an existing environment
  make                    Builds an environment
  manage_underlays        Manage underlay workspaces used for the current workspace.
  run                     Run a demo script
  adapt_environment       Adapt an environment to a config file
  scrape_environment      Scrape an environment config to a config file
  [...]

Aliases:
  ce                      fzirob change_environment
  fm                      fzirob make
```

What is an environment?

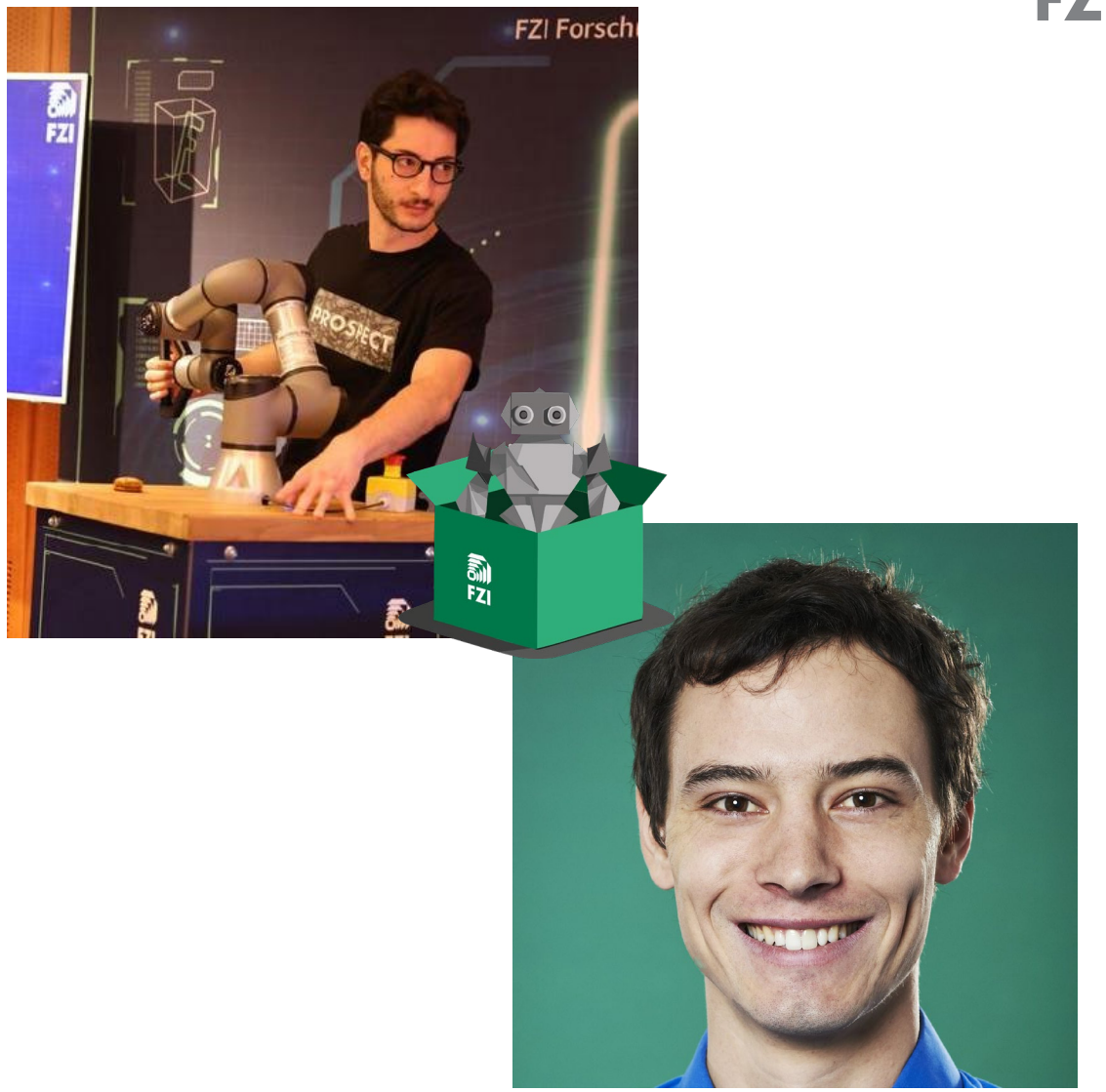
An environment can contain and will source if present

- A catkin_ws
- A colcon_ws
- A misc_ws
  - `misc_ws/export/lib` gets added to `$LD_LIBRARY_PATH`
  - `misc_ws/export/bin` gets added to `$PATH`
  - `misc_ws/export` gets added to `$CMAKE_PREFIX_PATH`
  - has to be built by hand
- ... potentially more

Collaboration features

`fzirob scrape_environment / adapt_environment`

- Export / import workspace repositories similar to `vcstool`
- Handles all workspaces at once
- Also handles demo scripts



Hey Vincenzo, turn on that random demo over there!

- **`fzirob run`** manages executables for an environment
- Place an executable in the **`demos`** folder
- Simple workflow on a demo you don't know:

```
ce # source the most recent env
fzirob run <tab><tab>
```

Summary

robot_folders helps making your life as a developer easier

- Easy sourcing
- Easy building
- Easy managing of complex dependency scenarios
- Tab completion everywhere
- Great collaboration features
- Easy installation

```
pipx install robot-folders
```

https://github.com/fzi-forschungszentrum-informatik/robot_folders

Thank you!

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