ROS Android-NDK

What? Why? How?

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Definitions

JavaTM Native Interface (JNI)

a standard programming interface for executing native code inside Java applications.

Android NDK

a tool-set that allows you to implement parts of your app using native-code languages such as C and C++.

rosjava (http://wiki.ros.org/rosjava?distro=indigo)

an implementation of ROS in pure Java with Android support.

What is it?

ROS Android-NDK

It's a set of scripts that make easier to cross-compile ROS packages/libraries using the Android NDK.

This allows to run ROS packages/libraries on Android as:

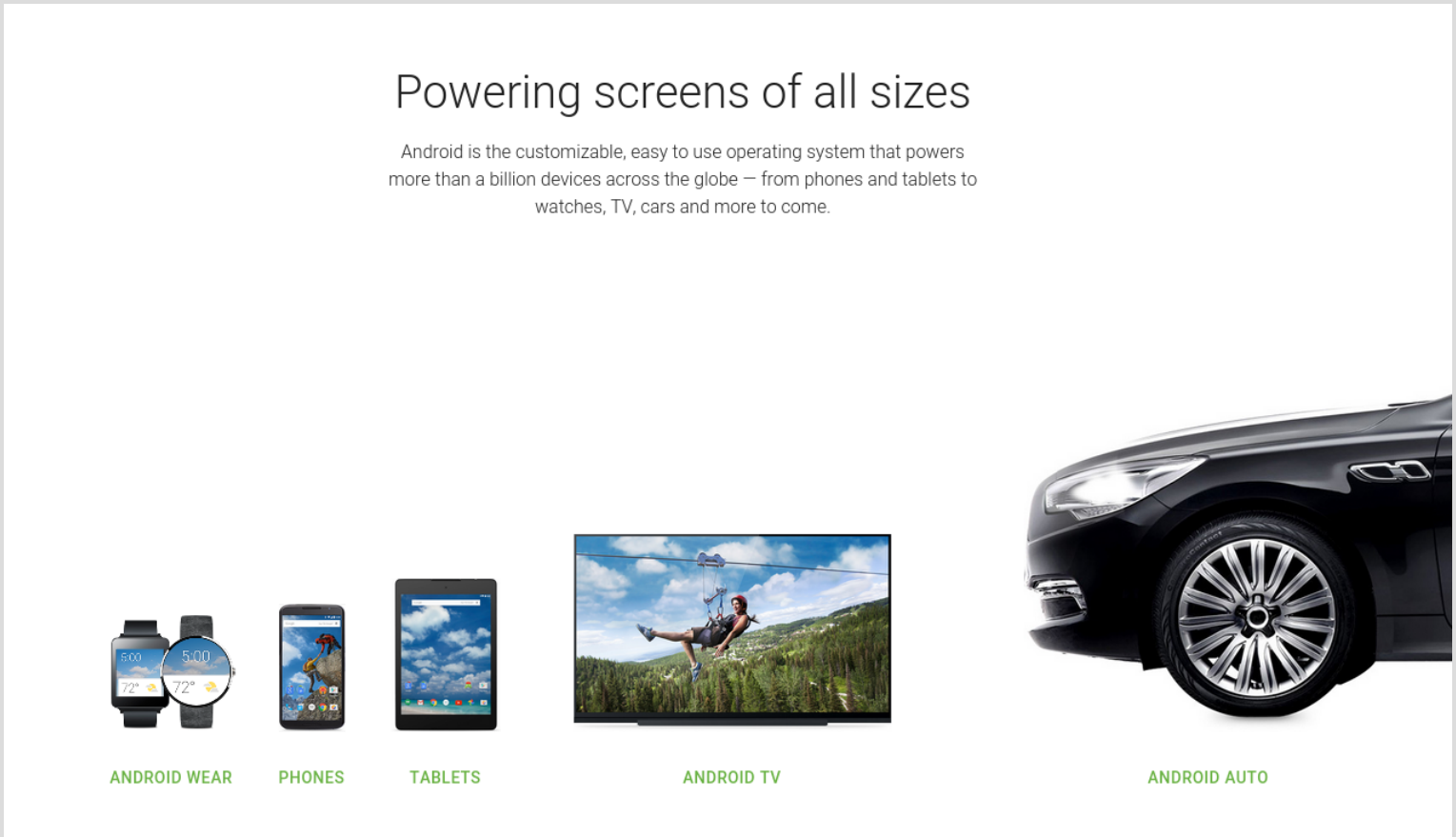
- a native activity (C++),
- a normal app using the JNI and rosjava
- a native executable

What's been done?

- 181 ROS packages from the Desktop variant (-viz -python)
- Tutorials (http://wiki.ros.org/android_ndk)
  - Native Activity
  - JNI wrappers with rosjava
- robot_localization demo

Why is it interesting?

Android devices are becoming more popular and ubiquitous



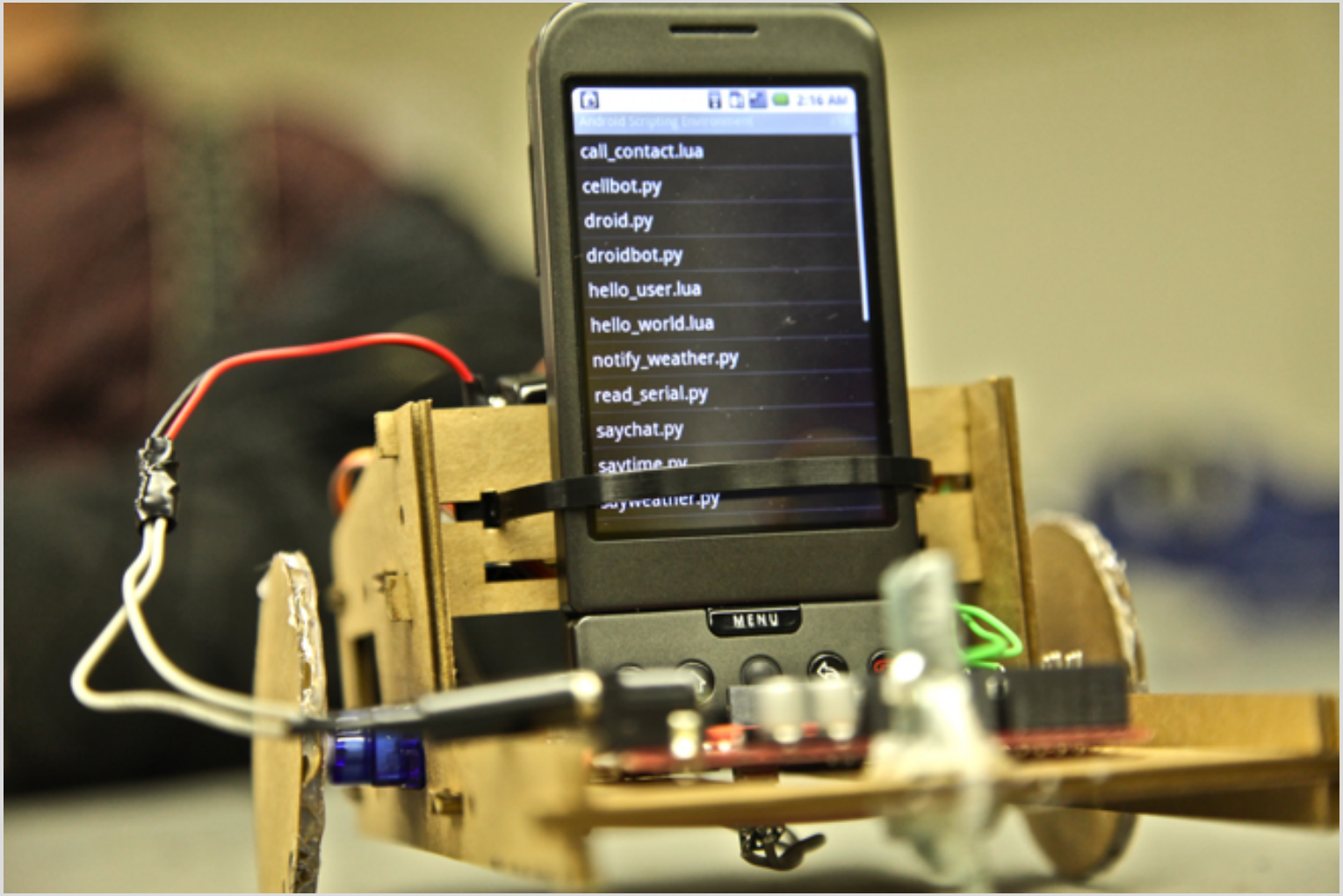
Why is it interesting?

Android devices are becoming more powerful

Why is it interesting?

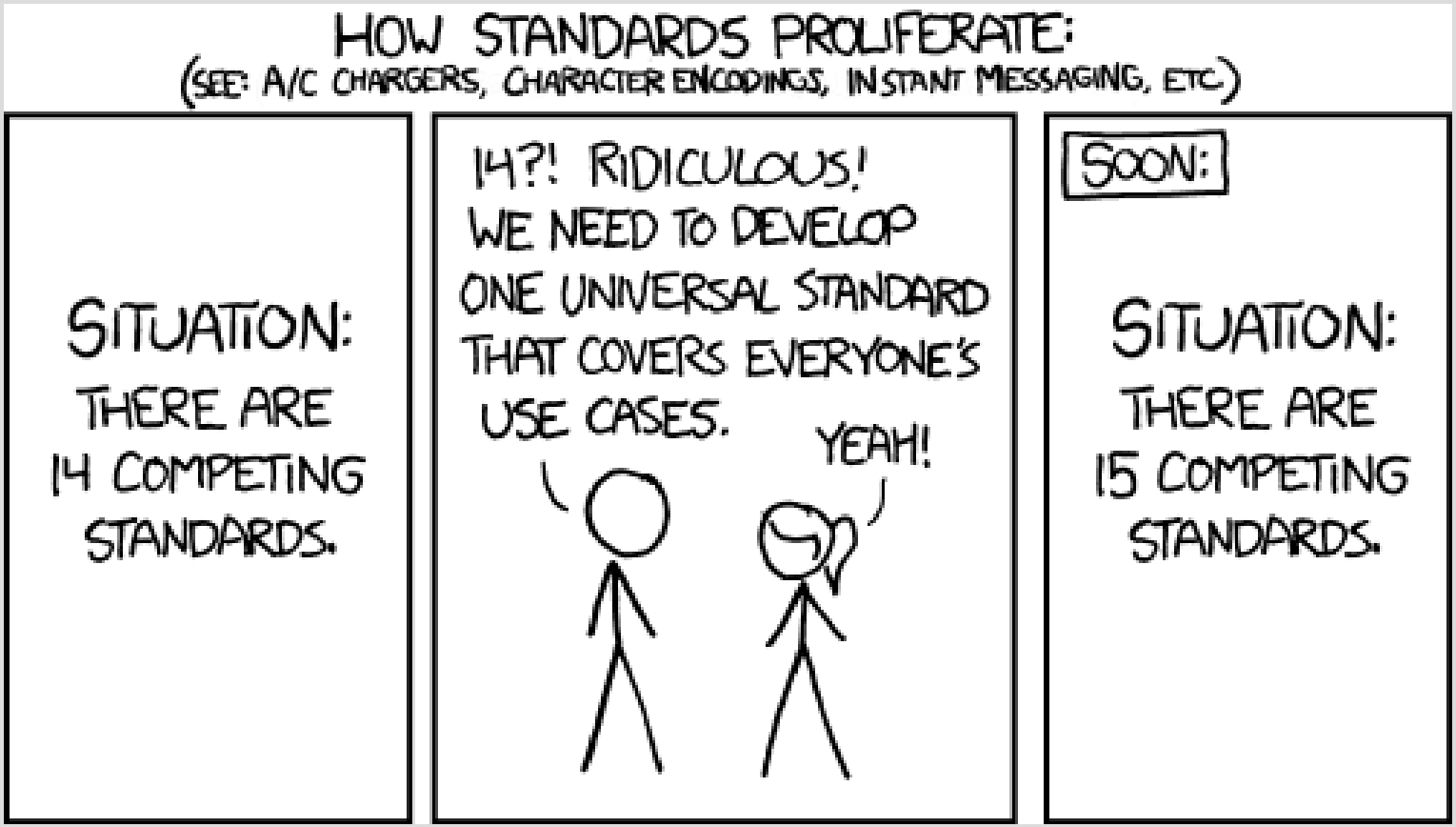
Android devices are becoming cheaper

Why is it interesting?



Why not just use rosjava?

Source: https://xkcd.com/927/



Why not just use rosjava?

- No need to re-implement functionalities in Java
- Can still be used together with rosjava
- run ROS nodes native directly (su required) or via JNI

Future work

- better way to get and update ROS packages (Done)
- output order of the libraries needs to be adjusted manually
- rosjava wrappers
- rospack (python and filesystem structure)
- pluginlib (hardcoded plugins)
- actionlib
- test packages!
- ROS 2.0 support

How to contribute?

- http://wiki.ros.org/android_ndk/
- https://github.com/creativa77/roscpp_android
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- http://www.ekumenlabs.com/