Scaling the Sailfish OS to support multiple form factors and devices
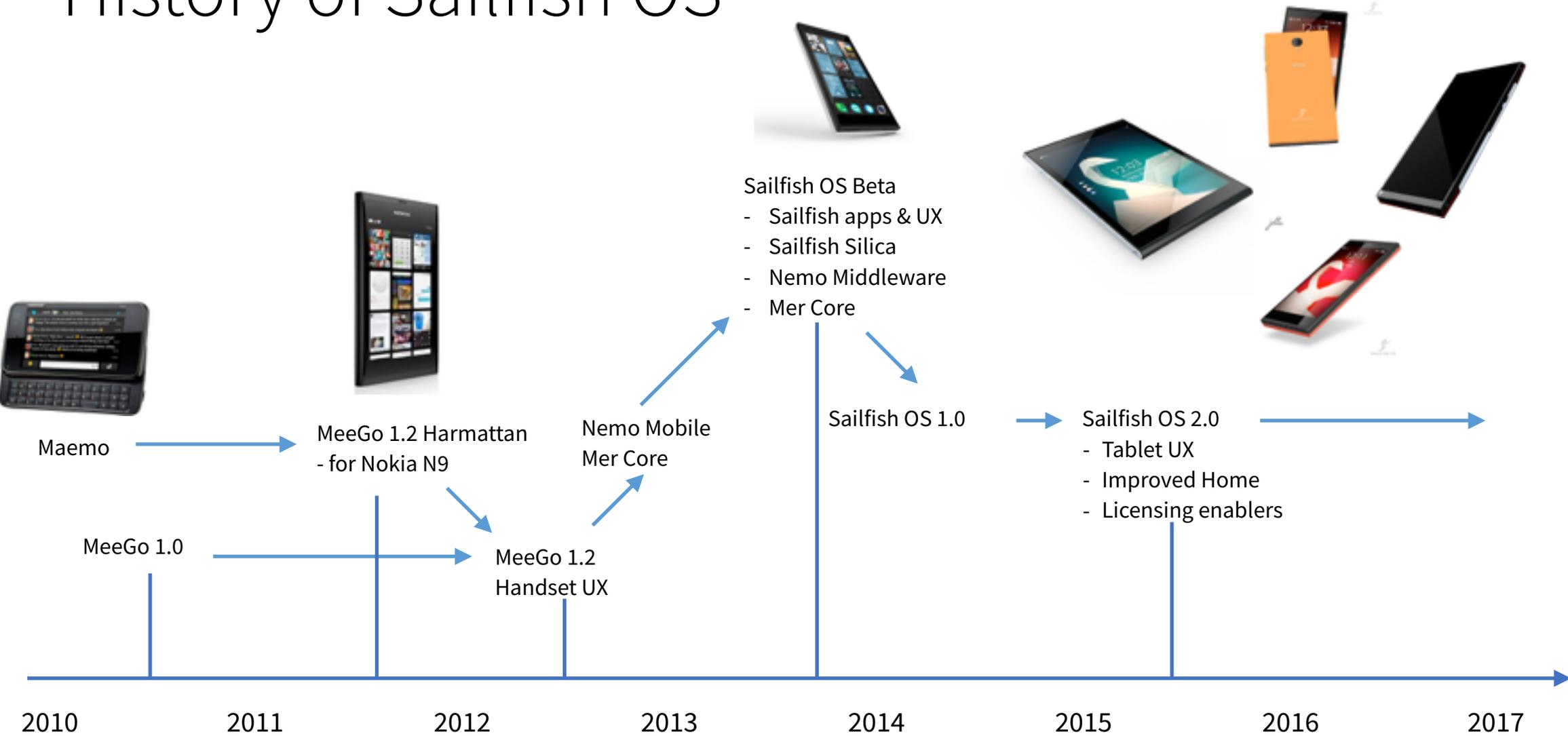
Vesa-Matti Hartikainen

2016 Fruct/Sailfish Meetup Jyväskylä
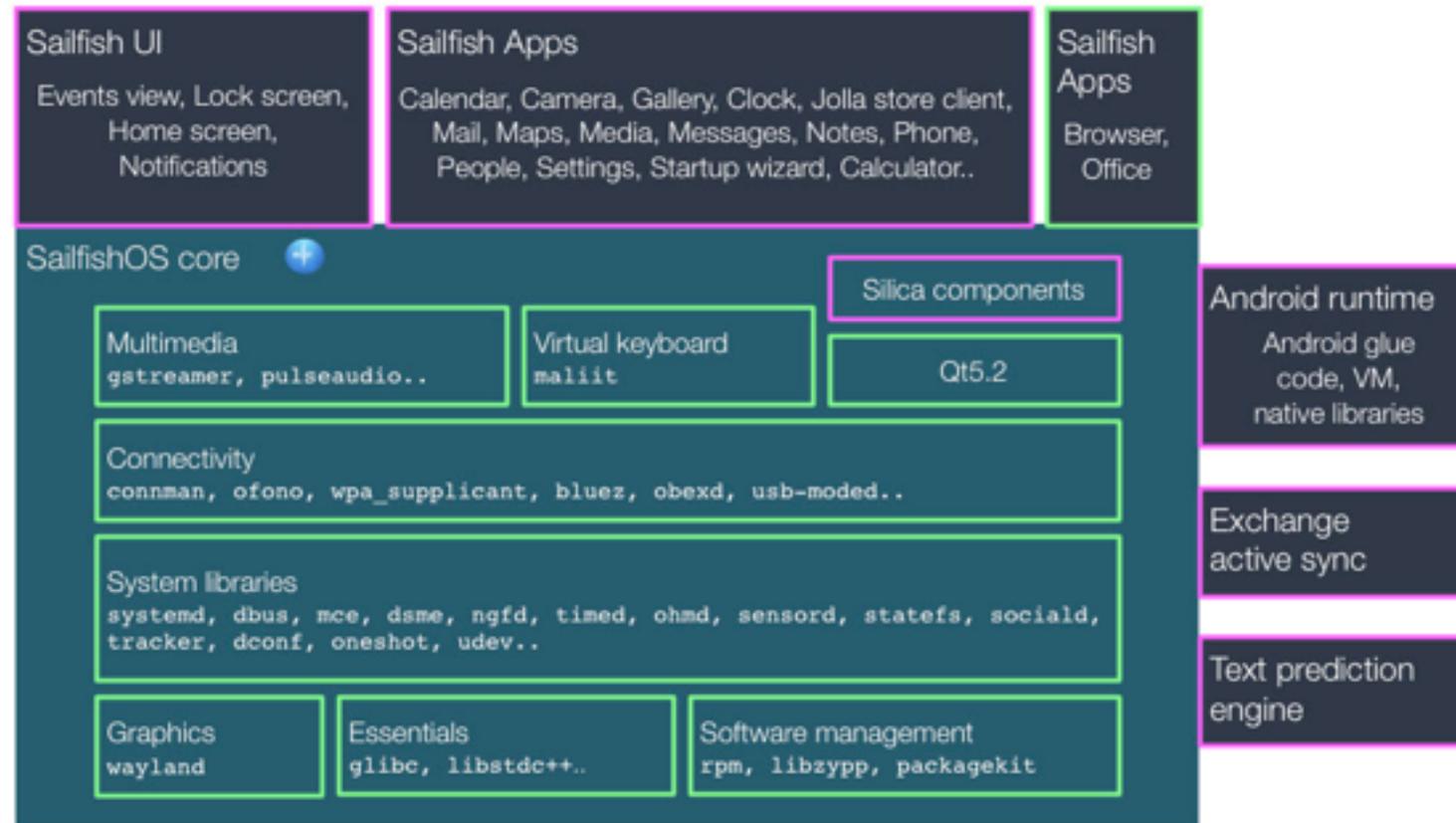
jolla

SAILFISH OS

History of Sailfish OS

Sailfish OS Beta
- Sailfish apps & UX
- Sailfish Silica
- Nemo Middleware
- Mer Core

Maemo

MeeGo 1.2 Harmattan
- for Nokia N9

Nemo Mobile
Mer Core

Sailfish OS 1.0

Sailfish OS 2.0
- Tablet UX
- Improved Home
- Licensing enablers

MeeGo 1.0

MeeGo 1.2
Handset UX

2010   2011   2012   2013   2014   2015   2016   2017

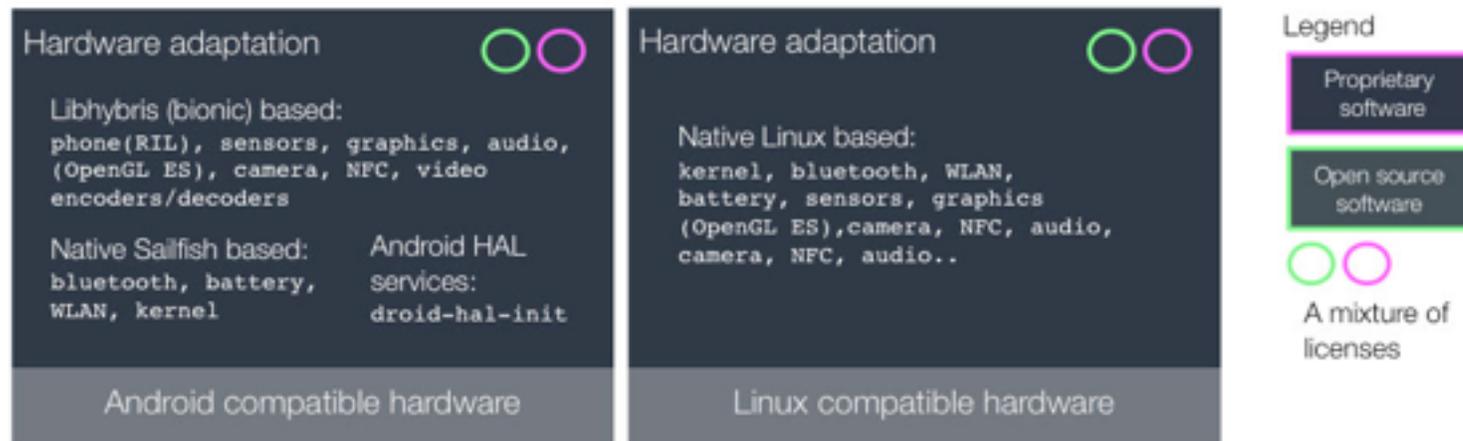SAILFISH OS

SAILFISH OS FOR PARTNERS

- Proven independent history & track record from MeeGo to Sailfish.

- Proven commercial capability, active user and open source community

- Highly customizable to meet regional certification and security requirements

- Strong base to build mobile security solutions

  - Government and corporate solutions

  - End-to-end OS level encryption, possibility to use local strong algorithms

  - Fully privately build in local build system

- Only freely available & commercialized mobile OS code base, making Sailfish a strategic interest for big companies & nations

- Regional licensing strategy to enable local implementations

SAILFISH OS

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Sailfish OS architecture

Sailfish UI

Events view, Lock screen, Home screen, Notifications

Sailfish Apps

Calendar, Camera, Gallery, Clock, Jolla store client, Mail, Maps, Media, Messages, Notes, Phone, People, Settings, Startup wizard, Calculator..

Sailfish Apps

Browser, Office

SailfishOS core

Silica components

Multimedia
gstreamer, pulseaudio..

Virtual keyboard
maliit

Qt5.2

Connectivity
connman, ofono, wpa_supplicant, bluez, obexd, usb-moded..

System libraries
systemd, dbus, mce, dsme, ngfd, timed, ohmd, sensord, statefs, sociald, tracker, dconf, oneshot, udev..

Graphics
wayland

Essentials
glibc, libstdc++..

Software management
rpm, libzypp, packagekit

Android runtime

Android glue code, VM, native libraries

Exchange active sync

Text prediction engine

Sailfish OS architecture designed to easily support multiple hardware targets

- -

Hardware adaptation separate from the platform

Hardware adaptation

Libhybris (bionic) based:
phone(RIL), sensors, graphics, audio, (OpenGL ES), camera, NFC, video encoders/decoders

Native Sailfish based:
bluetooth, battery, WLAN, kernel

Android HAL services:
droid-hal-init

Hardware adaptation

Native Linux based:
kernel, bluetooth, WLAN, battery, sensors, graphics (OpenGL ES),camera, NFC, audio, camera, NFC, audio..

Legend

Proprietary software

Open source software

A mixture of licenses

Android compatible hardware

Linux compatible hardware

First devices running Sailfish OS

- Development started on Nokia N9 and N950 devices
  - HW
    - Texas Instruments OMAP3630 SoC
    - 1GB of RAM
    - 864 x 480 display
  - OS
    - Mer core and Nemo middleware derived from MeeGo
    - Qt 4.8
    - X11 windowing - mcompositor
- First HW prototype
  - STE8500 SoC
  - 512MB of RAM

First product: Jolla

- HW
  - 1.4 GHz Dual Core Qualcomm SoC
  - 1GB of RAM
  - The Other Half
  - qHD display
- OS
  - libhybris
  - Wayland
  - Qt5
  - lipstick as compositor
  - Scaling the UI
  - Device orientation
  - BTRFS -filesystem
  - Systemd

Jolla Tablet

- HW
  - 7.85" IPS panel, 2048 x 1536 pixel resolution
  - 6 x Pixel count of Jolla1
  - Intel x86 1.8 GHz Quad Core CPU
  - 2 GB of RAM
- OS
  - Android runtime x86 translation
  - ext4 filesystem
  - Scaling UI - Sailfish 2.0
  - hwcomposer

Jolla C

Limited edition
For Sailfish OS Community

Intex Aqua Fish & Jolla C

- HW
    - 720p display
    - FM radio
    - Qualcomm MSM8909 chipset
    - 2 GB of RAM
    - Dual SIM support
- Variant support
    - Different bands
    - Different device names, manufacturers, preload content, some different behaviours
    - Update schedule flexibility

Turing Phone

- HW
  - Fingerprint sensor
  - Full HD
  - Qualcomm MSM8974AC 2.5 GHz Quad-core SoC
  - 3 GB of RAM
  - 13 MP camera
- OS
  - Turing Secure apps utilizing SD-card slot for storing credentials securely
  - Device lock rewrite to support additional locking methods

Configuration options
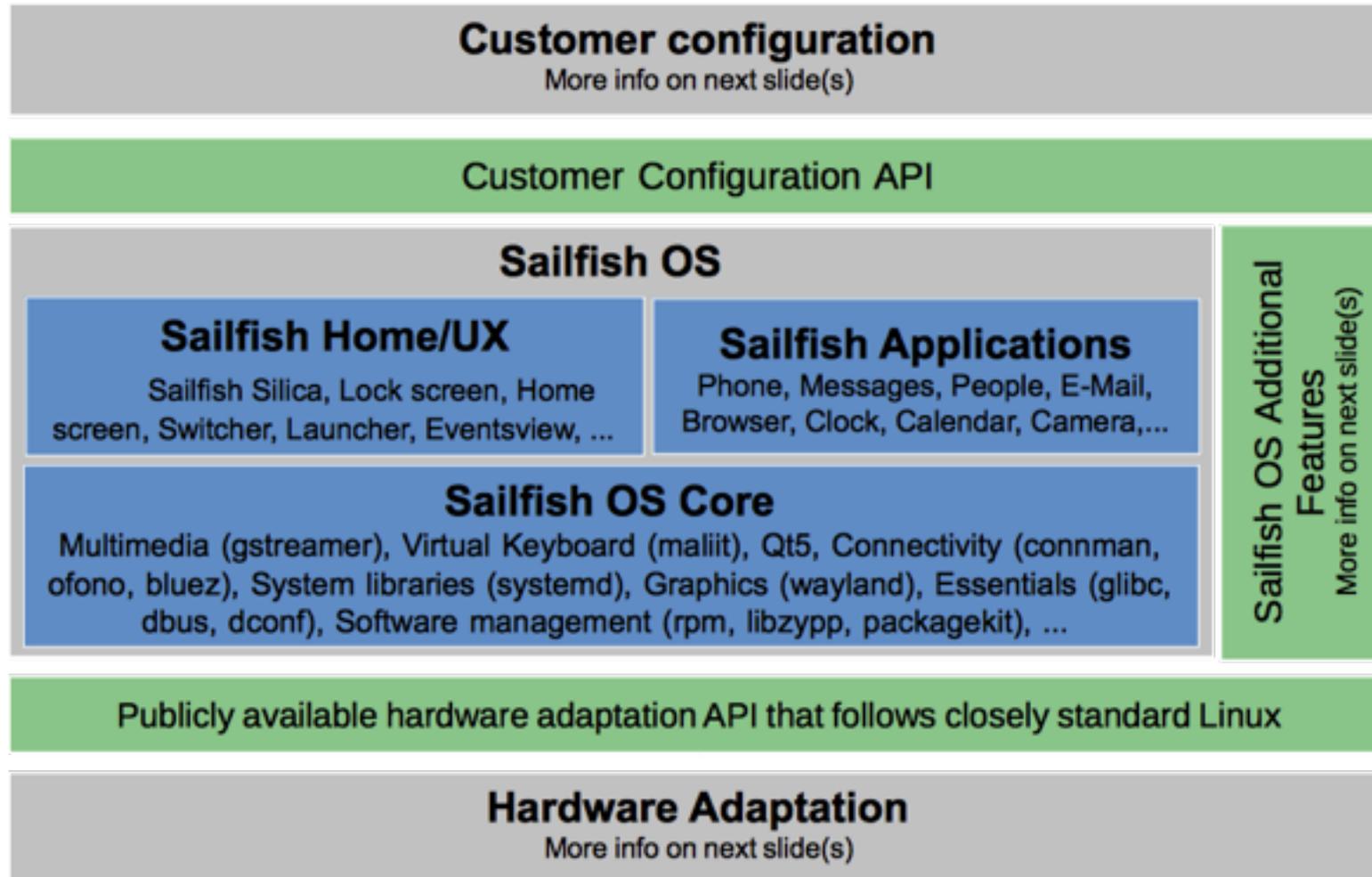
Customer specific configuration

|		
Super app(s)	Preinstalled apps: Sailfish, Android (*.apk)	Configurations/informations: e.g. default timezone, certification data (SAR values), default browser search engine, default photo format and size, ...
Ambiences (background pictures, sounds,...)	Preloaded content: Pictures, Videos, Browser bookmarks,...	

Customer Configuration API

Optional features
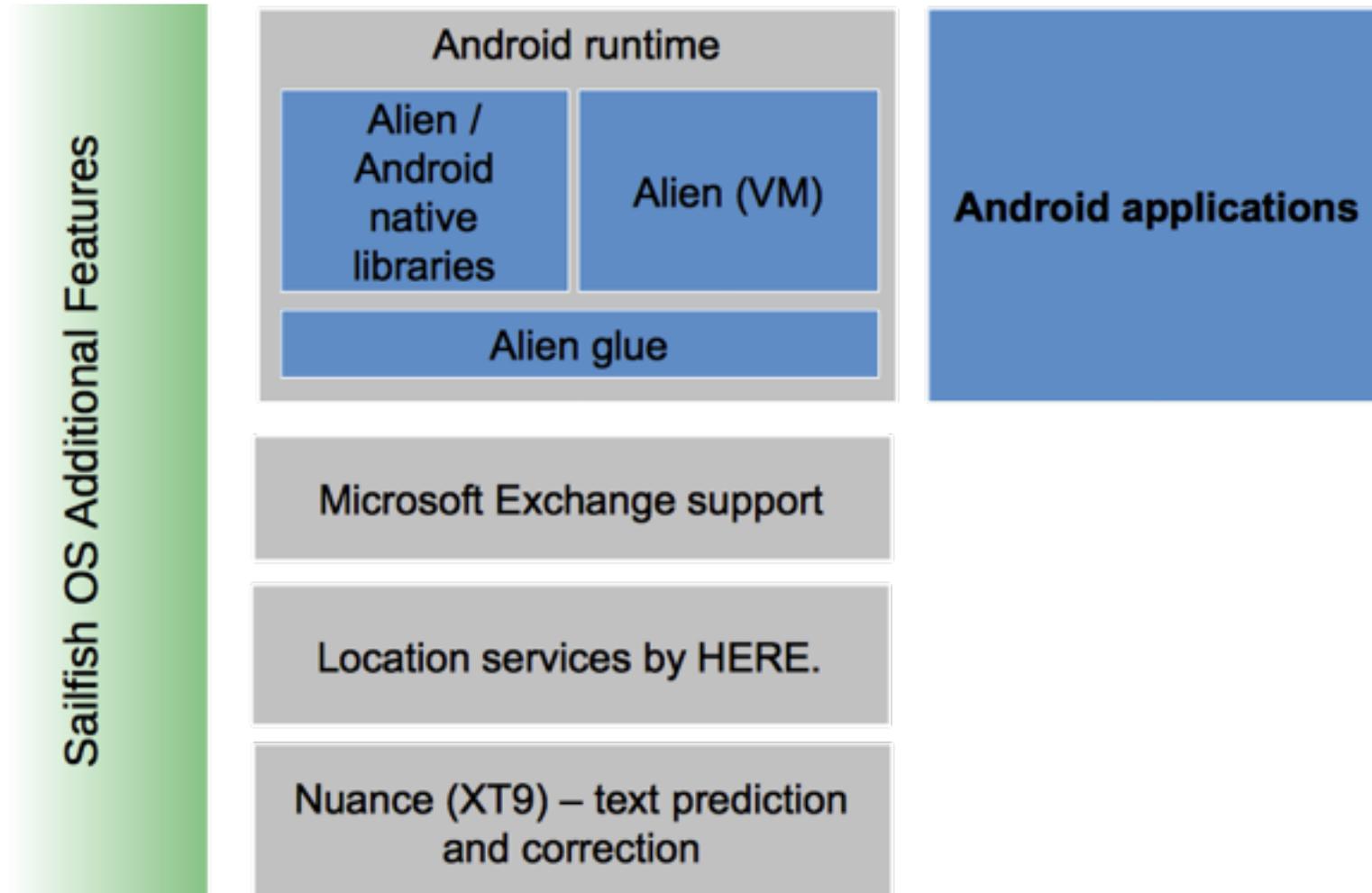
Getting ready for partners in Business-to-Business sector

- Group SW packages to features which can be configured based on customer needs
- Make parts of core OS optional to enable building more closed solutions. Enable control of:
  - Store
  - Android runtime
  - Developer mode
  - Side loading of apps
- New features to support customer cases
  - Device management options
  - Customer store
  - Allow custom encryption algorithms
- Improving security
  - Up-to-date CVE fixes
  - Filesystem encryption
  - VPN support
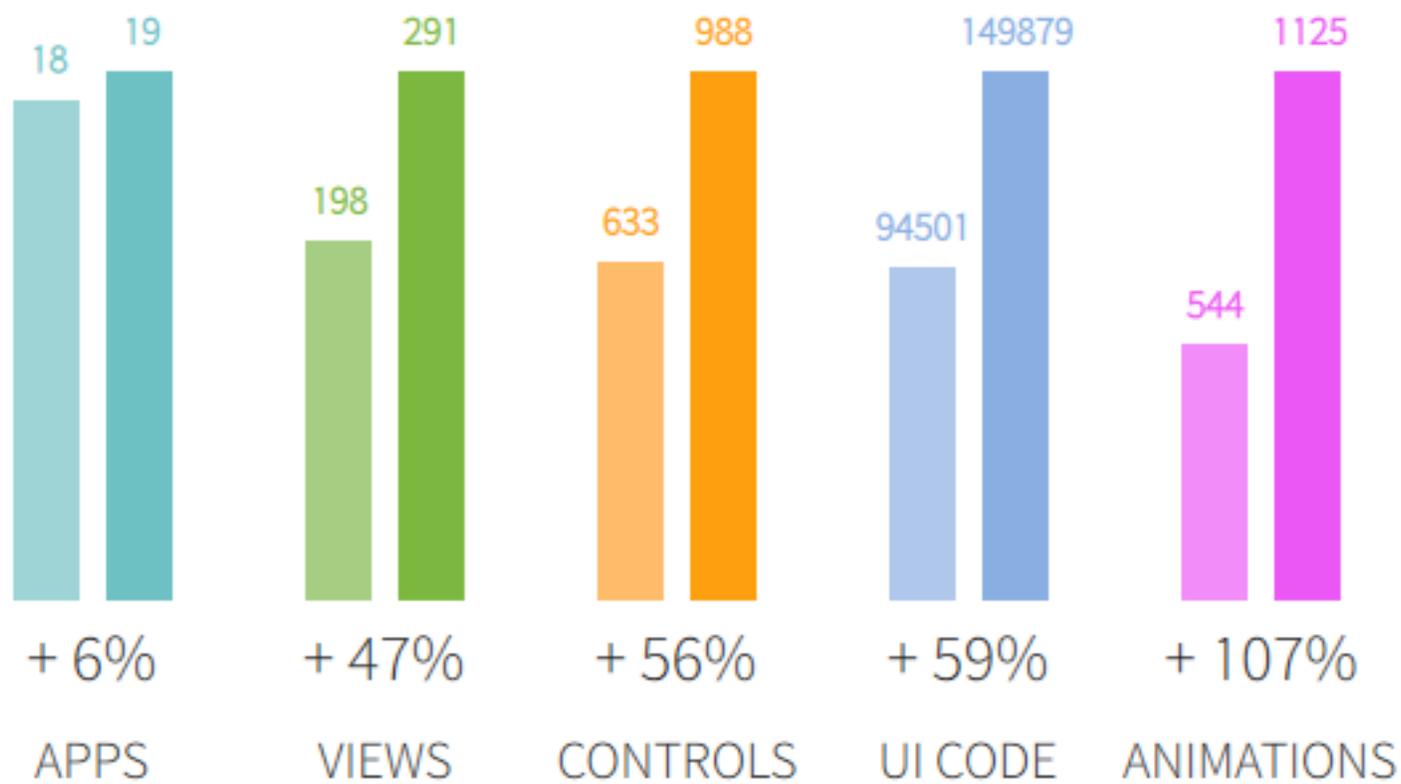 - Boot / flashing security improvements
  - Audit
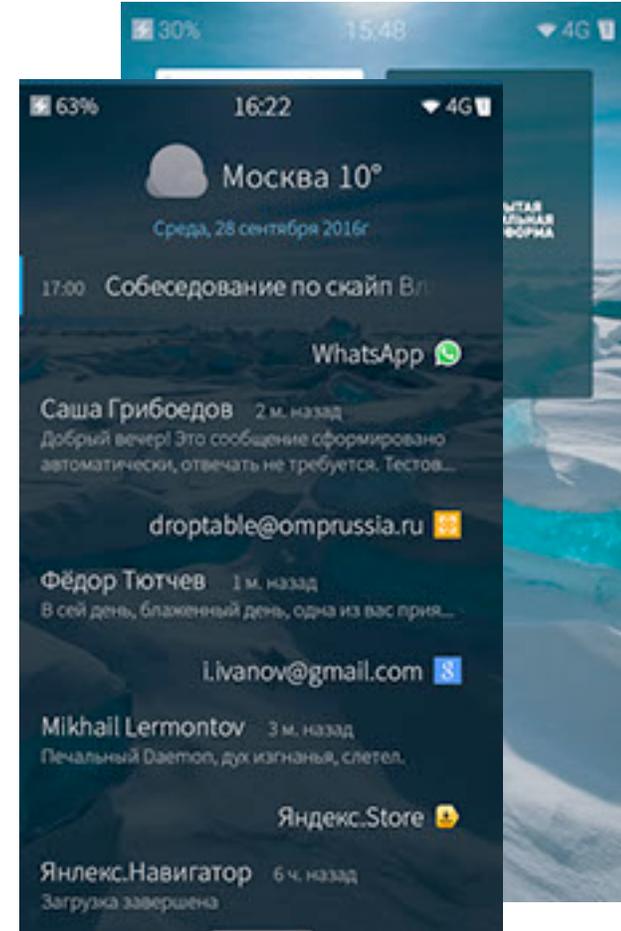
Country specific Sailfish OS versions for BRICS

- Trusted and secure Mobile OS for government and corporate markets

- Potential use cases:

    - Corporate mobile device

    - Front office mobile terminal

    - Mobile terminal for remote access

- Tightly integrated into corporate infrastructure

- Integrated with country specific public and government digital services

- Local partners working with Jolla on common Sailfish OS development

- Country specific security certifications can be done

- Fully customized experience: device, OS functionality, preinstalled apps

Summary

- HW
  - 4 officially supported adaptations
  - 5 products
  - 2 obsoleted adaptations
  - over 40 community ports
  - 2 architectures
  - Next steps: 64-bit ARM, Android 6 HAL
- UI
  - 4 officially supported screen sizes & resolutions
  - 1 obsoleted screen size
  - 6 UI variants
  - Two form factors
  - 23 supported languages
  - 23 community languages
  - Next steps: User adjustable font size, high contrast mode, more security features, and even more configurability

Sailfish OS 2.0

Questions?