Ubuntu Touch

James Henstridge

james@jamesh.id.au
james.henstridge@canonical.com

How do you start building a phone OS?

- Piggy back on Android

- Cheap readily available hardware with Linux enabled

- Google provides the binary blobs necessary to work with their Nexus devices

Bootstrapping Ubuntu Touch

- Kernel built from Android tree
- Stripped down Android user space
  - adb, OpenGL, codecs, SurfaceFlinger, etc
- Ubuntu in an LXC container
- Libhybris used to call from Ubuntu to Android
  - Allows calls from glibc to bionic

Flipping the Image

- Ubuntu as the root file system
- Android in an LXC container

Full Image Updates

- Prefer full image updates over individual package updates.

- Filesystem must be read only to support incremental image updates

- Bind mount various locations to a writable partition.

- Applications separate from base system image

- Can enable write support for development

Developer Mode

- Image can be set to read/write
- Useful for development
- Can install packages with apt-get
- Breaks automatic updates

Carrier Customisation

- Carrier customisations kept to a separate partition

- Base image is identical across devices

- Less red tape to push changes out to existing handsets
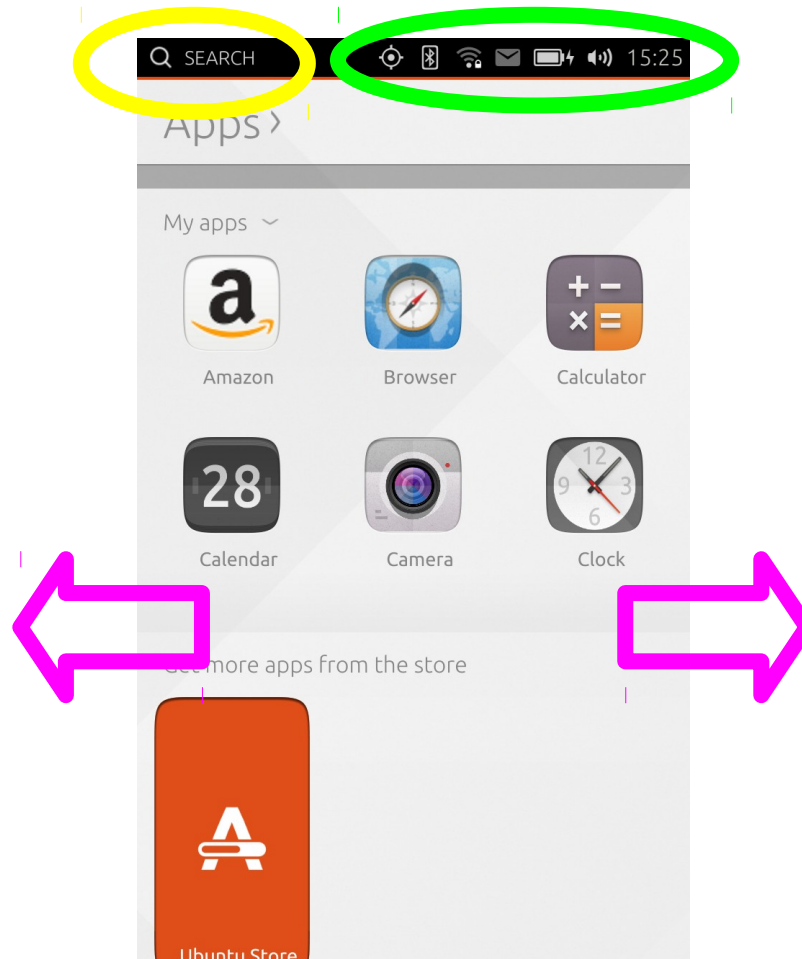
The Shell

- Mir display server
    - Server is a shared library embedded in compositor
- Unity 8 shell
    - A Qt/QML application
    - Doesn't share code with Unity 7
    - Shares design

Unity 7 / Unity 8 Comparison (1)
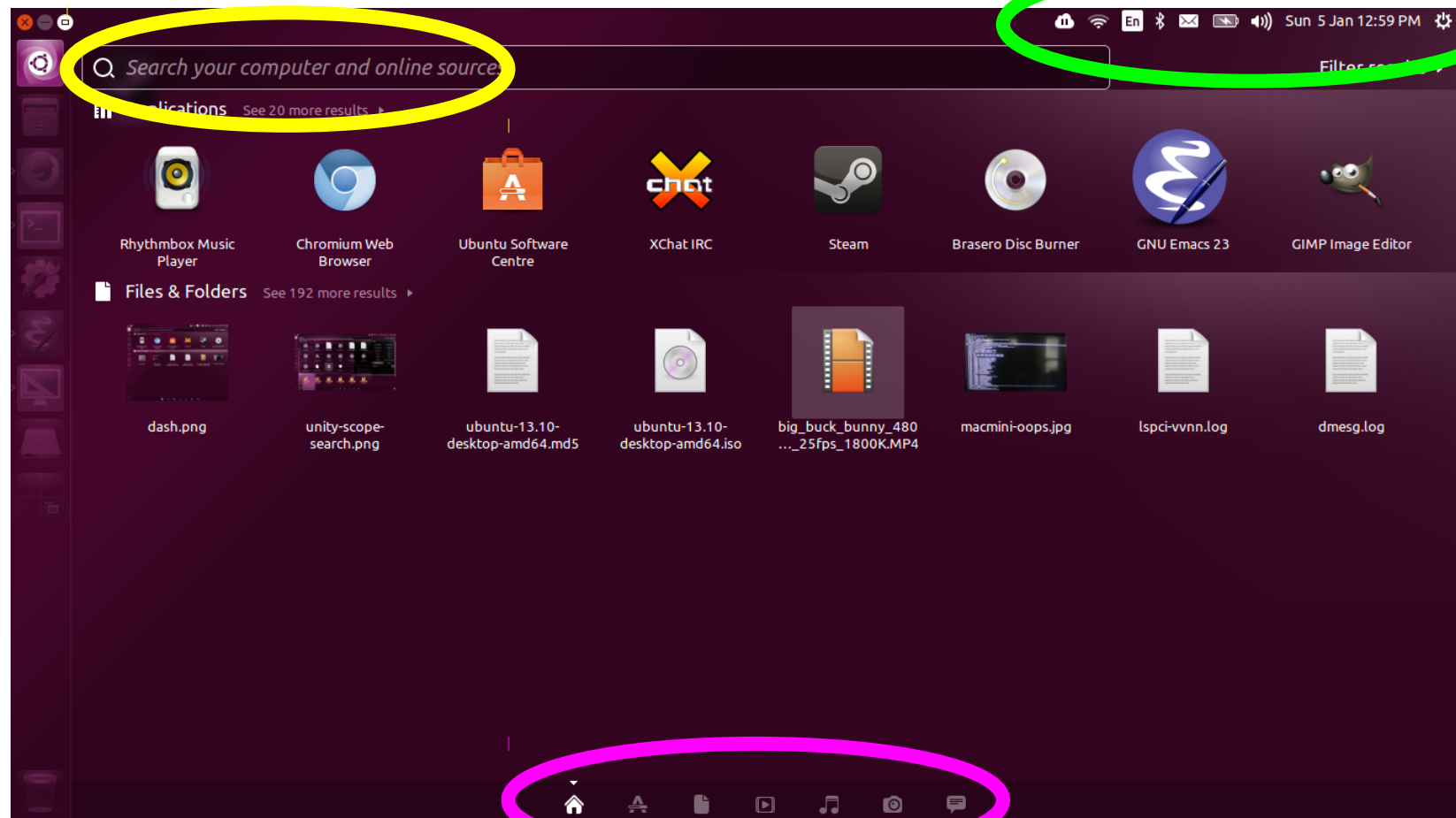
Unity 7 / Unity 8 Comparison (2)

Scopes

- Scopes drive the Unity 8 dash
- Each scope represents a data source
- Handle surfacing and search queries
- Can control how search results are presented
- Provide previews of results
- Currently support C++ and Go

Application Model

- Self contained
- Not installed into the base image
- Use "click packaging" format
- Run under confinement

Application Confinement

- User installed applications confined via AppArmor

- Apps use one of a small number of OS provided policies

- Apps use trusted helpers to access OS services

    – location, media playback, etc

Application

- Two supported APIs:
- Qt / QML
- HTML5
  - Browser based on Chromium
  - Supports Apache Cordova APIs (aka PhoneGap)
- More details at
  http://developer.ubuntu.com/apps/

Testing Ubuntu Touch

- Supported development devices:
  - Nexus 4
  - Nexus 7 (2013)
- Instructions:
  - https://wiki.ubuntu.com/Touch/Install
  - Can be used to upgrade the system image without wiping the data partition
- Emulator:
  - https://wiki.ubuntu.com/Touch/Emulator

Development Process

- Most components managed on Launchpad

- Use Launchpad merge proposals for code review

- Jenkins used to run unit tests pre-review, and on merge

- Manual test plans for each component run before adding to the image

- Autopilot tool used to test GUI

Ubuntu Phone Hardware

- First hardware partners announced at MWC 2014
- BQ Aquarius
- Meizu MX3
- https://insights.ubuntu.com/2014/02/19/canonical-announces-first-partners-to-ship-ubuntu-phones-around-the-globe/

Questions?