# Ubuntu Application Lifecycle

*Or: How I learned to stop worrying and trust application developers*

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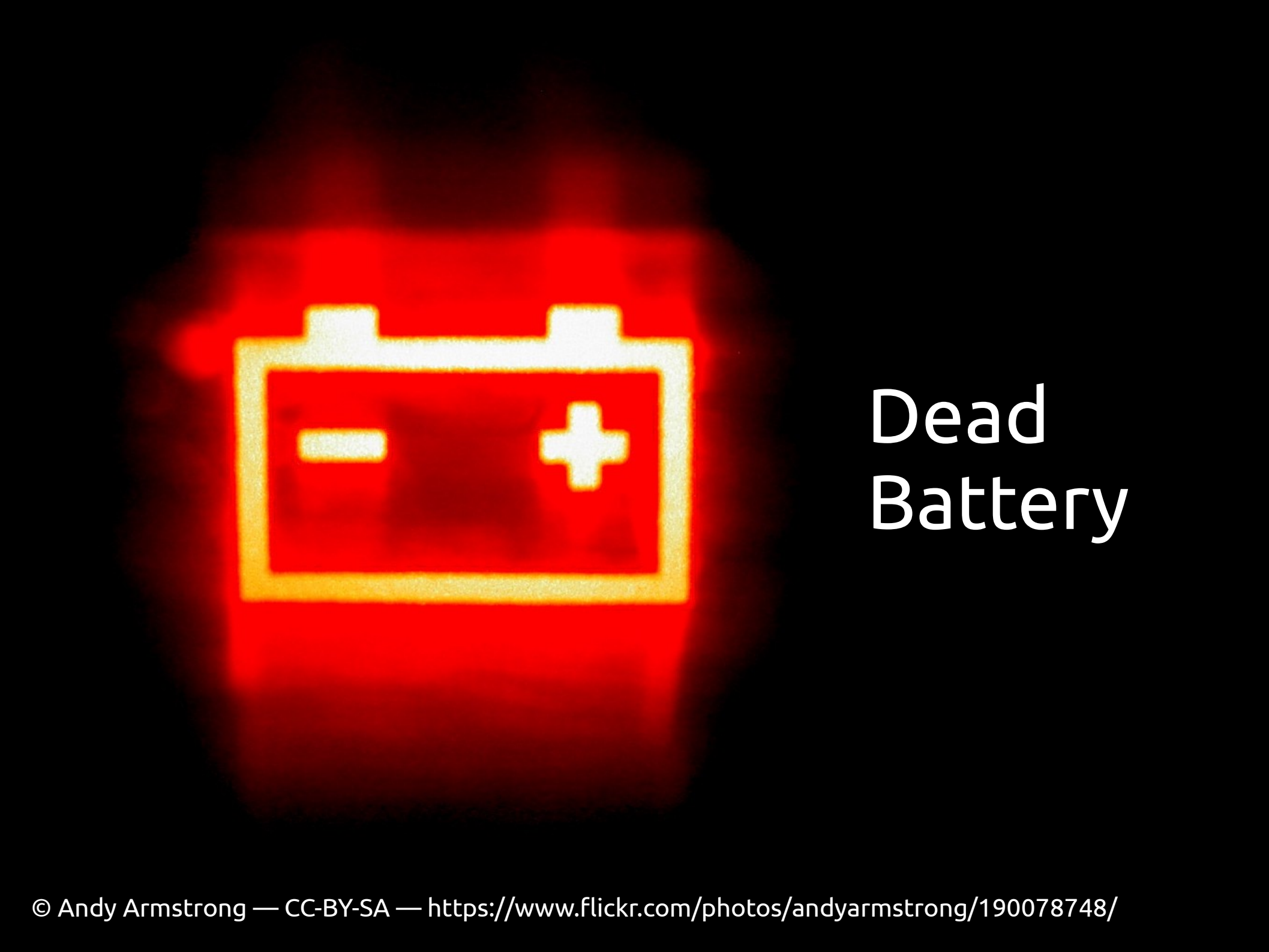
“I'm more worried about Murphy than I am Machievilli”

— Michi Henning

Ideal
Cracker

Diminished User Experience
CORE TEMP

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# Data Protection

© Josh Hallett — CC-BY — https://www.flickr.com/photos/hyku/368912557/

# Physical Destruction

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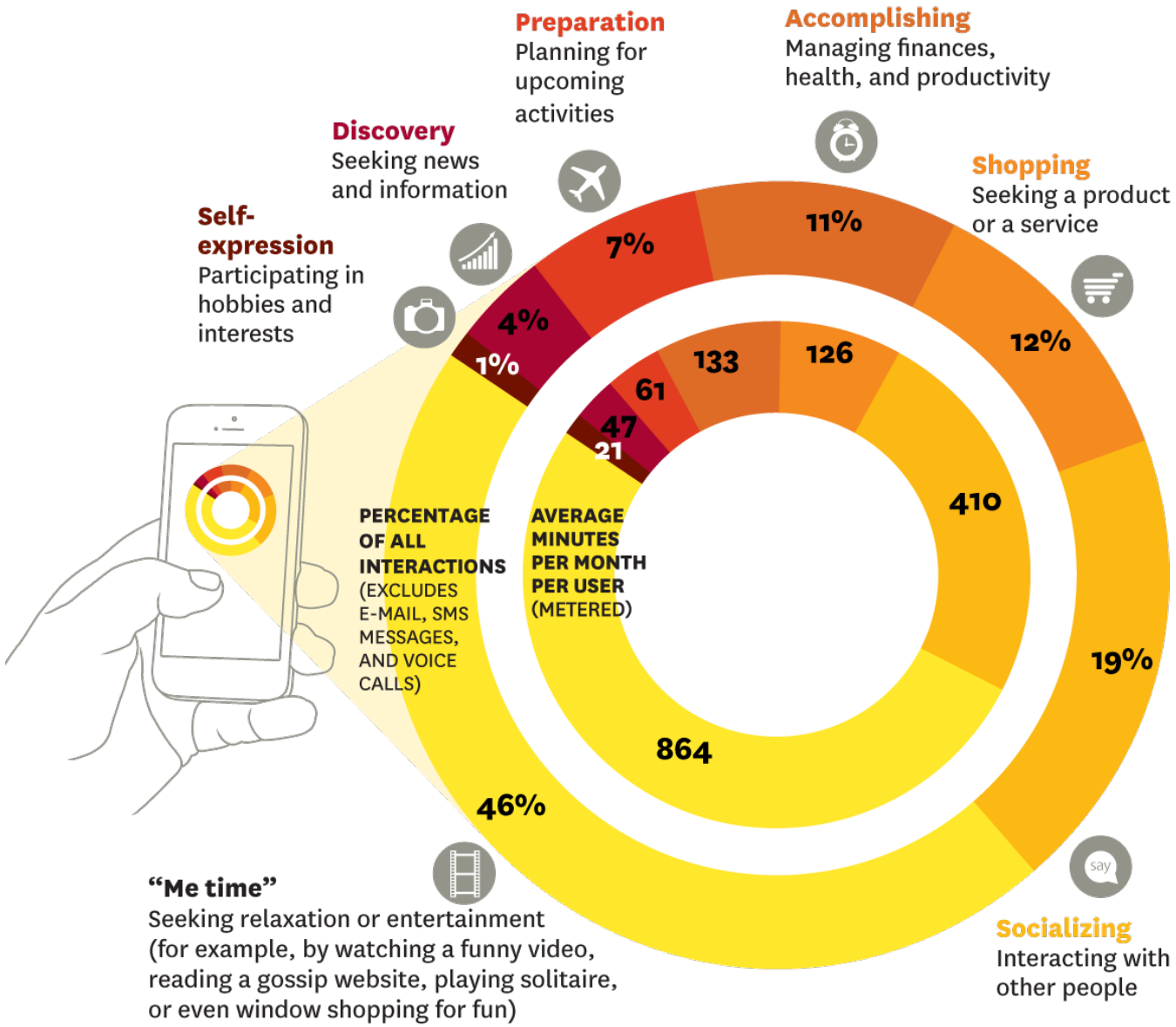
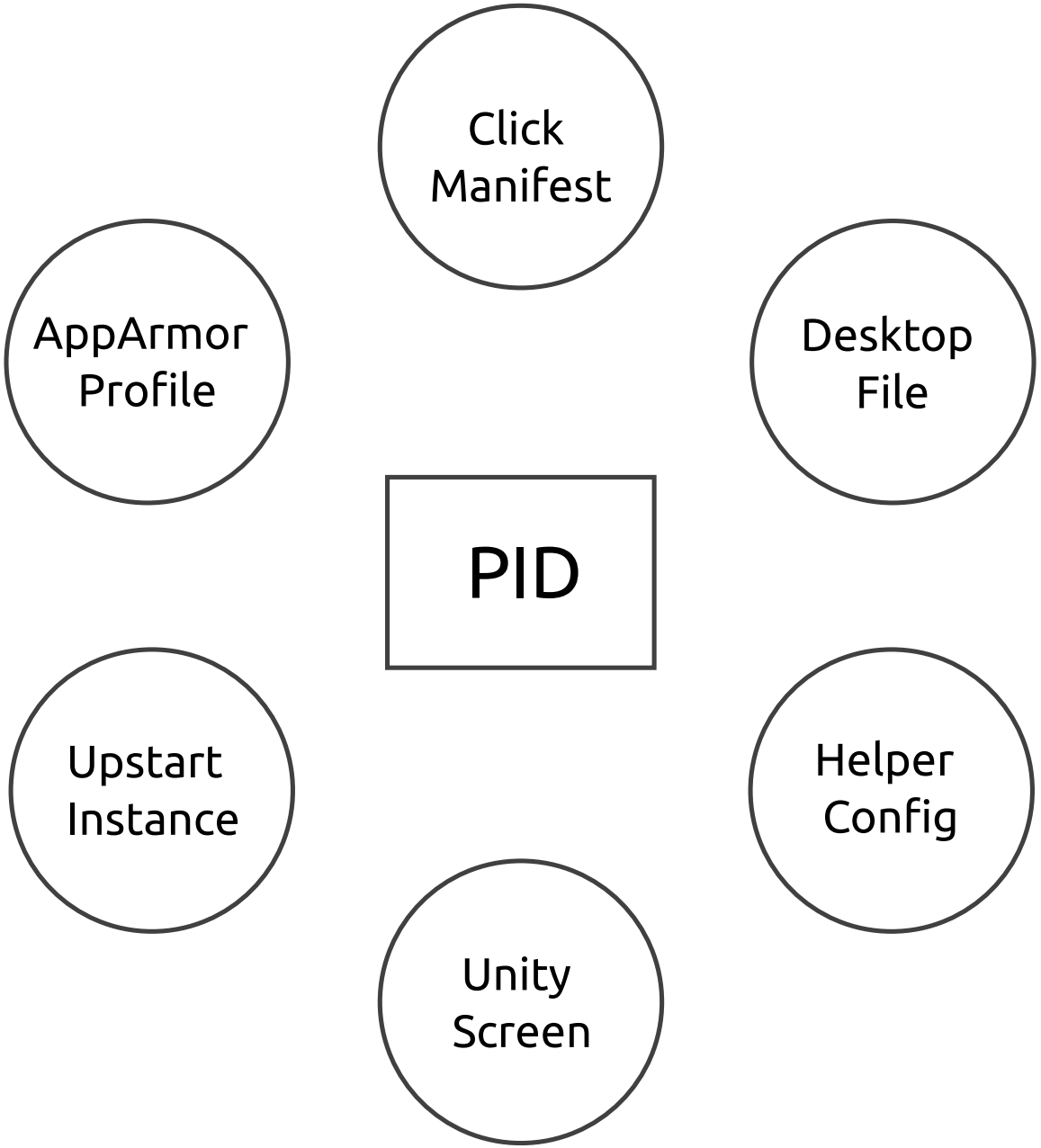
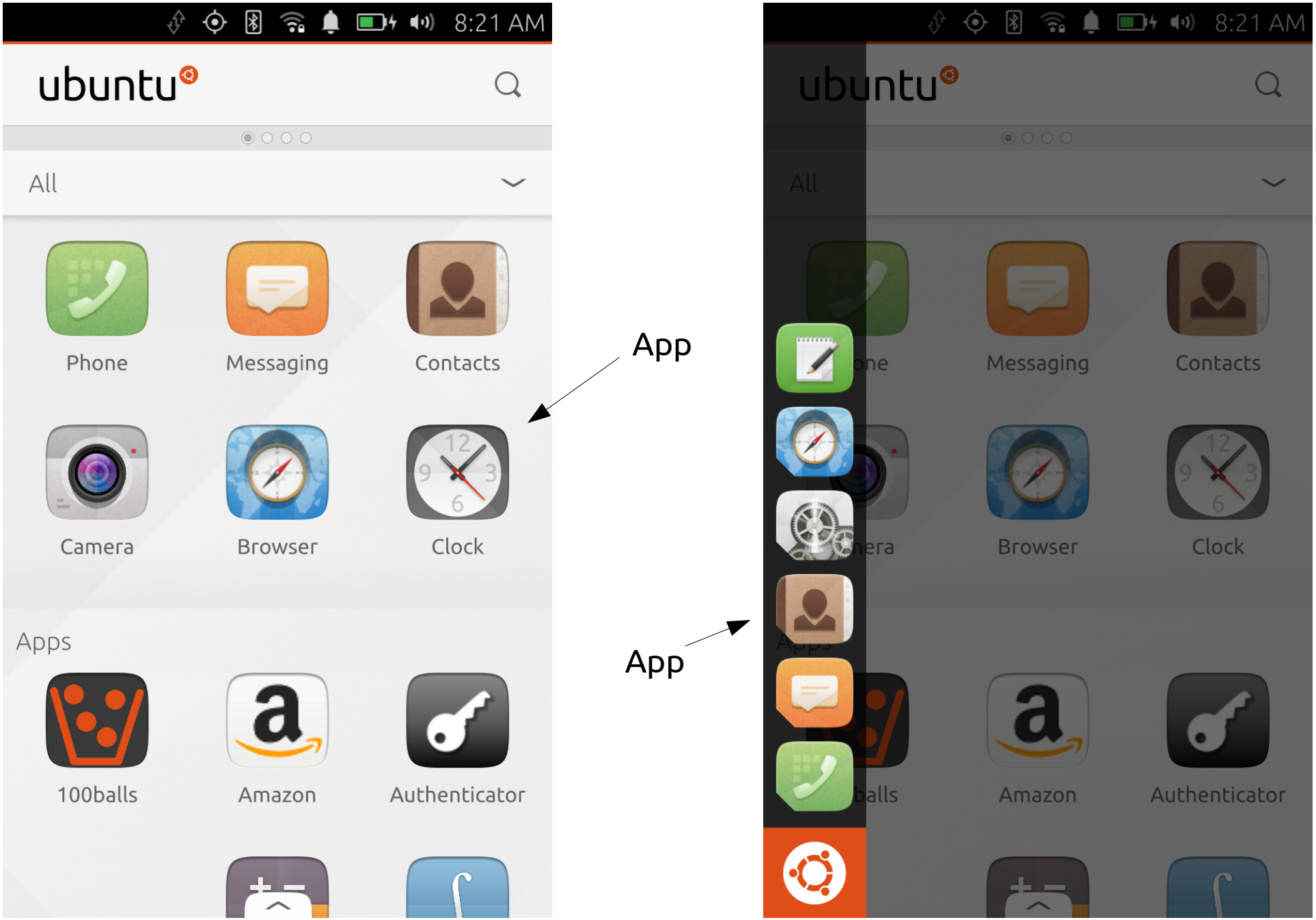
# Phone Usage



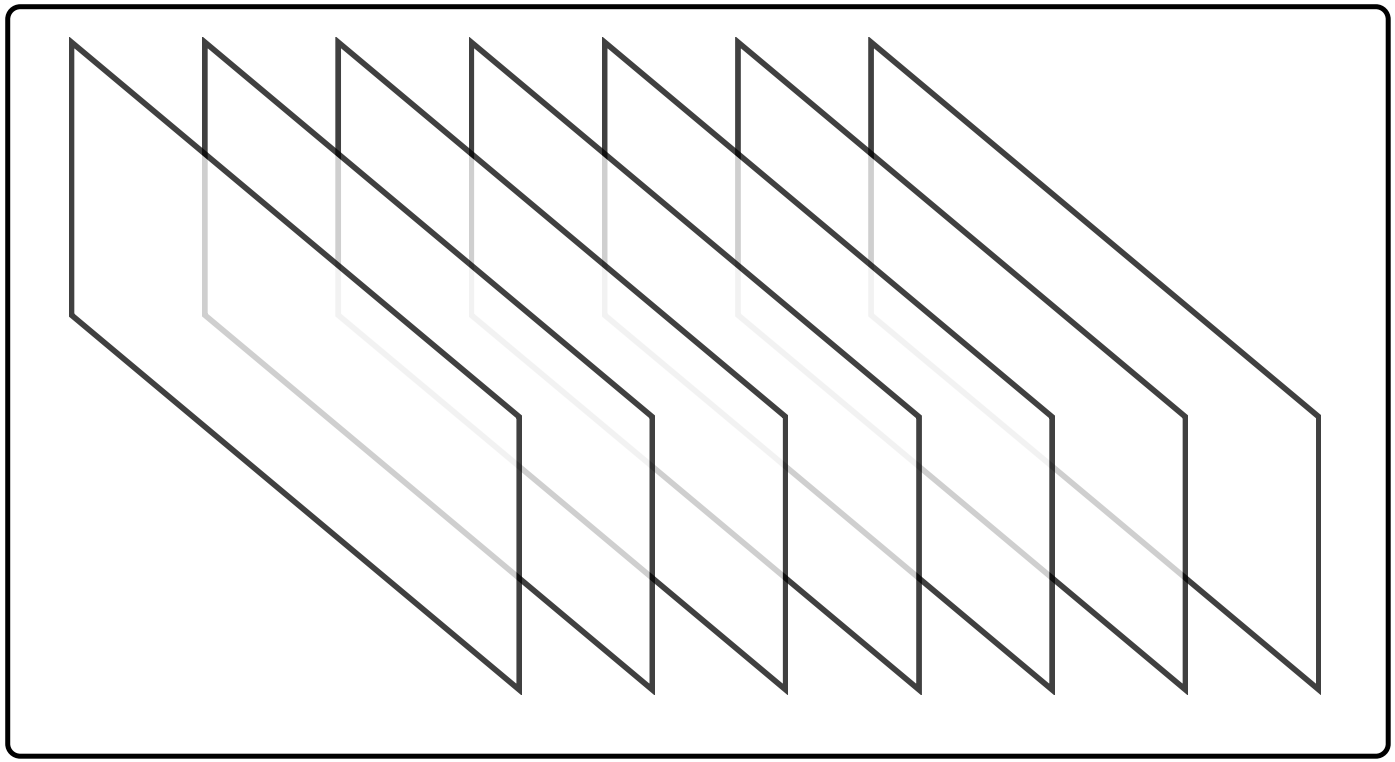

http://hbr.org/2013/01/how-people-really-use-mobile/


Click
Manifest
AppArmor
Profile
Desktop
File
PID
Upstart
Instance
Helper
Config
Unity
Screen

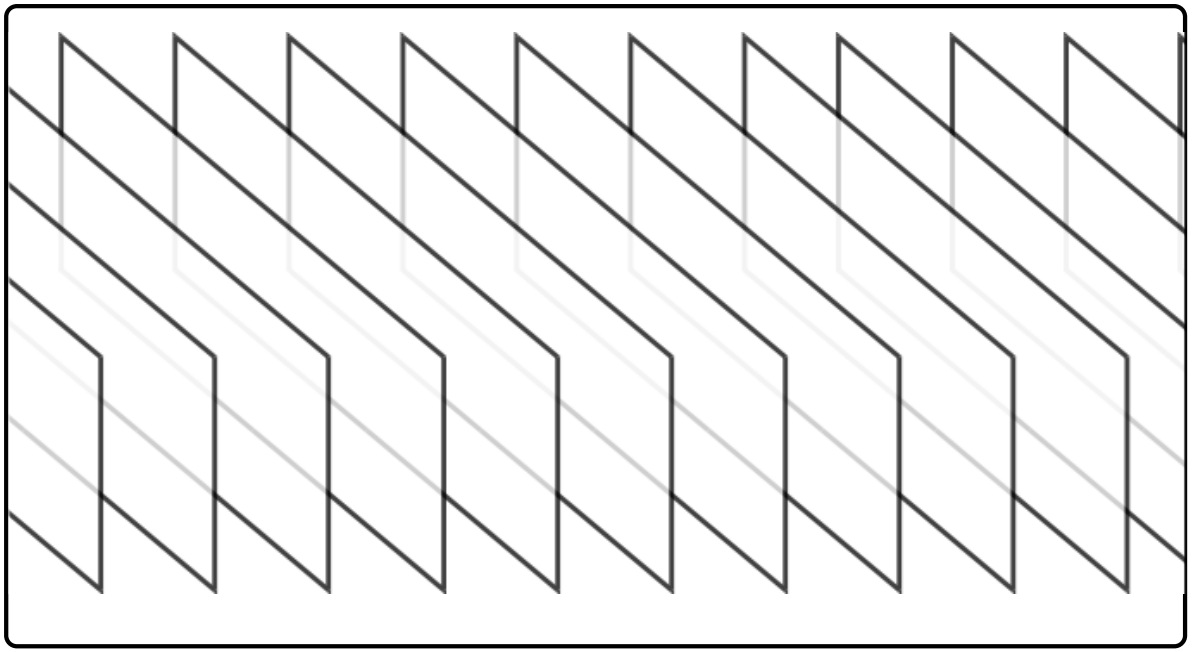

8:21 AM
ubuntu
All
Phone
Messaging
Contacts
Camera
Browser
Clock
Apps
100balls
Amazon
Authenticator
App
App

# Application Switcher

# Presentation Application Switcher



# Infinite App Illusion

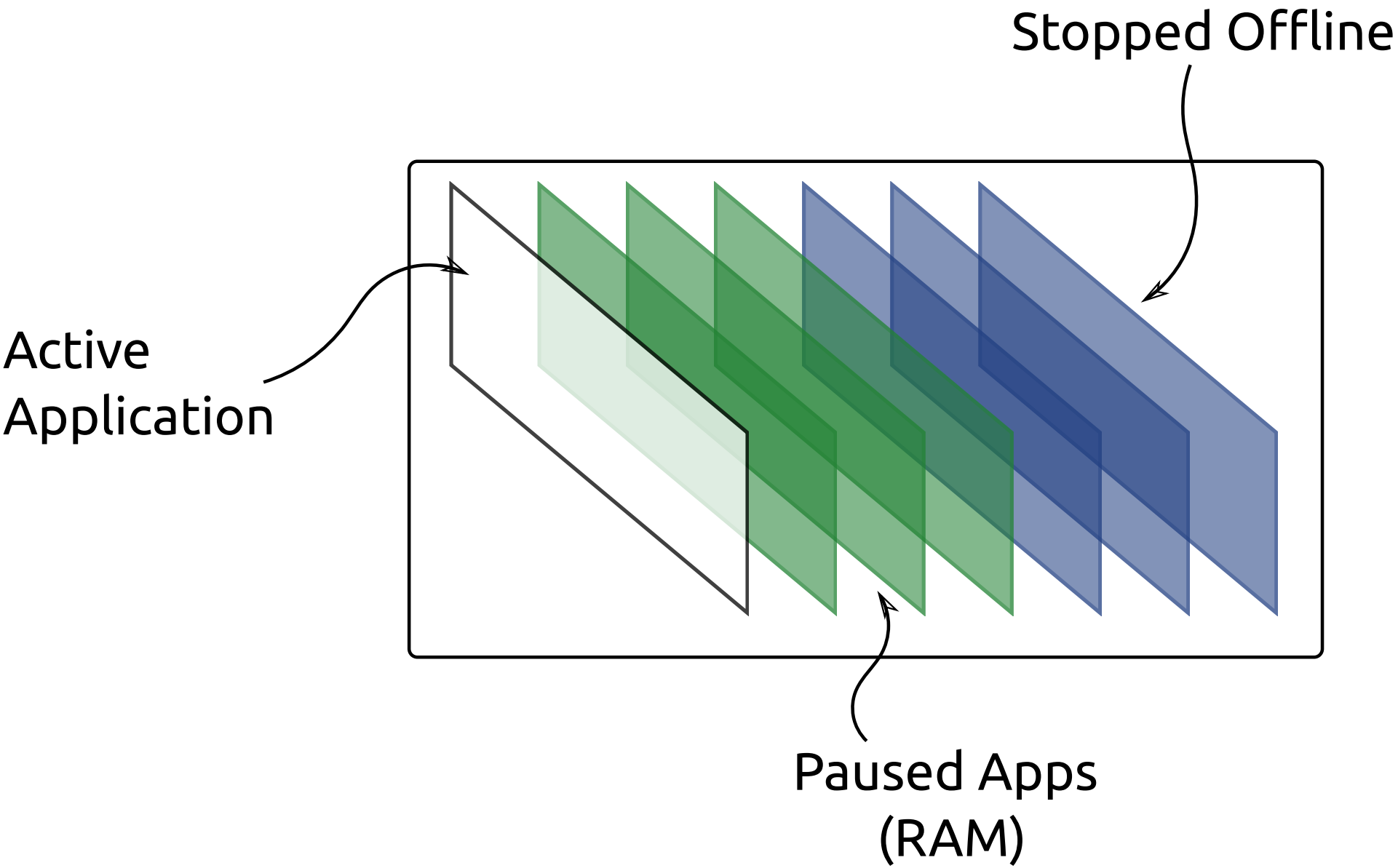


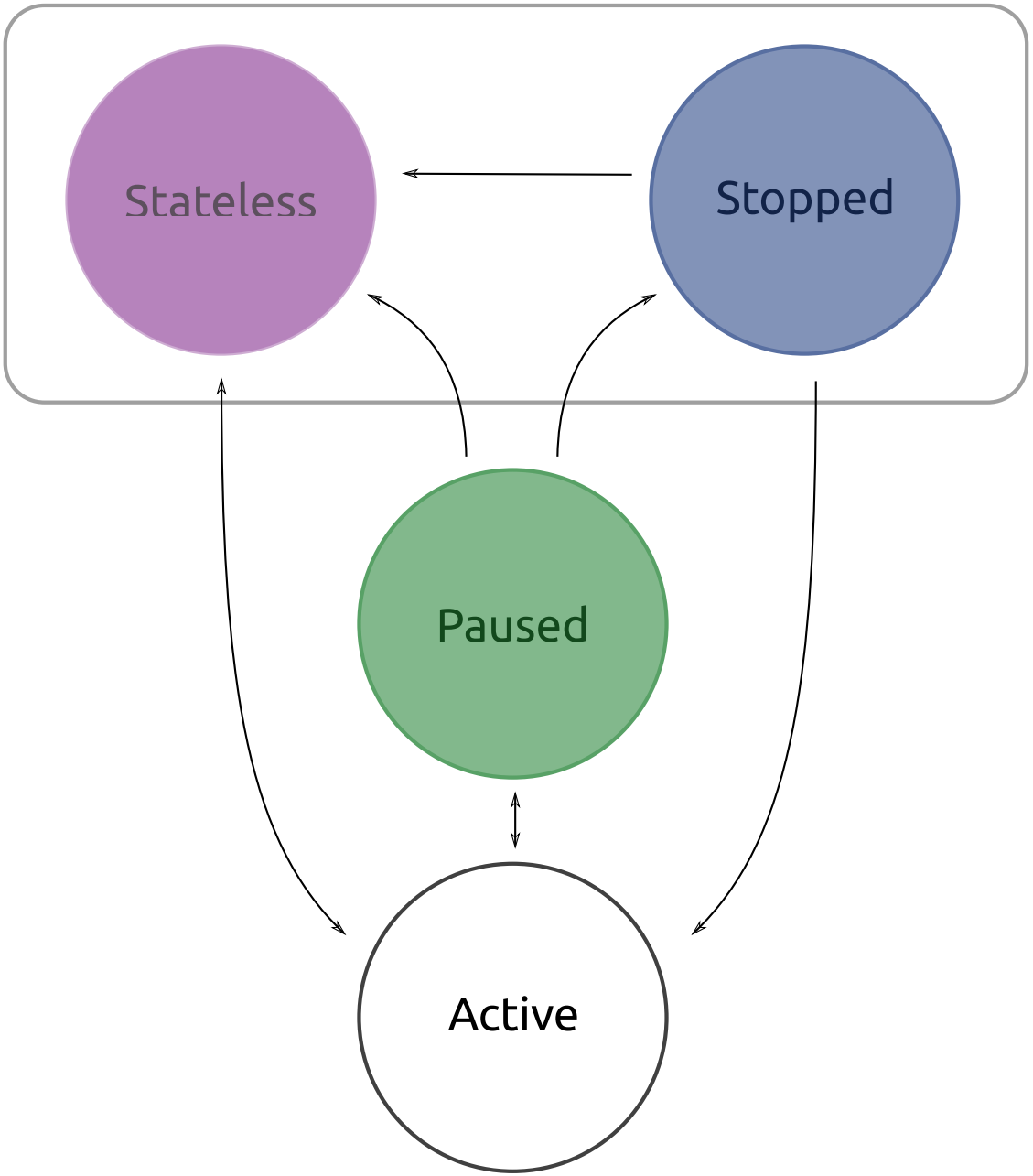
**Technical**

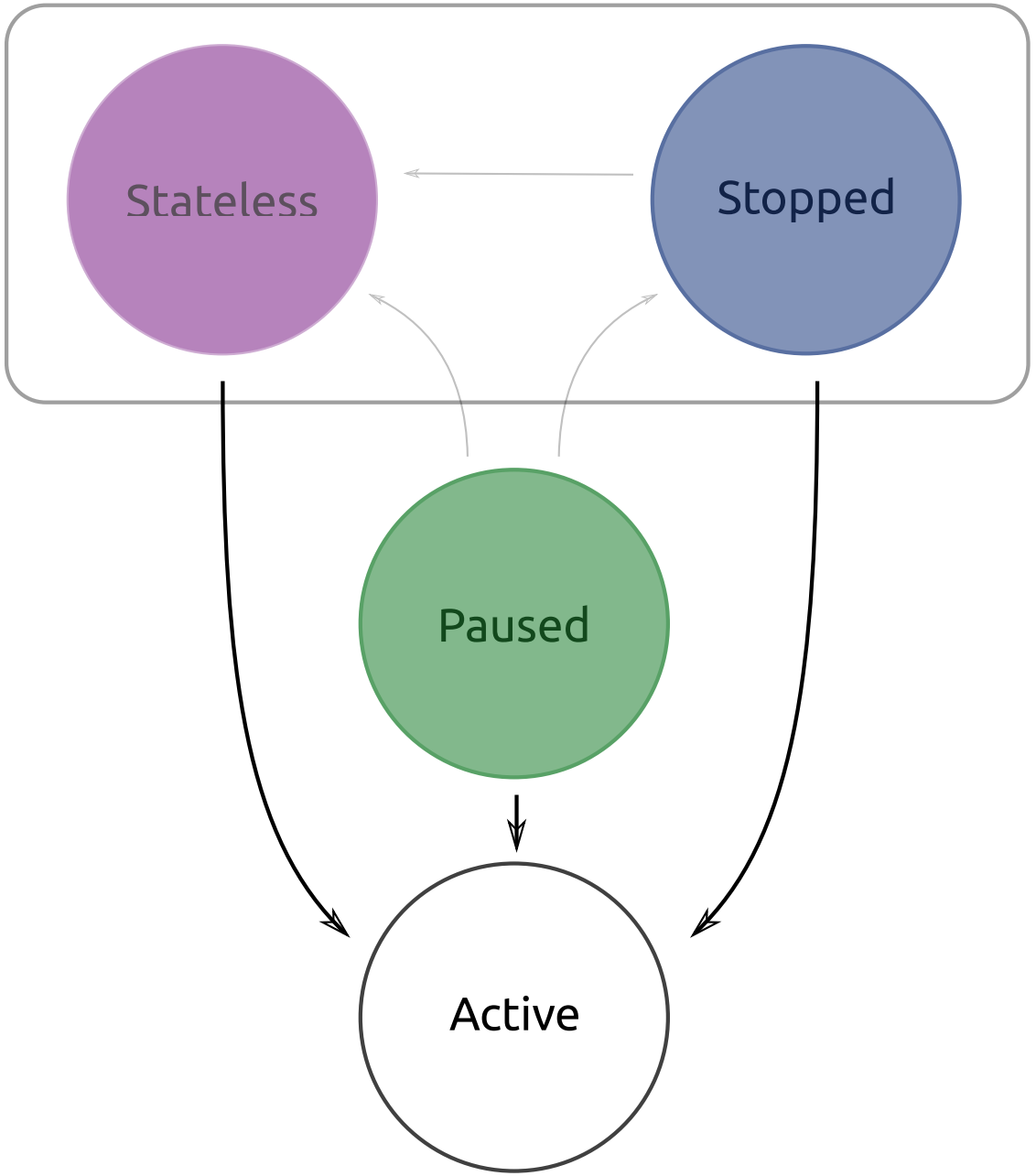
1 GB RAM
1 GHz Quad Core

**User**

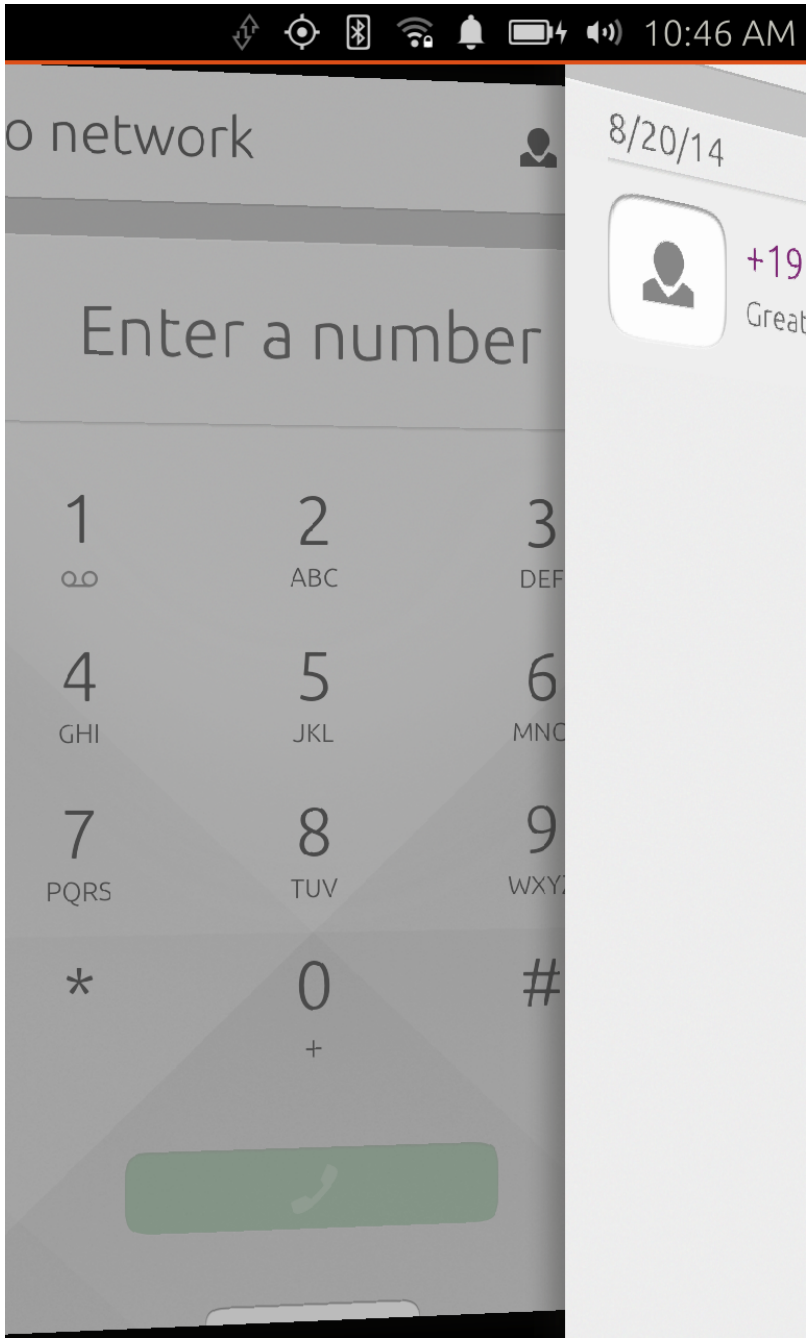
How many
apps can I run?

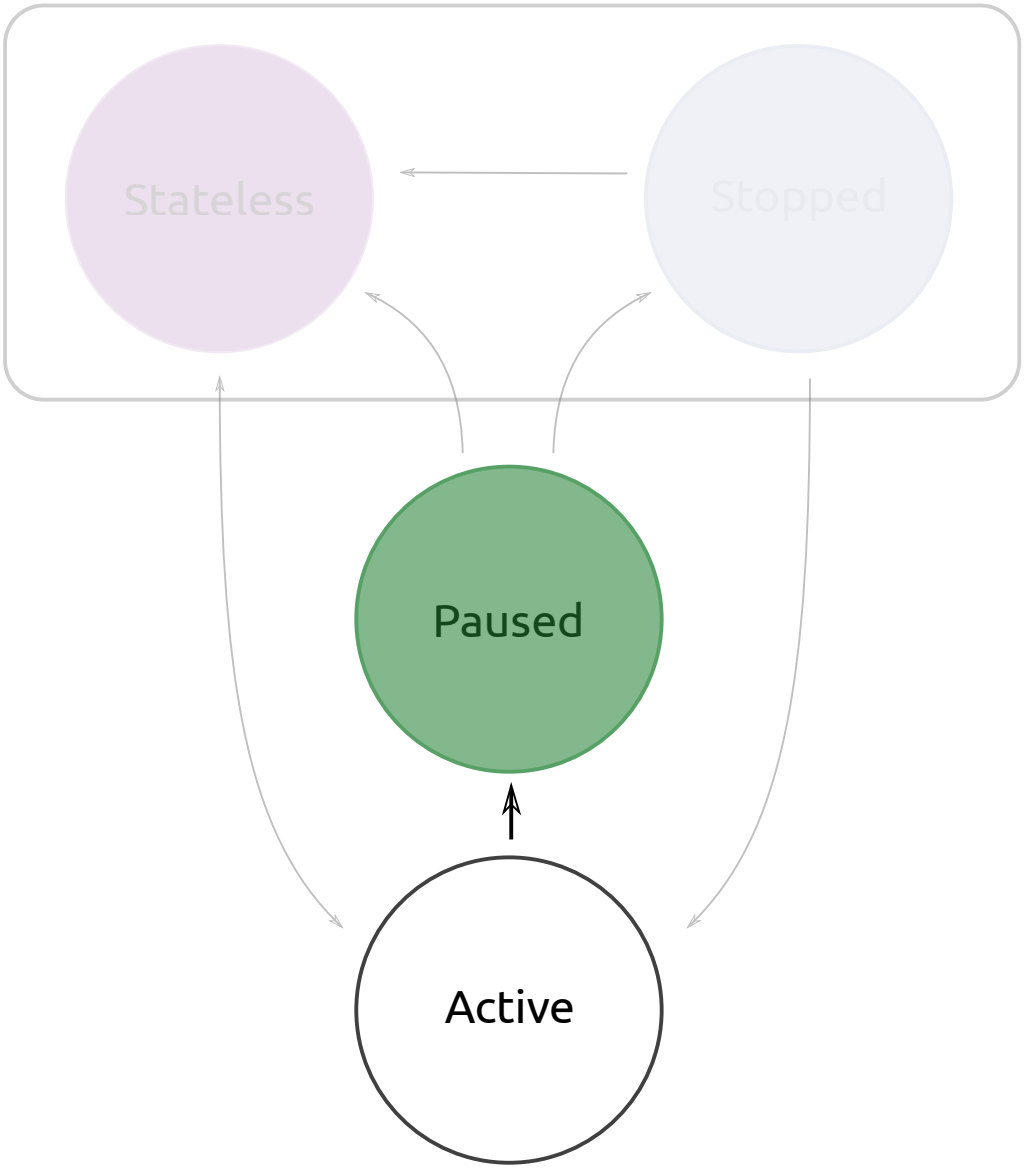

Stopped Offline
Active
Application
Paused Apps
(RAM)

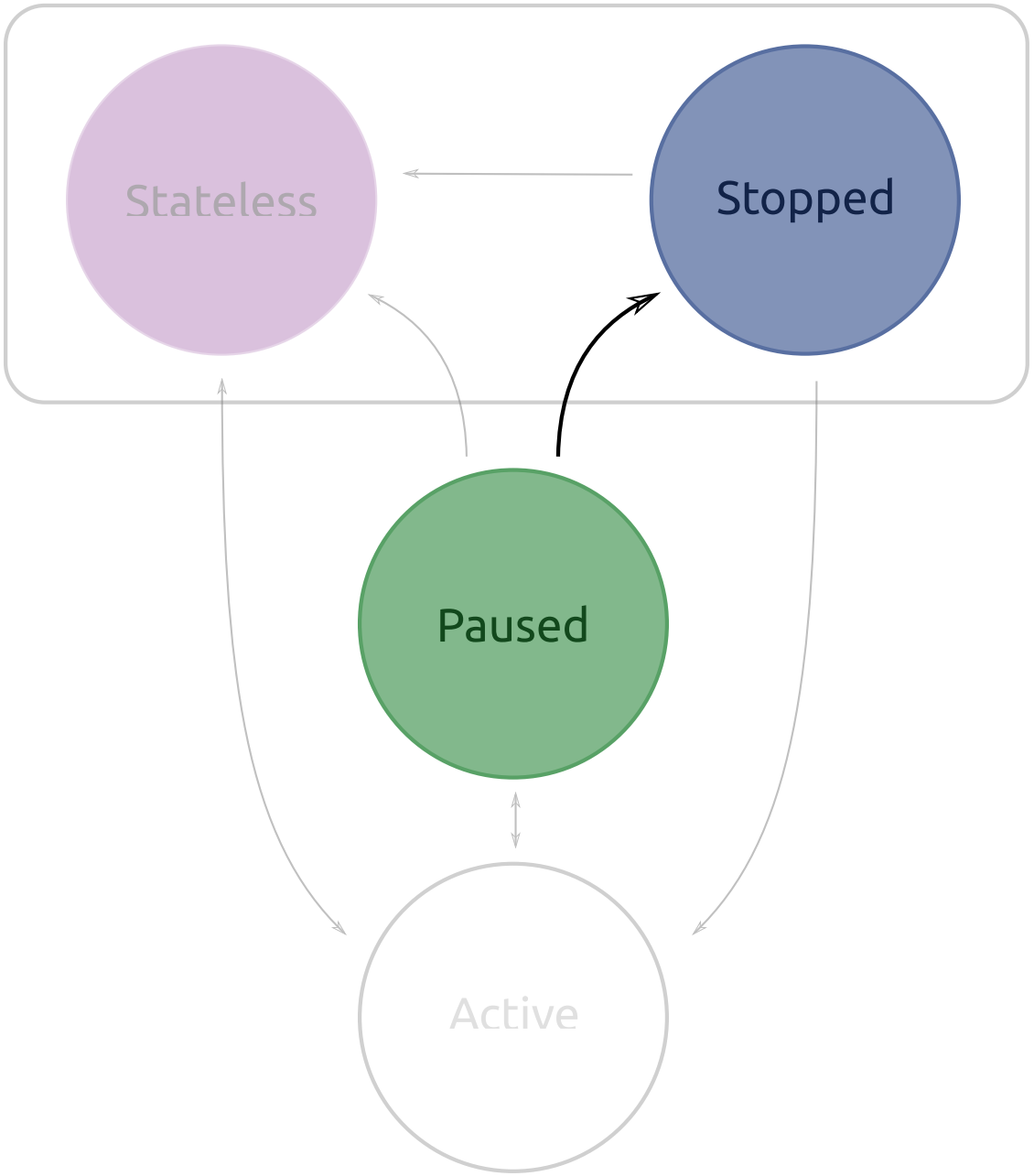

Stateless
Stopped
Paused
Active




**User Interaction Only!!!**


10:46 AM
o network
8/20/14
Enter a number
1
2 ABC
3 DEF
4 GHI
5 JKL
6
7 PQRS
8 TUV
9
*
0 +
#

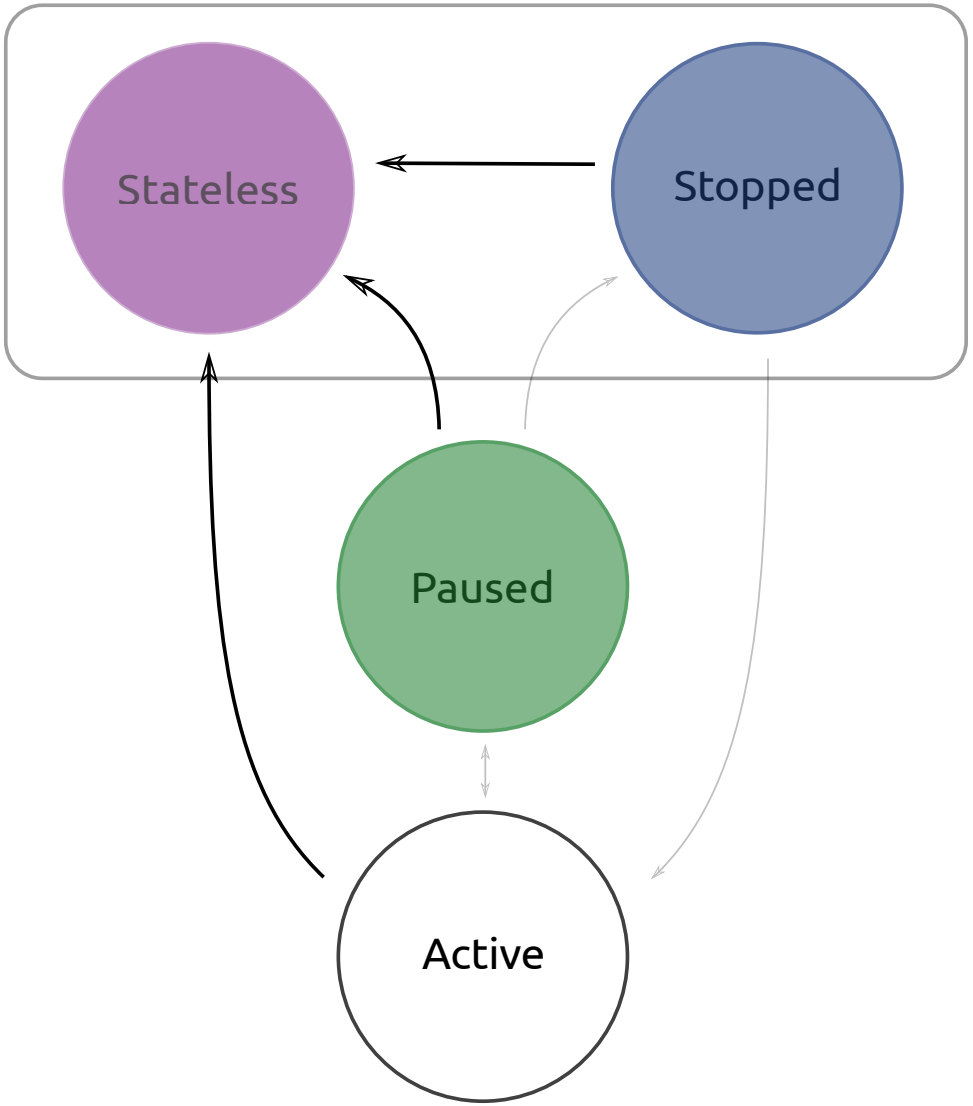

Stateless
Stopped
Paused
Active

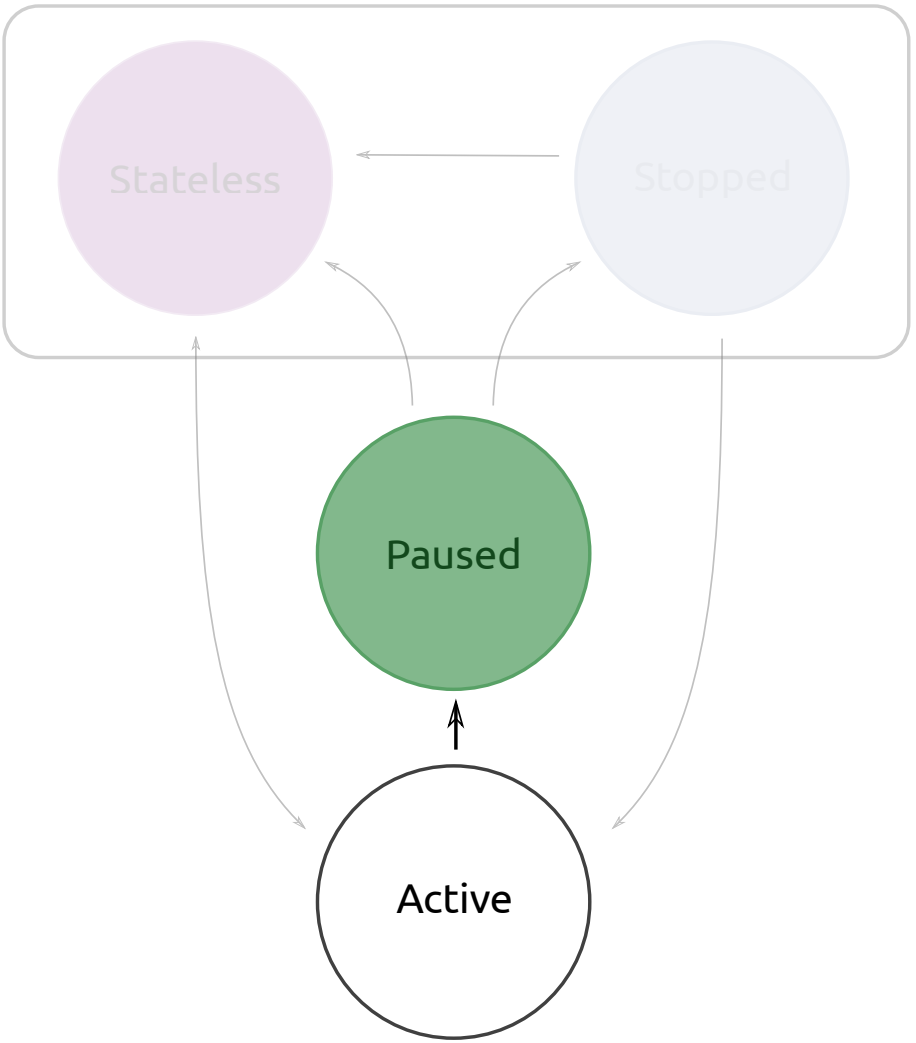



# Linux Kernel OOM Killer

*(want to include graphics resources in the future)*

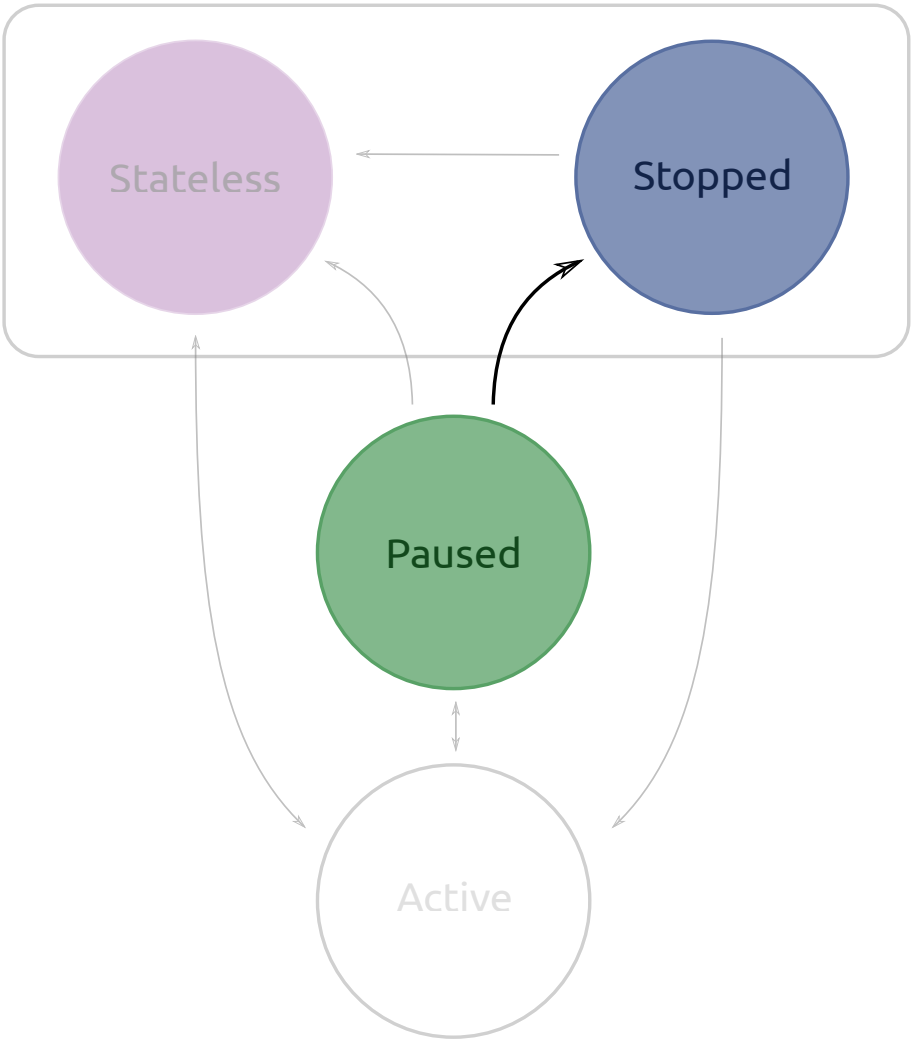
11:01 AM
ubuntu
All
Phone
Camera
Apps
100balls
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
*
0 +
#


Stateless
Stopped
Paused
Active




**What happens:**

- App is asked to save state
- Graphic buffers grabbed for screenshot
- Timeout, then all processes are sent SIGSTOP




**What happens:**

- NOTHING!

**Positive:**

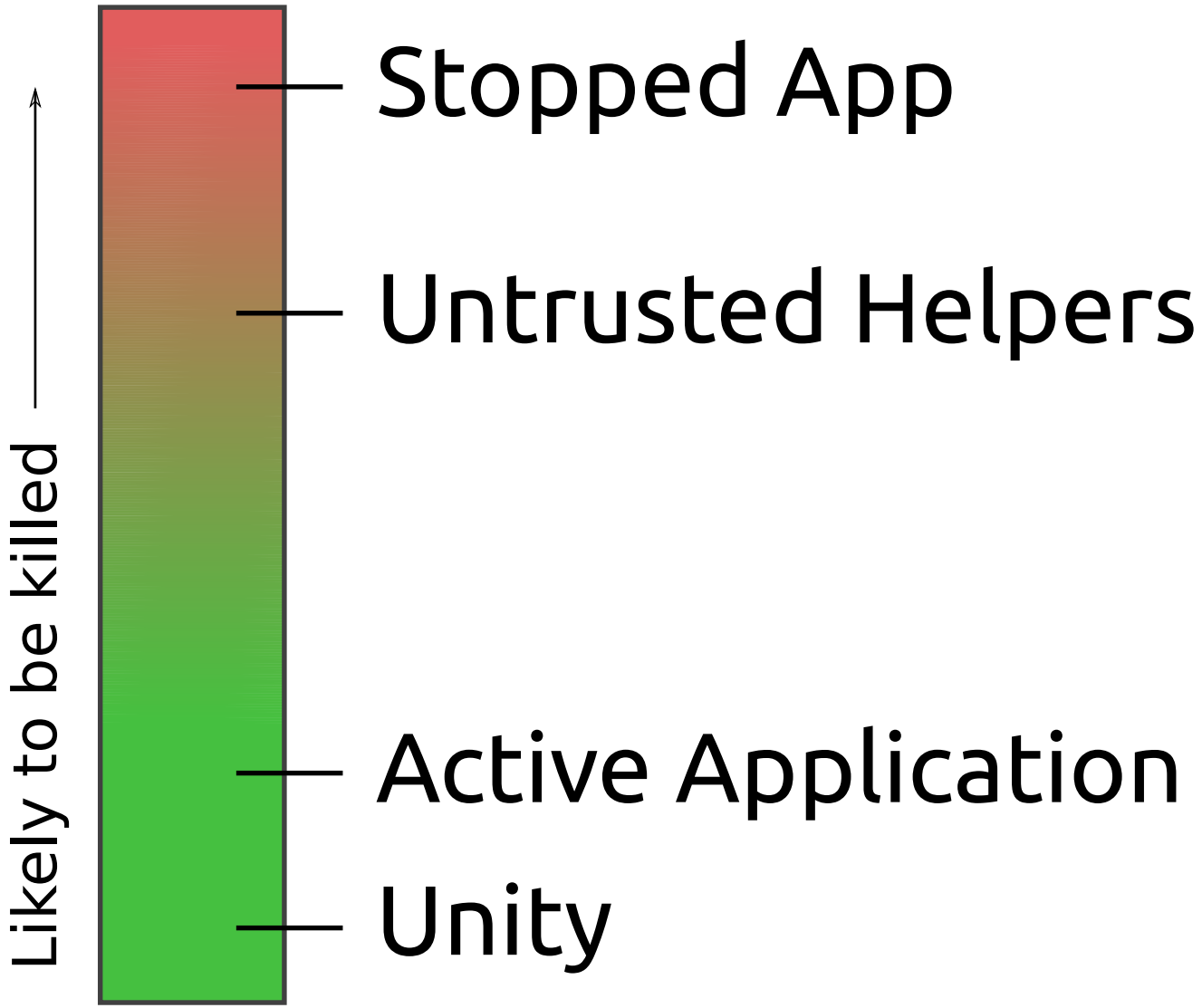
Ask to save state nicely via life cycle

Stop using processing when not asked

**Negative:**

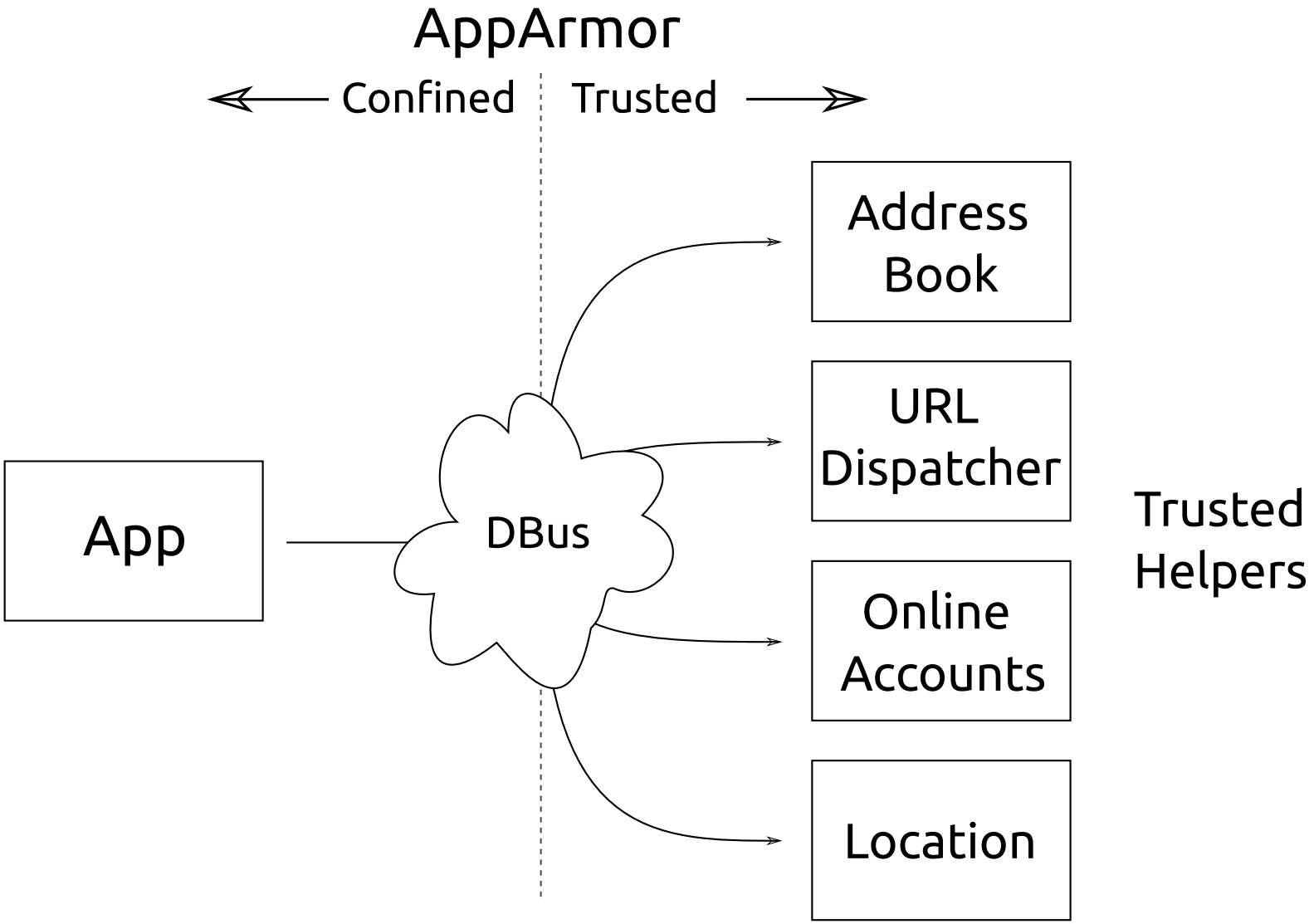
SIGSTOP apps

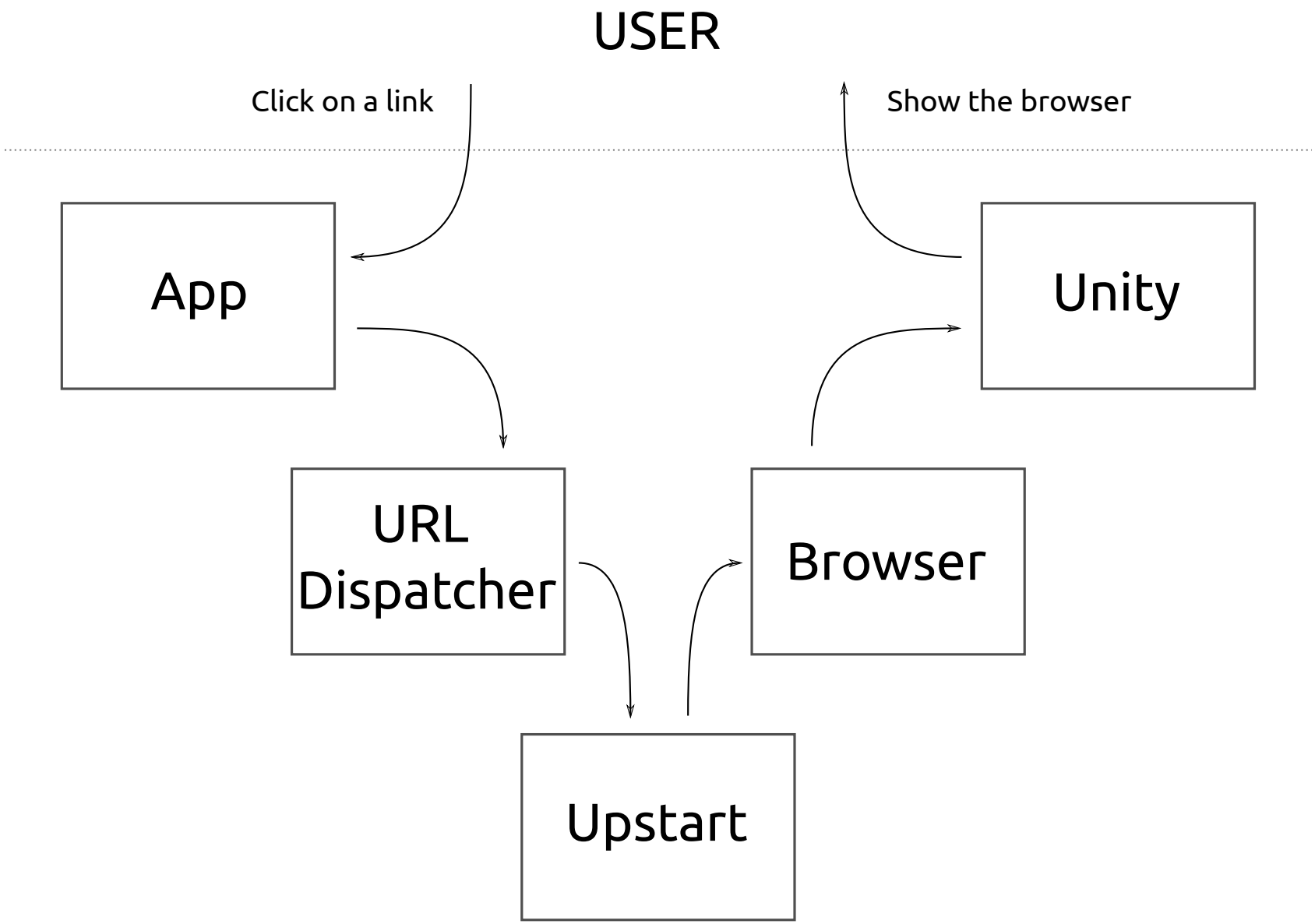
SIGKILL apps on OOM killer


Likely to be killed
Stopped App
Untrusted Helpers
Active Application
Unity

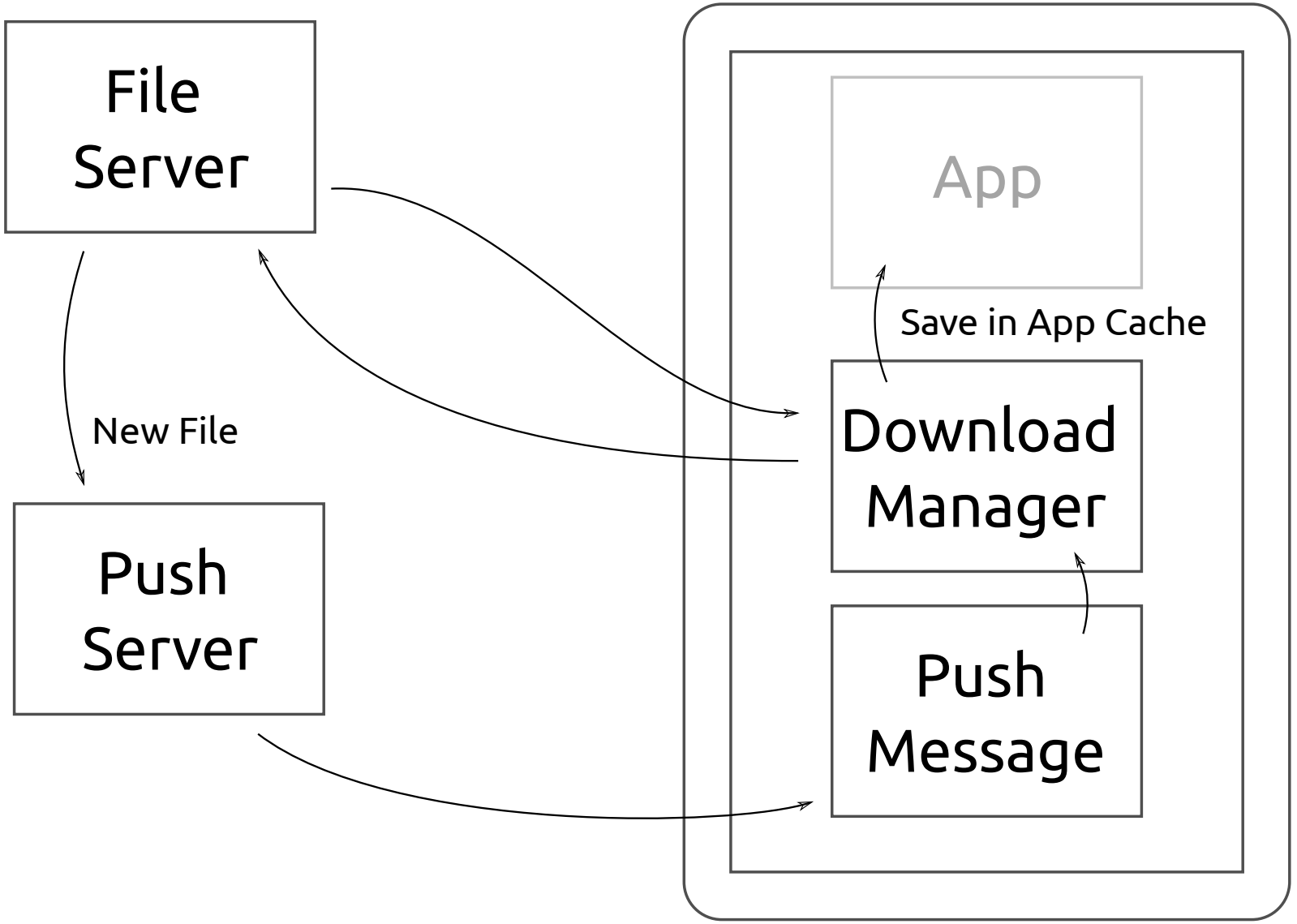
# Trusted Helpers

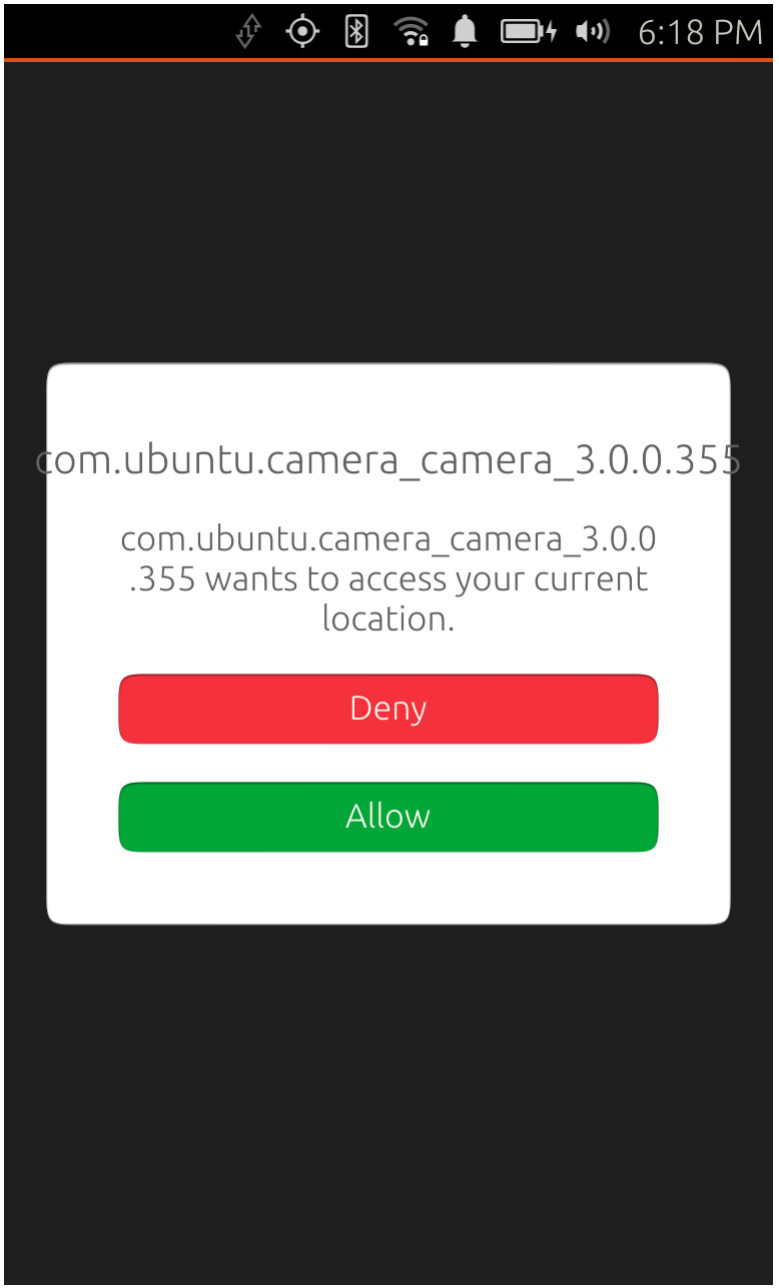
- **Download Manager** — Downloads content to the device while the application isn't focused.
- **Push Messages** — Background process that collects JSON messages targeted at app/user
- **Location Service** — Uses GPS and other sources to establish location continually.
- **Content Hub** — Shares files between application contexts securely.
- **Media Hub** — Plays audio files and play lists.


AppArmor
Confined
Trusted
Address Book
URL Dispatcher
App
DBus
Online Accounts
Location
Trusted Helpers


USER
Click on a link
Show the browser
App
Unity
URL
Dispatcher
Browser
Upstart

# Simple Sync


File Server
App
Save in App Cache
New File
Download Manager
Push Server
Push Message




# Request permission at time of use

# Review

Ubuntu Applications are:

- **Confined** — By default the applications are restricted from using a lot of functionality that might be expected from a traditional Linux user session.
- **Managed** — The application lifecycle works to keep the user in control of what is draining the battery and using resources.
- **Have Friends** — Trusted helpers provide ways to implement the functionality you need and work with confinement.

# Additional Info

http://www.ubuntu.com/phone

https://developer.ubuntu.com

https://wiki.ubuntu.com/Security/AppArmor

https://wiki.ubuntu.com/Mir

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