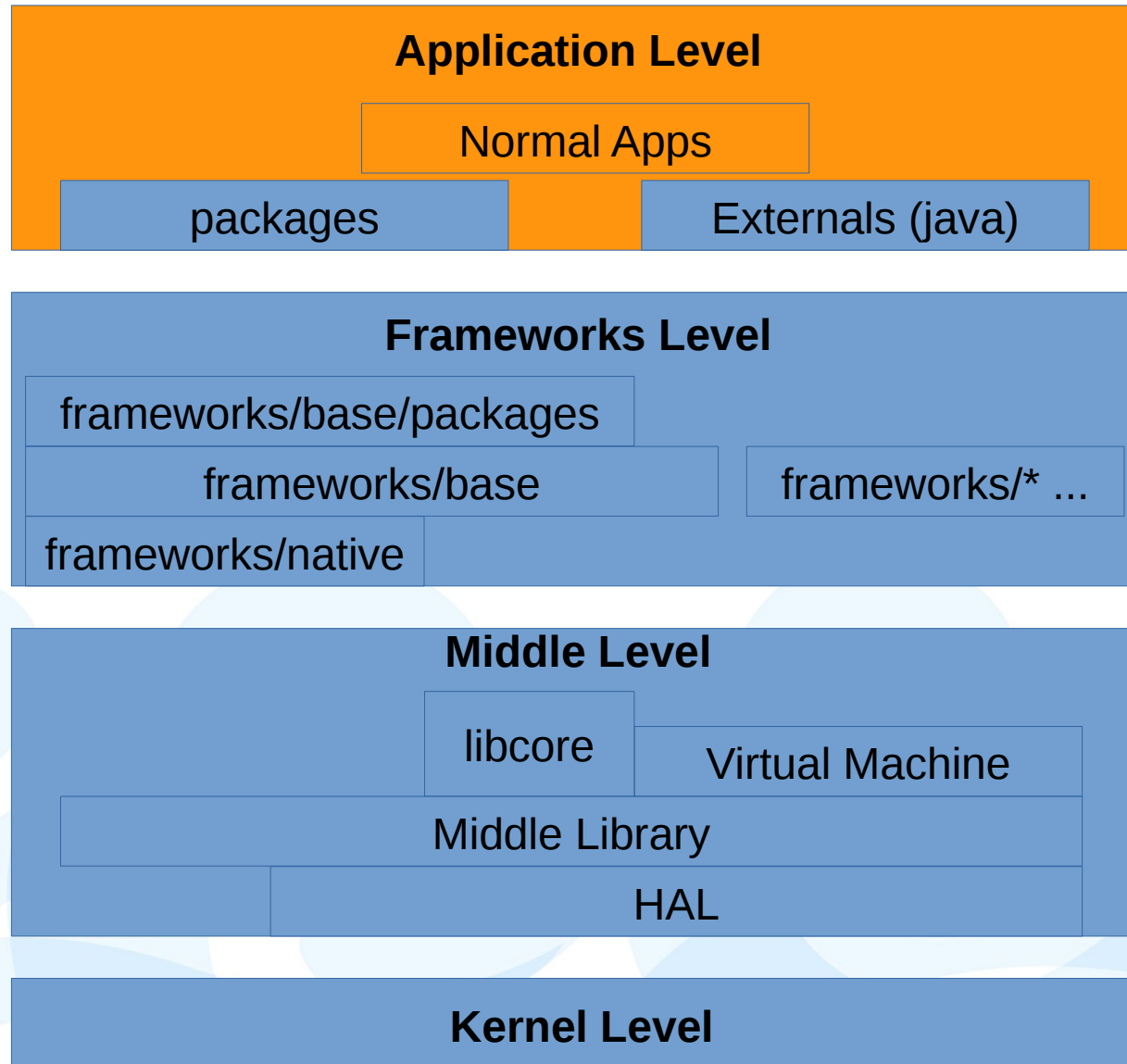


# OpenTHOS Multi-window Introduction

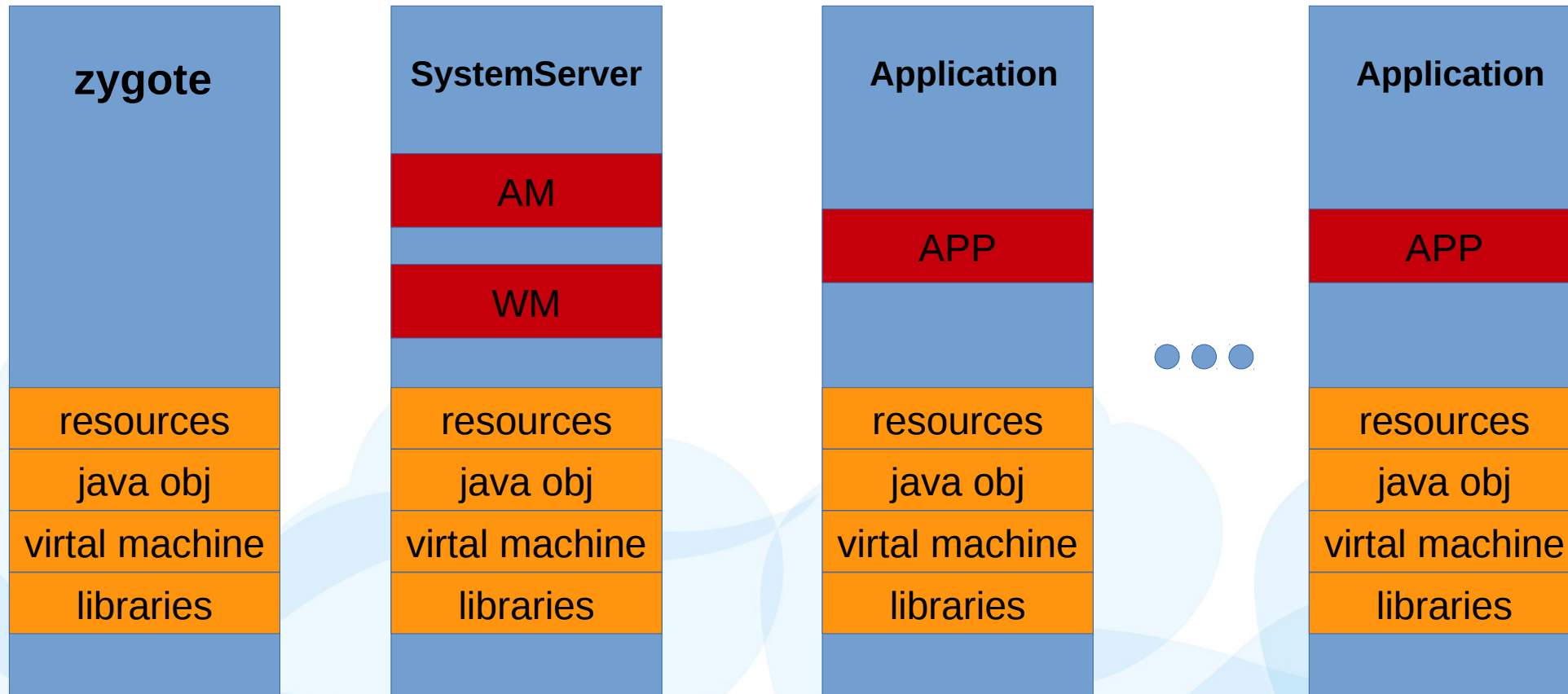
Chen Gang <[chengang@emindsoft.com.cn](mailto:chengang@emindsoft.com.cn)>

2016-09-24

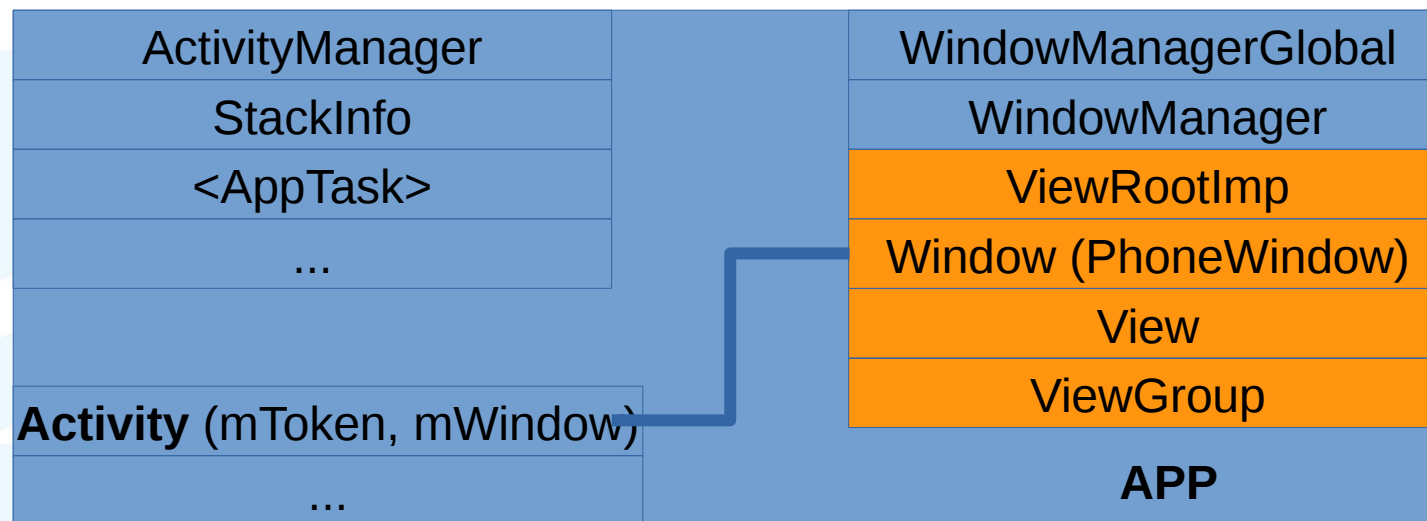
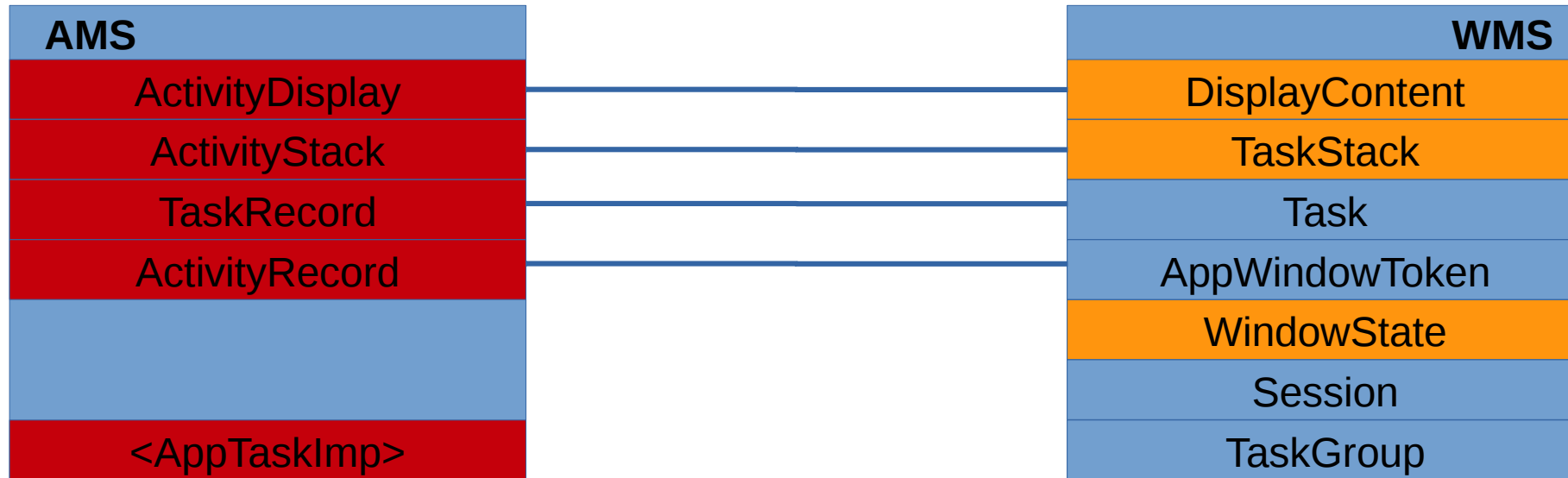
# Android Architecture



# Runtime environments



# Multiwindow Related Objects





## 1. Originally support:

PhoneWindow::Decor  
ViewRootImp::mWinFrame

TaskStack::mBounds  
WindowState::mContainingFrame

## 2. Implementation(500 lines patch):

PhoneWindow:: DecorMW, TouchListener, mStackId  
DisplayContent:: relayoutWindow(), stackIdFromPoint()

## 3. Notice:

Home stack (launcher)  
Window/View styles (fullscreen, floating, dialog, rotation ...)  
Display metrics and dpi (not implement).



## 1. Shadow:

transparent surface.

setbounds for Drawable.

Draw shadow image in template layout with clearing dirty contents.

## 2. Dialog:

WMS catch and process messages.

Adjust dialog size to avoid overriding application window header.

half-transparent black view between dialog and application window.

## 3. Auto-hide header:

WMS catch and process messages.

Decor customize the layout dynamically.



## 1. SystemUI

StartupMenu, StatusBar, NotificationBar, Alt+Tab ...

## 2. System Applications

Launcher, Settings, FileManager, Brower, Auto-Update, AppStore ...

## 3. User Applications

WPS, WeChat, QQ, Player, Camera ...





## 1. Mainly in Frameworks

Animation, Video, Capture ...

## 2. Related with Frameworks

Ethernet, Resolution, Shadow/Extend Display ...

## 3. Almost Independent from Frameworks

Printer, Run Linux GUI application ...





1. Framework Level:

2. All Features Level:

3. Stability and Performance Level:

4. Architecture Level:

**Thanks**