ANDROID SECURITY CONSIDERATIONS

Reading Material:

Android Forensics

Andrew Hoog

- Android as an attack vector
- Security strategies
- EDRM & BYOD

DATA THEFT TARGETS & ATTACK VECTORS

- easy to lose, easy to steal, short life usage span
- lots available second hand online
- increase in malware to target mobile devices
- information leakage
- data at rest
- data in transit

DATA AT REST

- non volatile data - not stored in RAM or on a network

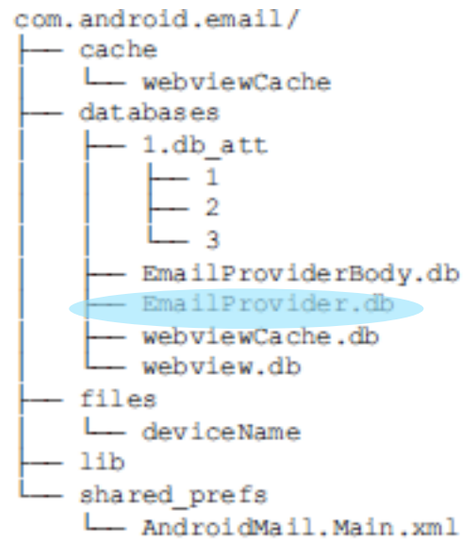
- SMS/MMS
- Call logs
- Voice Mail
- Financial apps
- Personal mail
- Web history
- Google search history
- YouTube
- pictures & videos
- Geo location
- Game history & interactions

DATA AT REST

- corporate email & attachments
- voice mails and faxes sent via mail
- user names, passwords, domain info
- wifi access points, information and passwords
- calendar items
- IM
- Corporate files
- Corporate cloud access

DATA AT REST EXAMPLE

- Android built in email app stores credentials for MS EAS in plaintext!!!!!!



- located in EmailProvider.db

```
ahoog@ubuntu:~$ sqlite3 com.android.email/databases/EmailProvider.db
SQLite version 3.6.22
Enter ".help" for instructions
Enter SQL statements terminated with a ";"
sqlite> .mode line
sqlite> select * from HostAuth;
        _id = 1
   protocol = eas
    address = owa.CorpExchangeServerExample.com
       port = 0
      flags = 5
      login = thisIsTheirUserNameInPlainText
   password = thisIsTheirPasswordInPlainText-Seriously
     domain = NeverHurtsToHaveTheDomainInfoToo
accountKey = 0
```

DATA AT REST ACCESS TECHNIQUES

- physical access
- malicious code

DATA IN TRANSIT

- on a network
- or in RAM
- susceptible to
    - man in the middle
    - DNS Spoofing
    - TMSI overflow (baseband attack on GSM networks)

ANDROID DEVICES AS AN ATTACK VECTOR

- Data Stroage - mass USB mode
- Recording Device - audio, video, photo
- Circumventing network controls
  - Connected via USB to a workstation
  - Wireless access point

SECURITY CONSIDERATIONS

- very difficult
- h/w and s/w created and maintained by a broad group incl manufacturer and carrier
- custom apps installed by user
- device may be rooted
- connects to many networks none of which are fully trusted

INDIVIDUAL SECURITY STRATEGIES

- Always use a data network you trust, cellular less susceptible to rogue access points
- Use a device passcode, wipe if entered incorrect
- Check services such as the appWatchdog
- Beware of link in SMS and emails, harder to identify fraudulent sites on a mobile device, three times more likely to click than a PC user
- Use an alternative browser
- Beware of the permissions required by a phone app

CORPORATE SECURITY STRATEGIES

- Policies - are the phones covered in corporate policies in for example, Acceptable Usage, Data Security, Backups and Data Retention, E-Discovery

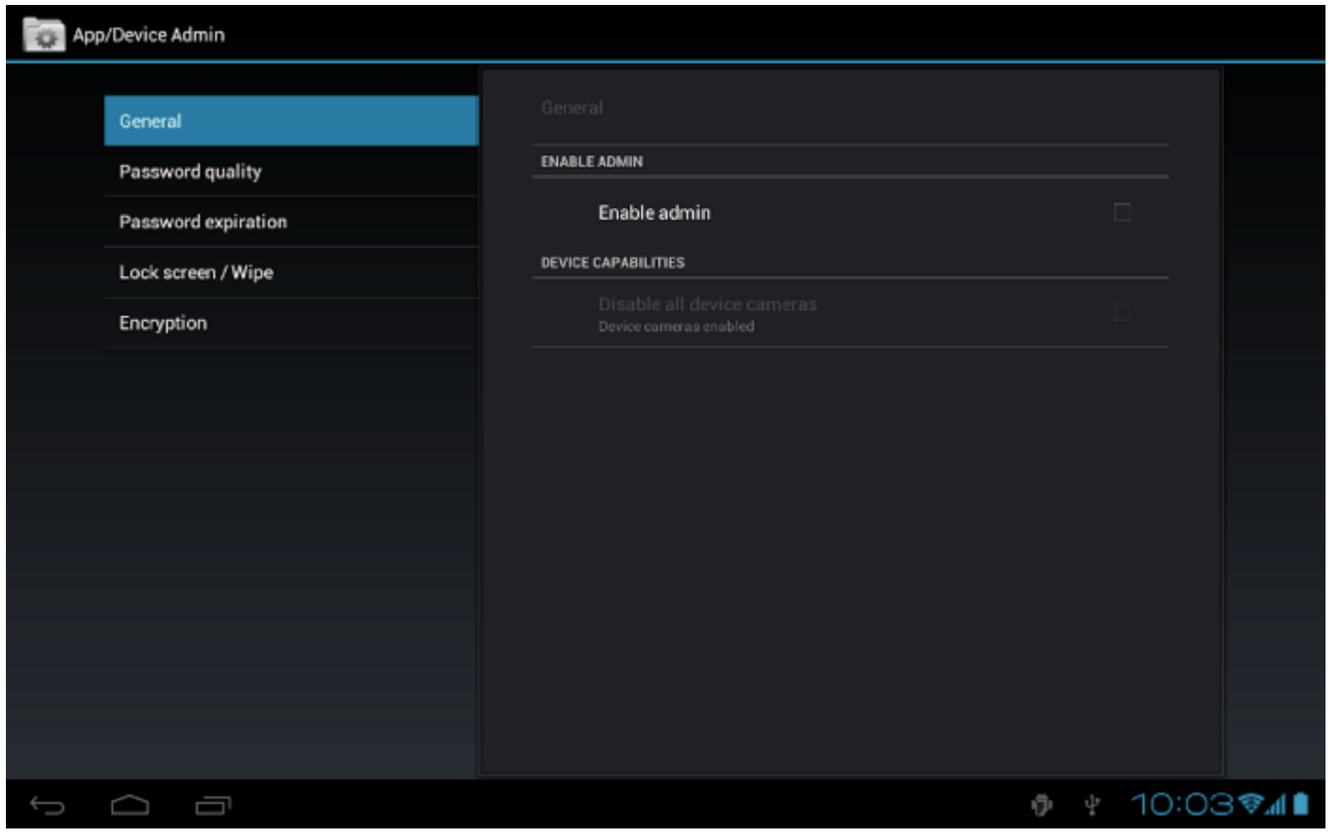
- Password/Pattern/Pin Lock max attempts to lock device

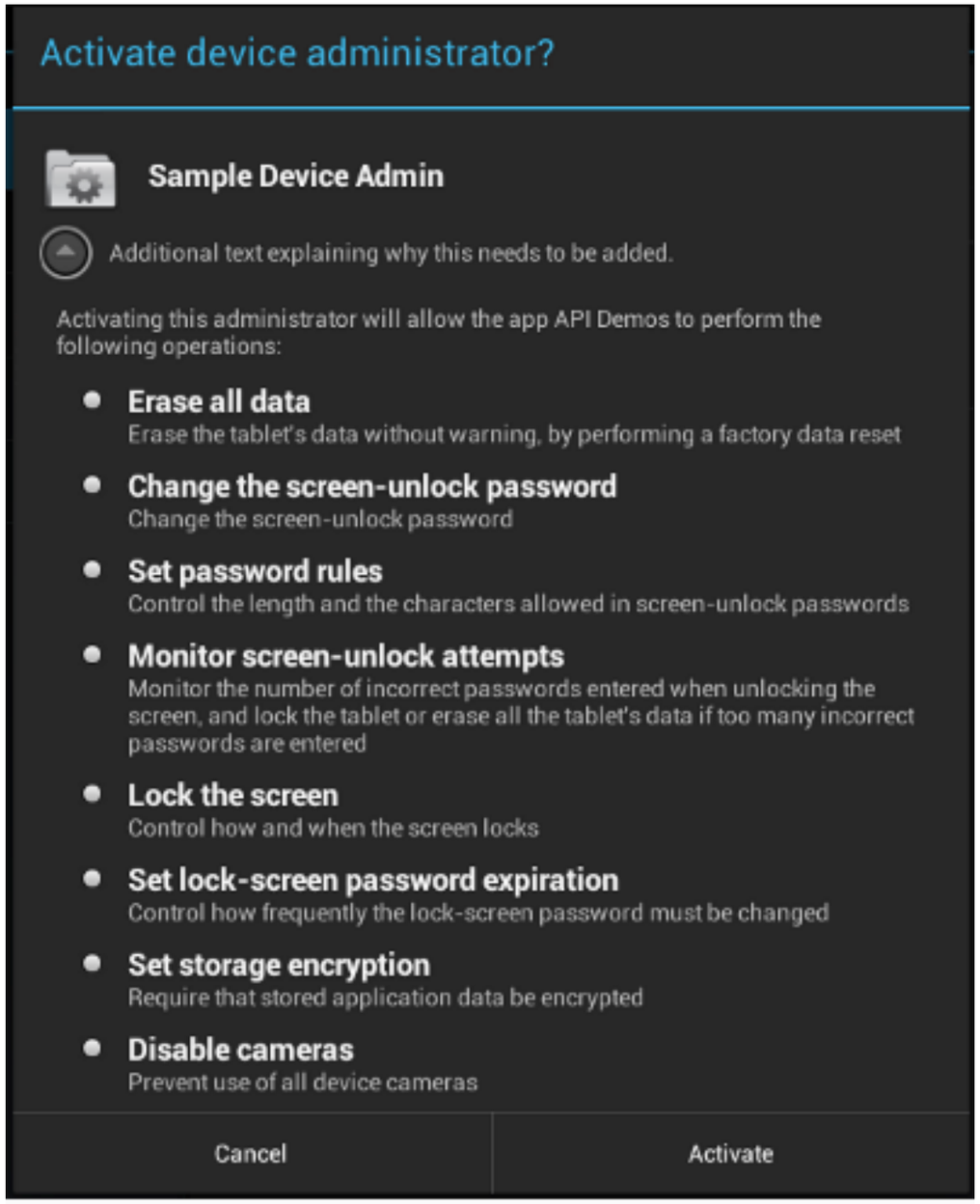
- Remote Wipe important but problematic if device set to airplane mode, employees cell plan disabled or if the device has been rooted. A countdown app can be used instead of this

- Upgrade to latest software

- Remote device management allows devices to be made adhere to policies eg: password enabled, min password length, max failed attempts, max inactivity timelock, prompt user for new password, lock device, wipe device

http://developer.android.com/guide/topics/admin/device-admin.html

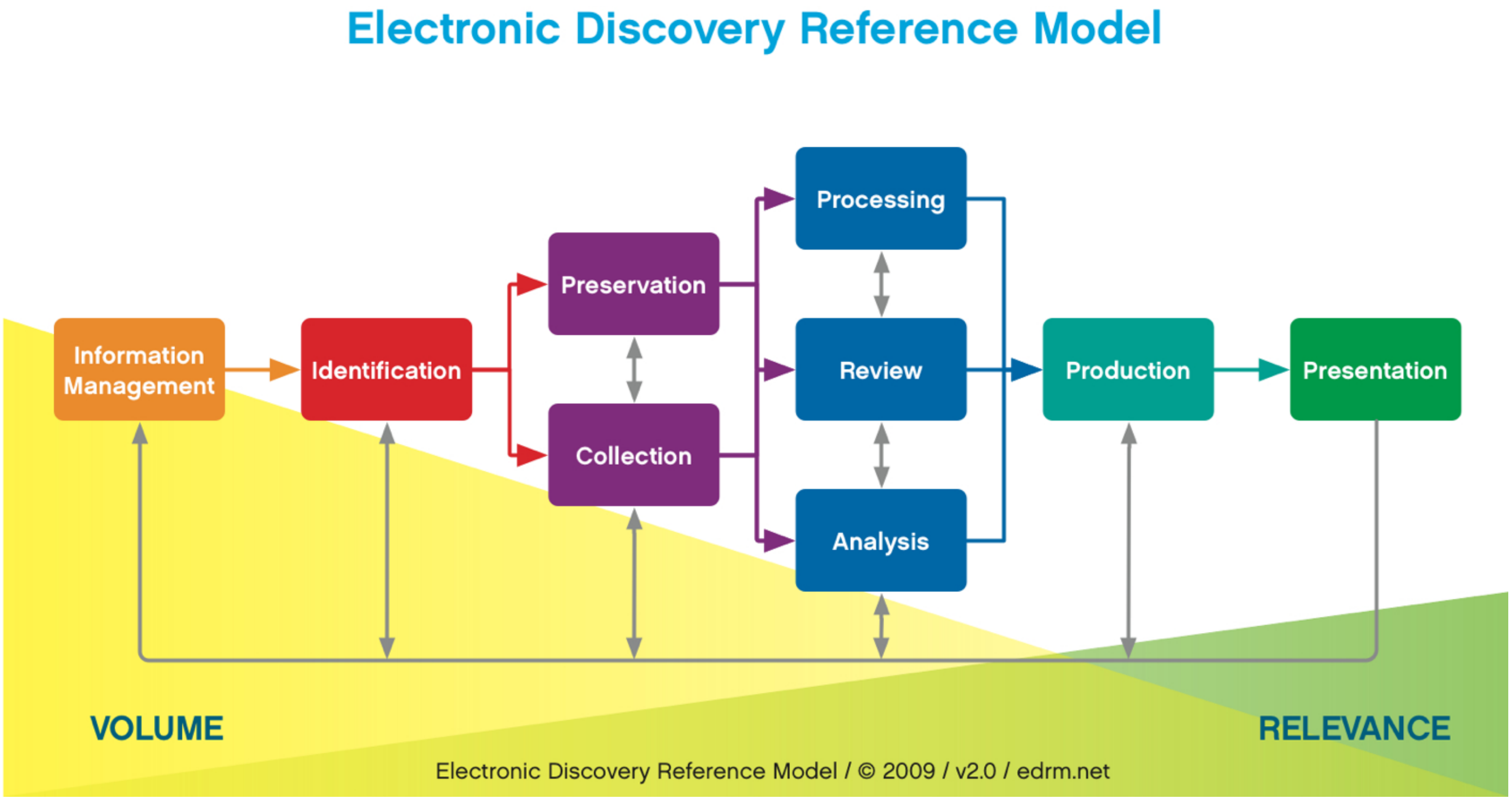




APP DEV SECURITY STRATEGIES

- Usernames should not be stored in plaintext
- Passwords should not be stored in plaintext, alternatives include token systems
- Read the AppWacthdog whitepaper

BYOD has big implications for EDRM



HANDLING AN ANDROID DEVICE

- Passcode - increase timeout or enable stay awake
- Network isolation
- Power and Data Cables
- Powered off devices