

Investigating Information recovered from Re-sold Mobile Devices

Tim Storer¹ Wm. Bradley Glisson² George Grispos²

¹School of Computing Science, University of Glasgow

²School of Humanities, University of Glasgow

Privacy and Usability Methods Pow-wow (PUMP) 2010

Motivation

background:

- ~5 billion mobile connections globally
(estimated penetration rate of 60%)
- ~53 million smartphones sold in Q1 2010
- growing presence of digital information as evidence in court

challenges?:

- extracting and verifying digital data from mobile devices
- securely disposing of devices containing sensitive information

The study

- acquire and analyse a selection of re-sold mobile devices from several sources:
 - pawn shops
 - online auction sites
 - mobile forensics application vendor

H-confidentiality: sensitive data is retained on re-sold mobile devices (and is retained even following attempted deletions by a user); and

H-consensus: different mobile phone extraction software applications produced different forensic results

Method – acquisition (purchasing)

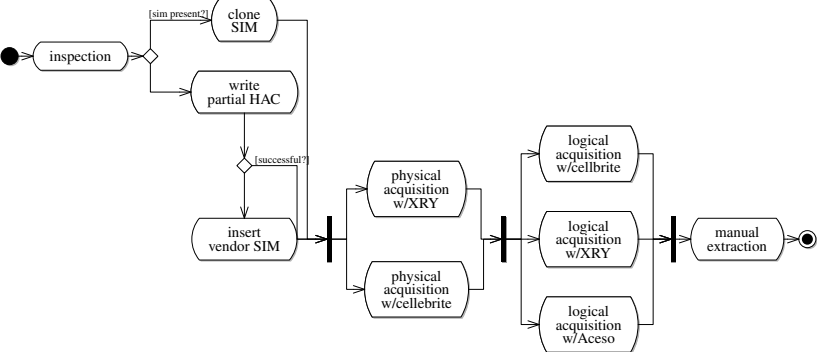
criteria:

- compatability
- price range
- location
- payment method
- seller type

data set:

	00.00– 20.00	20.01– 40.00	40.01– 60.00	60.01–
price (£)				
auction site	10	10	10	10
pawn shop	2	1	2	0

Method – analysis



Some numbers – recovered items:

category		all		deleted		
		P	S	P	S	
Audio	553	489	1	3	3	0
Contacts	1511	1003	11	70	70	6
Email	31	0	0	0	0	0
Files	123	0	0	0	0	0
Images	1927	1497	159	127	127	0
MMS	37	28	1	0	0	0
Notes	3	2	0	0	0	0
Others	60	1	0	0	0	0
SMS	2669	2377	55	896	823	17
Videos	150	88	8	0	0	0
Totals	7064	5485	235	1096	1023	23

data recovered (abstracted examples)

- images containing nudity, explicit material
- internet pornography
- drug use
- bank account details
- slightly dubious arabic language music video
- online intelligence/knowledge tests
- explicit material about other contacts on the phone
- personal health information

Observations and future work

- further analysis of existing results
- deleted information is not deleted data
- smartphones contain less sensitive data than expected
- investigate corporate mobile devices (work pending)
- experiment with phone scrubbers
- repeat study in Summer 2011