

# Technologies of privacy by design

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**Max Clifford**  
The *PI* guru has reportedly settled for **£1m**

### CASES ALREADY SETTLED

The *News of the World* has paid large sums out of court to several litigants



**Gordon Taylor**  
The FA chief executive. Taylor has received costs and damages of **£700,000**



**Ja Armstrong**  
Legal adviser to Taylor (above). Armstrong has also received costs and damages

**Liam O'Byrne**  
Former Lib Dem MP



**George Galloway**  
Former Respect party MP



### CONSIDERING LEGAL ACTION

Some of the people who are keeping their options open



**Kieren Fallon**  
Jockey



**Vanessa Feltz**  
Journalist and presenter

**Chris Tarrant**, left  
The television broadcaster has been through a messy divorce

**Rupert Murdoch**  
The News Corporation chairman has insisted there is no evidence of widespread phone hacking, that his company had very strict rules and that the Clive Goodman case was a one-off



**Andy Coulson**  
David Cameron's director of communications resigned as editor over the royal phone hacking scandal in 2007. He says he knew nothing about illegal phone hacking and did not know Glenn Mulcaire



### AT THE CENTRE OF THE WEB



**Rebekah Brooks**  
Former *News of the World* and *Sun* editor, and now *News International* chief executive, rejected allegations that illegal phone tapping was a widespread practice



**Glenn Mulcaire**  
The private investigator contacted by *News of the World* journalist Clive Goodman who was jailed in 2007 for illegally hacking into the phones of celebrities and royal aides



**Clive Goodman**  
Former royal correspondent, jailed in 2007 for intercepting phone messages of aides to Prince William and Harry



**Ian Edmondson**  
*News* editor suspended over allegations relating to the hacking of Sienna Miller's phones



**Steve Coogan**  
Actor and comedian



**Sky Andrew**  
Sports agent and former Olympian

### SUING THE NEWS OF THE WORLD

Those embroiled in legal action



**Les Hinton**  
Former executive chairman of *News International*, left, authorised payments to Goodman and Mulcaire after they were jailed for phone hacking. He denied it was a gagging payment



**Paul Gascoigne**  
Footballer



**Nicola Phillips**  
Celebrity publicist and former assistant to Max Clifford



**Sienna Miller**, right  
Actress



**Sir Ian Blair**  
Former Metropolitan police commissioner



**Boris Johnson**  
London Mayor



**Ebe McPherson**  
Model

### CONFIRMED AND SUSPECTED VICTIMS OF HACKING



**Andrew Neil**  
BBC presenter and former editor of the *Sunday Times*



**Tessa Jowell**  
Former Labour minister



**Lord Mandelson**  
Former Labour minister



**Sirion Hughes**  
Lib Dem MP



**David Davis**  
Former shadow home secretary



### SEEKING JUDICIAL REVIEW

A joint claim for a judicial review into the police's handling of the information in 2006 has been launched by the four men below. The review, if granted, will examine the lawfulness of the decision made by Scotland Yard not to contact all those named in the documents obtained by police. A decision on whether to proceed with the review is expected in the next few weeks



**John Prescott**  
Former Labour deputy PM



**Brendan Montague**  
Journalist



**Brian Paddick**  
Former Met assistant commissioner



**Chris Bryant**  
Labour MP

# Insider threats

Information required	Price paid to 'blagger'	Price charged
Occupant search	not known	£17.50
Telephone reverse trace	£40	£75
Friends and Family	£60 – £80	not known
Vehicle check at DVLA	£70	£150 – £200
Criminal records check	not known	£500
Locating a named person	not known	£60
Ex-directory search	£40	£65 – £75
Mobile phone account	not known	£750
Licence check	not known	£250

“What price privacy?”, Information Commissioner’s Office (2006)

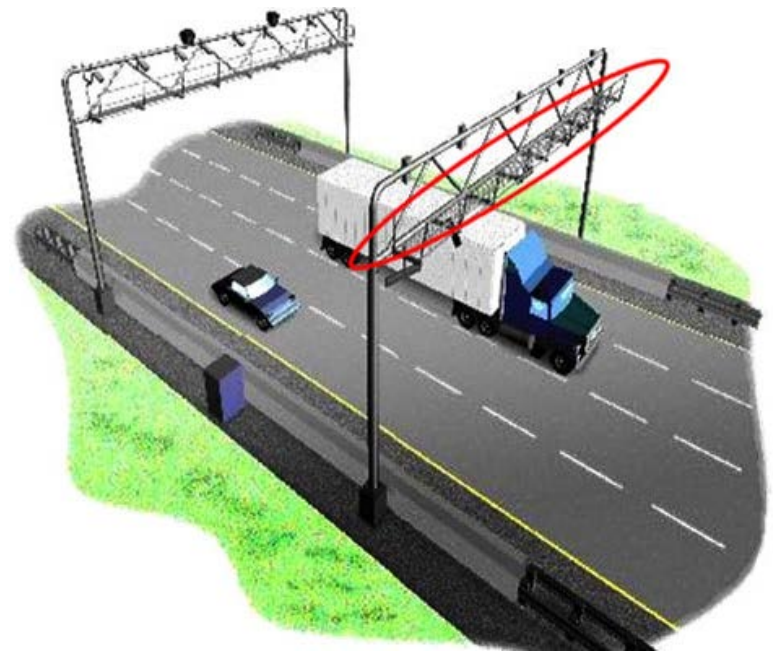
# Designing for privacy

- Data **minimisation** key: is your personal data really necessary? Limit personal data collection, storage, access and usage – enforced using cryptography
  - Protects against hackers, corrupt insiders, data loss, as well as function creep
- Users must also be **notified** and **consent** to the processing of data – easy-to-use interfaces are critical. What are defaults?



# Transport pricing

- Monitor all traffic centrally (London), at kerbside (W London) or deduct payment from pay-as-you-go toll cards (Singapore)? On-board unit (Balasch et al. 2010)? Or tax parking spaces?
- Link all payment card usage (Oyster) or use unlinkable RFID tokens (Shenzen)?



MIT Technology Review (2006)

# Mobile data

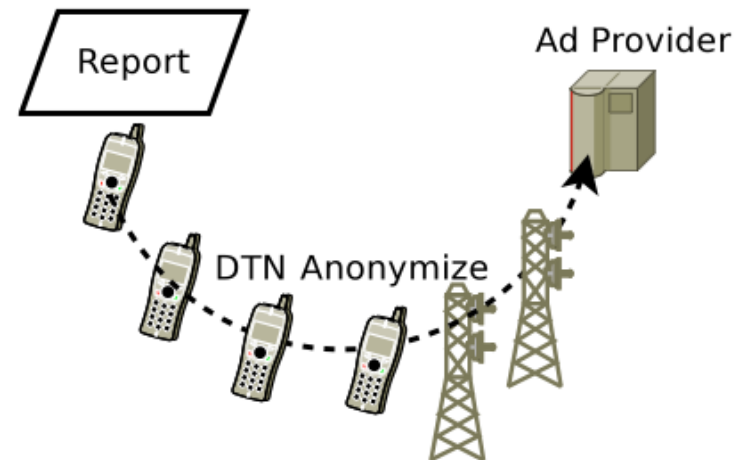
- Is communication uni- or bi-directional or broadcast?  
Oblivious transfer
- Does sensor, user agent or network carry out triangulation and processing?  
What resolution data can network access?
- How long-lived and linkable are identifiers? IMSIs, TMSIs and location patterns



# Location-Based Services



- Can we use features of mobile phone networks to supply anonymous, targeted adverts?



# Sensor mix networks

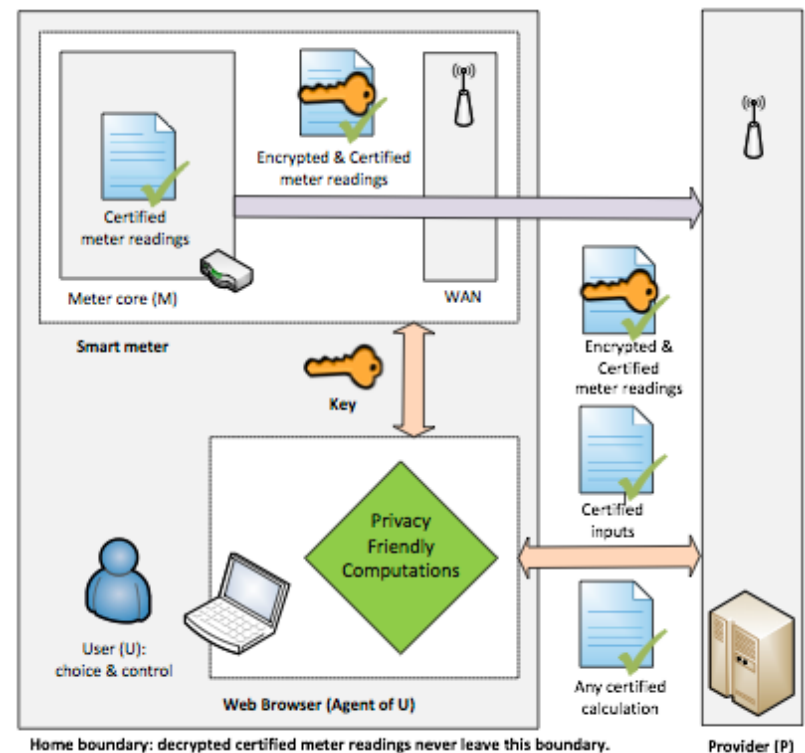
- Restricted Mix Networks in DTNs (Wright and Brown, 2010)
  - Network-wide routing is infeasible; isolated network partitions may still provide opportunistic mixing amongst local networks.
  - As messages enter zones, local mixing within the local network.
  - Local communication gateways can still act as powerful attackers against local network.
- Can we use encrypted broadcast to further conceal path of messages?






# Privacy-friendly smart grids

- Personal data should almost always remain at customer premises under their direct control
- Network broadcasts tariff data to meters, which control appliances
- Heavily aggregated information used for billing and price comparison
- PETs can further reduce information leakage to third parties



# Interoperability requirements

- API disclosure requirements are necessary but not sufficient - ability to program platform apps is of little use if they cannot run
- Must-carry obligations enable one platform to “break in” to another (e.g. Flickr app on Facebook)
- Interconnect requirements most likely to lead to seamless user experience that will create real competition



The screenshot shows the Skype Home interface. At the top, there are tabs for "Skype Home" and "Profile". Below the tabs, a large blue banner reads "Now video call everyone on Facebook". The main area features a video call window with a Facebook overlay. The overlay shows a Facebook profile page with a video call in progress. The video call shows a man and a woman smiling. The Facebook overlay includes the Facebook logo and the Skype logo. Below the video call window, there are icons for video call, chat, and a plus sign. At the bottom of the interface, there is a green button labeled "Connect to Facebook" and a link that says "No thanks, I don't want to connect to Facebook right now".

Do all this directly from Skype:

- Video call with anyone on Facebook.
- Instant message your Facebook friends.
- See your Facebook News Feed and update your status.
- Like and comment on Facebook posts.

To make video calls you'll need the [latest version of Skype Beta](#)

[Connect to Facebook](#)

[No thanks, I don't want to connect to Facebook right now](#)

# References

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