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PROTECTING IDENTITY IN THE DIGITAL ERA

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Aim of this presentation

- To 'set the scene' for subsequent discussions of identity security
- To outline the relevant characteristics of identity
- To look at identity theft, its scope and its modes

- To build shared understanding on specific examples
- To position technology appropriately amongst the applicable countermeasures

Footnote position, 12 pts.

Topics

- Scope and characteristics of identity abuse
- An 'industry example'
- The challenge we face
- What does Identity consist of?
- Identity theft life-cycle and attack vectors
- Possible counter-measures in theory and practice

Footnote position, 12 pts.

Scope and Characteristics of identity abuse

- Identity theft and identity fraud are a factor in:
  - Money-laundering and financial fraud
  - Vulnerability of the online 'critical national infrastructure'
  - Other aspects of organised crime

- These activities are:
  - Organised
  - International
  - A 'commercial' enterprise
  - Facilitated by Internet technologies
    - It is tempting (but, I believe, wrong) to conclude that the solution is therefore primarily technical.

'Name this Industry' ...

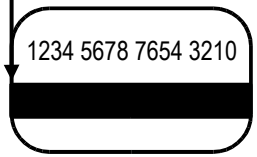
6 – Re-sell cross-border to monetise

3 – Reprocessing; consumer value-add

2 – Bulk sale, cross-border shipment

4 – Re-export, cross-border

1 - 'Mining' of raw materials



5 – Convert Assets to Goods

Retail Card 'Skimming' Case Study

- Details captured in North America
- 'Consolidated' in SE Asia
- Cards personalised in S Asia
- Physically shipped to EU
- Goods bought for shipment to Central Europe

- In other industries, this would be a normal supply chain...
- Organised entities operate in the theft, trafficking and exploitation of identities, for financial gain and other ends
- No single law-enforcement agency has the jurisdiction, resources or inclination to investigate or prosecute this crime (which one...?)

The Challenge We Face

"As long as we persist with

- C17th. notions of sovereignty
- C18th. judiciary and
- C19th. law enforcement

the C21st. will belong to organised crime."

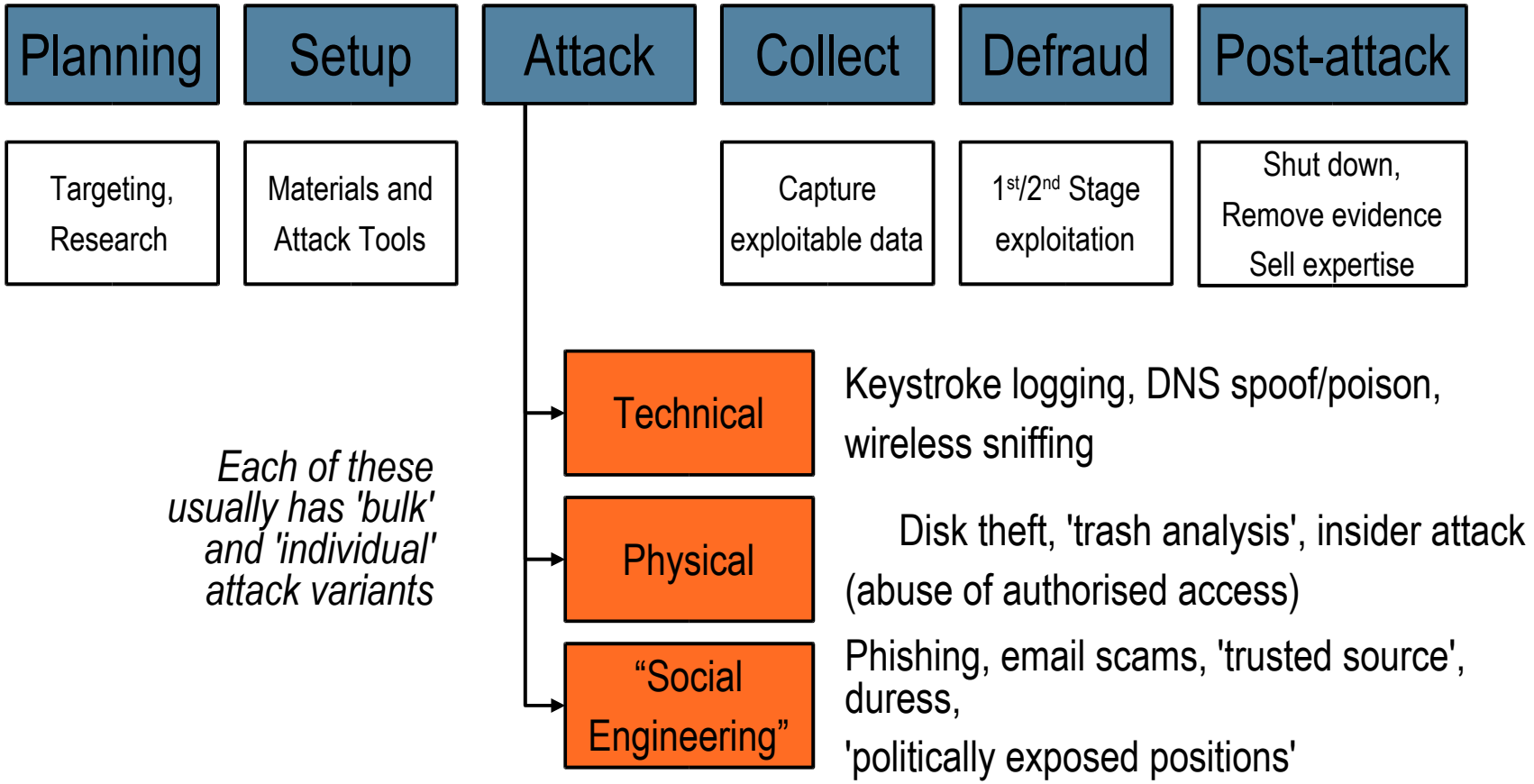
Jeffrey Robinson
Writer on Money-laundering and Organised Crime

What does Identity consist of?

- A three-layer model for Identity Data:

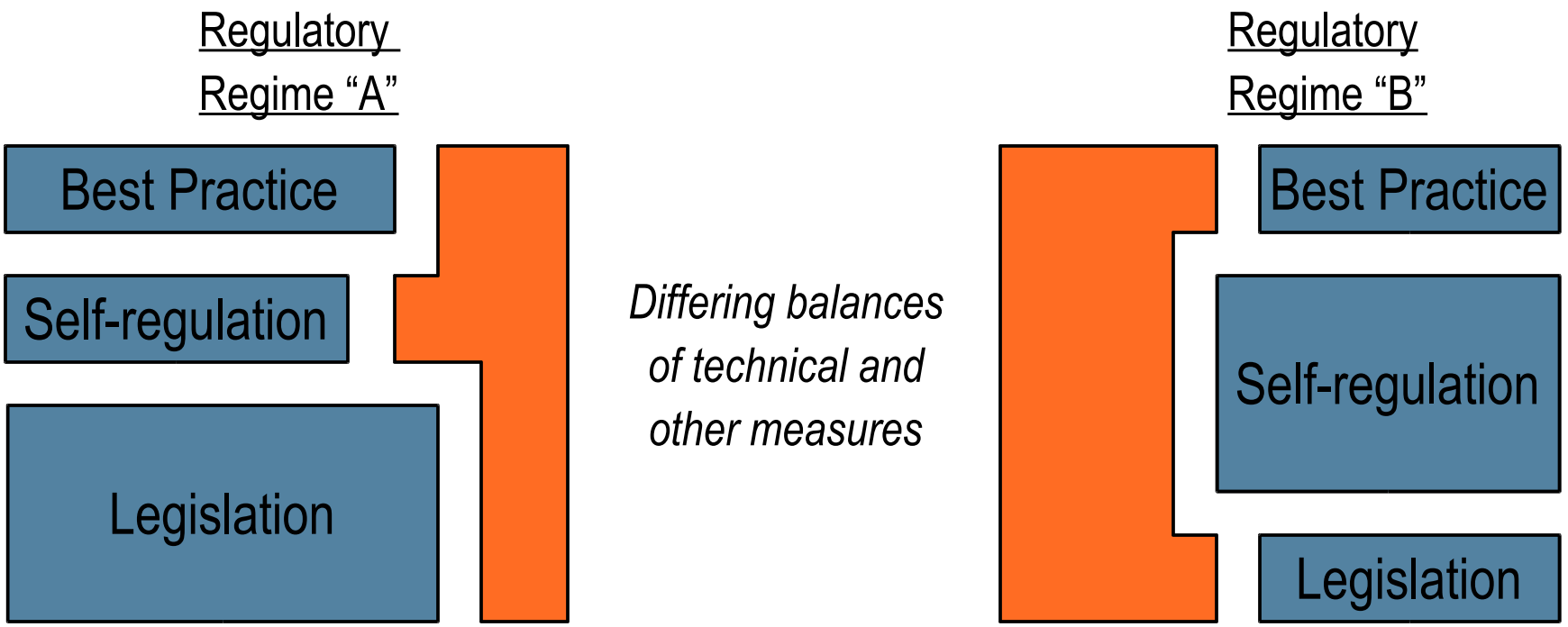
- Assertions about Identity are, essentially, assertions that the person presenting credentials is the person to whom they were issued at a point in the past.
- This reveals an implicit 'chain of trust', which must be intact if we are to trust an identity assertion.
- Identity Theft is the act of subverting that chain of trust at some point.

Identity Theft Life-cycle and Attack Vectors



Countermeasures and their Positioning

- It is tempting to see “technology” or “legislation” (or both) as the definitive solution to identity theft.
- However, that is likely to fail tests of practicality, scalability, and 'portability' across jurisdictions (for instance, regulations relating to 'Breach Notification').
- Each 'regulatory regime' (country, industry...) has a characteristic 'profile', to which technology needs to be fitted as appropriate:



Mitigations by Attack Vector – Some Examples

- As one might expect, the mitigations for identified attack vectors vary, include both technical and non-technical measures, and often overlap. The table below gives some examples:

Attack type	Attack Vector	Description	Mitigation
Technical	Wireless intercept	War-driving', open wireless access points, 'Evil Twin' attack	Wireless encryption, MAC filtering, user education
Physical	Trash Analysis' (also called 'Dumpster Diving')	Collecting (and aggregating) identity data which has been discarded without adequate protection (documents, disks, tapes)	User education, use of document shredding, secure file delete, asset disposal policies, audit
Social Engineering	Phishing	Luring individuals to reveal personal data	User education, browser toolbars, improved (e.g. multi-factor) authentication

Life-cycle and Attack Vectors – Further Reading

- My source for much of this analysis is the Liberty Alliance, through its ID Theft 'Special Interest Group'
- The SIG's first two pieces of output are freely available through the links below:

http://www.projectliberty.org/resources/id_Theft_Primer_Final.pdf

http://www.projectliberty.org/resources/Glossary_Id_Theft_Primer.pdf

- Also, see how this recent case-study of identity theft and fraud at 'street level' has got into the mainstream media: *who, why and how...*

http://www.usatoday.com/tech/news/internetprivacy/2005-12-14-meth-online-theft_x.htm

Some Advantages of a Federated Approach

- Federation makes strong authentication available as a 'shared service', capitalising on the user's 'most trusted' relationships
- The layered model for identity data provides functional separation
- Permission-based exchange of user attributes (allowing user consent and privacy to be addressed)
- Reduced need to move sensitive data from place to place

- The federated model provides a much better online analogue for 'real-world' trust relationships

Some Closing Thoughts...

- Why do people rob banks?
  - “Because that's where the money is...”
  - People steal identities because they are of value – and a 'clean' identity with excellent credit and strong credentials is all the more valuable
  - Every increase in the 'strength' of credentials requires greater care in the initial registration process
  - How do you issue someone with a 'new' biometric?

- Tackling Identity Theft requires a holistic approach:
  - Legislation, Regulation, Best Practice, Technology, Process and User Behaviour are all factors
  - Systematic analysis of identity data, attack vectors and mitigations is an essential foundation – and is possible

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THANK YOU

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