Dawes Centre
AI Sandpit

Some frameworks for thinking about AI

Paul Ekblom

p.ekblom@ucl.ac.uk
http://5isframework.wordpress.com
www.designagainstcrime.com/methodology-resources/crime-frameworks

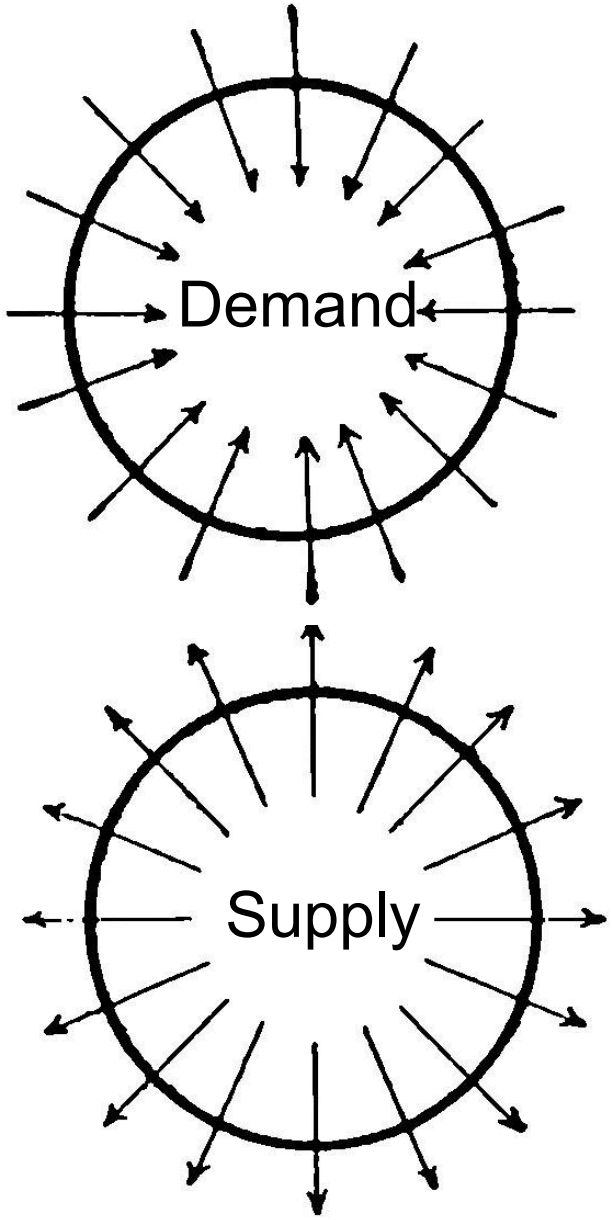
Coming up

- How to anticipate crime implications of innovations
- How to think about the roles people and organisations play in (future) crime
- 3 perspectives in time and space

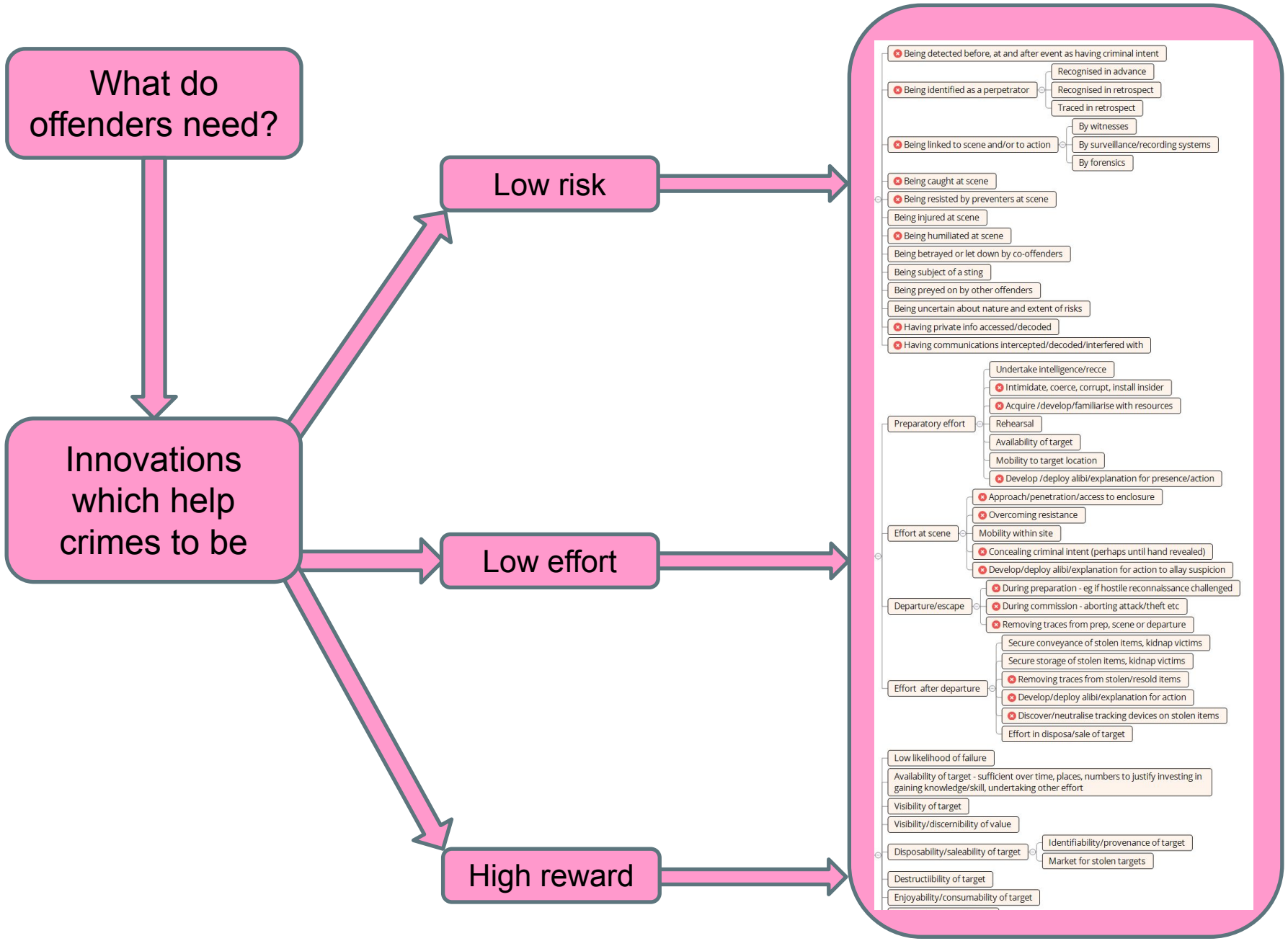
How to anticipate with innovations such as AI?

Can take different perspectives on future crime/ security

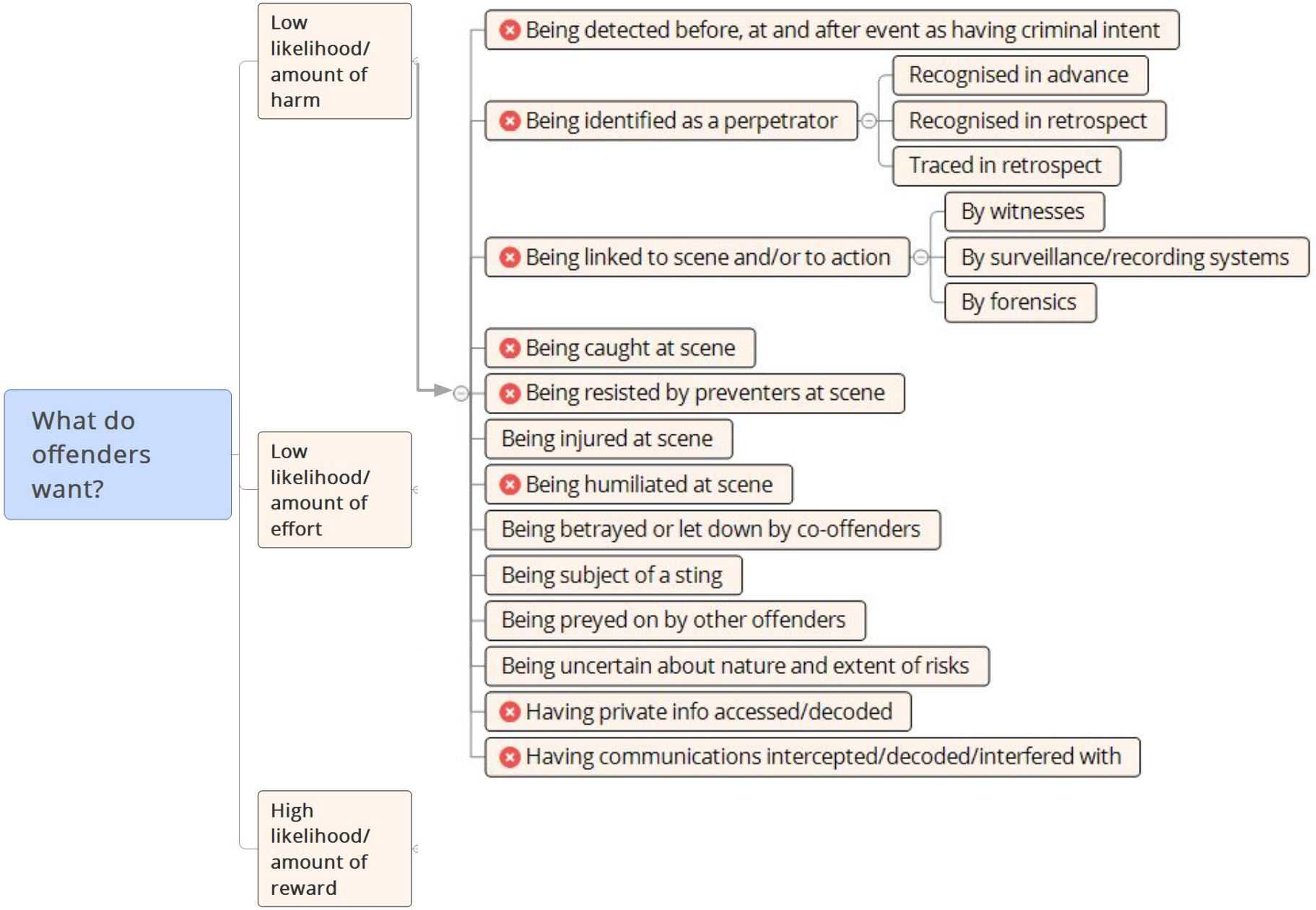
- Causal v functional
  - **Causal** – e.g. how might this innovation generate stress or conflict?
  - **Functional** – how might this innovation serve criminal or security purposes?
- Within functional
  - **Demand-side** focus – what do criminals or security *need* to be invented, to solve their problems/ complete an opportunity? Is any specific requirement holding them back?
  - **Supply-side** focus – what can *this* new piece of science or technology do for criminals or security?



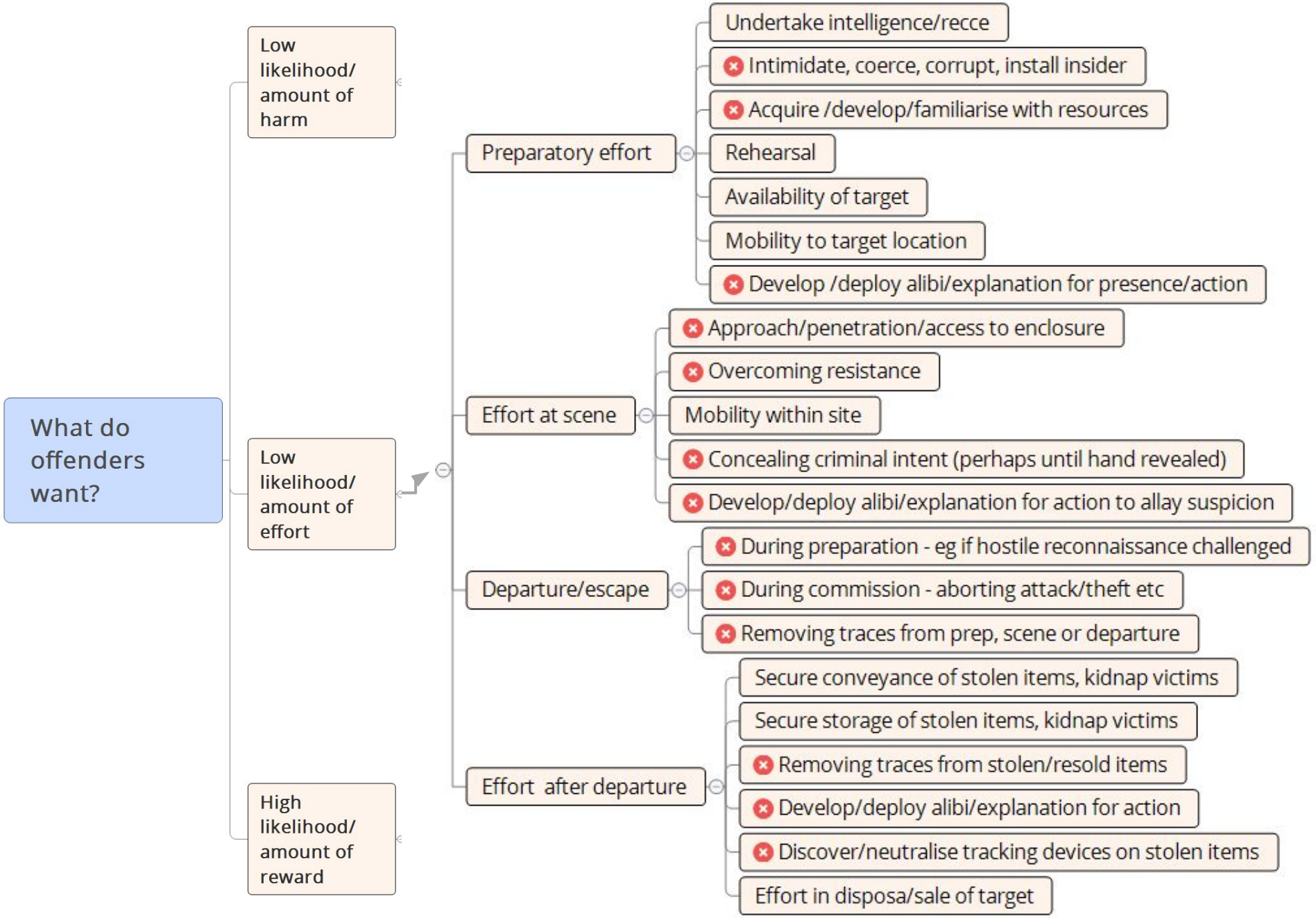
Function – generic demand-side – offenders' needs



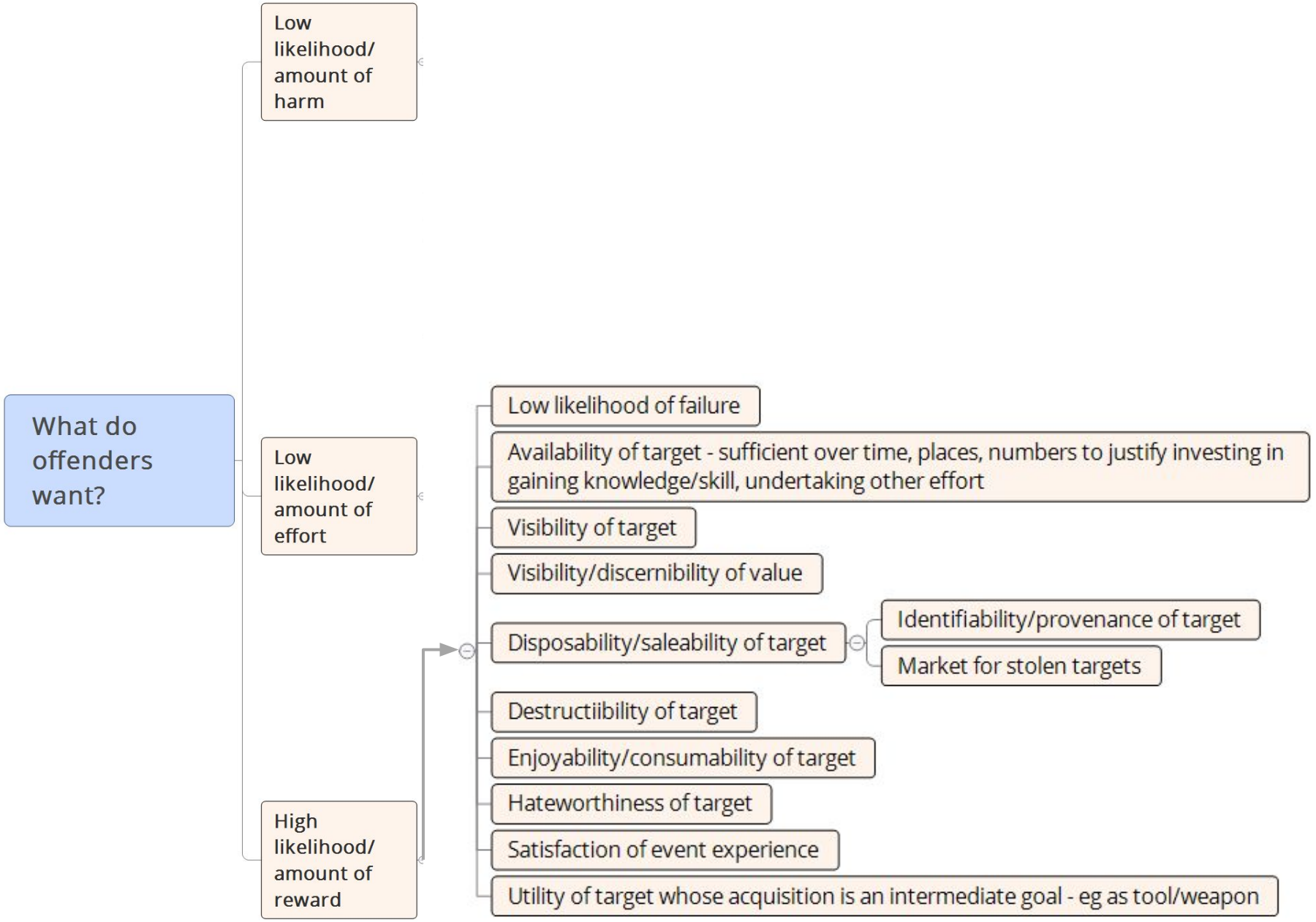
Function – generic demand-side – offenders



Function – generic demand-side – offenders



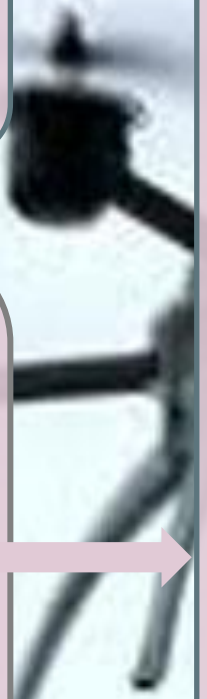
Function – generic demand-side – offenders



Example – supply – what can Drones do for Crime/ Security?

Functional **essence of Drone**

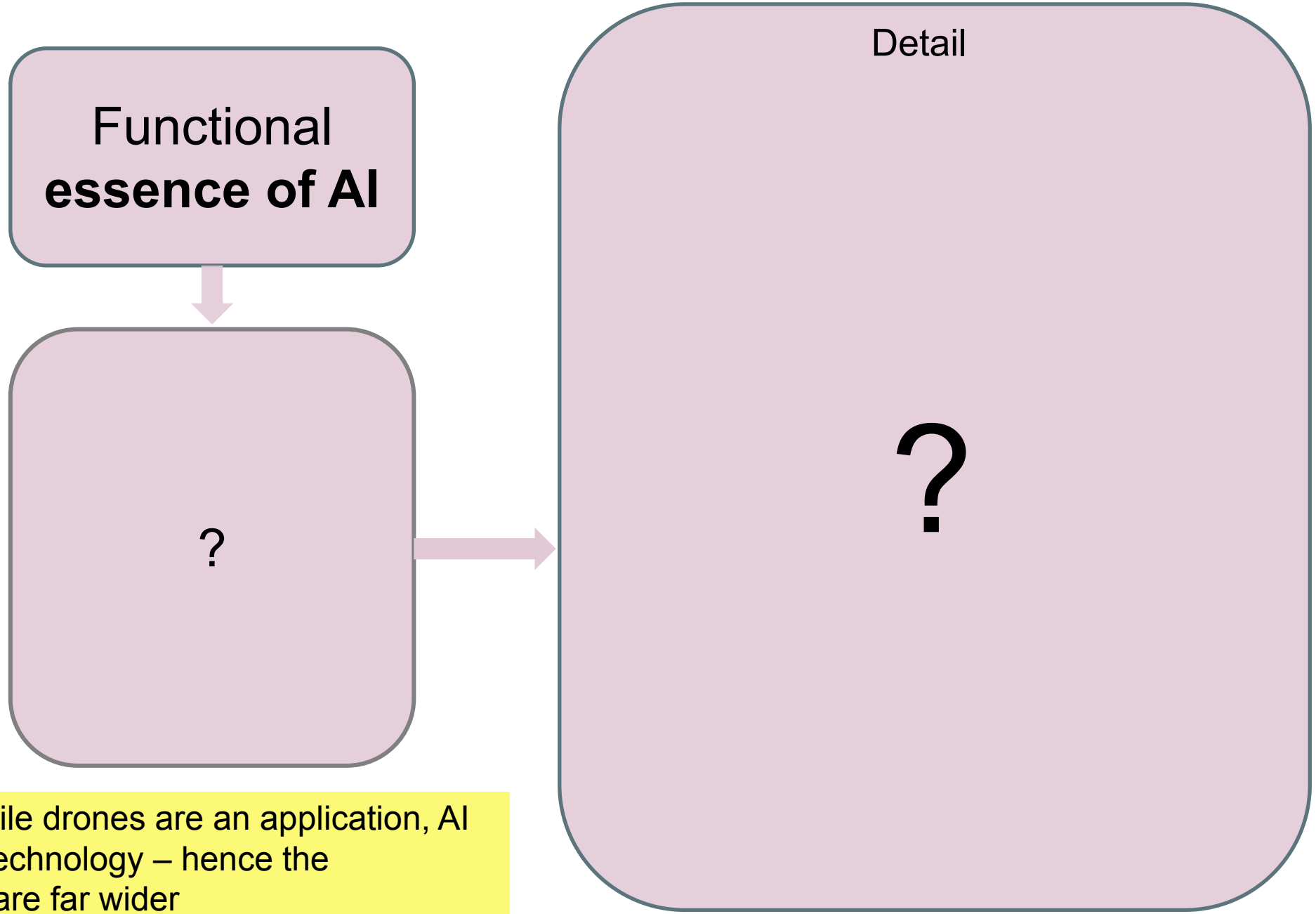
Active, mobile, effective telepresence of human agency



Detail

- Remote operation - can go to and do in different places from humans in general, individual agents in particular... remoteness can range from metres to many km... Allows distancing of agent from hazards, tracing by traditional means eg facial recognition
- Mobility and agility in different modes - air, land surface, walls, water
- Different size/shape/body configurability from agent - entry/exit, detectability eg through size/shape/disguise
- Communication with agent - coded/encrypted
- Sensors - human + more - inc Radar
- Image capture, transmission, recording
- Image interpretation
- Autonomy at various levels from tactical to more operational... navigation, risk and objective identification, decision, response
- Ease of operation/ limited training by user
- Conveyance of goods to/from destination
- Actuation
- Self-defence v threats/protection v natura/ accidental human hazards
- Generic regulatory requirements - eg licensing, identification, constraints on flight eg line-of-sight operation, no-fly zones
- Cheap

Supply – what can AI do for Crime/ Security?



Note that while drones are an application, AI is a field of technology – hence the possibilities are far wider

Function – supply-side – AI can be:

Tool for criminals

- **Misused** – in perpetrator techniques
- **Misbehaved with** – vandalism, nuisance
- **Misled, Misdirected** – spoofing

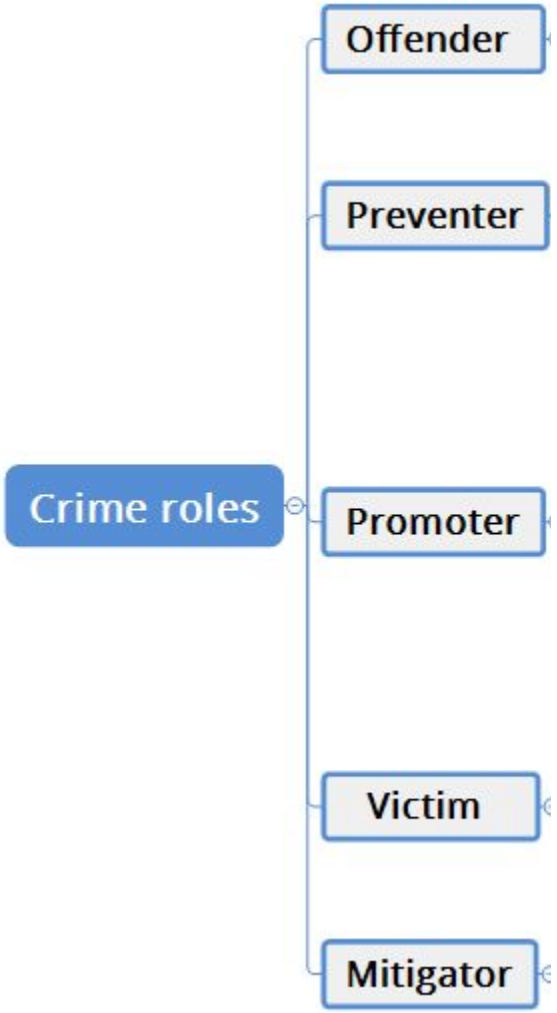
Target of crime

- **Misappropriated** – stolen
- **Mistreated** – harmed
- **Mishandled** – false licence
- **Misbegotten** – counterfeit/pirated version

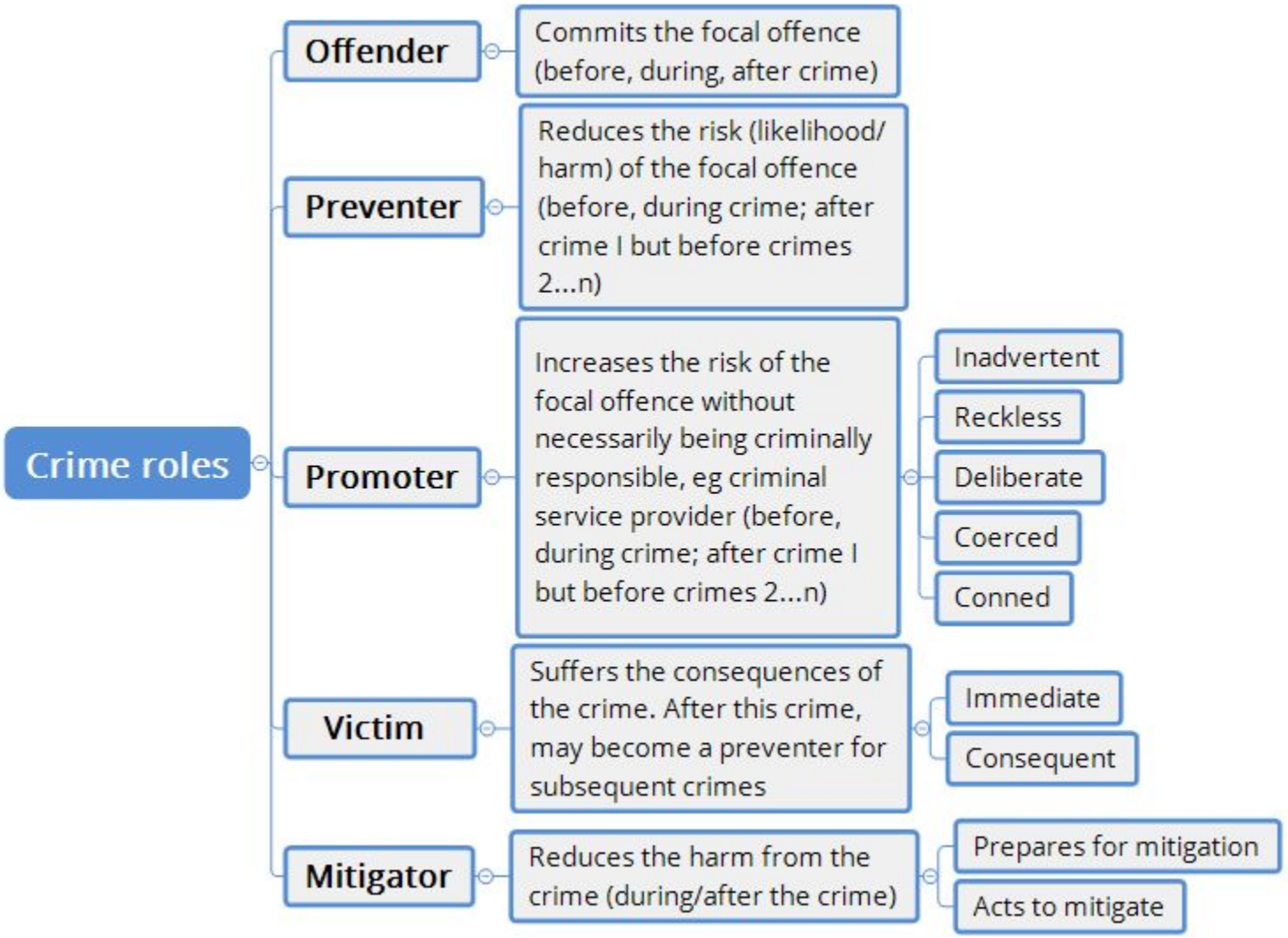
Aligned with security

- **Secured against above risks**
- **Exploited to control crime** – surveillance, detection, pursuit
- **Proofed vs Mistakes & Mishaps** – false alarms, accusation

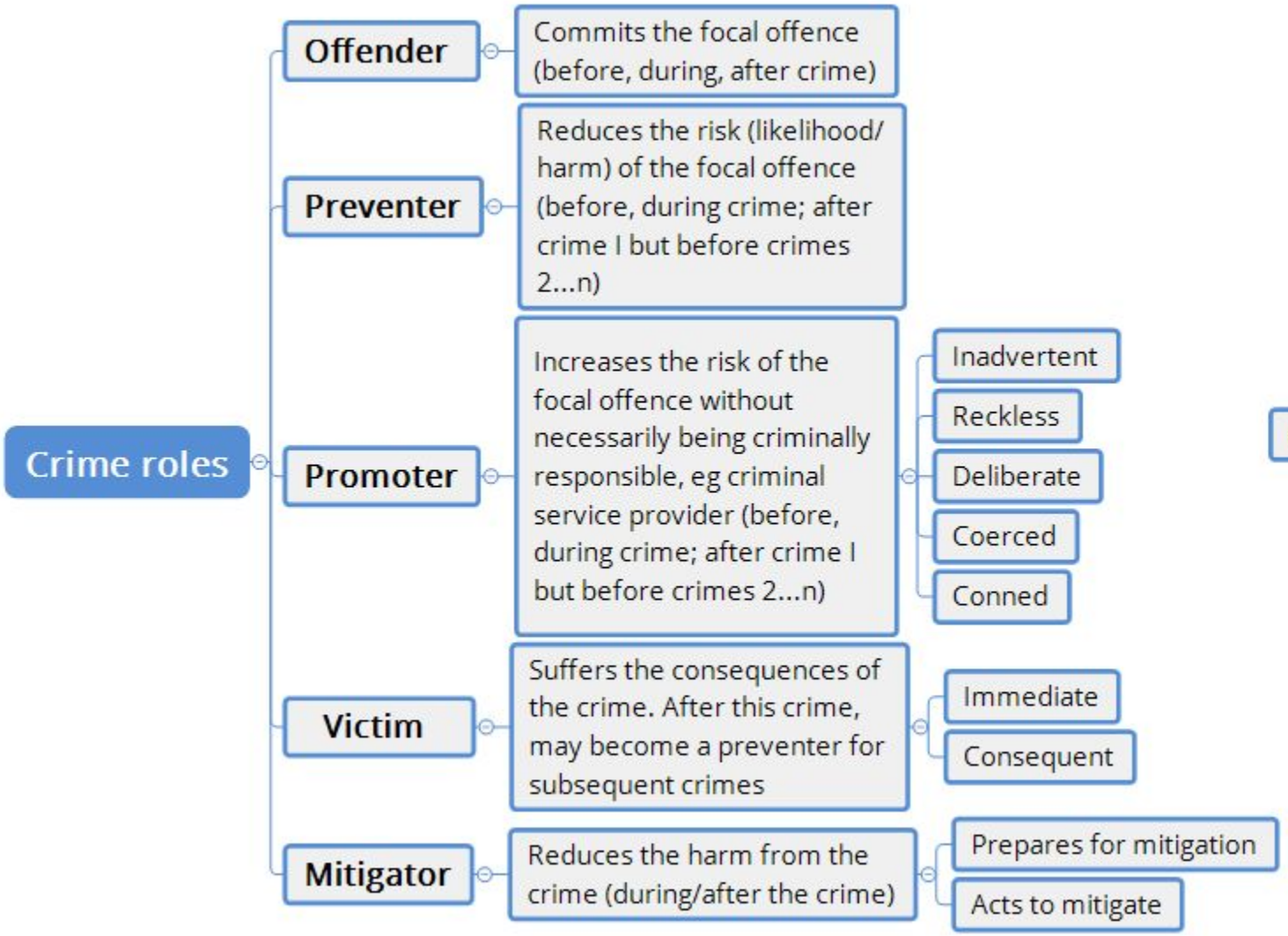
Thinking about crime roles – who is involved with crime, how?

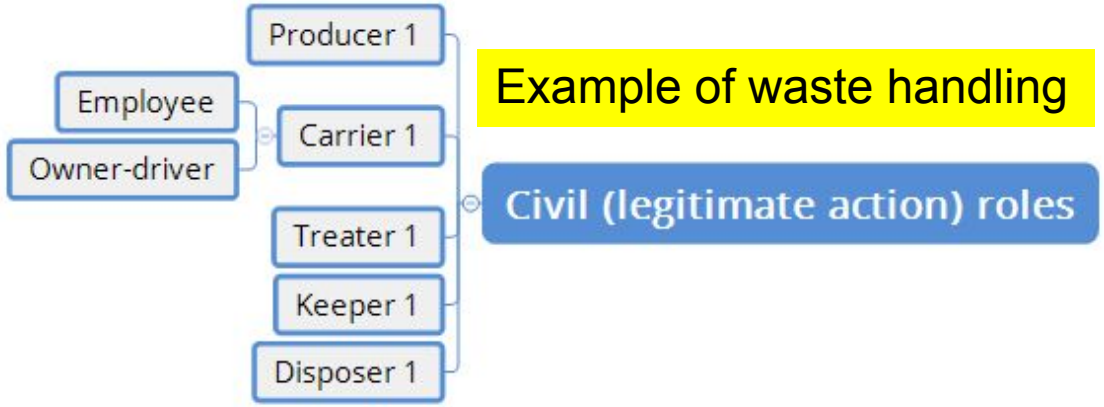


Thinking about crime roles



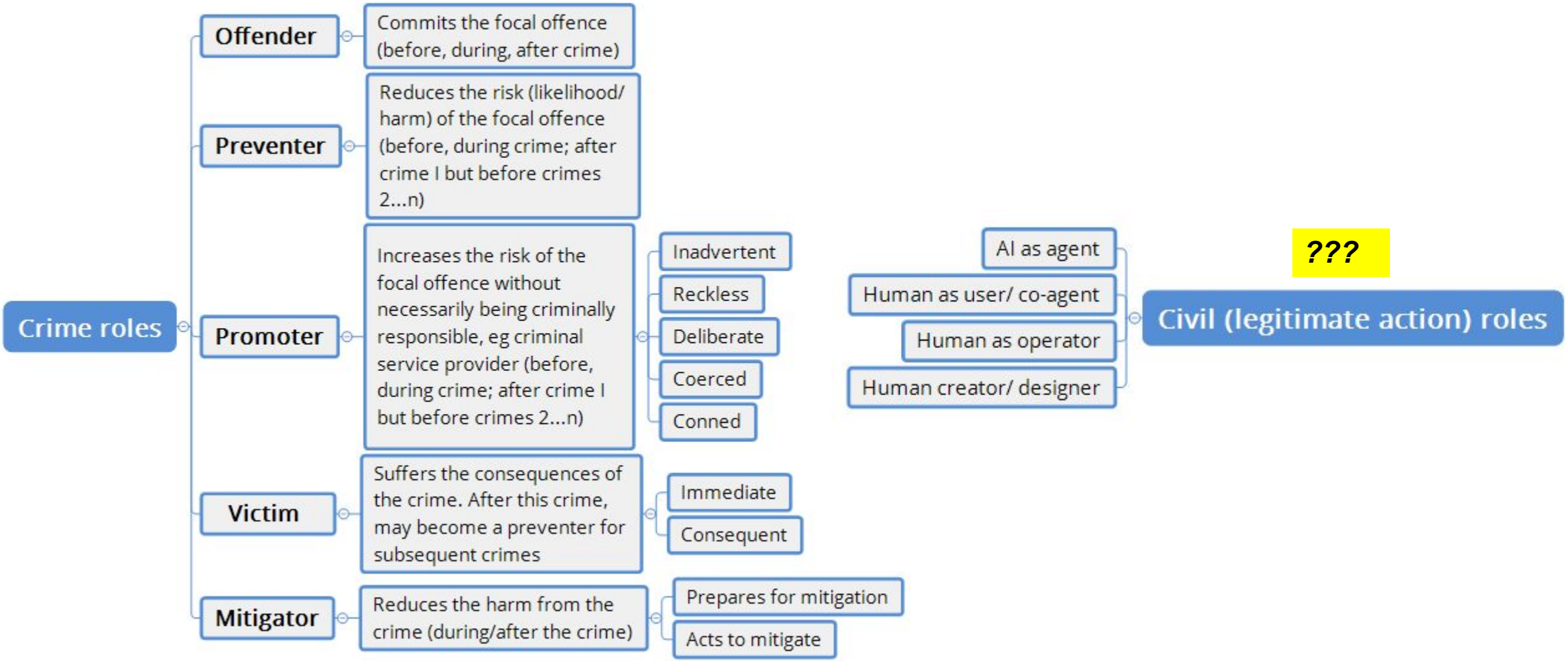
Crime X Civil/ legitimate roles



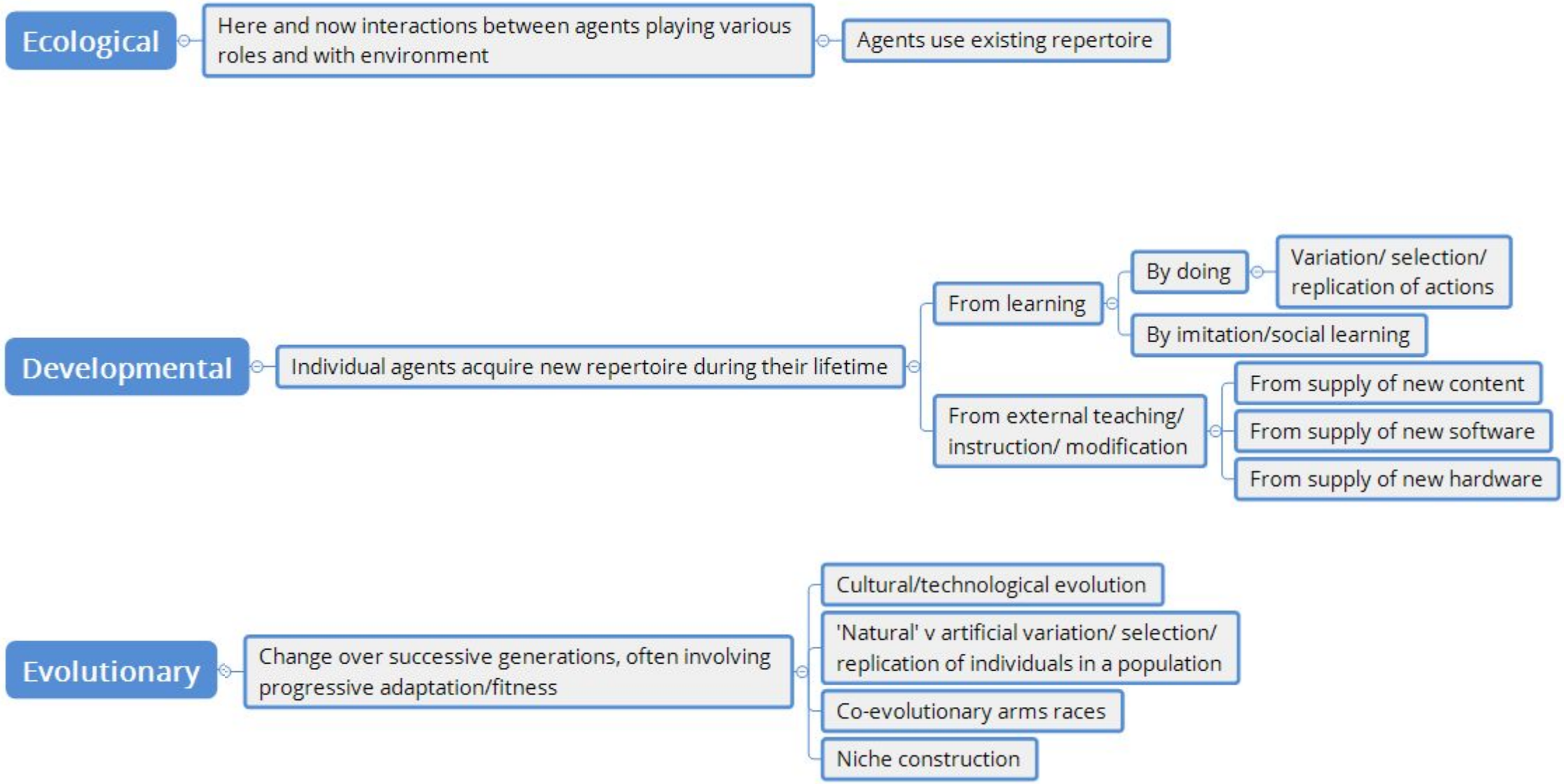


Example of waste handling

Crime X Civil/ legitimate roles



3 perspectives in time and space – Eco-Devo-Evo



Addressing tactical Script Clashes

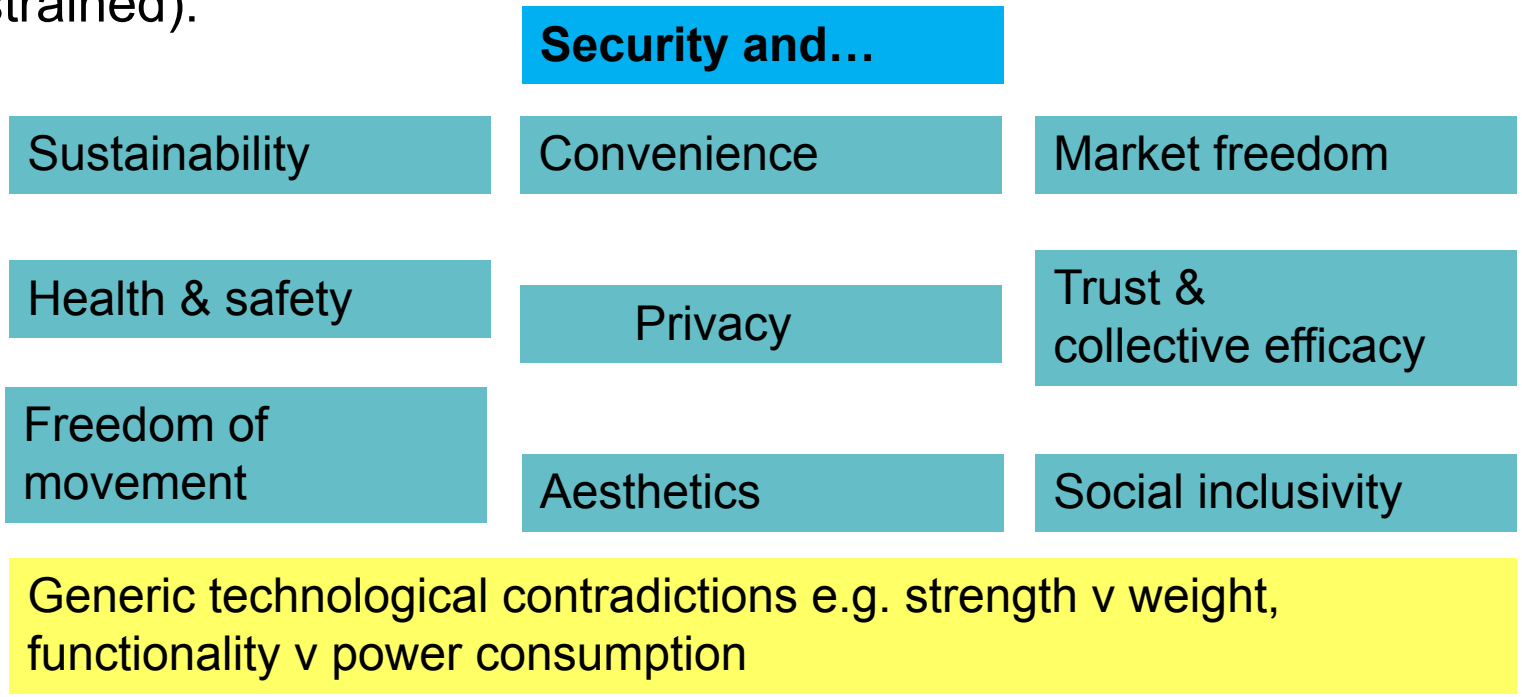
- We can identify **tactical clashes** between offenders and security

Wield force v resist (Damage v protect, Injure v keep intact)	Take v keep	Snoop v maintain privacy
Act at will v control misbehaviour	Confront v avoid	Pursue v escape
Conceal traces and tracks v detect	Surprise/ ambush v be alert	Trap v elude
	Challenge suspect v give plausible response	Conceal criminal intent v detect
	Surveill v conceal	

- These clashes
  - Influence **criminal plans and outcomes**
  - are **generic and perennial** – will always need to be faced
- Innovations can **disrupt the balance** of these clashes, and favour one side over other – which side will gain from a sudden breakthrough?
- We must design things to **advantage the good side**
- Approaches to **inventiveness** like TRIZ highlight these contradictions, and also identify **evolutionary trends in invention**

Handling civil-world tradeoffs & conflicts

- **What's stopping us** from making the future favour security?
- Various broader **design contradictions** can hold back exploitation of current/future technologies by the security side (offenders are less constrained):



- Will innovations relax, bypass, or tighten these contradictions?
- Can we steer them in beneficial directions, or at least be ready with mitigations?

Massaging the tradeoffs – desirable techno trends

- **Tunability** of materials, applications, for optimisation to diverse contexts
  - ‘What works’ in crime prevention is very context-dependent
- **Smart discriminator** functions
  - What’s good for legitimate users (e.g. **Smaller, lighter, more portable, more durable, cheaper, easier to operate**) is good for thieves
  - How to serve one while thwarting the other?
- **Adaptable, reconfigurable** form
  - Modelled on swing down fire escapes – both configurable and discriminating
- **Creative leap** rather than compromise
  - Internal combustion engine enabled armour **and** mobility