

Horizon Scanning Module

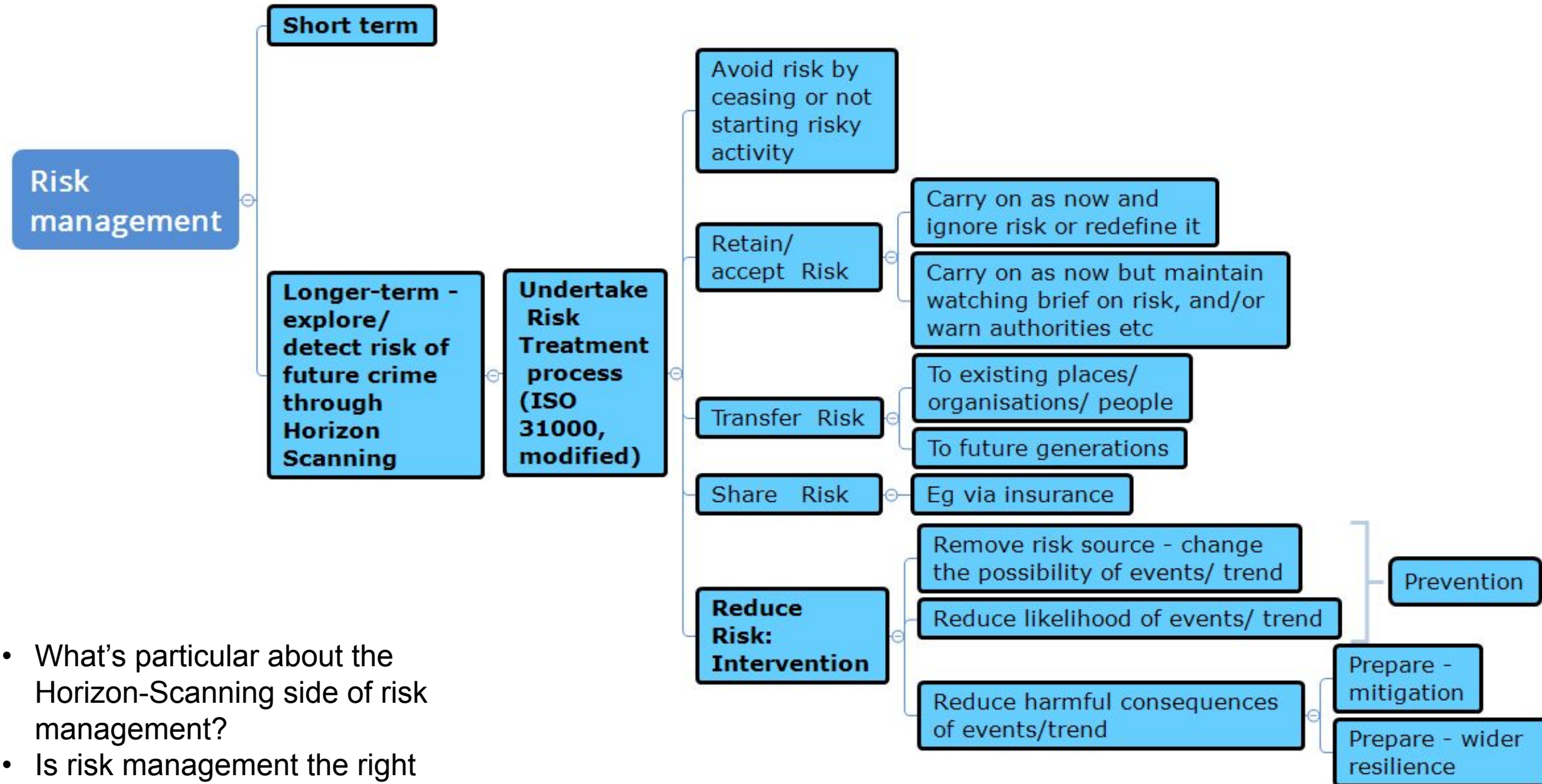
Session 7. Working out what to do I

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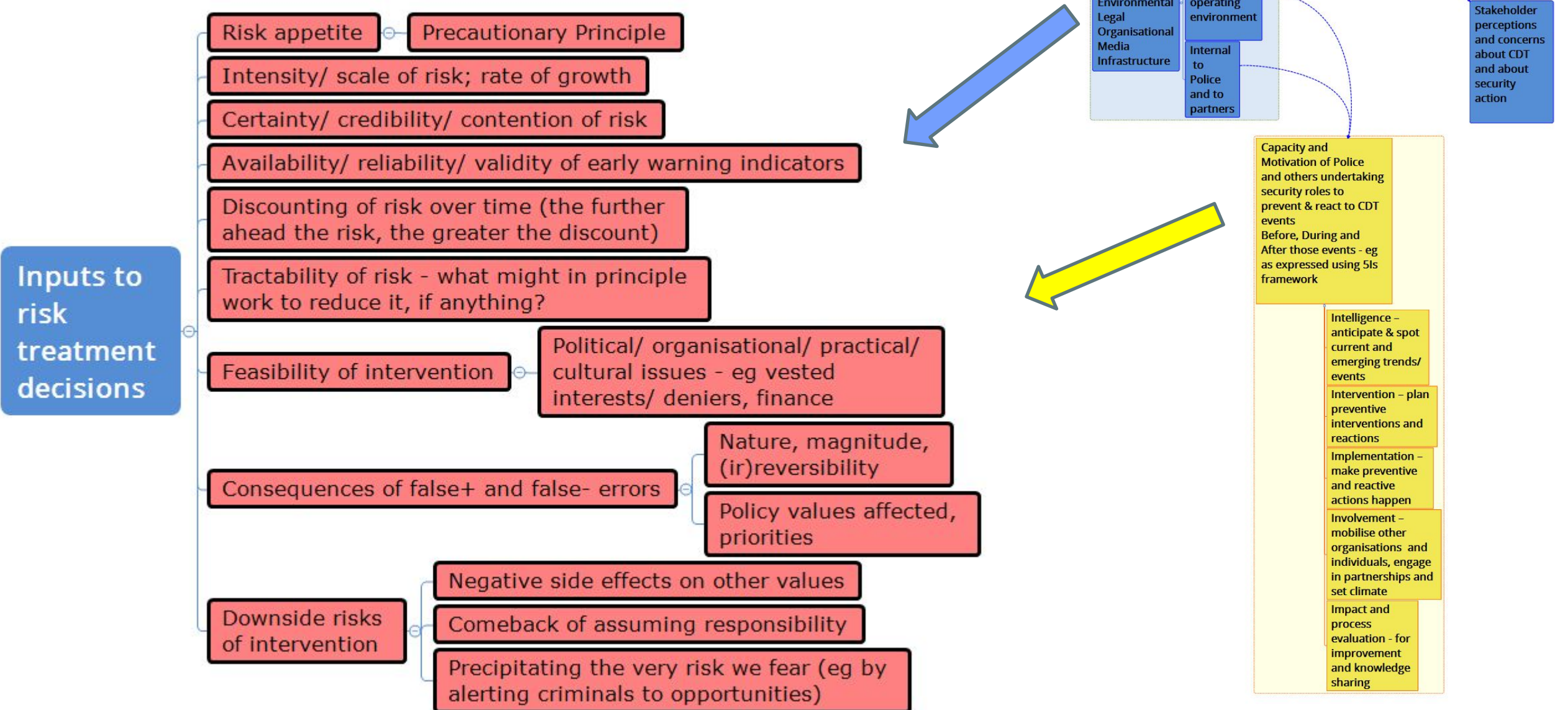
<https://crimeframeworks.com>

- 1. Risk management (Intelligence)**
- 2. When *What Works* ceases to work (Intervention)**
- 3. Arms Races and the strategy of Gearing Up Against Crime**
- 4. Drawing on design and engineering (Implementation – practicalities, and Involvement – people and organisations)**



- What's particular about the Horizon-Scanning side of risk management?
- Is risk management the right framework for Horizon-Scanning?

Future interventions must be considered in relation to the context in which they might be approved/implemented – which may be static or, more likely, changing



- When planning actions intended to lead to particular desired futures, or to avoid/cope with others, a SWOT analysis may be useful
- Many websites describe SWOT particularly in the business field, e.g. Wikipedia
 - **Internal factors** (S-W)
 - Financial resources (funding, sources of income, investment opportunities)
 - Physical resources (location, facilities, equipment)
 - Human resources (employees, volunteers, target audiences)
 - Access to natural resources, trademarks, patents and copyrights
 - Current processes (employee programs, department hierarchies, software systems)
 - **External factors** (O-T) (note broad meaning of threat)
 - Market trends (new products and technology, shifts in audience needs)
 - Economic trends (local, national and international financial trends)
 - Funding (donations, legislature and other sources)
 - Demographics
 - Relationships with suppliers and partners
 - Political, environmental and economic regulations
- Limitations – superficiality, used to defend status quo

SWOT ANALYSIS

	Helpful to achieving the objective	Harmful to achieving the objective
Internal origin (attributes of the organization)	S Strengths	W Weaknesses
External origin (attributes of the environment)	O Opportunities	T Threats

Intervention: What if What Works ceases to work in future?

- PESTELOMI changes, plus adaptive criminals, may mean that script clashes flip over to favour bad guys – so what works now, may not work in future – **obsolescence**
- Trivial example – the Gator Grip



- More serious example – car theft

Houston Car Hackers Suspected Of Theft of More than 100 SUVs and Trucks



Accused car thief Jesse Zalaya, posing with a Hummer with Texas plates in a Facebook photo posted on July 29th from Matamoros, Mexico.

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Technology

'Millions' of Volkswagen cars can be unlocked via hack

By Chris Baraniuk
Technology reporter

12 August 2016



The problem affects many millions of cars, according to researchers

A sizeable proportion of 100 million Volkswagen Group cars sold since 1995 can be unlocked remotely by hackers, a team of researchers has said.

<https://tekeye.uk/automotive/cyber-security/keyless-entry-theft-with-range-extender>

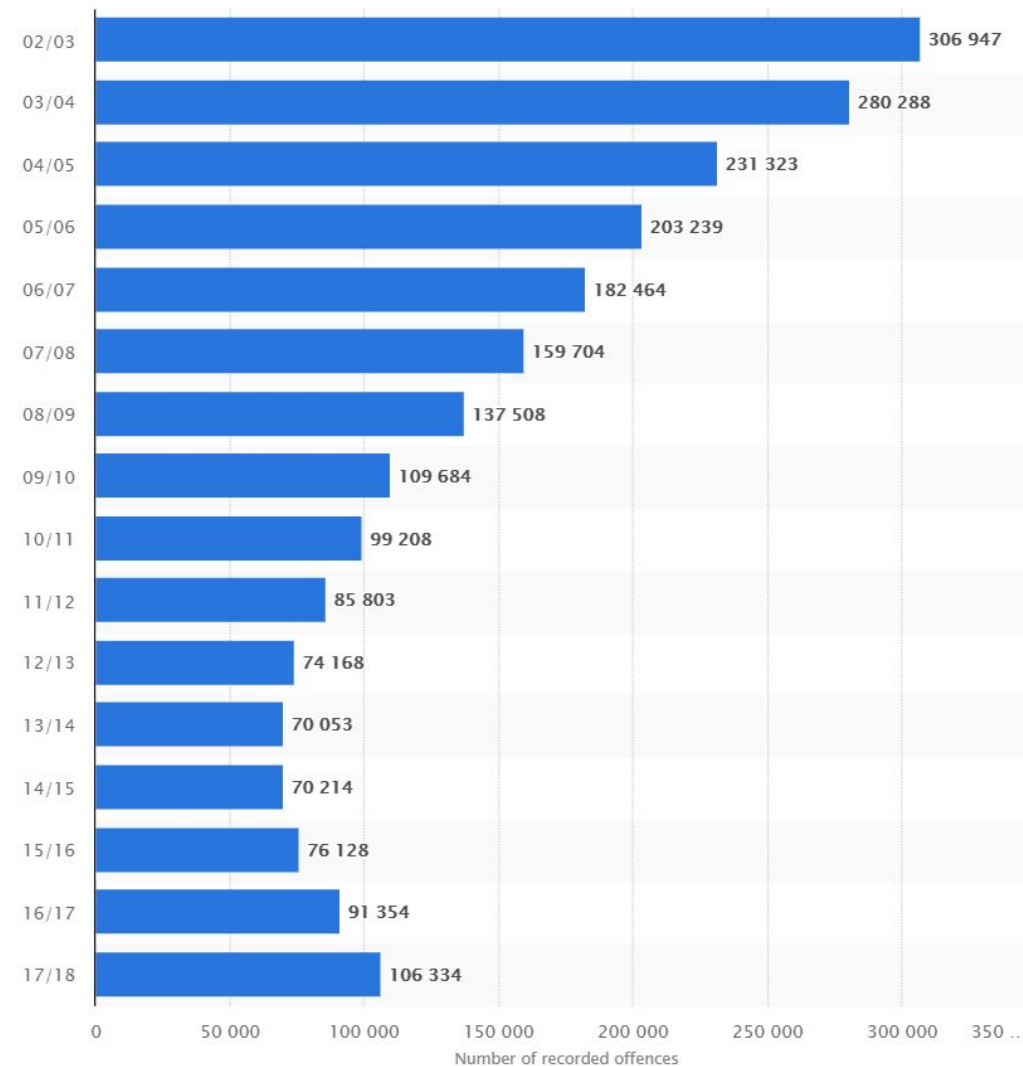
Intervention: What if What Works ceases to work in future?

- Car theft trends – how far attributable to criminals adapting to security?

Society > Crime & Law Enforcement > UK crime: Motor vehicle theft in England and Wales 2002-2018

PREMIUM +

Number of police recorded 'theft or unauthorized taking of a motor vehicle' offences in England and Wales from 2002/03 to 2017/18



<https://www.statista.com/statistics/303551/motor-vehicle-theft-in-england-and-wales-uk-yearly/>

- Tactical countermoves
 - in situ
 - return better tooled
- Counter-exploitation
- Strategic counter-design
- Reverse engineering



Open to release



Close handles to pull out dents

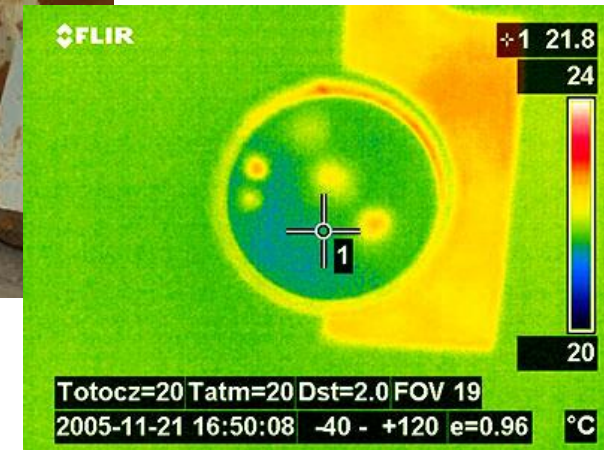
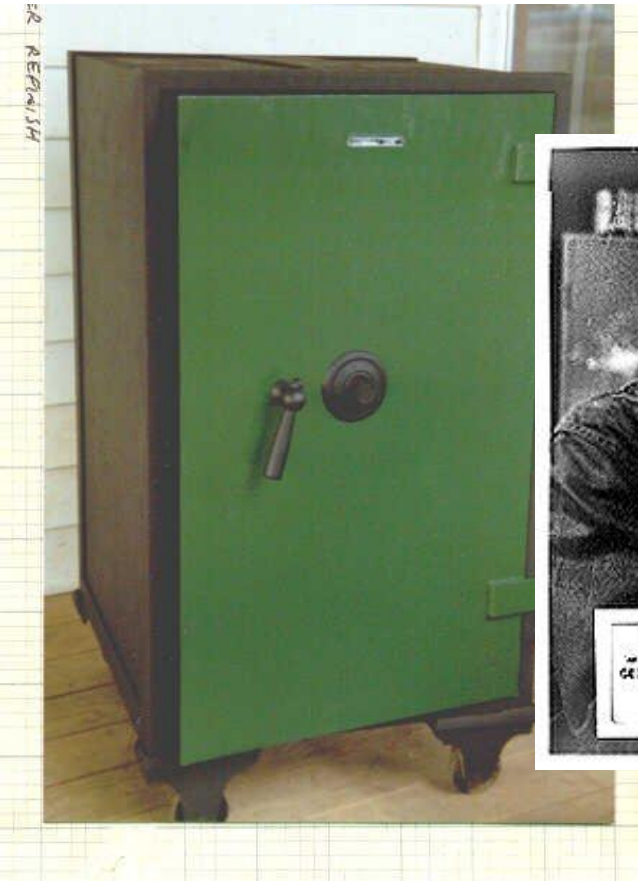


Repair car dents quickly and easily!

For minor dents on your bodywork the Dent Puller is the answer with vastly improved suction compared to others on the market. Simply place the cup over the dent, click the handles shut for automatic suction and gently pull out the dent. Open the handles to release the vacuum and remove without damaging the paintwork. No need to pay expensive panel beaters' bills! Can also be used to carry safely sheets of glass, metal, mirrors, etc.

Car Dent Puller Deluxe **£12.99** MX0220

E.g. banknote security, tax evasion, car theft (Brown), malware script kiddies/ exploit kits; IRA weaponry (Ekblom & Gill); classic case is the **safe** (Shover)

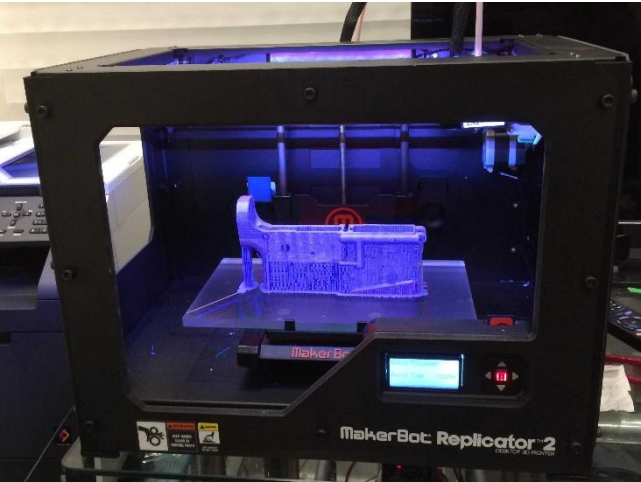


Brown <https://link.springer.com/article/10.1057%2Fs41284-016-0001-1>

Ekblom, P. and Gill, P. (2019). 'Evolution, crime science and terrorism: the case of Provisional IRA weaponry' in R. Wortley, A. Sidebottom, N. Tilley and G. Laycock (eds), *Routledge Handbook of Crime Science* 252-270. Milton Park: Routledge.

Shover, N. (1996). *Great Pretenders: Pursuits and careers of persistent thieves*. Boulder, Colorado: Westview Press.

Arms Race accelerants – prototyping, producing, disseminating, teaching



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News

Jun 23, 2016 — Still a small issue


Still a small issue with deposits that doesn't make sense - something like 1 in 30 somehow get stuck. If you have made a deposit and this happened to you, please contact support asap with your tx details. We might roll back to the old market system soon if we cant solve this today. Truly sorry, Admin S.P.




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
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Soft Lock Picking: Escaping the



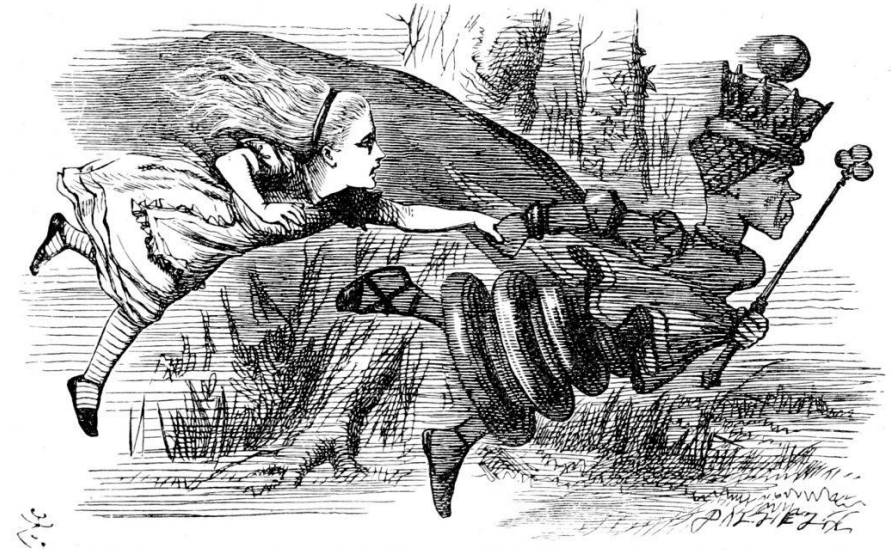
Lock Picking How-To with Cut Away

What security strategy to address Arms Race?

- **Problem:** In the short term, evidence indicates that situational crime prevention interventions are rarely neutralised by **displacement**; but in the medium to longer term, and especially with more determined/capable/well-resourced offenders, offenders are in a continuous state of **counter-adaptation** with security side
- **Solutions:**
 - **Reduce risk** of crime (eliminate possibility, reduce probability or harm)
 - **Reduce rate of growth** of crime
 - To do this in face of arms races, security must **outpace crime** (or at least keep up) – not just winning battles, but entire campaigns
 - This is a Red Queen's Game (Alice Through the Looking-Glass)

[In Looking-Glass Land,] it takes all the running you can do, to keep in the same place

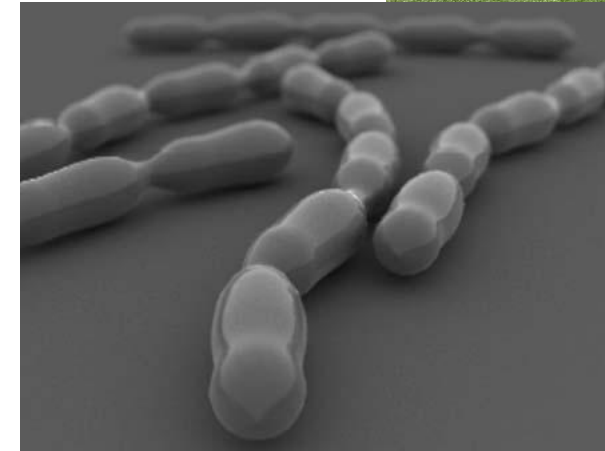
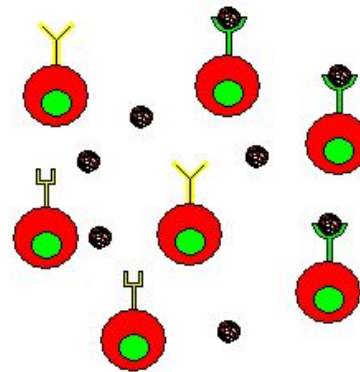
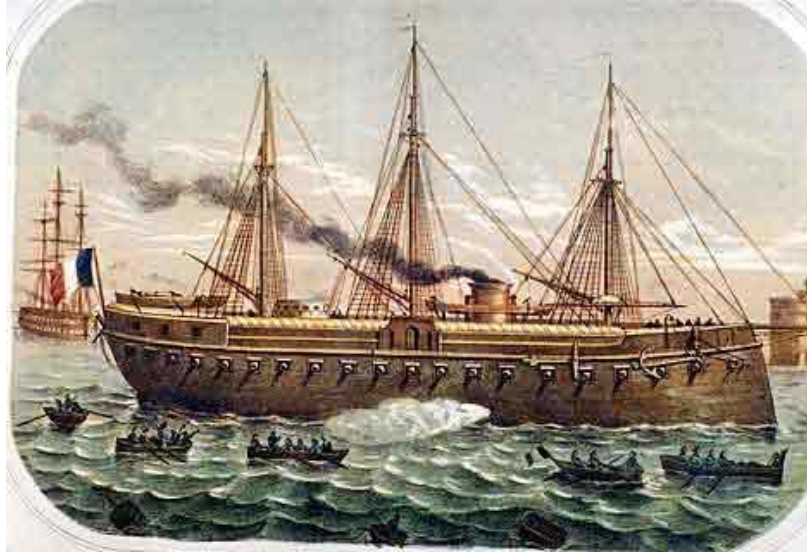
https://en.wikipedia.org/wiki/Red_Queen_hypothesis



- Study **offender resources** – current and future – what new tools and weapons will criminals have to take on current security?
- Slow **offender adaptation** (disrupt and inhibit their R&D and the actions of crime promoters)
- Encourage **variety** in security measures – beware ‘crack one, crack all’ from standard solutions
 - Motivate, develop, disseminate **capacity to out-innovate offenders**
- Specify security requirements using **performance standards/ generic principles**, to max **design freedom**
- **Crime proofing** – designing in extra security into hot products in anticipation of risk (Armitage)
- Avoid **rigidity** – when crime methods change but your security is locked-in
 - **Future proofing** – ensuring products/services are security-upgradeable if current measures cease to work or be appropriate
- **Pipelines** – ready to roll out the next solution when existing security is cracked
- Learn from other **evolutionary struggles**

https://www.researchgate.net/publication/291456106_Gearing_up_against_crime_A_dynamic_framework_to_help_designers_keep_up_with_the_adaptive_criminal_in_a_changing_world
Ekblom, P. (2017). ‘Technology, opportunity, crime and crime prevention – current and evolutionary perspectives’ in B. Leclerc and E. Savona (Eds.) Crime Prevention in the 21st Century. New York: Springer
Armitage R. (2012). Making a brave transition from research to reality. In P. Ekblom (Ed.), Design Against Crime: Crime Proofing Everyday Objects. Crime Prevention Studies 27. Boulder, CO: Lynne Rienner.

- Military
- Predator-prey
- Pest-farmer
- Bacteria-antibiotic
- Immune system-virus



Every design is a bet on the future

- Can product/system be made?
- Will it work?
- Will it last or fall to bits?
- Will it sell/operate at a profit – what's the competition?
- Will people use it as intended?
- *Will it be involved in crime?*
- *How can it be used to combat crime?*

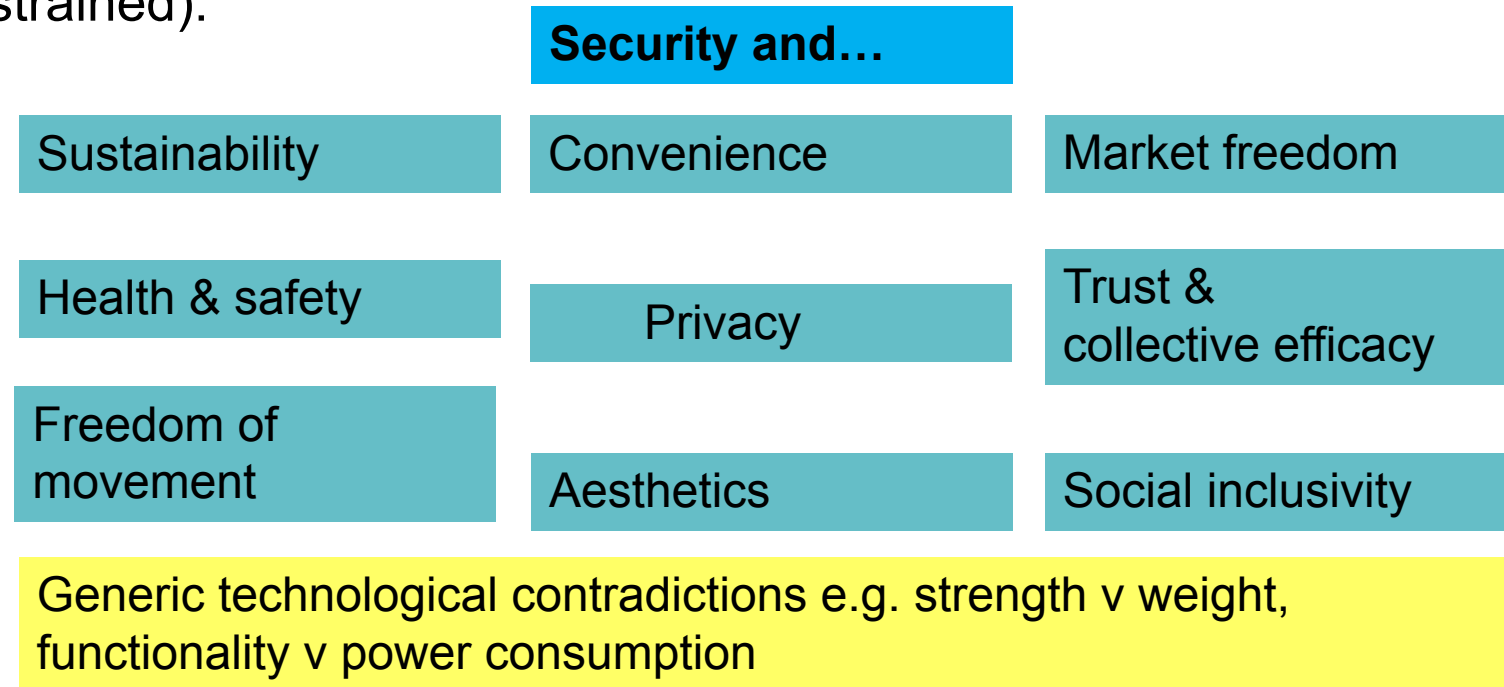


- We can identify **tactical clashes** between **offenders** and **security**

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**

- **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):

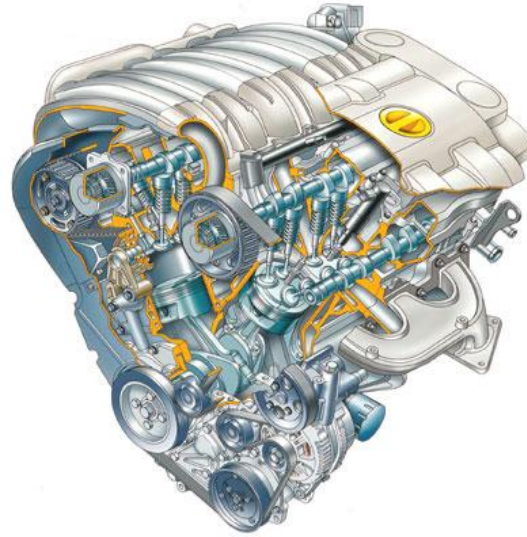


- Will innovations relax, bypass, or tighten these contradictions?
- Can we steer them in beneficial directions, or at least be ready with mitigations?

- **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

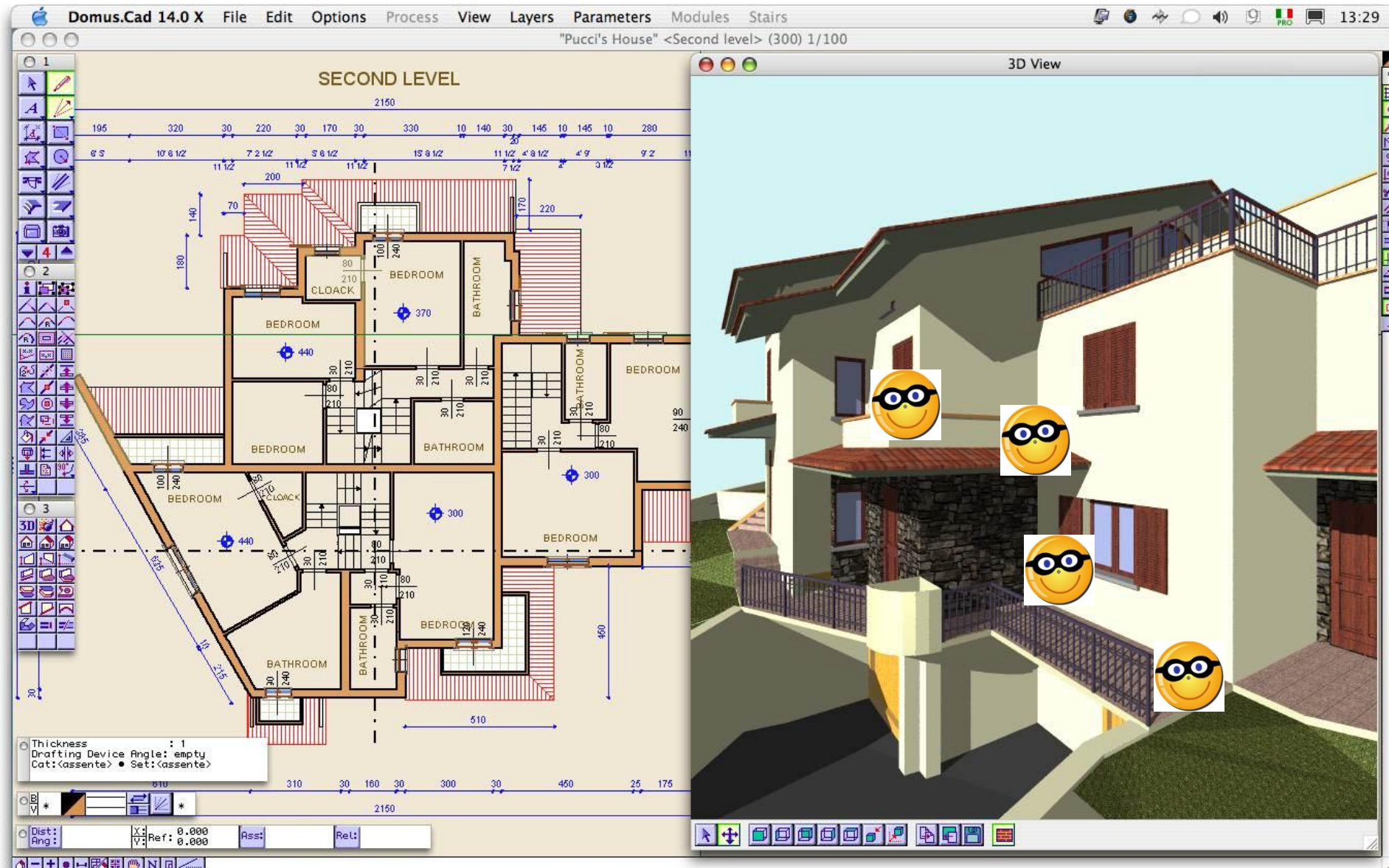


Mobility *or* Armour > Mobility *and* Armour



- **TRIZ** – a theory of inventive principles triz-journal.com
- TRIZ highlights design **contradictions/tradeoffs**, and also identifies **evolutionary trends in invention**
- Based on analysis of **oodles** of patents
- 40 generic **Inventive Principles**
- 39 **Contradiction Principles** – the sharper-expressed the contradiction, the easier the problem to solve...link to troublesome tradeoffs and the fundamental contradiction at the heart of crime prevention (**user-friendly, abuser-unfriendly**)
- **Lookup tables** – what inventive principles solved what contradictions in past?
- Analysis of **evolutionary trends** of invention (solid > segmented > flexible > field) – look for what's likely to be next to limit search for next solution









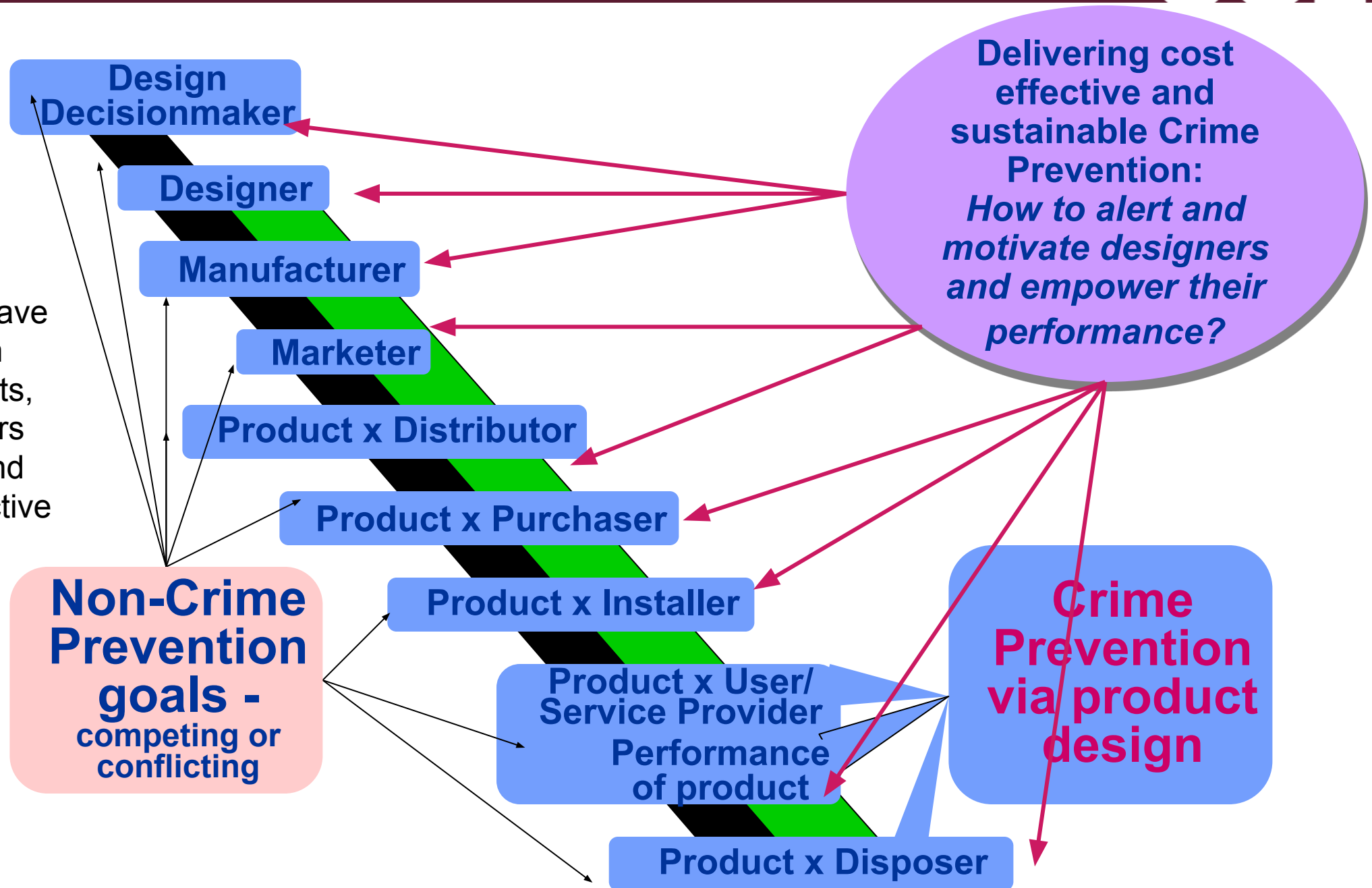
- Mobilisation
 - Clarify crime prevention roles/ tasks to achieve
 - Locate appropriate preventive agents – individuals/organisations
 - Alert them
 - Inform them
 - Motivate them
 - Empower them – increase capacity
 - Direct them – objectives, standards
- Partnership and co-design
- Climate setting – e.g. security subculture



<http://5isframework.wordpress.com>

Who to influence fostering a secure future?

- Many roles may have to be influenced in their future contexts, to act as preventers (not promoters) and foster crime-reductive outcomes
- Consider this example from future product design







Mind how you go!

The Uninhabitable Earth

Famine, economic collapse, a sun that cooks us: What climate change could wreak — sooner than you think.

By David Wallace-Wells



Fossils by Heartless Machine

In the jungles of Costa Rica, where humidity routinely tops 90 percent, simply moving around outside when it's over 105 degrees Fahrenheit would be lethal. And the effect would be fast: Within a few hours, a human body

