UCL DEPARTMENT OF SECURITY AND CRIME SCIENCE

Innovation in the knowledge-based process

Innovation i den kunskapsbaserade processen

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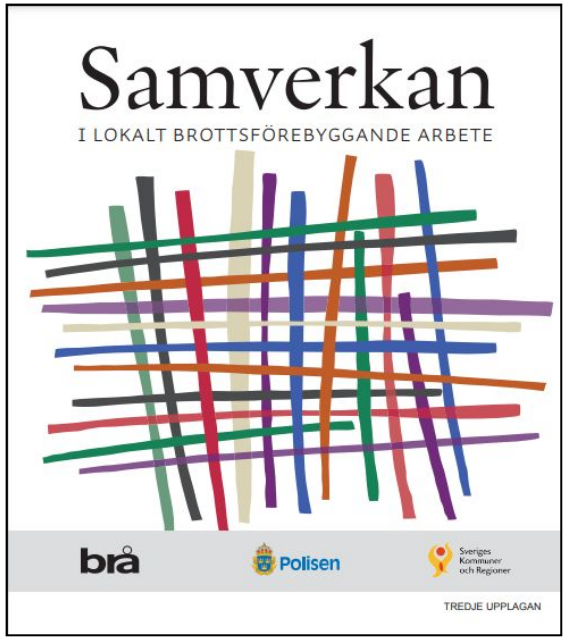


Coming up…

- What is **innovation**?
- Why should we innovate in crime prevention?
  - In the **here-and-now** – challenge of replication
  - In times of **change**
- Innovation, reaction and anticipation
- Social factors in innovation
- How to make crime prevention more innovative
- **5Is** – an innovation-friendly process model for crime prevention
- How to innovate using 5Is
- Thinking like a **designer**

What is innovation?

A UK government report offered this definition:

- **Creativity** is the generation of new ideas
- **Innovation** is the successful **exploitation** of new ideas – creativity deployed to a specific **purpose**
- Creativity becomes innovation through **design**

Why should we innovate in crime prevention ?

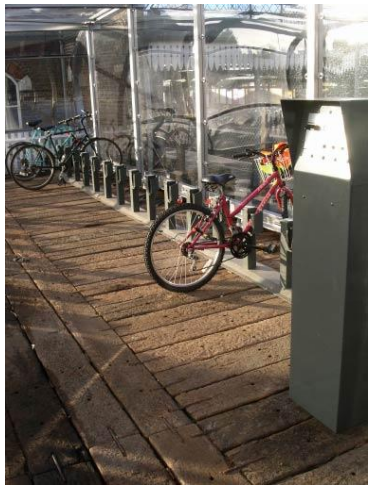
1) Here-and-now

- **Current solutions** to crime:
  - May be inefficient or too expensive
  - May not work
  - May have adverse side effects on privacy, energy-saving, profitability, aesthetics…
- **Cookbook replication** of success stories doesn't work
  - A burglary-prevention scheme in Rochdale cut crime by 65%
  - In UK Safer Cities Programme, there were 10 attempts to copy it by local practitioners
  - None of them worked well
  - The practitioners, under pressure of time and money, had tried to copy the end **product** of the Rochdale project too literally, not the intelligent thinking and research **process** that generated the solution

Beware cookbook copying – secure cycle parking

GHENT, BELGIUM

WALTHAMSTOW, LONDON



Replication requires innovation

- So, crime prevention interventions must be tuned to both **problem** and **context**
  - Both of these have **multiple dimensions** – social, physical, business-related, institutional…
- This means that every replication involves an intelligent process of
  - Understanding the **theoretical principles** underlying a successful project – how did it work?
  - **Innovating,** to try delivering the same **principles** but in locally-appropriate **realisations**
  - **Trialling**
  - **Collecting feedback**
  - **Making adjustments** – or if this doesn't work, **changing direction** to use a different principle or set of principles
  - **Learning from failures** – and how to fix them

2) The crimes, they are a-changin'

- **New crime problems** emerge
  - New targets for crime, new places
- New **opportunities** for improving safety and quality of life arise
- **Adaptive criminals** may exploit new technology or use social engineering to overcome existing security measures
- What works **now**, may not work in **future**
- In extreme cases, **arms races** between criminals and security
  - This means we must develop and disseminate the **capacity to out-innovate adaptive offenders**

Why should we innovate in crime prevention?

2) The crimes, they are a-changin'

- Special challenges and opportunities of **ICT**
  - Major **accelerants** of innovation in both crime and security, and huge ability to **scale up** operations at little extra cost
- New **constraints, possibilities or contexts** for crime prevention
  - E.g. funding dries up, priorities change, a law or a policy changes in the operating environment, some intervention becomes socially unacceptable
- So, **innovation is vital to support crime prevention both here-and-now and in changing circumstances**

When is it best to innovate? We can either

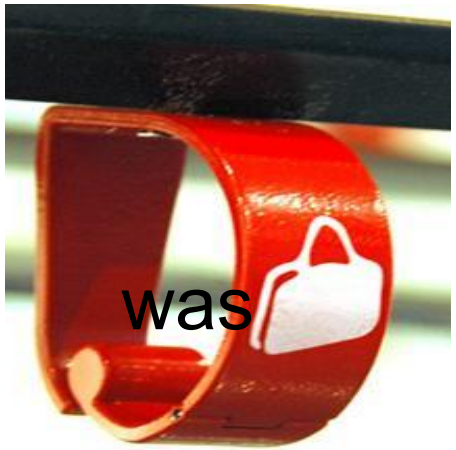
- Spot and quickly **react** to **emergent problems**
  - New Modus Operandi for familiar crimes, completely new kinds of crime
  - Need an **information system** to collect, interpret and share information
- **Anticipate upcoming problems** and develop solutions ready for when needed
  - **Crime Impact Assessments** of new products, new places, new services… even Brexit
  - **Horizon-scanning/ foresight** exercises – e.g. work of the Dawes Centre for Future Crimes looking ahead over various timescales
- Need **both** reaction and anticipation – different strengths & weaknesses

Even the most technological of innovations has human and social dimensions which can cause it to succeed or fail

- **CCTV**
  - Someone has to monitor it and make decisions, initiate action – performance factors e.g. attention span are vital
- **Door locking systems on public housing**
  - Different individuals, organisations or companies must specify, buy, fit, operate and maintain them
- **Anti-stab kitchen knife**
  - technically clever, but imagine giving this as a wedding present!

Not just technology – importance of human/ social factors in innovation

- **Anti-bag theft clips for tables in bars**
  - Worked in Barcelona but not in some British pubs
  - The supporting attitude/behaviour of bar personnel was vital in getting people to use them



- **Innovation by terrorists – timing device for bombs**
  - The engineers of the Provisional IRA invented a new timer which relied on acid eating its way through a condom
    - This worked perfectly from a technical perspective
    - But none of the IRA fighters would use it in case their Catholic mothers found the box of contraceptives

What is needed for innovation

- An innovative but disciplined **mindset** – to generate imaginative but plausible proposals
  - Rich **knowledge** of causes of crime and possibilities for preventive action
  - Awareness of **multiple requirements** – e.g. we want a locality to be **secure** but also **vibrant, aesthetically appealing, socially inclusive, energy-saving… what we want *more* of as well as what we want *less* of**
  - **Imagination, creativity, flexibility** – can be developed with training/tools for creativity (e.g. role play of victims, managers, criminals)
  - **Affordance** – seeing how products, places, skills can be used or re-purposed to serve new goals
  - Capacity to **re-frame** problems
  - But **balanced** by focus, appreciation of evidence base, awareness of constraints on action (e.g. cost, social acceptability, implementability), discipline-based knowledge and experience

What is needed for innovation

- **Design freedom**
  - Don’t immediately jump to solutions
  - Identify your needs, focus on functional requirements
- **Diverse inputs**
  - From different groups of people
- **Learning process**
  - Rapid prototyping, feedback and adjustment

How can we help crime prevention become more innovative?

- We can't just try to superficially **bolt** innovation on to crime prevention as a kind of **add-on**
- Innovation has to be **fully embedded** in how we do prevention
- We need a **process model** of crime prevention that **supports innovation** in **every task or activity**

How can we help crime prevention become more innovative?

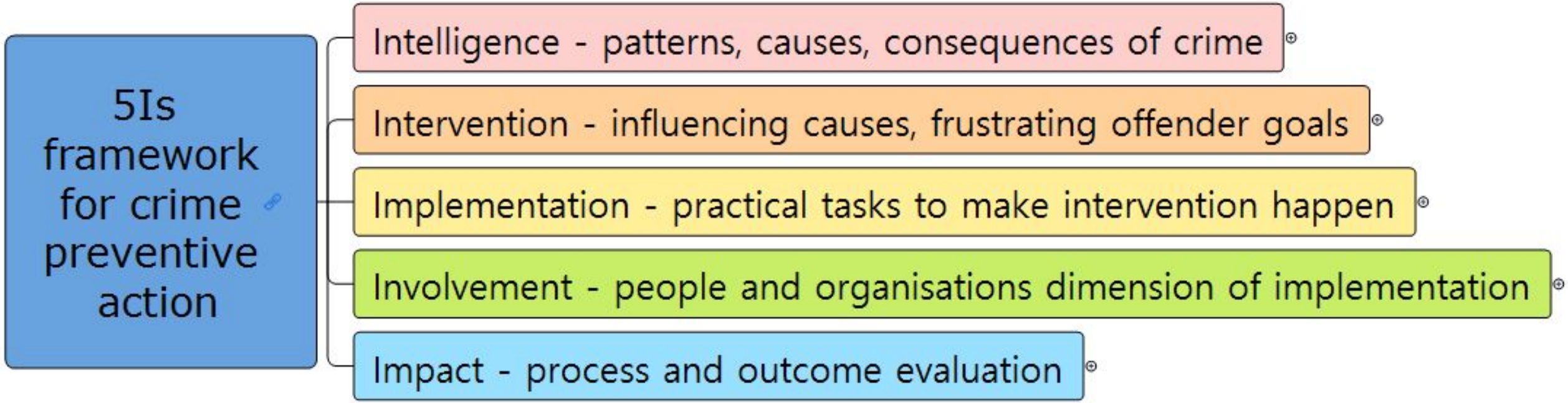
- The most familiar process model of crime prevention is **SARA**
  - Scanning, Analysis, Response, Assessment
- SARA is a good introduction, but it gives little support for innovation:
  - Not **detailed** enough to handle all the contextual factors that make/break a project
  - Treats '**Response**' as a single category of action, when there are **many kinds of activity** needed to develop a crime prevention project and make it succeed
  - Doesn't help us **generate sufficient variety** of ideas, or **select** those that are **plausible** (and thus worth taking further) in terms of both **tested theoretical principles** and **practical experience**
  - Not **design-friendly** – lacks the right mix of **guidance** and **open-endedness**
  - Doesn't help us **capture & organise the knowledge** from past successes and past failures, that we need to build that body of principles and experience

5Is – an innovation-friendly process model

- I developed 5Is when I was evaluating the UK's National Crime Reduction programmes
  - The purpose was to find a way of describing the wild variety of crime prevention projects, so the knowledge of practice could be systematically **captured**, intelligently **replicated** and used to support **learning, training and innovation**
  - The framework emerged in its current form for the **EU Crime Prevention Network** conference on good practice, in Aalborg, 2002
  - On various occasions, BRÅ have used it, e.g. in applications for funding of local projects
  - So it has European, & Scandinavian, roots!

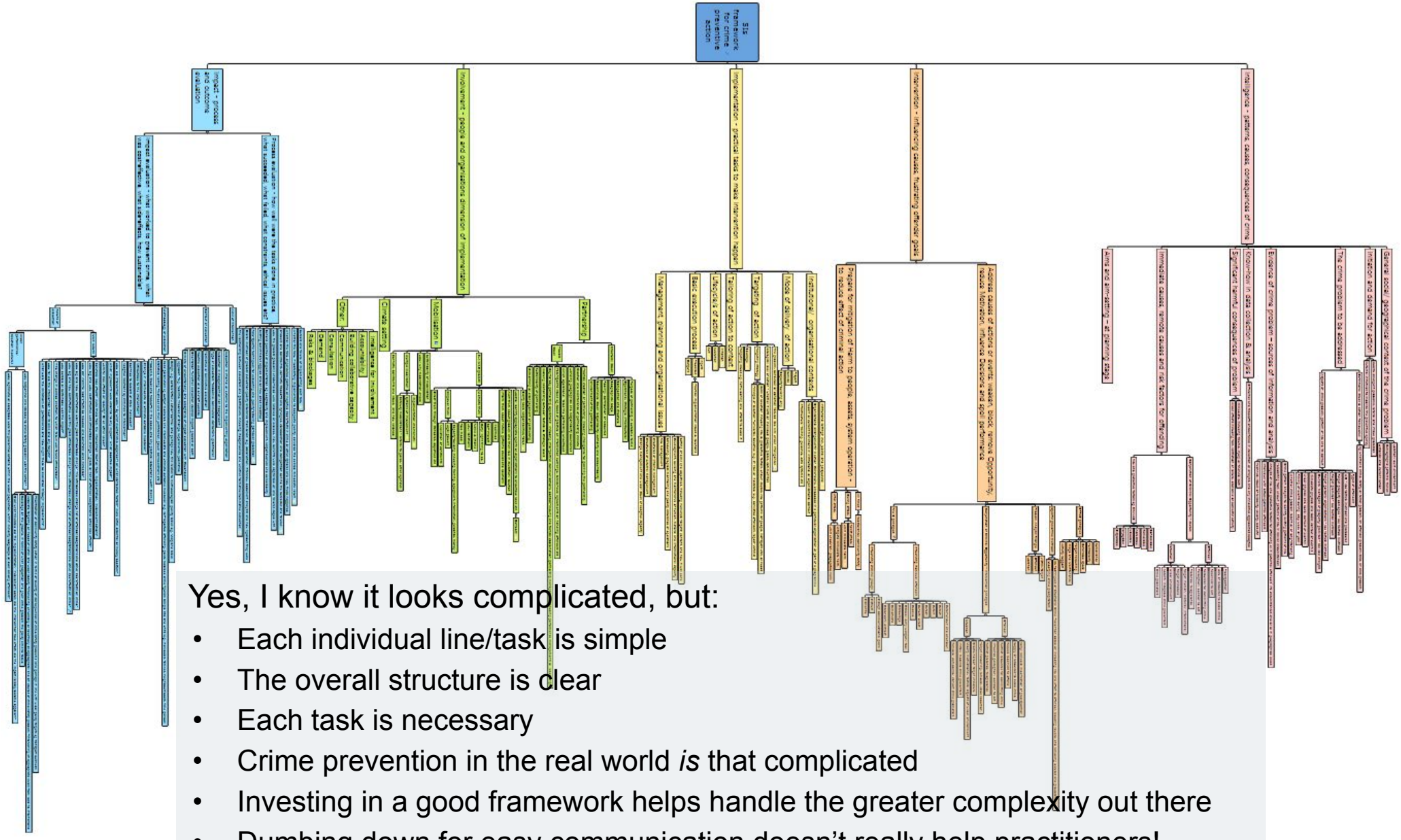
What are the 5Is?

- The 5Is are the top-level tasks of the crime prevention process



- Each top-level task expands into lots of detailed sub-tasks

5Is – all the headings!



Yes, I know it looks complicated, but:

- Each individual line/task is simple
- The overall structure is clear
- Each task is necessary
- Crime prevention in the real world *is* that complicated
- Investing in a good framework helps handle the greater complexity out there
- Dumbing down for easy communication doesn't really help practitioners!

What characteristics of 5Is support innovation?

- 5Is gives **broad coverage**, of
  - The entire **range** of tasks that practitioners need to think about, in order to identify and address a problem, and Involve diverse stakeholders in Implementing an Intervention
  - **Social** and **situational** prevention, **community** based approaches and 'hard' **security**
- 5Is supports **co-production** of proposals
  - Clarity of the task list enables **partners from diverse backgrounds and professional disciplines** to focus, to communicate, to share expertise and their knowledge of locality and/or of a problem

What characteristics of 5Is support innovation?

- 5Is supports **sharing** of innovations – we don't want practitioners to have to **re-invent the wheel**
  - **Operation Moonshine**, a project on drinking by under-age young people, was developed by a local police/civilian team,
  - It produced about **12 separate interventions** involving **many different partners** – without detailed 5Is description, all this experience would have been lost
  - Once an innovation has succeeded, it must be **described systematically in detail** so the knowledge of practice can be
    - **Moderated/filtered** for quality – we don't want to re-invent the flat tyre!
    - **Consolidated** into a single consistent picture if possible
    - **Easily retrieved**, **selected** as suitable for my problem and context, **transferred** & **intelligently customized** as appropriate

What characteristics of 5Is support innovation?

5Is is **Generative –** helps to produce **variety** of plausible action proposals

- **Detailed**
  - Can suggest **many angles** to attack a problem, **many practical issues** to consider
  - E.g. ‘if you take a group of deprived urban children on a fishing trip, do not let them all go into a little village shop to buy lunch’
  - Encourages project descriptions which do not just superficially document the **final actions** taken – but the **choices, trade-offs and contextual factors** that practitioners replicating the action would have to make in their own **local circumstances**

What characteristics of 5Is support innovation?

5Is is **Generative –** helps to produce **variety** of plausible action proposals

- **Structured** – for efficient organisation and retrieval of knowledge
- **Modular**
  - Can produce many **combinations** of actions to suit problems and contexts
  - Can also **salvage** usable knowledge from **failures**
  - E.g. a burglary project may **fail** to cut crime, but perhaps developed a **successful** way to mobilise citizens – knowledge which can be **re-used** in other projects
- **Flexible** – tasks can be described/thought about in any order (e.g. Intelligence to develop Involvement, Involvement to obtain intelligence)
- **Theory-oriented** – tested theoretical **principles** can generate many different plausible practical proposals, even when the 'what works' evidence base is limited

Innovating individual crime prevention tasks with 5Is

Practitioners can consider whether they need to innovate, with **every single task and sub-task** of the 5Is process – whether it concerns Intelligence, Intervention, Implementation, Involvement or Impact

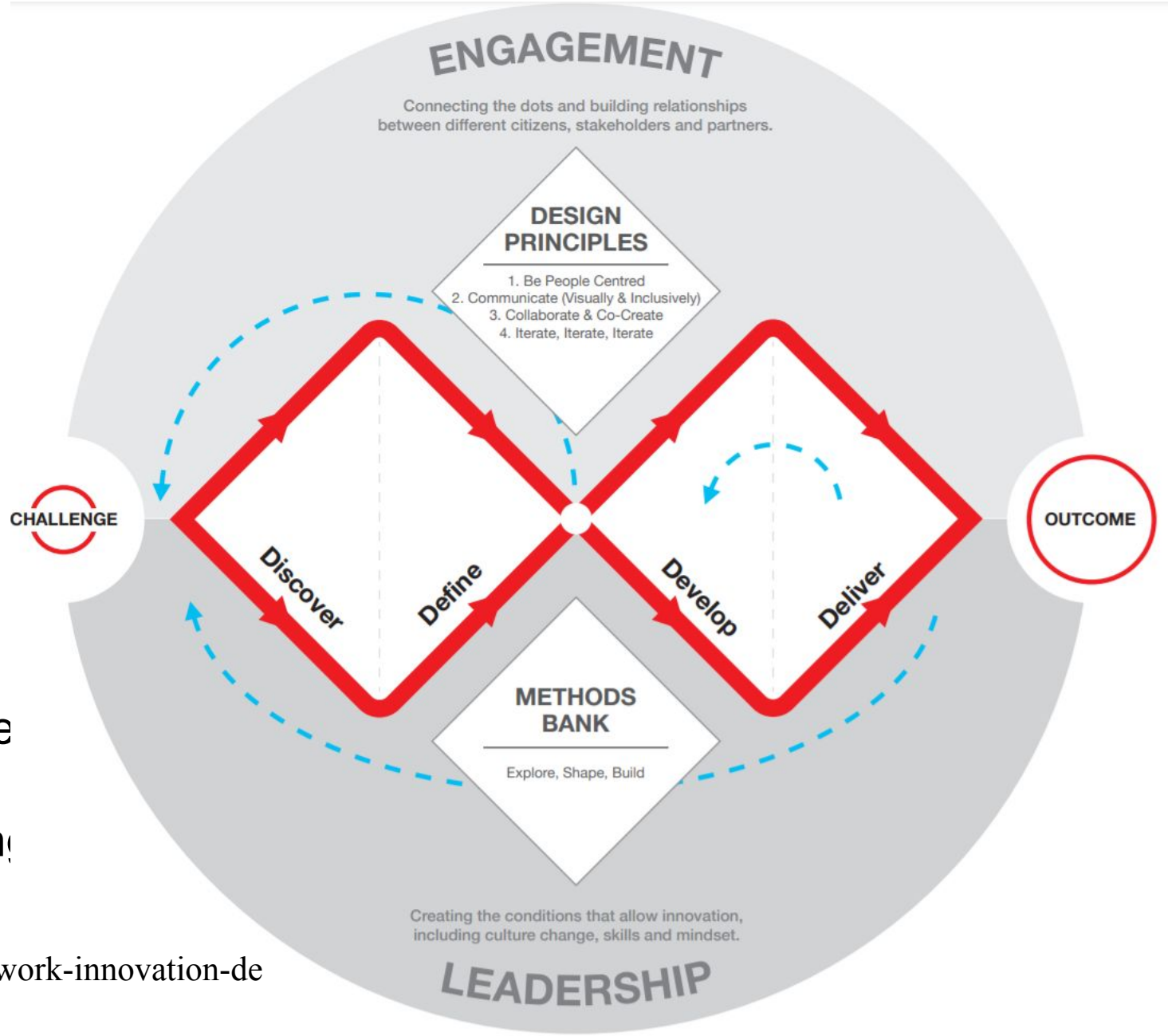
- Each (sub)task is a **practical problem to solve**
- Either by **existing** means in our repertoire
- Or by **new** ones
- In each case, we can ask a series of **questions**, with an approach that is either
  - **Routine**
  - **Radical** – ***think like a designer***

Routine innovation of individual tasks within 5Is

- How **well** are we performing?
- What are the **obstacles** and **constraints** which stop us achieving our immediate and ultimate goal/s, and how can we bypass them?
- Who, or what, are the **enablers** we can use to help solve the problem?
- Can we use **existing methods of Intelligence, Implementation etc** without modification?
- Do we need to **modify** our existing methods to suit problem and context?
- Do we need to **add** something extra to overcome resistance, supply an incentive?
- Do we need to **simplify** the solution?

Radical innovation – Don't just buy designs, *think like a designer*

- Use the **Double Diamond** process
- The diamonds represent a mix of **divergent <** and **convergent >** thinking
  - **Discover** the nature of the problem and who is affected by it
  - **Define** the 'design challenge', write the brief
  - **Develop** proposals, working with local stakeholders & professionals
  - **Deliver** – test out different prototype solutions at small-scale, rejecting those that do not work and improvin the ones that do



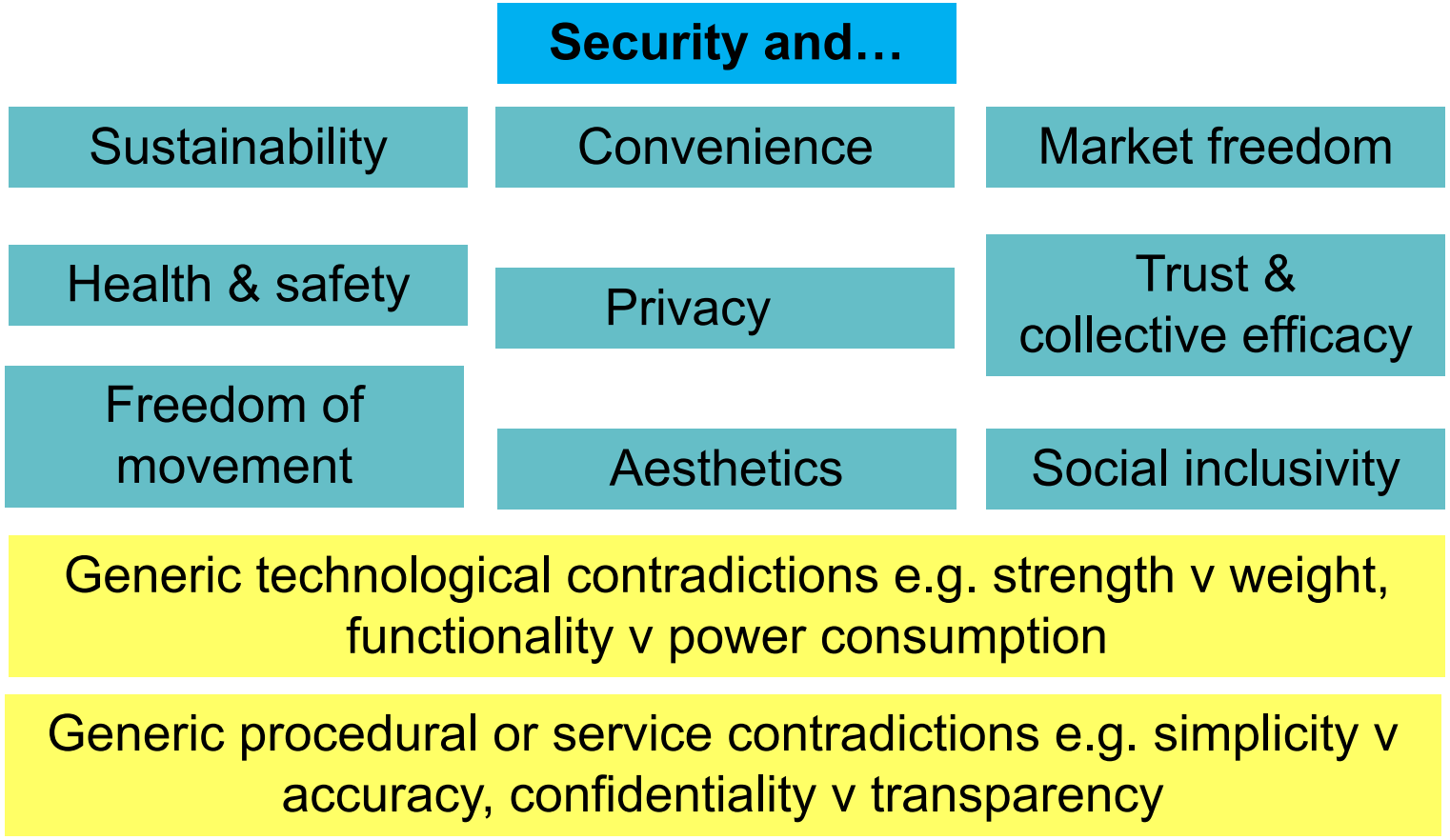
https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond

Radical innovation of individual crime prevention tasks

- What are the **design conflicts and trade-offs** we must resolve?
- Can we leave our **comfort zone** of **traditional approaches** and **compromises**, be more **tolerant of risk of failure**, take a **creative leap**?
- Can we get to the **functional essence of a problem** – e.g. do we want:
  - A better **washing machine**?
  - A better way of **washing clothes**?
  - A better way of **keeping clothes clean**?
  - Do we actually **need to keep so clean**?!
- Do we need to find a solution at a **higher or lower level** than the current approach, and/or at an **earlier/later stage of the process**?
- Do we need to **re-frame** the problem?

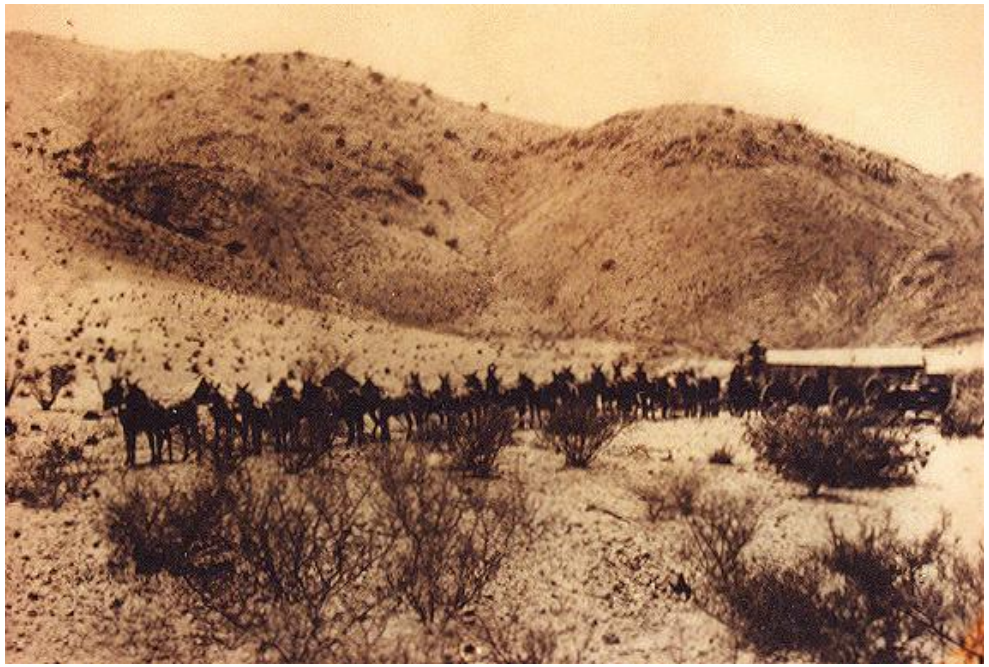
Trade-offs that innovation in crime prevention must address

- Various broader **design contradictions and trade-offs** can limit what crime prevention practitioners can do (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**?

Radical innovation – creative leaps, not compromises

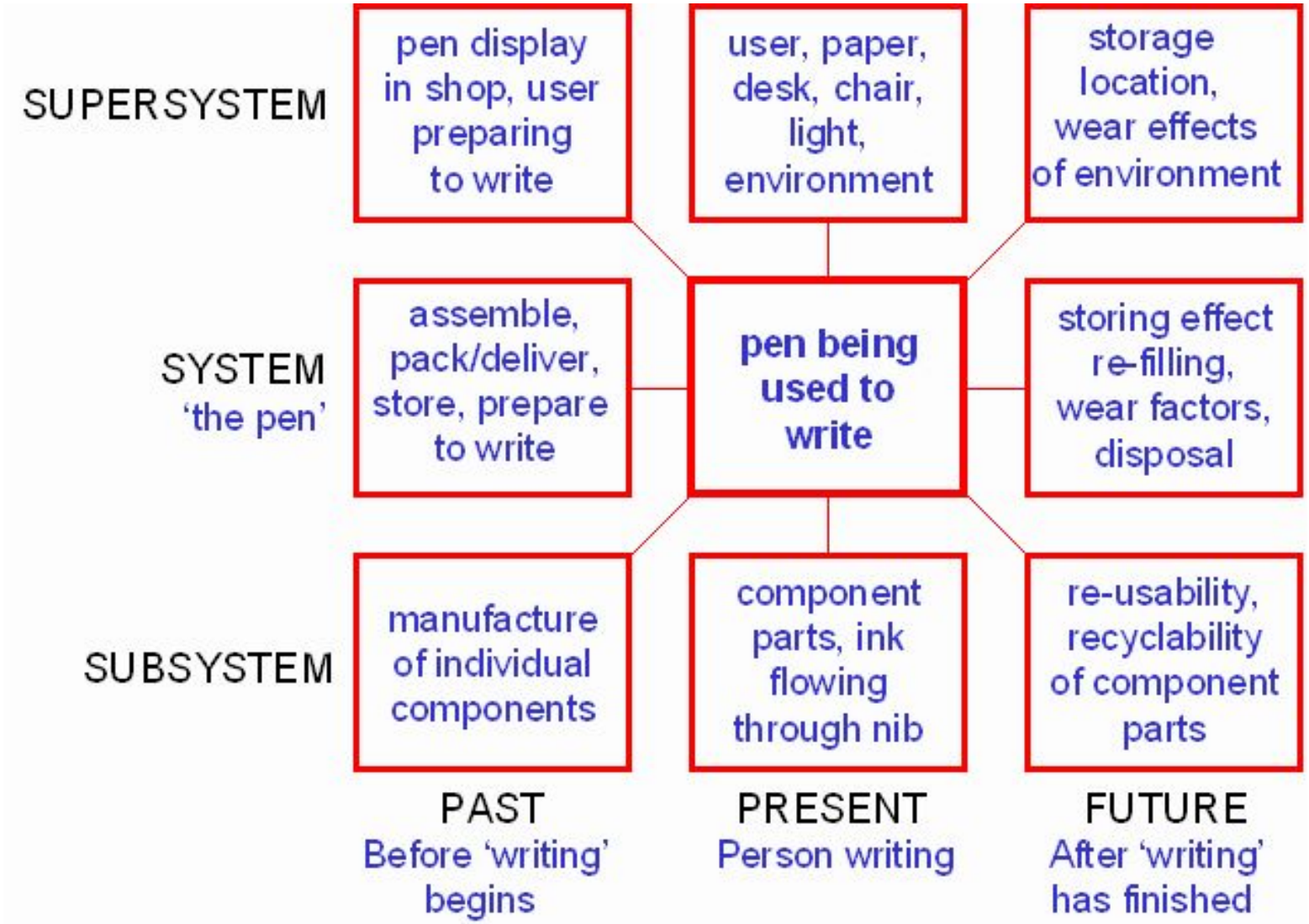


Radical innovation - reframing the problem

- **Counter-terrorism litter bin**, Designing Out Crime Research Centre, University of Technology Sydney
- **Reframed** from ‘prevent explosions’ to ‘also reduce costly and disruptive false alarms’
  - Limits size of bomb
  - Reduces shrapnel from explosion
  - Enables visual check of contents
  - Fast X-ray by Bomb Disposal agency

Engineering framework for inventiveness – TRIZ

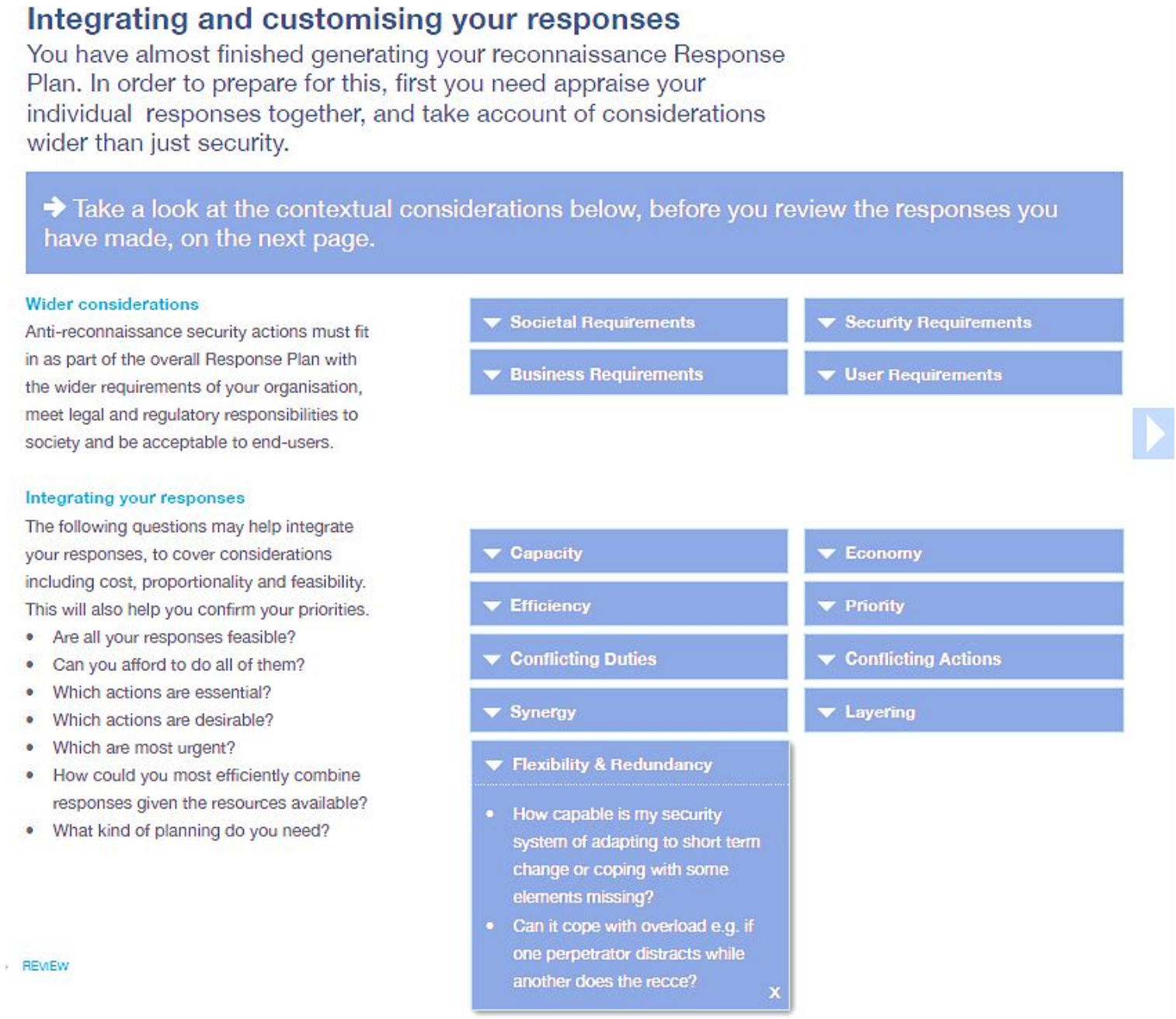
- 9 Windows – the System Operator
  - Think **before** and **after** the traditional point of intervention
  - Think **upwards** to intervene in supersystem and **downwards** to intervene in subsystems



https://triz-journal.com/

Design considerations – hostile reconnaissance toolkit

- Integration of security responses
  - Capacity
  - Efficiency
  - Conflicting duties and actions
  - Synergy
  - Flexibility & redundancy
  - Economy
  - Priority
  - Layering
- Wider requirements
  - Societal
  - Business
  - Other security
  - Users



Need to combine specific questions with holistic ones

- Being very problem-specific is necessary, but not sufficient
- Need also to take **holistic** views of the **crime problem** and the **preventive process**, how things all fit together
- We may be dealing with a **complex adaptive system** – where all the different stakeholders or actors (including criminals) make **adjustments** to the **changes** we introduce
  - Some of these adjustments will **neutralise** the prevention effect (but in the short term, displacement is not a widespread problem)
  - Others may make things **worse** (e.g. if a neighbourhood or individuals become stigmatised because they are targets of a preventive intervention)
  - Occasionally, interventions have unforeseen **benefits** (e.g. compulsory motorcycle helmets reduced bike theft)

Tactical challenges in crime prevention that innovation can solve

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

Use force v resist (Damage v protect, Injure v keep intact)

Act at will v control misbehaviour

Conceal traces and tracks v detect

Take v keep

Confront v avoid

Surprise/ ambush v be alert

Challenge suspect v give plausible response

Surveill v conceal

Snoop v maintain privacy

Pursue v escape

Trap v elude

Conceal criminal intent v detect

Tactical challenges in crime prevention that innovation can solve

- These **tactical script clashes**
  - Influence **criminal plans** and **outcomes of attacks**
  - Will **always** need to be faced
- Innovations elsewhere in society **disrupt the balance** of these clashes, and favour **one** side over the **other**
  - E.g. the cordless electric cutter, the camera on the smartphone
- We must design things to **give advantage to the good side**

And finally… remember, criminals are innovating too!

- **Adaptive criminals** find new **targets** of crime and develop new **Modus Operandi**
- **Background changes** in technology, business, society etc generate **new motivations and opportunities** for crime
- To keep up with the criminals (or ideally to overtake them), we need to develop, disseminate and maintain our own **innovative capacity**
- And – as I hope that I have shown – **5Is** can help here!

https://5isframework.wordpress.com