PROTON

PROJECT FACTSHEET

Shedding light on criminal organisations with social and computer science

Co-funded by the
European Union

Introduction

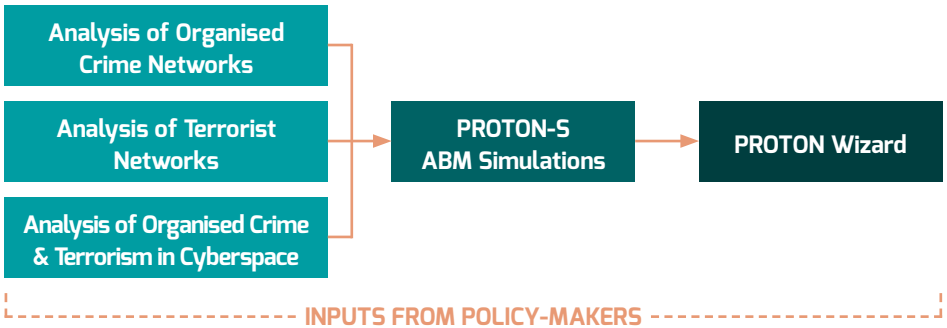
An overview of PROTON

The European project PROTON proposes an innovative approach which mixes social and computer sciences to assess policies that prevent the recruitment into organised crime (OC) and terrorist networks (TN).

The first half of the project conducted systematic analyses of the literature and innovative studies to understand what leads individuals into OC and TN. Based on these results, the second half of the project developed agent-based models (ABM) to simulate the recruitment processes and to test specific preventive policies. PROTON benefited from the interaction between researchers and policy makers to ensure the research addresses policy-relevant issues.

PROTON's final results include:

- **PROTON-S**, two ABMs which simulate the processes leading to the recruitment into OC and TN, respectively, and test the impact of specific preventive scenarios.
- **PROTON Wizard**, a user-friendly web interface which allows policy makers and interested stakeholders to easily navigate through the results of PROTON-S and test different scenarios.



Organised Crime Networks

Analyses of the Social, Psychological & Economic Factors

Systematic review of the literature on the recruitment into OC: based on 47 empirical studies, social relations (family, friendship, work), criminal background and criminally exploitable skills were found to be the main recruitment drivers.

Impact of OC policies across different EU Member states: it argued that most policies focus on the disruption of criminal groups, while few concentrate on prevention. Preventive policies should address an educational segregation since very early ages. This triggers and maximises peoples' vulnerabilities and the violent model of socialisation in youth, which may be a pull factor for OC recruitment and perpetuation.

Criminal careers of 1,841 Dutch OC offenders: it showed how involvement into OC follows diverse pathways in crime. Most individuals start offending later in adulthood. Social and economic embeddedness of criminal networks active at a big airport and in a big harbor were also analysed.

Criminal careers of approximately 15,000 Italian mafia offenders at the macro (whole sample), meso (by mafia type) and micro (individual) levels: it showed a variety of patterns of involvement into offending. Recruitment into the mafias is often preceded by an increase in the number and seriousness of crimes.

Neuropsychological characteristics of OC members: by comparing OC vs non-OC prisoners, several cognitive and behavioural differences between the groups were found. Less efficient executive functions, better verbal memory, and a masochistic personality trait seem to drive the enrolment in OC groups.

Relations between inequality, social mobility and OC presence: the findings show that higher inequality (particularly consumption inequality) can lead to higher OC development. Low socio-economic mobility displays a robust association with OC.

Terrorist Networks

Analyses of the Social, Psychological & Economic Factors

Systematic review and meta-analysis of factors associated with different radicalization and recruitment outcomes, and a separate review focussed on protective factors: while the reviews examined tens of factors, both found that socio-demographic characteristics were less important in comparison to traditional criminogenic factors for both their risk and protective effects.

Quantitative studies of:

- **social and criminal risk factors for terrorism offence recidivism in Israel**: many characteristics of criminal recidivism were found to be relevant to terrorist recidivism;
- **socio-economic and socio-psychological factors for differentiating non-violent and violent extremist offenders in the US**: it was found that while higher education and stable employment reduced the likelihood of violent extremism, mental illness, criminal history, and radical peers increased it.

Mixed methods studies (quantitative and qualitative) of:

- **beliefs of members of the UK's Muslim community**: the study found that counter-terrorism policies and police activities affect trust and legitimacy, and can have a backlash effect on radicalization. Procedural injustice, a sense of discrimination, and a lack of full-time employment increase the likelihood of such perceptions;
- **Terrorism offenders in the Netherlands**: personal strains, such as low education, unemployment and recent loss of employment, and criminal history, were found to have a significant correlation. The two studies found significant overlap in their qualitative and quantitative analyses

Significant overlap among the diverse set of results was found. Overall, traditional criminogenic and criminotrophic factors are relevant to radicalization and recruitment.

Organized Crime & Terrorism in Cyberspace

Analyses of how OCTN influence and exploit the internet and social networks

Systematic review of online activities of OCTN: a deep insight into the currently most frequently reported online activities of OCTNs: public image building, spread of narratives and facilitation of recruitment.

Finding the Dark Web signposts: knowledge on the links between the Darkweb and the visible web was quantified and identified as signposts into the Darkweb. Most Darknet market actors are relatively well-represented also in the surface web due to their need to obtain customer leads. A very common starting point from the clear-web is the search engine DuckDuckGo, but this study has shown that there are also links to .onion or .i2p addresses in Twitter and Reddit.

Online visibility and social media impact of gangs: social media activities of European outlaw motorcycle gangs were analysed with a new approach to show how they present themselves to the public. Using the PROTON data collection and analysis system, 89 Facebook presences of individual chapters of various outlaw motorcycle clubs were analysed regarding the information they present to the public, e.g. their Facebook friends or likes.

Radicalization in cyberspace and radical social media networks: Through a comparative analysis of the social media activities (mainly on Facebook) of 42 lone wolf terrorists with 42 non-violent radicals, new insights into the development of radicalization were gained and characteristic behavioural patterns related to posting frequency and the content posted on social media could be identified.

Terrorist-related contents in cyberspace: Data from various social media sources (YouTube, Twitter, Facebook, Reddit) and propaganda magazines were collected in an automated way, using web-crawlers. Textual information was analysed by means of natural language processing and psycho-linguistics. Clusters of personality traits amongst the publishers and commenters of videos related to Jihadism were identified.

PROTON-S

Combining social and computer sciences to fight OCTN

PROTON-S is a set of computer simulations showing how environmental, social, psychological, and economic factors affect recruitment to OCTN. It reproduces the main components of a society, such as individuals, groups or institutions. PROTON-S simulates phenomena that would be difficult to study in reality, such as mafia and terrorism recruitment. It enables policy makers to test in silico the impact of different intervention policies on the dynamics of recruitment to OCTN before they are implemented.

PROTON-S consists of two distinct simulation models to study recruitment to OCTN:

- **OC Recruitment Model: How do social relations and dynamics influence the processes of recruitment into OC?** The model represents prototypical (northern and southern) European cities. It focuses on the relations between people and studies how these relations can affect individuals' chances of becoming criminals.
- **TN Recruitment Model: How do changes in risk and protective factors influence the prevalence and incidence of radicalisation and recruitment to TN?** The model represents Neukölln, a neighbourhood of Berlin, which was used as a prototypical European neighbourhood. It focuses on the opinion dynamics among individuals: when they get together, people talk to each other and exchange opinions about various topics, during face-to-face or online conversation. Some opinions contribute to radicalization and terrorism recruitment, while others have a protective effect for the society.

Both models are based on **real data**. The innovative aspect lies in the opportunity of running large-scale simulations of recruitment to OCTN, using **between 5.000 and 40.000** agents interacting for many years.

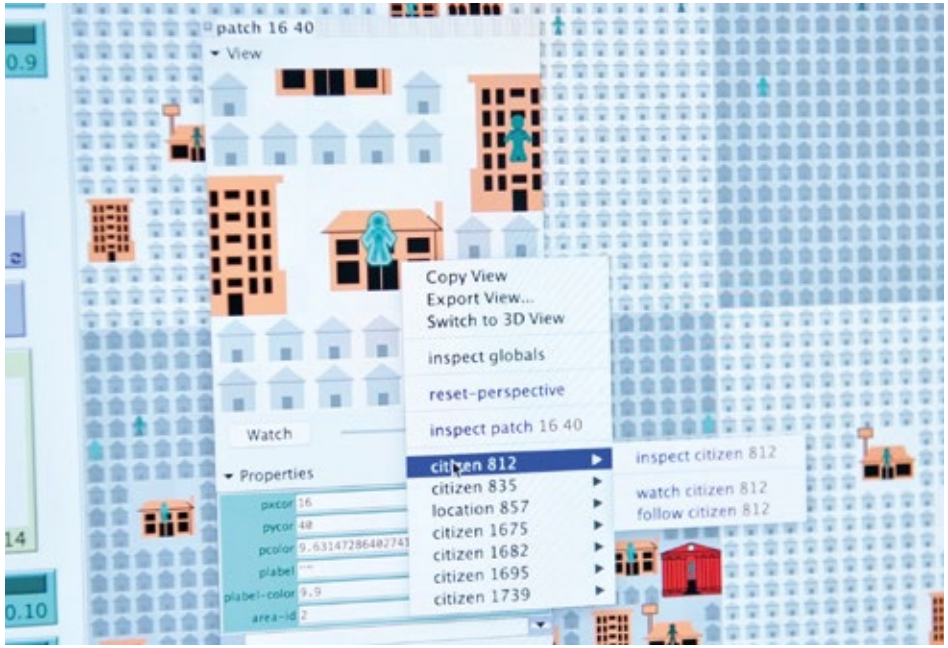
What happens to the TN recruitment process if new community centres, where social workers actively reinforce the trust in social institutions, are introduced? Or if social integration, employment enhancement and schooling campaigns are promoted? What if instead the government implements policies of stronger repression? What is the effect on the recruitment of young people into OC of increasing pro-social ties, such as ties with non-criminal friends? What about that of cutting criminal links that can also include family ties? These are just a few of the many questions that can be addressed using the PROTON-S models.

PROTON Wizard

A user-friendly tool for policy makers

PROTON Wizard is a software tool embedding the results of the PROTON-S simulation models and presenting them via various user-friendly visualisations. The goal is to allow policy makers to access the output of the simulations via a clear interface and without the help of specialised assistance. The tool is accessible online at two different addresses (for the PROTON-S models on OC and TN, respectively), both available here: **www.projectproton.eu/proton-wizard**.

PROTON Wizard has been developed by using modern standards of technology and user-experience design, and by following the agile methodology. This methodology enabled the straightforward implementation of inputs from the consortium partners during the development stage of the graphic layout.



Visualisation of PROTON-S

PROTON

Modelling the processes leading
to organised crime and terrorist networks

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Learn more about PROTON

www.projectproton.eu

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