



PROTON

Modelling the processes leading
to organised crime and terrorist networks

PROTON: A WEB-SCIENCE APPROACH TO ANALYSE ORGANIZED CRIME AND TERRORISM IN CYBERSPACE

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PROTON Overview

- ⦿ Improving existing knowledge on the processes of recruitment to OCTN
 - Building a simulated “world” for experiments
 - Social, economical and psychological factors
- ⦿ 21 partners, 7 WP, 619 PM in total
- ⦿ WP3 as the cybercrime WP



WP3 Objectives

⦿ WP3: OC & Terrorism in Cyberspace

- Analyse how OCTNs impact on and exploit the Internet and social media networks to commit cyber and cyber-related crimes.
- Understanding the links between cyberspace and factors leading to OCTNs by means of web science

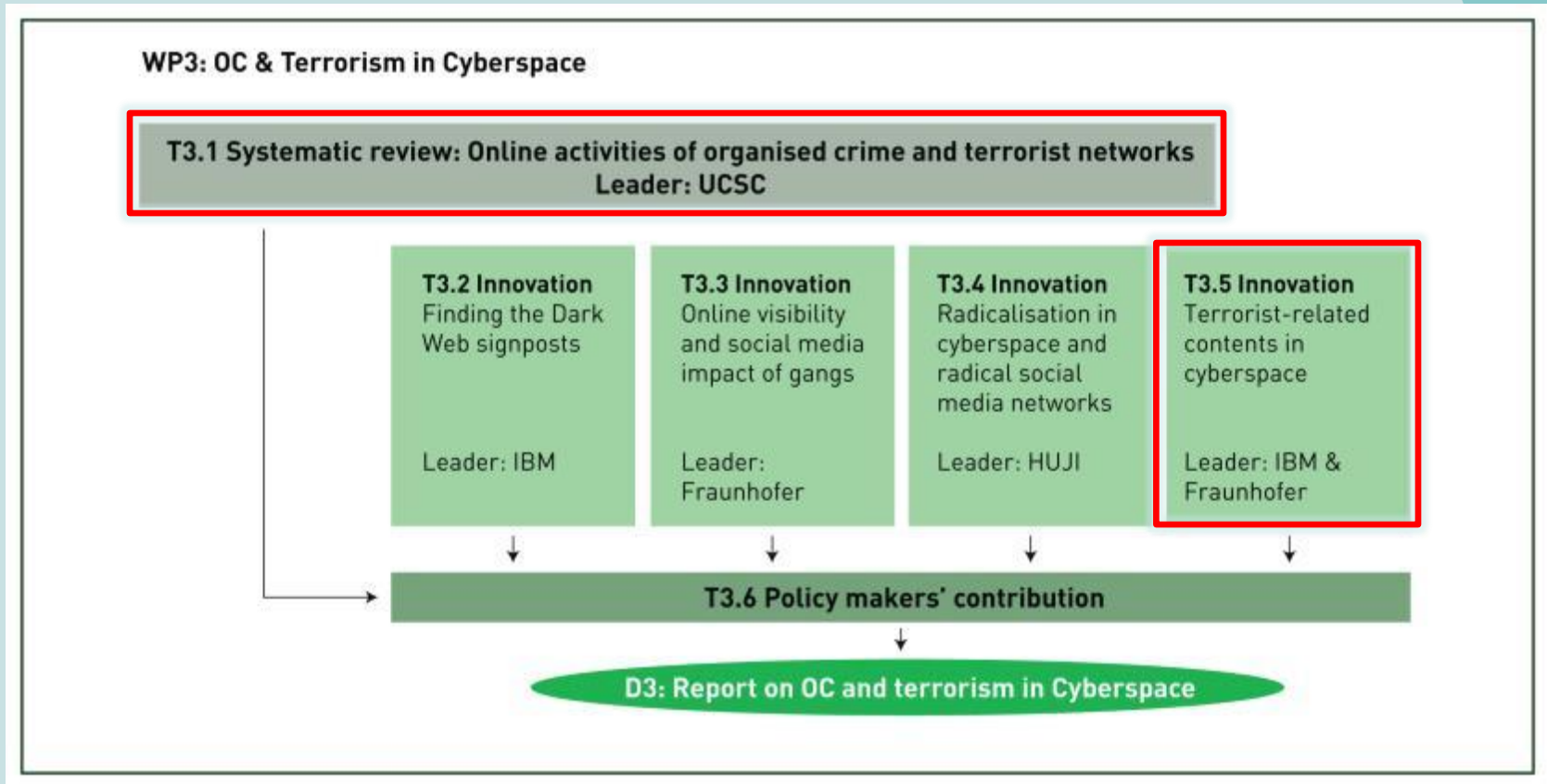


Expected Outcome of WP3

- ⦿ Analysis of the impact of cyberspace on OCTN
- ⦿ Agent models reflecting personality traits of the actors involved
 - Models are derived from the analysis of large data sets
- ⦿ Experimental Platform
 - Technical system allowing data collection and analysis



Structure of WP3



Existing knowledge

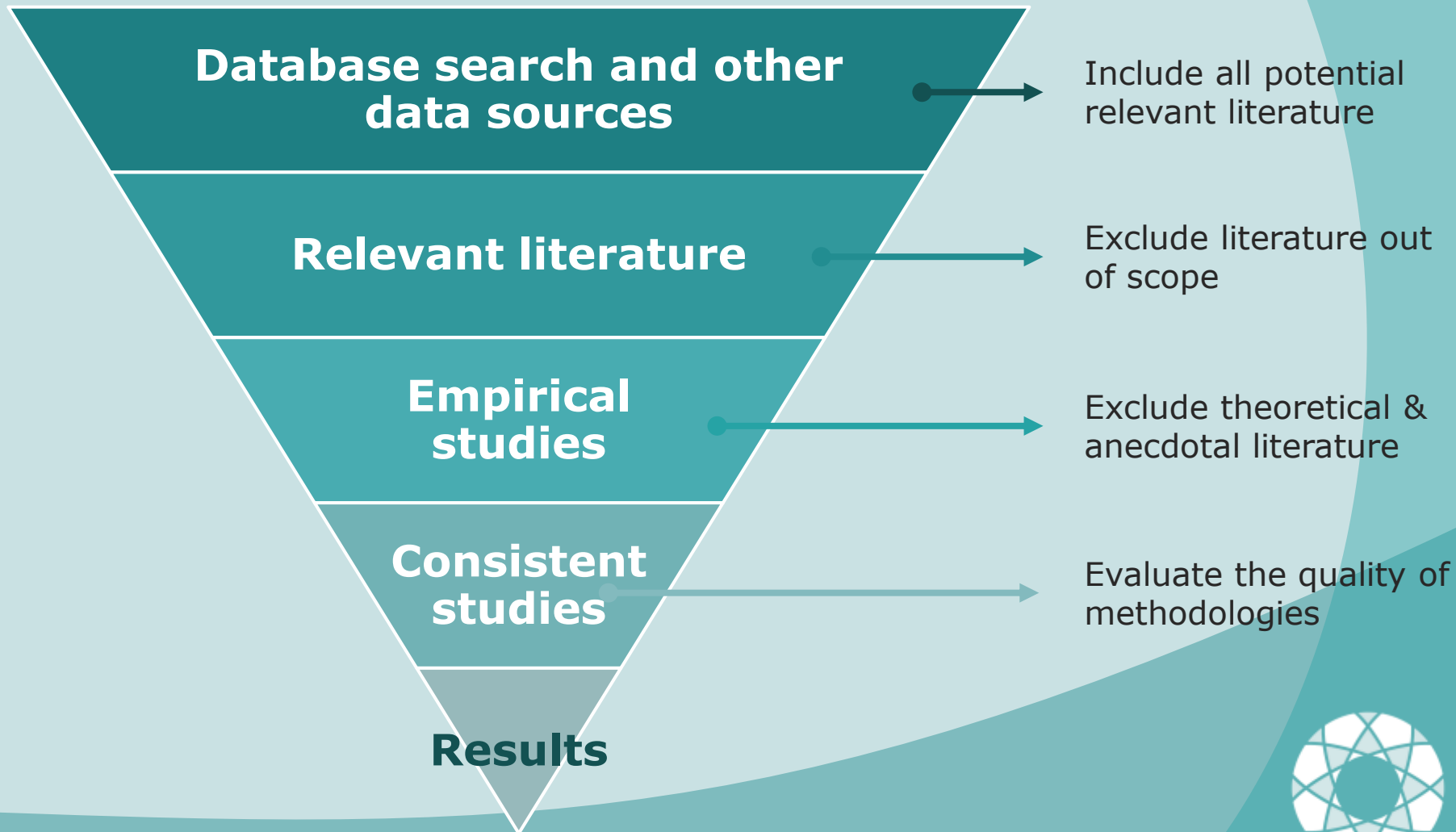
◎ **T3.1 Systematic review of OCTNs online activities**

The SR aims at assessing and synthesising the already existing knowledge on the exploitation of cyberspace by OCTNs to complement the knowledge produced by the innovative studies.



T3.1 Systematic review

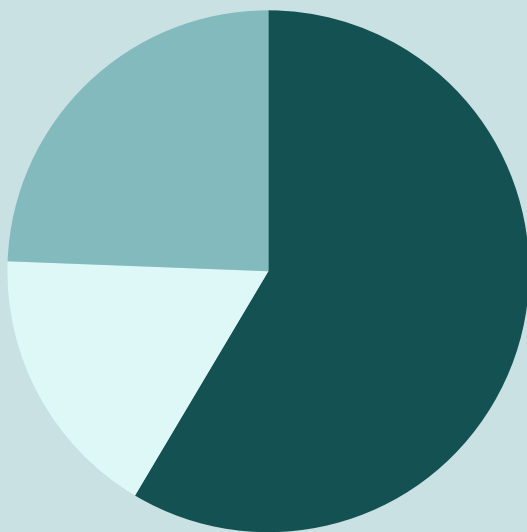
Description of the approach



T3.1 Systematic review

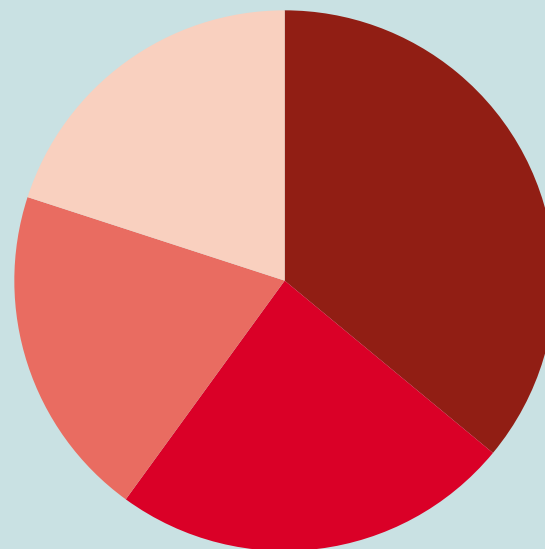
OCTNs analysed

TNs



- Islamic terrorism & radicalisation
- Far-right terrorism & radicalisation
- Terrorism & radicalisation (general)

OCGs



- Cyber criminal networks
- Drug trafficking networks
- Street gangs
- Others



T3.1 Systematic review

Online activities of TNs

	Terrorism & radicalisation
Internal communication and social networking	Evidence
Propaganda and psychological warfare	Evidence
Recruitment, mobilisations, & self-radicalisation	Evidence
Information gathering, training, & planning of attacks	Poor
Perpetration of computer crimes	Low



T3.1 Systematic review

Online activities of OC

	Traditional OCGs	Cybercriminal networks
Presence of affiliates on social media, dissemination of criminal culture and “indirect propaganda”	Evidence	Low
Recruitment and networking	Poor	Evidence
Perpetration of computer crimes	Poor	Evidence
Traditional offline crimes facilitated by online means (e.g., transit crimes)	Poor	Evidence



T3.1 Systematic review

Conclusions

- ⦿ Different goals of OCTNs determine distinctive uses of ICTs
- ⦿ Academic research reflects these differences in the choice of its topics
- ⦿ Similarities
 - Use of social media for public image building and the spread of narratives
 - Internet as a facilitator of recruitment



RS biases and need for innovative studies

- ⦿ Lack of evidence on gangs form the European context
- ⦿ Evidence on online TNs & radicalisation focus on the content creators and their narratives. Need to specifically target the personality profiles of the content consumers
- ⦿ Lack of studies targeting the dark web



Technical Work

◎ **T3.5 Innovative study: terrorist-related contents in cyberspace**

- Identification and collection of terrorist-related online contents
- Assessing mechanisms of online propaganda



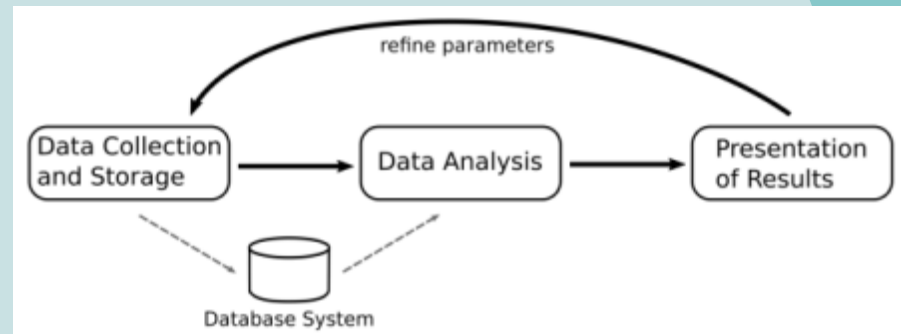
Identification and collection



- ◉ IS online activities
- ◉ Screening social media networks and search engines
 - Texts, and video annotations



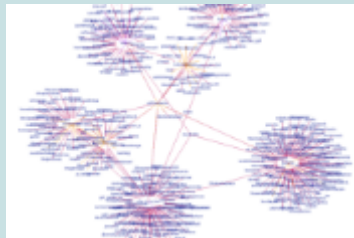
PROCeeD – Technical System



- ◉ Data collection and analysis system
- ◉ Distributed web application
- ◉ Web-crawlers are the data collectors
- ◉ Connection to IBM Watson Analytics



Assessing the mechanisms



- ◎ Text-based analysis
 - Text, captions, headlines
 - Watson Personality Insights
- ◎ Social Graph analysis
 - Likes, friends, Re-Tweets, Hashtags
 - Information on how actors are connected

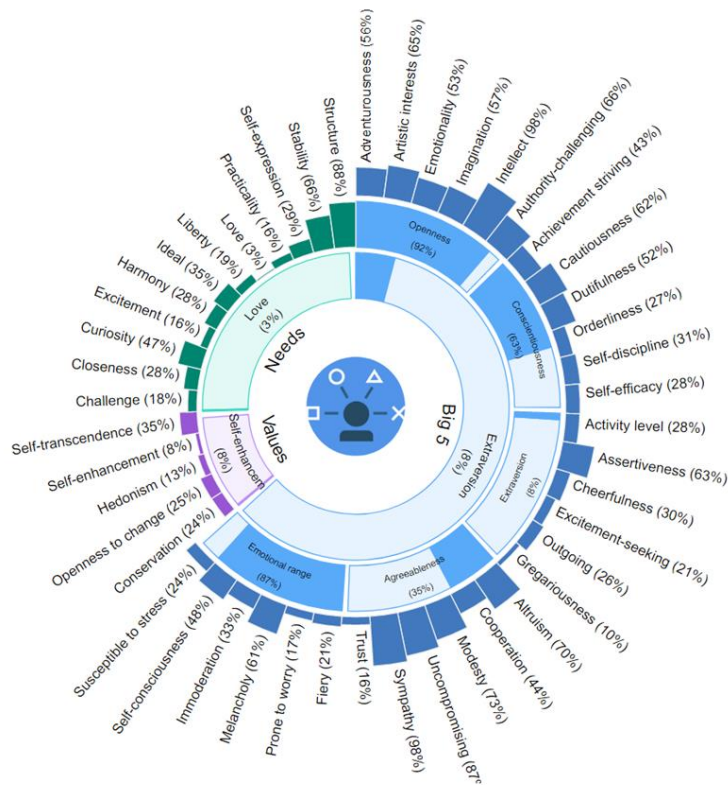


Personality Traits Extraction

- ◎ Personality traits from written text
 - Psychology of language in combination with data analytics algorithms
- ◎ Three models describe the personality
 - Big Five
 - most widely used model
 - Needs
 - Which aspects of a product are likely to resonate with the author of the text
 - Values
 - motivating factors that influence the author's decision-making



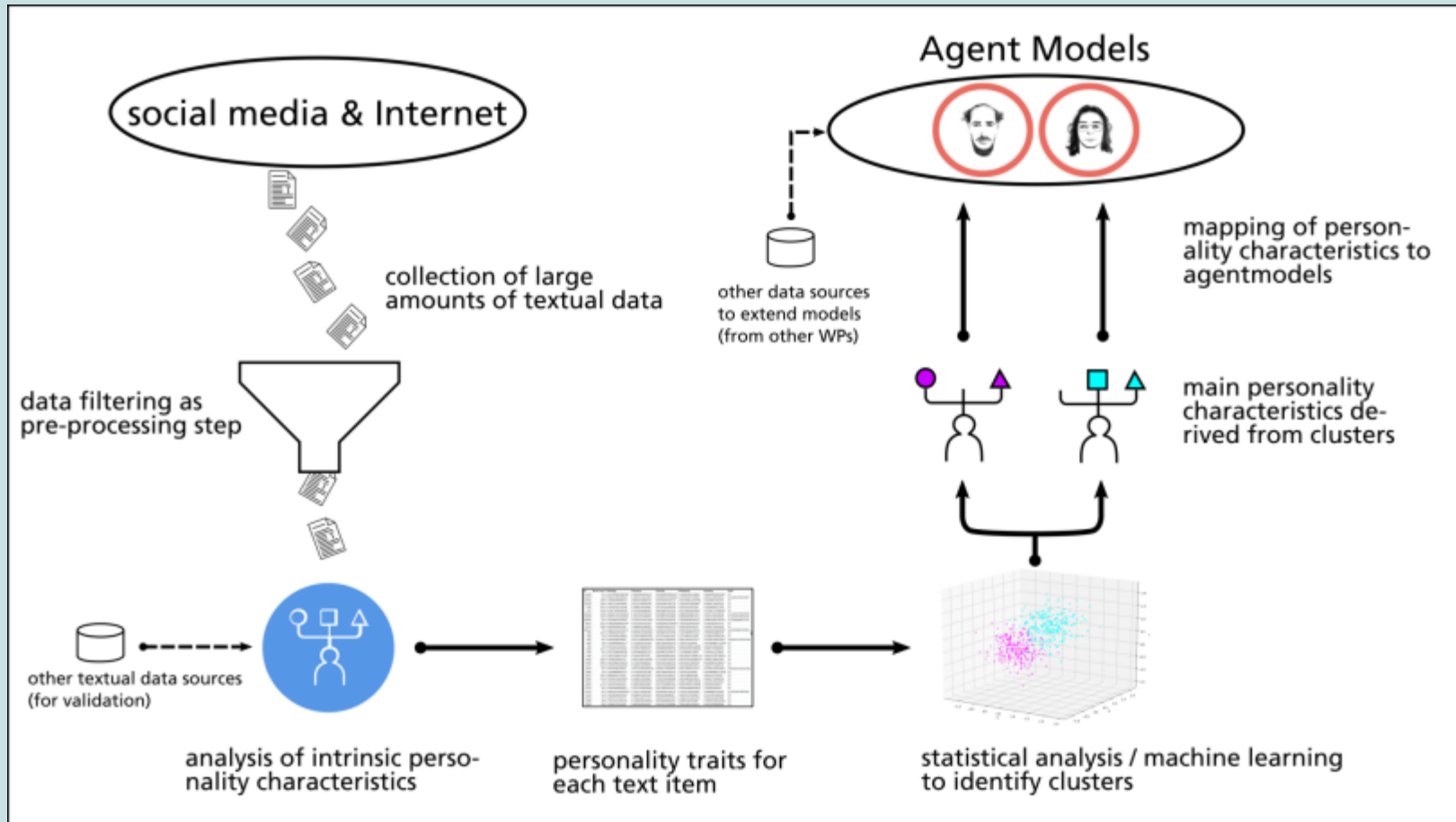
Personality Traits Extraction



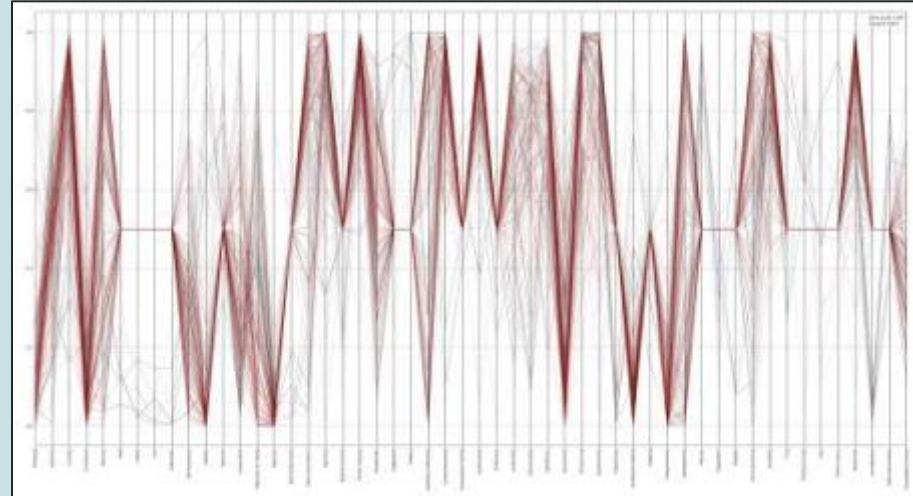
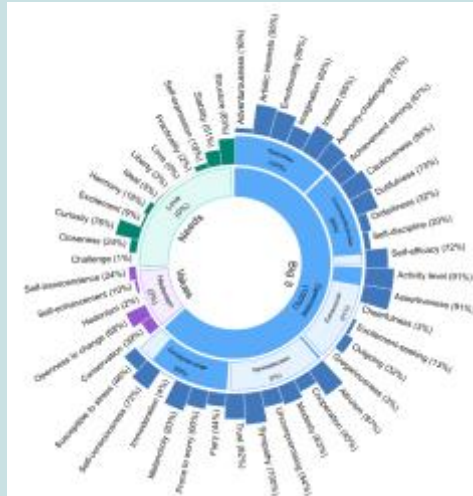
- 52 different personality traits
- 11 different Languages



Agent Models from Web-Data



Agent Models from Web-Data



- ◉ Personality profile of the actors involved
- ◉ Distinguishing between
 - Content Creators
 - Content Consumers (i.e. commenters)



Current state of Analysis

- ◉ Collected data from YouTube:
 - Ca. 5.000 videos, 60.000 user comments
- ◉ Interviews and narratives from IS propaganda magazines (Rome)
- ◉ Facebook pages from 40 Hells Angels chapters
- ◉ Ca. 400 Mio tweets collected and analyzed
- ◉ Reddit: 1.875.607.995 messages from 383.202 subreddits collected and analyzed



Conclusions

- ⦿ OCTN in cyberspace: Theoretical and practical studies
- ⦿ Systematic review of OCTNs online activities
- ⦿ Web-crawling and text-analysis pipeline
- ⦿ Personality traits from written text to assess the mechanics



Thank you



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