THE RIGHT TOOL FOR THE JOB
COLLABORATIVE REQUIREMENTS MAPPING FOR THE MILITARY APPLICATION OF MEDIA ANALYSIS

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OVERVIEW TOPICS

SETTING THE SCENE
MEDIA ANALYSIS

"AI systems could potentially save an intelligence community (IC) analyst as much as 364 hours, or more than 45 working days, a year" [1]
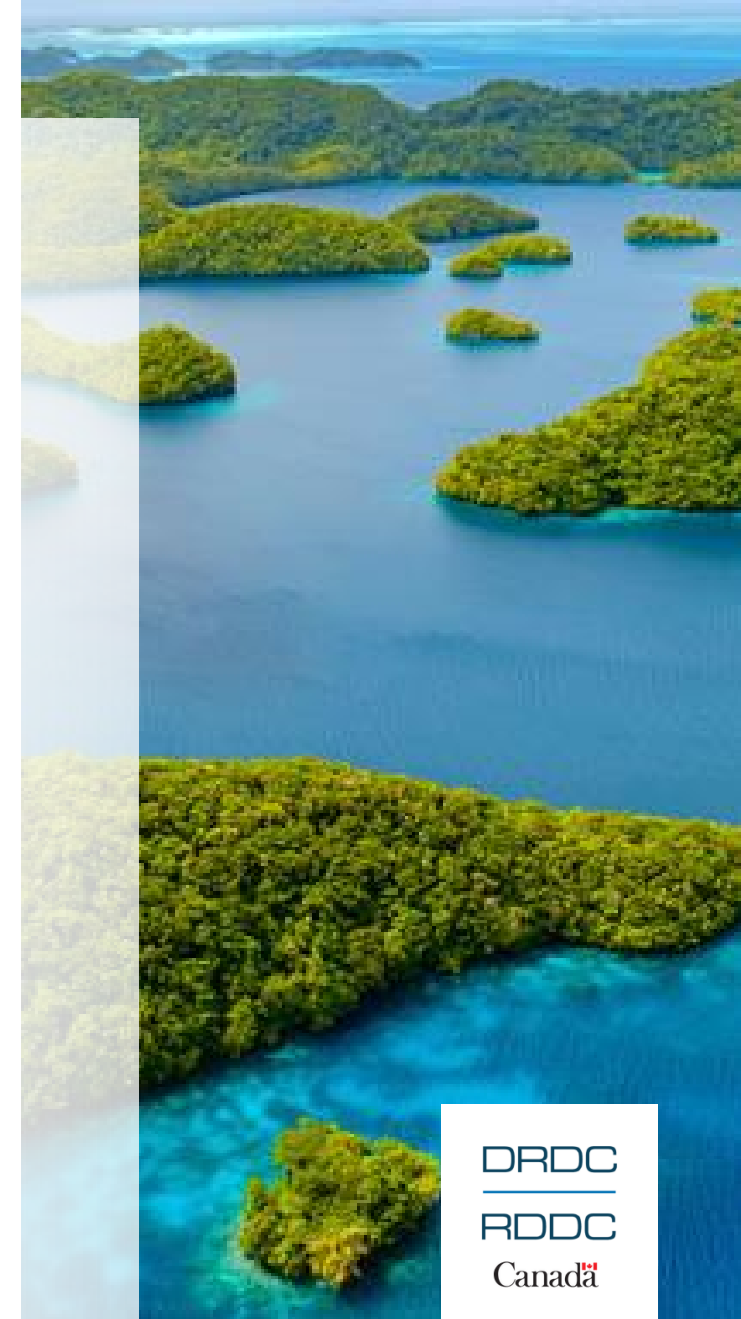
❯ Modern warfare is increasingly fought in IE

❯ Rapid digitalization means massive amounts of online media content

❯ Media analysis tools increasingly used for extracting, processing, analysing, and visualising meaningful information

[1] K. Mitchell, J. Mariani, A. Routh, A. Keyal and A. Mirkow, "The future of intelligence analysis," Deloitte Insights, 2019.

MEDIA ANALYSIS
CHALLENGES

› Need to consolidate experience and efforts to set R&D agenda

› However, there are several challenges:

  › Keeping an overview of the state-of-the-art (fast developments)

  › Standardization

  › Have a structured way of identifying avenues for R&D

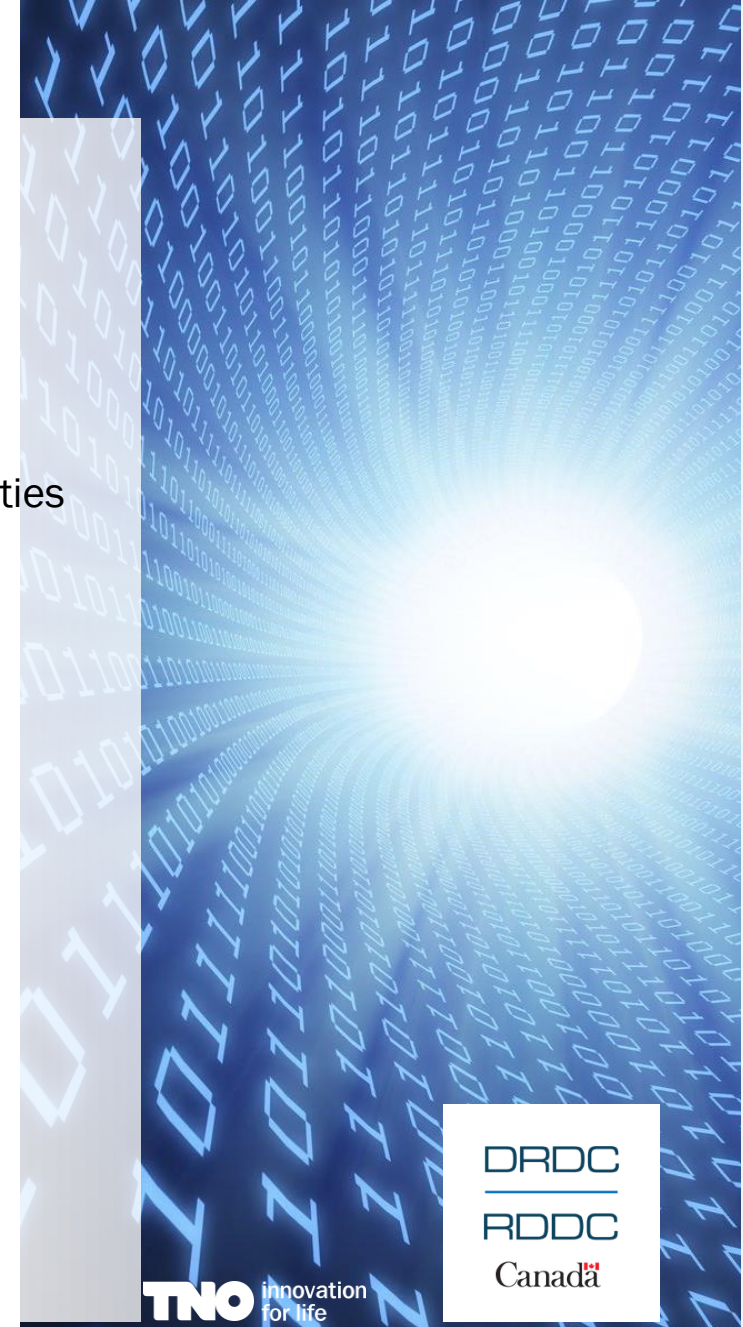# THE RIGHT TOOL FOR THE JOB
GOALS AND APPROACH

Goals

Short-term: Develop a standardised and multi-faceted overview of media analysis functionalities and stakeholders' requirements

Long-term: Provide directions for R&D, by comparing user requirements with the art-of-the-possible

Approach

› Expanding FIESTA (SAS-142), a methodology for assessment of media analysis tools

› Instead of tool assessment, use framework to compare and map requirements

› Focus on Sentiment Analysis and Narrative Sensemaking

FIESTA V1.0
ORIGINAL FIESTA SAS-142

- **›** Grading system that provides a suitability assessment of media analysis tools

- **›** Demonstrator implemented in an Excel Workbook

- **›** Structured list of suggested capabilities and functionalities

- **›** Developed by military operators and scientists from multiple disciplines

ID	Function	ID	Main	ID	Sub	ID	Detail	Explanation
2	Direct	4	Collection management	14	Collection planning system	75	Graphical	Planning of timelines, t
						176	Textual	
						79	Hybrid	
				56	RFI Management	134	Receive	Can you receive tasking
						171	Tasking	Can you task others via
						164	Status update	Can you follow on the t
		21	User management	57	Roles	7	Admin	All functions available f
						188	User	Limited user functions
						111	Other	Some custom role and t

› FIESTA V2.0
ADAPTATION FRAMEWORK FOR COLLABORATIVE REQUIREMENTS MAPPING

› Mapping unique and common functionalities

  › focus on developing unique (novel) functionalities that meet specific requirements

  › recycling modules which serve multiple purposes for different analysis capabilities

› An extra level of detail, "Technical Method", was added to "Main" – "Sub" – "Detail"

3-step process:

1) Creating a detailed list of media analysis functionalities

2) Collect requirements from different organizations

3) Compare and map requirements to listed functionalities

    identify both commonalities and gaps → opportunities for R&D

1) CREATING A LIST OF MEDIA ANALYSIS FUNCTIONALITIES
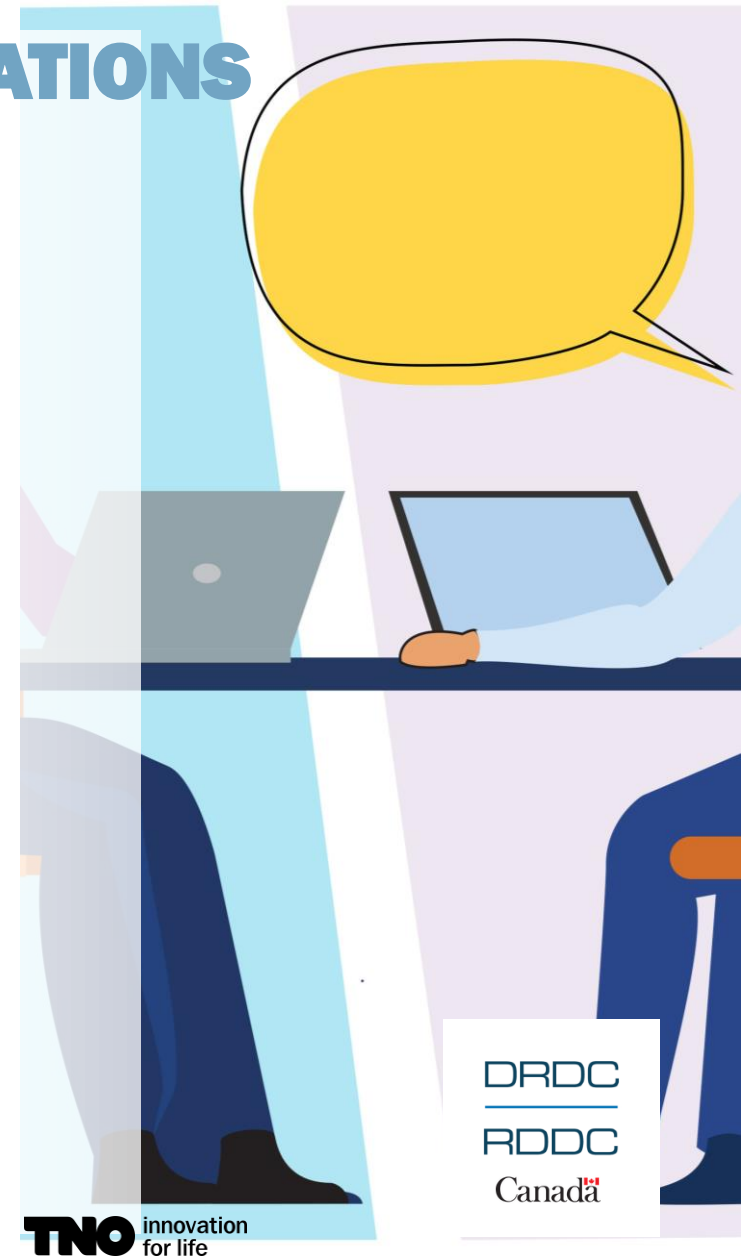## THE ART OF THE POSSIBLE

2) COLLECT REQUIREMENTS FROM ORGANIZATIONS
INTERVIEWS NL & CAN STAKEHOLDERS

NETHERLANDS

› Two military Information Manoeuvre organisations;

› Two military intelligence organisations;

› One Dutch Safety Region;

› One regional police organisation

CANADA

› Intelligence analysts at the strategic, operational, and tactical levels;

› Strategic communication public affairs officers;

› Requirements gathering from OSINT analysts as part of the SAS-IST-102 RTG

MEDIA ANALYSIS
SENTIMENT ANALYSIS – REQUIREMENTS

Automatic mining of certain affective states or opinions in texts

Detect emotions and sentiment regarding specific topics or entities

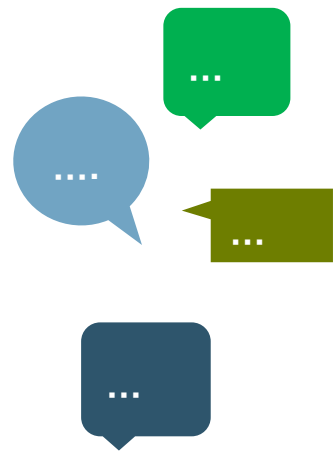Include explainable AI (XAI) capabilities

Use a broader spectrum of qualifications – discrete emotions like anger, fear, confusion and happiness – than just the standard 'positive vs. negative' sentiment

Visualize analyses over time and space to gain a dynamic understanding of sentiment in certain communities

DRDC
RDDC
Canada

TNO innovation for life

❭ 3) COMPARE & MAP REQS TO LISTED FUNCTIONALITIES

Collected requirements + Listed functionalities =
FIESTA 2.0

Areas for R&D

❭ extension of aspect-based sentiment analysis

❭ improvements in models that go further than just a binary classification of sentiment

❭ better insights into validation of techniques and explanation of accuracy to the end user

❭ a greater variety of visualizations including sentiment in a network and over time and geographical space

❭ ...

DISCUSSION

› Combination of disciplines, stakeholders and roles necessary

› FIESTA can help in

  › Identifying both unique and common functionalities;

  › Establishing proven technologies;

  › Highlighting areas for immediate development;

  › Revealing gaps for future innovation;

  › Facilitating establishing a standardized terminology

› These efficiency gains are multiplied when applied to multiple analysis capabilities, or in collaboration across multiple nations

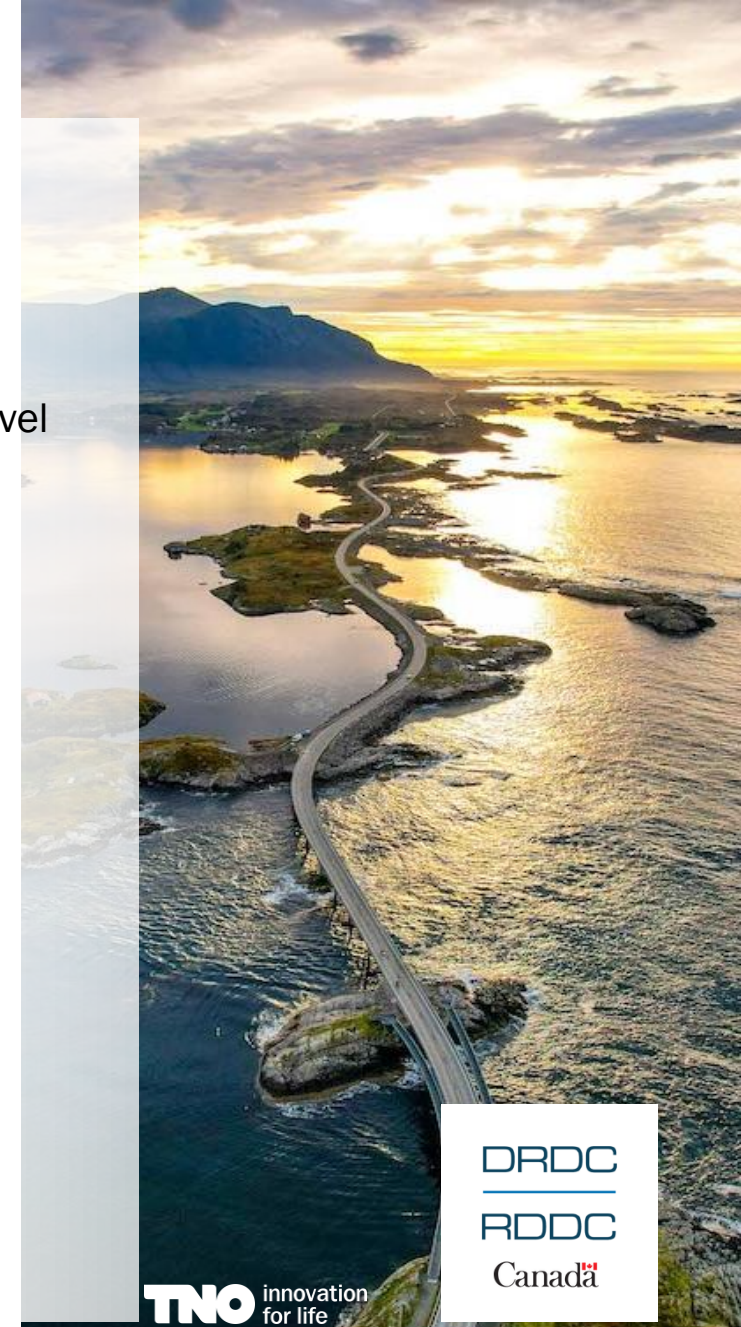› Future research should continue to expand and apply the FIESTA framework in increasingly collaborative settings.

WHAT'S NEXT?

❭ FIESTA as a strategic endeavor which will lead to better support at operational & tactical level

❭ In a fast-changing field it will remain challenging to keep up-to-date

  ❭ Inputs from different specialists needed

  ❭ Involving multiple nations more efficient

  ❭ Joining forces will lead to more comprehensive R&D agendas

❭ Standardization, communication, and collaboration are key

❭ Who's next?

  ❭ Always open for other collaborations!

› **THANK YOU FOR**
YOUR TIME

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