



MOBINT – an advanced platform supporting integration and analysis of mobile data coming from various sources

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CENTRE OF SECURITY TECHNOLOGIES

AGH University of Krakow



Who we are?

Centre of Security Technologies
Faculty of Computer Science

Since 2007 development of various R&D projects mostly for law enforcement

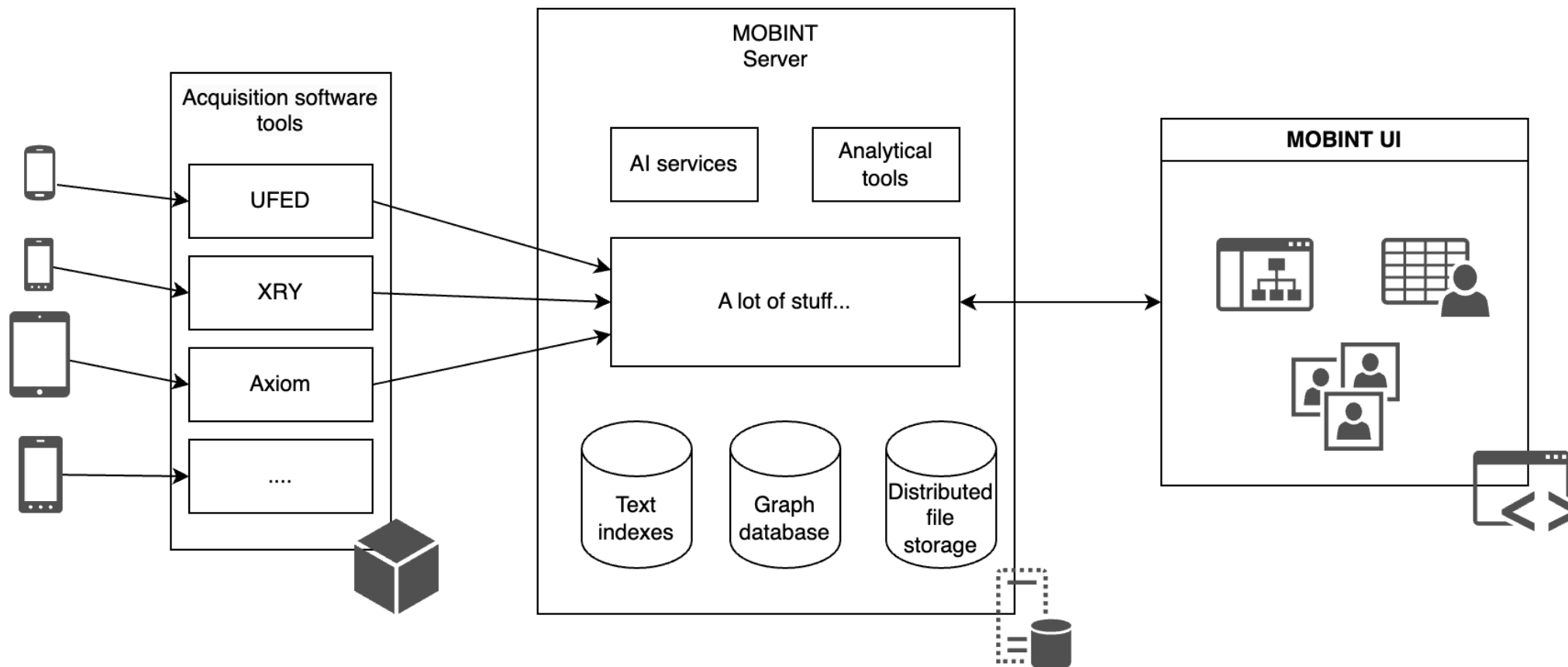
Areas of research:

- Data modelling and analysis
- Artificial intelligence
- OSINT
- Digital forensic

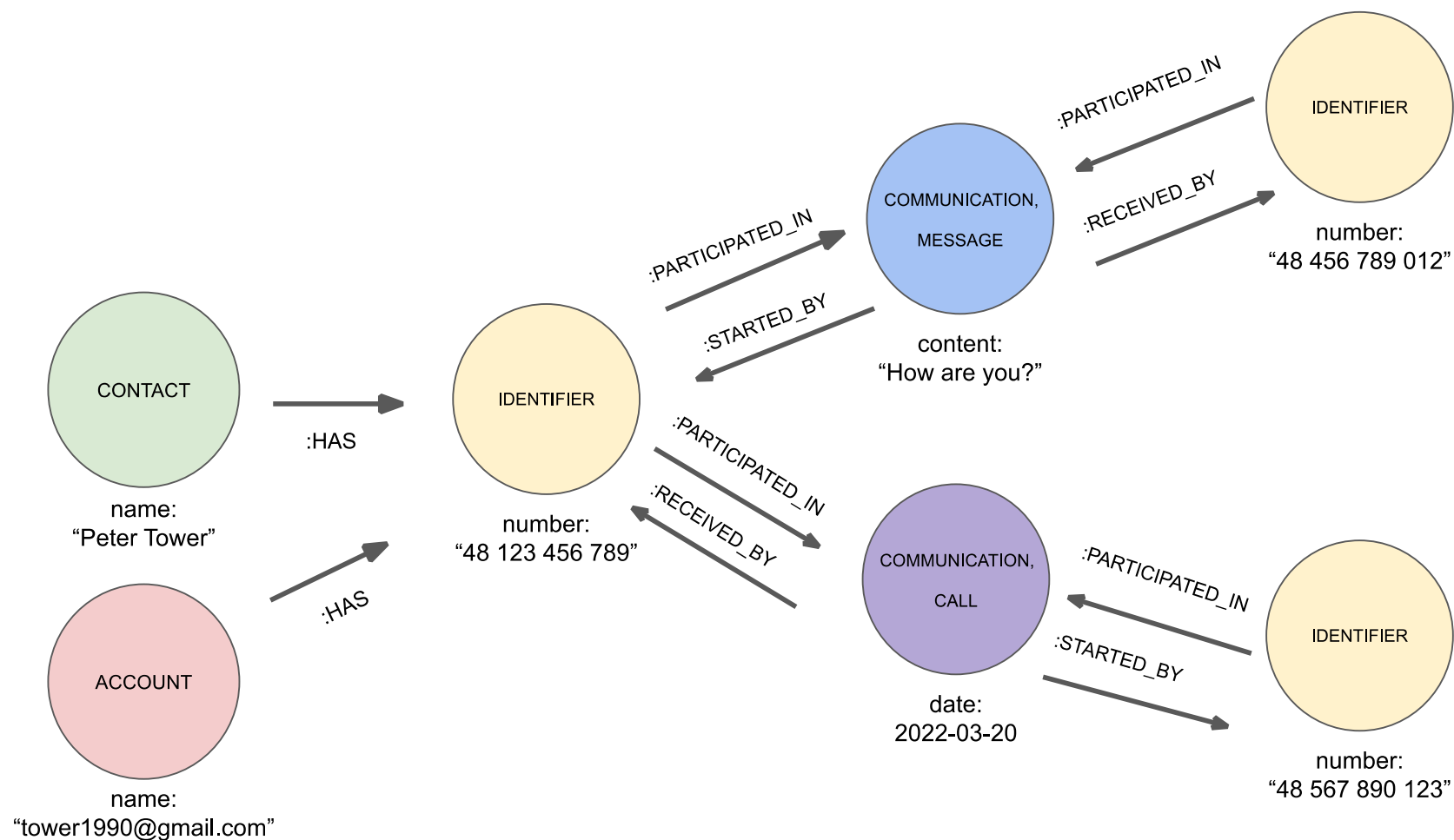
Key goals of MOBINT platform

- **Integrate data** coming from many devices (using heuristics to "connect" information between various data sources)
- **Combine and „understand” information** from various applications and devices (to see structural, time-based or geographical correlations)
- **Extract and search** data using dedicated data sources and AI tools

MOBINT – the concept



Model for mobile communication



Data filtering

- Simple MFU filters
- Advanced queries with auto-suggestions

Convenient filters adjusted to model communication model

Messages

Devices ▾ Viber, iMessage ✕ Labels ▾ Collections ▾ Date and time 📅

Type ▾ Status ▾ Attachments ▾ Search 🔍

☐ All (4012)

| | Initiator ↓↑ | Recipient ↓↑ | Labels | Content |
|-------------------------------------|--------------|--------------|--------|--------------------|
| <input checked="" type="checkbox"/> | +48606163442 | 48788965736 | 1 📌 | Na telegramie prze |
| <input checked="" type="checkbox"/> | +48606163442 | 48788965736 | 1 📌 | Wchodzisz? |
| <input type="checkbox"/> | +48606163442 | 48788965736 | | Akcja dzisiaj? |
| <input type="checkbox"/> | +48606163442 | 48788965736 | | Ruda |
| <input type="checkbox"/> | a4LQTt5FZxs= | U5OQsS5t8Lw= | | |
| <input type="checkbox"/> | +48606163442 | 48788965736 | | Odezwę się |

Calendar

< Apr 2025 > 00:00:00 < May 2025 >

Mo Tu We Th Fr Sa Su

31 1 2 3 4 5 6

7 8 9 10 11 12 13

14 15 16 17 18 19 20

21 22 23 24 25 26 27

28 29 30 1 2 3 4

5 6 30 Apr 2025 11

28 29 30 1 2 3 4

5 6 30 Apr 2025 11

28 29 30 1 2 3 4

5 6 30 Apr 2025 11

Group calls or messages from a particular device

Conversations grouped by members

```
participantCount:>3 AND objectType:(CALL OR MESSAGE) AND deviceName:"Huawei NAM-LX9"
```


An example of AI tools – named entity recognition

Max Verstappen says it "was not a mistake" that he liked a comment on social media describing Red Bull's decision to demote Liam Lawson as "a panic move" and "close to bullying".

The remarks were made by Dutch former Formula 1 driver Giedo van der Garde, a friend of the Verstappen family, on Instagram, external after Red Bull moved New Zealander Lawson down to their second team Racing Bulls in a swap with Japan's Yuki Tsunoda just two races into the season.

Red Bull's Verstappen said: "I liked the comment, the text, so I guess that speaks for itself, right?"

- Country (2) ^
 - China (1)
 - Japan (1)
- City (1) ^
 - Suzuka (1)
- Organization (6) ^
 - Red Bull (8)
 - Racing Bulls (3)
 - BBC (2)
 - BBC Radio (1)
 - Ferrari (1)
 - Instagram (1)
- Person (15) ^
 - Lawson (10)
 - Tsunoda (6)
 - Verstappen (5)
 - Liam (2)
 - Max (1)
 - Max Verstappen (1)
 - Nico Hulkenberg (1)

Utilizing NLP AI tools to extract data

Example of named-entity recognition applied for text messages

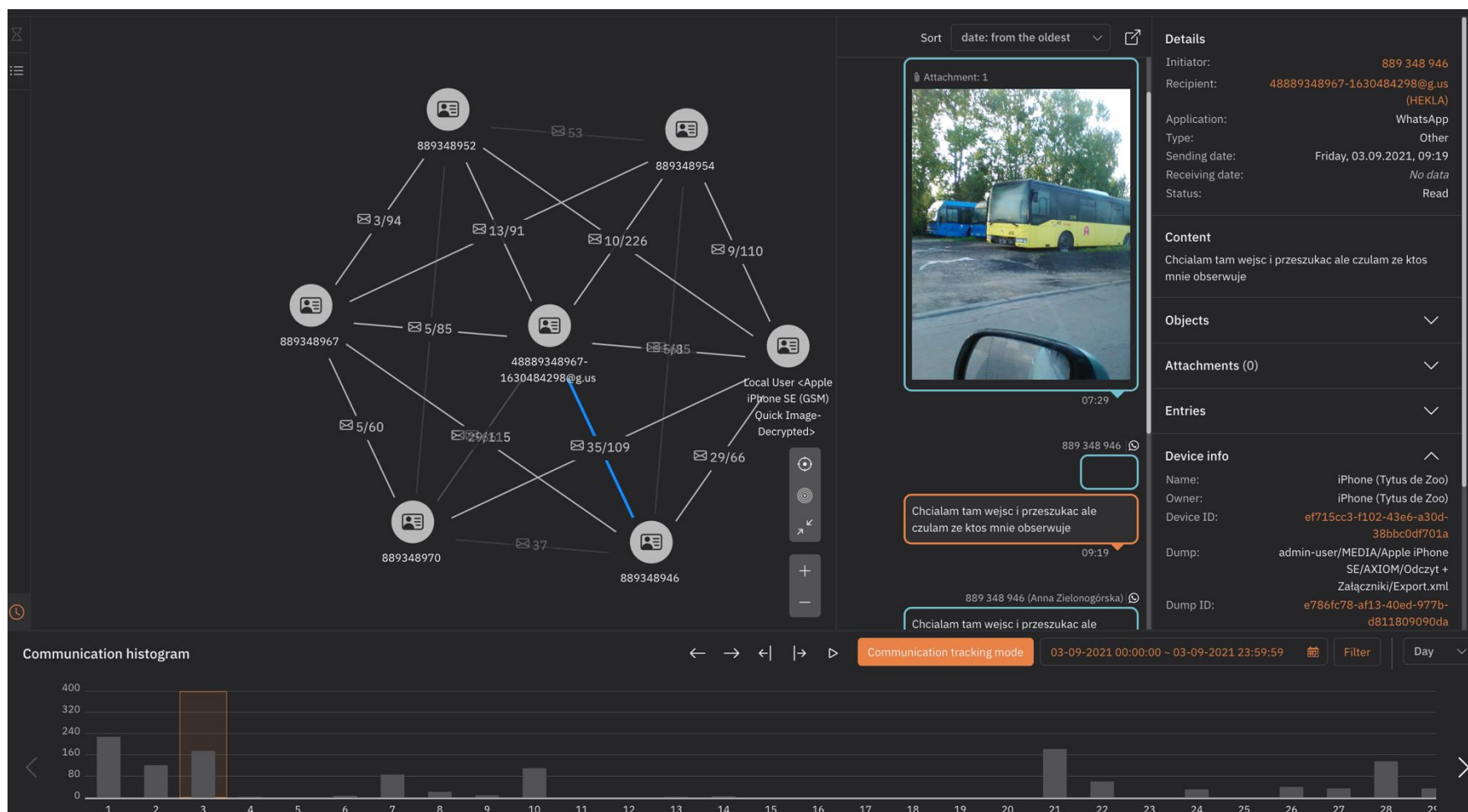
Messages

application:(VIBER || APPLE_RECENT_MESSAGING) AND nerCategory:PERSON

☐ All (52)

| | Initiator ↓↑ | Recipient ↓↑ | Labels | Content | Att |
|--------------------------|-----------------|---------------------|--------|---|-----|
| <input type="checkbox"/> | +48 606 163 418 | 48788965736 | | Właśnie Arni dzwonił | |
| <input type="checkbox"/> | +48606163442 | 5760566710418575854 | | Ruda zwijaj juz banknoty ! :D | |
| <input type="checkbox"/> | +48 606 163 433 | 5760566710418575854 | | Całość działań pod patronatem @Tytus de Zoo | |
| <input type="checkbox"/> | +48 606 163 433 | 5760566710418575854 | | Oleksandr zoorganizuje wóz | |
| <input type="checkbox"/> | +48606163442 | 5760566710418575854 | | Arni ogarnij sie:D | |
| <input type="checkbox"/> | +48 606 163 433 | 5760566710418575854 | | Tysz nie działa | |

Graph visualisation and exploration



Mobint

Case ▾

Analytical Objects ▾

←

→

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👤

Sprawa testowa

Data import

Reports

Devices ▾

Apple iPhone 7 Plus TD-LTE (A17...)

Apple iPhone X TD-LTE (A1901)

Google Pixel 4

Huawei NAM-LX9

Samsung SM-G960f Galaxy S9 T...

Analytical objects ▾

Contacts

Application accounts

Calls

Messages

E-mails

Files

🕒 Communication

👤 Identifiers

👤 Persons ▾

🏷️ Labels ▾

📁 Collections ▾

📊 Diagrams ▾

Sprawa testowa / Identifiers

Identifiers

☑ All (5668)

🏷️ 📁 📊 🕒 ⚙️ ⓘ

| Identifier ↕ | Labels | Type ↕ | Related applications ↕ | Related contacts ↕ | Related application accounts ↕ | Related devices ↕ | Calls ↕ |
|----------------------------|--------|--------------|------------------------|--------------------|--------------------------------|-------------------|---------|
| 5760566710418575854 | | User ID | 2 | 2 🔗 | 0 | 4 | 0 |
| 120363025763371827@g.us | | User ID | 2 | 2 🔗 | 0 | 4 | 0 |
| 48606163433@s.whatsapp.net | | User ID | 2 | 6 🔗 | 1 🔗 | 4 | 16 ✓ |
| 48788965736@s.whatsapp.net | | User ID | 2 | 5 🔗 | 1 🔗 | 4 | 24 ✓ |
| 48606163431@s.whatsapp.net | | User ID | 2 | 7 🔗 | 0 | 4 | 15 ✓ |
| Unknown | | User ID | 3 | 0 | 0 | 4 | 0 |
| 788 965 736 | | Phone number | 7 | 22 🔗 | 2 🔗 | 4 | 261 ✓ |
| 788 965 734 | | Phone number | 7 | 20 🔗 | 0 | 4 | 81 ✓ |
| 606 163 431 | | Phone number | 7 | 25 🔗 | 0 | 4 | 125 ✓ |
| 48788965736 | | User ID | 1 | 0 | 1 🔗 | 1 | 0 |
| +48 606 163 431 | | User ID | 1 | 0 | 0 | 1 | 0 |
| 606 163 433 | | Phone number | 10 | 20 🔗 | 7 🔗 | 4 | 155 ✓ |
| 7153169422684128261 | | User ID | 1 | 2 🔗 | 1 🔗 | 4 | 0 |
| 48606163442@s.whatsapp.net | | User ID | 2 | 6 🔗 | 1 🔗 | 4 | 12 ✓ |
| 48606163418@s.whatsapp.net | | User ID | 2 | 8 🔗 | 0 | 4 | 12 ✓ |
| +48606163431 | | User ID | 3 | 4 🔗 | 0 | 3 | 0 |
| Yc01751nAk4= | | User ID | 1 | 2 🔗 | 0 | 2 | 6 ✓ |
| U5OQsS5t8Lw= | | User ID | 1 | 1 🔗 | 1 🔗 | 2 | 9 ✓ |
| 48788965734@s.whatsapp.net | | User ID | 2 | 4 🔗 | 0 | 4 | 7 ✓ |

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Go to page:

Show:



Where we **are**? Where we **go**?

- Work in progress
 - any contacts and ideas appreciated
- Future work
 - extraction data from various **document types**
 - extending **AI tools** especially to analyse multimedia files and text extraction
 - applying **social network analysis metrics** to extract actors of communication (based on graph model)



Thank you for your attention!

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