

A close-up photograph of a black panther's face, focusing on its right eye which is glowing with a bright yellow light. The panther's fur is dark and textured, and its whiskers are visible in the lower part of the frame.

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Siemens Intelligence Platform

Non contractual; Commercial in confidence; Subject to change without notice

Agenda



- } Challenges
- } Requirements
- } Intelligence Tools
- } System Aspects
- } Summary

Non contractual; Commercial in confidence; Subject to change without notice

Did you ever wonder ...

➤ If the person flying into your country at a particular date every month is visiting his company's headquarters?

\ **but the date sometimes falls on a weekend...**

➤ If the irregular high banking transaction of a certain person is related to an inheritance from his just passed away mother?

\ **or from the art theft last week...**

➤ **Sure, you are able to answer these questions**

But do you have

- the time ?
- the staff to follow every seemingly unimportant hint ?

How do you cope with

» ... vague subscriber identities

- Variety of pre-paid SIM cards for mobile phones
- Internet access from differing public locations
- Nomadic use of VoIP phones
- Variety of anonymous log-in identities

» ... undetermined operator LI responsibilities

- Soft switch and payload via separate operators
- Peer-to-peer communication

Imagine ...

» ... to get a report within minutes:

- Track all major contact persons of the main militant group in the country using this data sources:
 - E-mail, Fax, SMS
 - Phone calls
 - Bank transfer data
 - Flight booking details
 - Credit Card records
- Identify new suspicious persons and organisations regarding money laundering.
- Which suspect person or group shows a different behaviour today compared with the normal behaviour?



***How can I find the
needle in the haystack?***

... or at least make the haystack considerably smaller?

Requirements



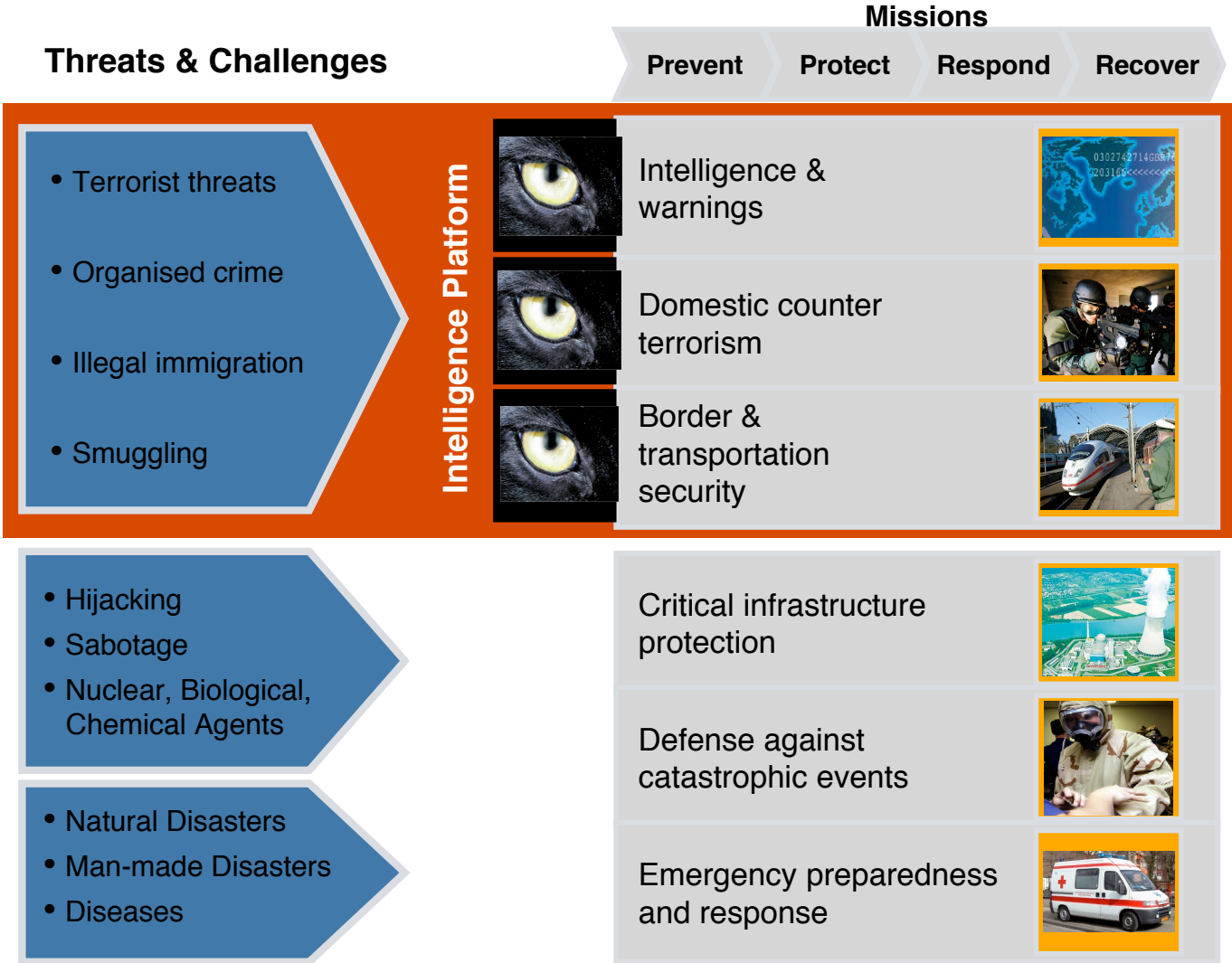
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The Intelligence Platform in the context of Homeland Security



Non contractual; Commercial in confidence; Subject to change without notice

Customer Requirements ...

Fact

Law Enforcement and Government authorities are drowning in huge amounts of disparate data

Challenge

To extract intelligence from this data and produce usable information

Task

To provide a system that can connect to all available data sources to generate comprehensive profiles of persons, groups, or entities

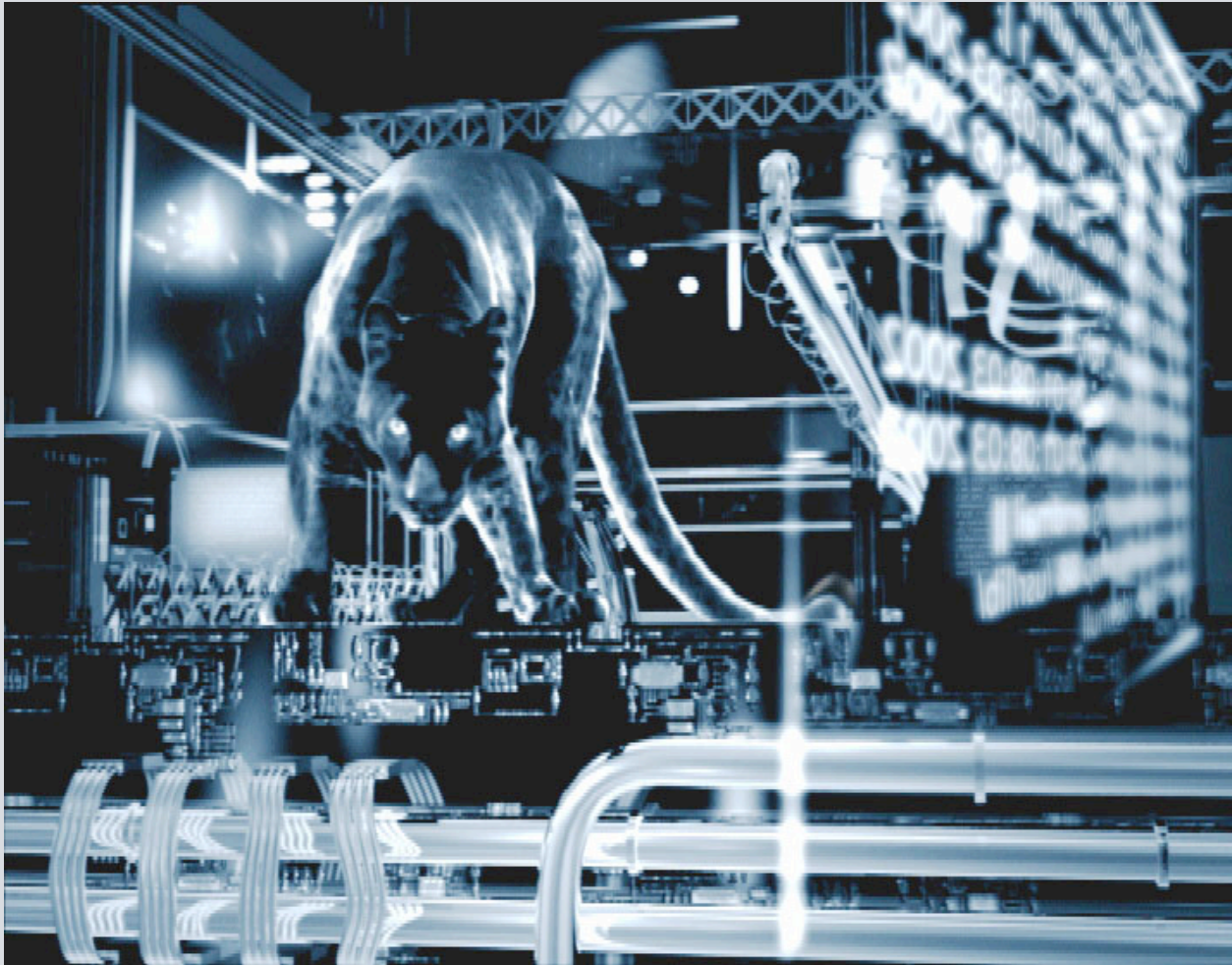
in TIME

The Intelligence Platform Design principle

- **The Siemens Intelligence Platform is designed for organisations related to**
- Law Enforcement
 - Government
 - Other investigative organisations

- **To support their task in the fields of**
- Intelligent Analysis
 - Case Management
 - Forensics

Intelligence Tools



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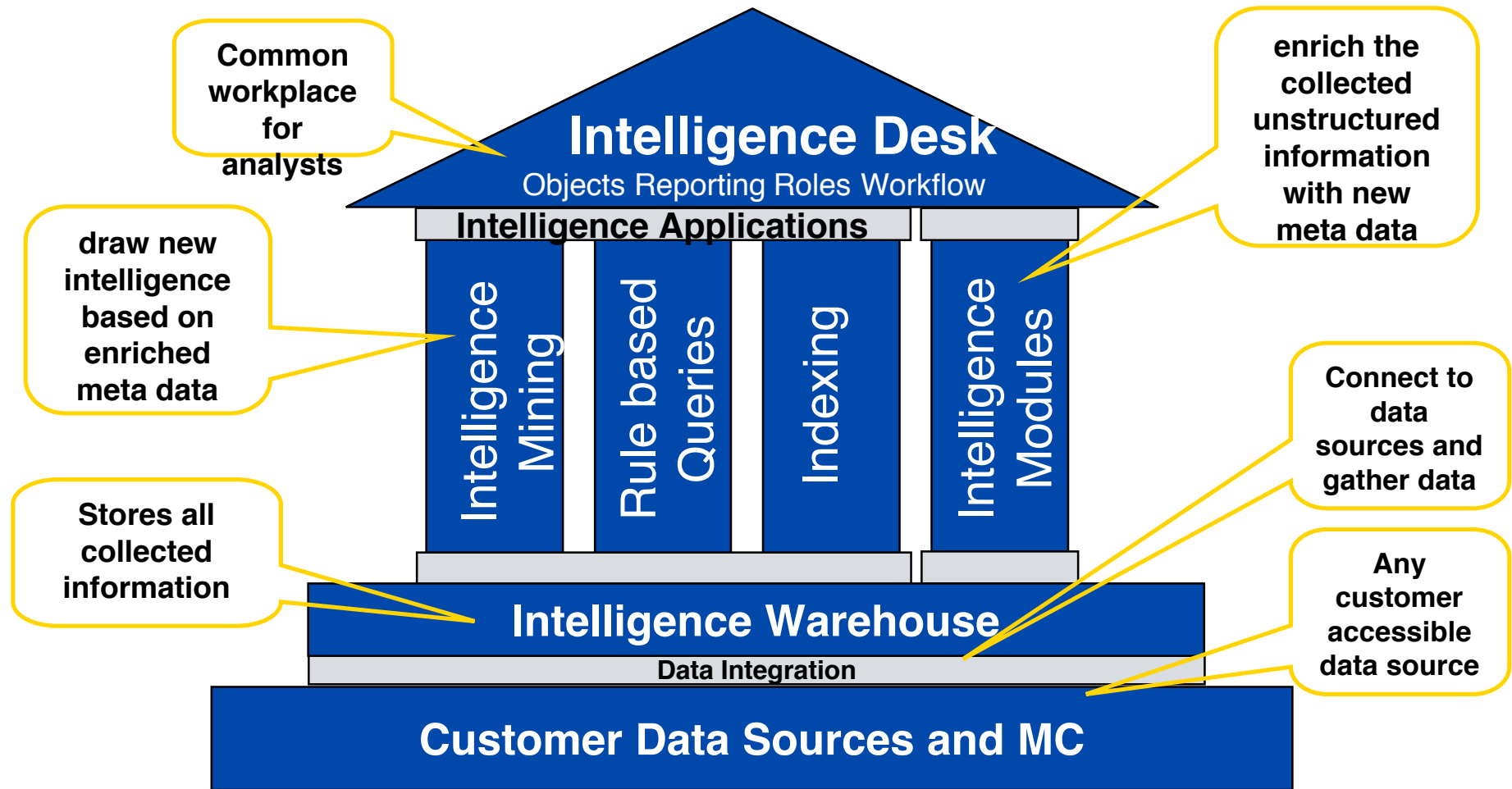
Market Positioning

- Main goal: Creating new intelligence
- User: Intelligence Officers and Analysts
- Customising and service are substantial parts of the offer
- Parallel product line to the Siemens Monitoring Center

Your Solution – The Intelligence Platform

- Integrate data from many different sources
- Structure unstructured data (files) by deploying Indexing and Intelligence Modules
- Create new intelligence using sophisticated Intelligence Applications
- Processing of mass data to enable comprehensive investigations
- Object oriented handling (e.g. targets, cases)
- One desktop for all applications

Intelligence Platform System Architecture



Data Integration

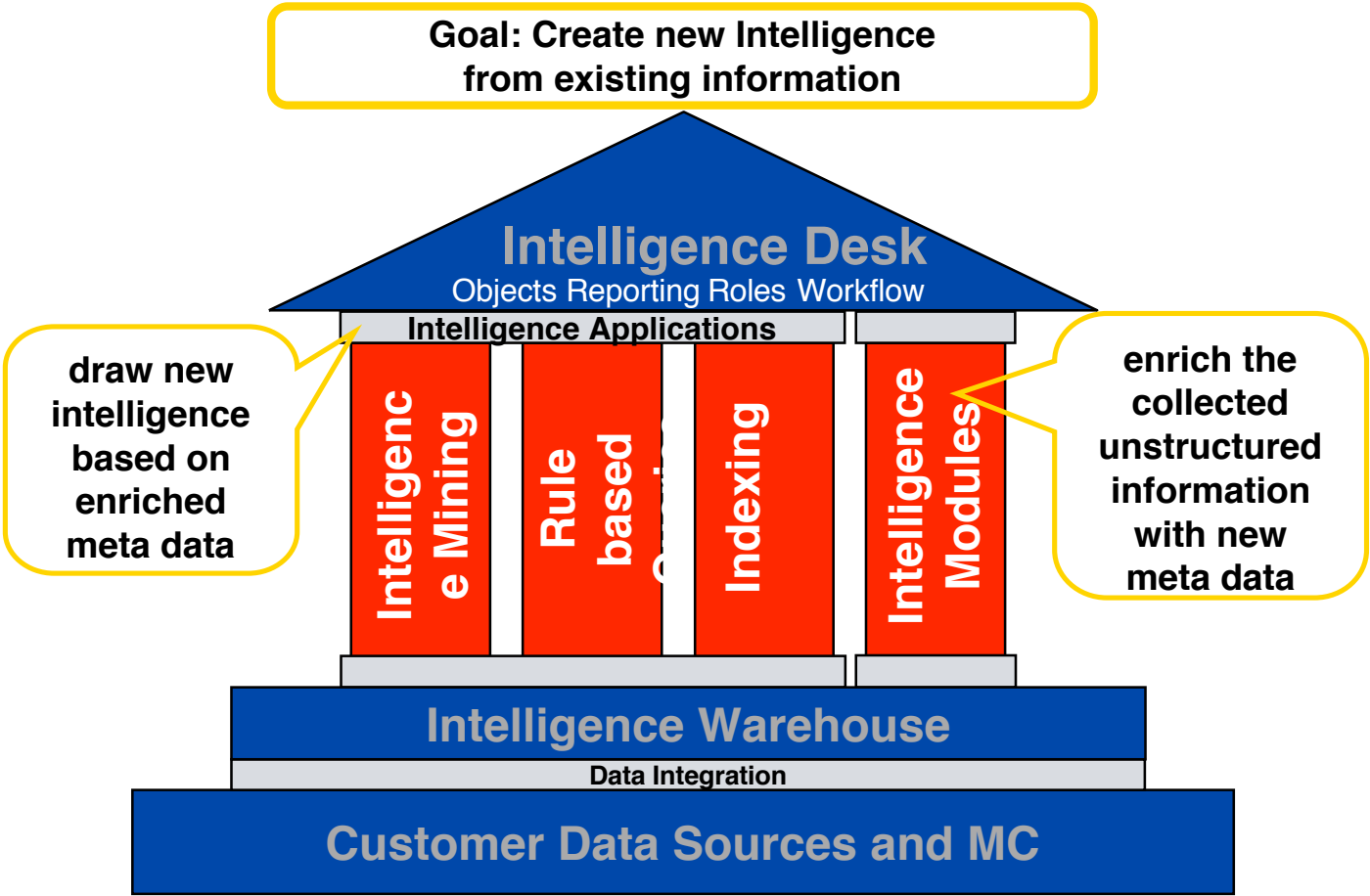
Examples of Data Sources

- Siemens Monitoring Center
 - Data Retention Systems
 - Telephone book data bases
 - Telephone billing records
 - Internet Protocol Address GIS
 - Police and criminal records
 - Driving Licence register
 - Traffic control points
 - Vehicle registration data base
 - Credit card transactions
- Bank account transactions
 - Insurance company data bases
 - Border Control data base
 - Passport data base
 - Finger print data base
 - DNA analysis data base
 - Registry office records
 - Land registry data base
 - Car rental data base
 - Any other data base which contain relevant data

Intelligence Warehouse

- The Intelligence Warehouse stores all collected operational data
 - Database
 - File Storage System
- Data can be entered in different ways
 - Imported by Data Integration
 - Created by Intelligence Applications or Intelligence Modules
 - Manually entered by the Analyst
- Data stored can be accessed, processed, and viewed from the Intelligence Desk

Intelligence Applications and Modules



Intelligence Applications Overview

- Intelligence Mining
 - Pattern Recognition
 - Pattern Profiling
 - Link Analysis
- Rule Based Queries
- Indexing
 - Full Text Indexing and Retrieval
 - Named Entity Extraction

Intelligence Applications

Intelligence Mining: Pattern Recognition

> What is it?

- Detects automatically all reoccurring patterns meeting certain criteria

> How does it work?

- Define the objects and links (relations)
- Set
 - time frame in which patterns occur
 - minimum occurrence count
- Data Source: Intelligence Warehouse

Intelligence Applications

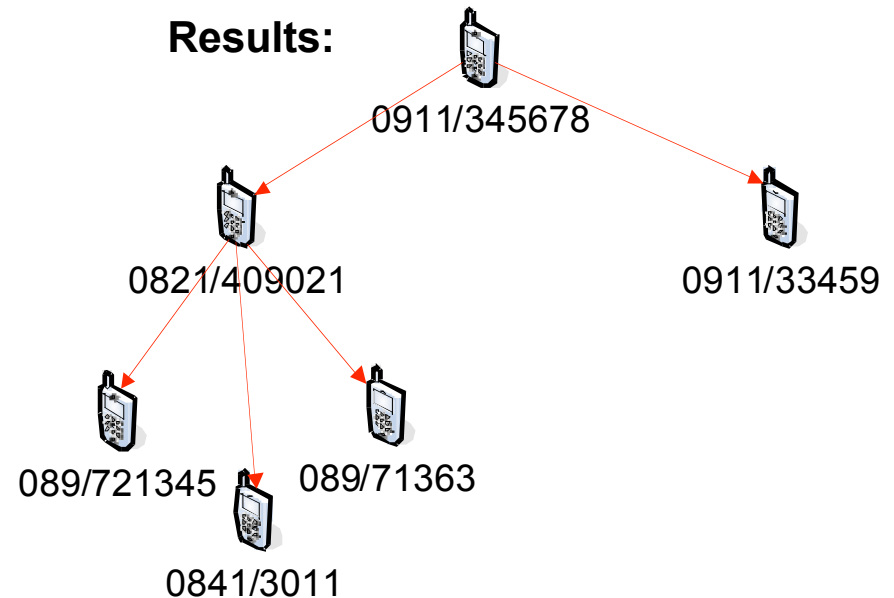
Intelligence Mining: Pattern Recognition - Example

Example Task:

- Search for suspicious patterns in 21,237,645 call records

Criteria:

- Time frame: 1 hour
- Minimum count: 5



Additional Examples

- money transfers between bank accounts
- geographical movements of targets

Intelligence Applications

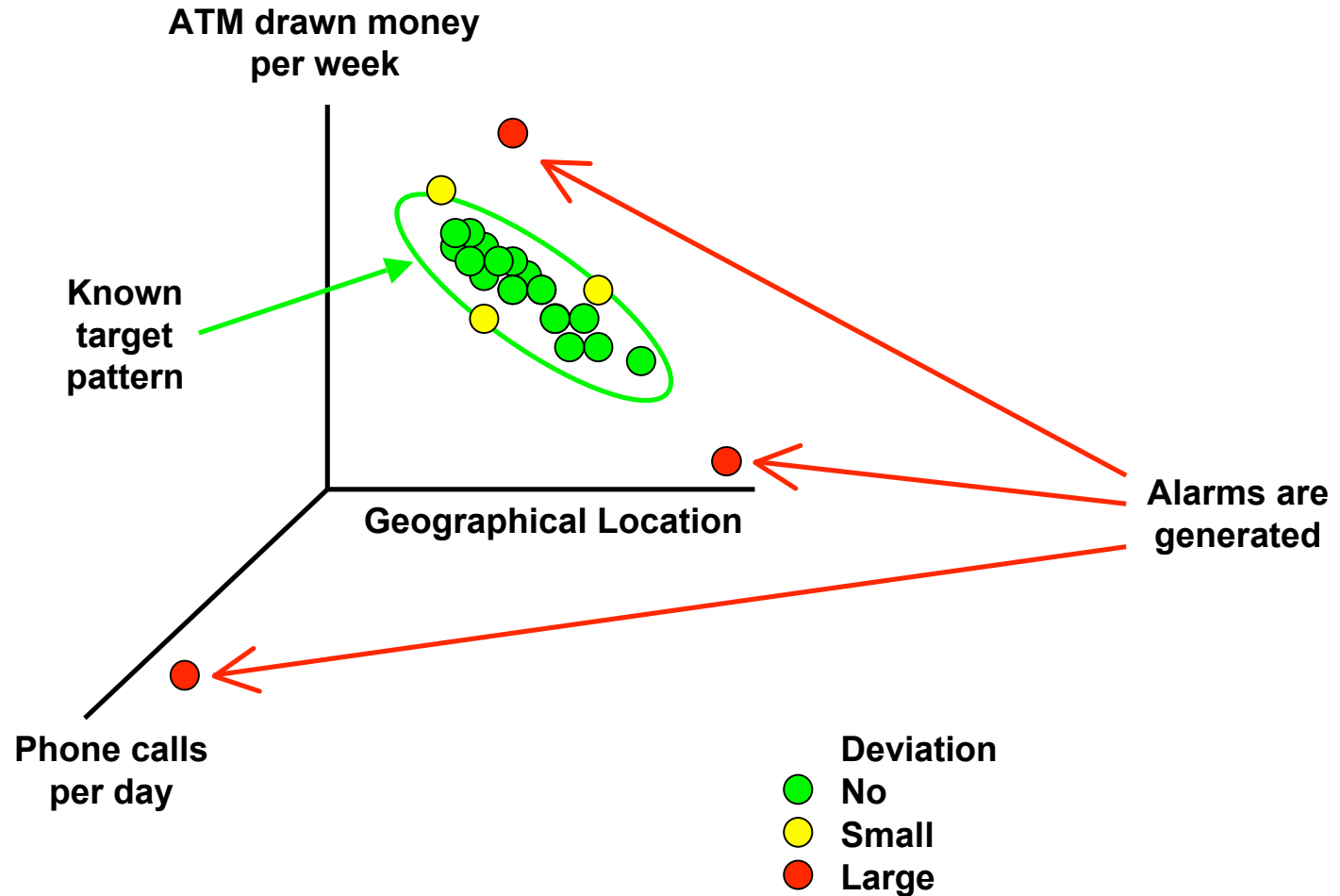
Intelligence Mining: Pattern Profiling

Principle:

- Pattern Profiling includes patterns with
 - behavior
 - communication
 - movement
 - relationship
- A target usually has its individual behavior which only changes slowly over time
- Sudden changes in target behavior
 - Generates an alarm
 - Draws the analyst's attention

Intelligence Applications

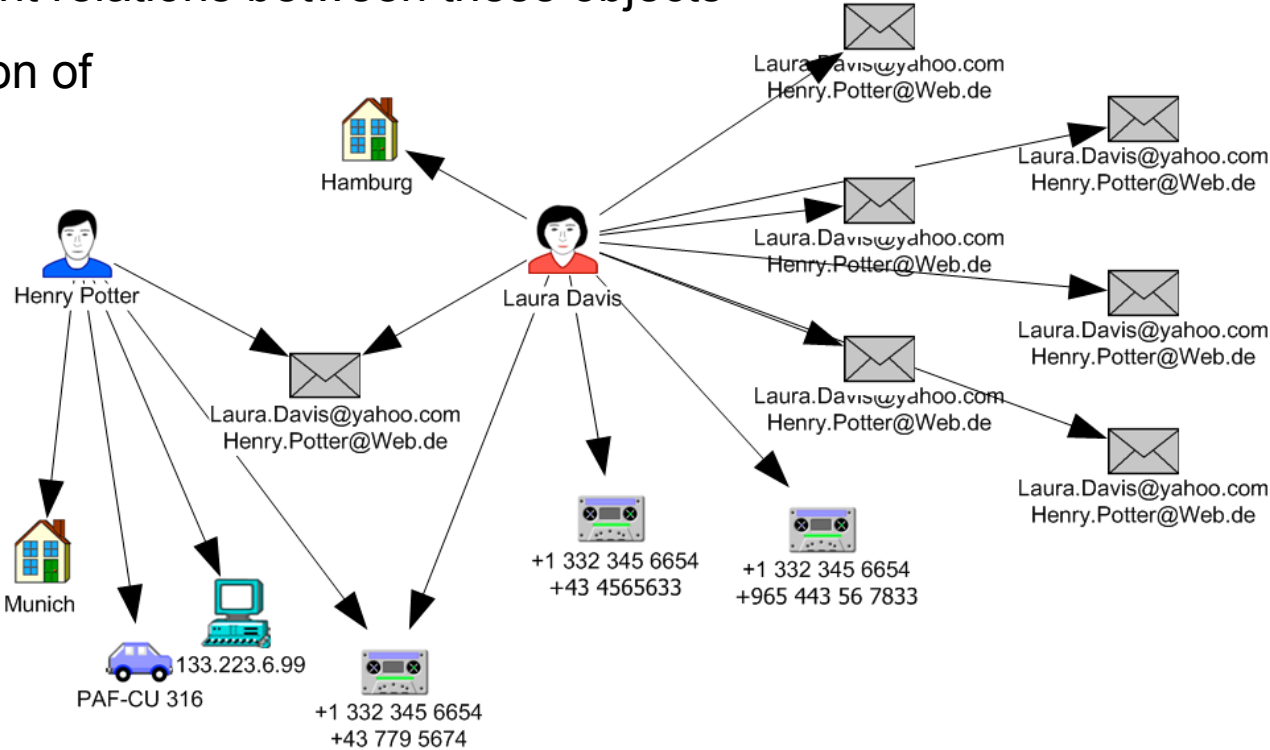
Intelligence Mining: Pattern Profiling - Example



Intelligence Applications

Intelligence Mining: Link Analysis

- The nodes represent any kind of object available in the database
- The links represent relations between these objects
- Display the relation of any information



Intelligence Applications

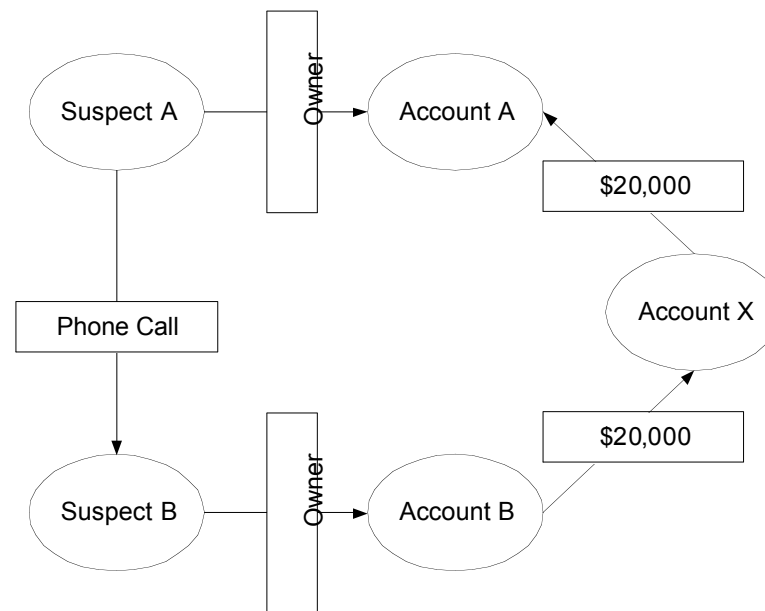
Rule Based Queries

- To construct complex database queries without database knowledge
- The analyst constructs a semi-graphical model of the query
- The system retrieves all instances from the database that fulfil the Rule

Example:

Search the database for all occurrences where two suspects

- a) are communicating via phone calls
- b) use a bank account to transfer money via a third party



Intelligence Applications

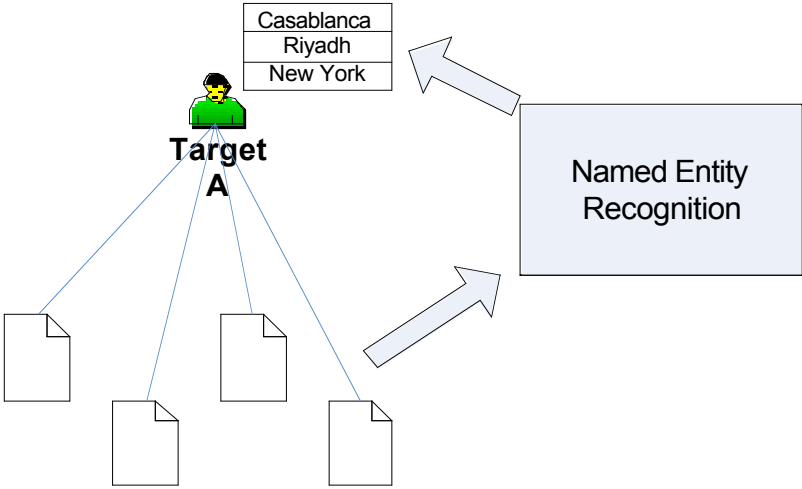
Indexing: Full Text Indexing and Retrieval

- Indexing is performed on all sorts of text documents, like
 - Web pages
 - Word documents, Transcripts
 - Emails, SMS, Chat protocolsas well as on data base records in general
- The Indexing process constantly runs in the background
- The analyst can quickly search in a Google-like manner for words or phrases
- Typical response time < 1 sec

Intelligence Applications

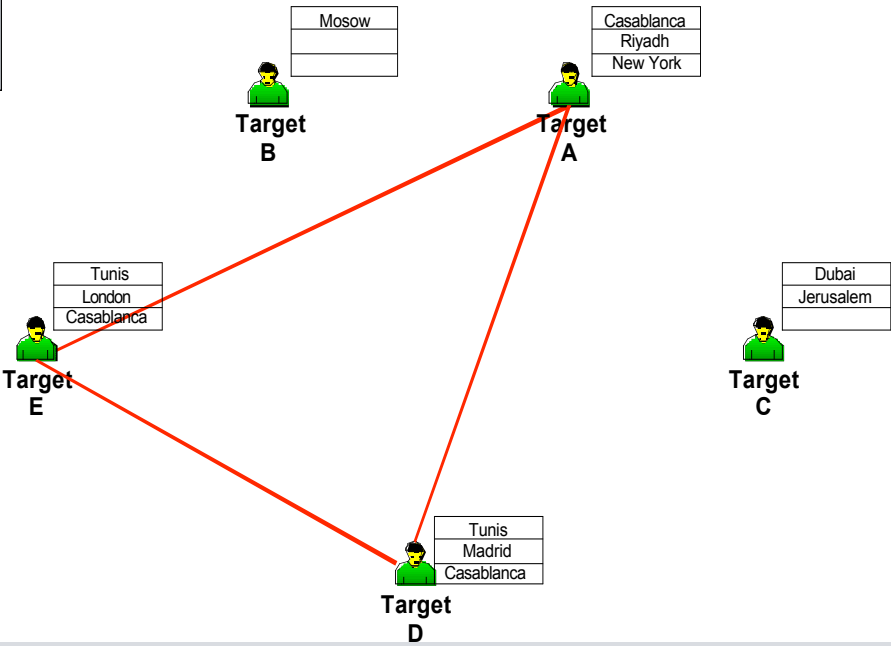
Indexing: Named Entity Extraction - Example

Task: Find targets sharing a name of a geographical place



Criteria:

- Detection of geographical places
- Target A gets associated with Casablanca, Riyadh and New York.



Results:
Targets A, D, and E
share the city name "Casablanca"

Intelligence Modules Overview

Voice Domain

- Speaker Recognition
- Language Recognition
- Word & Phrase spotting
- Topic Spotting
- Emotion detection
- Automatic Transcription

Text Domain

- Topic Spotting
- Language Detection
- Optical Character Recognition
- Automatic Translation

Image Domain

- Image Recognition (Images/Pictures/Logotypes)
- Video Recognition

An Intelligence Module runs in the background and enriches existing raw information with new intelligence

Intelligence Modules

Topic Spotting in the text domain

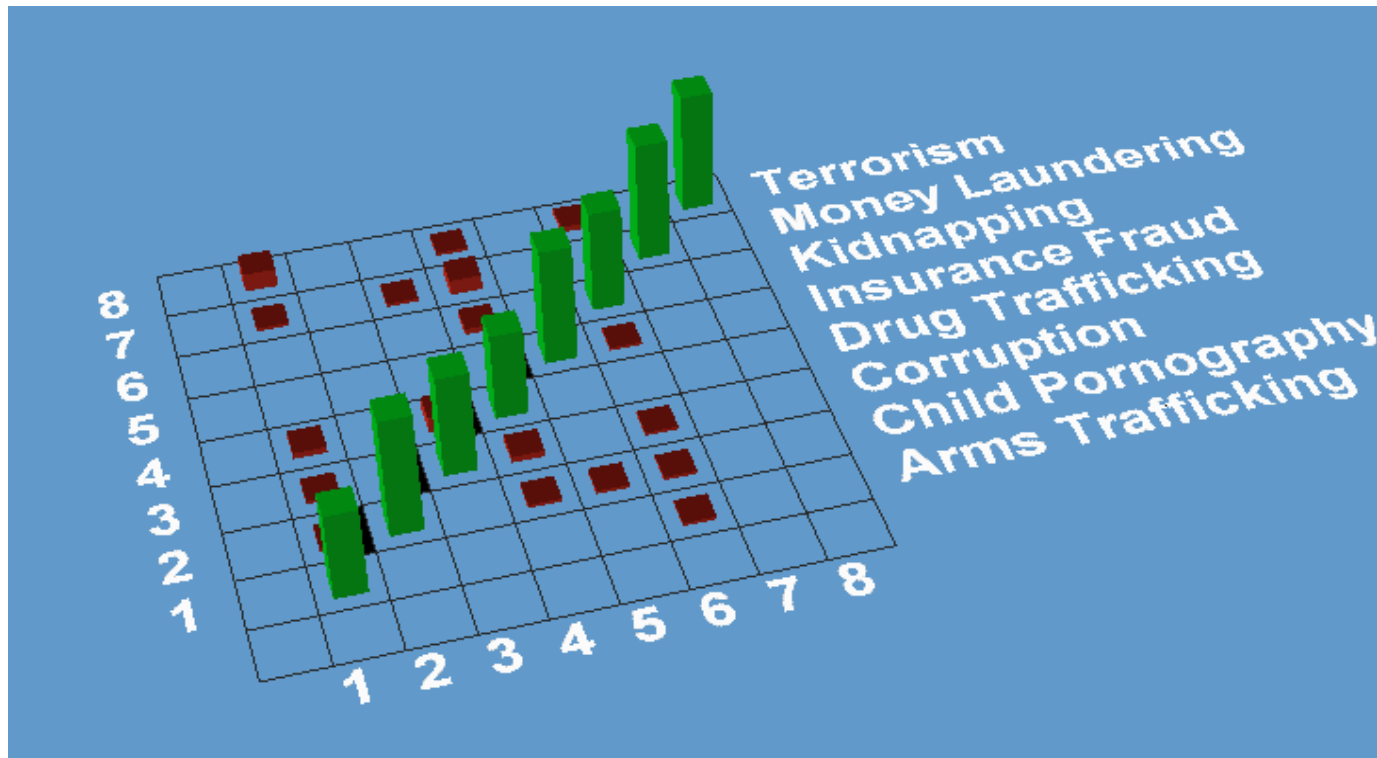
» How does it work?

- The Analyst defines a number of topics, e.g.:
 - Drug Trafficking
 - Corruption
 - Money Laundering
 - Kidnapping
- The analyst provides sample documents containing typical contents for each topic
- The Intelligence Module is trained on the samples
- After training the Intelligence Module classifies documents with unknown contents according to the trained classes
- Topic Spotting is language independent

Intelligence Modules

Topic Spotting – Text example

Typical Topic Spotting result (accuracy ~90%)

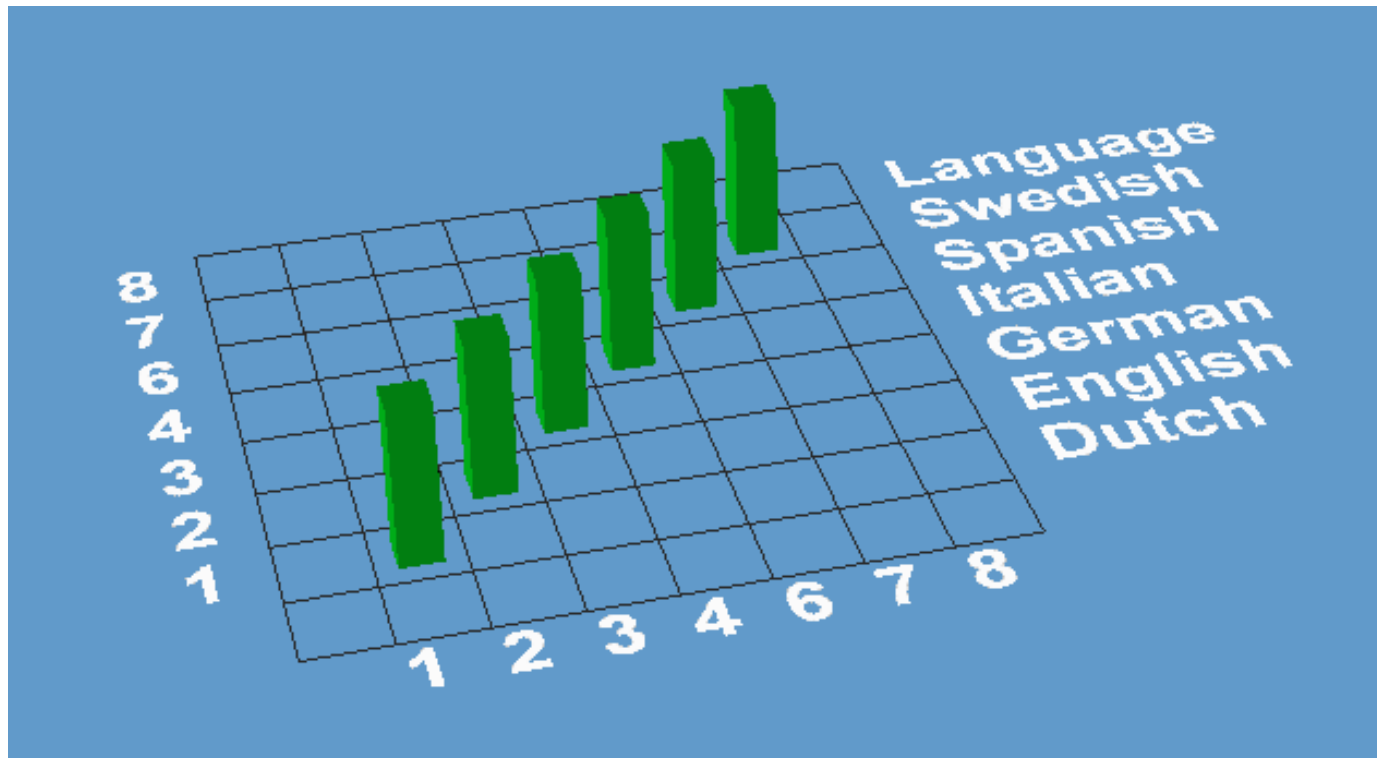


Intelligence Modules

Language Detection – Text example

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Topic Spotting applied to language detection (accuracy = 100%)



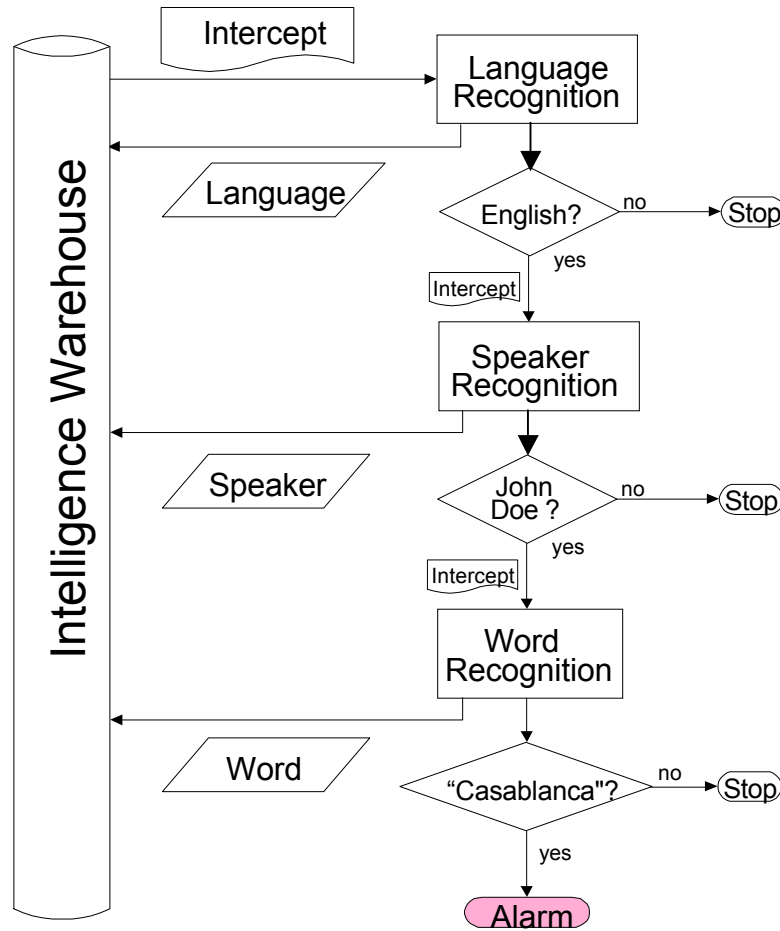
Intelligence Modules Process Management

➤ **Task:** Process an input file with a number of different Intelligence Modules according to a user defined workflow

- Default processes
- Analysts can graphically design processes on their own

➤ **Goal:** To enable automated analysis processes

Intelligence Modules Process Management - Example



Results:
 Alarm only if "John Doe"
 speaks English and
 mentions the word
 "Casablanca"

Intelligence Desk Overview

- Common workplace for the analyst to support
 - Planning and Direction
 - Analysis and Production
 - Disseminationwithin the Intelligence Cycle
- Integration of the different Intelligence Applications and Modules
 - Configuration
- Visualisation
- Customer and investigation specific reporting

Intelligence Desk Concept

- The Intelligence Platform is based on an **object oriented** concept

Object types - examples:

- Target
 - Telephone number
 - Car licence number
 - Bank account number
 - Civic registration number
 - Date and Time
-
- In each object the user can **drill down** to get the properties of the object, e.g.
 - Target
 - Telephone number, email address
 - Associated objects

Intelligence Desk Views & Roles

➤ Views

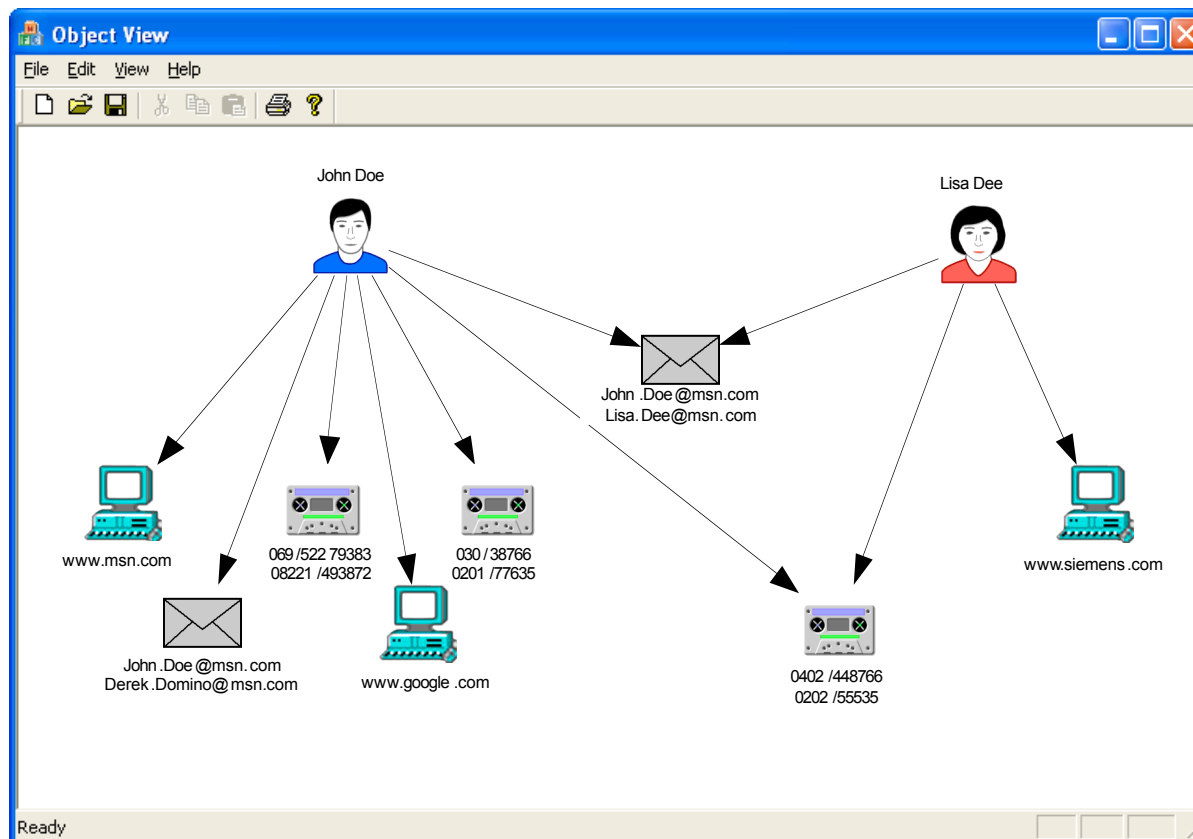
- Structured View, similar to Windows Explorer
- Object View
 - Targets
 - Attributes
 - Communications
- Analysis View
 - Intelligence Applications
 - Intelligence Modules
 - Process Management

➤ Roles & Security

- Analyst, Investigator (restricted access)
- Supervisor (defined access)
- Administrator (contents not accessible)

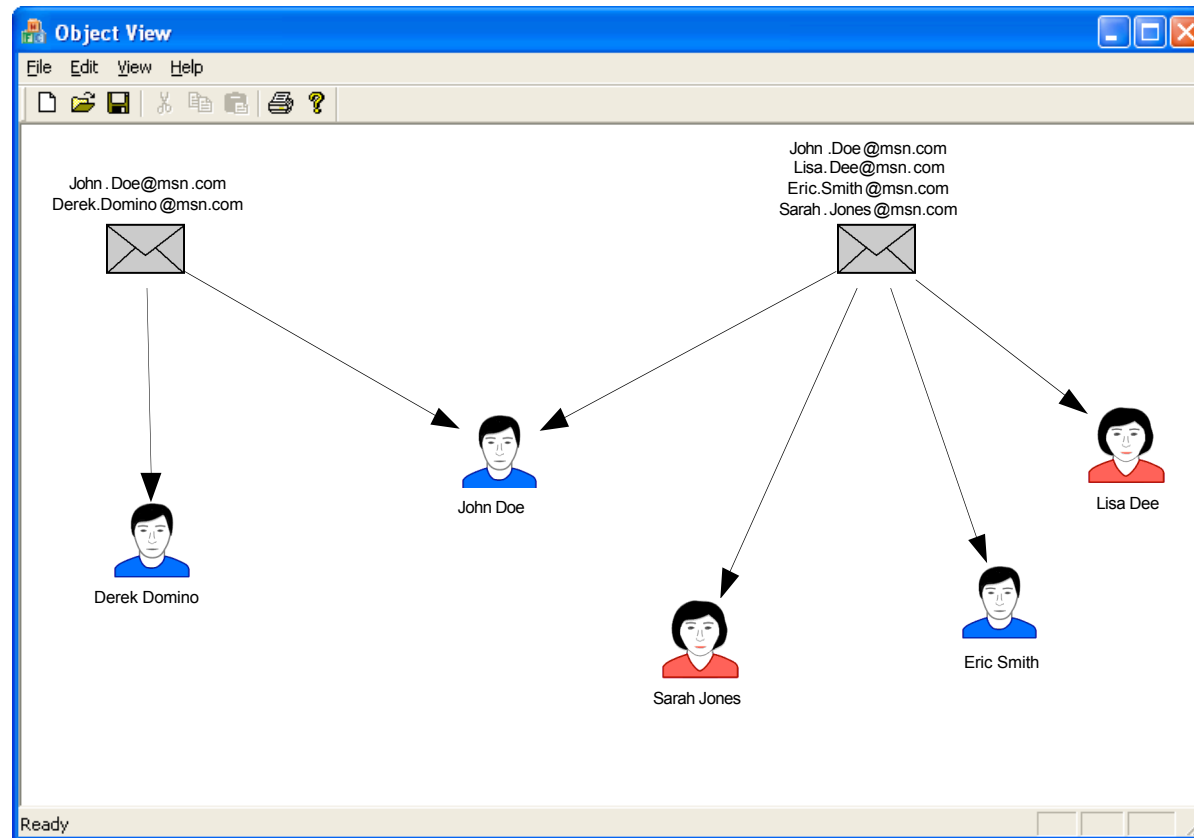
**World-wide
best-in-class
Security**

Intelligence Desk Object Views – Target centric



Intelligence Desk

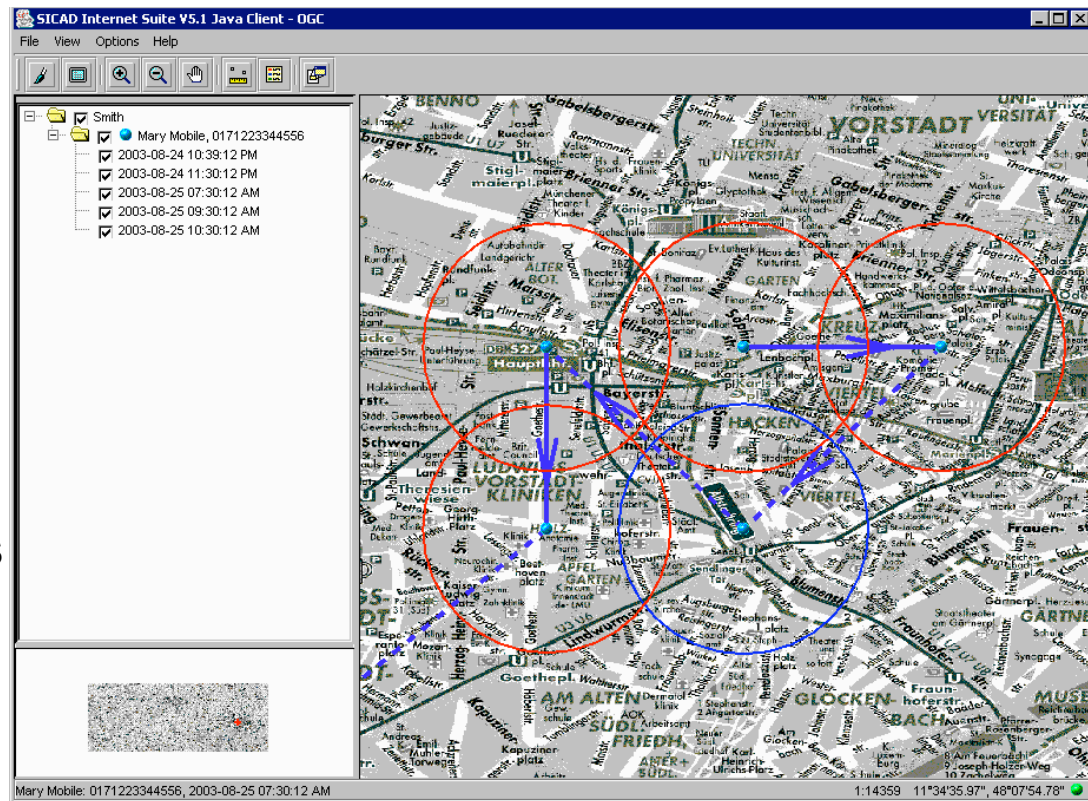
Object Views – Email centric



Intelligence Desk Location Tracking - GIS

Geographical view is applicable to any objects for which location information is available, e.g.

- Vehicle tracking using Toll Road Systems
- Location information of ATM machines
- Mobile phone tracking
- Geographical IP address mapping of nomadic targets
- Information provided by surveillance teams



Intelligence Desk Workflow Management

The Workflow Management supports the customer to comply with standardised procedures:

- The customer's operational processes are reflected within this system
- Collaboration functions enable efficient teamwork
- National and legal restrictions can be depicted within the Workflow

Intelligence Desk Reporting - Dissemination

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Comprehensive reporting function

- Based on templates
- Templates are customised depending on specific requirements
- Mixed content: Charts, tables, plain text, structured text
- Various output formats, e.g. Word, Acrobat Reader, Excel

Statistics

The Intelligence Platform constantly maintains different kinds of statistics. These include

- Workload of the Intelligence Applications and Modules
- Workload of database and data storage
- Health information of the Intelligence Applications and Modules
- Operator statistics per role, user, tool usage etc.

System Aspects



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Intelligence Platform Architecture

Scalability: The system can operate as a

- “Mini-Sized” entry system as well as with
- Data Center dimensions processing mass data (TB)

Redundancy: Avoid single points of failure

Dislocation: Remote access possible

Modularity: Basic Platform System - with optional extensions
Intelligence Modules
Intelligence Applications

Modularity



Basic System

- Intelligence Warehouse
- Data Integration
- Intelligence Desk
- Basic set of Intelligence Applications
- Basic set of Intelligence Modules



Optional components

- Additional Intelligence Applications
- Additional Intelligence Modules
- Workflow Management

Customisation

- End-to-end solution provided by Siemens
- High customisation level of
 - Interfaces
 - Templates (e.g. Reports)
 - Workflow
- Service agreements for
 - Regular upgrades
 - Integration of Customer Data Sources
 - Template modifications

Summary



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Intelligence Platform Advantages

Operational

- Reduced manpower, reduced operating costs
- Harmonise Homeland Security information
- Instant customized reports, e.g. “Daily Status”

Process

- Automated supervision of target behaviour
- Don't miss any part of information, e.g. Dragnet Investigations

Analysis

- Comprehensive identification of former unknown suspects
- Very fast results

Fact & Objective

End-to-end Lawful Interception solutions – only from Siemens

**Making the world safer
... with trend-setting intelligence solutions**

Thank you for your attention

