SIEMENS

Siemens Intelligence Platform

ISS Dubai – Feb 26th, 2007

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

Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Agenda

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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 ?

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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?

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

How can I find the needle in the haystack?

… or at least make the haystack considerably smaller?

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

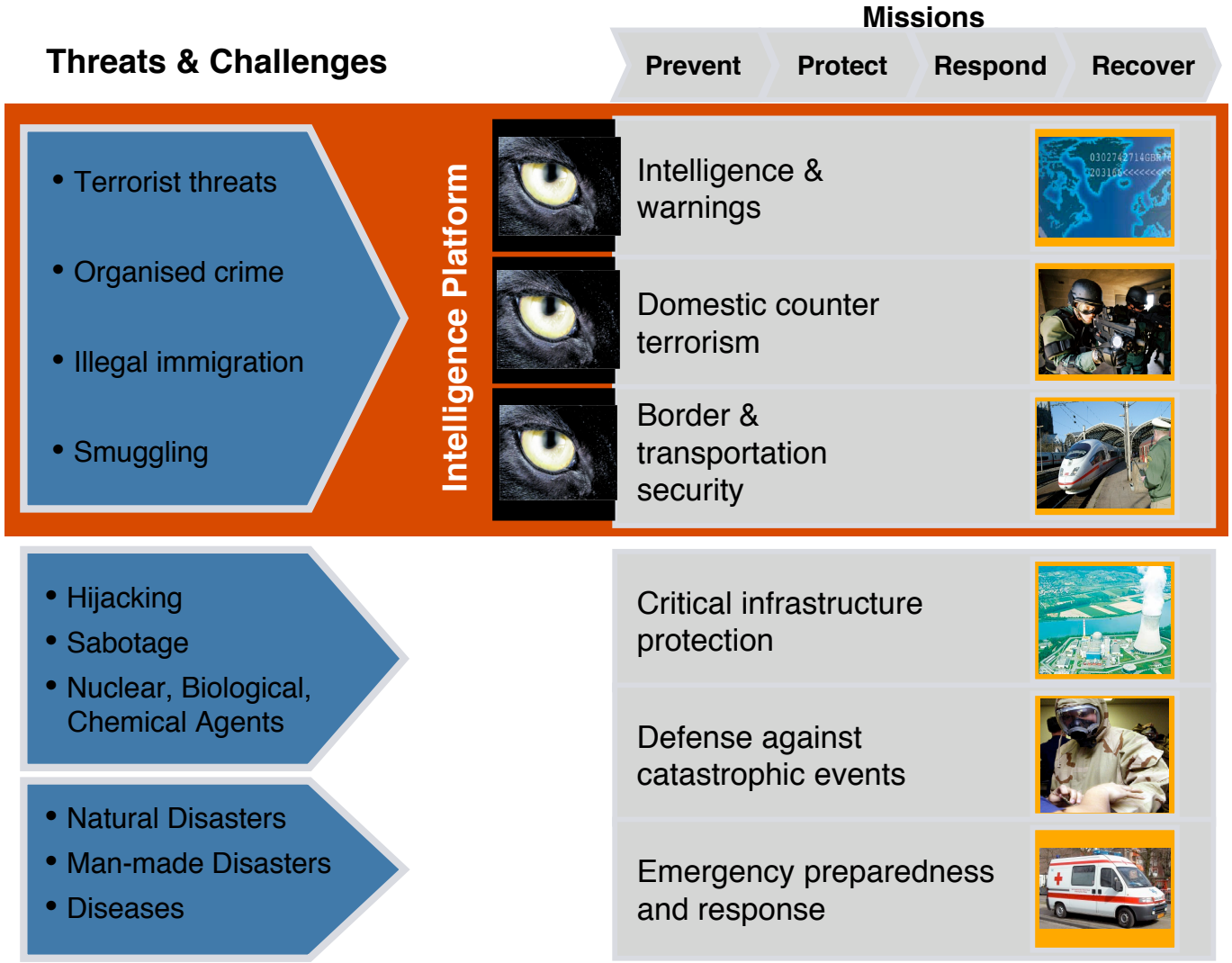
Requirements

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

The Intelligence Platform in the context of Homeland Security

SIEMENS



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

The Intelligence Platform
Design principle

SIEMENS

The Siemens Intelligence Platform is designed for organisations related to

- Law Enforcement
- Government
- Other investigative organisations

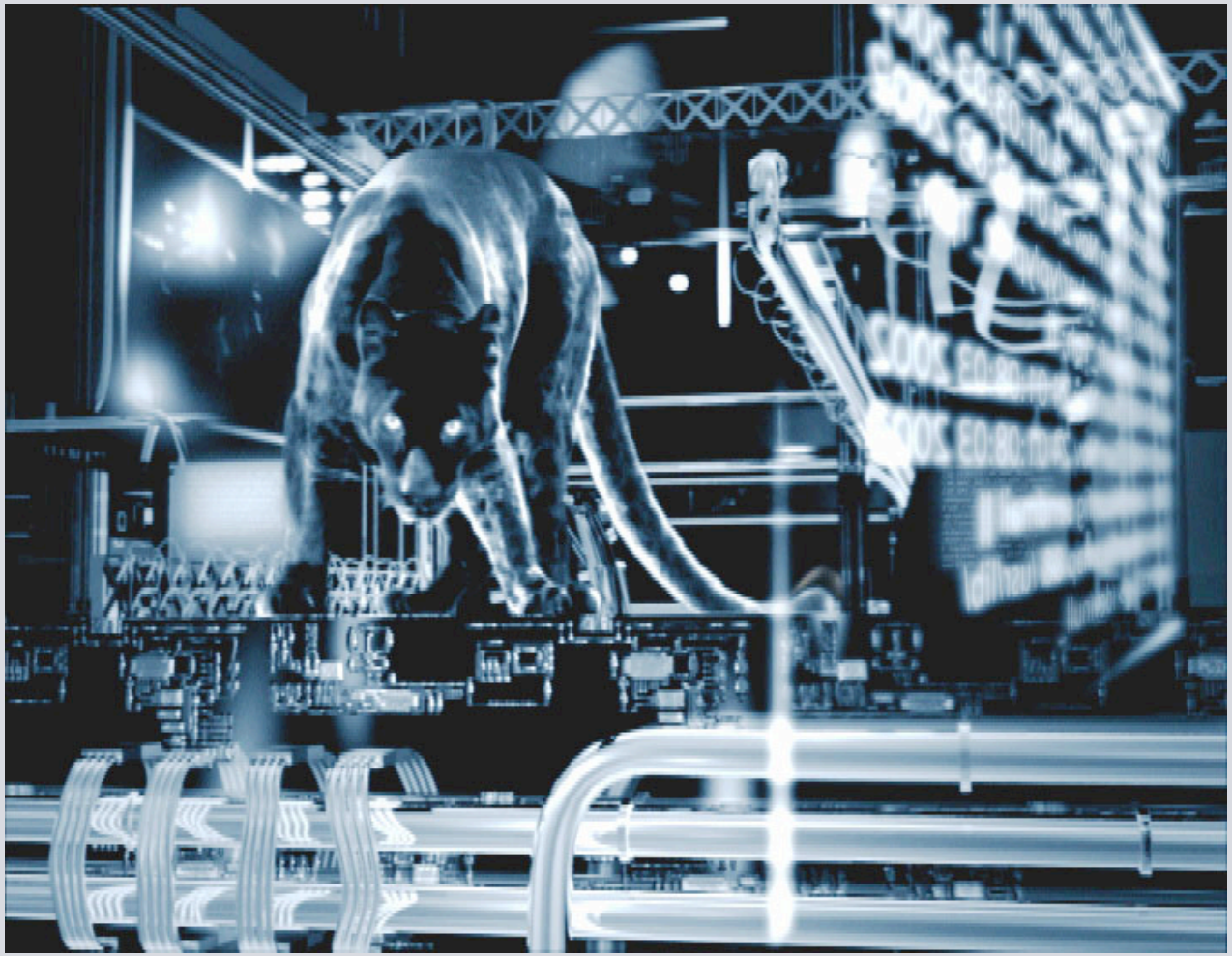
To support their task in the fields of

- Intelligent Analysis
- Case Management
- Forensics

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Intelligence Tools



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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Your Solution –
The Intelligence Platform

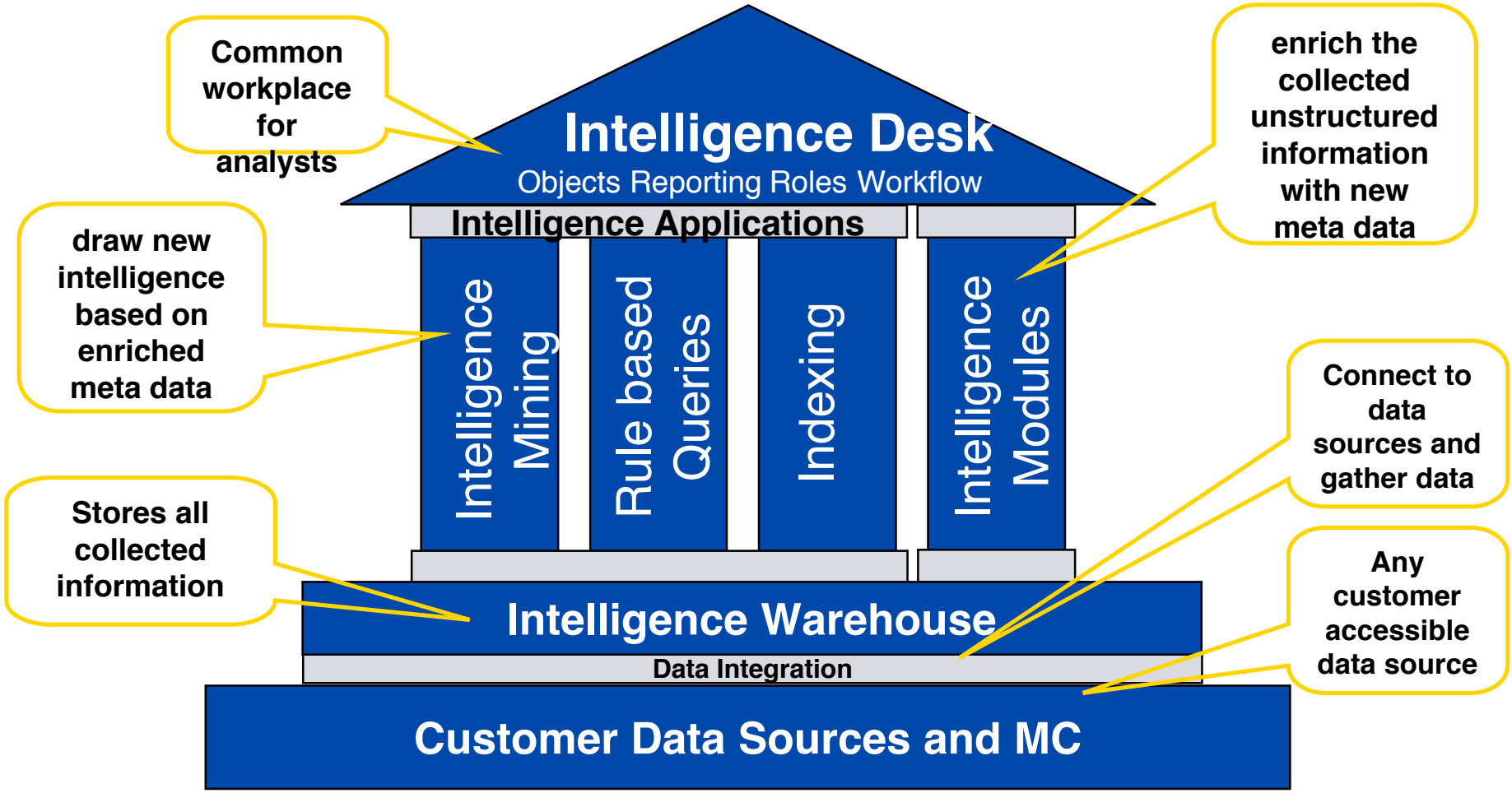
SIEMENS

- 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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Platform System Architecture

SIEMENS



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Data Integration
Examples of Data Sources

SIEMENS

- 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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

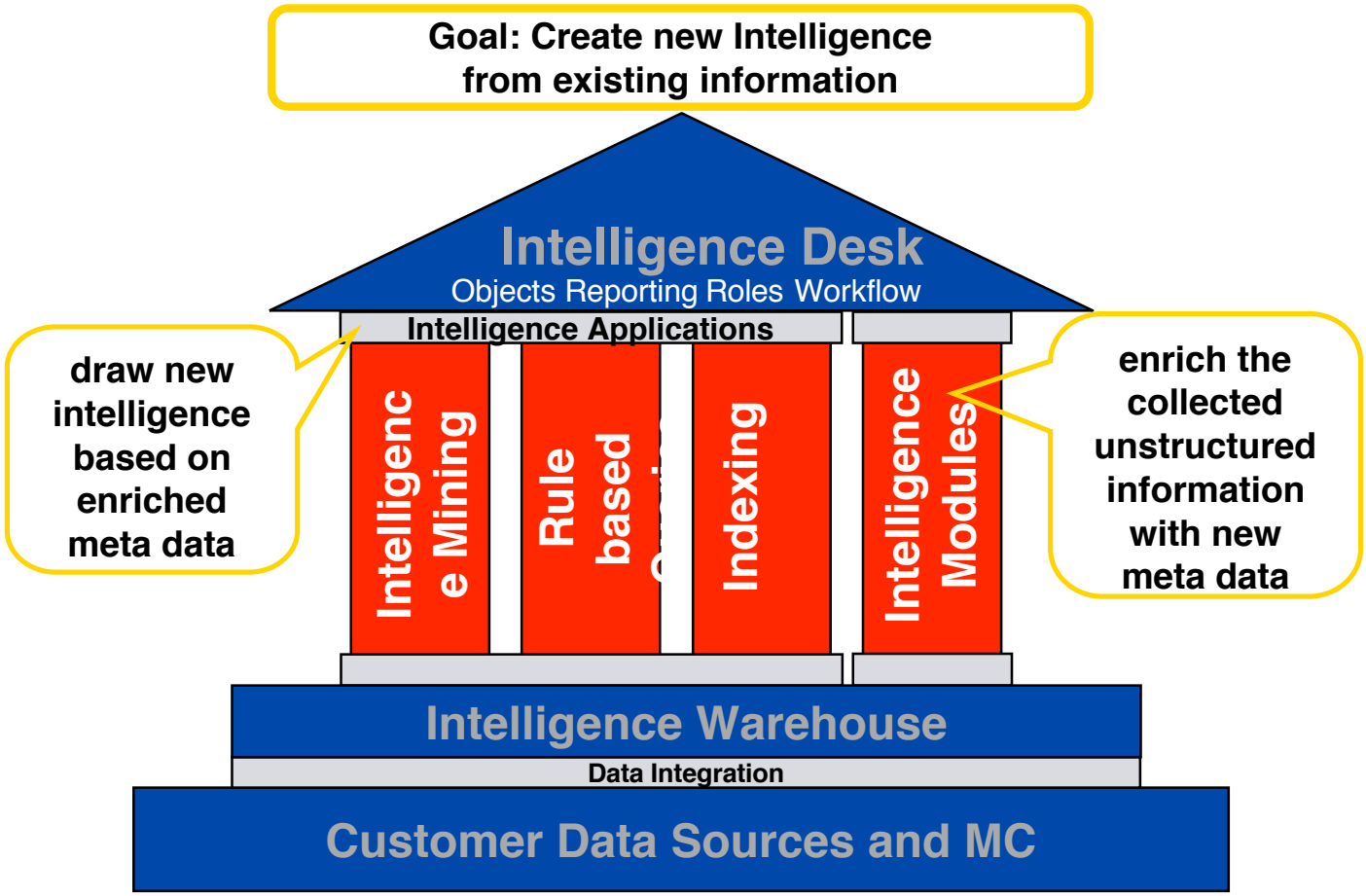
Intelligence Warehouse

- 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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Intelligence Applications and Modules



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications Overview

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Intelligence Mining: Pattern Recognition

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Intelligence Mining: Pattern Recognition - Example

SIEMENS

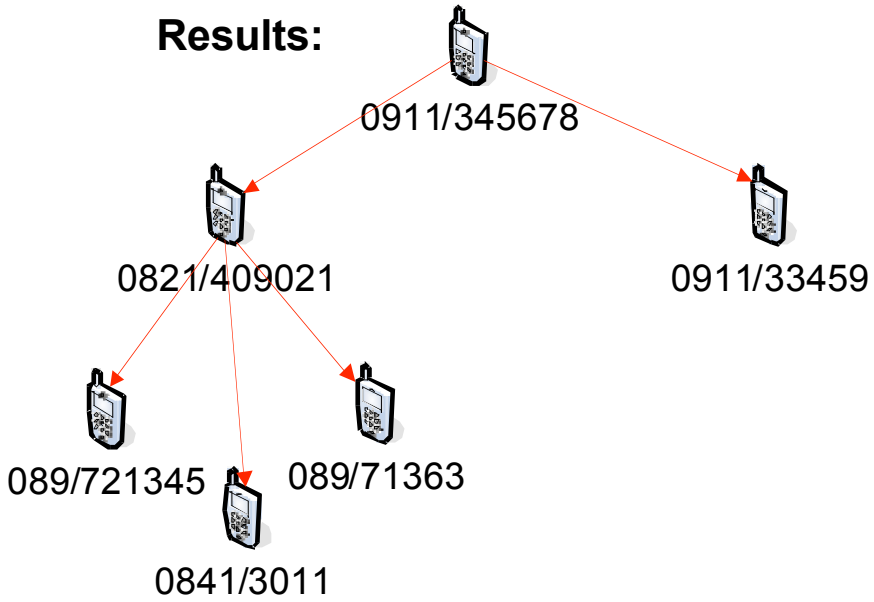
Example Task:

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

Criteria:

- Time frame: 1 hour
- Minimum count: 5

Results:



Additional Examples

- money transfers between bank accounts
- geographical movements of targets

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Intelligence Mining: Pattern Profiling

SIEMENS

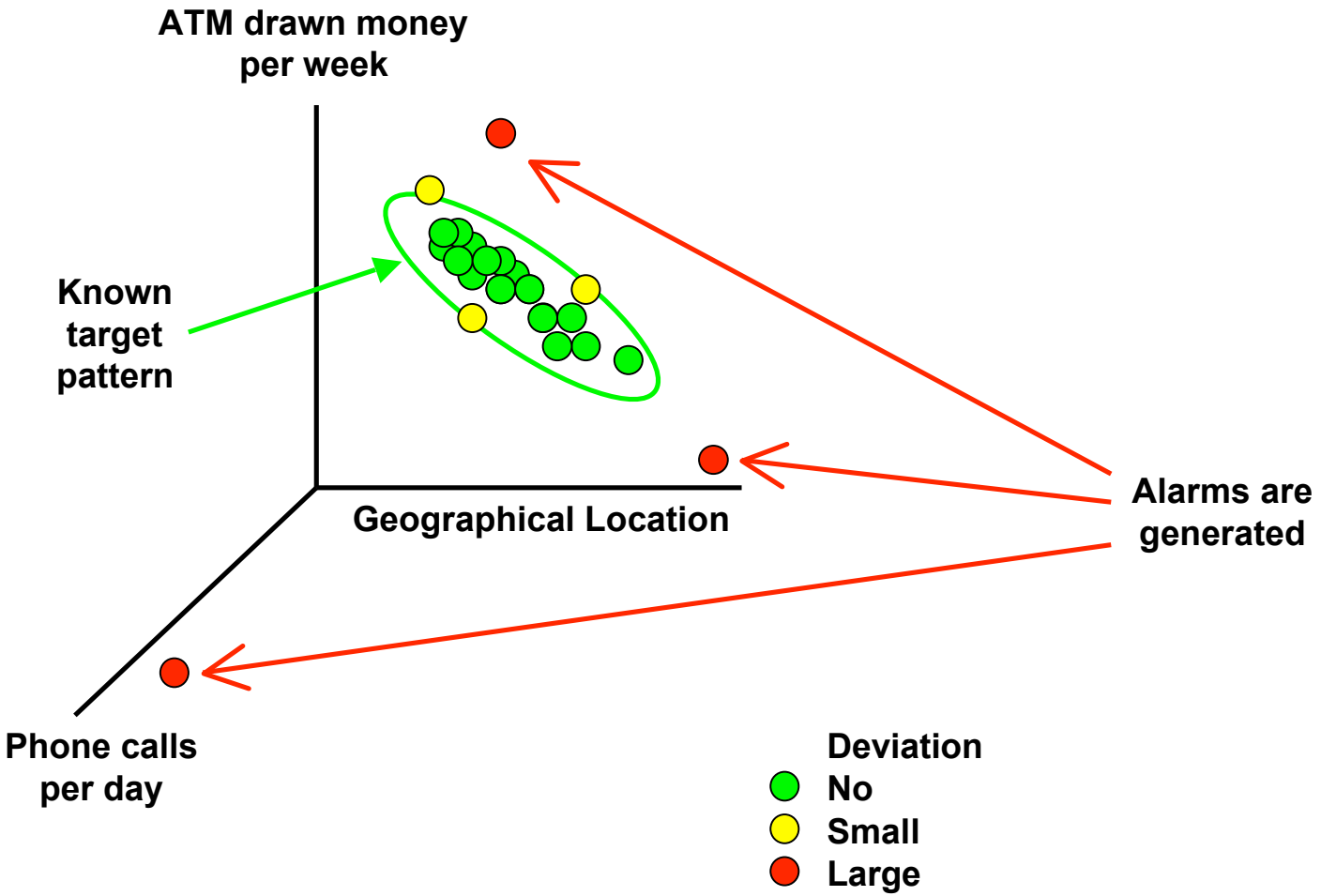
Principle:

- 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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Intelligence Mining: Pattern Profiling - Example

SIEMENS

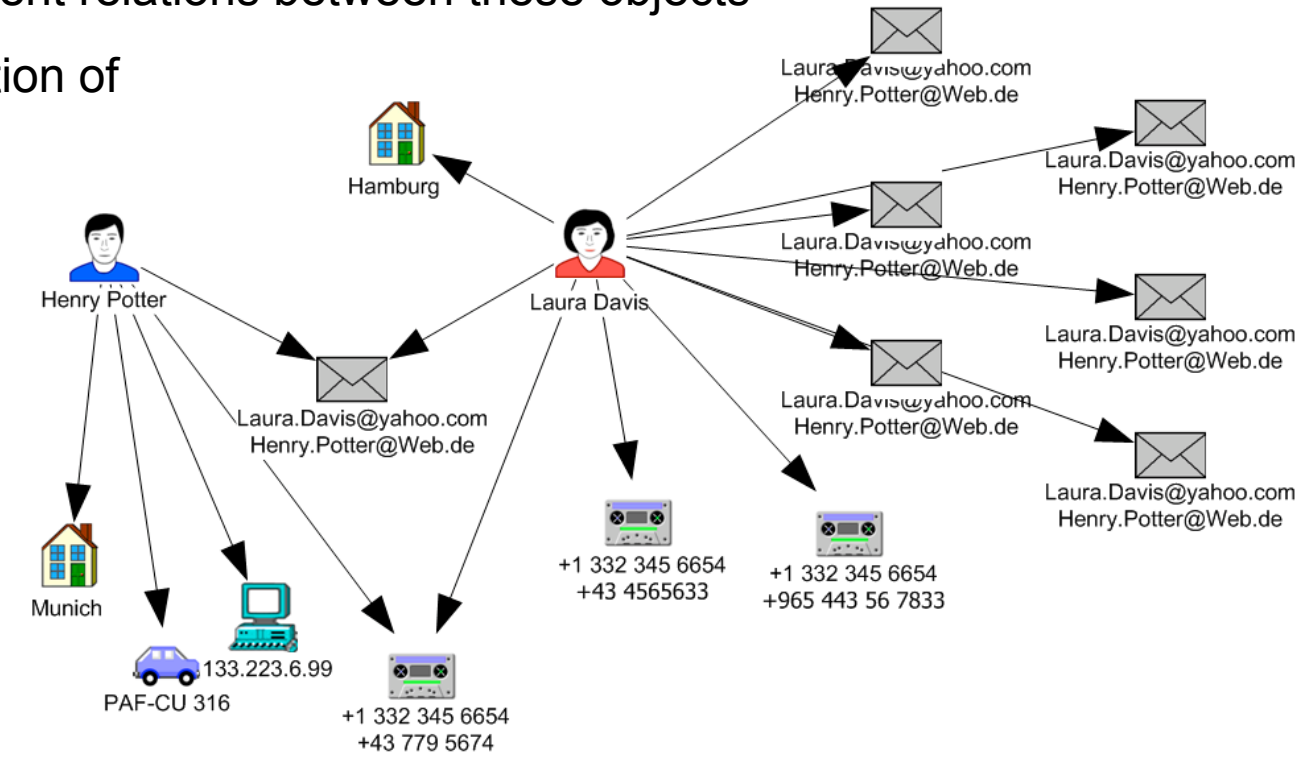


Non contractual; Commercial in confidence; Subject to change without notice
Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Intelligence Mining: Link Analysis

SIEMENS

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



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Rule Based Queries

SIEMENS

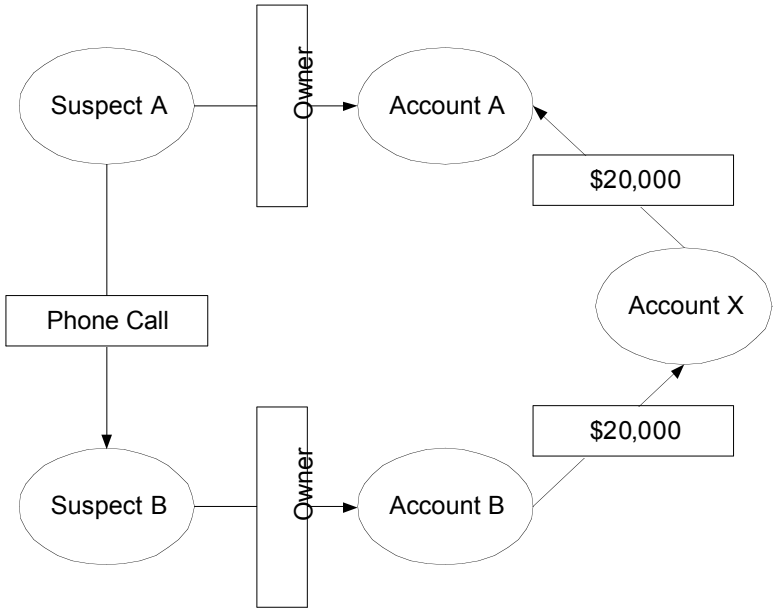
- To construct complex database queries without database knowledge
- The analyst constructs a semi-graphical model of the query
- The system retrieves all instances from the database that fulfil the Rule

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



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Indexing: Full Text Indexing and Retrieval

SIEMENS

- Indexing is performed on all sorts of text documents, like
  - Web pages
  - Word documents, Transcripts
  - Emails, SMS, Chat protocols

  as 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

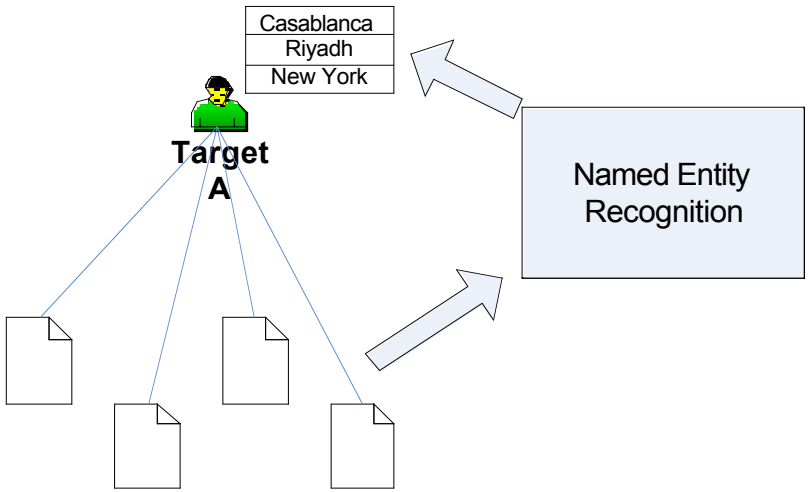
- Typical response time < 1 sec

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Applications
Indexing: Named Entity Extraction - Example

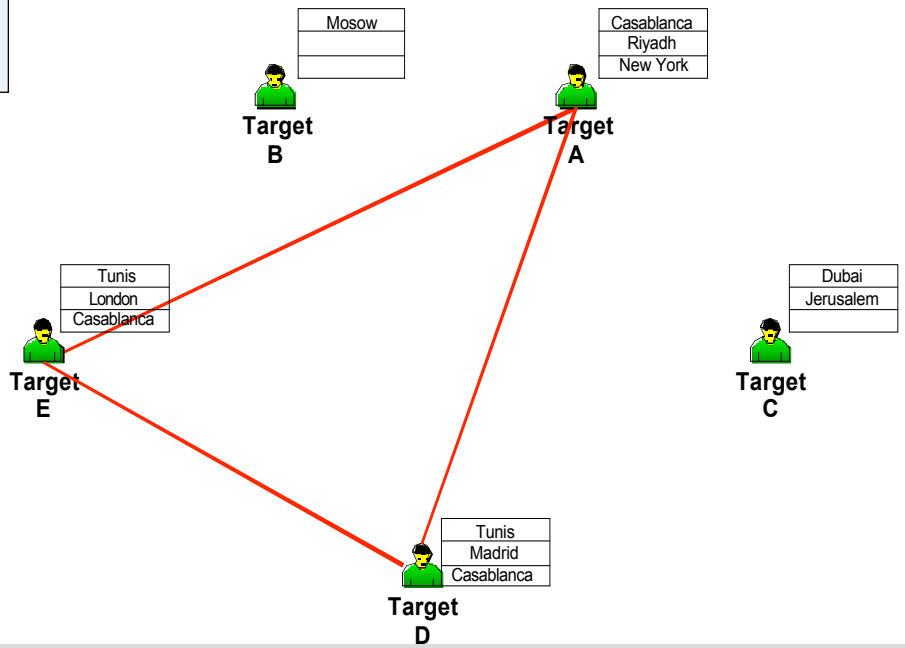
SIEMENS

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”

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules Overview

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules
Topic Spotting in the text domain

SIEMENS

How does it work?

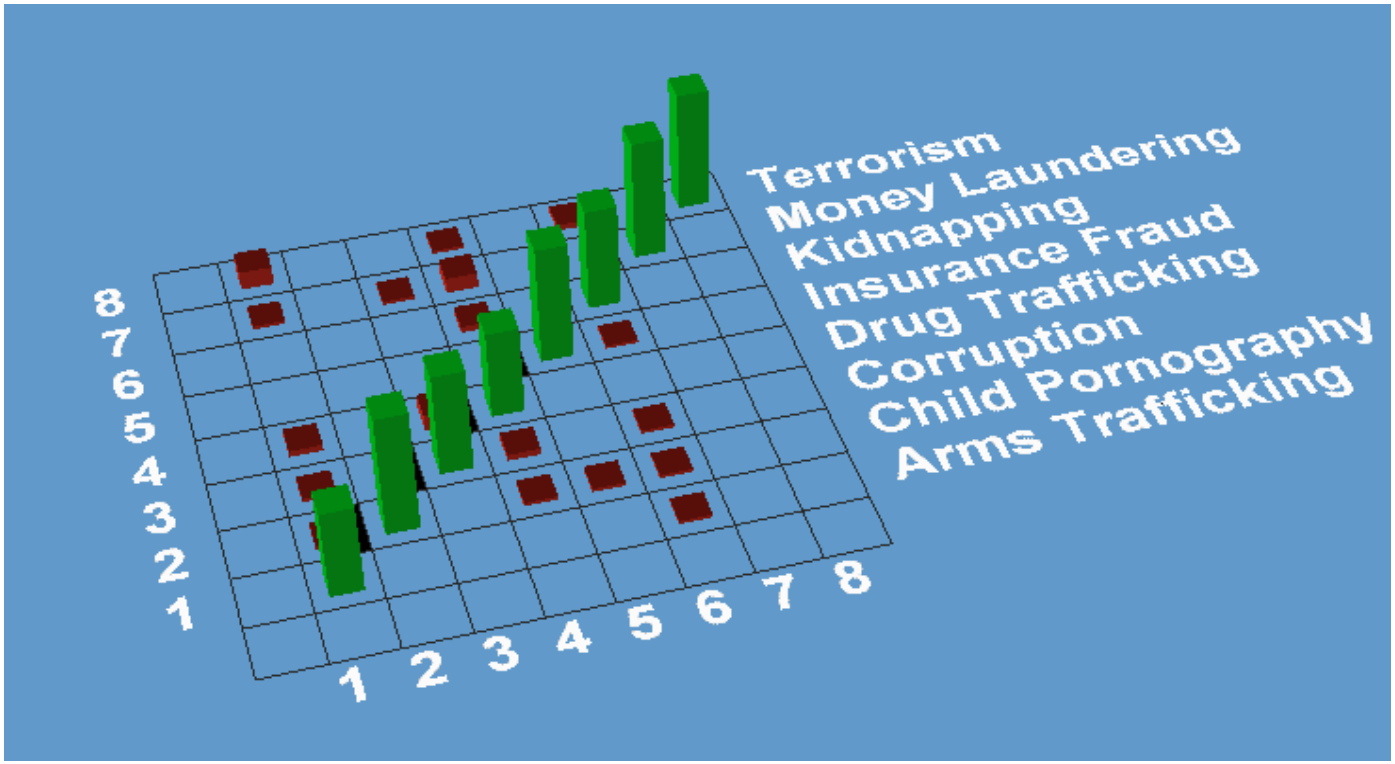
- The Analyst defines a number of topics, e.g.:
  - Drug Trafficking
  - Corruption
  - Money Laundering
  - Kidnapping
- The analyst provides sample documents containing typical contents for each topic
- The Intelligence Module is trained on the samples
- After training the Intelligence Module classifies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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules
Topic Spotting – Text example

SIEMENS

Typical Topic Spotting result (accuracy ~90%)

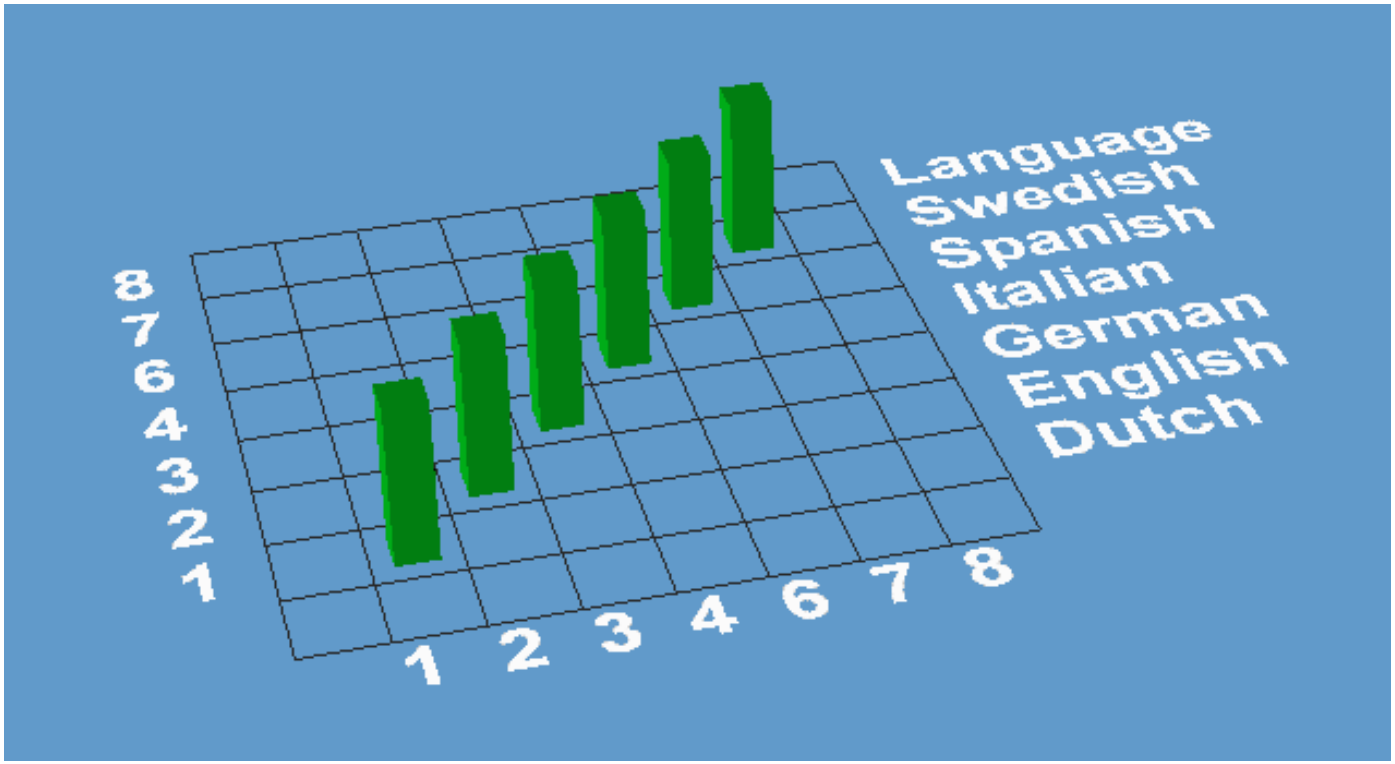


Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules
Language Detection – Text example

SIEMENS

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



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules
Process Management

SIEMENS

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

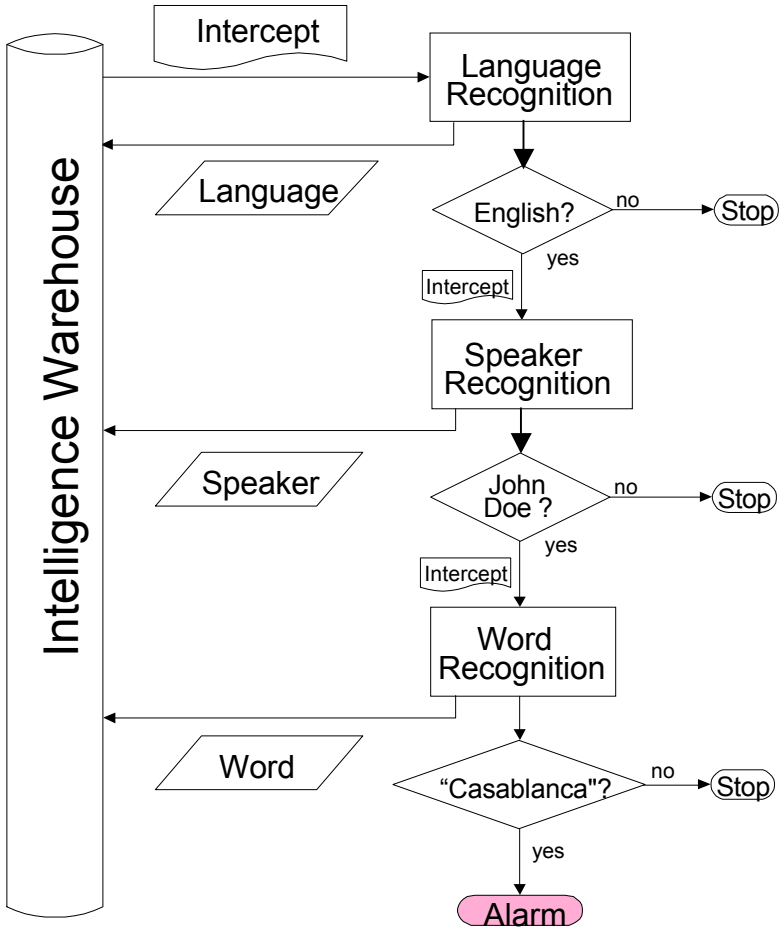
- Default processes
- Analysts can graphically design processes on their own

Goal: To enable automated analysis processes

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Modules
Process Management - Example

SIEMENS



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

Non contractual; Commercial in confidence; Subject to change without notice
Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk Overview

SIEMENS

- Common workplace for the analyst to support
  - Planning and Direction
  - Analysis and Production
  - Dissemination

  within the Intelligence Cycle

- Integration of the different Intelligence Applications and Modules
  - Configuration

- Visualisation

- Customer and investigation specific reporting

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk Concept

SIEMENS

- 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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Views & Roles

SIEMENS

Views

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

Roles & Security

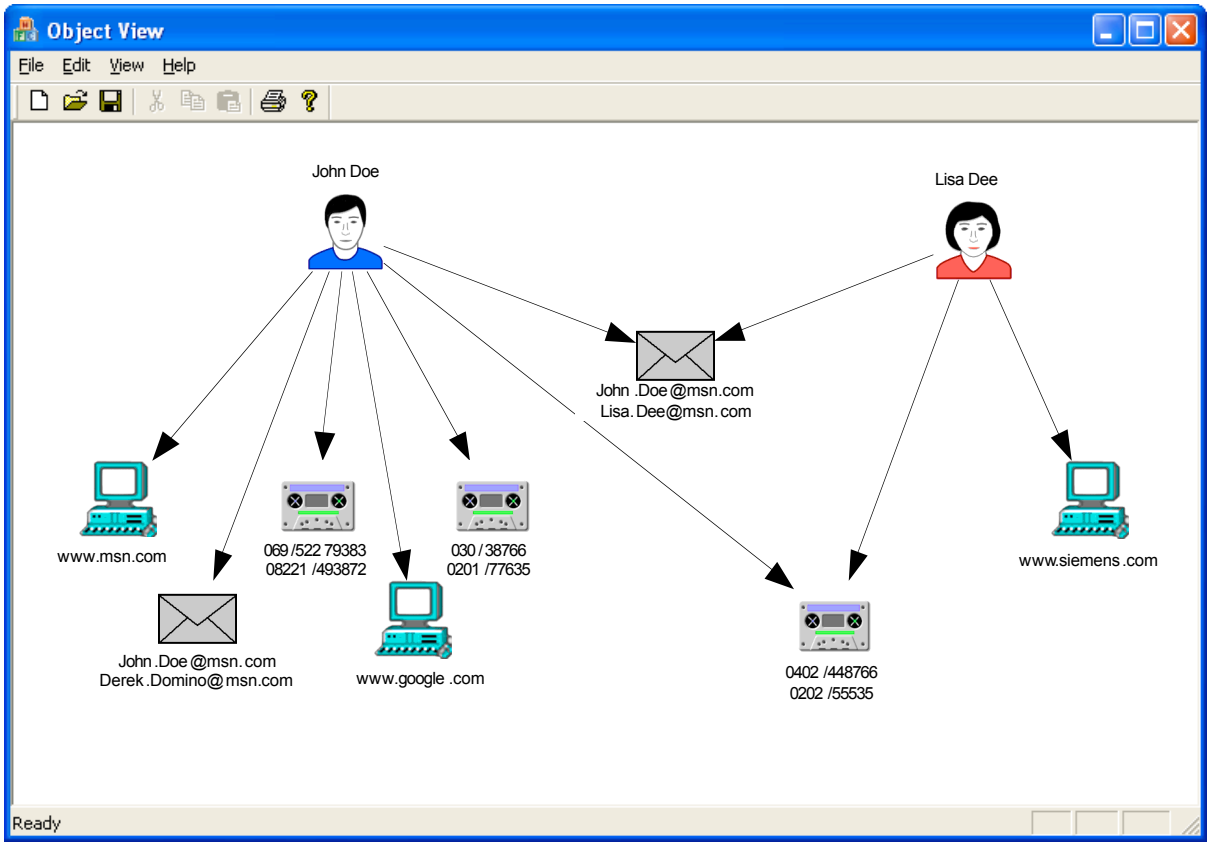
- Analyst, Investigator (restricted access)
- Supervisor (defined access)
- Administrator (contents not accessible)

World-wide best-in-class Security

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Object Views – Target centric

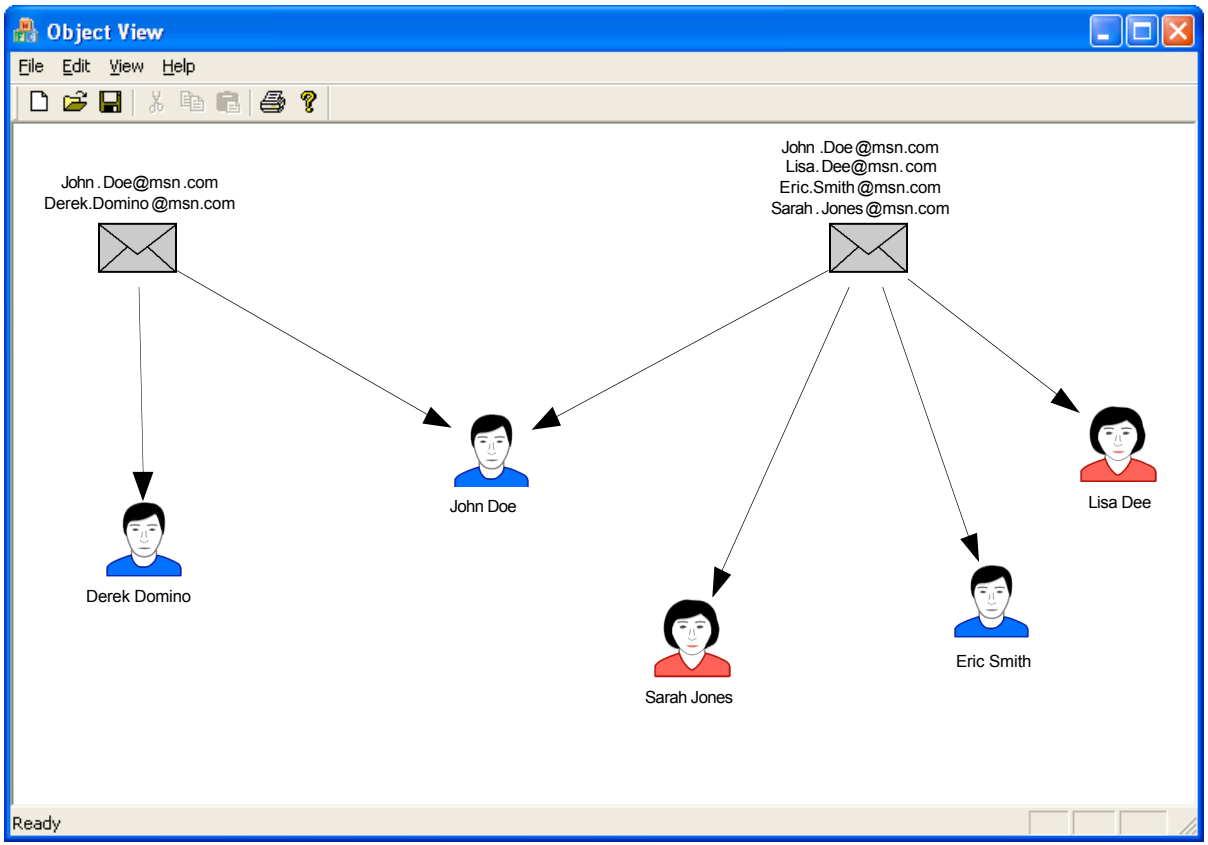
SIEMENS



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Object Views – Email centric

SIEMENS



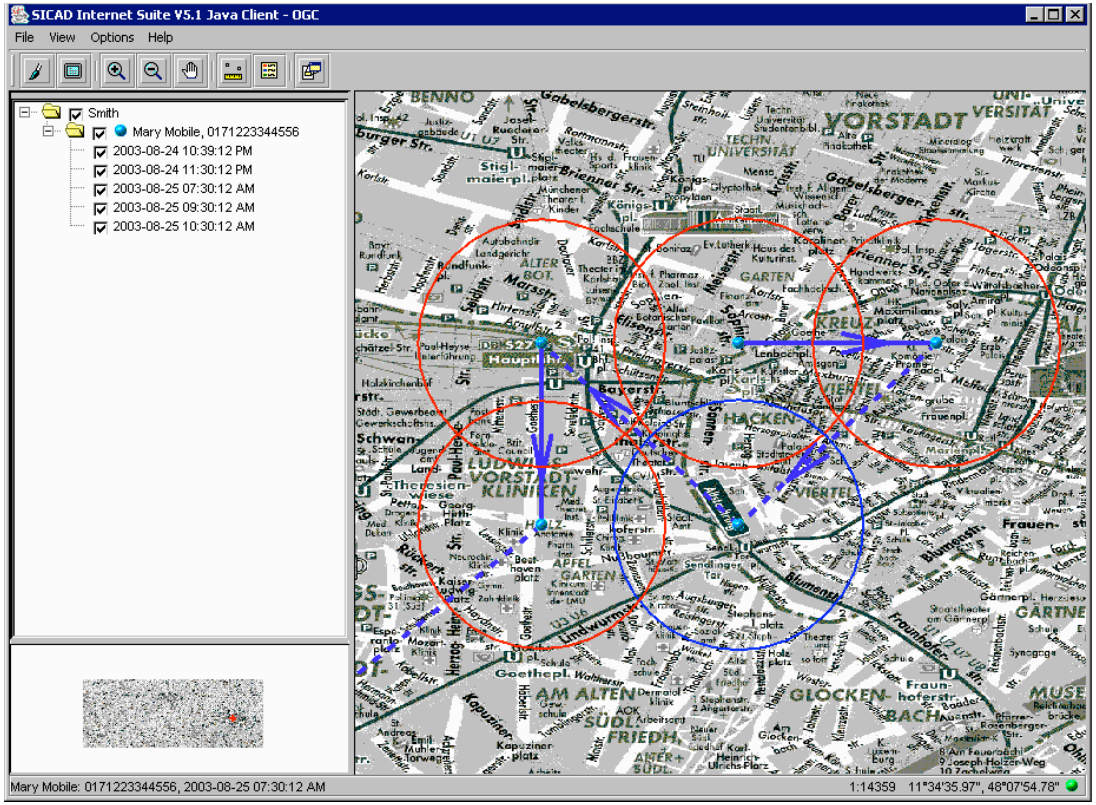
Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Location Tracking - GIS

SIEMENS

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



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Workflow Management

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Desk
Reporting - Dissemination

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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.

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

System Aspects

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Platform Architecture

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Summary

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

Intelligence Platform Advantages

SIEMENS

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

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Fact & Objective

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

Making the world safer

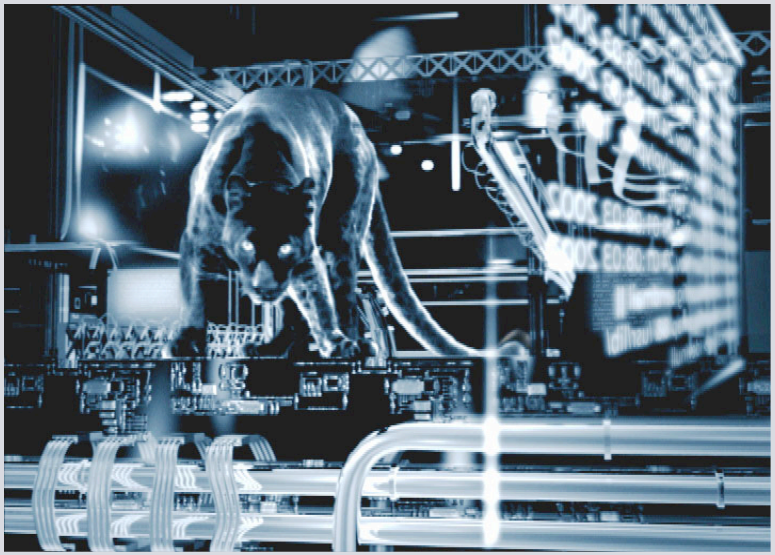
... with trend-setting intelligence solutions

Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007

SIEMENS

Thank you for your attention

Name: Tilmann L. Gabriel
E-mail: tilmann-laurence.gabriel.ext@siemens.com



Non contractual; Commercial in confidence; Subject to change without notice Copyright © Siemens Networks GmbH & Co. KG 2007