Future Challenges in the Lawful Interception of IP based Telecommunication

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DigiTask – Who we are and what we do

- *Special Telecommunication Systems for Law Enforcement Agencies (LEA)*
- *Development of special solutions for the needs of LI*
- *Located in the middle of Germany*
- *DigiTask has overall experience of many years in LI systems*
- *DigiTask is market leader for LI in Germany*
- *DigiTask is privately owned and independent*

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DigiTask – Who we are and what we do

- *The LI systems cover the following input interfaces:*
  - ISDN - BRI and PRI, X.25, IP, FTP, ATM
- *with recording of*
  - Voice, Fax, Data
  - Modular and flexible in extensions
- *Implementation of European (ETSI) and National Regulations*
  - TS 101 671, TS 33.108, TS 102 232, TR TKÜ, …
- *DigiTask is full member of ETSI*

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DigiTask – Who we are and what we do

- *Main Products*
  - Database supported Investigation System "DigiBase"
    - Automatic correlation of CC/IRI
    - User friendly and intuitive GUI
    - Wide functionality for investigation, combination and annotations for recorded data
  - Database supported Analysing System "DigiNet II"
    - Real time decoding of all standard internet traffic protocols

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DigiTask – Who we are and what we do

- *Main Products (continued)*
  - Database supported Analysing System "DigiNet II"
    - Decoding of proprietary protocols
    - Special tools for presentation
  - Mass Storage solutions up to 1 PetaByte and more
  - Storage Management solutions
  - WiFi-Catcher
  - Support for core area of private life
  - Onsite training

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DigiTask – Who we are and what we do

- *Main Products (continued)*
  - Own Mediation Device
    - Complete LI Data in one hand from ISP to LEA
    - Sniffer solution
  - Geo-Tracking
  - Geo-Region and Geo-Live
  - additional special solutions

The New Internet

- *Yes, I know the internet!*
  A statement frequently heard.
- *Various new applications/services arise*
  - Second Life, World of Warcraft
  - Dynamic WebPages, RSS, …
- *New communication protocols appear daily without notice*
- *There are a lot of questions*
  - Who is able to review and investigate the new information?
  - What about the increasing encrypted communication?

DigiTask provides solutions and not additional problems and speculations!

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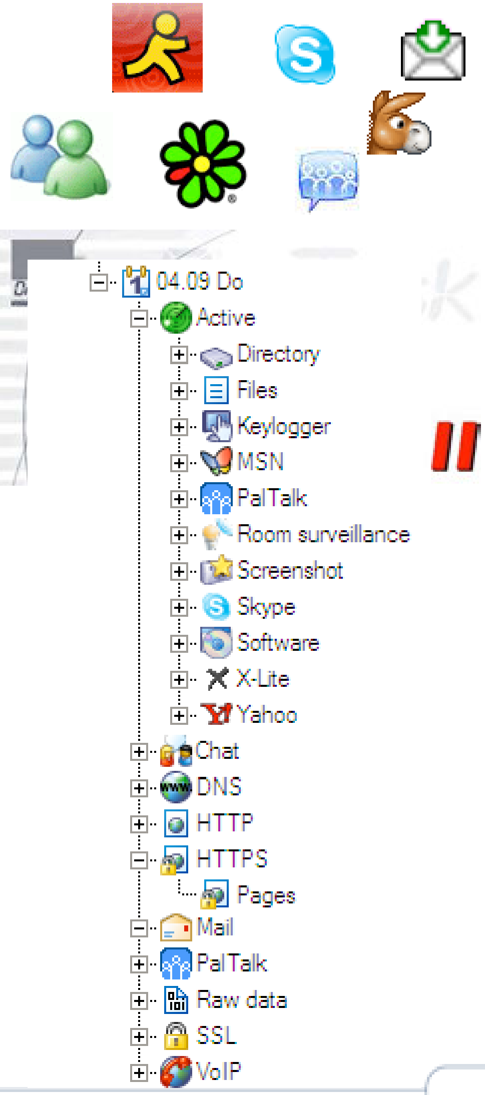
DigiNet – Decoding of Internet Traffic Protocols

- *Live decoding and visualisation*
- *Modular decoder implementation*
- *Extensive data retrieval, investigation and different user defined filters*
- *Functions for annotation and marking*
- *Supported protocols*
  - HTTP, POP3, SMTP, IMAP, FTP, TELNET
  - VoIP (H.323, SIP), MMS, Webmail
  - IRC, AIM, ICQ, MSN, PalTalk, Yahoo
  - PeerToPeer – eMule/eDonkey, BitTorrent
  - SSL and Skype (only recognition) in conventional LI



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DigiNet – Decoding of Internet Traffic Protocols

- *The number of protocol decoders is continually expanded*
- *Storage on web server*
- *Secure Analysis*
- *Use of terminal server or virtualisation to prevent network from viral infection*
- *Search in decoded results*

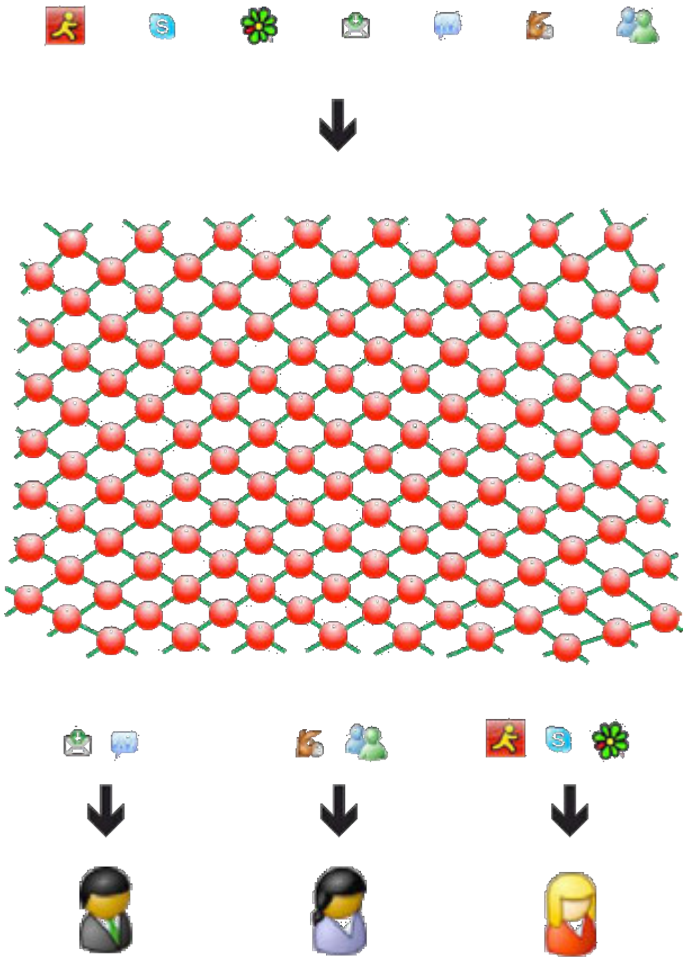
- *Processing possibilities*
  - Marking (colouring)
  - Text reports
  - Search tool for marks and text

Use of Smart Tools for Investigation

– *SPAM filter*
  - Decrease of data to investigate
  - User defined
  - More overview in analysing results
  - Focus on important data
  - Works on all protocols
  - Works immediately after definition and activation

Use of Smart Tools for Investigation

– *Neural network*
  - Statistical procedure
  - Based on input data
  - Automatic correlation between data and objects (target, person) after training
  - Different profiles multithreading
  - Self learning after new training
  - Result for each profile



Use of Smart Tools for Investigation

- *Classification of decoded internet data*
  - Behaviour of target while surfing the web or using other services
  - Preferences in communication
  - Manual classification
    - ineffective
    - Time wasting
  - URL classification
    - Allocation into classes
    - Classes are measurements for importance

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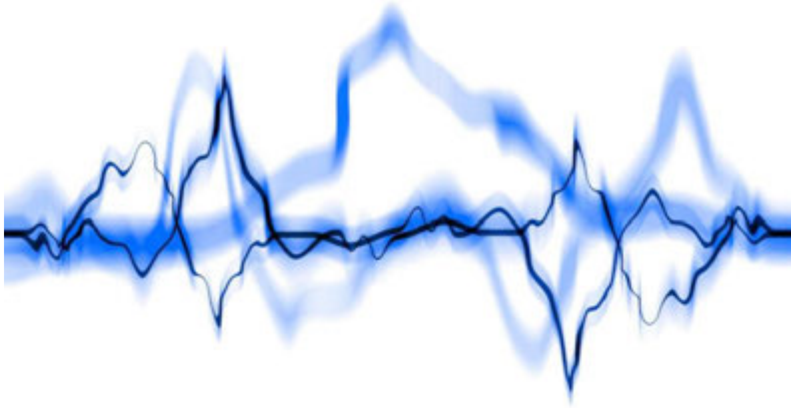
Use of Smart Tools for Investigation

- *Keyword Spotter*
  - Statistical procedure
  - Recognition of speaker
  - Topic spotter
    - Voice
      - » PSTN or IP
  - Live streaming
  - Results
    - Position within a file
    - Success probability
    - Storage in central database for further investigation
    - Supports more than 20 languages



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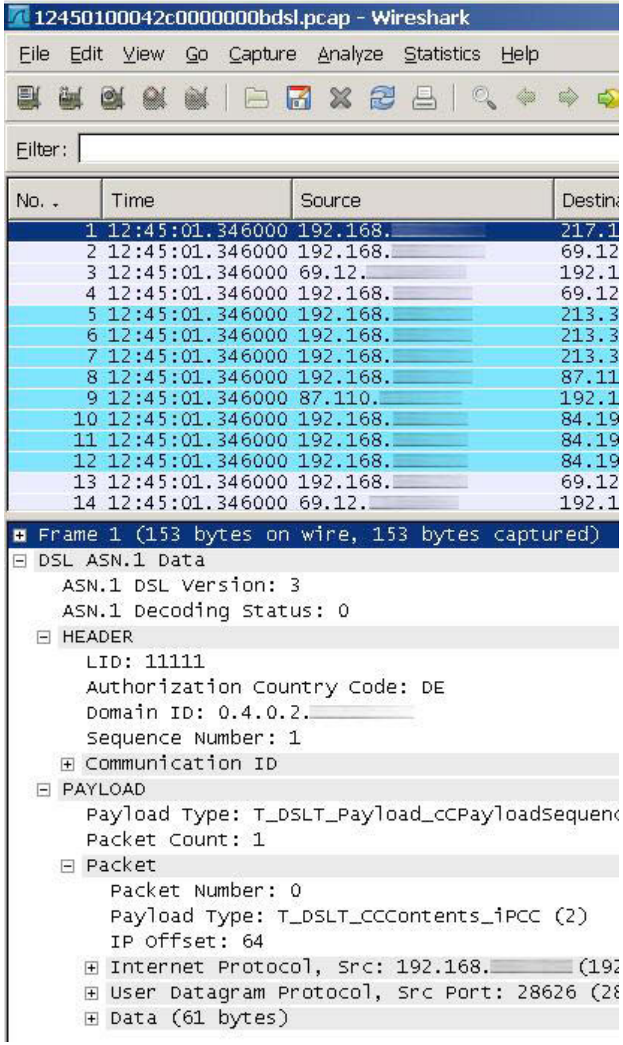
Use of Smart Tools for Investigation

– *RAW Data Inspection*

- Interface for 3rd party tools
- 1st step analysis for newly released communication protocols
- Designed for specialists at LEA
- Deep view into packets of intercepted data
- Approved standard tool Wireshark with special LI Header Plugins
- Adjustable to additional needs



12450100042c0000000bdsl.pcap - Wireshark

```
No. .  Time             Source                Destina
     1 12:45:01.346000 192.168.[redacted]     217.1
     2 12:45:01.346000 192.168.[redacted]     69.12
     3 12:45:01.346000 69.12.[redacted]       192.1
     4 12:45:01.346000 192.168.[redacted]     69.12
     5 12:45:01.346000 192.168.[redacted]     213.3
     6 12:45:01.346000 192.168.[redacted]     213.3
     7 12:45:01.346000 192.168.[redacted]     213.3
     8 12:45:01.346000 192.168.[redacted]     87.11
     9 12:45:01.346000 87.110.[redacted]      192.1
    10 12:45:01.346000 192.168.[redacted]     84.19
    11 12:45:01.346000 192.168.[redacted]     84.19
    12 12:45:01.346000 192.168.[redacted]     84.19
    13 12:45:01.346000 192.168.[redacted]     69.12
    14 12:45:01.346000 69.12.[redacted]       192.1
```

```
⊞ Frame 1 (153 bytes on wire, 153 bytes captured)
⊟ DSL ASN.1 Data
    ASN.1 DSL Version: 3
    ASN.1 Decoding Status: 0
  ⊟ HEADER
      LID: 11111
      Authorization Country Code: DE
      Domain ID: 0.4.0.2.[redacted]
      Sequence Number: 1
    ⊞ Communication ID
  ⊟ PAYLOAD
      Payload Type: T_DSLT_Payload_cCPayloadSequen
      Packet Count: 1
    ⊟ Packet
        Packet Number: 0
        Payload Type: T_DSLT_CCContents_iPCC (2)
        IP Offset: 64
      ⊞ Internet Protocol, Src: 192.168.[redacted] (192
      ⊞ User Datagram Protocol, Src Port: 28626 (28
      ⊞ Data (61 bytes)
```

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Use of Smart Tools for Investigation

- *WiFi-Catcher*
  - Modular unit for interception of WLAN traffic
  - Main features
    - Catching/Recording of data
    - Presentation of decoded data
    - Mobile usage
    - One channel interception
    - Multi channel interception (14 chann
  - Cracking of WEP encrypted traffic
  - Intersection of MAC address
  - Building of negative sessions
  - Supports standards 802.11a, 802.11b, 802.11g, 802.11n

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Use of Smart Tools for Investigation

- *Core area of private life*
  - Law in Germany
  - Information in CC about private life has to be deleted
  - Two aspects
    - Recorded voice delivered via ISDN
      - Indication and deletion of raw data
    - Recorded Data delivered via ISDN or IP
      - Raw data has to be analysed by various decoders before presentation
      - Indication and deletion of decoded data
      - Raw data will be unaffected

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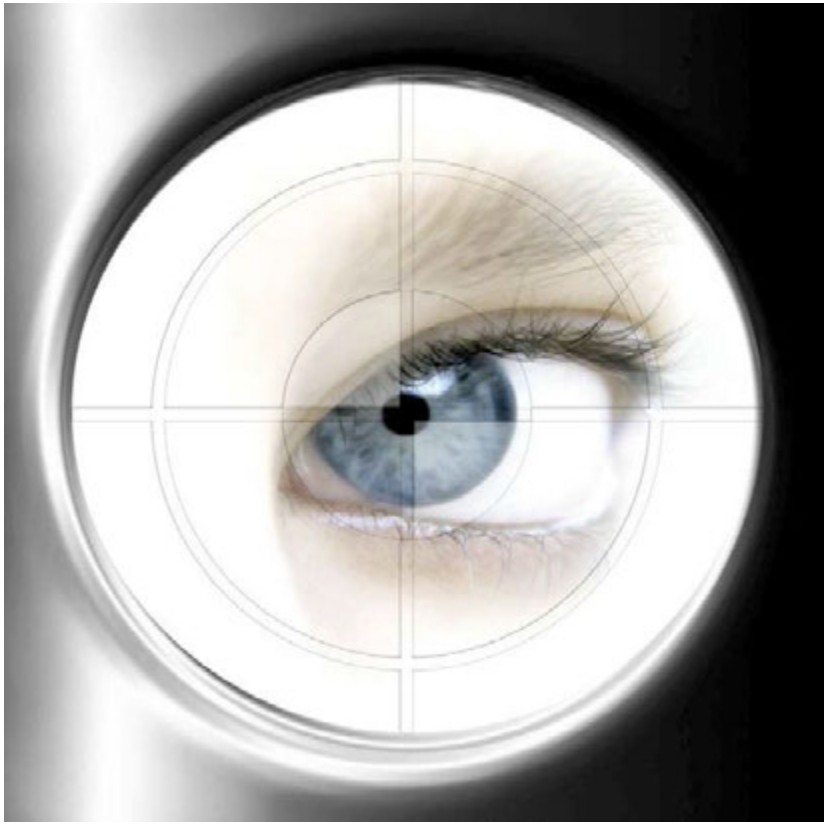
Problems and Risks for Lawful Interception

– *Let us return to Web 2.0, Internet 3.0*

- Further development of security standards
- Secure communication between dedicated users
- Privacy protection
- Result and conclusion
  - » Communication which can be intercepted with LI is decreasing



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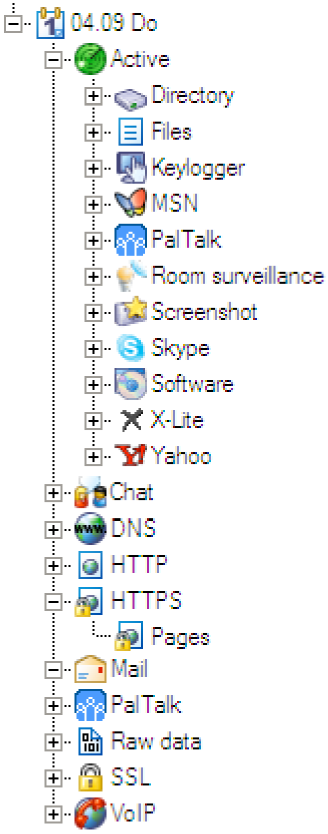
– *Development of Remote Forensic Software*

- Encrypted communication like Skype or SSL can be made visible
- Please visit our demonstrations in track 5
- We like to meet you on
  - Thursday, October 2nd 2008
    - » **14:30h – 15:30h**
      Live demonstration: DigiNet II
    - » **16:00h – 17:00h**
      Live demonstration: Remote Forensic Software

Visit our booth in main exhibition hall

Arrange presentation at your location



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04.09 Do
  Active
    Directory
    Files
    Keylogger
    MSN
    PalTalk
    Room surveillance
    Screenshot
    Skype
    Software
    X-Lite
    Yahoo
  Chat
  DNS
  HTTP
  HTTPS
    Pages
  Mail
  PalTalk
  Raw data
  SSL
  VoIP
```

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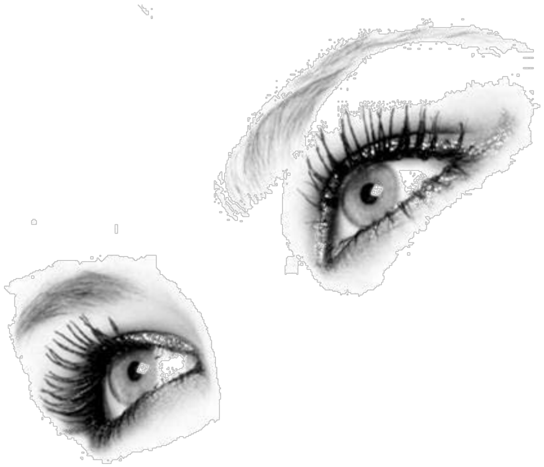
Perspective

- *Continuous further development to decode and present intercepted data*
- *Indication of contents concerning private life*
- *Inhouse demonstration at LEA*

➔ Complete LI from DigiTask

➔ Competence based on innovation



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