

# Future Challenges in the Lawful Interception of IP based Telecommunication

Dipl.-Ing. Thomas Kröckel DigiTask GmbH, Germany



- 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





- 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





- 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





- 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





- 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?

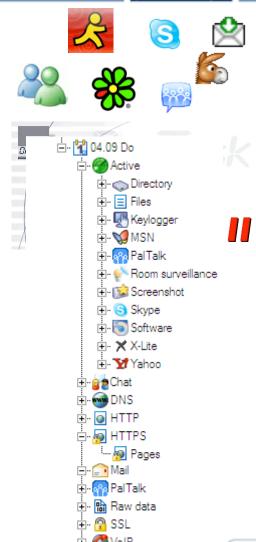
# DigiTask provides solutions and not additional problems and speculations!



#### **DigiNet – Decoding of Internet Traffic Protocols**

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- 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



#### **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





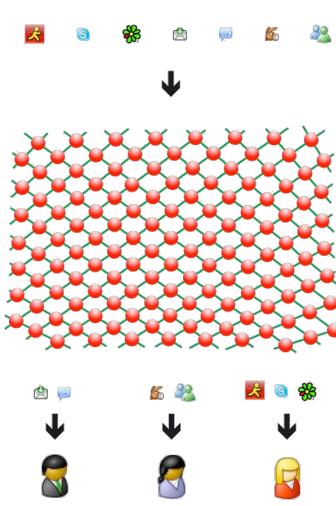
- SPAM filter
  - Decrease of data to investigate
  - User defined
  - More overview in analysing results
  - Focus on important data
  - Works on all protocols
  - Works immediately after definition and activation







- 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



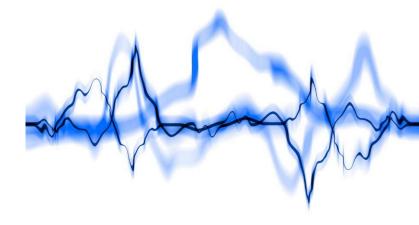


- Classification of decoded internet data
  - Behaviour of target while surfing the web or using other services
  - Preferences in communication
  - Manual classification
    - ineffective
    - Time wasting
  - URL classification
    - Allocation into classes
    - Classes are measurements for importance



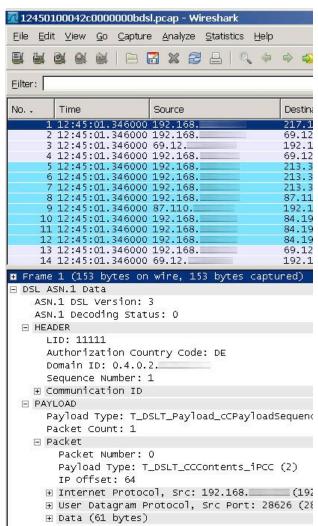


- Keyword Spotter
  - Statistical procedure
  - Recognition of speaker
  - Topic spotter
    - Voice
      - » PSTN or IP
  - Live streaming
  - Results
    - Position within a file
    - Success probability
    - Storage in central database for further investigation
    - Supports more than 20 languages





- RAW Data Inspection
  - Interface for 3<sup>rd</sup> 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





- 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 channels)
  - Cracking of WEP encrypted traffic
  - Intersection of MAC address
  - Building of negative sessions
  - Supports standards 802.11a, 802.11b, 802.11g, 802.11n



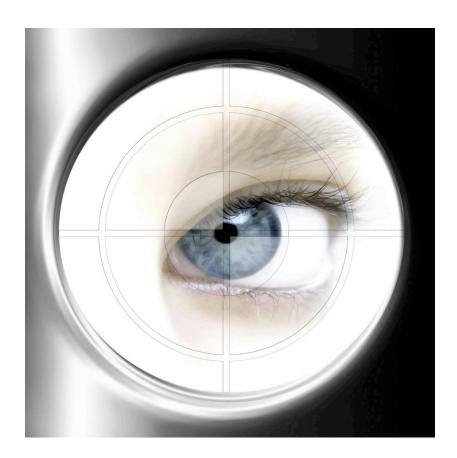


- Core area of private life
  - Law in Germany
  - Information in CC about private life has to be deleted
  - Two aspects
    - Recorded voice delivered via ISDN
      - » Indication and deletion of raw data
    - Recorded Data delivered via ISDN or IP
      - » Raw data has to be analysed by various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

#### **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

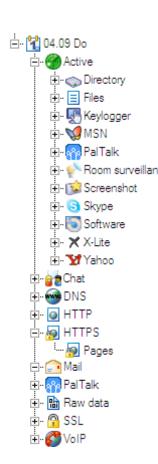


#### **DigiTask Product Innovation**



- 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 2<sup>nd</sup> 2008
      - » 14:30h 15:30h
        Live demonstration: DigiNet II
      - » 16:00h 17:00h
        Live demonstration: Remote Forensic
        Software

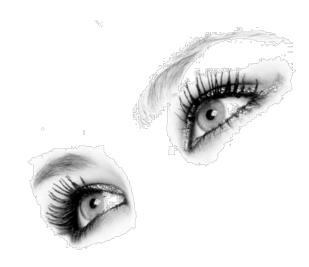
Visit our booth in main exhibition hall Arrange presentation at your location



#### **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



# Thank you.