

# *Developing a Legally Compliant Reachability Management System as a Countermeasure against SPIT*

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# Motivation

- Internet Telephony has developed, allows **cost-saving** use of VoIP technology.
- VoIP will affect audio communication as e-mail affected written communication.
- **Unsolicited calls** are already annoying PSTN customers.

**=> SPAM over Internet Telephony (SPIT) will become a problem similar to e-mail SPAM.**

# Motivation

- SPIT is expected to increase dramatically with cheaper calls.  
**=> Privacy protection needed.**
- Laws prohibiting such calls are most often effectless against calls from other countries.  
**=> Technical approach needed.**
- Telecommunication is regulated by several laws. Sanctions are up to five years in prison.  
**=> Legal compliance needed.**

# ***The SPIT-AL Project***

***Hey, let's try build some SPIT-filter!***

***... we need a name for it ...***

***SPIT-AbwehrLösung***

***OK. Now we need cash.***

# *The SPIT-AL Project*

- **Public Funding 2005 – 2006:**  
**e-Region Plus (Schleswig-Holstein)**  
**ERDF – European Regional Development Fund**
- **Project Partners:**
  - TNG** – The Net Generation AG  
Internet Service Provider and  
Telecommunication Company
  - ICPP** – Independent Centre for Privacy Protection  
Privacy Protection Authority

# *The SPIT-AL Project*

- **White Paper**  
*German language, download at [www.spit-filter.com](http://www.spit-filter.com)*
- **Prototype**  
*Implementation in progress <=*
- **Test Run**  
*with 1000 users by end of 2006*
- **Open Source Project**  
*Public funding, public benefit!*
- **Diploma Thesis**  
*at Dresden University of Technology*

# ***SPITting into your Ear***

- **Calls from Humans: Call Centres**
- **Calls from Automated Devices: Spam Bots**
- **Ringtone SPIT: Alert-Info Header**
- **Combinations**

# ***SPIT-AL: Technical Approach***

- **E-mail SPAM: Header & Content Analysis**
- **Content Analysis of Audio Communication:**
  - **Synchronous** Communication, impossible to do before call is established.
  - Technically **complex**.
  - **Breaking Secrecy of Telecommunication in Germany: Five years in Prison (bye!)**
  - **Not planned within SPIT-AL.**

# ***SPIT-AL: Technical Approach***

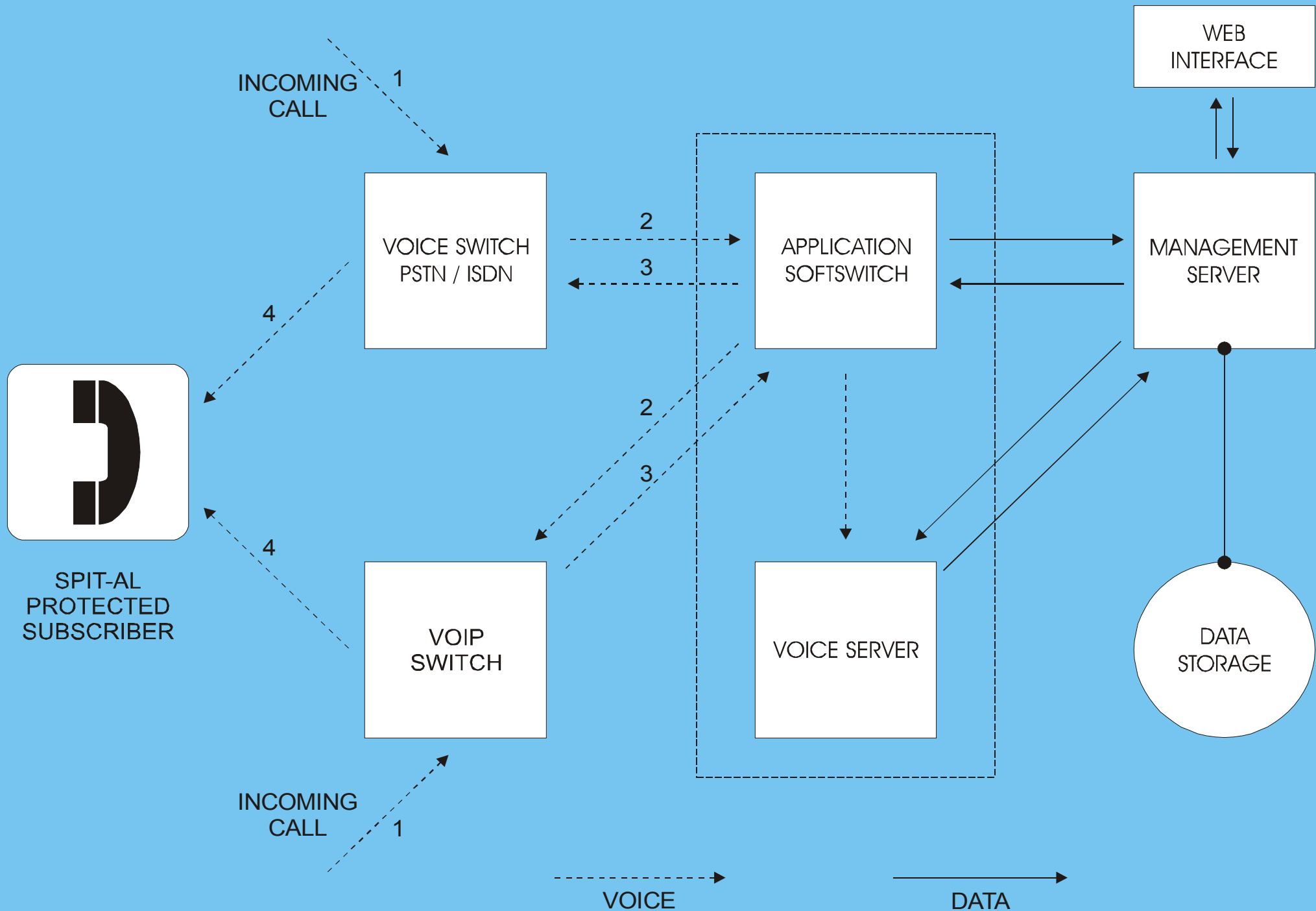
- Analyze **Information about Caller:**
  - Caller ID? (Lacking Authenticity with SIP)
  - Origin: PSTN / SIP (Proxy, IP Range)?
  - Whitelists / Buddylists / Blacklists
  - **Recursive Lists** / Web of Trust
  - *Statistical Analysis (backbone)*
- Analyze **Information about Call:**
  - 6 a.m.? Sorry, Mum.
- **Weighten results, sum up.**

# ***SPIT-AL: Technical Approach***

- Different **Actions** according to results:
  - Establish call. (implementation: easy)
  - „Busy“ on first try. (greylisting)
  - Challenge the caller:
    - „Please press \*42#.“ (simple voice menu)
    - „What is 10 divided by 2?“ (tricky that)
  - Voice Box => asynchronous
  - Announce alternate reachability

# ***SPIT-AL: Technical Approach***

- Different **Actions** according to results:
  - Simulate Callee (*c.f. Telecrapper2000*)  
*binding your resources!*
  - Honeyphones (as in Honey pots, Honeynets)
  - Reject call
    - *Implementation: Easy*
    - *Legal: Suppression of Communication*
  - *All not in SPIT-AL*
- 'Filtering' not appropriate. Therefore:  
**Reachability Management** to counter SPIT



# ***SPIT-AL: Legal Aspects***

- **Secrecy of Telecommunication, e.g. in Germany:**
  - **Art. 10 GG, § 88 TKG, § 206 StGB**
  - **Protecting content of communication and fact that it has taken place (or been unsuccessful).**
  - **Binding telecommunication companies and their employees.**
  - **Control over any SPIT filter therefore has to be in hands of user as one of the communication partners.**

# ***SPIT-AL: Legal Aspects***

- **Telecommunication Law (TKG)**
  - **§ 88 Secrecy of Telecommunication**
  - **§§ 148 f. – Suppression of Communication (Reject call, Greylisting)**
  - **VoIP has not yet gone through courts.**

# ***SPIT-AL: Legal Aspects***

- **Privacy Law (aka: Data Protection Law)**
  - §§ 91 – 107 TKG, BDSG in addition
  - **SPIT-Filter as delegated data processing?**
  - **Different SPIT-AL actions and configuration presets for private citizens, companies or administrations.**  
(Administrative Law: Right to be heard)
  - **Whitelists / Blacklists is processing of personal data => Infrastructure für consent / withdrawal  
=> web interface => Teleservices Law**

# ***SPIT-AL: Legal Aspects***

- **Consequences for Development:**
  - **User-controlled filtering!**
  - **Transparency and control of data processing and its consequences.**
  - **Configuration presets for different types of users.**
  - **Configuration options fine-grained.**

# Conclusions

- The SPIT **problem** will increase, countermeasures are needed.
- **Countermeasures** have to take effect before call is established.
- **Reachability management** is a possible approach.
- Can be expanded/integrated into **identity management** systems.



# Future

- **VoIP needs Security and Privacy Enhancements!**
  - E.g. strong end-to-end encryption
  - E.g. end-to-end authentication
- **VoIP could use a lot of other development, too.**
- **FP7, anyone?      markus@privacyresearch.eu**