Master's thesis proposal

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About The Internet Infrastructure Foundation[1] (.SE)

.SE is also known as Stiftelsen för internetinfrastruktur (IIS).

The Internet Infrastructure Foundation is an independent organization, responsible for the Swedish top level domain, and working for the benefit of the public that promotes the positive development of the internet in Sweden. Their head office is in Stockholm. In 2012 they had 61 employees and a turnover of almost 120 MSEK.[2]

Background and context

Part of .SE's research efforts include continuously analyzing internet infrastructure and usage in Sweden. Yearly reports convey the status of, for example, *Swedes and the internet* and *.se health status*[3] to the public, both in Swedish[4] and English[5]. Information and statistics are also published on a separate portal, in collaboration with other organizations.[6]

The report *.se health status* is based on data collected from around 900 .se domain names deemed of importance to the Swedish society as a whole, as well as random selection of 1% of the registered .se domain names. The research is focused on statistics about usage and security in DNS, IP, web and e-mail; the target audience is IT strategists, executives and directors. Data is analyzed and summarized by Anne-Marie Eklund Löwinder, a world-reknown DNS and security expert[7], while the technical aspects and tools are under the supervision of Patrik Wallström, a well known DNSSEC expert and free and open source software advocate[8].

Subject proposal

Correctly adhering to standards, implementing security and data protection measures, are important for the overall health of the internet, both when looking at specific examples and even more so on a grander scale. National results are already published by .SE, in the *.se health status* report, alongside helpful tips on how to avoid common problems. In terms of getting an overview of the status in Sweden, the full potential of the tools[9] used[10] and data collected has not yet been utilized.

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[1] https://www.iis.se/
[2] https://www.iis.se/docs/SE-Arsredovisning-2012.pdf
[3] https://www.iis.se/vad-vi-gor/halsolaget/
[4] https://www.iis.se/lar-dig-mer/rapporter/
[5] https://www.iis.se/english/reports/
[6] https://www.iis.se/vad-vi-gor/internetstatistik/
[7] https://www.iis.se/bloggare/anne-marie/
[8] https://www.iis.se/bloggare/pawal/
[9] https://www.iis.se/lar-dig-mer/open-source/
[10] https://github.com/dotse

Within the scope of the thesis work, the tools can be improved and/or extended to include new areas, which can then be analyzed as well. Collected data has been, at least partially, stored since 2011 and can potentially be used for retrospective analysis of trends. There is also the possiblity to compare Sweden's country code top-level domain (ccTLD) (.se) with another domain name common in Sweden (.nu, also controlled by .SE) and other ccTLDs.

The combined topics of DNS, IP, web and e-mail are too broad for this thesis, and the scope is to be narrowed down during the first weeks. Expected results include an overview of the national status in the selected field, potentially comparing it to historical data, or another ccTLD.

Relevant courses taken at LiU

- TDDC90 Software Security

- TDDD05 Component Based Software

- TDDD09 Software Engineering Project

- TDDD12 Database Technology

- TDDD24 Web Programming and Interactivity

- TDDD25 Distributed Systems

- TDDD27 Advanced Web Programming

- TDDD43 Advanced Data Models and Databases

- TDST02 Computer Network Infrastructure

- TSIT02 Computer Security