P-2: Cloud services in the field of Electroencephalography equipment

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Introduction
In recent years eHealth services and cloud based (public/private) computing has gained a lot of attention in healthcare business and/or services. Despite of that, it is well-known fact that the healthcare industry has fallen behind when comparing many other fields in the deploying of information technology and Cloud computing technologies. Security has been presented as the main reason why public cloud services should be avoided, but what is the actual truth behind that? This study is a continuation of the study "Use of Data Cloud Services in Clinical Environment - Case Video-EEG" presented in eHealth2018 - The 23rd ISfTeH International Conference's.

Material and Methods
Surveys related to this study have been made to people who have conducted interviews / surveys / experience surveys in hospitals in Sweden, Norway and Denmark. In Finland, similar actions have been taken by the author and his colleague. Interviewees were responsible for the Electroencephalography (EEG) equipment in hospitals or were hospitals' ICT operators, i.e. mainly external partners (Managed IT services, MITS).

Results
Managed IT service providers are not keen to accept public cloud services but rather private clouds provided by themselves. Most common argument is the lack of security. No one denies security problems what cloud computing business has had, but nowadays it's impossible for cloud service providers to do business if security issues occur, such as patient's data privacy and secure transfer of medical data (Abbas et al. 2016, AbuKhousa et al. 2012). This study also clarified for hospital staff and ICT practitioners the operating principle of the EEG equipment, which in this case is Software-as-a-Service (SaaS). The cloud service models can be identified in a variety of contexts, but there are three basic models for describing service entities: Infrastructure (IaaS), Service Platform (PaaS) and Application Platform (SaaS) (Baun et al. 2011). SaaS is the top layer of a three-tier cloud service model and usually it is meant to be used as "pay per use", in other words, user pays only what he/she uses (Salo, 2010). In this case, hospital pays EEG acquisition, review and other analyzing options, videos etc. when needed.

Discussion
This study does not take the stand on what kind of cloud model (public / private) hospitals should be introduced, but mainly to highlight different perspectives. It is understandable that MITS providers want to play a part in growing markets, and public cloud service providers are their competitors. "According to an International Data Corporation (IDC) Health Insights IT spending forecast report, IT spending by the Western European healthcare sector is projected to increase from $12.9 billion in 2016 to $14.1 billion in 2021. Hospitals represent around 62% of total Western European healthcare IT spending, and that is expected to grow at 1.9% Compound Annual Growth Rate (CAGR) to 2021" (IDC, 2018).
A very general concern about cloud services is cyber security, but ignorance of the issue affects people's thinking and, consequently, the business idea world. Jiří Hanák (Hanák, 2015) has listed five most common fears of the cloud: 1. Fear of change when there's no going back, 2. Fear of data security, 3. The fear of accessibility, 4. Fear of high expenses, 5. Fear of losing control**.** Cloud specialist David Linthicum has said wisely "Your data is only as vulnerable as your security protocols, cloud or not" (Linthicum. 2015).

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