GNU Health Interview: Corruption Prevents Use of Free Software

We have talked to representatives of the GNU Health community about how digitalisation in healthcare can also work with free software.

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By Marie-Claire Koch

In order to make the health system more efficient and advance research, the use of appropriate software helps. But it is especially in the health sector that is precisely this thing that is expensive and sometimes the (money) means are lacking – not only in countries such as Tanzania, but also in this country. In what countries freely available software is already used in hospitals and where it is happening, we have with Dr. Axel Braun and the doctor Dr. Edgar Hagenbichler spoke by the GNU Health community.

? heise online: What exactly is the motivation behind GNU Health and how did it come about?

! Axel Braun: More than fifteen years ago. The initiator of the project, Luis FalcÃ n, is a doctor and computer scientist and had to undergo medical treatment in Buenos Aires at the time. He noticed that there is little modern technology in many hospitals, until there is no modern technology. This is primarily because medical software is extremely expensive. For him, this was the starting signal, to say: we can do it differently. This was the born of the GNU Health project. Meanwhile, it is embedded in a slightly larger context.

Dr. Axel Braun has released the first GNU Health Live CD, takes care of the integration into openSUSE and is a long-time supporter of GNU Health. (Image: Axel Braun)

The non-governmental organisation that is pushing the whole thing forward is called GNU Solidario and the mission is education and health care with free software. In 2008, the project started with

INHALTSVERZEICHNIS

Open ERP (Enterprise Resource Planning) as a subject ERP framework. GNU Health built on the open ERP at that time, until Open ERP changed its license conditions and they were no longer as free as they could be. That was about ten years ago, when the technical basis of GNU Health was switched to Tryton, which in turn is also a fork of Open ERP or Odoo, as it is said today.

"Knowledge should be shared and not allowed as intellectual property"

! Edgar Hagenbichler: What was originally born with Louis FalcÃ n and GNU Solidario was intended to provide the sub-privileged or people from less wealthy countries with a technical system in the medical field. Technology is a necessity, so to speak.

Dr. Edgar Hagenbichler is a general practitioner, occupational physician, psychotherapist and service provider in information technology and partner of GNU Health
(Image: Edgar Hagenbichler)

The project lives by volunteers and I think that each of us has a different approach and a different motivation to GNU Health. For me as a practising physician, it is particularly relevant that medicine or health and access to health must be free. This is a human right, the right to health and then the tools belong to it, because medicine is now very technology-driven and influenced by technology.

GNU Health is a central point. What is important, however, is that the technology is used in a supportive manner and does not dominate medicine. Participation and responsibility are relevant to this. The latter, because you can look at what the system then suggests, which is not possible with non-free software or closed systems per se. You can check what the system does. This is also the essential understanding in medicine – sharing knowledge and making it available to the patient. Knowledge should not be permitted as intellectual property. For the 21st This has become a much more relevant topic, especially with artificial intelligence.

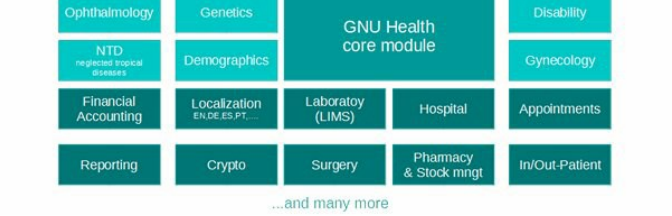
! Braun: I have been active in the Free Software environment since the 1980s. At the end of the 1990s, I switched completely to Linux-based systems. In 2005 I wanted to provide a practices software based on a free license. Then, after a market analysis, I noticed that there are systems in Germany that are completely sponsored by the pharmaceutical industry. My thought at the time was that if a practice gets something for free, nobody will bother investing in free software. So I put it on hold and then came to GNU Health years later, because I still interested in the topic.

? **heise online: What is GNU Health?**

! Braun: GNU Health consists of three main products. On the one hand, the classic "Health Management and Information System" (HMIS), which can be used to manage medical practices and hospitals.

Then there is the so-called "Federation Server" (Thalamus), which helps to build a regional or national health network. This federation server is the central data instance with which the individual hospital or practice nodes can be synchronised. There, user data can be compared, patient data, where findings can be stored and exchanged and the like.

MyGNU Health is the third and most recent product. It is a "Personal Medical Record". This is not just a patient file. In particular, personal data can be stored. For example, how do I do today, psychosocial components, which blood pressure I have, what oxygen saturation, what heart rate, which weight and so on. This was developed to be able to run on free systems. That was the development environment for the PinePhone . But the PinePhone hasn't really prevailed, so MyGNU Health 2.0 has now been released, which is to run on Android, plus on the usual free desktops. And this will be pre-installed on the full phone in the future, among other things. This is a provider from Germany that delivers Android without Google.



Core modules of GNU Health
(Image: GNU Health)

GNUHealth itself consists of a core module, which can be used to dock with further modules as required. These are all included as standard. If you want more specific things from the ERP area, you can add modules from the Tryton universe, where another 140 different modules related to enterprise resource planning (ERP) or enterprise resource management are included – for example for payment methods and supply chain functions.

? And who still attends there?

! Braun: The Tryton community. This is a little larger than that of GNU Health and is essentially driven by the Tryton Foundation and two, three companies behind it. But it is also a project that has existed for a very long time and has matured accordingly. GNU Health is always based on the so-called long-term support releases of Tryton. We will now release version 4.4 of GNU Health next month. This will run again on Tryton 6.0. And when Tryton 7 appears shortly after, we consider whether we are releasing a migration version of GNU Health 5.0 to Tryton 7.0.

? What can you do with it?

! Braun: For example, you can manage the doctor's office or the hospital. Bed occupancy, operating theatres and doctors can be managed for the hospital. For example, there is an in- and out-patient management, which gives it the opportunity to manage the outpatient or inpatient recording. There is also an pharmacy module that allows you to manage the drug output and the similar things, such as the drug store and the supply chain behind it. And of course the whole billing.

The management of diagnoses and findings is another core area. You can issue birth certificates, death certificates or recipes, among other things. The prescriptions can then be electronically signed with GPG. We have been doing this for years.

? Could the electronic patient record come from GNU Health?

! Braun: Yes, GNU Health is very general at first. Every health system in the world is different. Not only in terms of language, but above all from the legal framework. Which data in which format is required in Germany? This will change until 2025. This is also a classic interface question. We need to map, expand if necessary, and so on.

This requires adaptations to the national structures. We have different partnerships with universities. The goal is that the adjustments within the country are made by bachelor's or master's theses. Or through projects that take place there, such as in Laos, who have taken over the complete translation into Laotian.

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? What is the collaboration with Orthanc, a DICOM server for managing medical images?

! Braun: We have an interface to Orthanc for DICOM images that is currently being revised. We can include the orthanc viewer accordingly – orthanc is available under GPLv3 Then we get an image of order from Orthanc and in the GNU Health System there is a link to this picture. If you click on it, the DICOM images are displayed. So we do not need our own web viewer.

? Where is GNU Health used everywhere?

! Braun: Frankly said, we would like to know that too. No one has to contact us to say that he or she is using it. At some point a mail came with a few questions from a hospital in Tanzania. We then supported them and asked them if they wanted to introduce GNU Health. It turned out that they have been using it for five years, but wanted to expand the range of functions. We had not heard of it until then.

We also have a community member from China that helps diligently with bug fixing and translation. He could not see Wikibooks where the documentation for GNU Health is published because the site is locked in China. However, we do not know a project in China.

? **Why do the GNU Health products not be used in Germany?**

! Braun: This is primarily due to the necessary certifications. This starts with the electronic health card, which has to be read in. You need card readers that need certifications. The necessary interfaces must also be certified. For the invoice, a service catalogue must be defined especially for Germany. The same goes for the e-recipe. We do not have the money for the necessary manpower. In my view, this is a political problem. German politics could do that if they wanted. Especially in the international environment, I see corruption as one of the biggest obstacles to the spread of free software.

Cost of licenses as a hurdle

? **Have you already dealt with how much it would cost to get the licenses?**

! Braun: We had a stand at the Medica with GNU Health a few years ago, which was strange in itself, because we were the only free software in this commercial temple. People also came to us who wondered why we provide software freely. That was hard to imagine for some. In this context, I also spoke with certainty. With the right hand you say "Good day" and with the left you already have an invoice.

? **The healthcare industry is one of the largest sectors of the economy. Do great tech companies interest to share their knowledge?**

! Hagenbichler: Yes, it is a completely different system behind it, if you do it commercially and have it shaped mainly by people who then draw their profits from it. One knows that then, of course, marketing is in the foreground, and much more than any research on it. Pfizer is a wonderful example. The marketing budgets exceed the so-called scientific research budgets at Pfizer. This is also one of the companies that paid billions of euros in a settlement in 2009 because they have used unfair marketing methods. That has been a while, but certainly no less topical, on the contrary. Likewise, big tech companies such as Google do not necessarily have an interest in expanding knowledge and researching illnesses. Instead, you have an interest in the intellectual property of the products in order to shut themselves off as far as possible and not share the knowledge with anyone. The profits are then poured in.

GNU Health also has intellectual property because it is a licensed trademark, but the license says that anyone can use it. This means that I may change and adapt the software, but then it has to redistribute it under a different name, because it may then no longer be called GNU Health.

? **Google also wants to provide social medicine with Google Health. How social is that?**

! Hagenbichler: Google is simply one of the large tech companies that do not have people's health in mind, but the profit. So medicine cannot work. This has been seen, for example, in the global COVID-19 crisis. In my view, it was predominantly the typical commercial area that was not for the benefit of society and patients. There were various programs where, for example, the National Health Service in the UK simply exchanged data with Google without informing the patients or the doctors involved. Of course, that is not possible. Google basically takes your data, for example about Fitbit, which they have now bought, and evaluates them, that is their business model.

A software developed and published as open source focuses primarily on the user's needs and not on the profits of Big Tech behind it. Of course, people need to earn money to live, but build a system to make as much profit as possible is completely wrong in the healthcare sector. It would mean producing as many diseases as possible, which are treated as much as possible. This is not in the

interest of patients.

Copyrights

? What if a company rebuilds and resells the GNU Health products?

! Braun: As long as the copyrights all go along, that's okay. Unfortunately, we have experienced several times that the modules are more or less one to one, the copyrights fly out and the people want to sell or publish it as their own work. But we take action against that. There have been several deletion requests on Github.

? How does GNU Health fund?

! Braun: First and foremost through donations and we have a membership model. For 120 euros a year you can become a member of GNU Solidario and the donation goes one to one to one. Companies doing business with GNU Health should donate a percentage of sales.

And we would like something like a company membership. So that hospitals that use GNU Health support the development. But unfortunately that is like many other systems. They like to use the free software, but if it is somehow about supporting the further development financially, then they all have one hedgehog in your pocket. However, there are also good examples, such as the Injury Surveillance System and the Dental Module. In the Injury Surveillance System, you can link any findings to an event. If someone has just fallen down the stairs or was it a robbery, it was a traffic accident or whatever. The whole thing can be mapped with geolocation, so that the analysis can then be seen in the analysis, for example, where the accidental are focal points in the city.

This Injury Surveillance System was developed in Jamaica and then returned to the project. This is actually the ideal way of open source development, that you make an extension and then return it to the project. The dental module, for example, was also created in the basic concept in Argentina at the university, was then incorporated into the standard and extended.

? What is the handling of data security?

Braun: We could technically encrypt up to the field level. The Federation Server is an example of this. We can encrypt everything. However, if you want to make a data analysis because GNU Health is also used for precision medicine, we have stored a complete genome database. There, genetic dispositions can be deposited for individuals. Of course, if data analyses about mass of patient data are to be made, then of course it is not possible if everything is encrypted. Ultimately, it depends on how the system is structured.

Role-based authorization management

! Braun: Technically we have seen a three-step client/server architecture. We have a database, mostly PostgreSQL, which is lower. Then we have the server and we have the client. And as a client, we once have the GTK client – a free GUI toolkit – or a web client with a slightly stripped-down functionality. When it comes to permissions, we have a role-based authorization model, so that for example, the front desk, which only makes the appointments, cannot necessarily see the findings of the individual patients and so on.

? Gibt es auch die Möglichkeit, Daten mit einem Analyse-Tool auszuwerten?

! Braun: Alle sozioökonomischen Determinanten der Gesundheit können erfasst werden. GNU Health setzt an, bevor ein Mensch zum Patienten wird. Der Mensch wird zunächst als Individuum in seinem Umfeld betrachtet – zum Beispiel in seinem familiären Kontext, seiner Wohnumgebung oder ähnlichem. Die Erweiterung besteht darin, auch die Daten zu nutzen, wenn er ins Krankenhaus kommt.

Kontaktnachverfolgung

! Braun: Aufgrund der sozioökonomischen Daten haben wir eben auch die Möglichkeit, zum Beispiel Kontakte zu verfolgen. In Ländern, in denen das relevant ist, sogenannte "vernachlässigte tropische Krankheiten" wie Chagas oder Dengue-Fieber. Wenn es zu einem Ausbruch kommt, können wir über die Kontaktbeziehungen die Menschen proaktiv vor solchen Dingen warnen oder

Impfkampagnen starten und Ähnliches. Das hat zum Beispiel in Argentinien bei Corona gut funktioniert. Die Argentinier haben sich ein Frontend gemacht, wo sie die ganzen Corona-spezifischen Daten leichter eingeben können und haben dann das Kontakttracking in GNU Health gemacht, während man in Deutschland lange gekämpft hat, überhaupt irgendwelche Corona-Apps zu bauen. Und das Ganze mit einem Budget, von dem man bei einem Projekt wie GNU Health eigentlich nur träumen kann.

Transparenzhinweis: heise online ist Medienpartner der GNU-Health-Konferenz.

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(mack)

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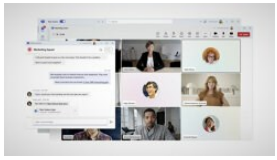

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