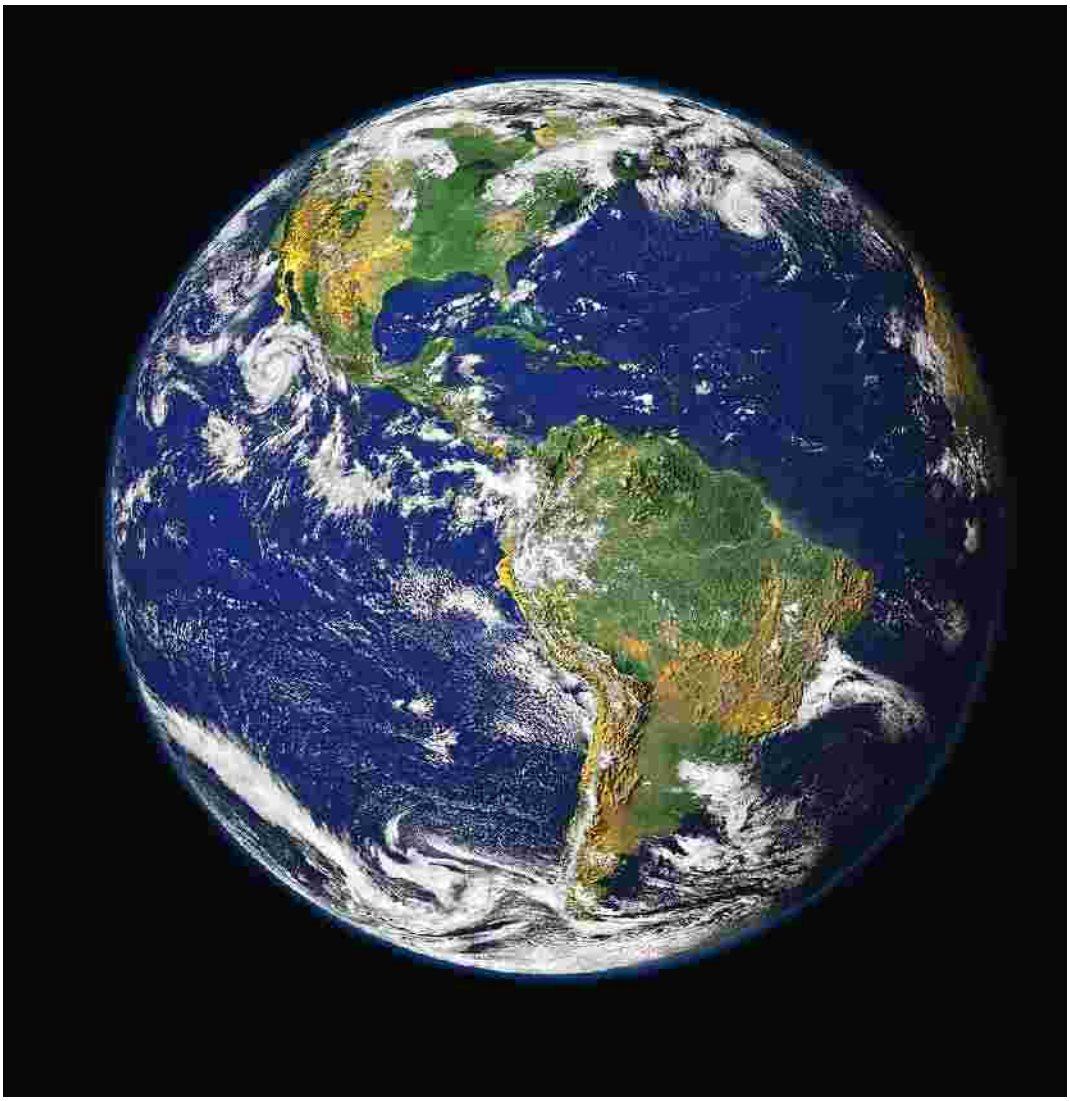
CYPSELA.NET

A GLOBAL HEALTH SERVICE FOR THE PLANET EARTH

FOR A BRAVE NEW WORLD



This is where we live. There are more that 8 billion of us now. The majority of us have only primitive health care. Many have no health care records at all.

The health of people from wealthy countries is closely tied to the health care of people in underdeveloped countries. Geographical isolation no longer isolates disease.

Many of the most dangerous diseases to human health are caused by non-living agents and this knowledge requires a paradigm shift in our attitudes to health.

PREFACE

WORLD HEALTH AND MEDICAL RECORDS

I became aware that human health on this planet needed to be understood as one integrated entity, after I attended a number of private scientific meetings in Cambridge and London, UK, in 1979 - 1981. I knew that there should be data centres dedicated to this end, where all the data collected would be available to the individuals that it referred to, and if those people so desired, their data could then be collected anonymously with other peoples data, so that the whole collection could be available to all health researchers and administrators without any politics involved.

Dealing with human health of this planet, country by country, and disease by disease, is archaic and totally misses the point that the health of humans is intimately tied to the environments and ecologies they had lived in since birth. I knew that knowing a person's contact with other living things (animals, plants, bacteria) and non living things (asbestos, chemical carcinogens, prions), and the climates that they lived in mentally and physically, and the quality of their lives and life styles at crucial times, could throw open doors to new medical, physiological and psychological understanding.

The need for a global health record service is clear. Medical records can standardize medical facts, and allow integration and correlation of these. This is necessary to understand medicine globally. It is true that a vast number of people in this world do not have a medical record, so we are far from understanding world-wide health. Nevertheless, the rapid spread of disease now cries out for a platform on which to make educated administrative and research decisions. This is crucial to understand global health. New medical records need to provide corroborative data that could throw light on how humans react to each other in the mental and physical parts of their environments. Adverse conditions do occur in particular people and in specific circumstances, and this information is important to the pharmaceutical industry. The current medical records which do exist, do not indicate the complex interaction that takes place in the health of a community of people and its environment, nor are they standardized globally.

The health of people in Amazonia, Central Africa, the Pacific Islands or the Siberian Arctic does not isolate western countries from diseases any more, and the health of all humans is related to multiple disease factors which are simply not considered, but only because they are not collected in a scientific way. However, if that could happen, the problem then will be; gathering the right data; giving it to the right people; and giving it at the right time to avoid pandemics.

A major concern will be finding the data from individual patients rather than from their doctors or other health care workers who can make mistakes or slant information for various reasons. The information required now, is more broadly based than that which ordinary physicians generally have time to collect, and also thought to be less 'scientific', as that being scientific was being truthful, but even if family doctors were willing to gather this data, how could they store and standardize it globally, and how could they disseminate it wisely?

It is unusual for any person to have access to his/her own medical record today, even if such a record exists. Currently all medical records tend to be held by governments, national or provincial, or hospital chains, groups of clinics, individual doctors, or other commercial health organizations, and these can sell the data to third party organizations without giving notice. However, to give individual people the absolute control of their own medical records will end privacy problems, and give comfort to ordinary people. Now people often have to pay to get written copies of their own medical records, and some doctors will not provide this service. The fact that the data that is now being collected in current medical records is not as useful as it could

be, to both patients and medical research, and is a problem that can be overcome at the same time as forcing governments or institutions to come to heel on selling their public's private data.

I saw that there were five major problems in the development of an integrated world-wide medical solution that were necessary to deal with the intricacies of the new type of research suggested at the 1979 and 1981 meetings I attended. The problems were:

1. A way to ***Communicate*** to all people on Earth.
2. A way to overcome ***Language*** barriers.
3. A way to ***Standardize*** data over multiple languages and types of data.
4. A way to take ***Politics*** out of the control of medical practice and research.
5. A way to ensure the ***Privacy*** of individuals' records.

Although to build a system to accommodate these five requirements was thought insurmountable in 1979, but all of these could be overcome by the use of a potential system that I conceived in my mind at that time. Though it was fantasy in 1979, my team did achieve this in 2009, in three adjunct parts being *Cypsela Personal Health Record* (CPHR), *Cypsela Personal Profile Data* (CPPD) and *Cypsela Information Research Centre* (CIRC) discussed in the following pages. By that time we had a product, proven in a major European Union funded project, covering 8 countries in Africa and 3 countries in Europe. My system was chosen to collect the data.

It is true that the vast majority of people do not have a health record! None of these people have a health record. They are collecting drinking water from Lake Albert at Bugoigo, in Uganda. They are all at risk from a number of water borne diseases. Schistosomiasis is rife here. Picture taken in 2007. Collecting drinking water.

In the following pages the use of *Cypsela's CPHR* will unfold the essence of a different type of health record system that is designed to make a fully comprehensive private personal medical record for anybody on this planet, to bring better health prospects to all, and to form the basis for a more overarching ability for research, practice and administration of medicine.

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CYPSELA PERSONAL HEALTH RECORDS - CPHR

In reading this, please do not think of yourself as a being a citizen of a western country. Do not think about America, Britain, Canada or Europe. Do not think about how health is managed in these areas. Think of yourself as one person among 8,000,000,000 people, because that is what you are. Everything that follows is possible **now**, and can be expanded to a **global service easily**.

Imagine that everybody on earth can have their own digital health record for free if they choose. Imagine you have one, it is a CPHR. Imagine you have absolute control over your own health record. Imagine that only authenticated and authorized health care professionals can add data to it, but only ***you*** can say who they are and when they can do it. Imagine you can choose your clinics or family doctors and specialists, and you can 'switch off' doctors and 'switch on' new doctors at your will. Imagine that your health record isn't owned or controlled by any doctor, clinic, hospital, insurance company or government. You don't have to visit your doctor to see your health record. It isn't in your doctor's office. It is physically stored in Cypsela's data vaults or cloud, yet it isn't owned by Cypsela and Cypsela ***can't*** read it. It isn't owned by any third party. It is yours. It belongs to you, and you alone, and it is always accessible to you anywhere in the world at any time, via the Internet, and to any physician or insurance company you like.

Imagine your health record inherently inter-correlates all languages, so that although your health care providers write notes regarding your visits to them in one language, say English, your entire record can appear in any other language instantly at your request. To clarify this point:

If you are an English patient using CPHR and have an accident in China, Chinese doctors at a Chinese emergency clinic can see your full up-to-date health record in Chinese instantly if you so wish. Moreover, any notes they make in Chinese can also be seen instantly, in English, and also in any other language if required, e.g., Arabic, Russian or Swahili. Not only this, but multiple authorized health care providers at different centres, anywhere in the world, can see your record in different languages at the same time, but again, only those who you authorize. Think of the capabilities this facility gives you.

Imagine your health data is always up to date. Any new notes are added instantly, as a doctor or other health care provider writes them. Your system is secure and private. You cannot alter your own record, otherwise you would endanger its integrity, but only you, can say who can see and add notes to it, or edit it, and then, only authorized health care officers in their own jurisdictions can do this. You can entrust a general practitioner to suggest specialists to be approved by you, and then they can also add to your file. Nobody can delete any part of your record. Every addition or edit is noted chronologically and can be searched and queried by your health care providers, but only if ***you say so.***

Imagine your health care record service is free. You do not have to pay for it. Just a minimal, one time only payment for your first registration, say UK £5 per person, or 5 units of foreign money to deal with poorer countries.

Imagine your health record is fully comprehensive. This means it covers every aspect of your health history, in one integrated single digital file. So all your visits to family doctors or walk-in-clinics, and all medical laboratory tests and results, and all visits to specialist clinics (e.g. cardiology, neurology, physiotherapy etc*)*, and all your radiology (e.g. x-rays, ultra-sound, CT and MRI scans) are recorded. All hospital visits, all vaccinations and all surgery notes are added to your file as they happen. Your file includes all comments by all the health care professionals you see. It is an ongoing record and is always up to date, and can be searched by you, and the doctors you permit.

Imagine your medical record automatically provides an up-to-date health summary (i.e. when and where you were last seen by a health care officer, what vaccinations you have had, and when and where they were given and by whom. All your allergies and adverse food and drug reactions, and all the basic data, blood group, height, weight and colour of your eyes, is included, and a picture of you.) This can appear on your own, or your doctor's computer screen instantly, or on any other hand-held facility that can be accessed via the internet, but only with your permission, your password and/or your biometrics (thumb print, iris scan etc) as required by you, on each occasion. You can see your health summary as an 'app' on your mobile phone.

Imagine, when bringing your file up on a monitor screen, there is a button to switch to different languages. Imagine you live in an English speaking country but get a job in a French speaking country. You can then 'switch off' your doctors in your own country, and 'switch on' new ones in the French speaking country, and imagine that your new doctors can see your entire medical record in French. You haven't switched off your medical record, you haven't moved it, you haven't changed it, you have just changed who can see it. You can have two family doctors, one in England and one in France. The change is instant, costs nothing, and you can do it on your own computer or mobile device. You do not have to go through any procedures. You just have to ask new doctors to take you as a patient, and if they say yes, then, a few clicks and it is done.

Imagine your medical record comes with search facilities so that doctors, or you yourself, can search to find where and when you had tonsillitis, bronchitis, mumps or measles, or had your appendix removed, or broke a bone, or had malaria. And imagine your record can tell you which doctors and nurses treated you for what, when and where! It can show when and where you had all your vaccinations, and against which diseases, and which medicines you were prescribed and any unexpected adverse drug reactions. These historical searches are useful to your doctors because most people do not know the names of the drugs they were prescribed a few years after the event, but knowing the details may be crucial to doctors in an emergency. Some people die after being brought into emergency rooms because they do not recall past treatments or episodes, or for other reasons do not give the staff in emergency rooms correct information. Many people do not know if they have been vaccinated for this or that. Most people, who think they may have had a mild adverse reaction to a specific drug, do not report it, but knowing this can be important.

Imagine when you visit your preferred doctors, that their reports and the dates and times they saw you are automatically recorded in your record. Imagine that all the forms your doctors may require for their own purposes (e.g. in western countries to get payment by a government, insurance company, hospital or clinic) are automatically completed and presented to the doctors for their signatures at the right times.

Imagine you are sent for medical tests at your preferred medical laboratory and your own personal health record appears at that laboratory and automatically allows the findings to be added to your record, and it sends copies to your appropriate health care professionals instantly. Imagine that your test data is never misfiled; it cannot be. It won't enter anybody else's file, and your file cannot accept anybody else's data. This gets rid of misfiling which is still common in some western countries.

Imagine you take a holiday in a foreign country. You are in Africa, on safari. You have an accident, or fall ill. You find the nearest bush clinic through your Cypsela service. You get to a clinic and they can treat you. The clinic shown below, knows who you are. It can find you from the Internet and your password. The clinic may be different from what you are used to, but they can see your medical record in say, Swahili, using your mobile phone or theirs. The fact is, your medical record is useful in any country in the world, and Internet access is available from places that you might think would not have an Internet connection. Internet access is much cheaper than making roads, and it covers more of the continent of Africa and Asia than roads do.

A bush clinic in Uganda, at Runga. These people are being checked for schistosomiasis. Cypsela can work on line with these types of clinics.

Imagine you need a hospital in Africa. If you cannot talk to the people at the clinic you can sign to them and they can get you to the nearest hospital somehow, and imagine that all hospitals have biometric readers (most already do) and satellite connections.

Roman Catholic Hospital at Biharamulo, Tanzania, between Burundi and S.W. Lake Victoria - 225 beds, catchment area 300,000 people, 1 physician. Taken 2007

Imagine you are a receptionist at a hospital like the one above, and you have problems in admitting new patients. Often patients have been seen at this hospital before, but they don't remember when, or for what, and may not even know what name they used last time. It is not uncommon for local citizens to change their names, and in Africa a person can have a famous name like Winston Churchill or Joan of Arc, but may change this quite often. Names do not necessarily go with gender in Africa and a man can be called 'Avril' or 'Anna'. Many people in Africa have only one name. In some places people have no official identity at all. Finding any type of personal medical history in underdeveloped countries is a frequent problem at hospitals, but if the patient uses CPHR, when he/she arrives at the hospital a thumb print will identify that person and their medical history is clear in an instant.

Imagine that multiple health care officers can see and access your data at the same time, from multiple places on earth, in real time if you permit this. Imagine what power this brings. You can allow conversations between your own family doctor and different specialists (approved by you) where ever they are. They can all look at the same pages of your notes, in real time, even if they speak different languages. They can discuss your case with specialists from hospitals and clinics around the world. They can look for a replacement organ for you world wide.

Remember, your file is held by Cypsela, but Cypsela can't read it. Your record is secure as can be. Imagine that your data, in and out of the Cypsela servers is always encrypted. It is stored by Cypsela and mirrored at other Cypsela sites to prevent catastrophic loss. Remember, your file cannot be moved and nothing ever can be deleted from it. Everything that is entered in it, is always there, even after parts are edited. This feature is also necessary to maintain your record's integrity.

Imagine that every household in an isolated hospital catchment area (say in Africa) has been visited by Cypsela staff, and a health record has been established for every geo-referenced home, and the man or woman in charge in every house, and all their daughters and sons, and others who live there have been registered and thumb prints have been taken. Now all these people have an identity, but nobody can see it, and it isn't something that they can lose, even if they change their names.

N.B. Cypsela has already done this in an isolated area in Africa with some 200,000 inhabitants. It had one road in and out, but usable only during the dry season. It took 5 months, 10 attendants, 10 bicycles, 10 laptops, but minimal money. The bicycles and laptops took more. This was to prove a point that getting to all households in a large isolated un-roaded area is not a difficult financial or physical problem.

Imagine you are a merchant seaman on a tanker, or a passenger on a cruise ship. Your record will be instantly accessible, and in any language, and all the facilities imagined above will apply. A great many people work overseas, and many are isolated for long times. Some merchant ships do not return to their home bases for months on end and CPHR would be valuable to them. The crew on the ship shown opposite can be away from home for as long as 5 months.

Imagine that you want to allow your health data to be available for medical or pharmaceutical research or health administration purposes, but you do not want to give away your name, address, or any other possible personal contacts. You can sign a form to allow this. Then Cypsela will copy your raw health data, but no personal

contact information, and transfer it to the *Cypsela Information Research Centre* (CIRC) wherein no personal contact information is stored. Then authorized researchers (approved by Cypsela) can cross check tens of thousands of files to look for correlations, for a fee.

Imagine That a research team can now cross correlate the anonymous data in CIRC over all the files provided by CPHR members in say Argentina or the Fiji Islands, looking for specific connections in different patient's life styles. These searches can also check the files of those individuals who have decided to use the adjunct Cypsela service, *Cypsela Personal Profile Data* (CPPD), which collects life history, life style and life quality, in association with CPHR and (CIRC). All data in CIRC is anonymized, but can be a direct adjunct to a person's normal CPHR record. Then, for example, researchers can look for mental concerns in patients which correlate with the appearance of a change in life style which may have initiated the change. They can look for a sudden onset of an unusual adverse reaction to a drug which a person may have been taking happily for years. Unusual situations which are tied to both specific types of patients and specific adverse reactions may be able to keep a good drug on the market, but with cautions to specified people or situations.

Imagine that your medical record file is stored and mirrored in different physical locations and continuously guarded, but if an insurrection occurred, or a government ordered the close down of the site in their jurisdiction, that local store of data would instantly evaporate, but you would not lose your data. It will still be available from other physical sites. It can still be used anywhere.

Imagine you are a nomad and you do not have a country. There are a million nomads in Africa, Asia and South America who do not hold any allegiance to a particular country, and they cross borders at will. They do not have identities as we understand the term. Nomads without a country are common in North, East and West Africa. Imagine what CPHR can provide for them? Right now they do not have records of any type.

Here is a young Masai man in Tanzania (2007) who has a temporary job as a hotel guard. He is a nomad. He doesn't have a name, he is called 'noname.' He speaks Swahili. He cannot read. He doesn't seem to know about 'countries' or borders. He is nevertheless very intelligent and an intriguing person. The use of CPHR would give him presence in his community. The use of CPHR can bring people together, and this or other alternative systems on a global scale can occur, and assist the binding of the people of this planet into one group. The use of these services will give health care providers and administrators significant assistance, and will help medical and pharmaceutical research, and can give confidence to the individuals concerned.

Imagine the value of health records from all the isolated areas in Africa, Asia and South America, for research. These areas will contain communities with highly restricted gene pools where many people are born and die in the same village. Health data from such areas have been sought by pharmaceutical companies for the patterns and information

that can be extracted from them, unclouded by multi-racial genomes. The value of the data from all these isolated areas to research industries could be great. Cypsela CPHR can become a true global system for collecting and managing health data.

Imagine that your personal data with CPHR will not be available to individual interrogation by police authorities, insurance companies, or in law courts, without your consent, because your medical history is not under the care of any government organizations or NGOs that can be silently tapped. Your data is with Cypsela, and you will be advised if there is any attempt to open your file illegally, and then you will be told who is trying to see it, and have the opportunity to say yes or no, and can set limitations if necessary. However, if a genuine government agency wants to see your file, they can simply ask you for access.

Few third party organizations are ever interested in the medical record of individuals, except insurance companies when dealing with individual claims. Yet many organizations are looking for significant collections of data (*e.g.* female oncology patients taking a specific drug) but these searches can now be easily provided from CIRC. Members of pharmaceutical companies who attended the 1979 meetings (previously mentioned), showed great interest in being able to follow the passage of their drugs through millions of different users around the world, and then could refined their searches, to area, age or gender. They wanted to know how the drug worked in the open field.

It is important that CIRC will be available to deal with any authenticated health research group. Cypsela will never pose a threat to any authority, and will gather only health data, and this will be available for a fee through CIRC, to all states, nations and organizations. This will prevent different countries or NGOs from deliberately inhibiting new health data to be seen only in specified countries or organizations. Health research should be free for all.

THE FUTURE MANAGEMENT OF HUMAN HEALTH

Changing water resources, old lakes desiccating, new areas flooding, and a rising sea level, are promoting changes in the distributions of populations of humans, animals and plants, and this is leading to significant changes in the global health of all living things.

A sunset at Lake Chad, Central North Africa, one of many dying lakes

The impact of humans on the global ecosystem over the last century has rocketed disastrously, changing the whole biosphere of this planet by destroying vast habitats all over the world, and polluting areas of land, sea and air. This brings humans into contact with new diseases and new vectors, and the quick inter-continental transport of humans from place to place exacerbates the spread of disease. While checking for terrorists at airports is not easy, checking for disease carriers is an even a more subtle and altogether a more difficult task.

Managing and understanding global health effectively requires a global change in political thinking, away from one country, or one corporation, but to the survival of the human race. We need this to happen, and we need to assess the implications that new data from every isolated corner of this planet, in real time. Cypsela is one way to try to bind people together by looking at human health as one big entity in which we are all involved, and that no government, no corporation, no group, should be exempt.

The first version of CPHR was used as a parasitological data base for the *World Federation of Parasitologists*, initially for a project funded by the *European Union* (EU) for use in Africa which covered 8 countries with a continuous stretch going east from Senegal to Zanzibar. It dealt with all aspects of schistosomiasis, and we showed this software at a conference in Yaounde, Cameroon, pointing out its great flexibility. We showed it could be used for any other parasite or any host, be they animal, plant, fungal, bacterial or viral, and that it had taken more than 40 man-years of work, spread among 5 people, to achieve. The system we showed looked in detail at the 8 countries from local environments, in this case rivers and lakes, and the parasite's spread which was influenced by seasonal climatic conditions and movement of its hosts. The system we showed covered the treatment of any disease (not just parasitic diseases), medically, veterinary and agriculturally, and considered the patients and their family trees and work experiences. We showed it in multiple languages: English, Chinese and Swahili.

Picture at the conference in Yaounde, Cameroun, after a successful demonstration of our software. My wife (Chief Operating Officer of our company) and I, stand either side of the President - who is dressed in blue, 2008.

Importantly, we showed that CPHR dealt with health care providers (names, status, qualifications, organization), and we could find which person gave a vaccination or a medicine and which batch of vaccine or medicine was used, and was given to specific patients, and where this happened and at what time. It noted any adverse or beneficial reactions, occurring instantly, or after a few hours, days or weeks of treatment. Samples of environmental water and parasites were sent to laboratories in Africa, Denmark, Belgium and the UK for analysis, including genomic studies of the living things involved. People in London, UK, could see a group working on a stream in Africa in real time, and could talk to them and give them advice, *e.g.* 'look under the shady bank, not the sunny one'.

Our system can look at all parasitic situations, where the parasite is bacterial, fungal, viral, plant or animal, and where the host is bacterial, fungal, plant or animal, and this does not require changes of our code.

It is important to know that physicians, surgeons, hospitals and clinics do not have to store any Cypsela data and cannot be hacked for medical record data because they do not have any. Clinics and hospitals can bring up a patient's data on the internet with the patients agreement and a password or a biometric scan. Patients and health care providers do not have to pay for the service.

CIRC. *Cypsela Information Research Centre.* The beauty of this is that any user can see all the data in their own language, regardless of the language initially used to insert the data. Thus groups from different countries can collaborate without using different languages. They all use their own language.

In addition to collecting basic medical history from CPHR, CIRC also collects and integrates detailed information of a client's life history, life style and life quality collected by CPPD which stores data anonymously into CIRC. Thus all authenticated researchers, can then find people who have had similar different traumas in their lives, *e.g.* lost a loved one, served a prison sentence, had a car accident, gone bankrupt, have been beaten up, treated badly at work, or a fire burned their house down. We can see if these events relate to dates and times with changes in their health. We can see how their work and times of relaxation changed throughout their lives, and we can understand their hobbies, sports, and attitudes to life, and how their diet and religious life changes. We would know from their whereabouts if they had been irradiated after the Chernobyl disaster in 1986, or whether they resided in the Tar Ponds or Tar Sands areas of Canada where carcinogens have permeated the ground water. CIRC will hold all its data (anonymized) in the public domain, available for a fee to commercial or government customers.

Cypsela is a platform providing a service which came to bloom in 2010. A period of stagnation then occurred, caused by personal situations in my life. I am now in a situation where I can let my software and ideas move forward again. I am a scientist, and have never had a marketing team. To fulfill its promise Cypsela requires a sophisticated data infrastructure to spread and market globally. I can negotiate help from other bodies who would like to be involved in a global exercise. At 88 I do not want to run a company, any more, but will give my assistance.

The key to this endeavour is that we have a way to control the questions that doctors can and need to ask their patients and control their answers in many languages from the beginning, thus we do not have to translate any thing on the fly!

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