Gérer ses données, ou être géré par ses données, quels futurs nous dessinent le big data et le quantified self ?
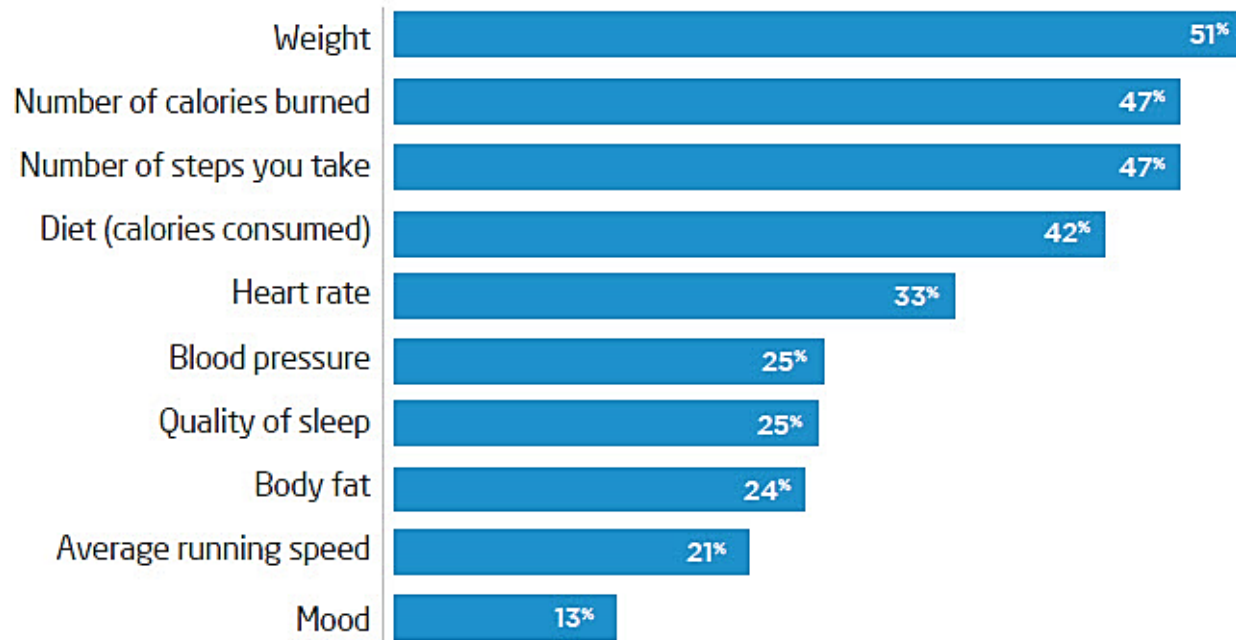
Stéphane Koch

www.stephanekoch.tel

Digital literacy real life coach

Vice-Président d'High-Tech Bridge SA

Health and fitness metrics tracked using QS tools

Metric	Percentage
Weight	51%
Number of calories burned	47%
Number of steps you take	47%
Diet (calories consumed)	42%
Heart rate	33%
Blood pressure	25%
Quality of sleep	25%
Body fat	24%
Average running speed	21%
Mood	13%

FUN FACT:

Aggregated sleep data from Jawbone Up users in the San Francisco area shows an interesting trend of sleep interruption at the time of the recent earthquake by distance of users from the epicenter.

(Aug 2014, https://jawbone.com/blog/napa-earthquake-effect-on-sleep/)

Most users consider the use of the QS has had a positive impact on their lives.

"I HAVE LOST OVER 70 POUNDS SINCE I STARTED USING THE WATCH."

90% OF HEALTH AND FITNESS QS USERS SAY USING THE TOOLS HAS IMPACTED THEIR LIFESTYLE AND BEHAVIOR.

"IT MAKES ME EXERCISE MORE, EAT LESS, SLEEP BETTER, AND LIVE A HEALTHIER LIFE."

"IT IS FUN AND EASY AND IT GIVES ME MORE ACCOUNTABILITY."

"I EAT BETTER, I PURPOSELY WALK AS MUCH AS POSSIBLE TO HIT MY GOAL IN STEPS FOR EVERY DAY."

"I'M MORE CONSCIOUS OF MY CALORIC INTAKE, I CHECK LABELS MORE OFTEN NOW. I WEIGH MYSELF WEEKLY NOW TO SEE IF I'M ON THE RIGHT TRACK."

Quantified Self
guinea pig: me ;)

Measure physiological data over a period of two years, use, and profit statement

Start and evolution

- ✓ Former elite athlete 25 years ago (weight 79kg form)
- ✓ Stopping the sport for 20 years
- ✓ August 2013 : back to sport with the practice of Stand Up Paddle (106kg weight)
- ✓ Mid-August 2013 acquisition of a first Smart Body Analyzer, from iHealth
- ✓ September 2013, test of endurance and Vo2Max, to define properly my areas of HR frequencies in Cressy (HUG)
- ✓ Buying a Polar watch and H7 chest-strap Heart Rate Sensor
- ✓ October 2013 enrollment in a Fitness
- ✓ January 2014 purchase of a watch and belts measuring heart rate (sport)

Start and evolution

- ✓ February 2014 purchase of a connected watch BASIS

- ✓ May 2014 Using a calorie counter MyFitnessPal.com

- ✓ June 2014 purchase of a new connected scale TANITA BC 610 (I felt that iHealth was not accurate enough at measuring body fat index).

- ✓ July 2014 using Endomondo, an application measuring sports performance.

- ✓ In late July 2014, new endurance test with HUG (great progression Vo2Max) / 82kg.

- ✓ End of 2015 I bought a Fénix3 whatch

- ✓ Beginning 2016 I bought a Withings WS 30

So, I decided to start Stand Up Paddle

And... sometime I failed!!!

Endurance test Cressy– HUG Septembre 2013

TEST DE PUISSANCE MAXIMALE AEROBIE SUR ERGOCYCLE

Données personnelles

Prénom	Stéphane	Poids (kg)	101.2	Sport	Stand-
Nom	Koch	Taille (cm)	1.88	Date du test	02.09.2013
Date de naissance	28.09.1965	IMC	28.6	Sexe	M
Age (années)	48.0	Evaluation IMC	Surpoids	E-mail	skoch@intelligentzia.ch

Protocole de la séance

Puissance de départ (W)	70	Augmentation de la charge par palier (W)	30	Durée des paliers (min)	3

Conditions du test

Phase d'entraînement

Reprise

Valeurs au seuil aérobie (Endurance de base):

VO_2 Seuil:	23.2	(mlO_2/min/kg)	% VO_{2max}:	76.1
Puissance:	135.0	(W)	% PMA :	56.3
FC:	141	(bpm)	% FC_{max}:	75.0

Valeurs au seuil anaérobie

VO_2 Seuil:	25.5	(mlO_2/min/kg)	% VO_{2max}:	83.6
Puissance Seu	165.0	(W)	% PMA :	68.8
FC au seuil:	150	(bpm)	% FC_{max}:	79.8

Valeurs à la fin du test

VO_{2max}:		**30.50**	(mlO_2/min/kg)
Puissance maximale aérobie (PMA)	**240.0**	(W)	*2.372 (W/kg)*
FC_{max}:		**188**	(bpm)
VO_{2max}:	Considéré comme:	**"Sous la moyenne"**	

en termes de santé selon l'Office fédérale du Sport

"I can feel the force of the Quantified self"

Body Index measured at the HUG

My Data

HISTORY

Date Range:

| 09/02/2013 | to | 10/29/2013 | List View ▾ | Search |

MEASUREMENT TIME	WEIGHT (kg)	BMI	Body Fat	Lean Mass (kg)	Bone Mass (kg)	
09/02/2013 09:13:44	100.3	28.1	23.9%	76.3	3.7	Edit

Age 48.0   Sport Stand-up paddle/Kickboxing

RESULTATS/ANALYSES			

Indice de masse corporelle (IMC ou BMI) - Le poids sur la taille au carré			
Poids (kg)	101.2	IMC (kg/m^2)	28.6
Taille (m)	1.88	Interprétation	Surpoids

Composition corporelle - masse grasse	
Masse grasse (% du poids)	23.8
Interprétation	Graisse en excès
Masse grasse (kg)	24.07

Statement on the use of the SBA TANITA BC 601 (and Withings WS 30)

- ✓ Tanita have 2 points of measurement by induction of the body index (hands and feet)

- ✓ Tanita give a more relevant measures than the iHealth, but there is also some big difference in the fat (3-4%) with the SBA from Withings

- ✓ Tanita is not connected to the internet (Withings & iHeatlh are)

- ✓ Tanita have a body index software which provide a better interpretation of the data

- ✓ But It remains quite a lot of inconsistencies in the measurements of the percentages of the different body indexes

Sometime it brings some really surprising results

TANITA®
Monitoring Your Health

Obtain Data	Print	Option	Data Table	Return
Weight	% Fat ▶	Muscle Mass ▶	Estimated Bone Mass	Height
Visceral Fat Level	Total Energy Exp.	Metabolic Age	% Body Water	

Data Table   ◁ Previous ◁   **28/MAY/2015(Thu)**   ▷ Latest ▷   No.:1/   **Koch**

Daily | Week AV. | Month AV. | Weekly AV. | Zoom In | Bar Chart

Date	Time	Weight (kg)	BMI	% Fat (%)	Muscle Mass (kg)	Estimated Bone Mass (kg)	Visceral Fat Level	Total Energy Exp. (kcal/day)	Metabolic Age (years old)	% Body Water (%)	Height (cm)
27 MAR /2015	14:43:05	82.70	23.4	11.9	69.30	3.6	6.0	4384	34	62.5	188.0
31 MAR /2015	13:10:06	84.20	23.8	9.3	72.60	3.8	5.0	4591	34	64.6	188.0
3 APR /2015	11:07:26	84.20	23.8	15.3	67.80	3.5	7.0	4304	34	59.8	188.0
5 APR /2015	09:55:48	85.60	24.2	11.0	72.50	3.7	6.0	4592	34	63.3	188.0
6 APR /2015	11:16:01	86.30	24.4	11.2	72.90	3.8	6.0	4620	34	63.2	188.0
7 APR /2015	09:36:18	85.60	24.2	13.6	70.30	3.6	6.0	4462	34	61.2	188.0
10 APR /2015	13:05:04	84.70	24.0	11.3	71.40	3.7	6.0	4522	34	63.0	188.0
23 APR /2015	09:04:01	84.30	23.9	11.7	70.80	3.7	6.0	4482	34	62.7	188.0
27 APR /2015	09:51:54	84.90	24.0	9.3	73.30	3.8	5.0	4636	34	64.7	188.0
1 MAY /2015	10:30:11	84.30	23.8	12.1	70.40	3.6	6.0	4460	34	62.4	188.0
2 MAY /2015	11:34:27	84.90	24.0	13.4	69.90	3.6	6.0	4435	34	61.4	188.0
19 MAY /2015	07:08:40	85.70	24.3	11.0	72.50	3.8	6.0	4596	34	63.3	188.0
22 MAY /2015	09:15:54	85.10	24.1	13.9	69.70	3.6	6.0	4421	34	61.0	188.0
23 MAY /2015	10:37:37	84.10	23.8	15.9	67.30	3.5	7.0	4274	34	59.3	188.0
28 MAY /2015	20:57:40	85.40	24.1	10.3	72.80	3.8	5.0	4609	34	63.9	188.0

	Date	Time	Weight	BMI	% Fat	Muscle Mass	Estimated Bone Mass	Visceral Fat	Total Energy Exp.	Metabolic Age	% Body Water	Height
Latest	28/MAY/2015	20:57:40	85.40kg	24.1	10.3 %	72.80kg	3.8kg	5.0Level	4609kcal/day	34Y/O	63.9 %	188.0cm
Selected	28/MAY/2015	20:57:40	85.40kg	24.1	10.3 %	72.80kg	3.8kg	5.0Level	4609kcal/day	34Y/O	63.9 %	188.0cm

Are the tools, such Smart Body Analyzers (Withings, Tanita, iHealth), able to "distinguish" the difference in the type of Fat %...

neck

supraclavicular

para aortic

paravertebral

suprarenal

A Brown fat tissue

Visceral fat pads
Epicardial
mesenteric
omental
retroperitoneal
gonadal

Subcutnaeous fat pads
Subcutaneous abdominal
gluteal
femoral

B White fat tissue
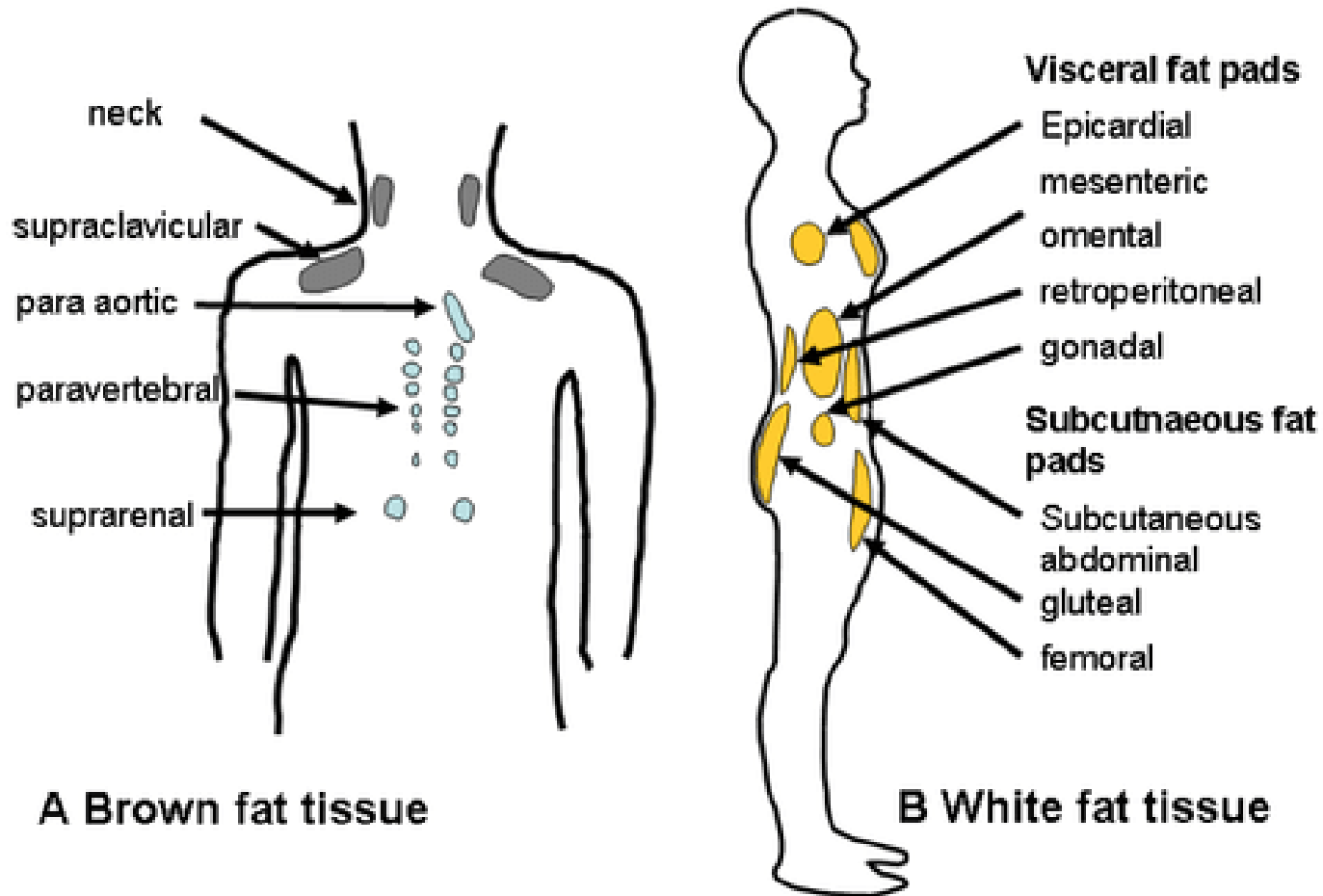
Anyway ... it's not so useful to measure what we do not understand.... And most of the user of Smart Body Analyzer do not understand the difference between White Fat (WAT) and Brown Fat (BAT)...

Brown fat cell
Converts chemical energy to heat to protect against cold weather.

Beige fat cell
Immature cell in white fat tissue matures to burn fat.

White fat cell
Most common fat cell, used to store fat and found beneath the skin and abdomen.

Mitochondria
Small lipid droplets
Nucleus
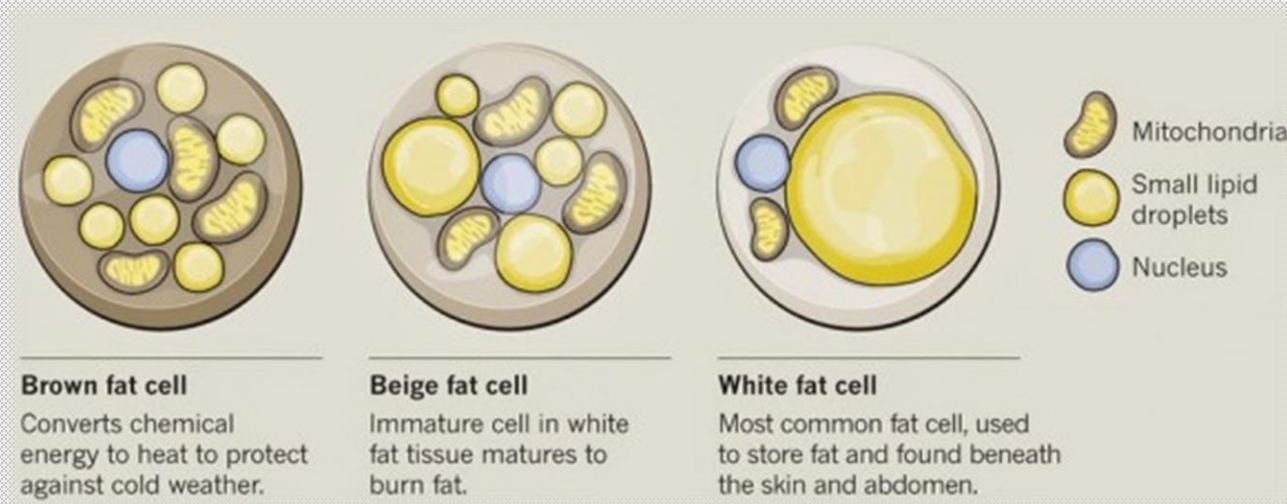
Calorie counter, food journal and exercise | MyFitnessPal.com

Votre journal alimentaire pour: ◀ **lundi 9 juin 2014** ▶ 🗓️

Snacks

Ajouter un aliment | Outils rapides

Après-midi

	Calories	Glucides	Lipides	Protéines	Sodium	Sucres	
Migros - Bio Amandes, 50 grams	316	2	27	13	0	1	⊖
Bio - Banane, 1 Banane (110g)	98	25	0	1	1	13	⊖
Ajouter un aliment	Outils rapides	414	27	27	14	1	14

Fin De Soirée

Ajouter un aliment | Outils rapides

	Calories	Glucides	Lipides	Protéines	Sodium	Sucres
Totaux	1 271	87	70	78	51	39
Votre objectif quotidien	2 894	385	82	154	2 300	109
Reste	1 623	298	12	76	2 249	70

*Vous avez gagné 934 calories supplémentaires avec l'exercice d'aujourd'hui
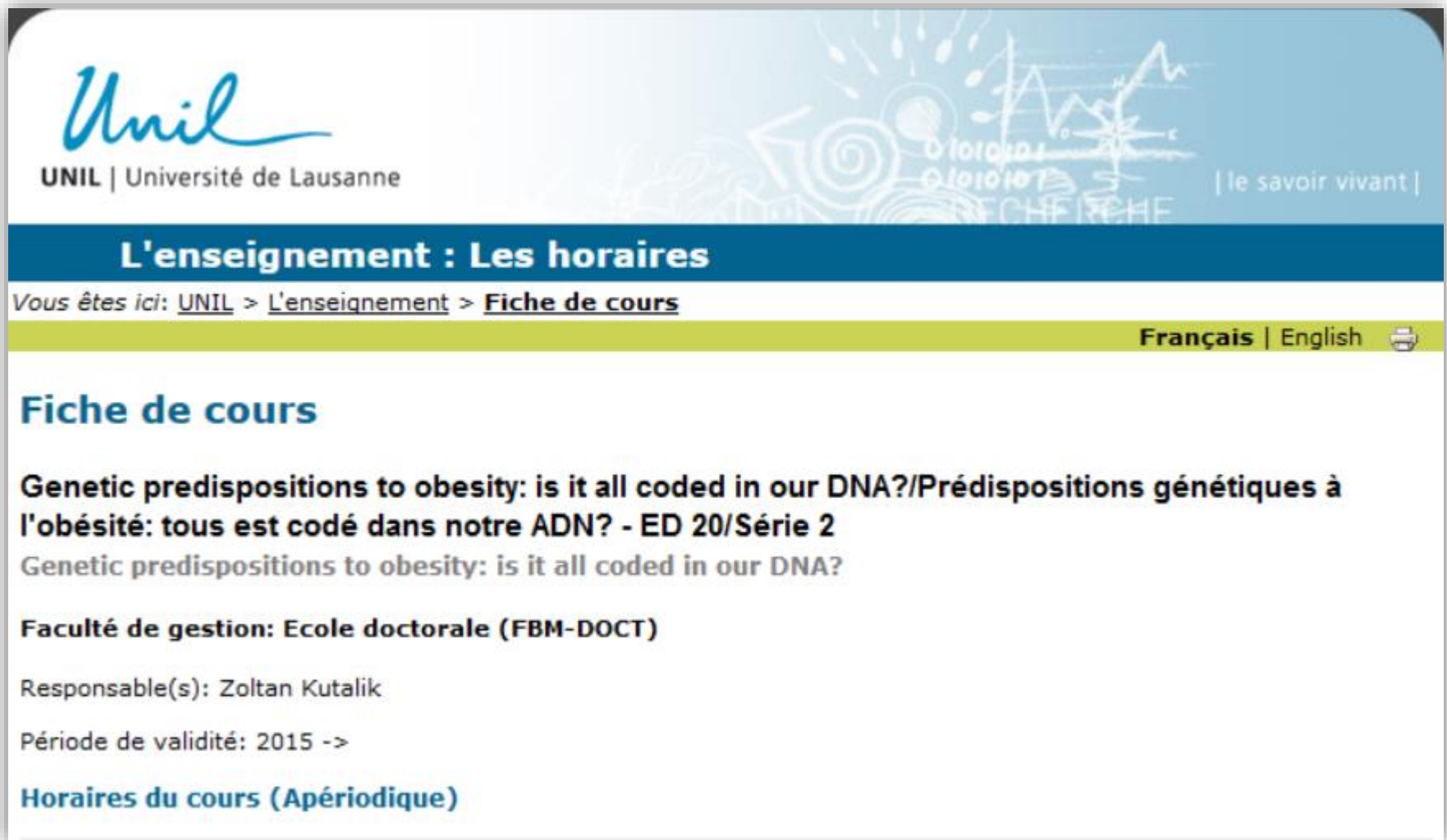
soupe (10 g)

Ajouter un aliment	Outils rapides	625	53	41	13	50	20

RÉSUMÉ QUOTIDIEN
876
CALORIES DISPONIBLES
1210 + 934
OBJECTIF   ALIMENTS

But there is not democracy in QS predisposition

UNIL | Université de Lausanne | le savoir vivant |

L'enseignement : Les horaires

Vous êtes ici: UNIL > L'enseignement > **Fiche de cours**

Français | English

Fiche de cours

Genetic predispositions to obesity: is it all coded in our DNA?/Prédispositions génétiques à l'obésité: tous est codé dans notre ADN? - ED 20/Série 2

Genetic predispositions to obesity: is it all coded in our DNA?

Faculté de gestion: Ecole doctorale (FBM-DOCT)

Responsable(s): Zoltan Kutalik

Période de validité: 2015 ->

Horaires du cours (Apériodique)

Basis watch and measurements
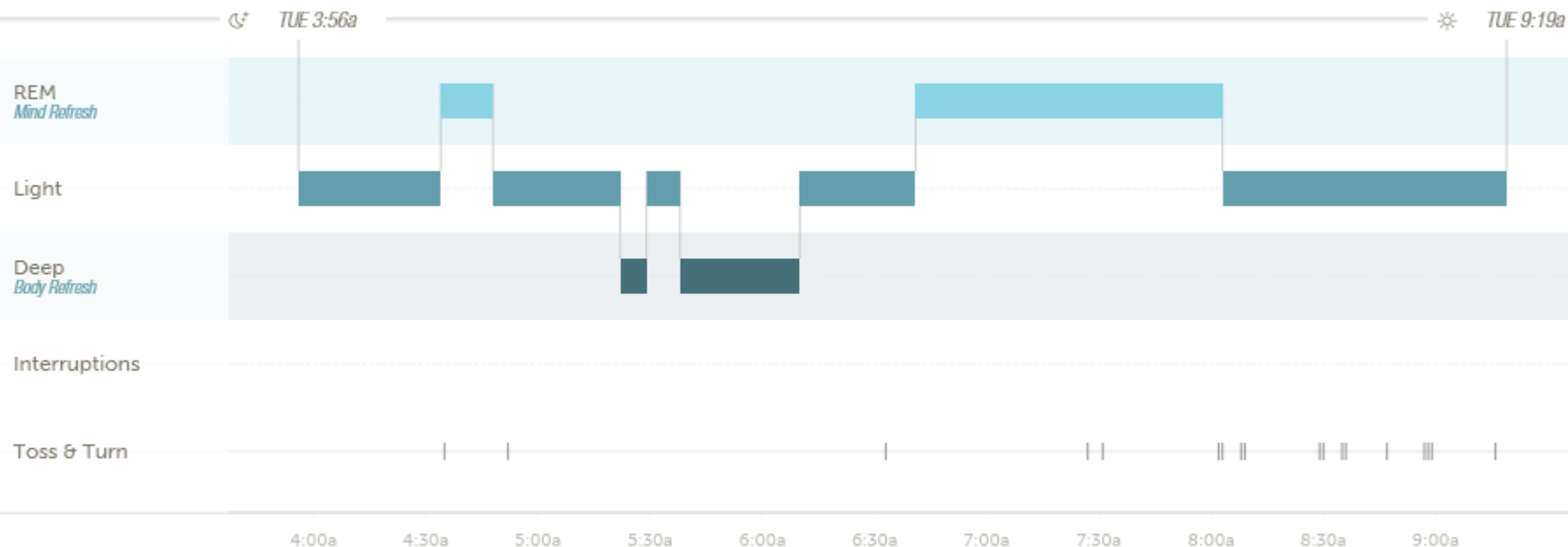
Findings on the use of the BASIS watch

- ✓ The heart rate measurement is very uncertain (interval measures not very convincing, several seconds).

- ✓ Measure sports, inadequate for this model

- ✓ Measurement of skin temperature, difficult to assess
  Measurement of calories consumed, seems not os accurate

- ✓ Measuring the quality of sleep, the system is not as smart as it claims … it does not identify the difference between a sleep state and being lie down. It does not always identify the wake up phases during sleep

Identifying sleep disorders: few sensors on the wrist, cannot do the job properly ;)
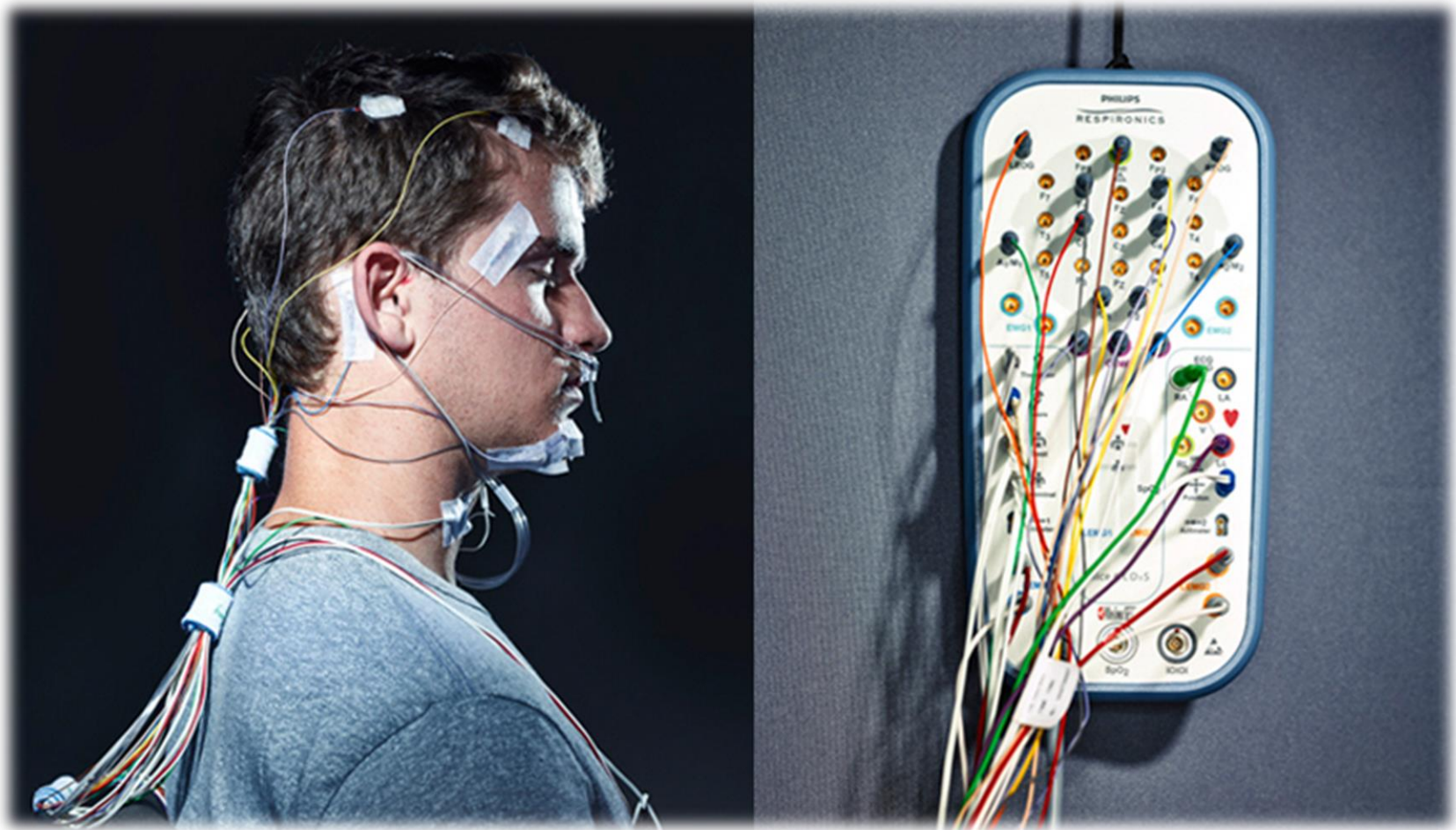
Using Endomondo to QS my training
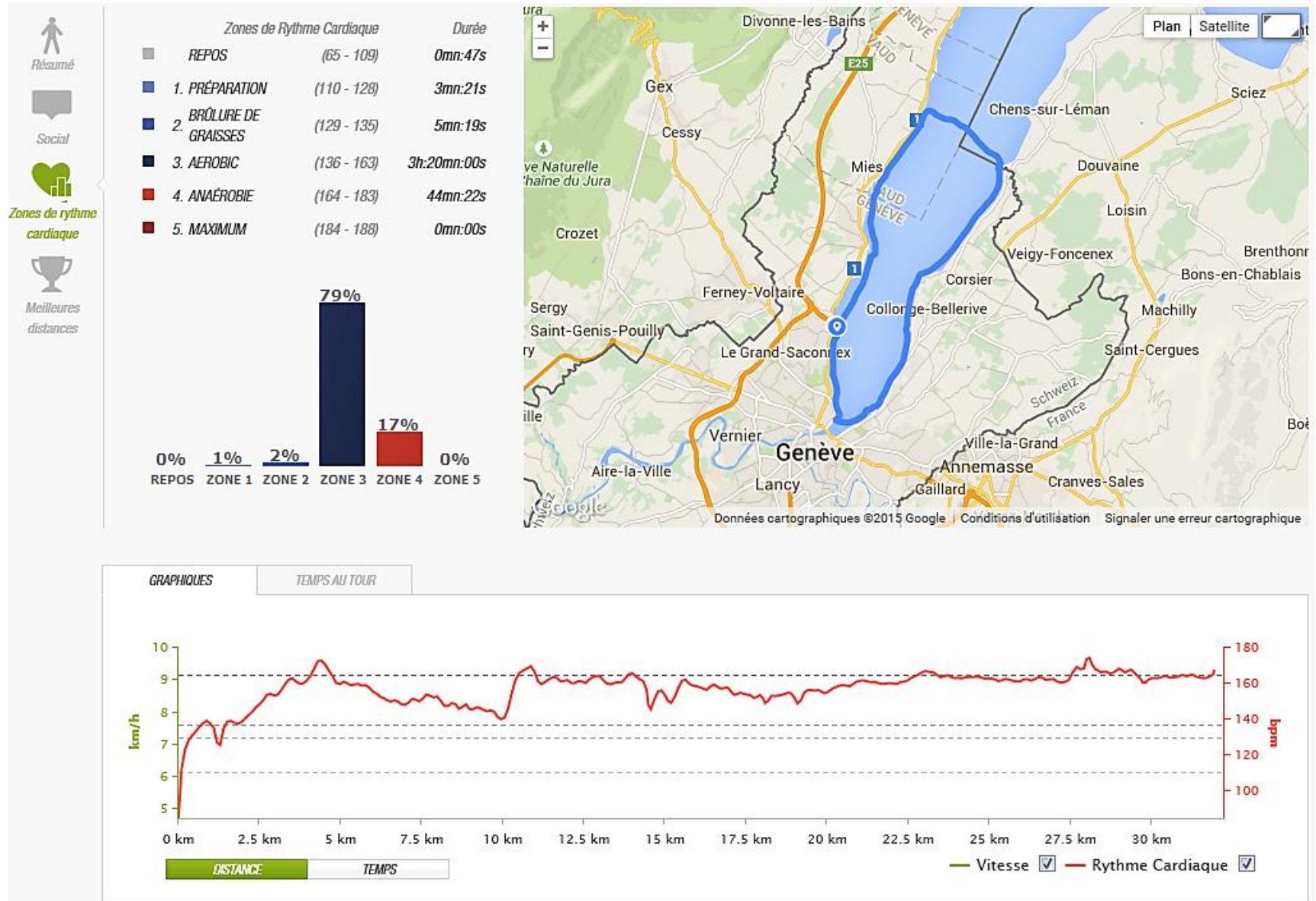
What is the risk of not measuring HR ?

Weakening of immune defenses

Affecting the digestive system

Increased cortisol levels

Production of cytokine

● Fréquence
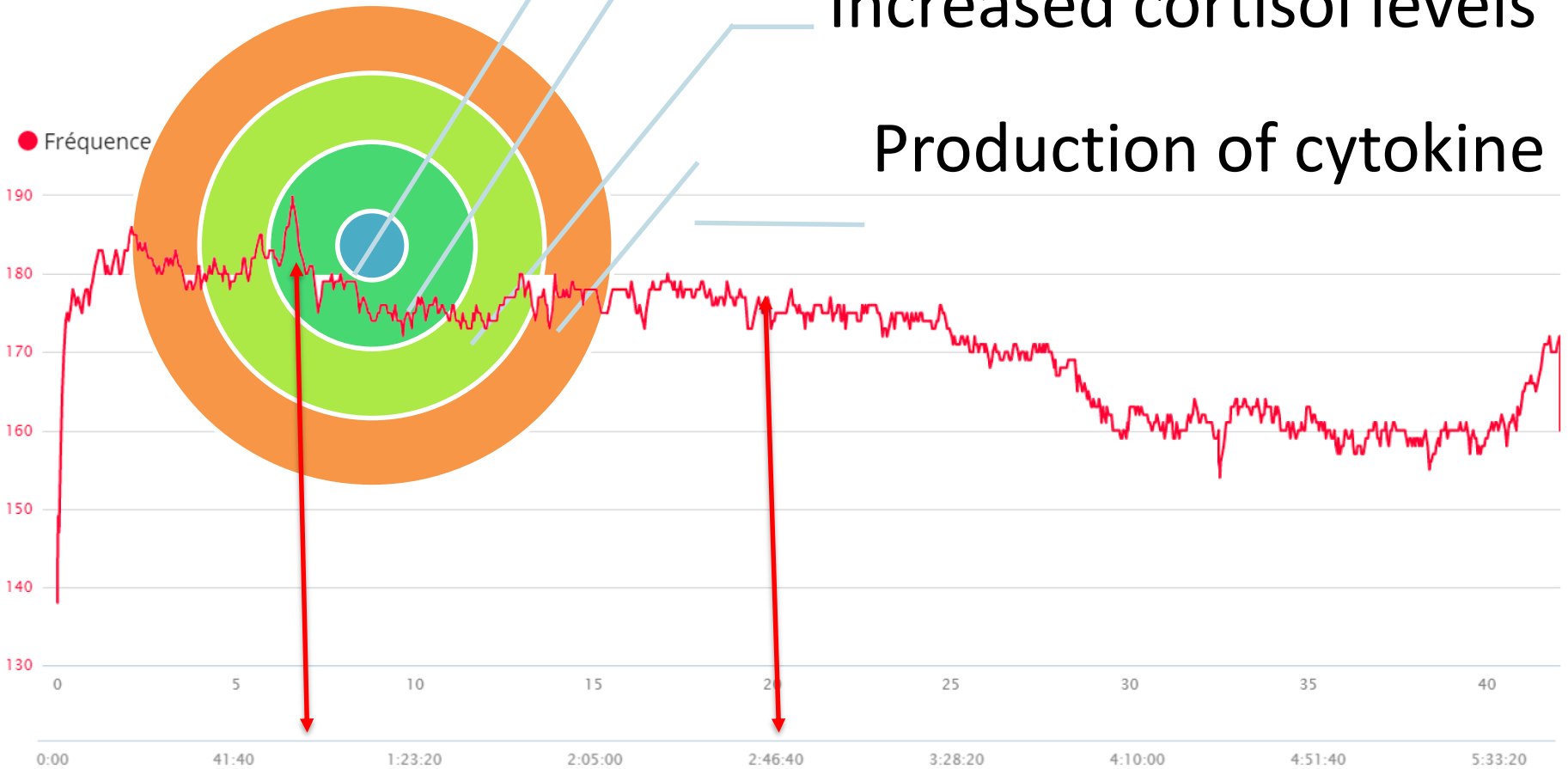
Understanding how your body is fueled is not that easy...

Too many calories or carbs per meal ➡ Blood Sugar Spikes ➡ BODY STORES FAT

120 mg / dl

Stable Blood Sugar ➡ BODY RELEASES FAT, PROTECTS LEAN MUSCLE, ELIMINATES CRAVINGS and INCREASES ENERGY

80 mg / dl

Skip a meal, restrict calories or carbs or exercise on an empty stomach ➡ Blood Sugar Drops ➡ BODY BURNS MUSCLE & HOLDS ON TO FAT, ENERGY CRASHES & CRAVINGS INCREASE
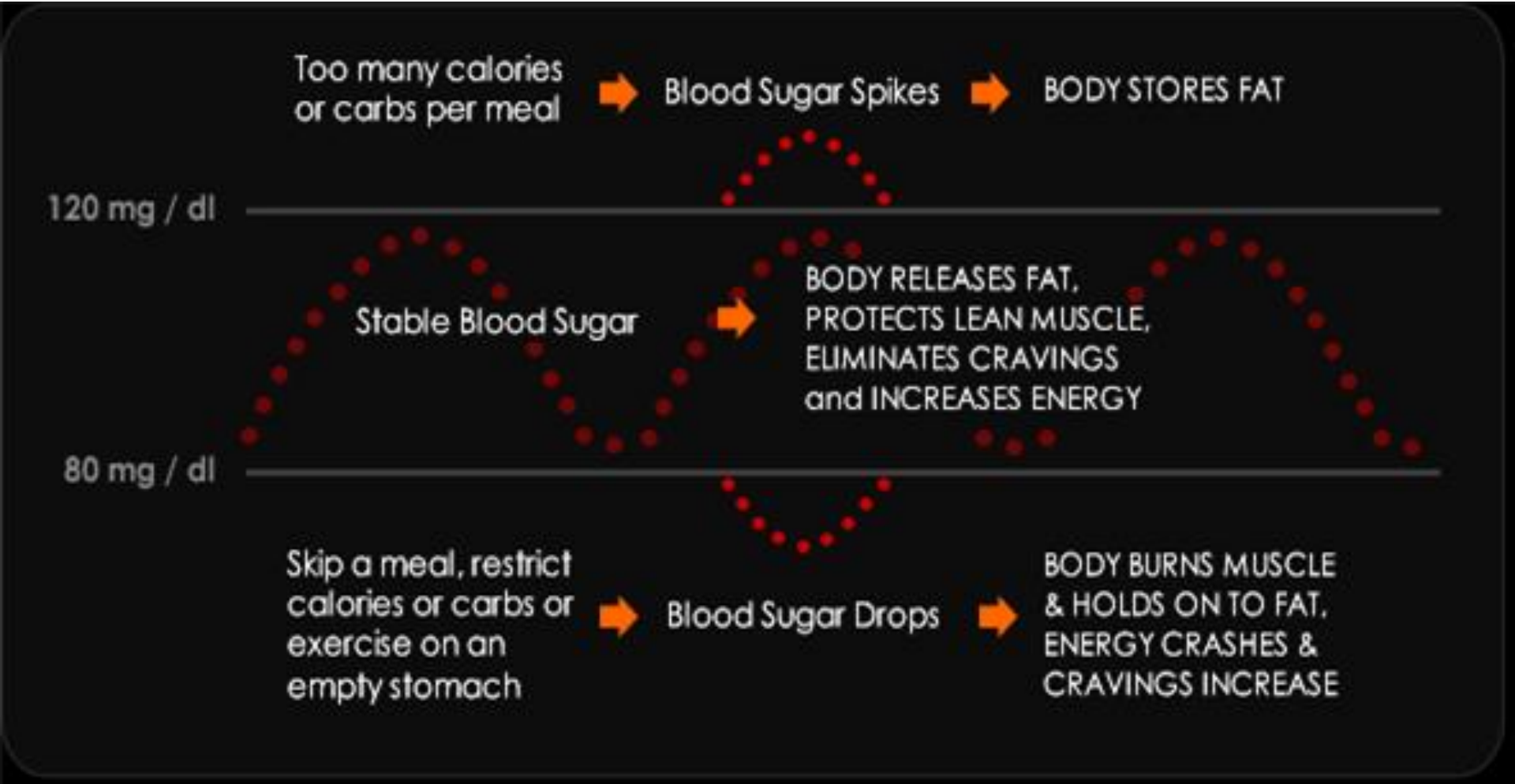
Endurance test in Cressy– HUG, 30 July 2014

TEST DE PUISSANCE MAXIMALE AEROBIE SUR ERGOCYCLE

Données personnelles

Prénom	Koch	Poids (kg)	82.1	Sport	Divers
Nom	Stéphane	Taille (m)	1.88	Date du test	29.07.2014
Date de naissance	28.09.1965	IMC	23.2	Sexe	M
Age (années)	48.0	Evaluation IMC	Corpulence normale	E-mail	skoch@intelligenzia.ch

Protocole de la séance

Départ (W)	70W	Incrément (W)	30	Durée des paliers (min)	3

Conditions du test

Phase d'entraînement

Non spécifique

Valeurs au seuil aérobie (Endurance de base):

VO_2:	30.8	(mlO$_2$/min/kg)	% VO_{2max}:	77
P:	160.0	(W)	% PMA :	57
FC:	135	(bpm)	% FC_{max}:	72

Valeurs au seuil anaérobie:

VO_2:	38	(mlO$_2$/min/kg)	% VO_{2max}:	95
P:	210.0	(W)	% PMA :	75
FC:	164	(bpm)	% FC_{max}:	87

Valeurs maximales:

VO_{2max}: **40.10** (mlO$_2$/min/kg)

Puissance maximale aérobie (PMA) **280.0** (W)   PMA/kg: 3.4

FC_{max}: **188** (bpm)

VO_{2max}:   Considéré comme: "Bon"
en termes de santé selon l'Office fédéral du Sport

RPM:

Using Garmin Fénix3, with the *Scosche rhythm+ armband*
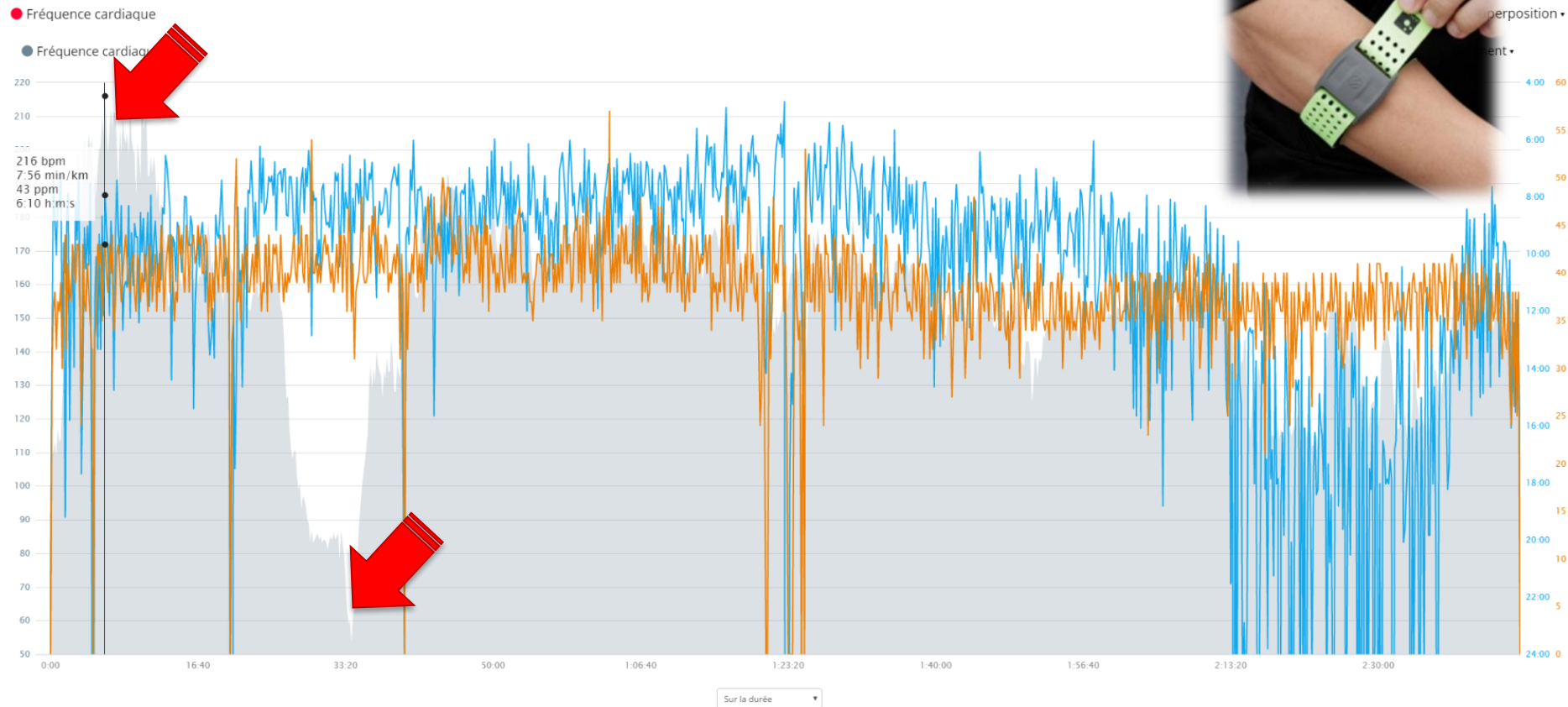
Ok, the failure in that measurement is quite obvious for us, but what about the application which cannot identify such problem… and do not allow to modify the data… so I'm forced to transmit that data over the internet… without to have a idea of how that data can be interpreted by a third party… algorithm…

« I have lost 24kg weight in one year... ...and I also lost the control of the use of the data collected...»

« What I won ... the technologies used in conjunction with the "medical" knowledge of my condition (endurance test), allowed me to significantly improve my health and the quality of my food »

Using Garmin Fénix3, with the *Garmin chest-strap* Heart Rate Sensor

STAND UP PADDLE ▼ PAR STEPHANE KOCH LE 7 MAI 2016 @ 06:42

Stand up paddle - Dordogne-integrale ✎

Type d'événement: Course ▼ · Parcours: -- ▼ · Equipement: Ajouter
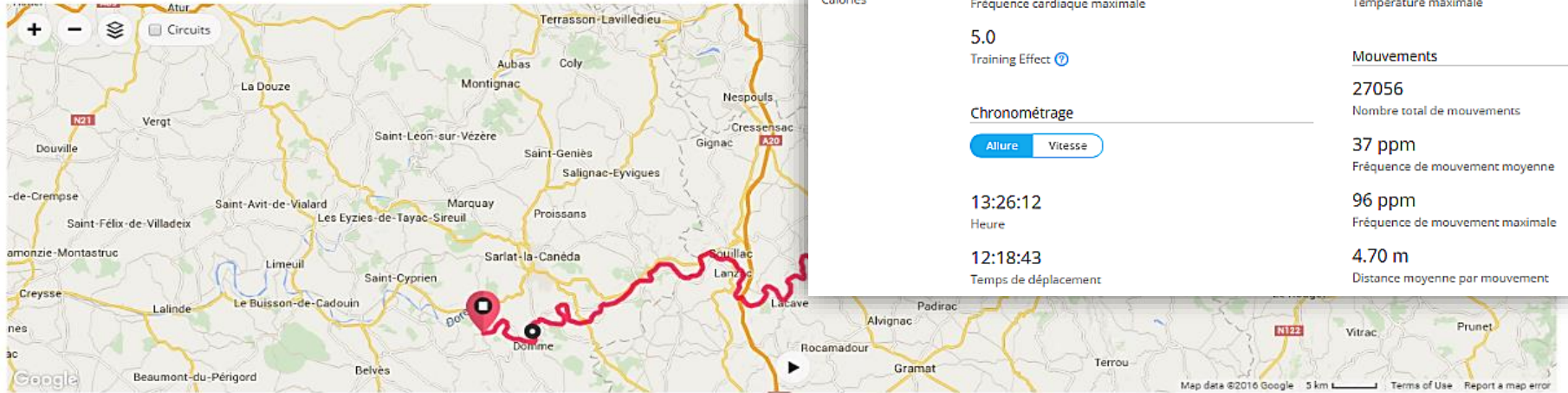
Distance	Fréquence cardiaque			Température
131.16 km Distance	bpm · % de la valeur maximale · Zones			**24.5 °C** Température moyenne
	146 bpm Fréquence cardiaque moyenne			**15.0 °C** Température minimale
Calories				
7,067 C Calories	**182 bpm** Fréquence cardiaque maximale			**32.0 °C** Température maximale
	5.0 Training Effect ⑦			**Mouvements**
				27056 Nombre total de mouvements
	Chronométrage			
	Allure · Vitesse			**37 ppm** Fréquence de mouvement moyenne
	13:26:12 Heure			**96 ppm** Fréquence de mouvement maximale
	12:18:43 Temps de déplacement			**4.70 m** Distance moyenne par mouvement

Sur la durée ▼   Personnaliser ▼

● Allure

● Fréquence cardiaque

● Fréquence de mouvement

● Distance par mouvement
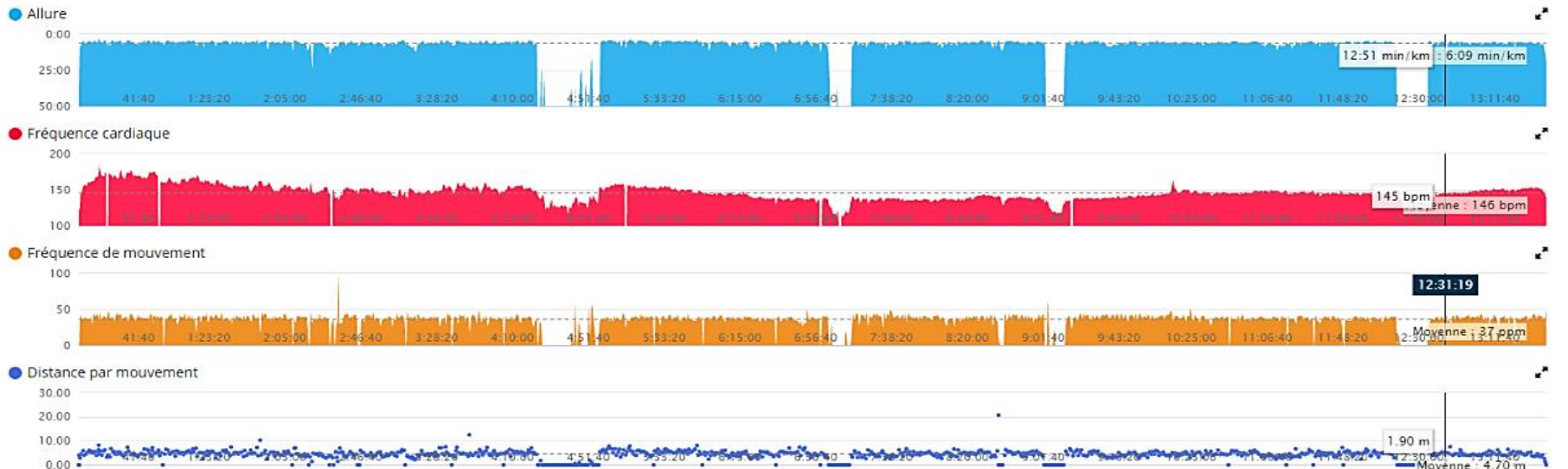
Regular blood pressure measurements… is providing you an historic of your blood pressure that you can talk about with your doctor.. It do not make you a doctor ;)
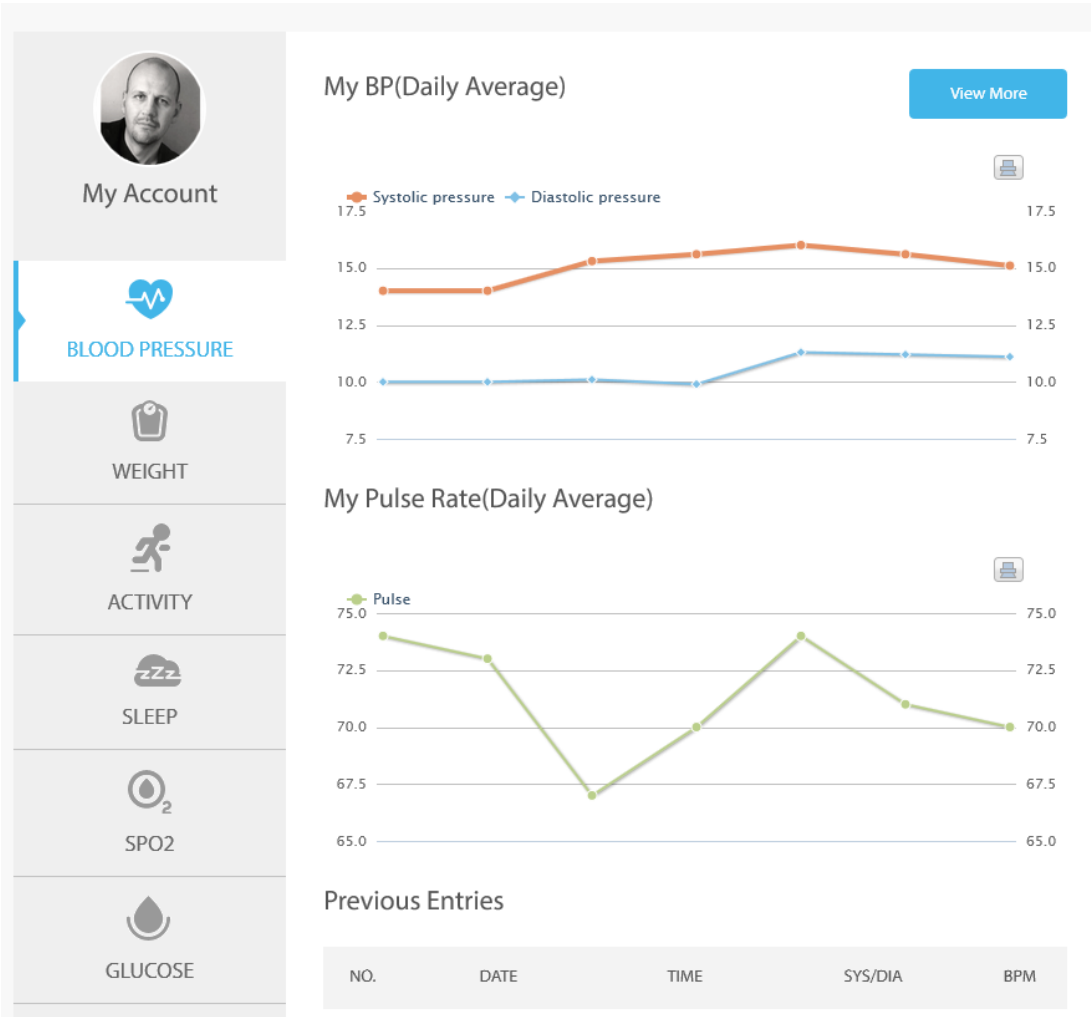
«The QS is perceived positively as the measure is "positive"… If the user does not see progress in his health, or if it declines, the Quantified Self can be also a negative factor for health (physical and mental) »

"The user awareness is the key point of QS, he have to understand the meaning of the data collected and the limits of the sensors"

Awareness
Having the capacity for cultural self-assessment

Sensitivity
Becoming conscious of the microdynamics inherent in cultural interactions

Knowledge
Developing a knowledge base about other cultures

Skills
Reflecting competence in relationship
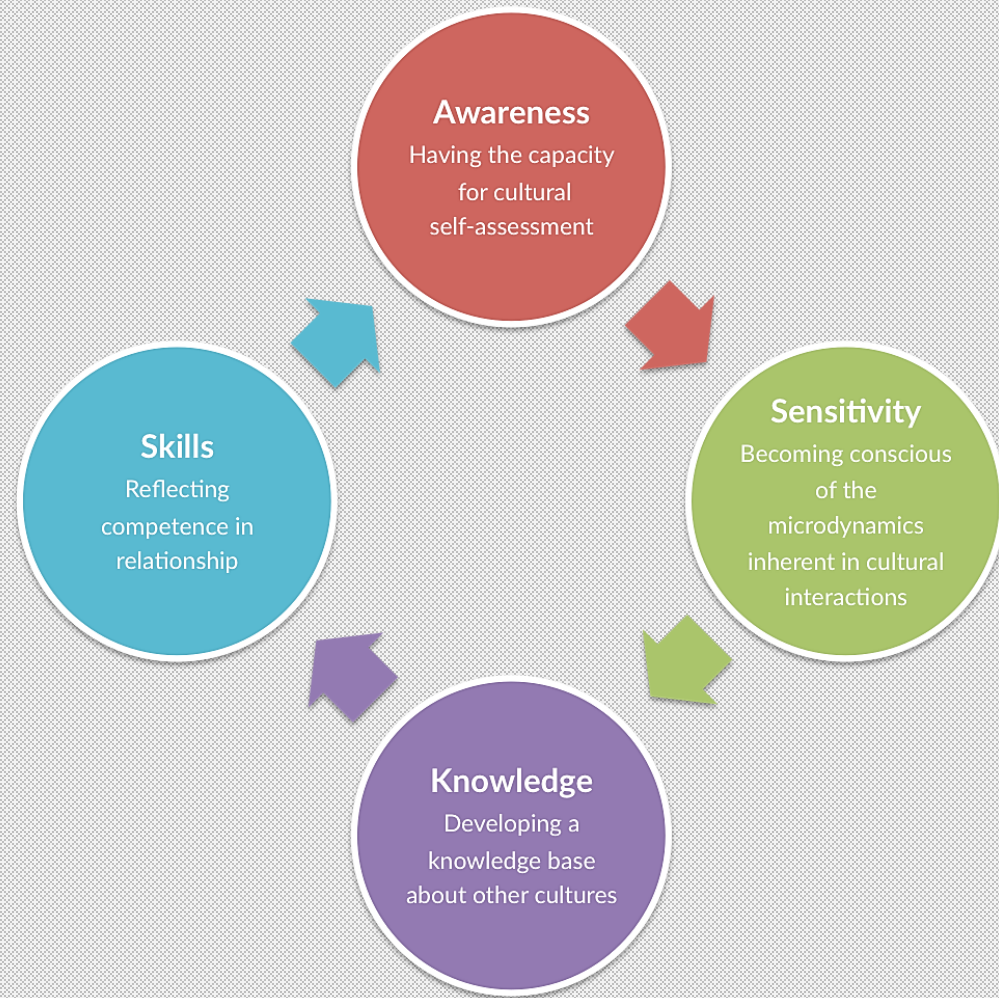
"But I fell a great disturbance in the Force"

But data are not generate only by wearables...

Smartphone claims that you cannot use the data for health purpose, but they might sell it under health purpose

Terms and conditions

sensitive health information. Any health-related information found herein and in any materials or information acquired and/or accessed through S Health and its preloaded applications is available only for your conve-nience and should not be treated as medical advice. Users should seek any medical advice from a physician, in particular before embark-ing on any new lifestyle or regimen and users should not self-diagnose any ailment. Unless otherwise expressly stated or legally required, S Health with preloaded applications is provided with no warranties. Any information that you obtain from use of S Health or an application preloaded within may not be suitable, accurate, complete or reliable.

S Health is intended to help users manage their overall fitness and wellness through applications that capture or track fitness or wellness information and metrics and
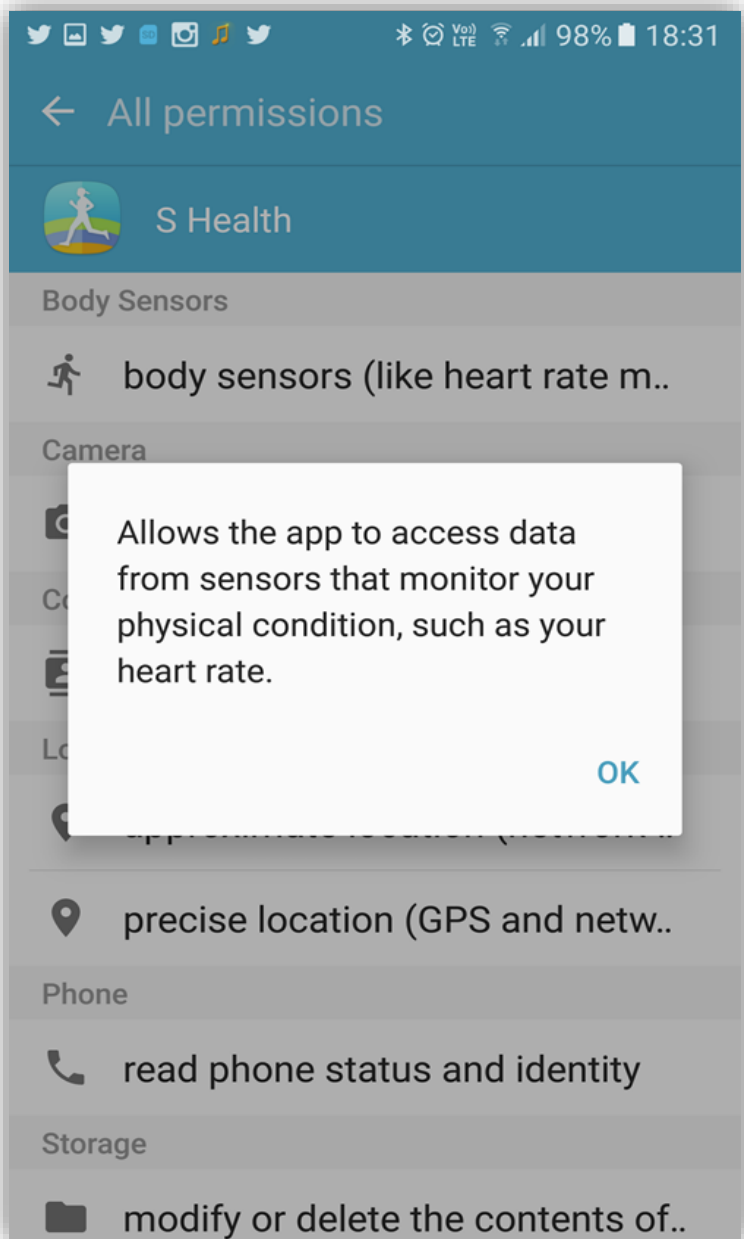
98% 18:31

All permissions

S Health

Body Sensors

body sensors (like heart rate m..

Camera

Allows the app to access data from sensors that monitor your physical condition, such as your heart rate.

OK

precise location (GPS and netw..

Phone

read phone status and identity

Storage

modify or delete the contents of..

Smartphone claims that you cannot use the data for health purpose, but they might sell it under health purpose

S Health est uniquement conçu pour améliorer votre forme physique et votre bien-être ; il n'est pas destiné à servir au diagnostic de maladies, ni plus généralement à apprécier votre état de santé, ni n'a vocation à traiter les maladies, à en atténuer les effets ou à les prévenir. Vous pouvez également utiliser les applications S

☐ J'accepte.

Politique de confidentialité – Supplément S Health

S Health exploite les données de bien-être ou de fitness entrées directement ou par l'intermédiaire d'applications préinstallées ou téléchargées, d'appareils tiers ou de logiciels pouvant se connecter à S Health (ou à toute application préinstallée ou

☐ J'accepte.

SUIVANT ▸

< Détails

3. Bug fixes

[v3.5.1.0693]
1. Weight management is added.
2. UV, SpO2 measurements and management are added.
3. Sleeping time measurements and management with the compatible wearable device is added.
4. The following features are no longer available in certain countries.
- Blood pressure
- Blood glucose
- Heart rate
- Stress

* Affected Countries:
- Blood pressure, Blood glucose: UK, South Korea, Angola, Ireland, France, Netherlands, Belgium, Luxembourg, Austria, Slovak, Greece, Cyprus, Slovenia, Algeria, Iran, Canada
- Heart Rate: Angola
- Stress: UK, Japan, Angola, South Africa, France, Austria, Hungary, Czech, Greece, Cyprus, Slovenia, Algeria, Canada, Thailand
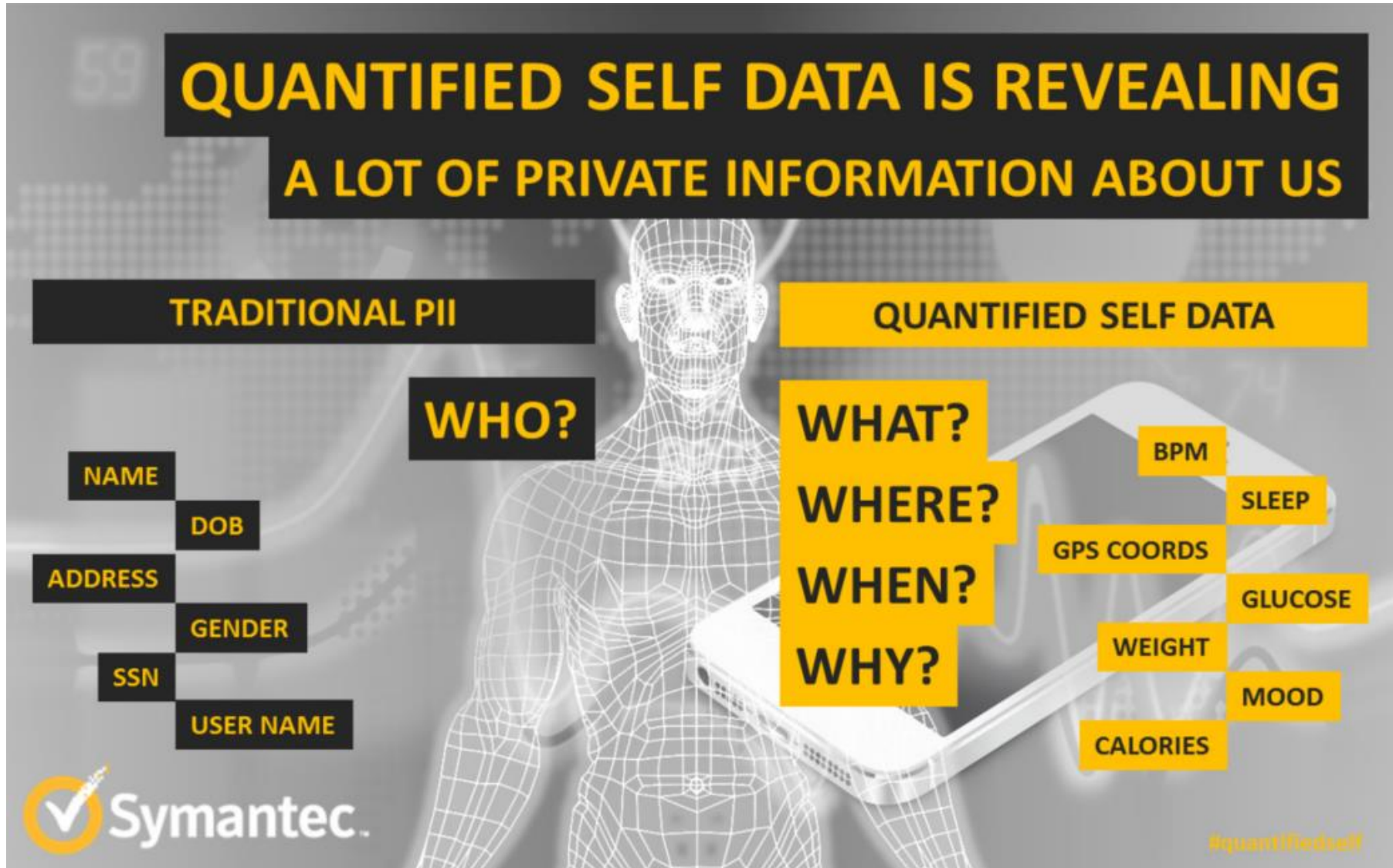
From S Health 3.5.1 onwards, some functions will not be available in countries in which they require medical certification.
Your previously measured data can be exported from Settings. A Unicode compatible reader is required to

Lot of sensitives data transmitted and covered by ambiguous and hypocrites ToS

Data processing and mining by the algorithms: the result we get today, might differ from analysis which will be made in 5 years, because it will be based on the same data, but with use of more efficient algorithms, user is not aware of that
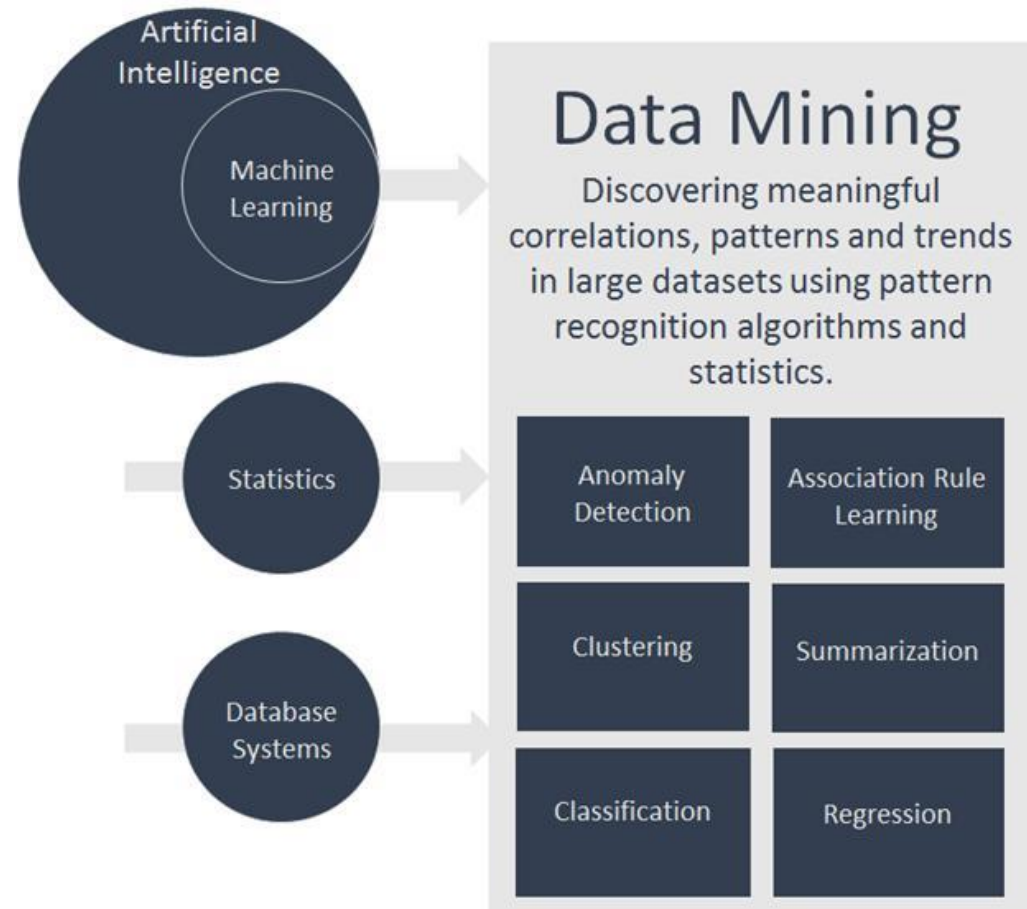
The police will be able to constantly check your car speed based on your smartphone data

BIENTÔT LA POLICE POURRA CONTRÔLER VOTRE VITESSE EN PERMANENCE VIA VOS SMARTPHONES, ENTRE AUTRES

Par Romain Vitt le 31 mai 2016

Depuis quelques temps maintenant, les projets numériques entourant l'automobile se concrétisent. Apple Car ou Android Auto proposent aux conducteurs tout un lot de services dans la continuité de leur usage sur mobile. Figurez-vous qu'un projet de loi permettra à la police de contrôler votre vitesse en permanence via vos smartphones, entre autres.
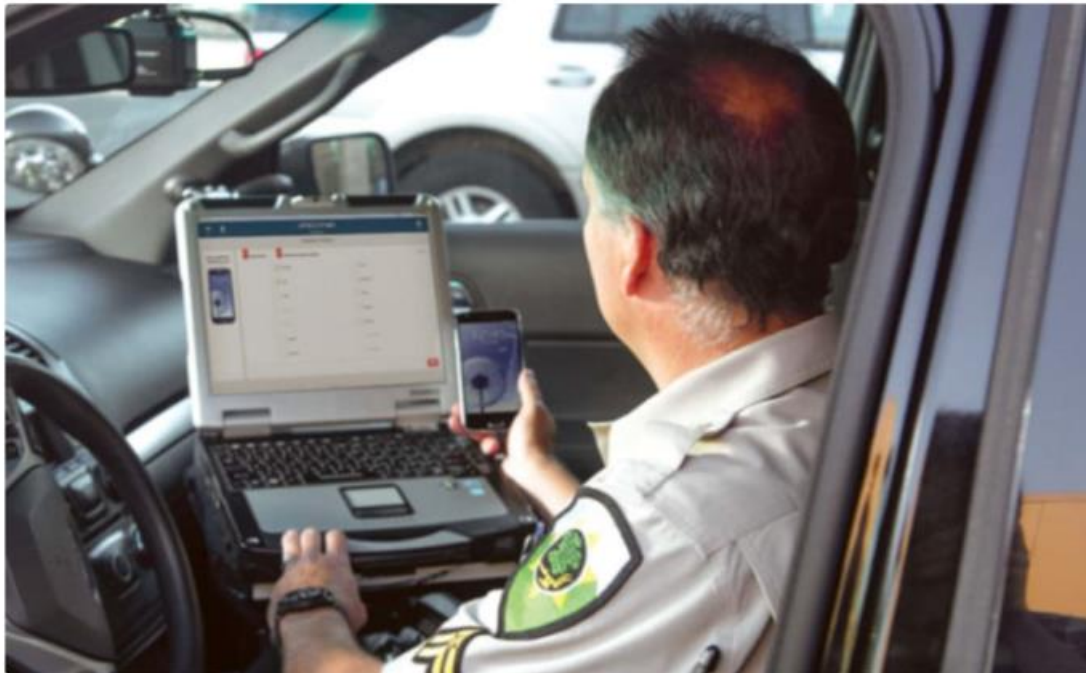
In 2014, Withings and AXA announced a partnership which offers AXA customers a free Withings Pulse

Pulsez votre santé avec AXA

Pour vous aider à préserver votre santé,
AXA offre un Withings Pulse, d'une valeur de 99,95 €
aux 1 000 premiers clients qui souscrivent une complémentaire
santé Modulango depuis axa.fr.

Le Pulse, mesure votre activité physique en temps réel et vous aide à préserver votre santé au quotidien :

Nombre de pas, dénivelé, distance parcourue, nombre de calories brûlées dans la journée	Mesure du rythme cardiaque Mesure du taux d'oxygène dans le sang	Analyse du cycle de sommeil

Connecté à votre smartphone, le Pulse vous accompagne et vous permet d'être encore plus actif.

Data From Our Wearables Is Now Courtroom Fodder

How Data From Wearable Tech Can Be Used Against You In A Court Of Law

Alexander Howard
Senior Editor for Technology and Society, The
~~ton Post~~

Wearable Technology and Personal Injury Cases: Evidence and Ethics

SEP 15TH 2015 • GENERAL PERSONAL INJURY, LEGAL UPDATES

fitbit charge L
Wireless Activity + Sleep Wristband
SEE BACK FOR SIZING TOOL
fitbit

Wearable technology has gone from calculator watch to Apple Watch in the last few decades. Now we can tweet from our T-shirts, view the world through Google Glass, and keep track of our health and habits second by second with a Fitbit – and these wearable tech trends are only predicted to continue growing and advancing. (Be on the lookout for smartwatches, computerized clothing, and wearable technology as future business accessories.) As we continue to integrate this technology into our lives, the data it collects presents an ever more detailed picture of our daily activity – a picture that may soon be routinely used as evidence in the courtroom.

According to Lanc~~...~~
knowingly filing a false report after ~~...~~
undermined her claim of rape.

Measure cannot yet taken into account the real specificity of our body

DNA provides instructions to every cell in our bodies
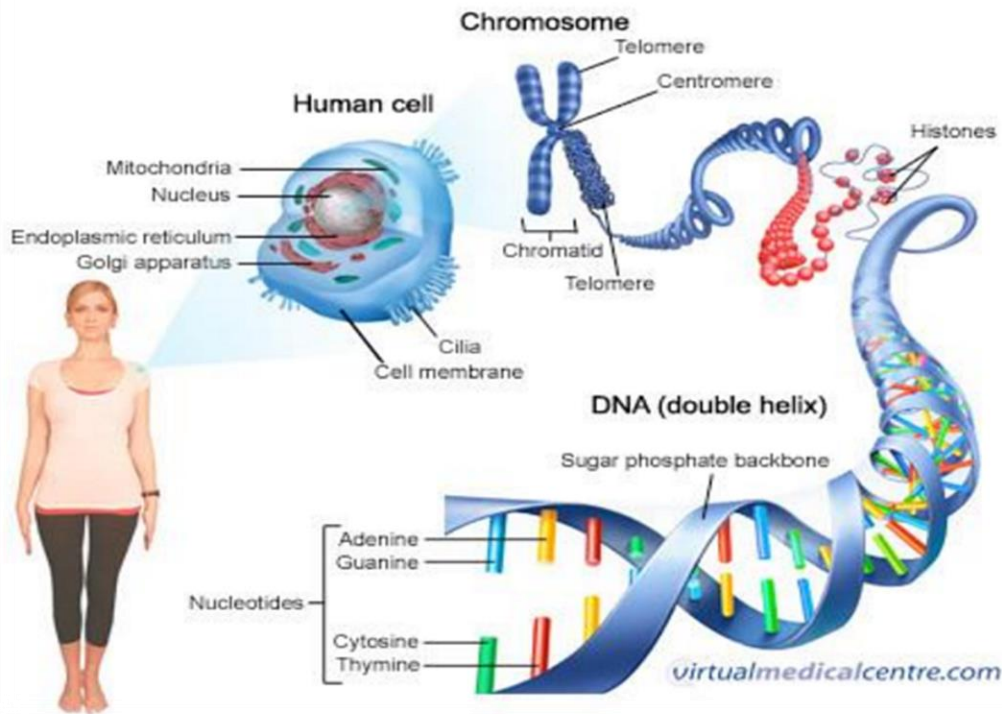
The DNA sequence in our genomes is what makes us human

Differences in our genomes make us unique

Our genome sequence is a code that is read by each of our cells

virtualmedicalcentre.com

But DNA do not make «Direct–to–consumer genetic testing» accurate…

FDA Warns Three Companies Over DTC Genetic Tests

FDA Letters to Genetic Testing Companies		
Company	Test Name	Indication or Claim
DNA4Life	Pharmacogenetic Report	"Intended to predict how patients will respond to more than 120 of the most commonly prescribed medications."
DNA-CardioCheck, Inc.	DNA-CardioCheck	"Intended to test for DNA genetic markers linked to thrombophia, deep vein thrombosis, cardiovascular disease and stroke."
Interleukin Genetics, Inc.	PerioPredict Genetic Test, Osteoarthritis Genetic Test, Weight Management Genetic Test	"Intended to identify individuals with genetic predisposition for increased risk to diabetes and heart attack, osteoarthritis associated conditions, and obesity-related genotype for weight loss."

Reliability of the data collected, the participatory model

Basée sur l'évaluation de la valeur d'usage, la plateforme communautaire dmdpost vous guide dans votre recherche d'applications mobiles et d'objets connectés

APPLICATIONS MOBILES DE SANTÉ

Pour les professionnels de santé, une recherche par profession et spécialité médicale.

Pour les patients ou le grand public, une recherche par pathologie ou thématique.

Retrouvez toutes nos évaluations complètes sur dmdpost.com

En savoir plus

OBJETS DE SANTÉ CONNECTÉS

Balances connectées, brassards tensionnels sans fil, ainsi que d'autres objets de santé connectés sont analysés par nos confrères et nos laboratoires partenaires.

Avec dmdpost.com, bénéficiez d'une analyse rigoureuse.

En savoir plus

DEVENEZ ÉVALUATEURS

Dmdpost.com est une plateforme d'évaluation en mSanté qui fait appel aux énergies de professionnels de santé et de patients. Plusieurs centaines d'entre vous ont déjà répondu à l'appel de la recommandation neutre entre usagers.

Chez dmd Santé, nous sommes convaincus que l'union fait le force. Et vous ?

En savoir plus

mHealth Quality

La qualité en santé mobile porte un nom

mHealth Quality est le premier programme scientifique européen de validation de la qualité des applications mobiles de santé.

Users evaluate the quality of the technologies they are using

The dark side of the Healthcare data

Records

Healthcare 109 million
Other Industries 30 million
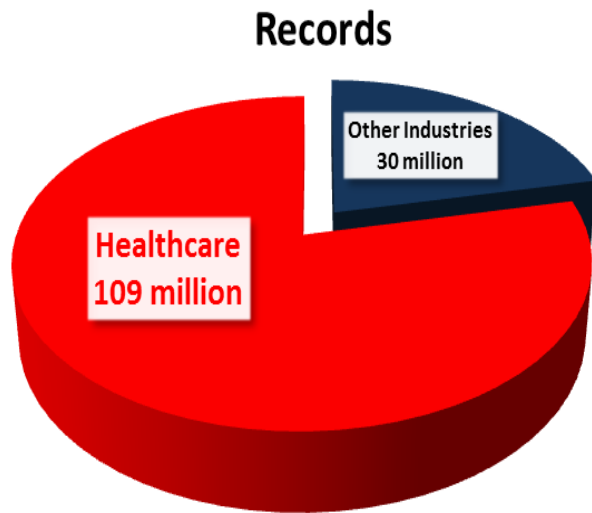
Top 10 Healthcare Data Breaches 2015		
Organization	Records Breached	Type of Breach
Anthem	78,800,000	Hacking / IT Incident
PREMERA BLUE CROSS	11,000,000	Hacking / IT Incident
Excellus	10,000,000	Hacking / IT Incident
UCLA Health	4,500,000	Hacking / IT Incident
MIE MEDICAL INFORMATICS ENGINEERING	3,900,000	Hacking / IT Incident
CareFirst	1,100,000	Hacking / IT Incident
DMAS	697,586	Hacking / IT Incident
GEORGIA DEPARTMENT OF COMMUNITY HEALTH	557,779	Hacking / IT Incident
BEACON HEALTH SYSTEM	306,789	Hacking / IT Incident
DJO GLOBAL	160,000	Laptop Theft
2015 Total	111,022,154	(almost 35% U.S. population)

Undisclosed attack type: nearly 50% of healthcare breaches (2001–2015) / IBM

- In almost half the healthcare breaches sampled, the victim organization has not to date disclosed exactly what type of attack they sustained

- "Physical" ranked second as most prevalent attack type affecting the healthcare industry

- With phishing and malware accounting for nearly 22% of disclosed attacks, the impact of social engineering and the inadvertent actor is significant

Attack types in healthcare breaches

- Watering hole 1.82%
- SQLi 3.64%
- Misconfiguration 7.27%
- Phishing 10.91%
- Malware 10.91%
- Physical 18.18%
- Undisclosed 47.27%

Source: IBM X-Force Security Incidents data (January 1 2011 – October 31 2015).
Note: Data is a sampling of notable incidents for each year and not a full representation of all incidents.
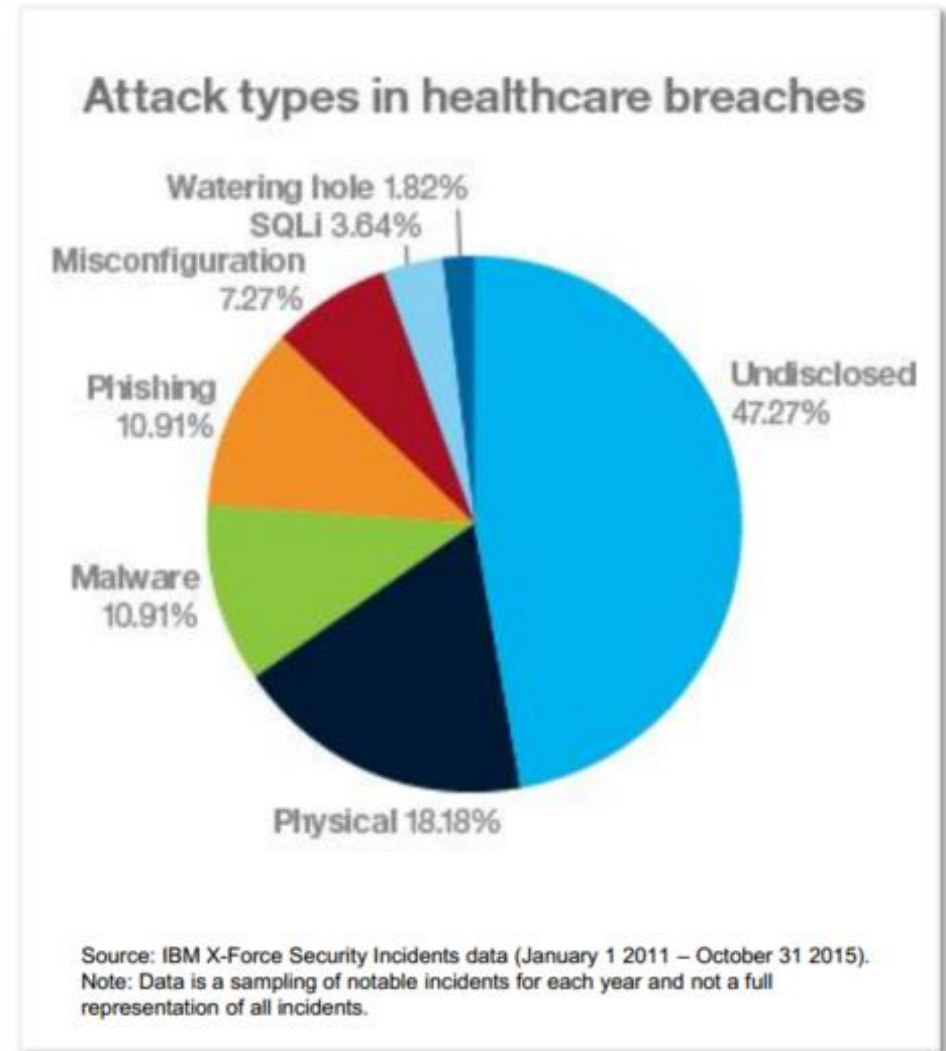
How the risk in mitigating and in healthcare connected data ?

- Technology has helped the healthcare industry make great strides in the advancement of care, but it can also pose increased security risk

| Internet of Things	Mobile health apps	Security in the cloud
- Vulnerabilities in medical devices could be exploited for financial gain, or to cause injury or death - Theft of data via medical devices has occurred, and is also a risk	- A 2013 study found there were 97,000 mobile health applications in major app stores[1] - mobile applications in the hands of both consumers and medical staff can be attack entry points	- A growing number of healthcare organizations are using software as a service (SaaS) in the cloud - Health information exchange (HIE) systems are increasingly cloud-based

[1] http://research2guidance.com/the-market-for-mhealth-app-services-will-reach-26-billion-by-2017/

Security issues seen in the field: Granular location and personal tracking & personal data in clear text
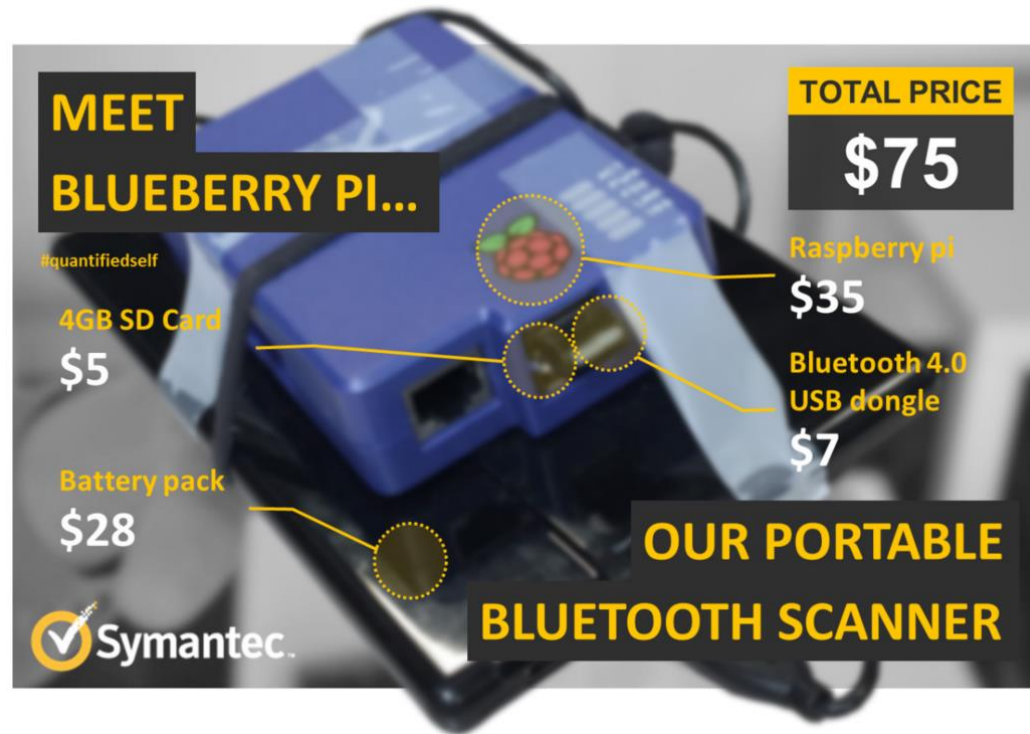
✓ Most of the self-tracking services that we looked at required or offered online cloud-based service components for which users have to create an account for in order to use. Whenever there are user accounts, user names and passwords are never far away so we were interested to see how the different services handled sensitive information such as login credentials.

Transmission of tracking & personal data in clear text

We were disappointed to find that out of all the apps that we looked at that required user logins, 20 percent of them transmitted user login credentials in clear text, meaning no attempt is made to encrypt the passwords at all.

1000 mètres

How many of you.. Especially doctors and QS start up, are implementing such program..?

Security risk analysis
Conducted at least annually, preferably by a professional

Software implementation
Such as an EHR system & encryption on mobile devices

Staff training
With annual HIPAA courses and documentable quizzes

Patient communication
Through engaging NPPs & educational outreach

Breach response plan
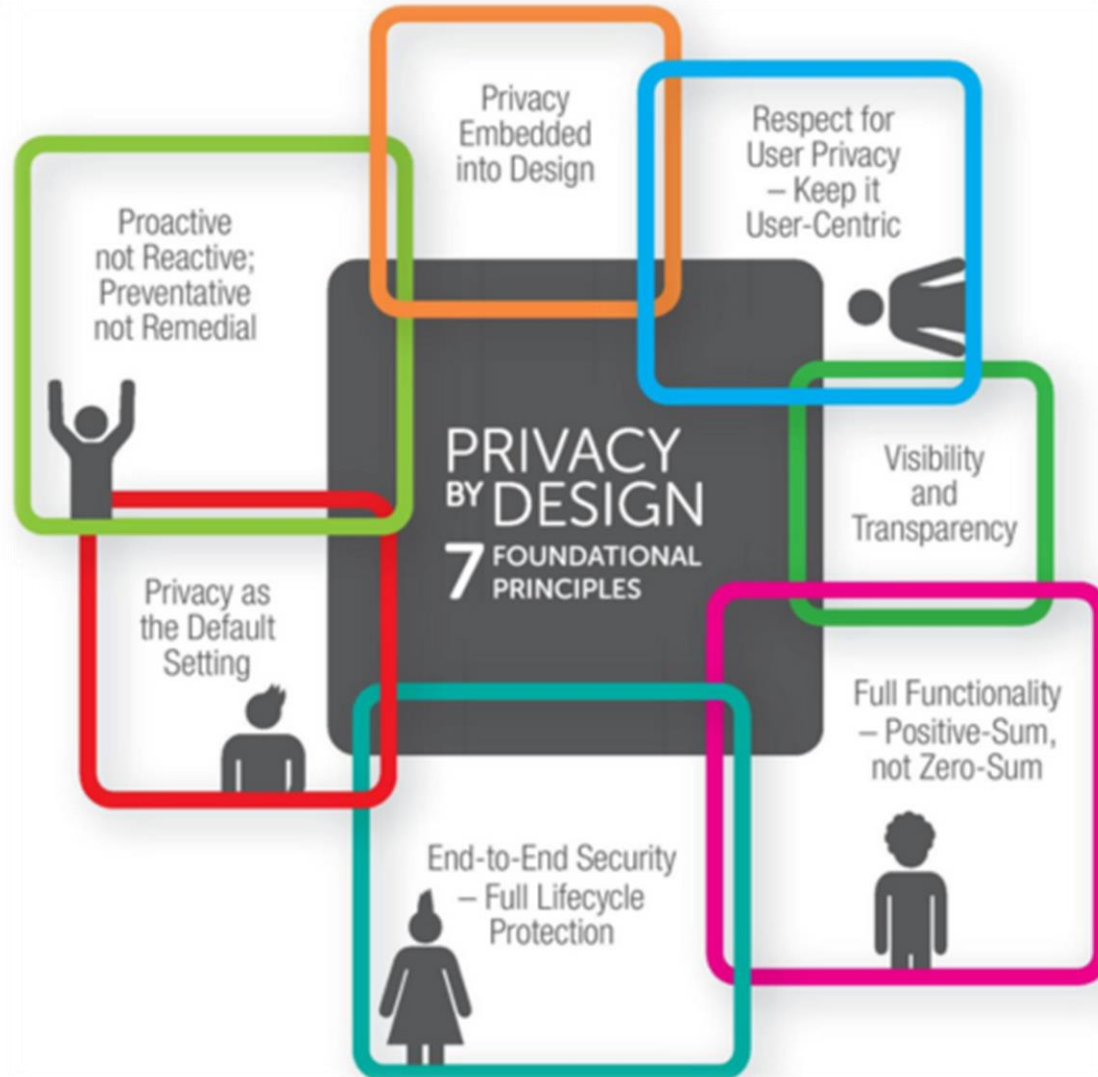Including a notification timeline

New threat awareness
For guiding policy updates as risks emerge
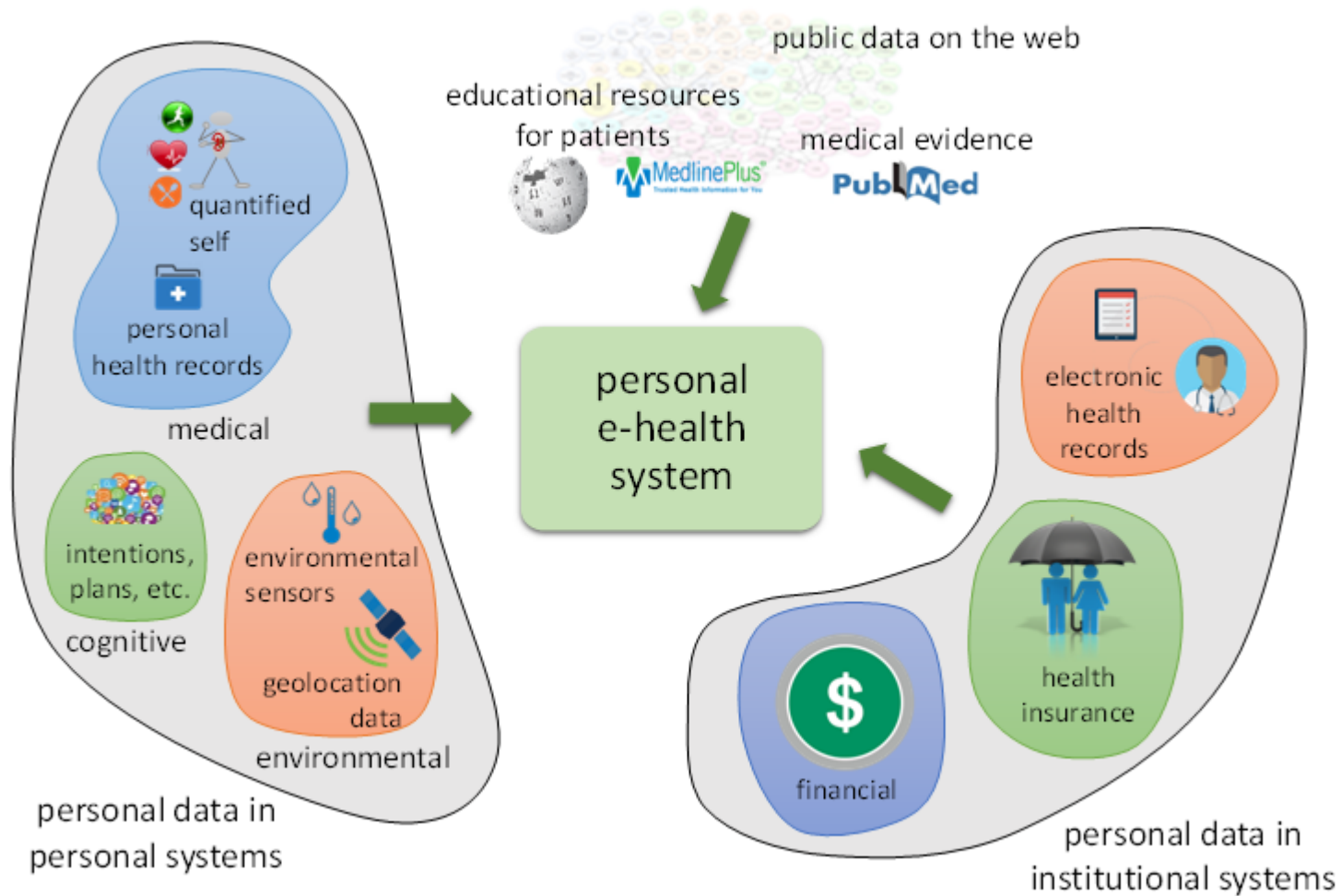
Security Strategies for Safeguarding Patient Data

"You must unlearn what you have learned"

Privacy By Design
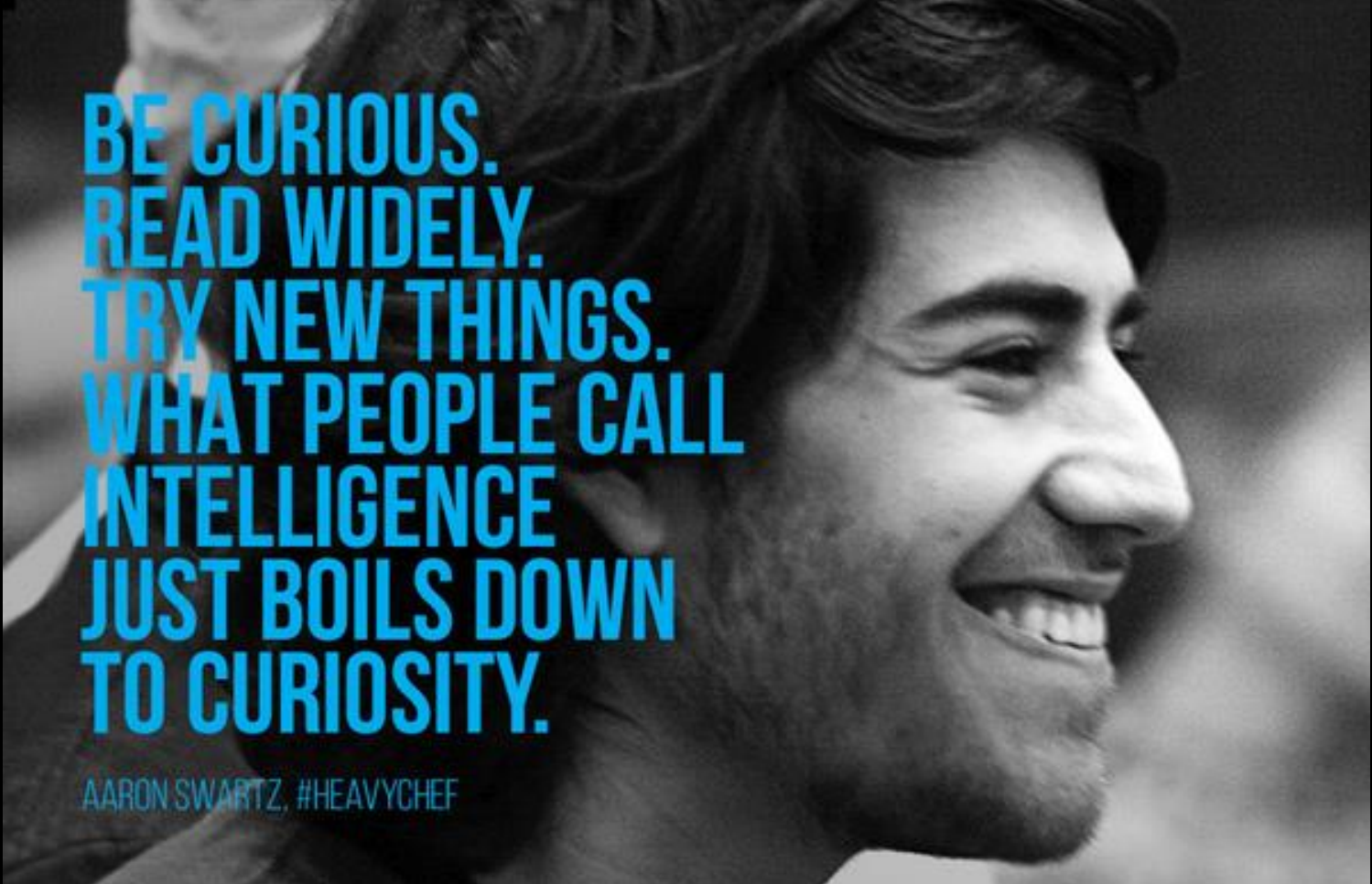## An user centric process instead as user as a product

Personal e-health systems are designed to be used by the citizens themselves to acquire, store, and manage personal health data.

"If no mistake have you made, yet losing you are ... a different game you should play"

Thanks for your attention

[Professionnel]

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More..? http://bit.ly/AskGoogleAboutMe

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