



Las tecnologías de la información redefinen la industria de la salud

Un (pequeño) viaje desde las mega tendencias hasta los casos reales



México, 10 de Junio del 2014



Warning:
*“Esta charla está en construcción
Escúchela a su propio riesgo...”*

1834 – Predicciones, tendencias...

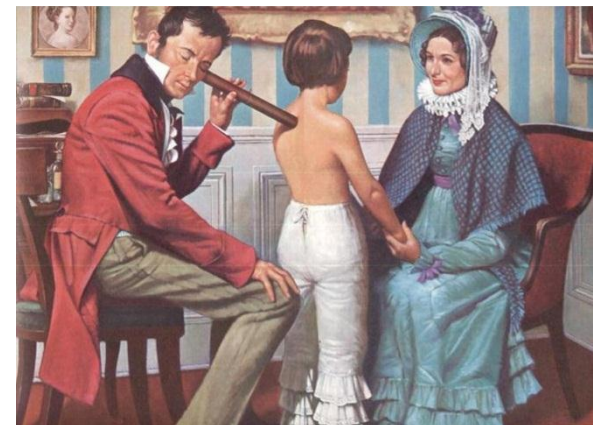
"That it will ever come into general use, notwithstanding its value, is extremely doubtful because its beneficial application requires much time and gives a good bit of trouble."

"..que se generalice, a pesar de su valor, es extremadamente dudoso, dado que su aplicación exitosa requiere mucho tiempo y da numerosos problemas..."

The Times, London, 1834

The innovation in question:
the newly invented stethoscope.

1. Telemedicina
2. Expediente Clínico Electrónico
3. Cloud



René Laënnec

Conclusiones (iniciales)

1. Lo único constante es el cambio
 - Innovación y cambio siempre han existido.
2. La gestión del cambio siempre ha sido relevante...(y cada vez lo es más)
 - Escépticos siempre los habrá
 - La innovación de “valor” termina imponiéndose
3. Predecir siempre ha sido difícil...

2014 – Predicciones, tendencias en Salud...

“Today the healthcare industry is facing a tsunami of inexorable market forces that are leading to major global disruptions, transformations and collapses of traditional systems” - Forbes, Feb, 2014

In healthcare, we’ve never seen a time when more trends are converging -MedAxiom Consulting, 2013

“Through 2018, pressures in the healthcare industry will be high due to: the extreme nature of the challenge; the magnitude and pace of change ; the amount of investment required; the need to improve quality and cut costs at the same time” - Gartner, Oct, 2013

The healthcare sector has reached a turning point, according to industry observers, with technology set to play an important role in its future success... - Financial Times, 2012

2014 –2020 ¿Qué podemos esperar en Healthcare IT?



MANATT'S HEALTHCARE INDUSTRY MEGATRENDS

1. **Consumers Take Charge**
2. More with Less: From Volume to Value
3. **Healthcare Everywhere**
4. Mega Health Systems
5. Centrality of the States as Payers, Public Health Agents & Innovators
6. **Value Through Data**
7. **Predict, Prevent, Personalize**
8. Employers Recalibrate
9. The New Aging
10. Healthcare Goes Global

FierceHealthcare

1. Consolidation of services:
Increased focus on value
2. **More technology-driven,
personalized treatment**
3. Increased cooperation between
the healthcare, food and retail
sectors
4. **More emphasis on prediction
and diagnostics instead
of therapeutics**

The Economist

1. The Greying world
(Aging)
2. Urbanization –
Globalization (Risk
Global Pandemic)
3. Medical Tourism
4. **Connectivity - mobile
health**
5. A global shortage of
organs for transplant

Deloitte Consulting

1. Demanding demographics (Aging)
2. Strategic globalization
3. **Unconstrained connectivity**
4. Constrained resources
5. Accelerated consolidation
6. **Big data**
7. **Consumer discontent**

Harvard Business Review

1. Innovation and demand soar in emerging economies
2. **Personalized medicine and technological advances**
3. Aging populations overwhelm the system
4. Rising costs
5. Global pandemics
6. Environmental challenges
7. **Evidence-based medicine**
8. Shortages in physicians - Non-MDs providing care
9. Payers' influence over treatment decisions
10. The growing role of philanthropy
11. **Prevention is the next big business opportunity**
12. Medical tourism

MedAxiom Consulting

1. Concept of value: outcomes divided by cost
2. Changing payment paradigm
3. Government increases compliance issue funding
4. **Consolidation/integration**
5. Development of healthcare teams
6. **Data management: big data**
7. Aging

Healthcare IT News

1. **Healthcare Cloud Adoption**
2. Telemedicine
3. **Integration of Genomics & Predictive Modeling**
4. **Empowering the Increasingly Demanding Patient**
5. Security

InformationWeek

1. **Data explosion: big data**
2. **Personalization**
3. **Social Media**
4. **Demographics**

ePatient 2015

HEALTH HYPEREFFICIENCY

1. **Empathetic Interfaces**
2. Unhealthy Surveillance
3. **Predictive Psychohistory**

THE PERSONALIZED HEALTH MOVEMENT

4. **The Over-Quantified Self**
5. **Medical Genealogy**
6. Augmented Nutrition
7. Healthy Real Estate
8. **The Device Divide**
9. Multicultural Misalignment
10. Natural Medicine
11. MicroHealth Rewards
12. Neuro-Influence Mapping

DIGITAL PEER-TO-PEER HEALTH CARE

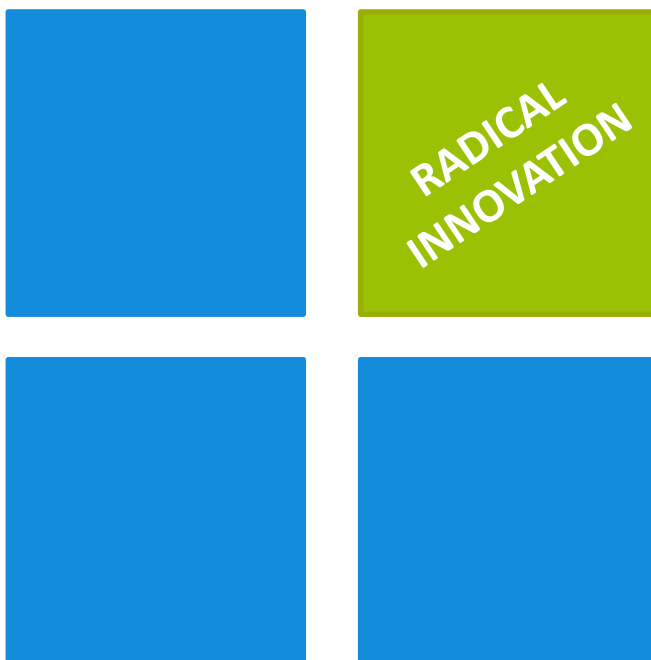
13. **Virtual Counseling**
14. CareHacking
15. Accelerated Trial-Sourcing



“One of the best ways to anticipate change in your sector is to spend time outside it” - Michael Cameron

NEW IDEAS

EXISTING
ENABLERS



EXISTING IDEAS

NEW
ENABLERS

Combine New Ideas & New Enablers!

“These combinations often emerge from a collaboration between leading experts from different fields. Radical Co-Creation doesn’t happen with your everyday consumers or even passionate fans. It happens through new journeys taken together with the most interesting thinkers and doers in the field”

Fuente: WEVOLVE

La capacidad de “co-innovar” o de “co-crear” se ha convertido en una necesidad real del mundo actual en la búsqueda de “valor”.

Se difuminan los roles tradicionales de cliente-proveedor, o las fronteras entre industrias, incluso, el concepto de “competencia”

“Healthcare Beware! New *Intruders* are Coming – Introducing the New Gold Rush” – Forbes, May 2014

- Entidades Financieras
- Constructoras
- Telecoms
- Electrónica de Consumo (LG, Samsung, Sony)
- Empresas de Contenidos (ej. [Time Warner Cable](#))
- [Empresas IT](#) y Redes Sociales (ej. Apple, Google, Facebook,..)
- [Video Games](#)
- Cadenas de Retails (ej. Waltmarts)
- Hotelería (“[end-to-end customer experience](#)”)
- Distribución comercial
- ...



Sources:

- <http://www.forbes.com/sites/reenitadas/2014/05/19/healthcare-beware-new-intruders-are-coming-introducing-the-new-gold-rush/>
- KPMG: <http://www.kpmginstitutes.com/healthcare-convergence/>

Buzzword!!!



Nanorobots in blood

Nanomedicina -omics

IA fraccionada Crowdsourcing Dopaje académico

Yo cuantificado Diseño iterativo Gamification

Apertura de información gubernamental

Healthcare IT

Internet de las Cosas

Virtual Reality

Green Hospitals

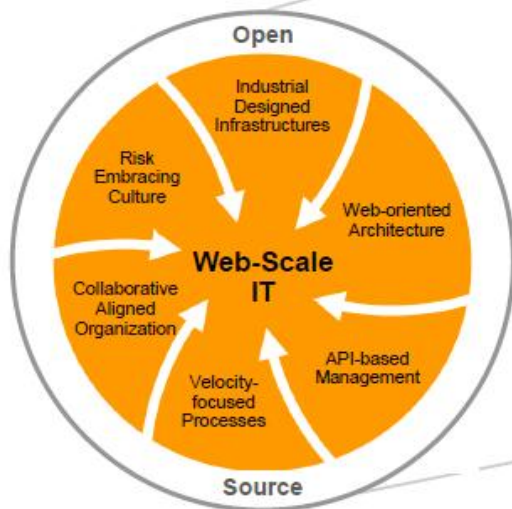
Sombra de datos 3D printing

Biohakeo Digestible Sensors

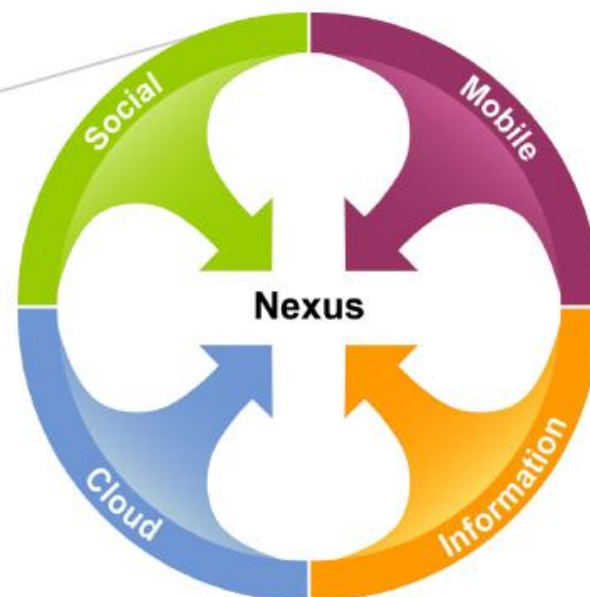
Data donors Derecho al olvido

2014 – 2020: Healthcare IT

cuatro grandes fuerzas



***Web-scale IT
“powers” the
Nexus***



Tecnología abierta, escalable y colaborativa (economía API)

“Information is the lifeblood of modern medicine, and health information is destined to be its circulatory system”

David Blumenthal, New England Journal of Medicine

Casos y ejemplos reales



1. [Xente con Vida](#)
2. [Mayo Clinic](#)
3. [PatientLikeMe](#)
4. [OneHealth](#)
5. [Sermo](#)
6. [Yaampi](#)
7. [Hospitales Latinoamericanos](#)
8. [La enfermera Nicole, ¿vale todo?](#)
9. [ehCOS Social Health](#)
10. [ehCOS Business Community](#)

1. [Apple](#)
2. [Samsung](#)
3. [Air-Waves](#)
4. [Proteus](#)
5. [BlindSquare](#)
6. [Nuubo](#)
7. [Muvuku](#)
8. [Wereables for kids](#)
9. [ehCOS WearTech](#)
10. [m-ehCOS](#)

1. [Apixio](#)
2. [iGem](#)
3. [Biomeme](#)
4. [Vuline](#)
5. [BGI](#)
6. [Health Data Initiative](#)
7. [OpenFDA](#)
8. [ehCOS Big Data](#) (AMER, Clinical Coding)
9. [Magnetosperm](#)

El ZEN de la vida digital

Tres etapas del comportamiento del ser humano ante cualquier nueva tecnología

(Douglas Adams, 1999)

- 1) Todo lo que ya esté en el mundo cuando naces es simplemente “normal”
- 2) Todo lo que se invente desde entonces y hasta antes de que cumplas 30 años es muy emocionante y creativo (con algo de suerte podrás hacer carrera a partir de eso)
- 3) Todo lo que se invente después que cumplas 30 va contra el orden natural de las cosas y es el comienzo del fin de la civilización como la conocemos... (hasta que haya existido otros 10 años y resulta que no pasa nada, y nos damos cuenta que todo esta bien)

Conclusiones

1. Lo único constante es el cambio
 - Innovación y cambio siempre han existido.
 - Los ciclos de innovación cada vez son mas cortos
2. La gestión del cambio siempre ha sido relevante...(y cada vez lo es mas)
 - Escépticos siempre los habrá
 - La innovación de “valor” termina imponiéndose
3. Las grandes tendencias tecnológicas que impactan en el sector salud son: Social, Movilidad, Cloud, Big Data
4. La medicina y el sector Health esta inmerso en un cambio radical con nuevos paradigmas: Personalizado, Predictivo, Preventivo y Participativo
5. Toda iniciativa IT de las organizaciones del sector se verán impactadas por estas megatendencias (sea HW o SW, sea iniciativa estratégica o táctica, sea operacional o analítica)

it's time to re-think your healthcare IT



an NTT DATA Company

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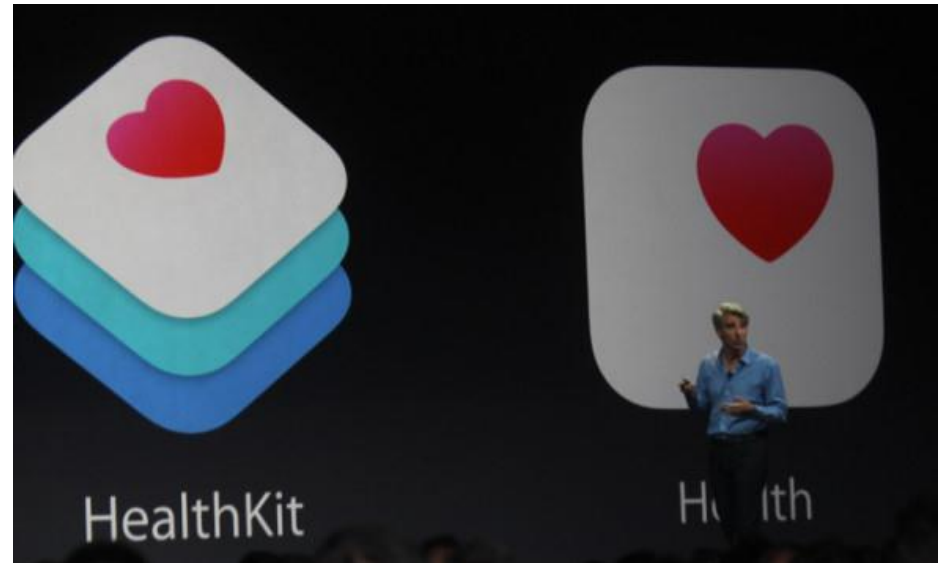
<https://www.linkedin.com/company/everis>



<https://www.youtube.com/user/everisgroup/channels>



Apple's 'Healthbook' will finally debut as part of iOS 8 this Monday, May 31, 2014



1. Health & Wellness
2. mHealth
3. Wereable
4. Cloud
5. ...

- A. Co-innovation
- B. Quantified Self (Yo cuantificado)
- C. Gamification
- D. IoC
- E. ...



everis.com

The healthcare sector
transformation:
a big opportunity

attitude makes the difference



SAMSUNG
Strategy & Innovation Center

DIGITAL HEALTH

DATA CENTER

HUMAN COMPUTER INTERFACES

INTERNET OF THINGS

INTELLIGENCE FOR SMARTER HEALTH

The Samsung Digital Health Initiative leverages an array of hardware and software technologies designed to bring developers, healthcare professionals, academics and health enthusiasts together to create a healthier world. The key component of the Digital Health Initiative is a new health open reference design platform tailored to take advantage of the latest sensors, behavioral algorithms, battery technologies and displays. This is an open data platform and open sensor platform that's attracting the brightest minds and the most creative innovators to work with Samsung to accelerate innovation in personal health technology.

SIMBAND ∨ **S.A.M.I.** ∨ **PARTNERS** ∨

SIMBAND

YOUR BODY IS TALKING TO YOU

Samsung Simband is not a product. It's a reference design. It's our concept of what a smart health device should be. Devices based on the Simband platform will be able to gather vital diagnostic information - from your heart rate to your skin's electrical conductivity, 24 hours a day, seven days a week.

WE'RE OPENING THE ECOSYSTEM

Samsung Architecture Multimodal Interactions (S.A.M.I.) will be a data broker that will enable wearable devices like those based on Simband to upload information to the cloud. From there, developers can access the data and leverage it to create entirely new applications. S.A.M.I. will be the first truly secure, open, diverse data platform of its kind. Its open APIs enable it to collect data from any type of device or online

- | | |
|----------------------|--------------------|
| 1. Health & Wellness | A. API Economy |
| 2. mHealth | B. Co-innovation |
| 3. Wearable | C. Quantified Self |
| 4. Cloud | D. Yo cuantificado |
| 5. ... | E. Gamification |
| | F. IoC |
| | G. ... |



Muvuku: mHealth en telefonos de 15 USD

Muvuku is an award winning platform for SIM card applications. By loading data collection forms directly on to the SIM card, you enable health workers to collect structured data using any standard GSM mobile phone

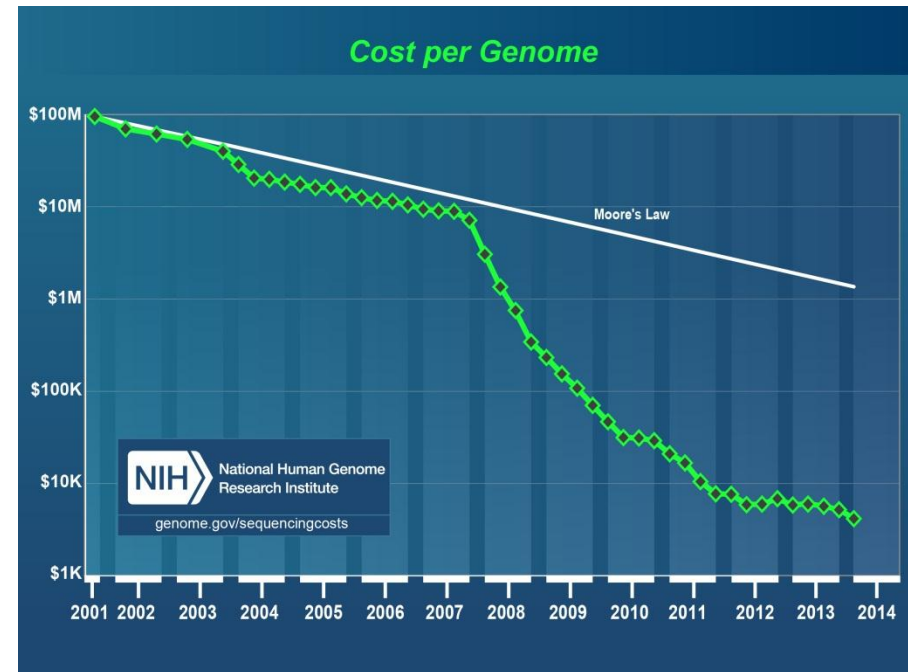
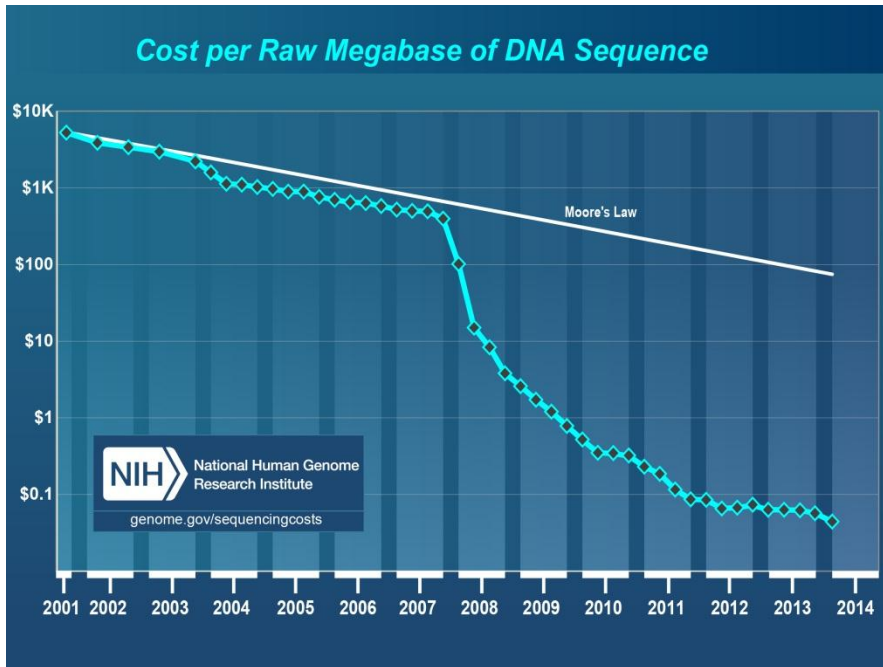


MEDIC MOBILE





National Human Genome Research Institute - DNA Sequencing Costs





Biomeme – DNA Lab en tu smartphone



Turn
your smartphone into
a convenient, low-
cost lab for quick DNA
diagnostics and on-
site disease tracking.





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Magnetosperm – “esperma robotica”

Hot Topics: Telemedicine

Robotic sperm is here, and it's not just for fertilization — it might help treat cancer, too

June 6, 2014 1:52 pm by [Harrison Weber](#) | 0 Comments

Share This Story



Meet the humble “Magnetosperm,” a tiny, sperm-like robot with incredible abilities in the micro world.

It's approximately six times longer than a human sperm, and [scientists](#) [Physics](#) say in a paper that Magnetosperm “technology could be used for fertilization, but also chemotherapy treatment.”

Patients who undergo chemotherapy to kill cancer cells can experience side-effects, if healthy cells are damaged in the process. Using Magnetosperm, doctors could more accurately target the cancer cells, and could reduce the damage from exposure.



Because Magnetosperm was “designed to move very very small things around,” the robots [could also be used](#) to assemble any object on “nano- and micro-scales.” Scientists also speculate that magnetosperm could help improve egg fertilization.



Conceiving New Ways to Use Personal Data

- Opportunity:
 - On average it takes women 4 to 6 months to get pregnant
- Data and Analytics:
 - 4M data points from over 70,000 women via wearable "quantified self" devices (e.g., Fitbit), along with self-reported data on body medical history, weight, menstrual cycles, and sexual intercourse specifics via a mobile app
 - Algorithm developed by Harvard scientist and fertility experts to more accurately predict ovulation cycles and when to plan romantic interludes
- Results:
 - Ovuline Smart Fertility app used by 40,000 women and their partners
 - Users report pregnancies in about 60 days (2x to 3x faster than national average)

 ovuline



Gartner.

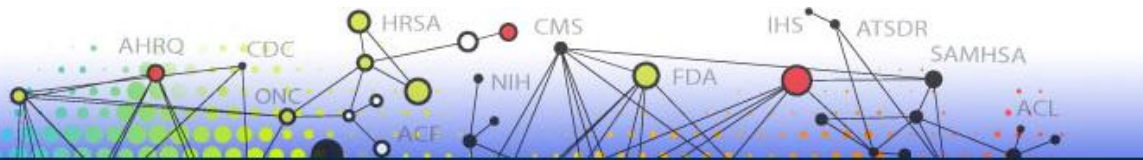
1. Health & Wellness
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- A. Quantified Self (Yo cuantificado)
- B. ...



attitude makes the difference

HealthData.gov



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Data

Blog

Q & A

Ideas

Developers



Search entire site...



Unleashing the Power of Data and Innovation To Improve Health

Welcome to HealthData.gov! This site is dedicated to making high value health data more accessible to entrepreneurs, researchers, and policy makers in the hopes of better health outcomes for all. In a recent article, Todd Park, United States Chief Technology Officer, captured the essence of what the Health Data Initiative is all about and why our efforts here are so important.



HDI Starter Kit - Learn about all of the HHS data available to you.

Get the Kit!



1. Big data
2. Open Data

- A. Collaboration
- B. Co-innovation

openFDA

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Introducing openFDA

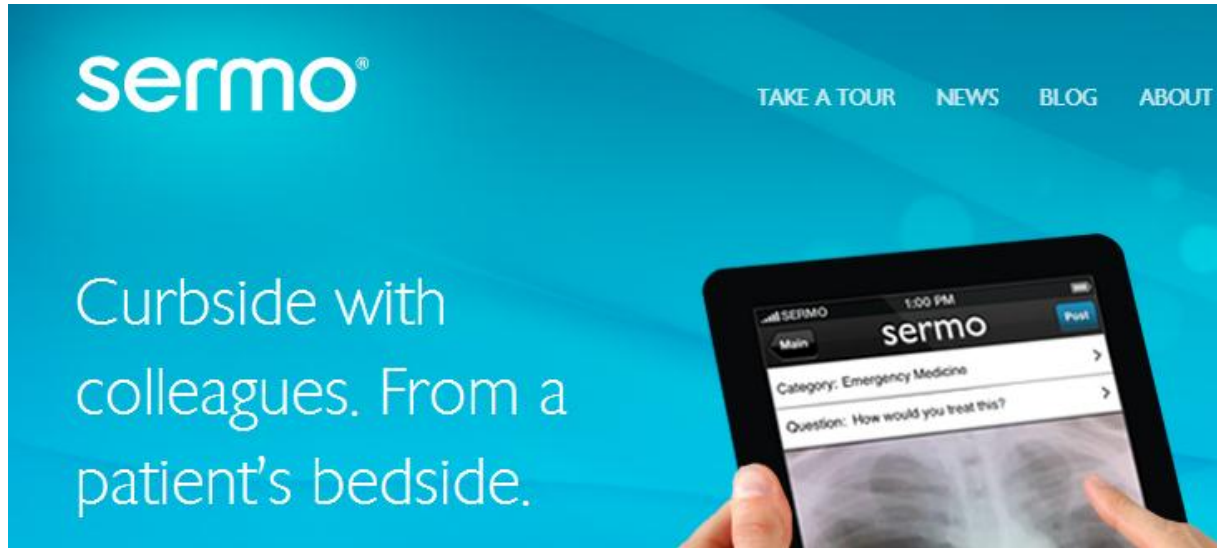
More than 3 million adverse drug event reports at your fingertips.

Adverse drug event reports, 2004 to 2013, where an indication for use was hypertension



Redes Sociales – OneHealth

Sermo – Red Social exclusiva para médicos



Collaborate + Consult

Over 270,000 physicians. On-call to help you.



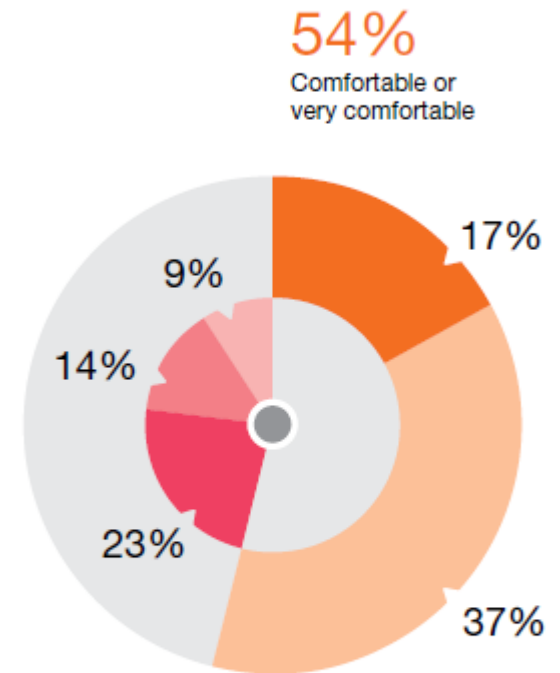
THOUSANDS
OF CASES
SOLVED

Get a second opinion.
(Or a hundred more).

Present your toughest cases to colleagues, and get answers in minutes. No referrals required.



Figure 5: Consumers' feelings on doctors going to online physician communities for advice related to their health situation



n = 1,060

- Very comfortable
- Comfortable
- I don't care
- Uncomfortable
- Very uncomfortable