



Internet and Societies: new innovation paths

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ICT BUILDING RESILIENCE WITHIN SOCIETIES: SMART HEALTH

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Questions

- ICT To impact tangible lifestyle changes towards sustainability?
- Evidence base on Online communities impacting situational awareness and behavioural change?
- Engage relevant "agents of change" for trust and participation?
- Top down or bottom up and issues of privacy, identity, security?
- Minimum quality guarantees standards or they will emerge bottom up?
- Which areas for a multidisciplinary research agenda

Source of my presentation

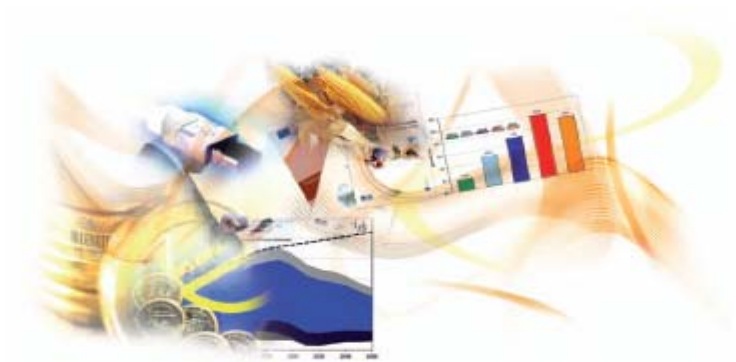
JRC Scientific and Technical Reports



Nudging lifestyles for better health outcomes: crowdsourced data and persuasive technologies for behavioural change

Authors: Brigitte Piniewski, Cristiano Codagnone, and David Osimo

<http://ftp.jrc.es/EURdoc/JRC64206.pdf>

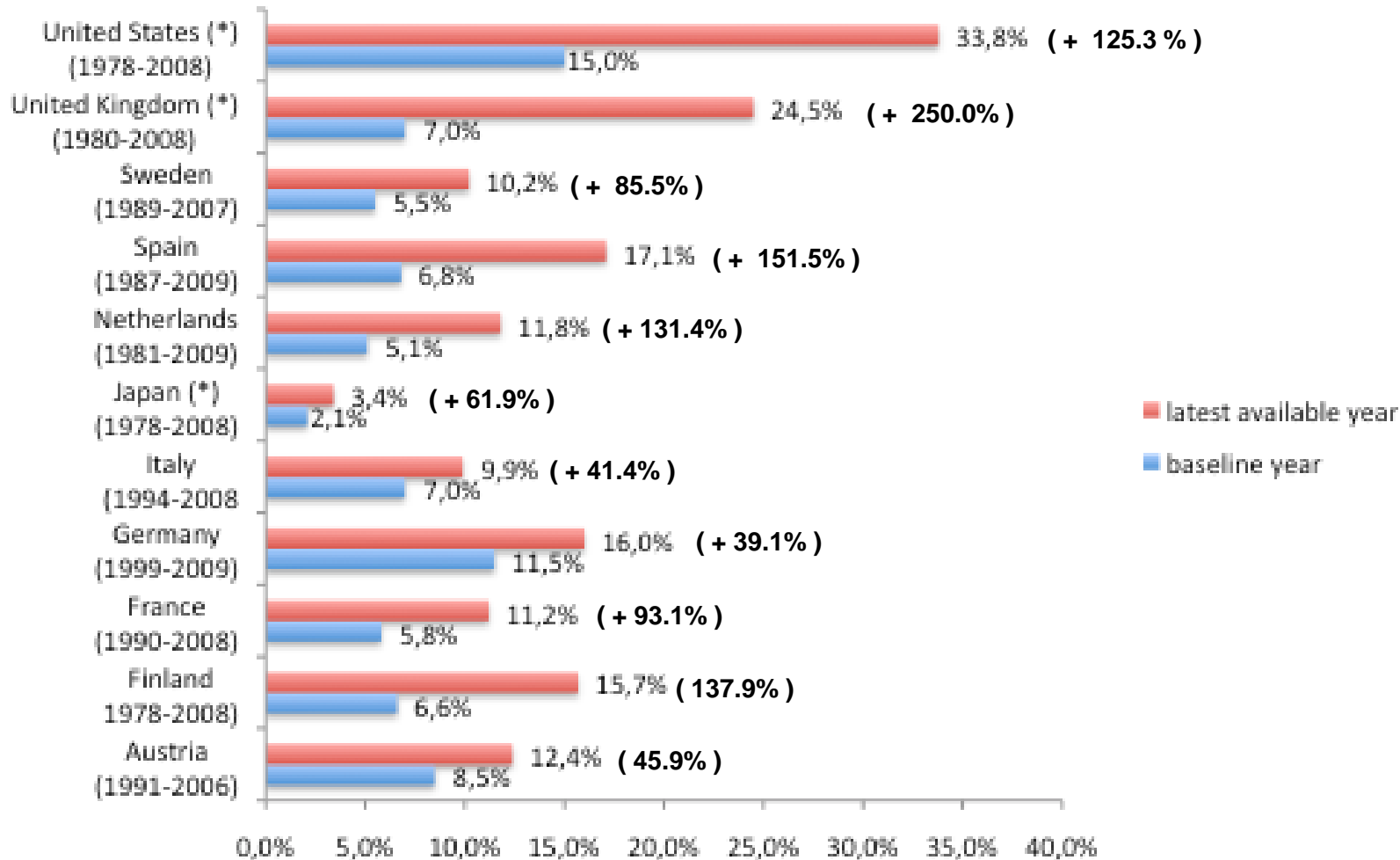


EUR 24795 EN - 2011

A Tsunami in 3 decades

Not predicted nor prevented a Tsunami of poor health, entirely mediated by modernised lifestyles, has hit our shores on both sides of the Atlantic

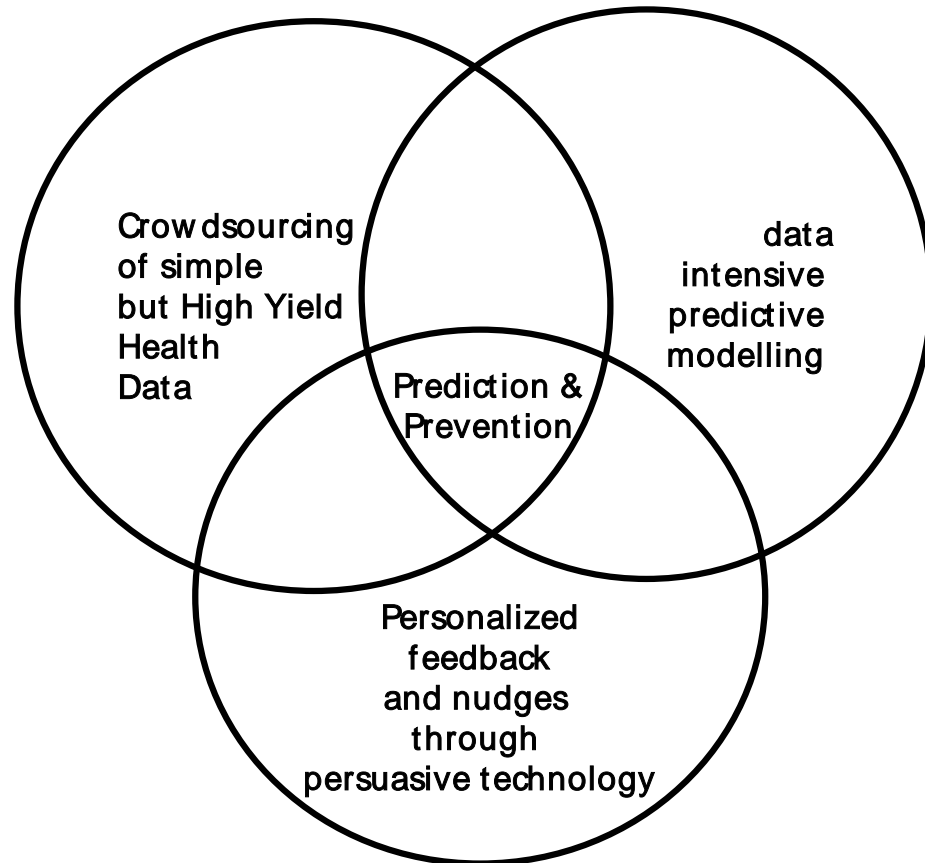
% OF POPULATION WITH BMI > 30



OECD Health Data

(*) data comes from measurement, all other are self-reported

Crowdsourcing, living epidemiology, and persuasive technology



- Community based crowdsourcing: high yield health data
 - Individuals input a few high yield data (nutrition, activity and key physiological parameters) for themselves and their children
 - They use ubiquitous mobile technologies to communicate and receive data
 - They are provided with new functionalities to detect and input physiological parameters
- Living epidemiology: real time analysis of co-occurrences
 - Researchers (granted access to the data) identify the per unit and crowds co-occurrences explaining wellness or illness
 - Evidence used to evaluate and support public health investments
 - Evidence mapped against characteristic of community help shape other interventions
- Persuasive technologies: change behaviour
 - Can integrate classical interventions
 - Can overcome and avoid the resistance that these interventions encounter
 - It is a quintessential nudging approach leveraging crowds participation and network effect

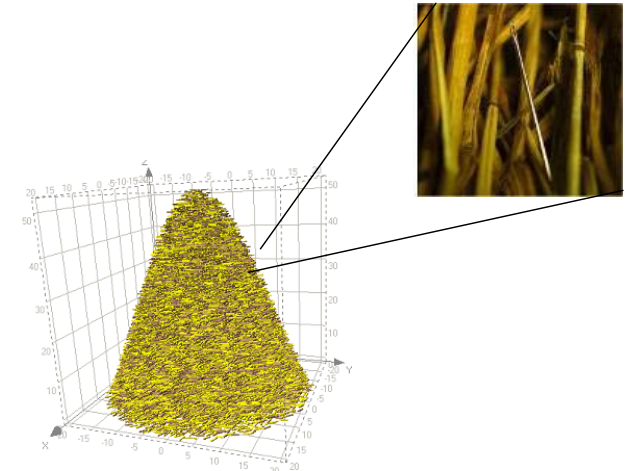
Back to the future

- The Greek provided the universal analytical proof that the square on the long side of every right angle triangle has the same area as the sum of squares on the other two sides
- Babylonian engineers simply measured the sides of a thousand right triangular and heuristically induced the same conclusions

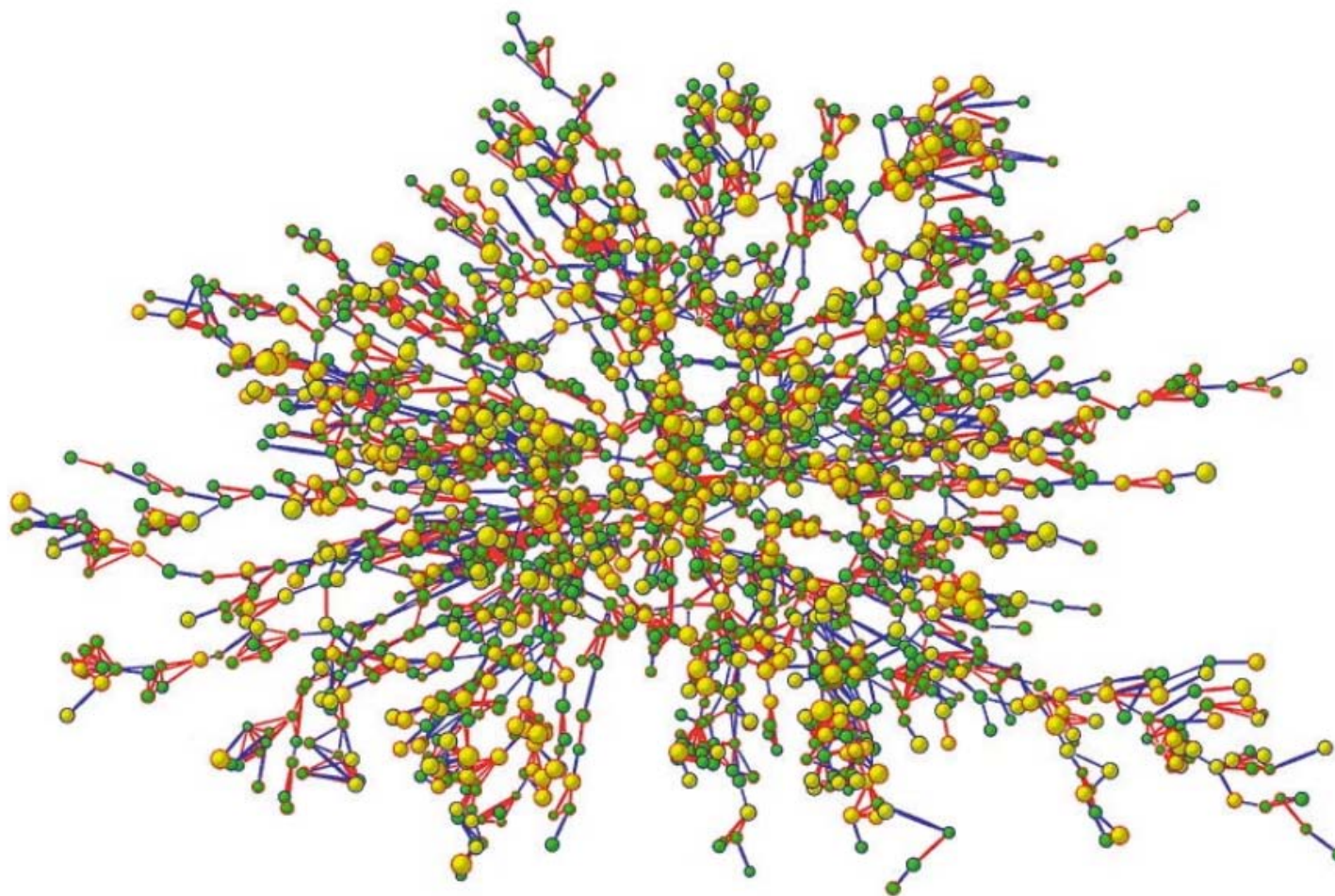
Science paradigms

- Past 3000 years: Empirical
- Past 400 years: Theoretical-analytical
- Past 30 years: Computational
- Tomorrow: Data intensive eScience

Needle in the haystack: benign and malign co-occurrences explaining good or bad health



Social networks and obesity



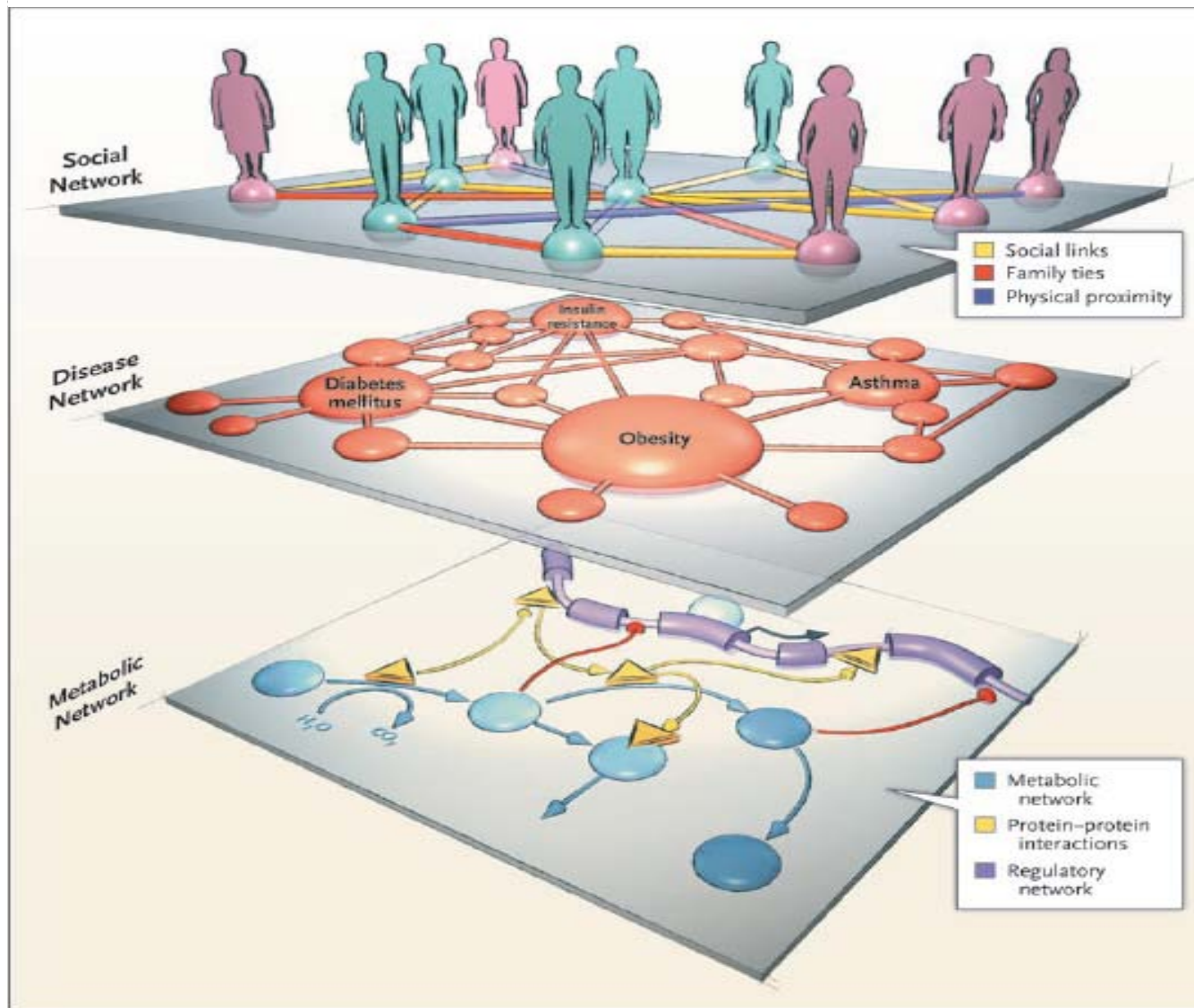
The Framingham Heart Study (*):

- **Interconnected social network of 12,067 people, assessed repeatedly from 1971 till 2003**
- **The chances of becoming obese appeared to increase by 57% for individuals with obese friends**

(*) Christakis, N.A. and J.H. Fowler, The spread of obesity in a large social network over 32 years. N Engl J Med, 2007. 357(4): p. 370-9

http://www.nejm.org/action/showMediaPlayer?doi=10.1056%2FNEJMsa066082&aid=NEJMsa066082_attach_1&area=

Network medicine (*)



(*) A. Barabasi, Network Medicine – From Obesity to the “Diseasome”, N Engl J Med, 357, 4: 404-407

Web2.0 infoveillance behavioural experiments

First stage: understanding

- Automatized collections for a few months of tens of thousands of posts in Facebook, Twitter and Patientlikeme, containing opportunely selected key word and/or hashtags
 - There are several options of software which continuously gather and mine textual information from Twitter and via their Application Programming Interface (API).
 - The collection of data will establish a time windows of gathering information from the social web platforms.
- The analysis based on two complementary approaches.
 - First, it will analyse using web-metrics the information foraging behaviour of users on the topic. It will identify the main channels of diffusion of information, the main actors that acts as information hubs, the structural features of information networks.
 - Second, an automatic content analysis – based on latent semantic analysis - will identify the dominant semantic domains in which the issue is discussed in the sample of social web content collected.

Second stage: online experiment/assessment of policy measure:

- Repeat the analysis above but steering the discussion on potential intervention
- Or repeat the analysis to understand the impact of introduced intervention