



# iMed

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A technological platform  
for mind-body efficiency  
evaluation

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# iMed - Overview

## A RELIABLE MEASUREMENT

is a non-negotiable prerequisite to make substantial improvements in our understanding of human health. To say that someone is in a good/bad shape we need some sort of unit of measurement, an objective scale to quantify the global health status of a system. To the contrary, the current medical practice tends to rely on mostly subjective judgements and to use measurements purely on a local basis.

In other words, the fact that subject X has high blood pressure does not imply anything at all about X's health and his chance to live for 95 years: since it is well known that human bodies have extremely adaptive features, a "deficiency" in trait T<sup>1</sup> may well be compensated by the "efficiency" of T<sup>2</sup> and T<sup>3</sup> - that is why, in fact, many people with high blood pressure live a long and healthy life.

We firmly believe that a radical extension of human life-span may only be achieved through the development of an "efficiency measure" that takes into account the complexity of our body and correctly map any local "anomaly" to the global health situation.

Although medicine knew a spectacular development in the last century, the ability to **estimate** our health status within six months is still relatively modest: people suddenly get heart attacks and strokes without any measured symptom, others develop cancer without apparent reasons. Apart from clear-cut cases, we have no idea of how to **objectively** measure our current mind-body efficiency and **predict** how it may change in the near future. Can't we do better?

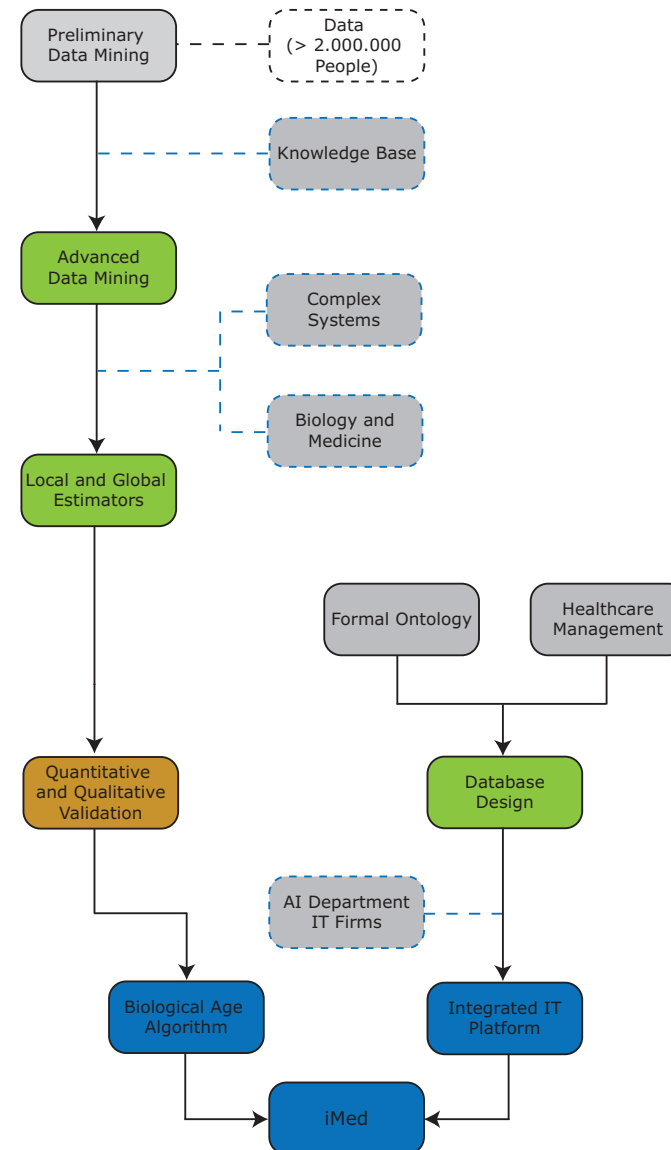
**iMed** is a multidisciplinary project aiming at a deeper understanding of **health**, a better knowledge of mind-body **interplay** and wiser decision-making **procedures** when it comes to **global** as well as **individual** healthcare. Evidence-based medicine is becoming increasingly popular: we strongly favour this paradigm shift and a quantitative approach to biological and psychological sciences. Without a shared "**efficiency index**" - helping practioners to judge on an objective basis the outcome of a treatment - our **efforts** to radically improve people life are seriously compromised.

**iMed** is an advanced technological platform explicitly designed to **MEASURE** mind-body efficiency and reliably predict people health across different **scenarios**. In particular, the project is grounded in the following core principles:

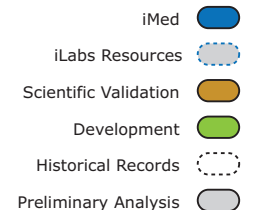
- >>> "loosing efficiency" means "becoming older"
- >>> different people **have** different **equilibria**, **develop** different diseases and **deserve** customized treatments
- >>> health-monitoring should be **cheap**, fast and **not stressful**: **advanced** technology is the answer

**iMed** is an ongoing project, **already integrated** in a complete software platform to manage people healthcare through years. We welcome institutions, research facilities and firms that are willing to **join** our scientific vision of tomorrow's healthcare.

# iMed Overall Structure



**iMED STRUCTURE**  
 is a multidisciplinary enterprise involving almost every iLabs department. On the scientific side, we are employing advanced data mining techniques coupled with tools from computational biology and psychoneurophysiology to design our efficiency estimators. We are confident that the validation step will confirm our first findings and establish significant qualitative correlations between iMed efficiency measure and particular diseases. On the technological side, we take advantage of iLabs IT firms to integrate the algorithms within a user-friendly database for complete healthcare management.



# iMed Healthcare Management

**iMED MONITORING PROCESS**  
 is designed to minimize costs, time and discomfort for any subject involved.  
 We are constantly exploring new ways to detect aging processes in mind and body: our current software works with results from a blood test and it will soon include spirometry and an index of cognitive efficiency.

**STEP 1: FIRST CHECK-UP**  
 A preliminary evaluation of mind-body efficiency using **iMed** algorithms and the collection of any available medical record are the first steps into the protocol. Depending on age, past history and other relevant factors, each person is given a check-up schedule.

**STEP 2: MONITORING**  
 People are invited to undertake **iMed** monitoring examinations at suggested times. Few, inexpensive and **NON-INVASIVE** tests are sufficient to assess aging rate and to diagnose abnormal changes in mind-body health status.

**STEP 3: DIAGNOSIS**  
**iMed** efficiency index may be a reliable indicator of global illness and specific diseases. If the **QUALITATIVE VALIDATION** will confirm our preliminary findings, **iMed** will enable us to better understand local problems and prevent systemic damages.

**STEP 4: TREATMENT**  
 Responses to treatments vary widely across subjects. **iMed** framework is explicitly designed to take into account individual differences and provide an objective evaluation of treatments' success in improving people's health.

**QUALITATIVE VALIDATION**  
 is the process of mapping **iMed** output values into qualitative health scenarios.  
**iMed** advanced estimator plots, for a given set of data (blood test results, EEG waves, spirometry, etc.), a probability distribution: in standard cases, the interpretation of the curve is straightforward, showing the aging rate of the subject under examination. However, preliminary findings suggest that some pathologies (even in early stages) produce a discernible deviation in the probability curve. If these results are confirmed by the ongoing validation process, **iMed** will be used to effectively detect specific diseases.

