Efficient Patient Recruitment for
Innovative Clinical Trials of
Existing Drugs for other Indications

www.ponte-project.eu

eHealth

PONTE

Efficient Patient Recruitment for Innovative Clinical Trials of Existing Drugs to Other Indications

Pharmaceutical companies are placing increasing importance on drug repositioning research. PONTE will develop and validate a universal drug repositioning platform, featuring a semantic search engine, decision support and a Clinical Trial Protocol authoring tool. By incorporating advanced data mining techniques and an intelligent query mechanism the PONTE platform will simplify and accelerate the process of validating novel uses for existing drugs and will support the clinical researcher throughout each stage of the process, from the moment an idea is generated - through to the selection of suitable volunteers for a clinical trial, including evaluation of commercial viability.

The current clinical trial environment

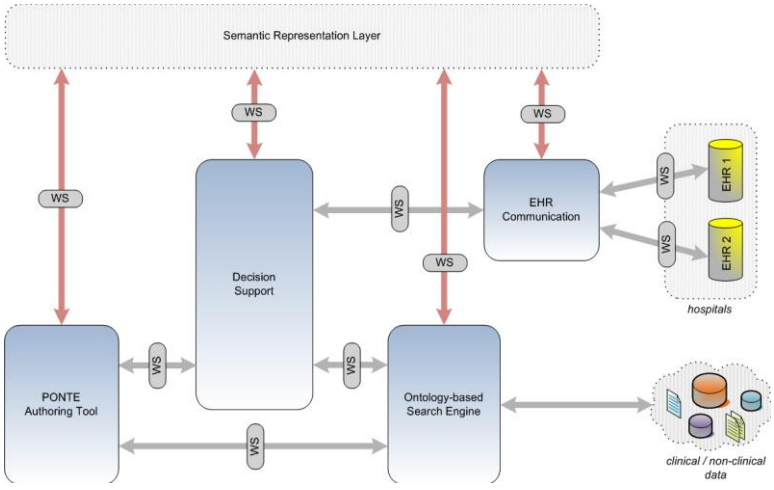
New drug development is costly and slow. Several newly approved drugs exhibited unexpected safety risks resulting in significant loss of investment. The cost of launching a new drug has doubled in the last 10 years and in the same period the return on investment has decreased by 50%.
Researching the use of known drugs for new indications has become a timely strategy for the pharmaceutical industry and has been found to offer faster, cheaper and safer solutions.
PONTE's universal platform, which aims to optimise drug repositioning, is thus strategically well placed in the current market environment.

Objectives

PONTE aims at developing a set of intelligent procedures linking descriptive semantic representations of data involved in the clinical trial lifecycle to:

- Enable the development of a research question into a clinical trial through the comprehensive testing of the hypothesis across the clinical, molecular and commercial domains
- Efficiently guide clinical researchers through clinical trial protocol preparation through advanced decision support at multiple steps, intelligent queries to distributed heterogeneous data sources and advanced navigation through the clinical trial protocol
- Enable effective automatic identification of eligible individuals while focusing on patient safety, clinical trial efficacy and cost

Support adaptive clinical trial



This project is partially funded by the European Commission under the 7th Framework Programme

European Commission
Information Society and Media

Efficient Patient Recruitment for Innovative Clinical Trials of Existing Drugs for other Indications

www.ponte-project.eu

The PONTE approach

The PONTE consortium is comprised of academic and commercial research groups of clinicians, ICT experts, ontology and knowledge engineers and systems modelers. The project focuses on the development of a computational platform which links to EHRs and external data resources and optimises the design of clinical trials and the evaluation of inclusion/exclusion criteria to aid in patient recruitment. PONTE begins this process by supporting the development and evaluation of the underlying hypothesis for a clinical trial. In this manner, the platform extends the conventional bottom-up integration of multiple data sources into a novel top-down approach from need-based scenarios linking the concepts and queries to the appropriate underlying data sources, both public domain and private. This hypothesis generation approach integrates concepts from the clinical, molecular and business domains to uniquely enable early evaluation of constraints, potential side-effects, risk of success and population size which support the critical decision making necessary to improve clinical trial success and product development
The three primary reasons for considering a repositioning approach center upon realization of new/additional knowledge about the disease, the drug target or the drug molecule. Development of concepts and ontologies based on these three perspectives naturally converge and overlap, but identify critical issues to be considered, e.g. clinical presentation, likely co-morbidities, secondary pathway response, competitive intelligence, intellectual property restrictions, etc, prior to trial design and initiation. This integrated ,comprehensive approach enhances the assignment of risk, evaluation of potential market size/share, provides early identification of adverse effects, identifies at-risk patient populations and improves the overall success rate of the trial. In addition, by integrating the clinical, molecular and commercial factors within a single environment, better assessment of the potential "business case" and early criteria/decisions can support both success and early termination of a trial when necessary. Additionally, this approach has been applied to "reverse engineer" existing trial designs to retrospectively identify omissions of critical components in the initial design phase.
PONTE supports the integration of wide-ranging data sources including those from the public domain and from validated commercial sources.

Expected results and impacts

PONTE will provide clinicians with new methods for accessing information to prepare, design and select patients eligible for recruitment for drug repositioning trials.
Pharmaceutical companies will benefit from earlier and more reliable go/no-go decisions and earlier identification of risk of failure. Designing drug repositioning trials through the PONTE platform will help increase the clinical trial efficacy, mitigate patient safety risks and reduce trial costs. PONTE will further stimulate drug repositioning research and will help recover commercial value from previous expensive research investment.
At the research institutions PONTE will facilitate faster and safer design of drug repositioning trials, allowing for early and more precise estimates of the likely cohort size of eligible patients.
Patients will benefit from the results of drug repositioning research faster. At the same time repositioned drugs are likely to be safer for the patients than newly developed compounds.
Stakeholders from the pharmaceutical industry and international data providers who would interface and integrate their data with the PONTE platform for commercial exploitation will gain a competitive edge.

Pilot

THIRST, the pilot study to validate the PONTE concept is based on an existing, multi-center clinical trial – a study of the effect of thyroid hormone in patients with acute myocardial infarction. The hypothesis for this drug repositioning study was based on previous research evidence, which could evolve into a ground breaking discovery and could take treatment of acute myocardial infarction into a new paradigm.
The THIRST based scenarios provide vital insight into the components of a clinical trial setup and the information necessary to access by the intelligent query mechanism. During the validation phase PONTE will re-evaluate the original hypothesis and the conversion into the clinical trial protocol. By "reverse engineering" both the PONTE functionalities, as well as the completeness of the THIRST clinical trial design will be tested and critically evaluated.

This project is partially funded by the European Commission under the 7th Framework Programme