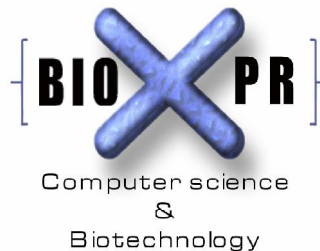


# BioXplain

*The Alliance for Integrative Biology*

*The First Open Platform for Iterative, Predictive and Integrative Biology*

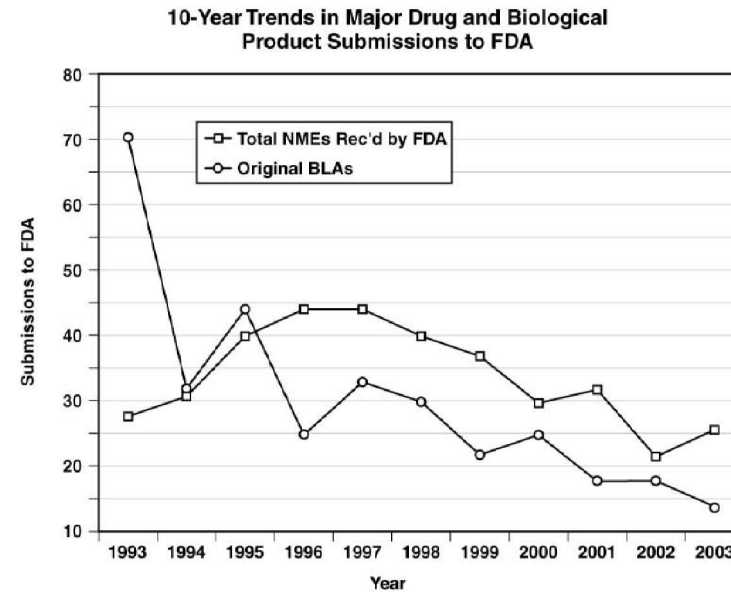
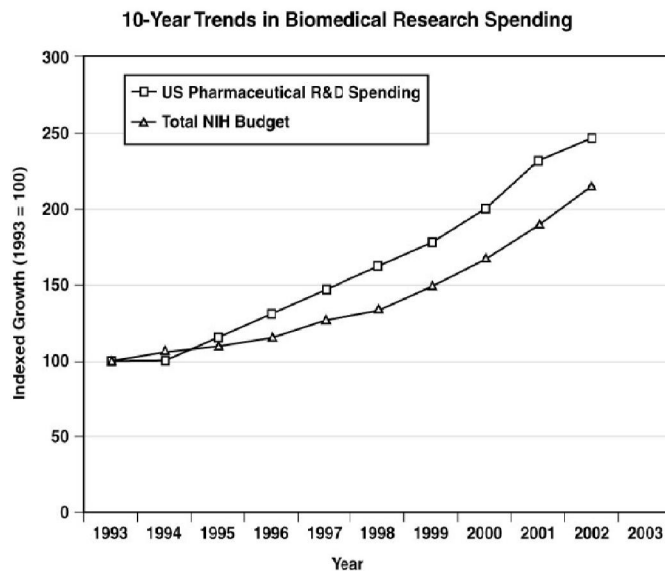


BioXplain 2009



# Pharma R&D critical challenge

**Despite increasing investments in Technology and I.T., the major drugs and biological products submissions to FDA are constantly declining**



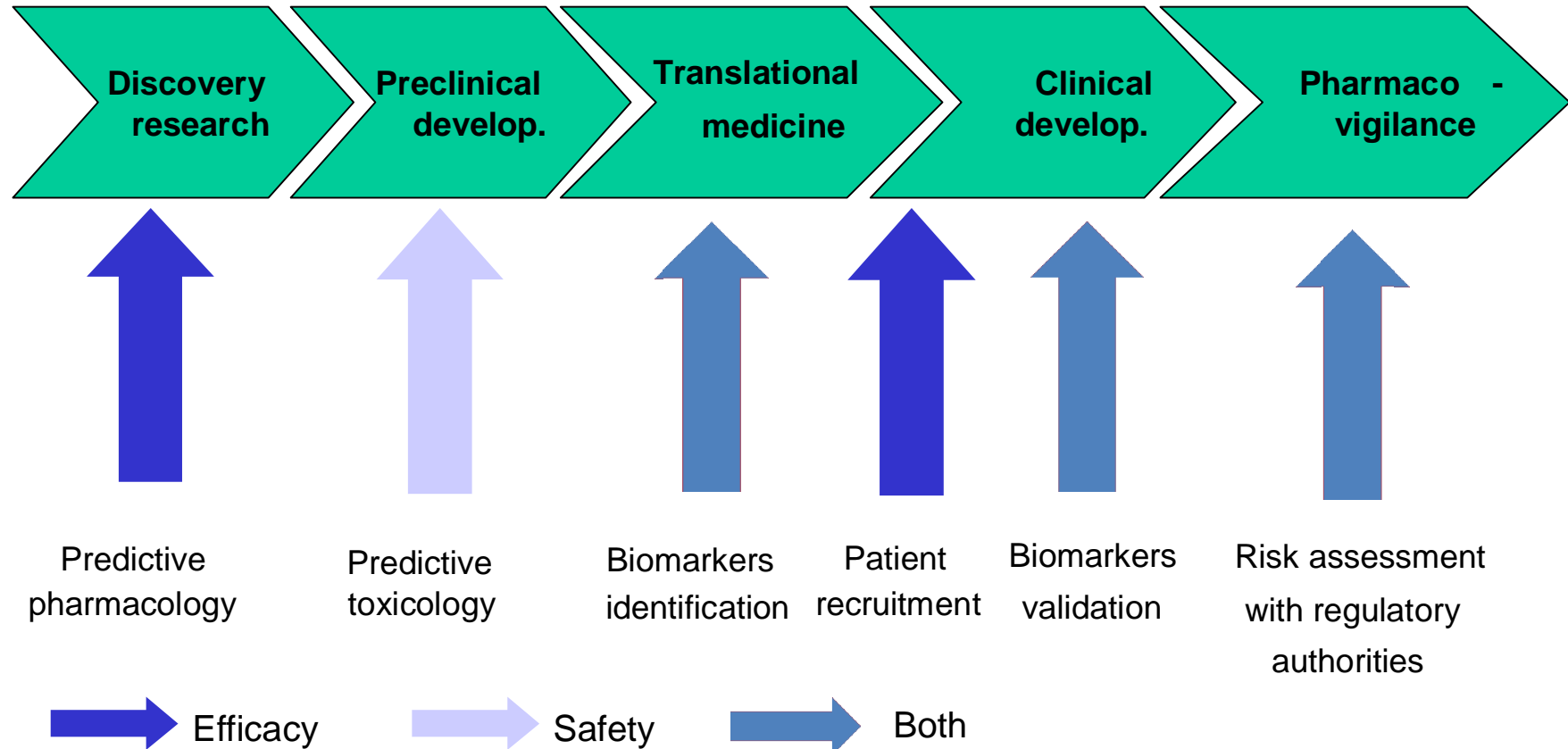
**The success rates from first-in-human to registration is on average 11% and does not take into account products withdrawals after launch.**



**Clearly, the issue is not solely a question of technologies!**

# Pharma R&D critical challenge

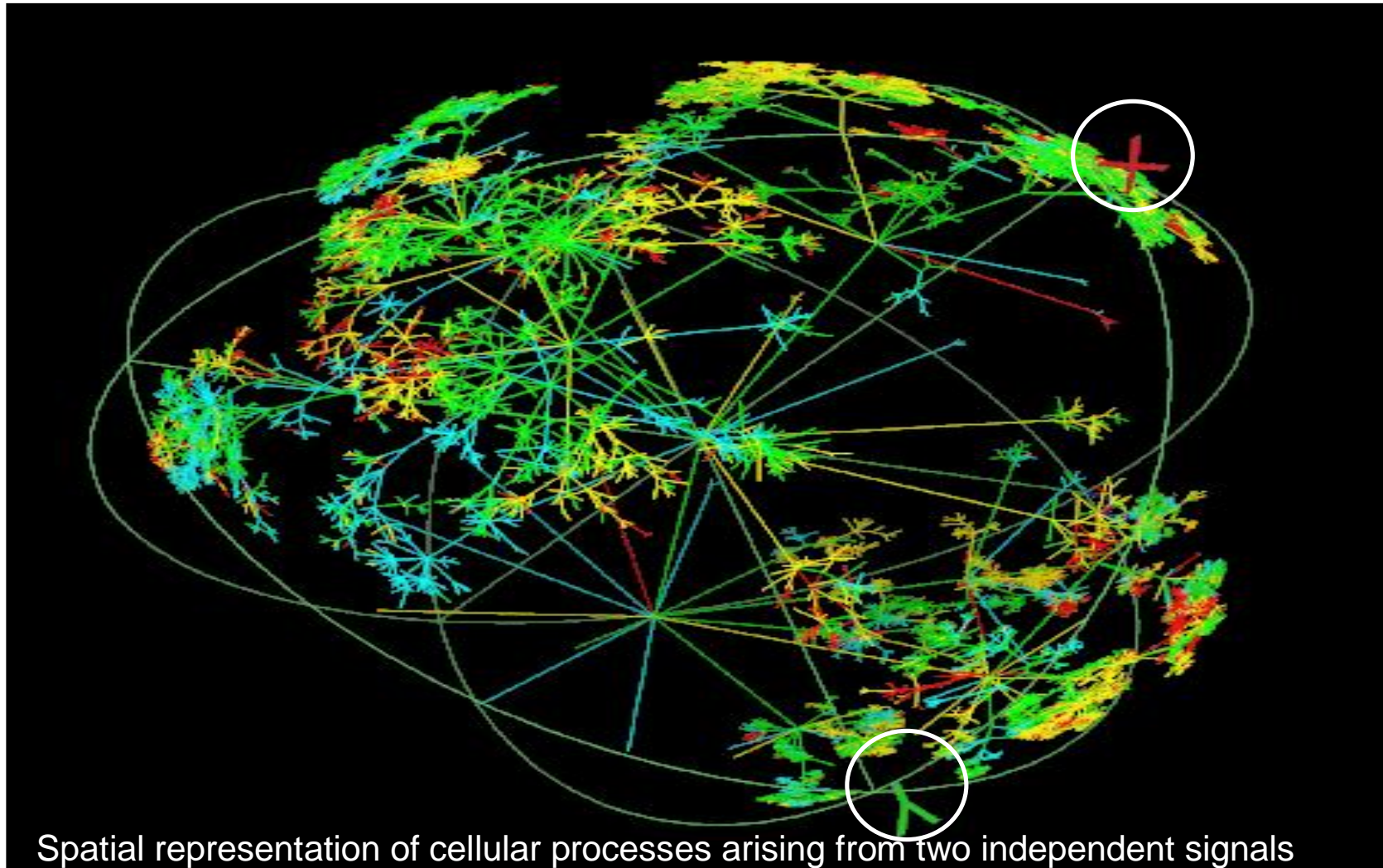
*Yet, ...the bottlenecks and major reasons for attrition are well known.*



**But, ....**

# Mechanisms of life are not cartesian:

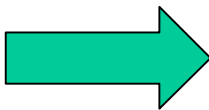
The biological effects result from the differential integration of ALL these events.



# The Pharma R&D dilemma

1. The ***mechanisms of life and diseases are non-linear and integrative processes*** that can't be correctly described using “cartesian”/ mathematic tools.
2. ***The “knowledge” value*** of scientific/medical publications, “Omics” technologies and bioinformatics is limited by the “garbage in, garbage out” reality. All the information produced ***is necessarily ALWAYS incomplete, biased and erroneous*** to an unknown extent.
3. ***The growing impact of translational medicine***, the flood of clinical trials, patients data , etc... generate “tons” of heterogeneous information that can't be efficiently used ***without robust “contextualizing” tools & processes.***

Mathematical modeling failed to provide operational answers addressing these three major issues.

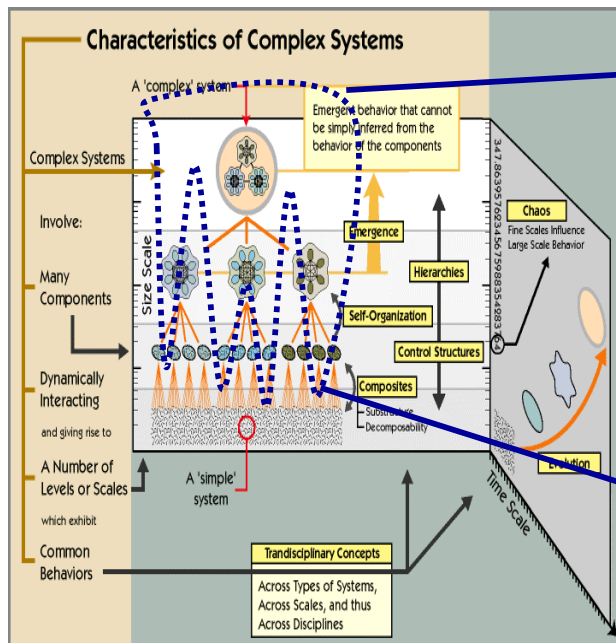


**We need to change our point of view.**

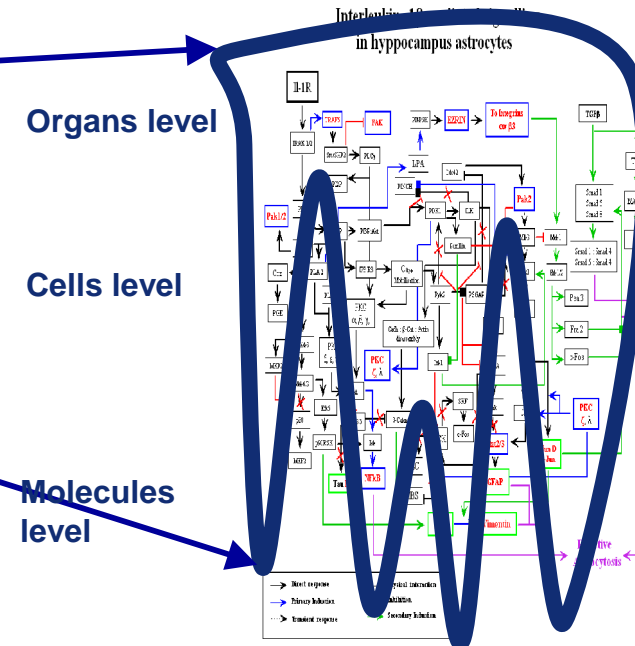
# BMSystems CADI™ models

- CADI™ (Computer Assisted Deductive Integration) based on “negative selection processes” is a disruptive innovation to *build detailed validated biological interaction maps*
- The CADI™ models belong to the *non-mathematical holistic and heuristic class of models*. They represent *inter-cellular and/or intra-cellular mechanisms associated with a biological status*.
- CADI™ models reveal the pertinent biological mechanisms, the therapeutic targets & the associated biomarkers, *leading to novel, proprietary discoveries*.

The complex system to study



A CADI™ model representing the system in a specific context



# First value proposal

## Existing CADI™ models and maps

8 CADI™ models & seven « proto-models (PM) », in 6 major medical areas for optimization of the drug development process and the diversification of drugs applications.

<u>Pathologies / Applications</u>	<u>Models ready for experimental evaluation</u>	<u>Experimentally validated models</u>	<u>Experimentally validated and published models</u>	<u>Proto-Models</u>
<u>CNS-PNS</u>	Alzheimer disease	Creutzfeldt-Jakob		Pain, migraine Psychiatric disorders Fribromyalgia
<u>Oncology - Systemics</u>		Metastasis	Breast cancer Tamoxifen resistance	
<u>Infection</u>		Antibacterial bio-agent		
<u>Immunology</u>	Chronic Fatigue Syndrome			Hepatitis C
<u>Tissue differentiation</u>			Müllerian duct regression	Adipocytes growth control
<u>Metabolism</u>				Hypercholesterolemia

# Let's go a step beyond

The pharmaceutical industry now requires its **scientists and clinicians** to harness & explain the non-linear mechanisms of health and diseases.

But they need **“simple and adapted” systems and tools to help them work.**

**Three complementary, cutting edge life sciences companies decided to collaborate to address this challenge:**

Ø **Bio-Modeling Systems:** The inventor of CADI™ methodologies and tools, including the collaborative iterative validation process.

Ø **BioXpr:** The most diversified provider of Software solutions built from a versatile library of modules to create real-added value from “OMICS” datasets.

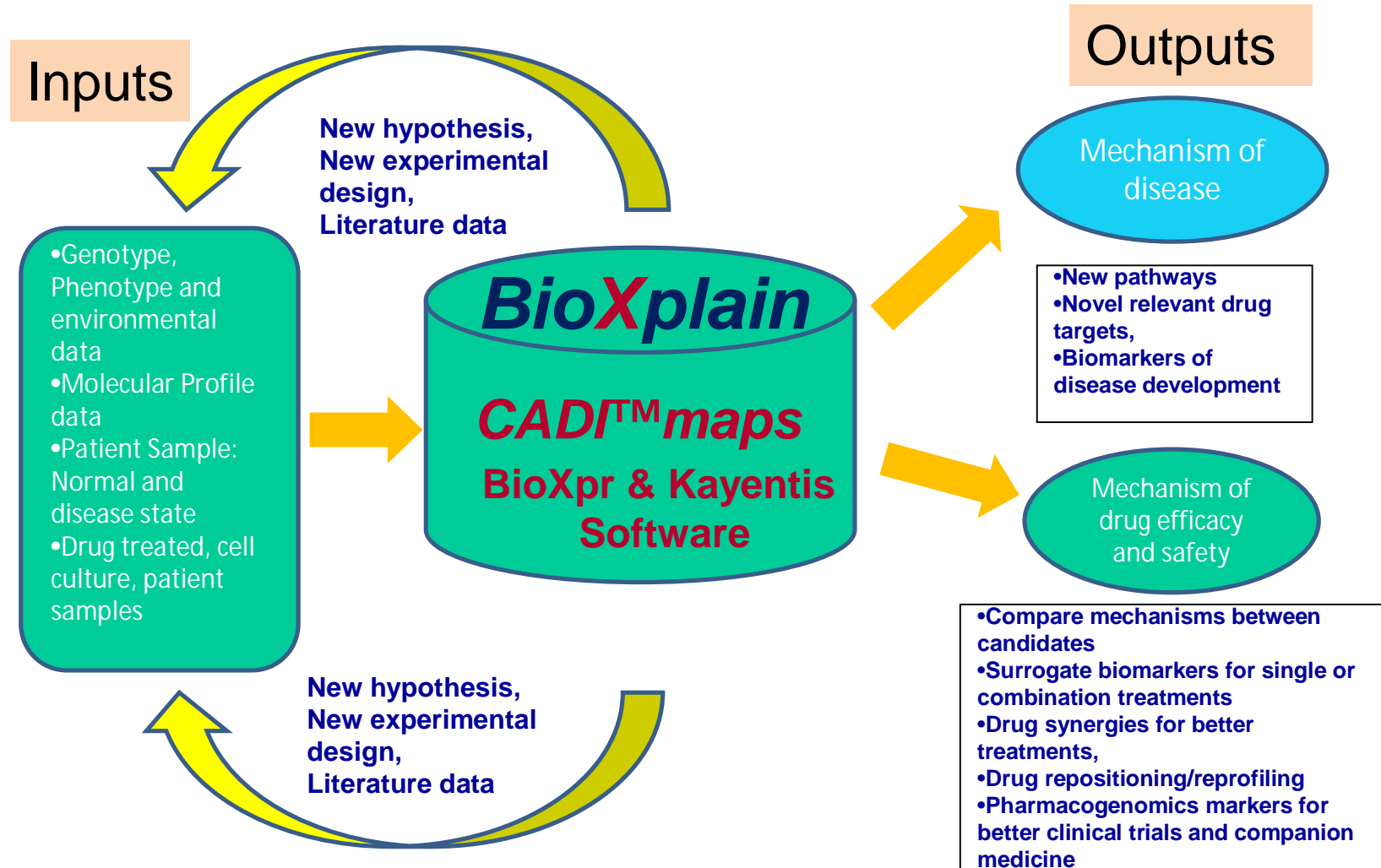
Ø **Kayentis:** The solution provider of the first integrated platform to capture and deliver real time “contextualized” research & clinical information.



**The first Open Platform for Iterative Predictive and Integrative Biology.**

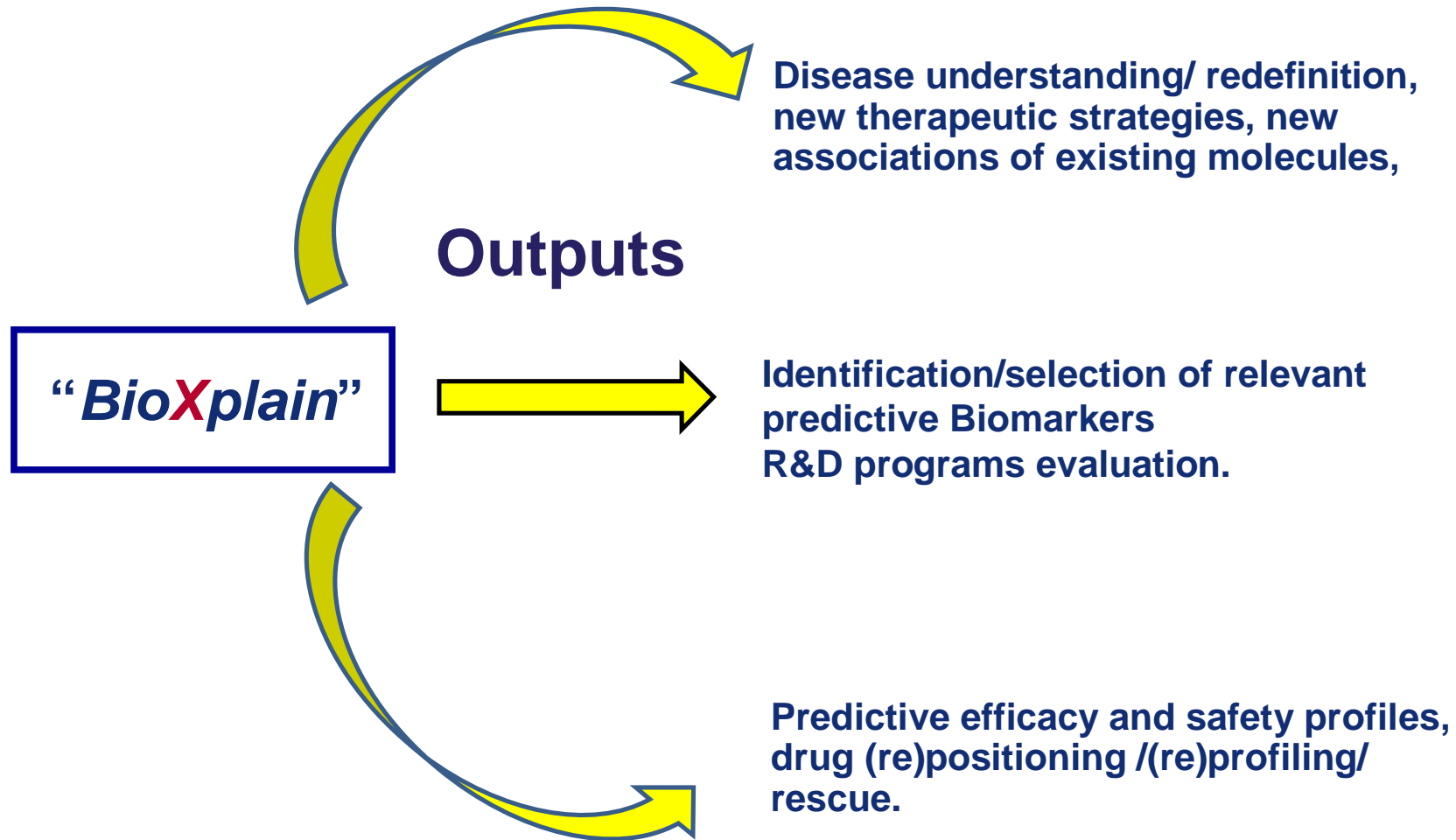
**Now we can Bio-Xplain!**

## The first Open Platform for Iterative Predictive and Integrative Biology

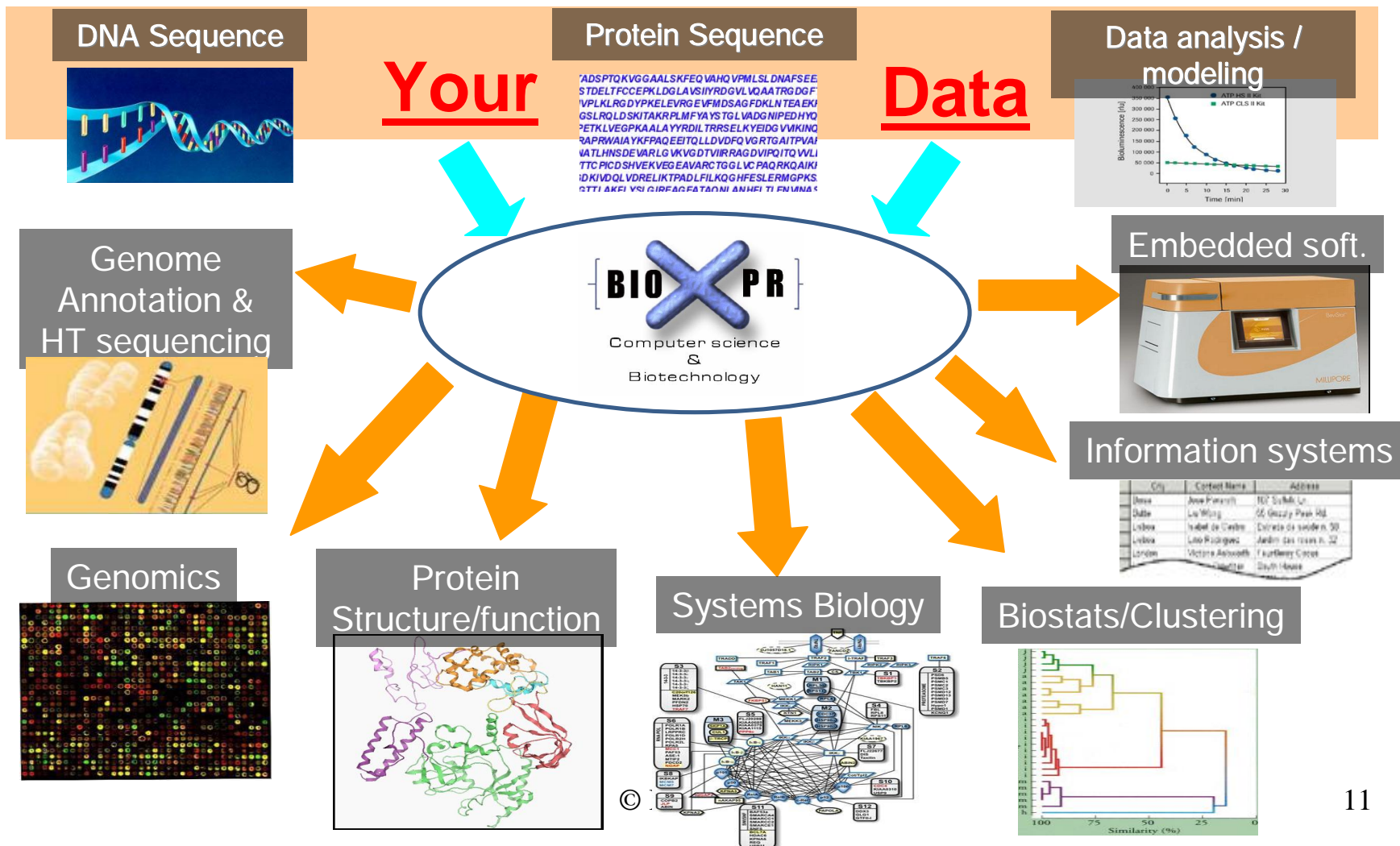


# “BioXplain” outputs

*Smarter, faster, safer pharmaceuticals and life sciences R&D*



# BioXpr: The Integrative Software & Services Platform



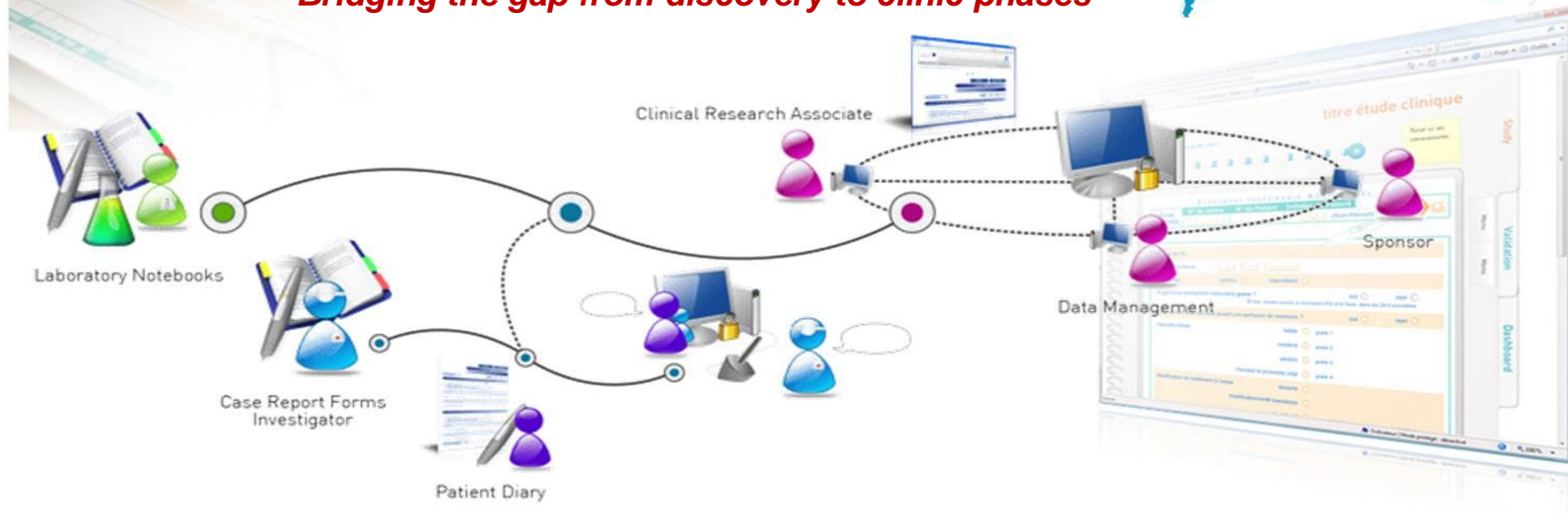


# Kayentis: The Integrated Platform to capture and deliver real time “contextualized” information






*45 countries, 5 continents, 10 000 users  
3 Millions pages captured from pharma, hospitals,  
Research centers , patients ...*

*Bridging the gap from discovery to clinic phases*



# BioXplain founders

*Three founders sharing same values and history*

Company	Company specificities	Company information
	<ul style="list-style-type: none"> <li>• Created by senior scientists and engineers.</li> <li>• Inventor of CADI™ methodologies and tools</li> <li>• Research-based biotech company</li> <li>• <i>The company does not sell its technologies nor access to its technologies</i></li> <li>• 1 spin-off Pherecydes-Pharma</li> </ul>	<ul style="list-style-type: none"> <li>• The R&amp;D booster for life sciences discoveries, Member of BiO</li> <li>• Established : 2004</li> <li>• 9 FTE based in France, 100 people working on BMSystems research programs</li> <li>• Active in the pharma, Industrial biotech, energy and biosecurity businesses</li> </ul>
	<ul style="list-style-type: none"> <li>• Created by senior scientists and biologists.</li> <li>• Collect, format, store, integrate, analyze and interpret from literature and experimental data ("OMICS", "environmental" data ,...)</li> <li>• Technology based on a library of powerful software modules that can be easily combined to create specific custom tools.</li> </ul>	<ul style="list-style-type: none"> <li>• A State of the Arts software solutions company.</li> <li>• Established 2003.</li> <li>• 10 people based in Namur Belgium.</li> <li>• Namur University Spin-off.</li> <li>• Numerous clients in the pharma, red and green biotech industries.</li> </ul>
	<ul style="list-style-type: none"> <li>• Created by senior scientists and clinicians</li> <li>• Collect, carry and share research, pre-clinical, clinical and post-marketing data using Digital Pen and Paper technology, DPP.</li> <li>• Full, un-biased and complete data capture in real-time ensure the completeness and integrity of the data.</li> </ul>	<ul style="list-style-type: none"> <li>• A software provider with strong growth</li> <li>• Established in 2004.</li> <li>• 40 staff based in France (Gif-sur-Yvette, Grenoble, Reims) and in the United States (Philadelphia).</li> <li>• More than 10 000 users in 44 countries on 5 continents.</li> </ul>

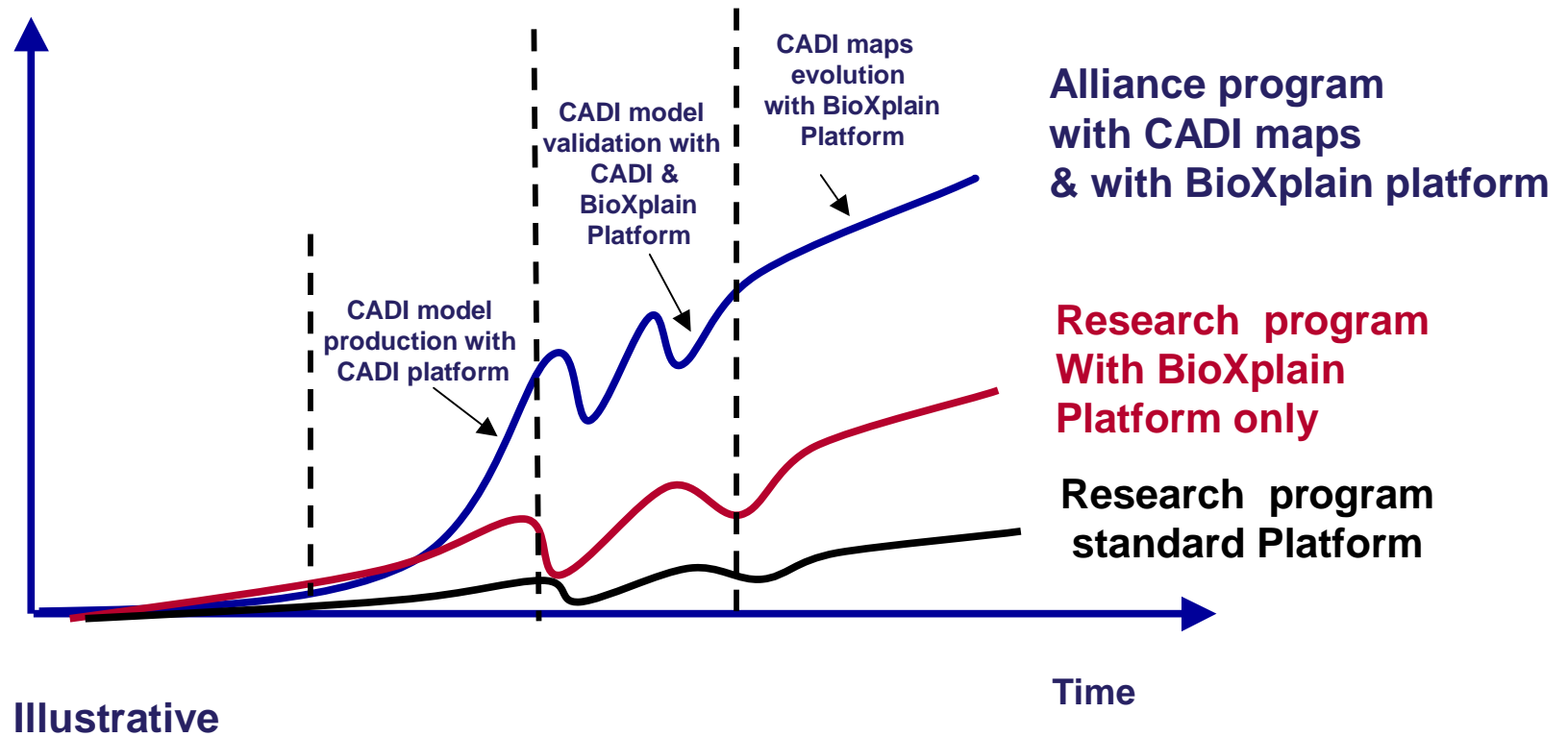
# BioXplain Clients & Partners of BioXplain founders

*Diversified complementary network*



# Comparative R&D program value generation

New validated knowledge



# “BioXplain”

**The First Open Platform for Iterative, Predictive  
and Integrative Biology**

*Ready for integrated business...*

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