



Symposium

Knowledge Management in Personalized Medicine

Program*

RECEPTION	8:30
DR. KLAUS HEUMANN <i>Biomax Informatics AG, Munich</i>	9:30
Welcome and Introduction	

Part I: State of the Art in Personalized Medicine

UNIV.-PROF. DR. HANS-WERNER MEWES <i>Helmholtz Center, Munich</i>	10:00
The Need for Structured Data in Medical Research	
UNIV.-PROF. DR. EMIEL WOUTERS <i>Department of Respiratory Medicine, University Medical Centre, Maastricht</i>	10:30
The CIRO+ Data Center	
UNIV.-PROF. DR. JOSEP ROCA <i>Lung Function Unit, Hospital Clinic, Barcelona</i>	11:15
Integrating Care for Chronic Conditions: Toward a Systems Medicine approach	

COFFEE BREAK 11:45

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Mechanisms of Pulmonary Fibrosis: Need for an Integrated Approach	

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KNIME: Integrating Data, Tools, and Science	

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Data Integration of Clinical and High-Throughput Data in Oncotryol	

SHORT BREAK 16:55

Part III: Workshop - Practical know-how sessions

PARALLEL WORKSHOP SESSIONS (30 MIN EACH IN 3 ROUNDS)	17:05
Session 1 – Building a BioXM Solution from Scratch	
Session 2 – Software Demonstration BioXM	
Session 3 – Integration of External Databases and Tools	
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Session 5 – Modeling Knowledge in BioXM	
Session 6 – Visual Data Mining with Viscosity	

DR. KLAUS HEUMANN <i>Biomax Informatics AG, Munich</i>	APPROX. 18:30
Closing Remarks	

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Practical Know-How Sessions

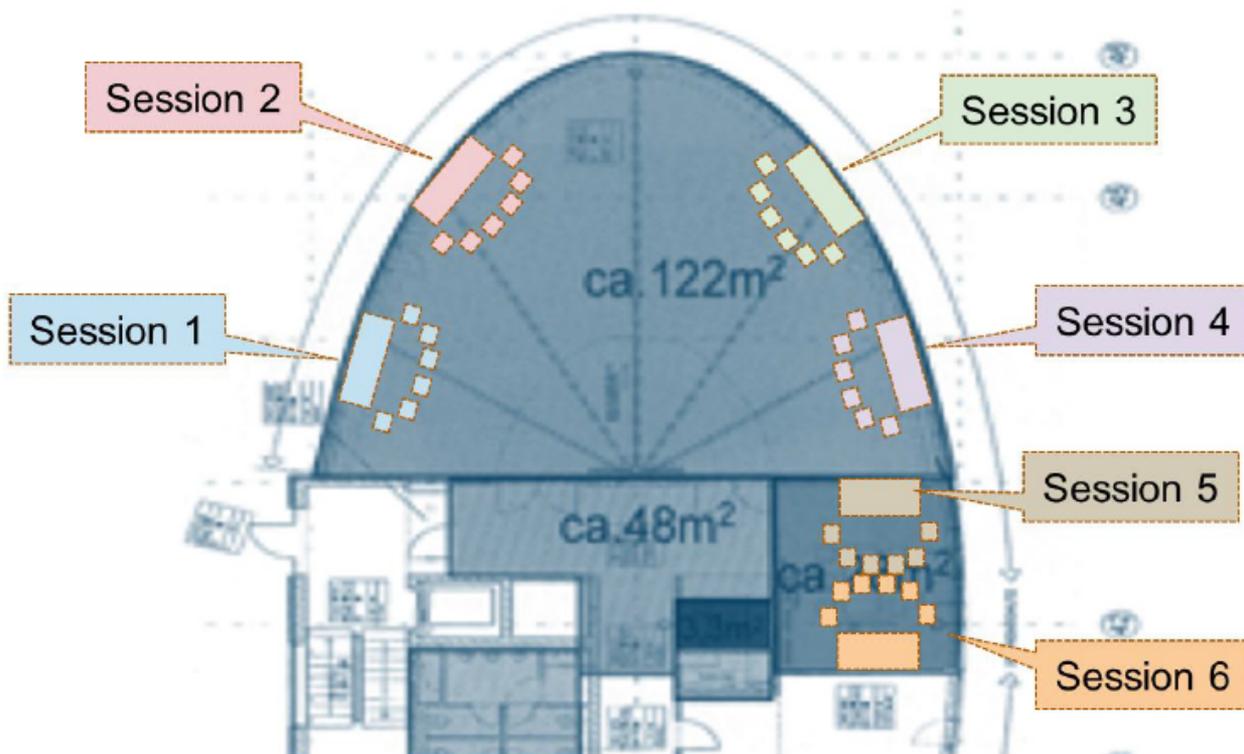
Slot	Time	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
		Building a BioXM solution from scratch DR. HILMAR ILGENERITZ <i>Biomax Informatics AG</i> This session introduces principal concepts of <u>knowledge management in BioXM</u> . It begins with the design of a semantic knowledge model, continues with building a knowledge network from raw data, and shows ways to explore the network content.	Software demonstration of BioXM DR. SASCHA LOSKOG <i>Biomax Informatics AG</i> "BioXM 101" — This workshop will give you a feature and use case driven overview about the different modules of the <u>BioXM</u> framework and will present new features of the latest version of <u>BioXM</u> .	Integration of external databases and tools DR. WENZEL KALUS <i>Biomax Informatics AG</i> This presentation gives an overview <u>how BioXM</u> allows to integrate data and applications and how <u>BioXM</u> is integrated into other systems.	Building custom portals for BioXM DR. GERD LORUNSER, MSc <i>Biomax Informatics AG</i> This session shows how to build custom user interfaces for the portal of a <u>BioXM</u> installation. It introduces the three main technologies which enable the implementation of flexible designs tailored to the special needs of the user.	Modeling knowledge in BioXM DR. DIETER MAIER <i>Biomax Informatics AG</i> Multiple concepts exist to create abstract representations of biological knowledge. This workshop will focus on advantages/ disadvantages of these concepts and will present some best-practice examples based on experience from multiple system medicine projects.	Visual data mining with Viscosity DR. GERHARD KRÄNNER <i>Viscosity Software GmbH</i> In this session the <u>Viscosity</u> Data Mining Suite will be presented, including the concept of Self-Organizing Maps for visual data exploration and a demonstration of typical applications.
1	17:05 – 17:35	1	1	1	1	1	1
		2	2	2	2	2	2
		3	3	3	3	3	3
		4	4	4	4	4	4
		5	5	5	5	5	5
		6	6	6	6	6	6
2	17:35 – 18:05	1	1	1	1	1	1
		2	2	2	2	2	2
		3	3	3	3	3	3
		4	4	4	4	4	4
		5	5	5	5	5	5
		6	6	6	6	6	6
3	18:05 – 18:35	1	1	1	1	1	1
		2	2	2	2	2	2
		3	3	3	3	3	3
		4	4	4	4	4	4
		5	5	5	5	5	5
		6	6	6	6	6	6

Every session is held three times.

Everybody can visit three sessions at most, one in every time slot.

Please register for one session per time slot.

Workshop Session Plan





Symposium

Knowledge Management in Personalized Medicine

Feedback

Part I: State of the Art in Personalized Medicine

Please rate the first part of the symposium.

	Low	Medium	High
Composition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part II Applied Knowledge Management

Please rate the second part of the symposium.

	Low	Medium	High
Composition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part III: Workshop - Practical Know-How sessions

Please rate the third part of the symposium.

	Low	Medium	High
Composition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

After work session



Margaretenstraße 31
82152 [Krailling](#)
Telefon: (089) 89 19 84 44



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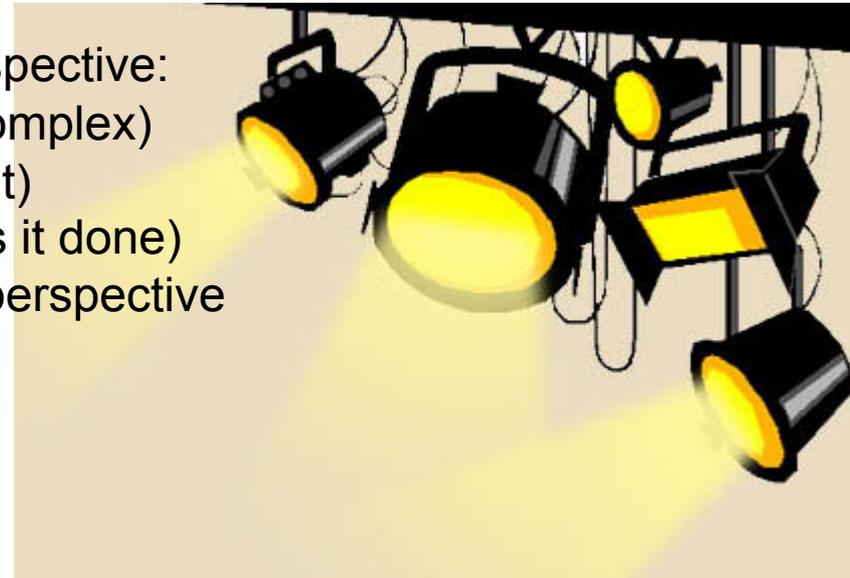
Motivation, Rational and Objective of the Symposium

Motivation:

- Profs. Mansmann, Mewes and Peschel to develop an innovative concept for the Trail Service Center with Knowledge Management as center piece.

Rational:

- Shed light on the topic from a science perspective:
 - Different disease areas (chronic vs. complex)
 - Different consortia (how do others do it)
 - Different countries in Europe (where is it done)
- Shed light on the topic form a technology perspective
 - What are the pieces needed?
 - How do they fit together?
 - How to evolve into the future?
- Exchange hands on experience



Objective:

- Stipulate common understanding and critical discussion of principals of a knowledge driven approach to personalized medicine.

Personalized medicine in practice

I know my patient

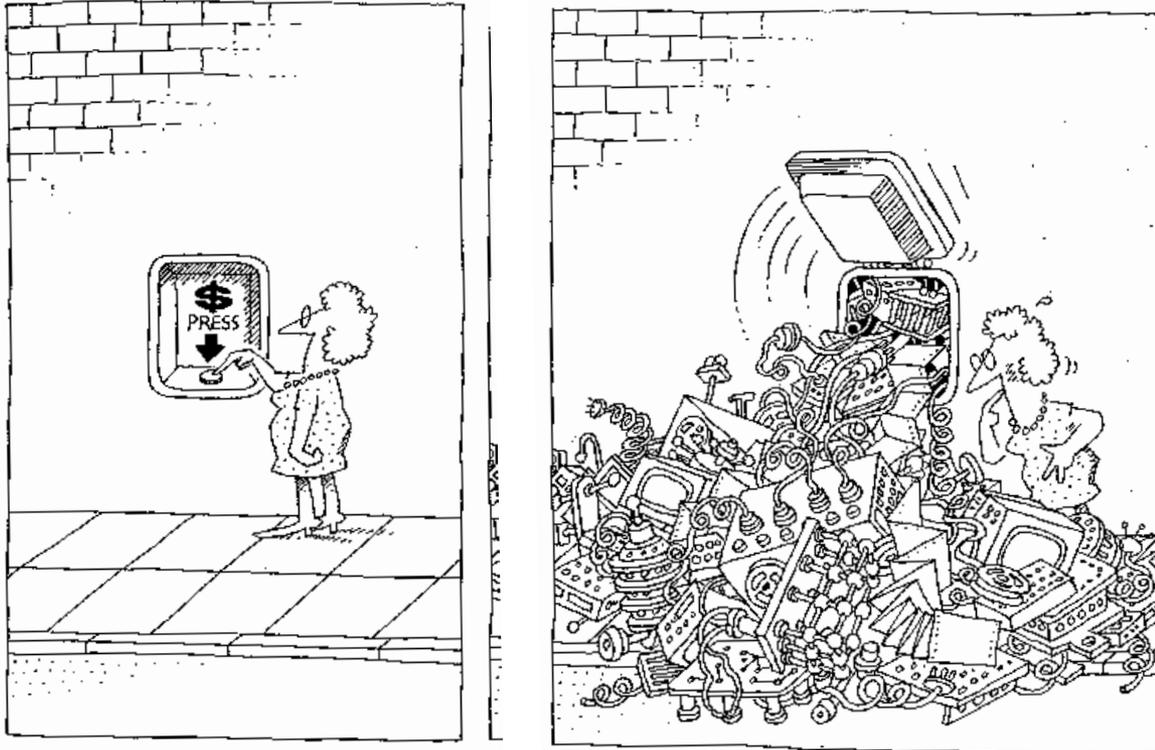
Will my patient benefit
from the treatment
proposed?



I do not know all comparable patients and their outcome.

Challenge

The deficit of efficient data integration causes costs and makes patient care less efficient.



The current healthcare system is flooded with information but lacks solutions for efficient integration & exploration. Decisions in care management need comprehensive information.

“The impact of being able to exploit clinical knowledge effectively using state of the art technology cannot be overestimated. This applies to both, improved patient care and better management of treatment costs”

Heaven and hell of personalized medicine

- No new hip if you are older than 80 years
- No kidney, if older than 70

Best medical treatment to improve quality of life



Treat everyone equally
bad



Treat everyone
differentiated

The Cost of Care Dilemma

The basis of personalized medicine

„Stratification of Patients“

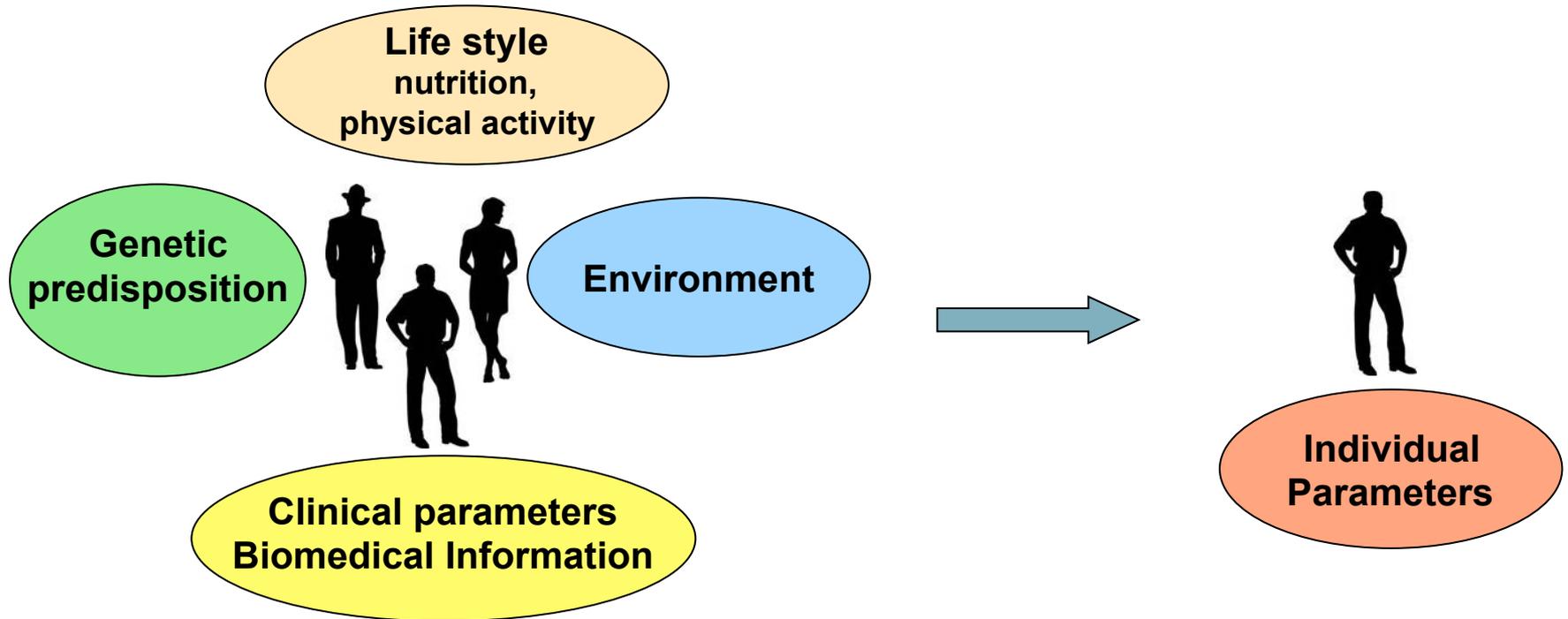
Objective:

An integrated, coordinated, evidence-based data analysis to individualize patient care and treatment

- efficient patient therapy & risk management
- reduction of costs

Knowledge Management : Closing the gap between complex data and existing information & required knowledge

Stratification: From complex Data to Specific Knowledge



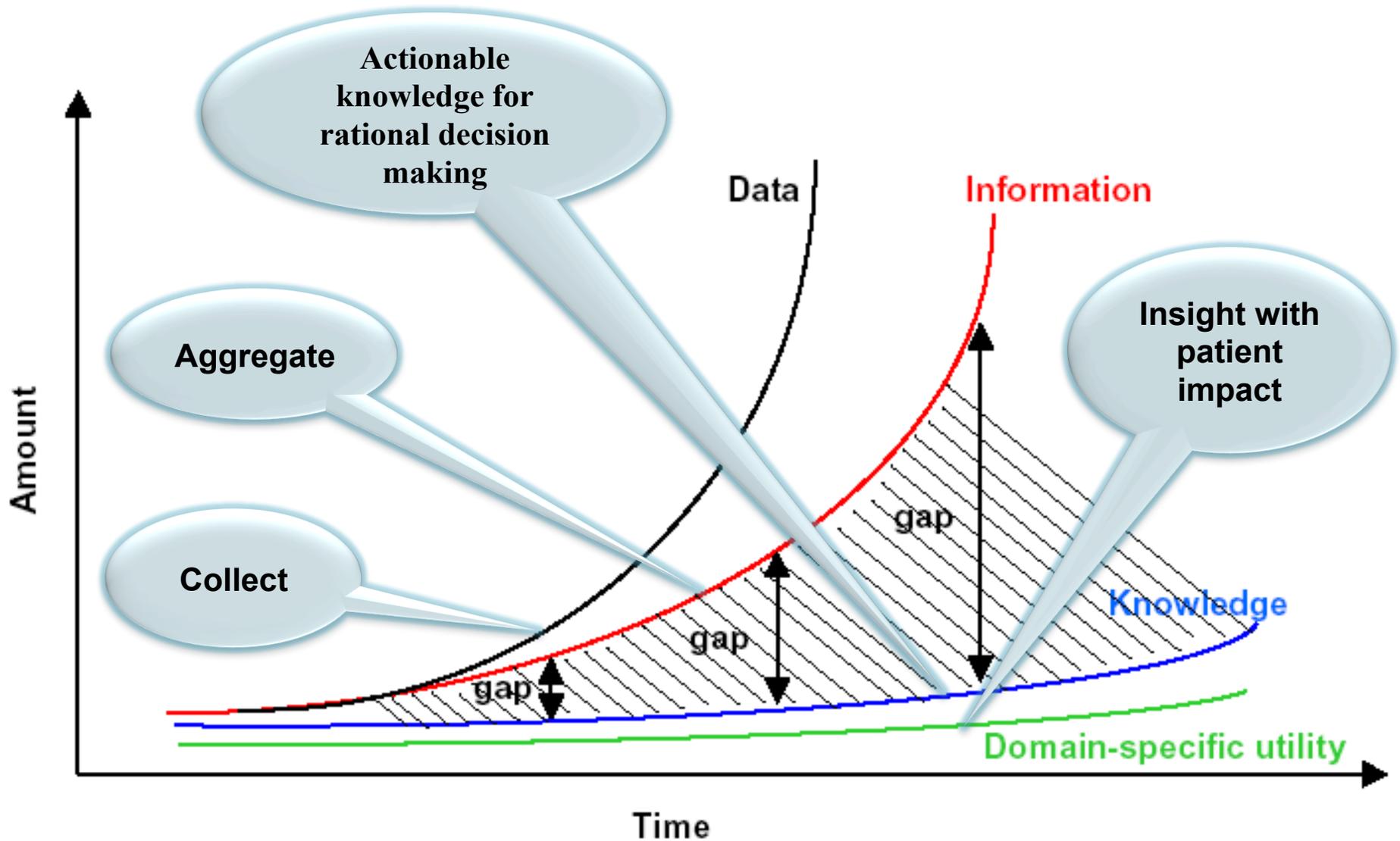
Traditional medical perspective:
Statistical classification of patho-phenotypes
leading to standardized therapeutic concepts

Only a fraction of patients benefit from
suggested standard treatment

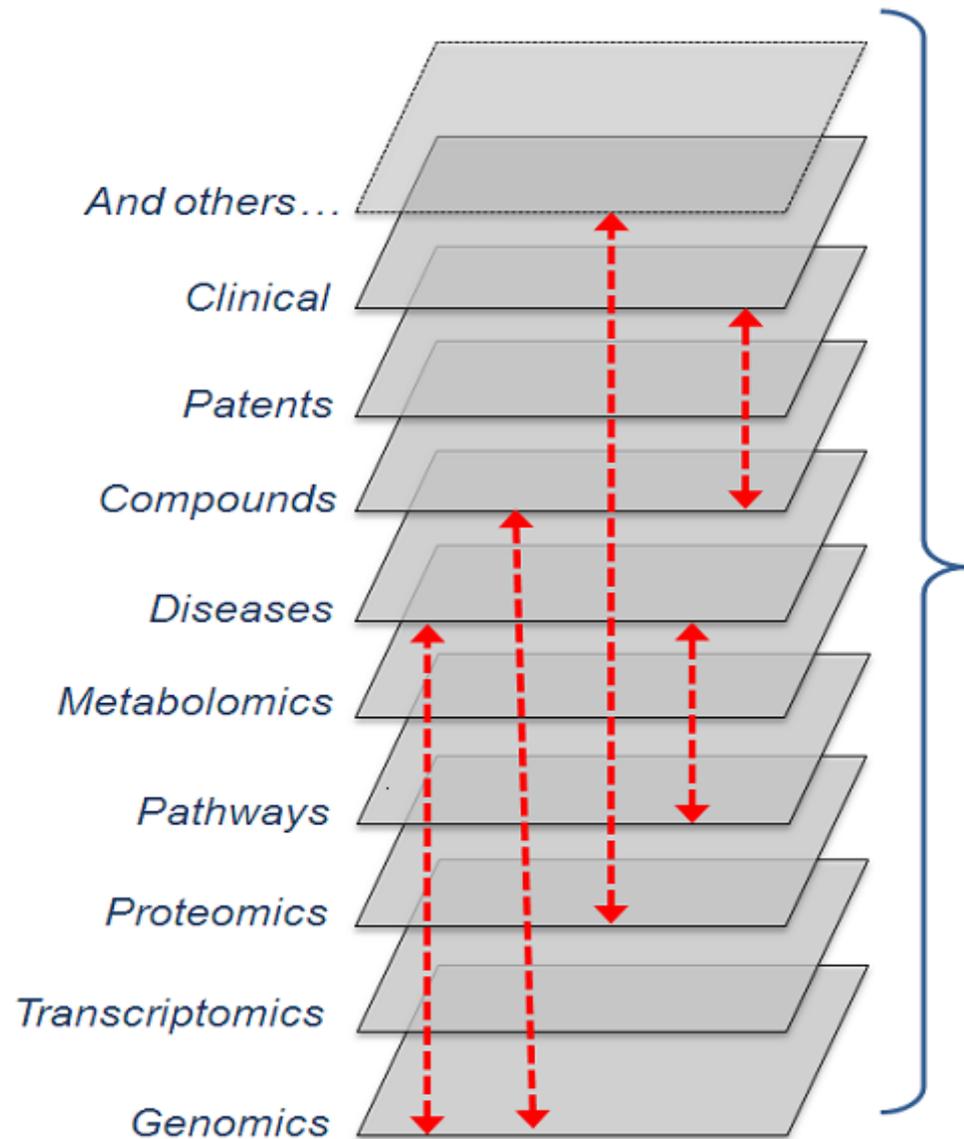
Stratified medicine:
Individualized knowledge leading to
personalized medical decisions

better patient care & improved therapy

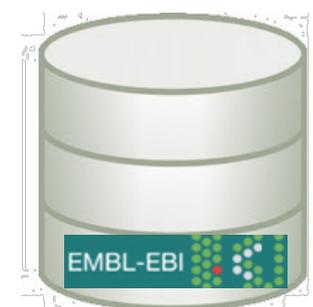
Generate impact for patients from knowledge exploitation



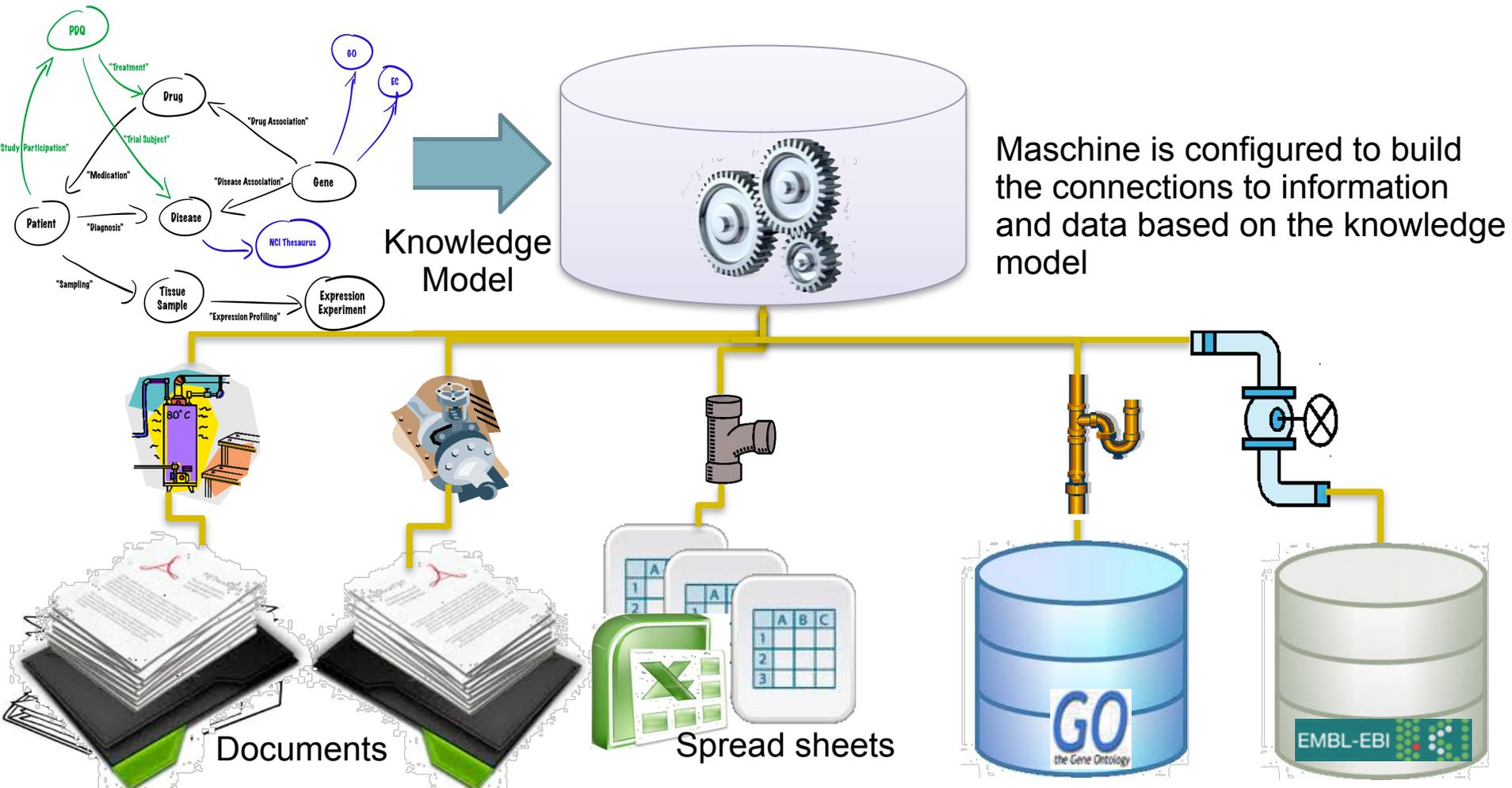
The unmet need: connect information to establish relevant knowledge

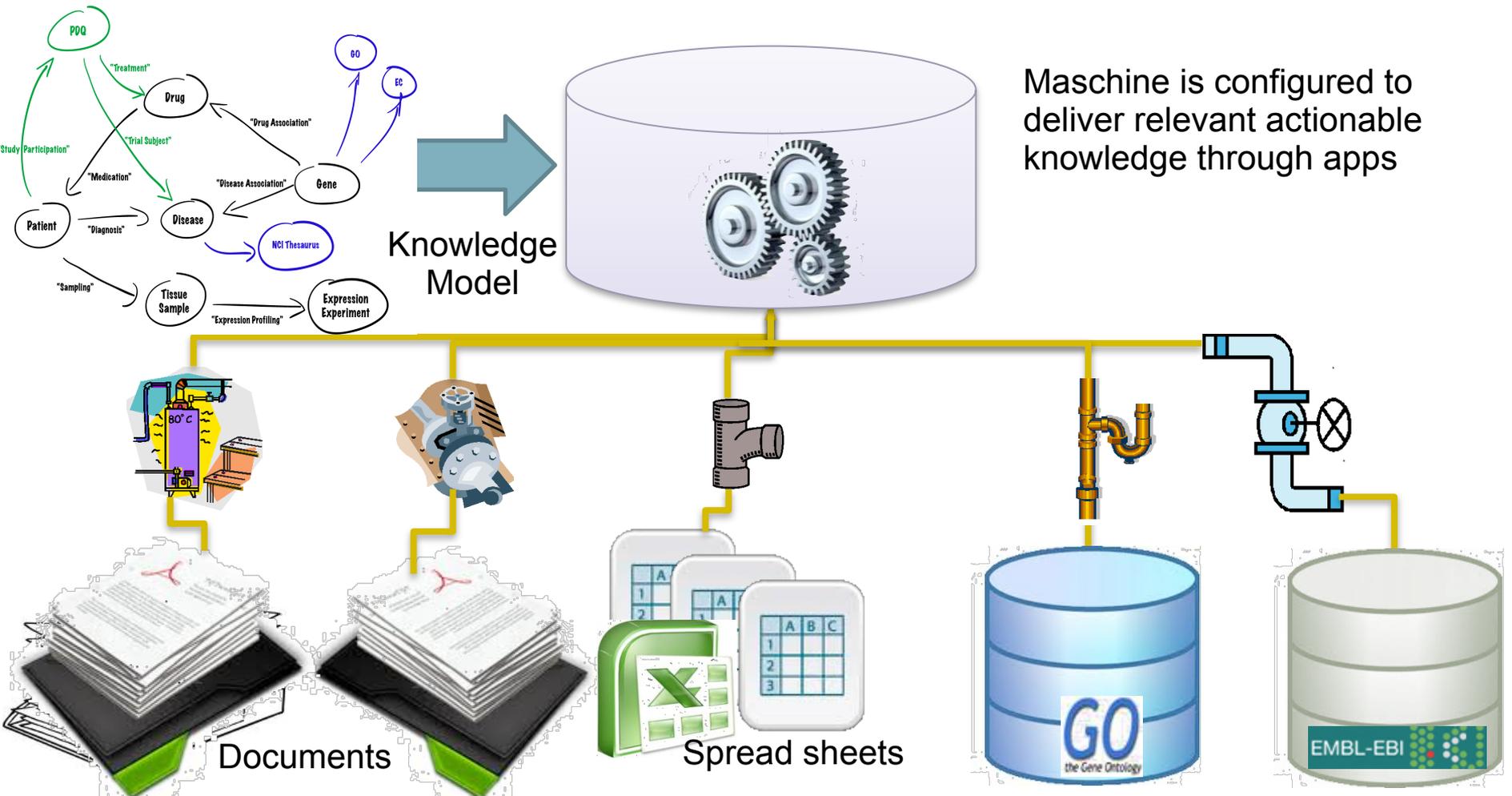


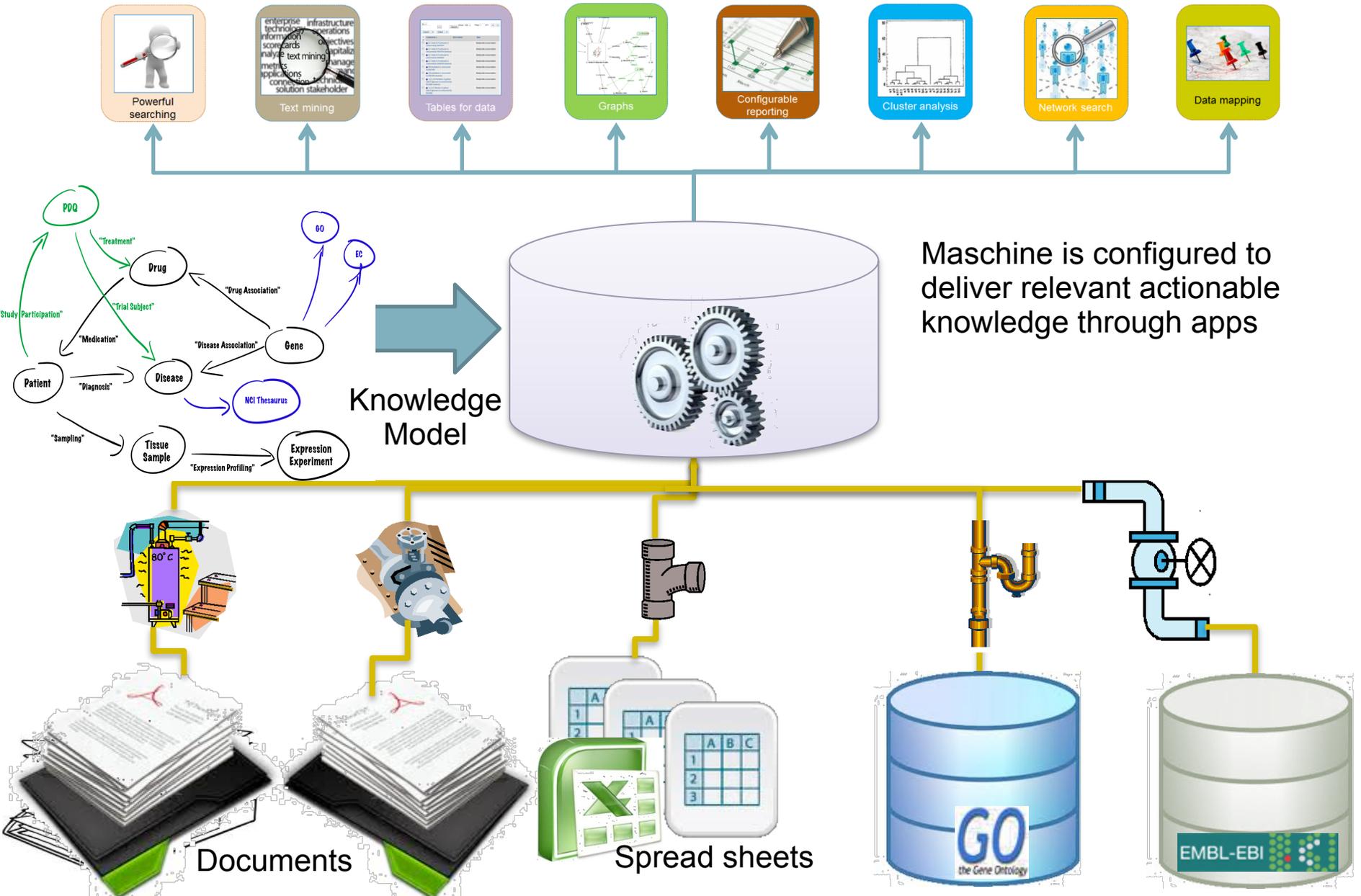
**„knowledge is the
interconnection of
detail which in
isolation is of lesser
value“**



Any type of data
Any format of data
Any volume of data
Any location of data
Any size of data









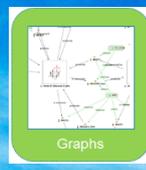
Powerful searching



Text mining



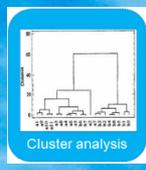
Tables for data



Graphs



Configurable reporting



Cluster analysis



Network search



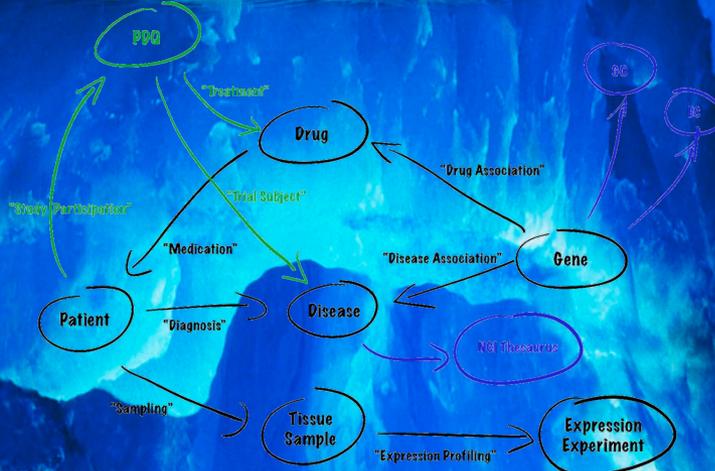
Data mapping



Common users

Apps

Knowledge Model

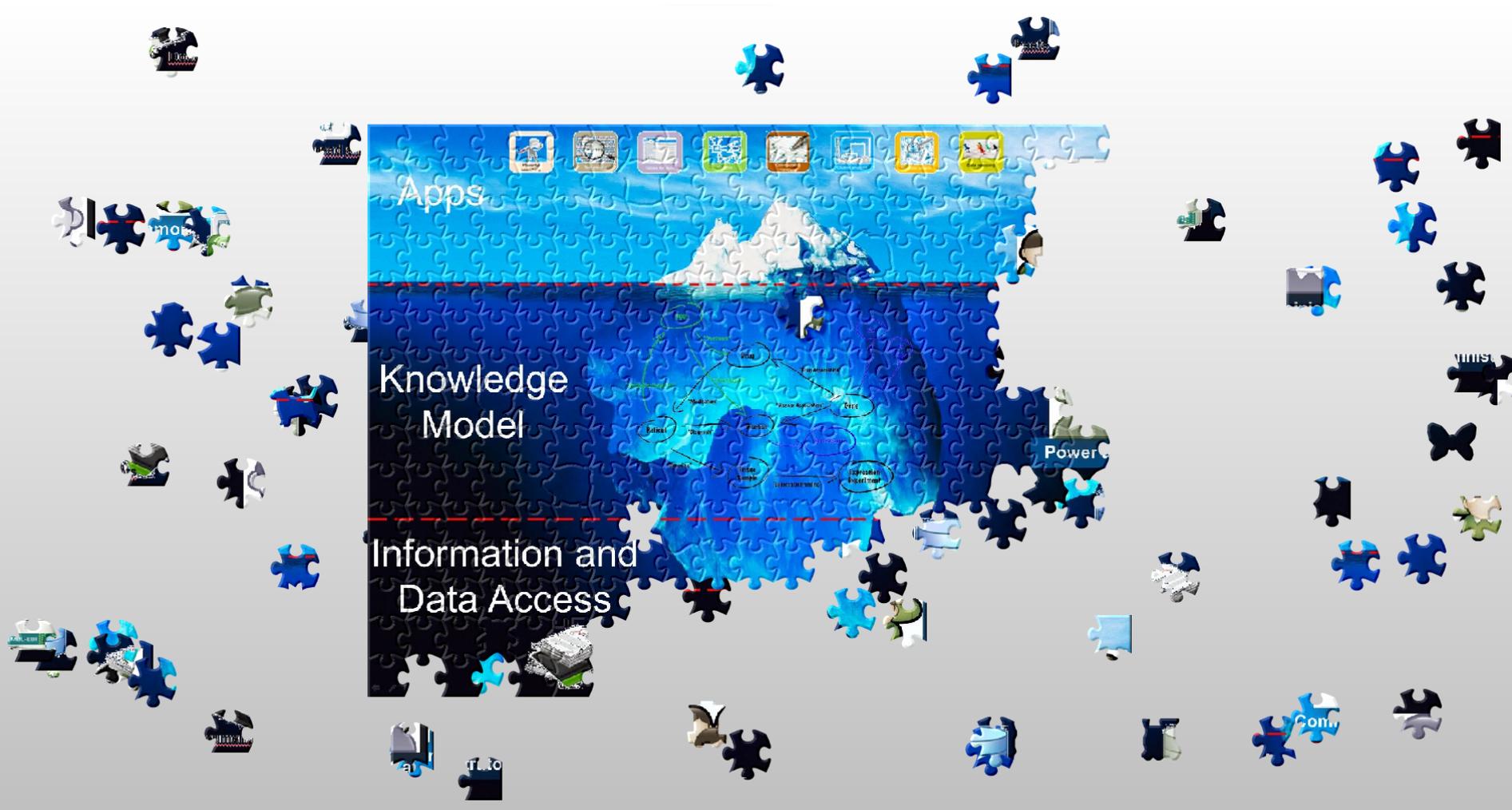


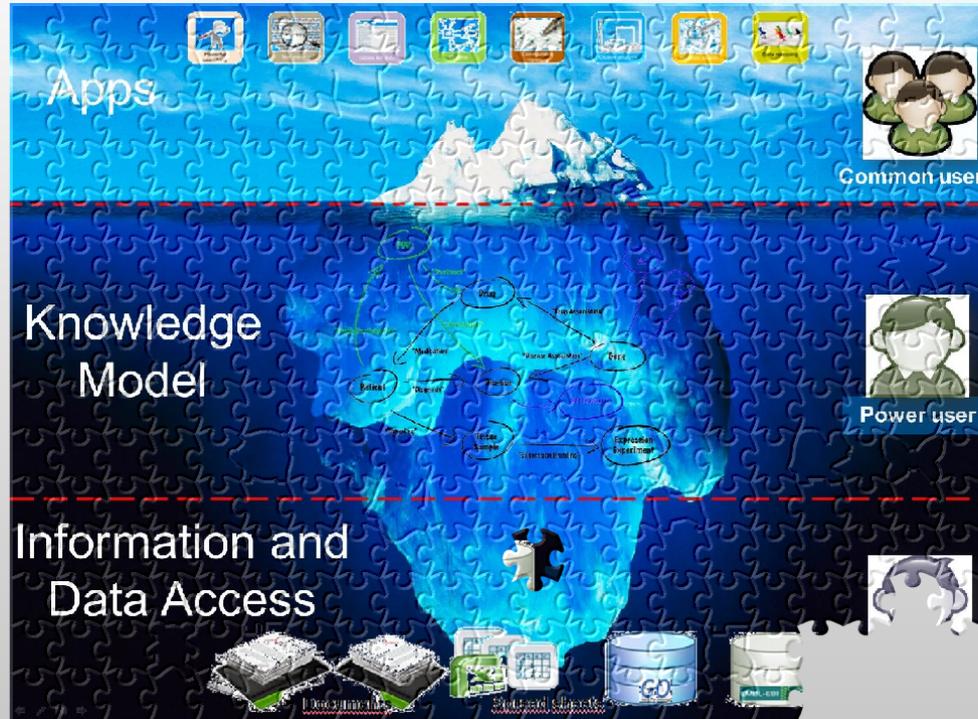
Power user

Information and Data Access



Administrator

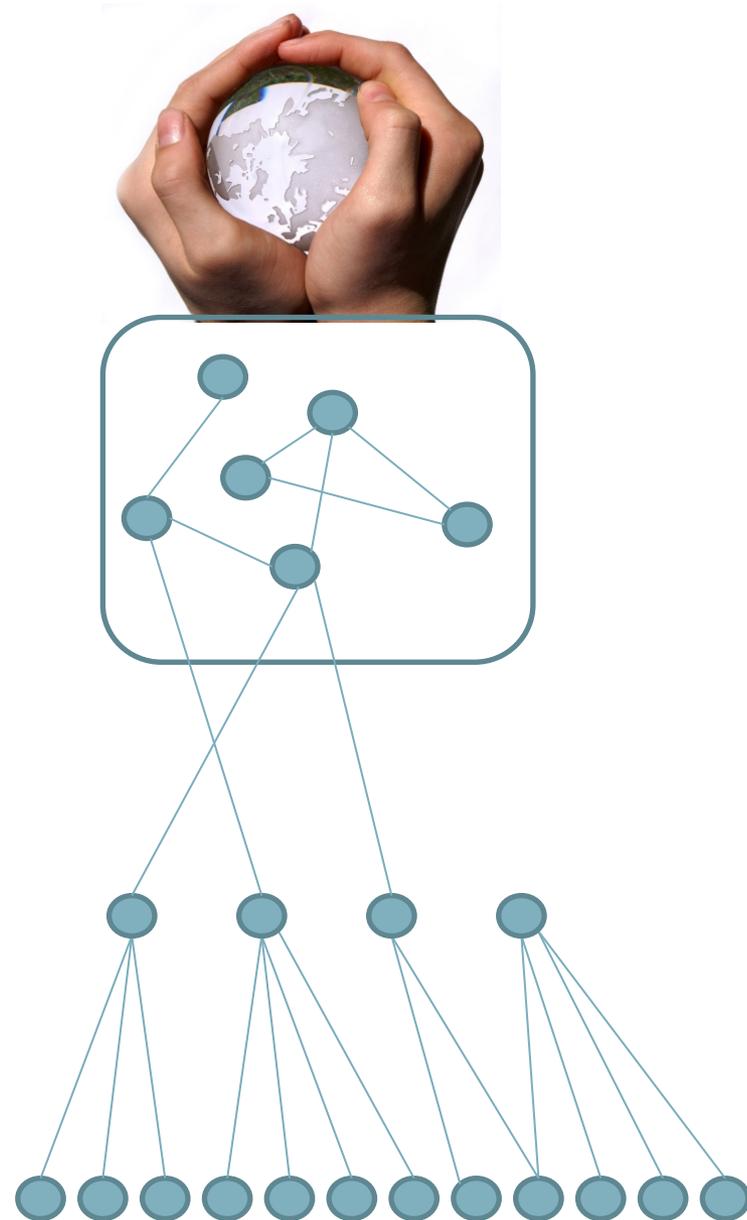




Build relevant insights from actionable knowledge

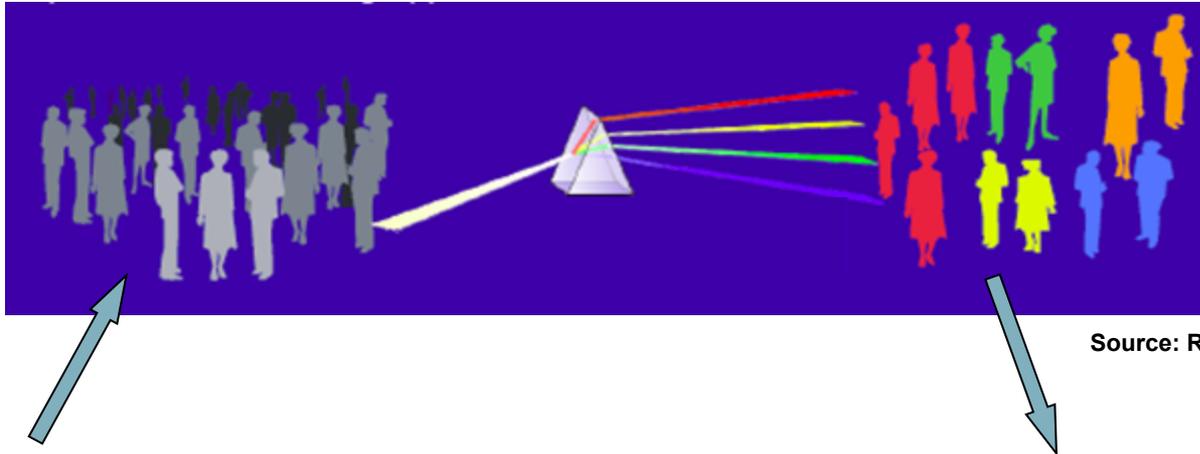
Connect information within the relevant knowledge context

Aggregate data points to interpretable pieces of information



- **Cover all data sources, integrate, quantify, and visualize**
- **predict**, whether patient a patient will benefit from a treatment from baseline assessment data
- **profile** patients against the map of all previously seen patients

Outlook Patient Stratification



Source: Roche Diagnostics

Huge Data-Sets and information:

- Individual Genomes
- Epigenomic profiles
- Metabolic profiles
- Social parameters
- etc

Integrated, coordinated, evidence-based approach to individualizing patient care

- Cancer
- Diabetes
- Neurodegenerative diseases
- etc

Patient stratification towards personalized medicine



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