

# Research

**Dr. John Kelly**

Senior Vice President and Director, Research

# IBM Research: A global research capability



# IBM Research: A force for transformation

1945 – 1980's

Established hardware/  
system labs near major  
universities



1990's – Today

Expand to software and  
services, globalize labs,  
deep client engagements



2014 – Future

Leading IBM's  
future growth



# IBM's strategy

Engaging  
in new  
ways

Cloud  
transforming  
IT

Data  
transforming  
industries

# IBM Research: Aligned to growth

Engaging  
in new  
ways



Cloud  
transforming  
IT



Data  
transforming  
industries



Science & Technology



**Renewable Energy Integration**





CXLab



Foundations  
for Education



Renewable  
Energy  
Integration



Environmental  
Prediction and  
Modeling



Cognitive  
Wealth  
Advisor



Precision  
Agriculture



IoT Asset  
Management



Genomic  
Medicine



CXLab



Foundations  
for Education



Renewable  
Energy  
Integration



CXLab



Environmental  
Prediction and  
Modeling



Cognitive  
Wealth  
Advisor



Precision  
Agriculture



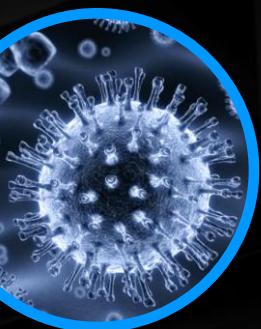
Genomic  
Medicine



IoT Asset  
Management



Analytics  
for Dynamic  
Sustainability



Nanobiology-  
based DNA  
Analytics



CXLab



Renewable Energy Integration



Foundations for Education



# Genomic Medicine



Precision Agriculture



Cognitive Wealth Advisor



Nanobiology-based DNA Analytics



Fully Digitized Customer

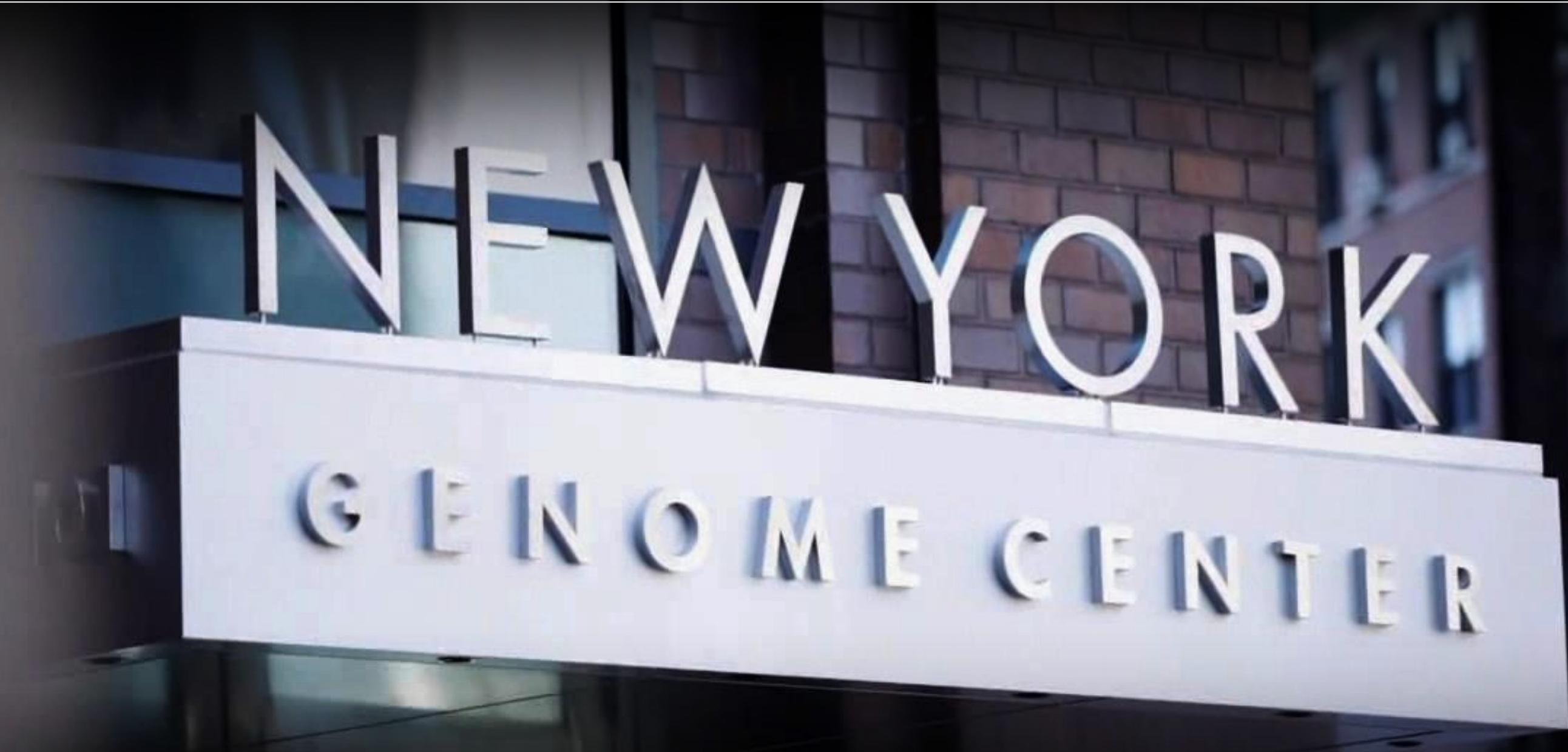


Analytics for Dynamic Sustainability

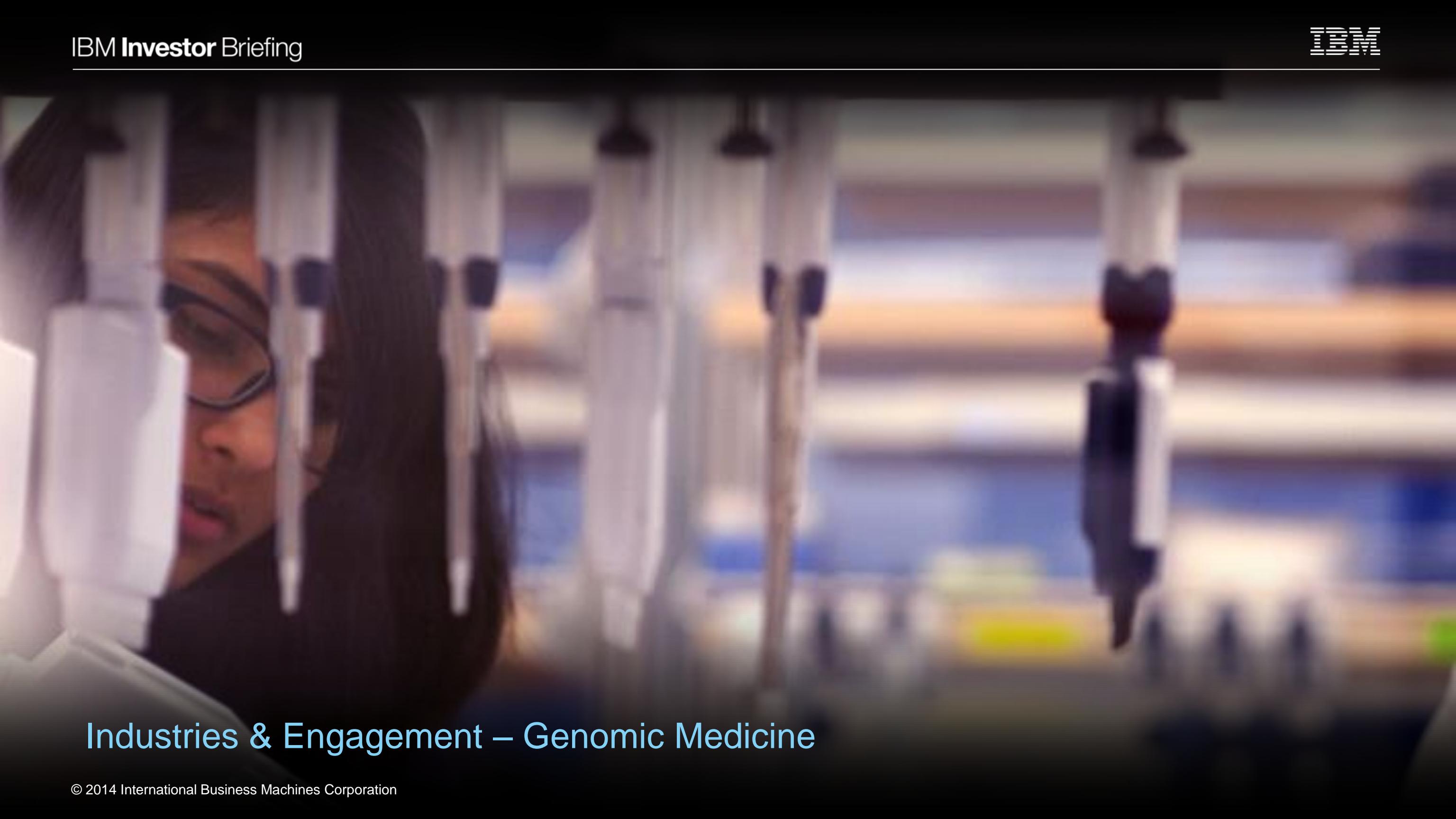


Intelligent Wearables for Healthcare





## Industries & Engagement – Genomic Medicine



## Industries & Engagement – Genomic Medicine

To analyze ONE person's brain tumor, doctors need to sequence

**800 Billion**  
base pairs of DNA

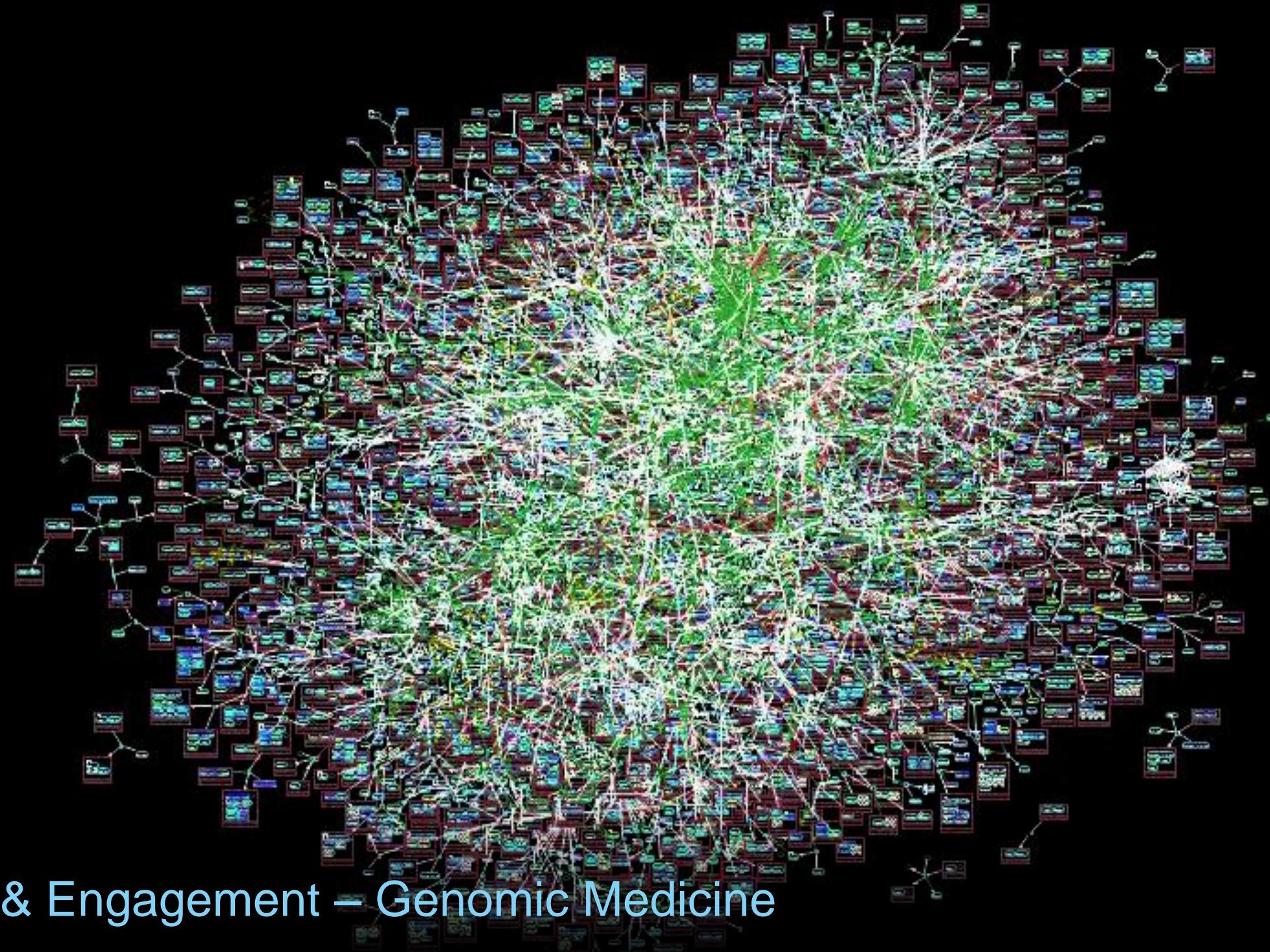
**23 Million**  
medical research articles with relevant findings

Cancer strikes  
**14.1 Million**  
patients each year causing  
**8.2 Million deaths**

## Industries & Engagement – Genomic Medicine



## Industries & Engagement – Genomic Medicine



## Industries & Engagement – Genomic Medicine



transcription factor

growth factor

receptor

receptor kinase

generic

kinase

drug

GPCR

ON

OFF

MUTATION

DRUGS

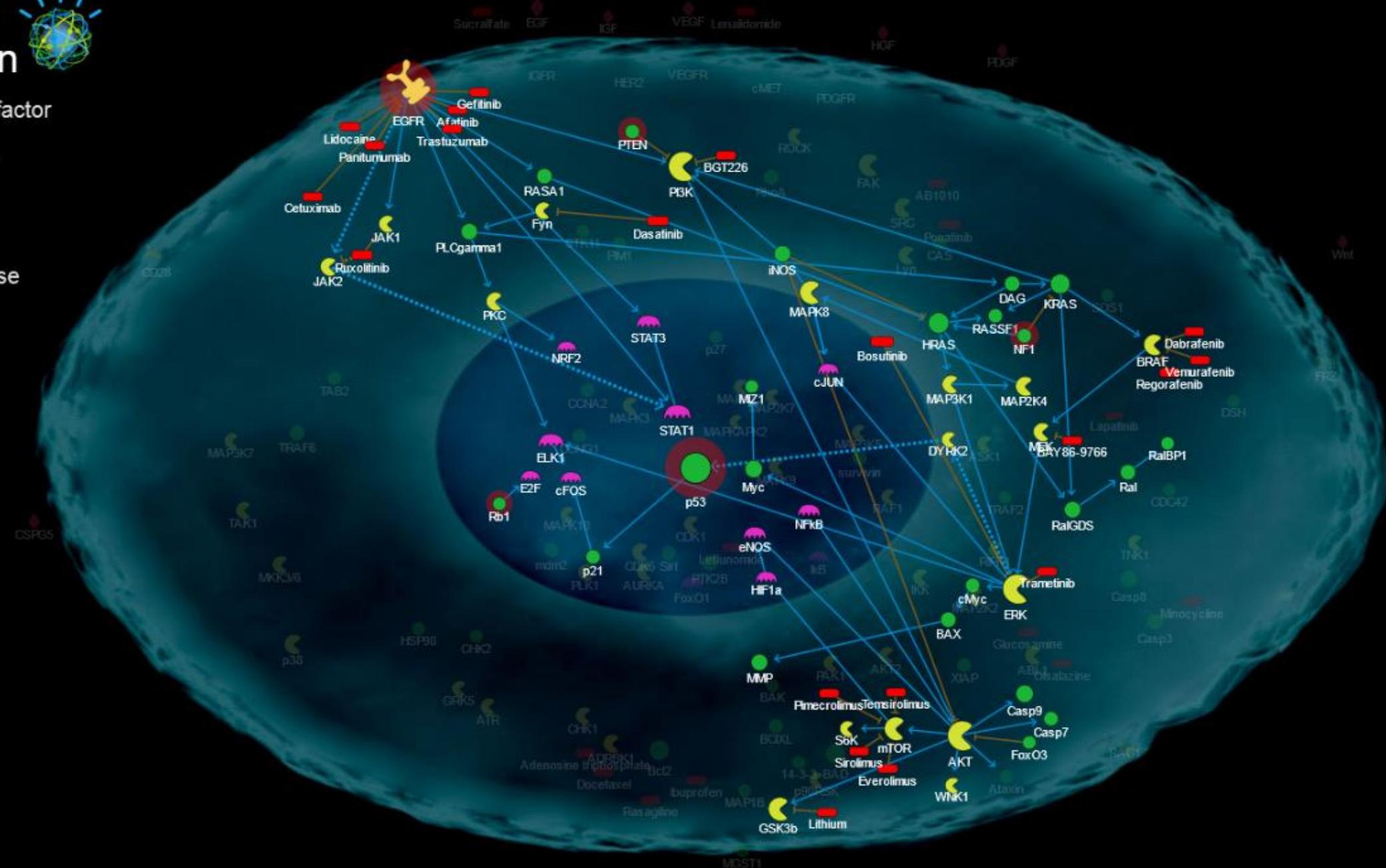
#### Information:

entity : p53

type : protein

family : generic

localization : nucleus



## Industries & Engagement – Genomic Medicine

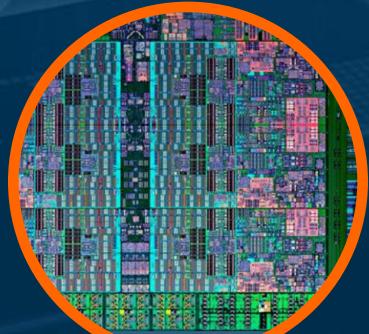
Mobile  
Backend



Cloud  
Research



POWER 8



Analytics  
on  
Mainframe





Cloud  
Research



Analytics  
on  
Mainframe



POWER 8



Mobile  
Backend



Extreme  
DevOps



Intelligent  
Security



Micro Cloud



Watson as  
a Service



Multimedia  
Analytics



Cloud  
Research



Mobile  
Backend



POWER 8



Multimedia  
Analytics



Watson as  
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Intelligent  
Security



Micro Cloud



Analytics  
on  
Mainframe



Extreme  
DevOps



Systems of  
Insight on  
SoftLayer



Data-centric  
Computing



Computing  
on Encrypted  
Data



## Moving cloud to data

that is difficult to move

Keep your data  
**on-premise** but consume  
your IT through Cloud



Cloud – Micro Cloud

# 50 Petabytes

of regulated financial data  
in Germany

By 2016, Telcos will spend  
**\$8.5 Billion**  
every year in moving  
subscriber metadata

# 520 Terabytes

of traffic surveillance video  
per day in NYC alone

Cloud – Micro Cloud

**Buying local**  
will beat online

**In-Store intelligence**  
will be crucial in  
delivering the local  
retail experience



Cloud – Micro Cloud

**Watson  
Engagement  
Advisor**



**Cognitive  
Research**



**Watson  
Content  
Analytics**



**System U**



**Watson  
Discovery  
Advisor**



**Watson  
Paths**

**Watson  
Engagement  
Advisor**



**System U**



**Cognitive  
Research**



**Watson  
Content  
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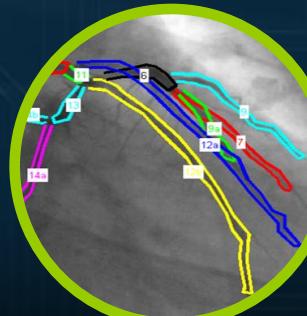
**Watson for  
Education**



**360°  
Seller's Platform**



**Advanced  
Image  
Recognition**



Watson  
Engagement  
Advisor



System U



Cognitive  
Research



Watson  
Content  
Analytics



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Discovery  
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Watson  
Paths



Watson for  
Education



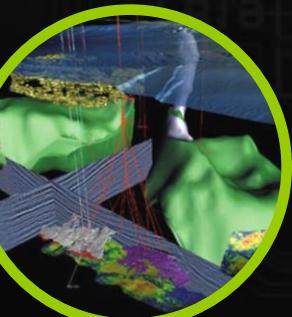
360°  
Seller's Platform



Advanced  
Image  
Recognition



SyNAPSE



Cognitive  
O&G



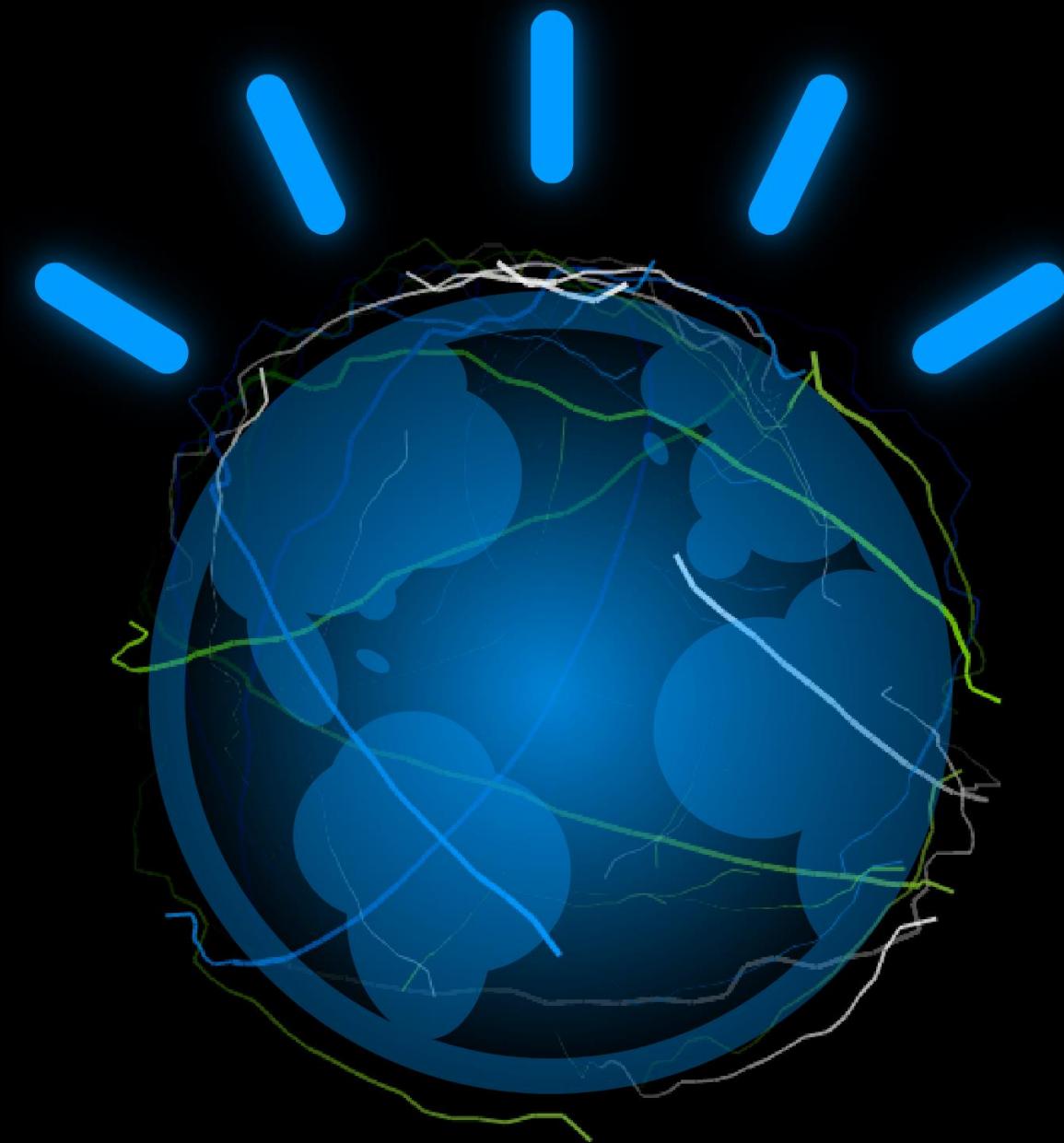
Advanced  
Dialogue &  
Reasoning



Cognitive  
M&A



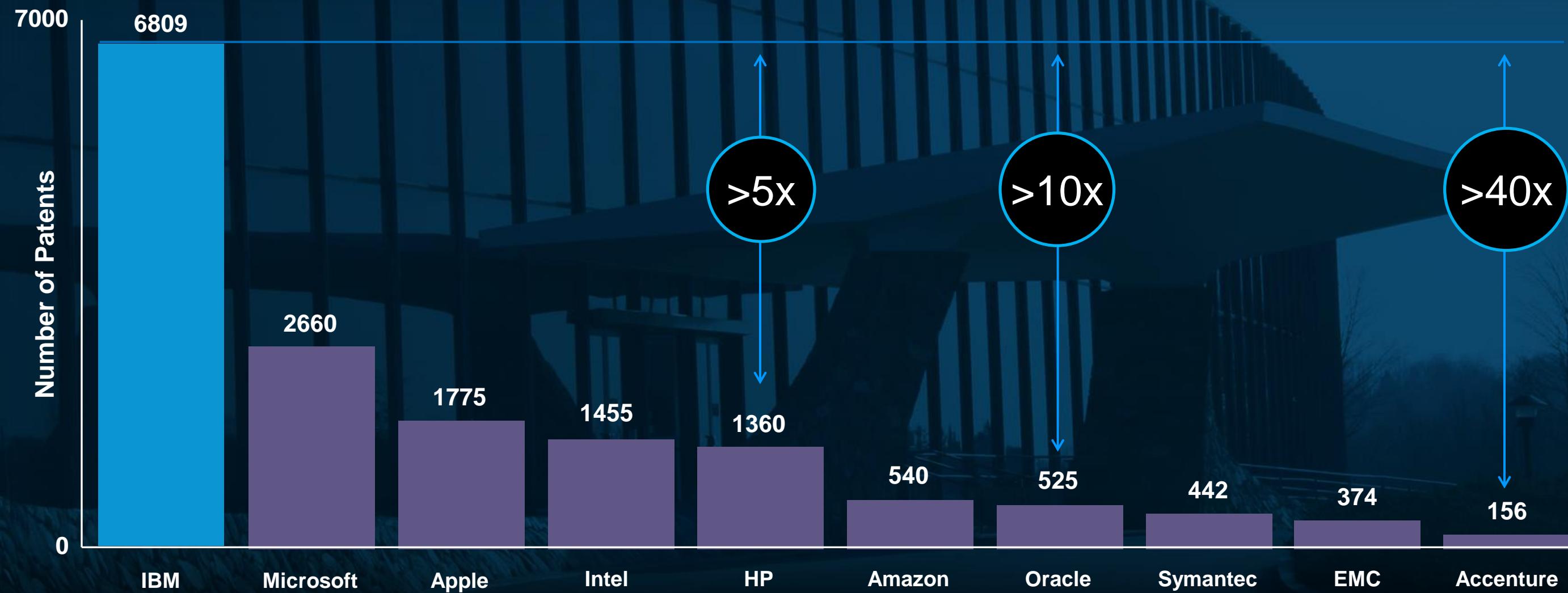
# IBM Debating Technologies



# 21<sup>st</sup> year of patent leadership

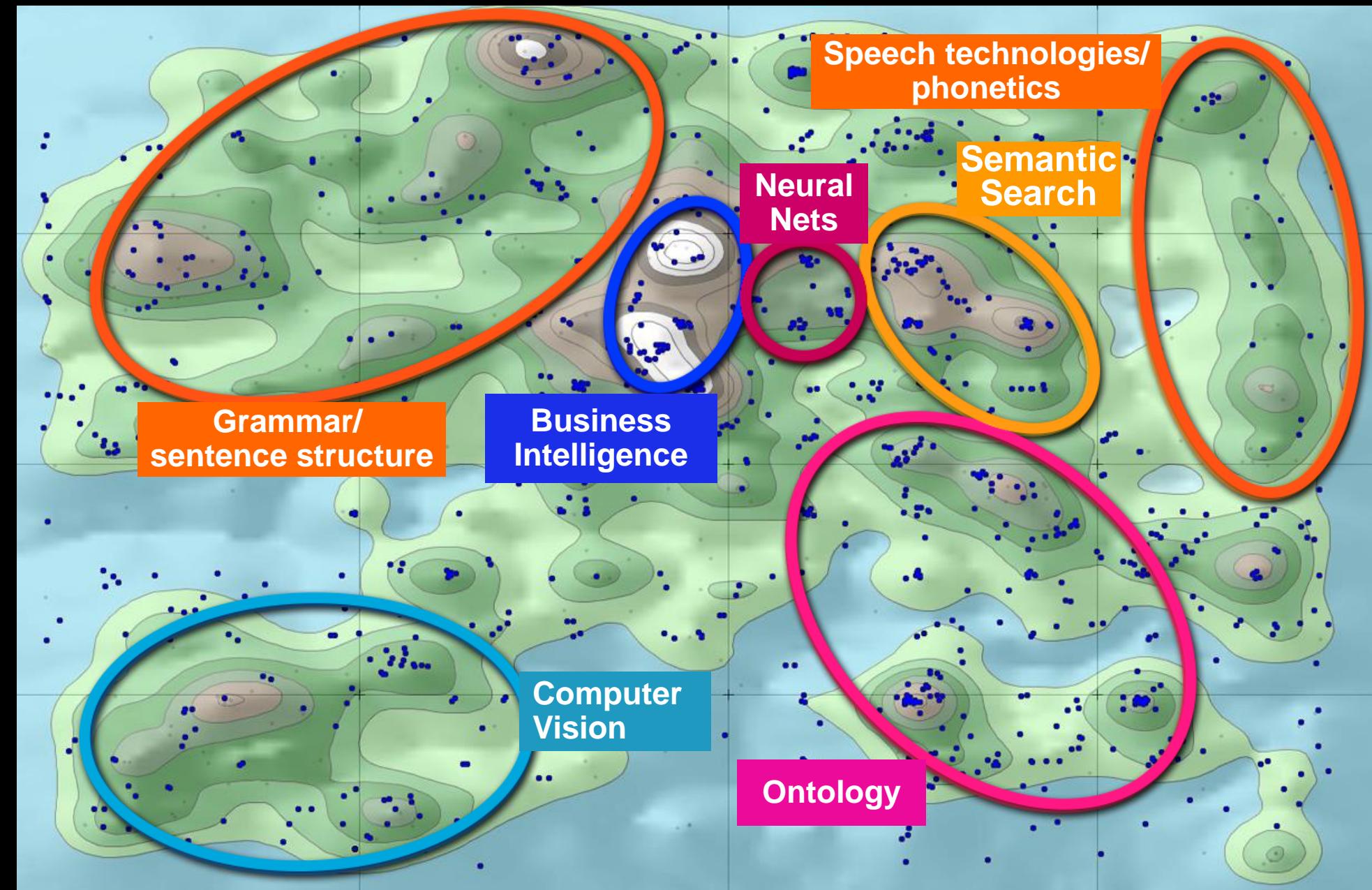
2012 US Patents

## IBM vs. key competitors

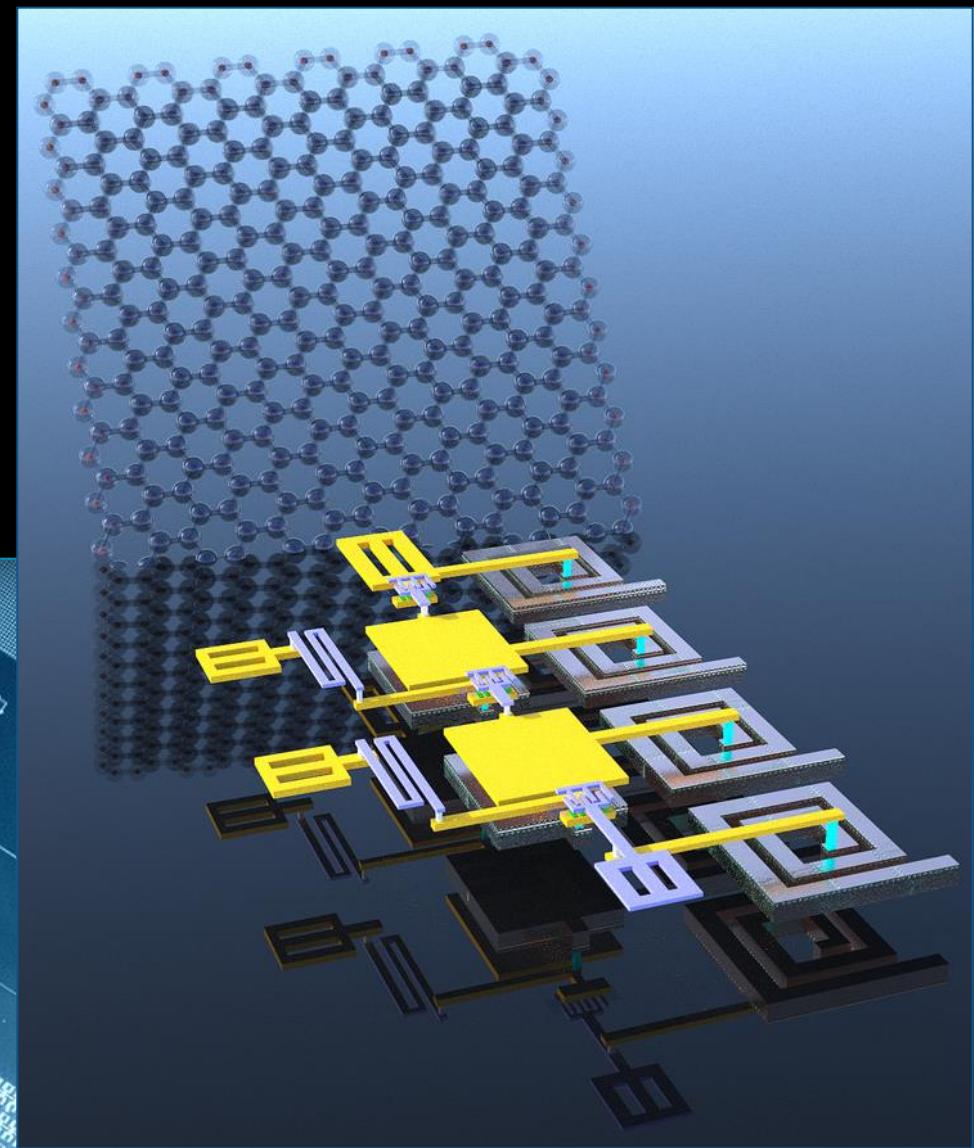
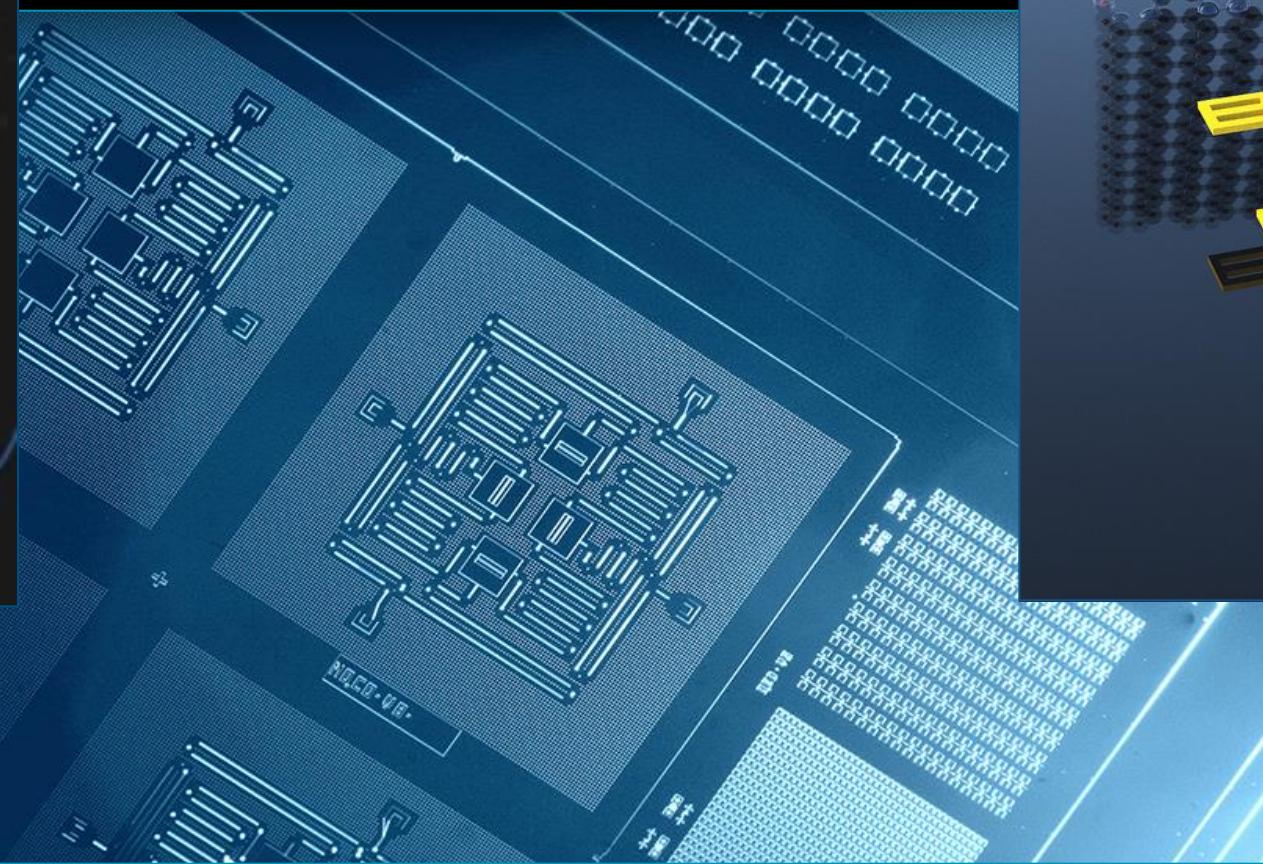
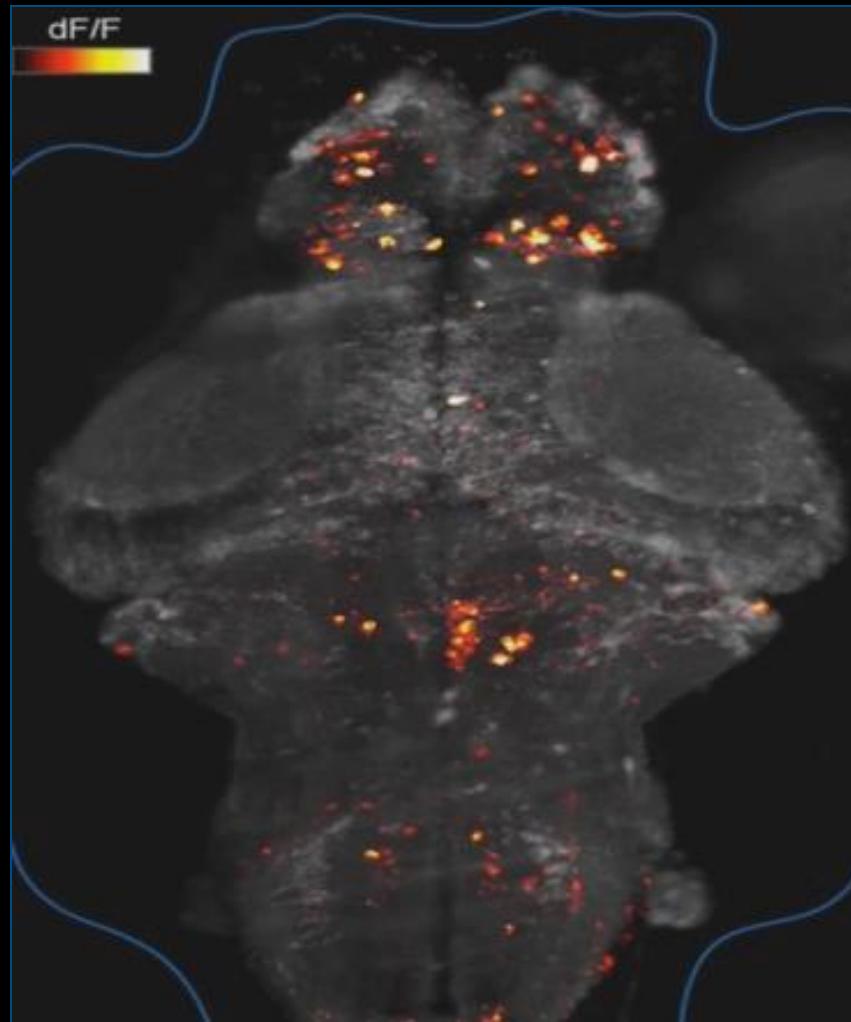


# Innovation landscape for cognitive computing

- Machine learning
- Cognitive interaction
- Cognitive interfaces over entire map



# Science & Technology



# IBM Investor Briefing



These charts and the associated remarks and comments are integrally related, and they are intended to be presented and understood together.

In an effort to provide additional and useful information regarding the company's financial results and other financial information as determined by generally accepted accounting principles (GAAP), certain materials presented during this event include non-GAAP information. The rationale for management's use of this non-GAAP information, the reconciliation of that information to GAAP, and other related information is included in supplemental materials entitled "Non-GAAP Supplemental Materials" that are linked to the company's investor relations web site at <http://www.ibm.com/investor/events/investor0514.phtml>. The Non-GAAP Supplemental Materials are also included as Attachment II to the company's Forms 8-K dated January 21, 2014 and May 14, 2014.

# IBM Investor Briefing

