



David Chen
Lead HPC Solution Architect
GMU - Worldwide Growth Countries
IBM





Self Introduction



- **Ph.D. In Theoretical Physics (5 years)**
 - Indiana University, United States of America
- **Post Doctoral Research (4 years): Computational Geo-Chemistry**
 - Petroleum reservoir simulation code development
- **SGI – Boston & Detroit (10 years): HPC Performance Specialist**
 - Parallel application performance support, HPC training, auto industry
- **IBM - Detroit (8 years): HPC Solution Architect**
 - Asian national HPC centers, higher educations, auto industry
- **Northwestern University - Chicago (2 years): HPC Specialist**
 - Campus wide application support, focused on bio applications
- **IBM GMU - Beijing (since July, 2011): Lead HPC Architect**
 - Based in Beijing, China, support all 8 GPU geographical territories



Introducing IBM

IBM has 426,000 employees worldwide



IBM in 170 countries around the globe



2011 Financials

- Revenue – over \$100b
- Net Income – over \$15b

IBM Research

*R&D annual budget \$6billion,
3,000 researchers,
Number 1 globally
in new patents for
18 consecutive
years*

5 Nobel Prize winners



Working with our partners to build a Smarter Planet



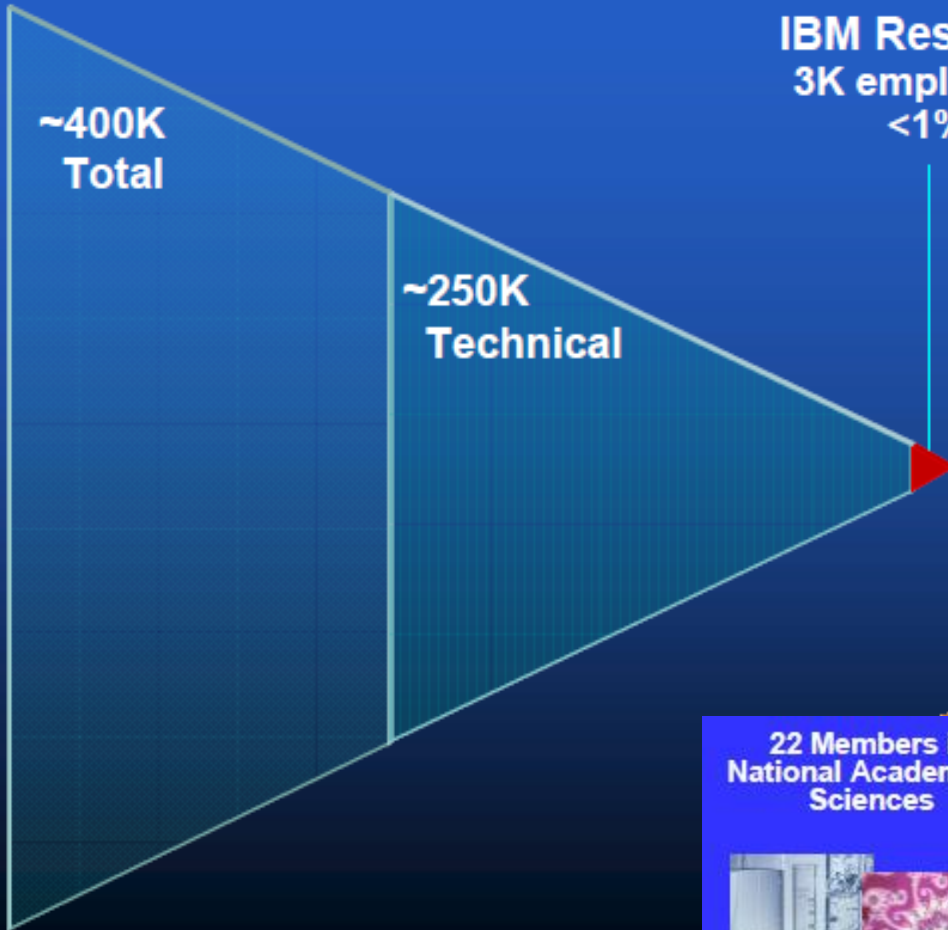


IBM Research Labs



Research as the Innovation Engine

IBM Employee Population



5 Nobel Laureates

Scanning Tunneling Microscope



High Temperature Electron

6 Turing Awards



High Performance Computing

9 US National Medals of Technology



Copper Chip Technology



Silicon-on-Insulator



SiGe



DRAM

5 National Medals of Science



Nuclear Magnetic Resonance



22 Members in National Academy of Sciences



64 Members in National Academy of Engineering



11 Inductees in National Inventors Hall of Fame



Laser-etched hair based on excimer laser surgery - foundation for LASIK surgery

A legacy of World-Class Research



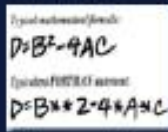
1944:
Mark 1



1948:
SSEC



1956:
RAMAC



1957:
FORTRAN



1964:
System/360



1966:
One-Device
Memory Cell



1967:
Fractals



1970:
Relational
Database



1971:
Speech
Recognition



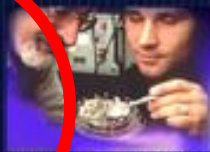
1973:
Winchester
Disk



1979:
Thin Film
Recording
Heads



1980:
RISC



1986: Nobel Prizes:
Scanning
Tunneling
Microscope



1987:
High Temperature
Superconductivity



1990:
Chemically
Amplified
Photoresists



1994:
SiGe



1993: RS/6000 SP
1996,97: Deep Blue



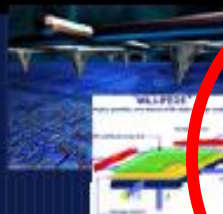
1997:
Copper
Interconnect
Wiring



1998:
Silicon-on-Insulator



1998:
Microdrive



2002:
Millipede



2004:
Blue Gene
The fastest
supercomputer
in the world

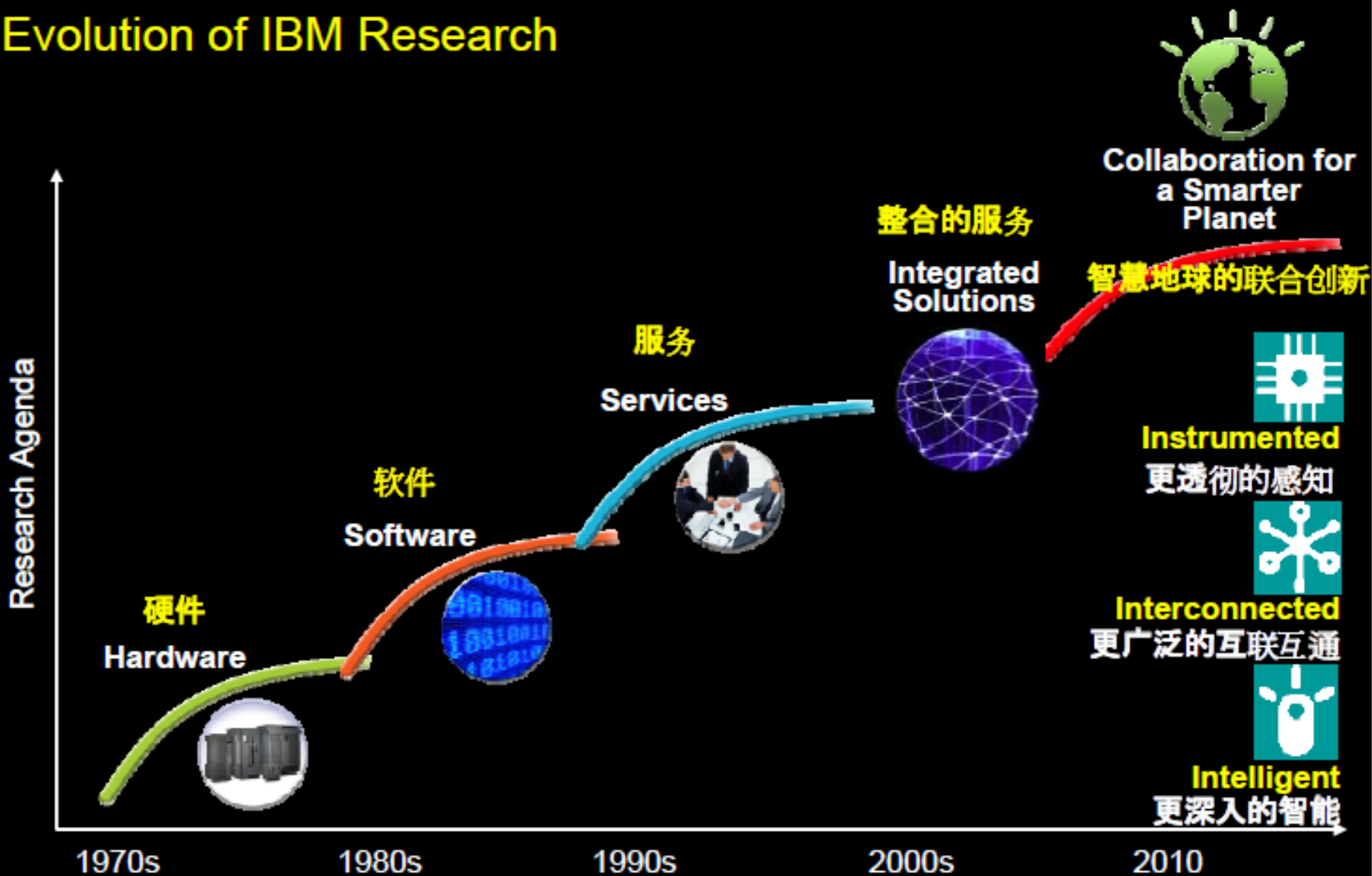


2006:
5-stage Carbon
Nanotube Ring
Oscillator



2008:
World's First Petaflop
Supercomputer

Evolution of IBM Research



A diversity of disciplines

Behavioral Science



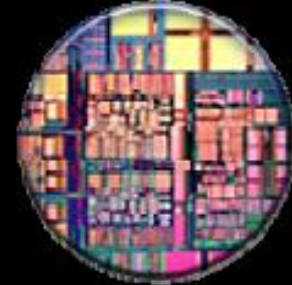
Chemistry



Computer Science



Electrical Engineering



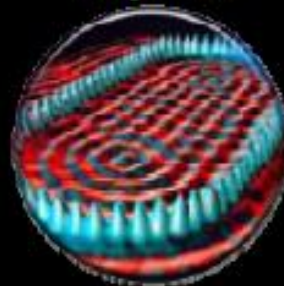
Materials Science



Mathematical Science



Physics



Service Science



How does IBM Research partner with you?

IBM 研究院是如何与您合作的?



Client Engagements 客户服务

- IBM Research Services
IBM 研究院提供服务
- First-of-a-Kind (FOAK)
FOAK 计划
- Research Direct
研究导向



Collaboratories (联合研究创新中心)



Joint Programs (联合项目)

IBM研究机构服务团队:

支持IBM全球企业咨询服务部和全球信息科技服务部客户团队和客户直接与杰出的科学家合作, 利用他们的技能来实现业务优势。

First-of-a-Kind (FOAK) 计划:

在我们的行业解决方案实验室中, IBM研究人员与IBM客户合作, 深入剖析富有前景的研究如何转变为可上市的产品和服务。通过FOAK计划, 客户可与我们的研究团队合作解决诸多目前还没有解决方案的问题, 我们的研究人员也可从客户那里获得及时反馈, 以便进一步完善他们的项目。

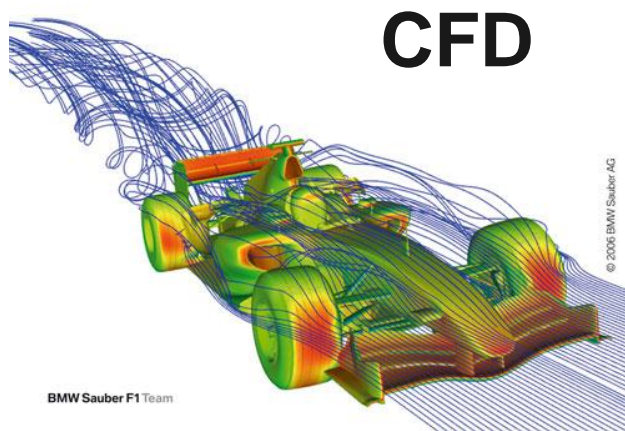
行业解决方案实验室:

IBM行业解决方案实验室 (ISL) 是IBM研究机构与IBM全球销售和服务团队的合作成果, 它以一种独特而高效的方式将客户与研究人员集中在一起。ISL为各种行业的公司提供了体验我们的先进技术和解决方案如何影响其业务的机会, 而IBM研究人员也获得了对他们的技术如何用于解决真实问题的市场观点。IBM研究人员在ISL活动中的参与为客户提供了很少有竞争对手能够匹敌的未来愿景。4个ISL分别位于纽约霍桑、印度德里、中国北京和瑞士苏黎士。

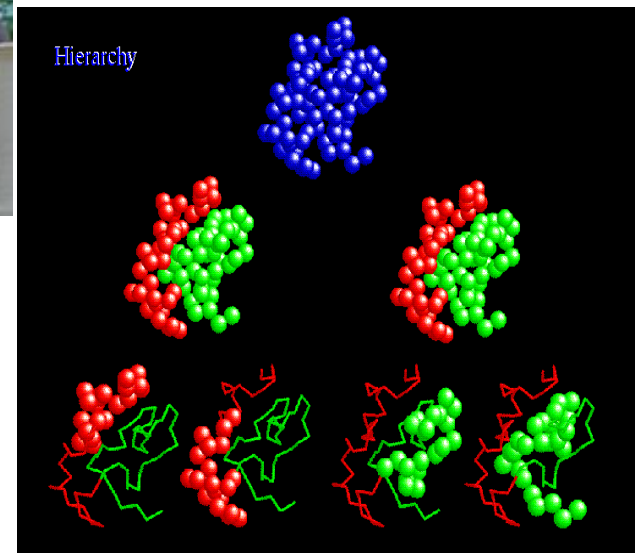
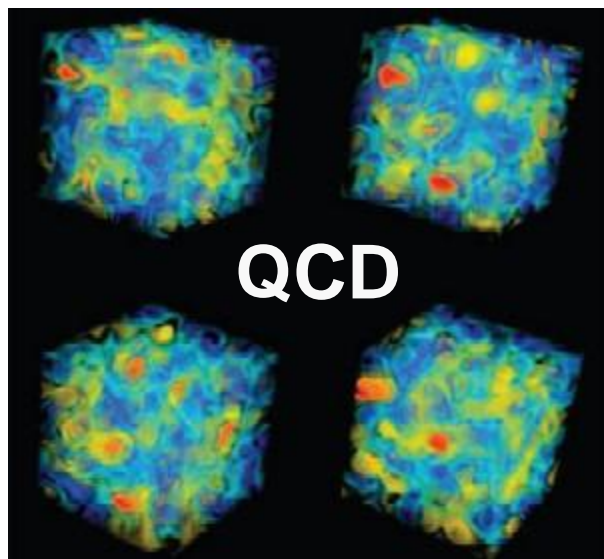
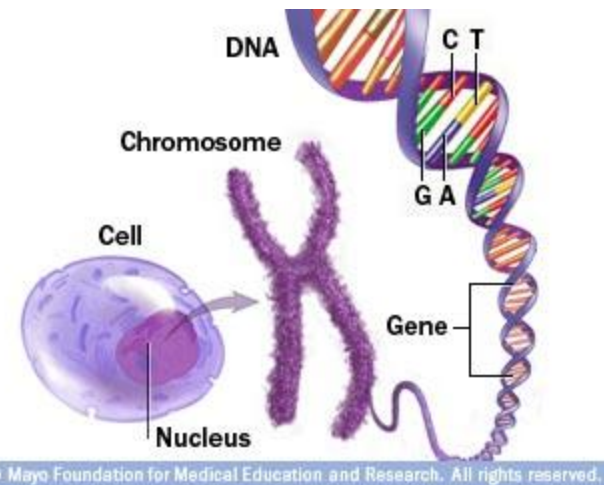


MSU and IBM Working Together

Genomics



App Software Development





IBM Centennial – 100 Years of Innovation!



1957: FORTRAN

IBM revolutionizes programming with the introduction of FORTRAN (Formula Translator), which soon becomes the most widely used computer programming language for numerical analysis and technical work.



1962: SABRE

Two IBM 7090 mainframes form the backbone of the SABRE reservation system for American Airlines, linking high-speed computers with data communications to handle real-time seat inventory and passenger records in more than 50 cities.



1964: System/360

IBM introduces the System/360, incorporating Solid Logic Technology (SLT) microelectronics and compatible programming environments. This first compatible "family" of computers transforms global industry – and IBM – forever.



1969: Apollo – Man on the Moon

IBM personnel and computers help NASA put the first men on the Moon, notably using System/360 Model 7900 calculator lift-off data for Neil Armstrong and Buzz Aldrin's Lunar Module.

