EMERGENCE OF NEW MARKETS:
CAN BUSINESS SURVIVE WITHOUT A BETTER TECHNOLOGY ROADMAP?

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and

Distinguished Professor

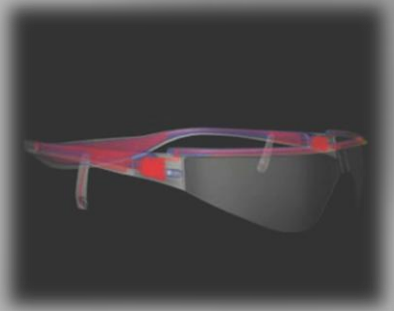
Chungbuk National University, Korea

ASQED, 10 July 2012

PENANG, MALAYSIA

10:29

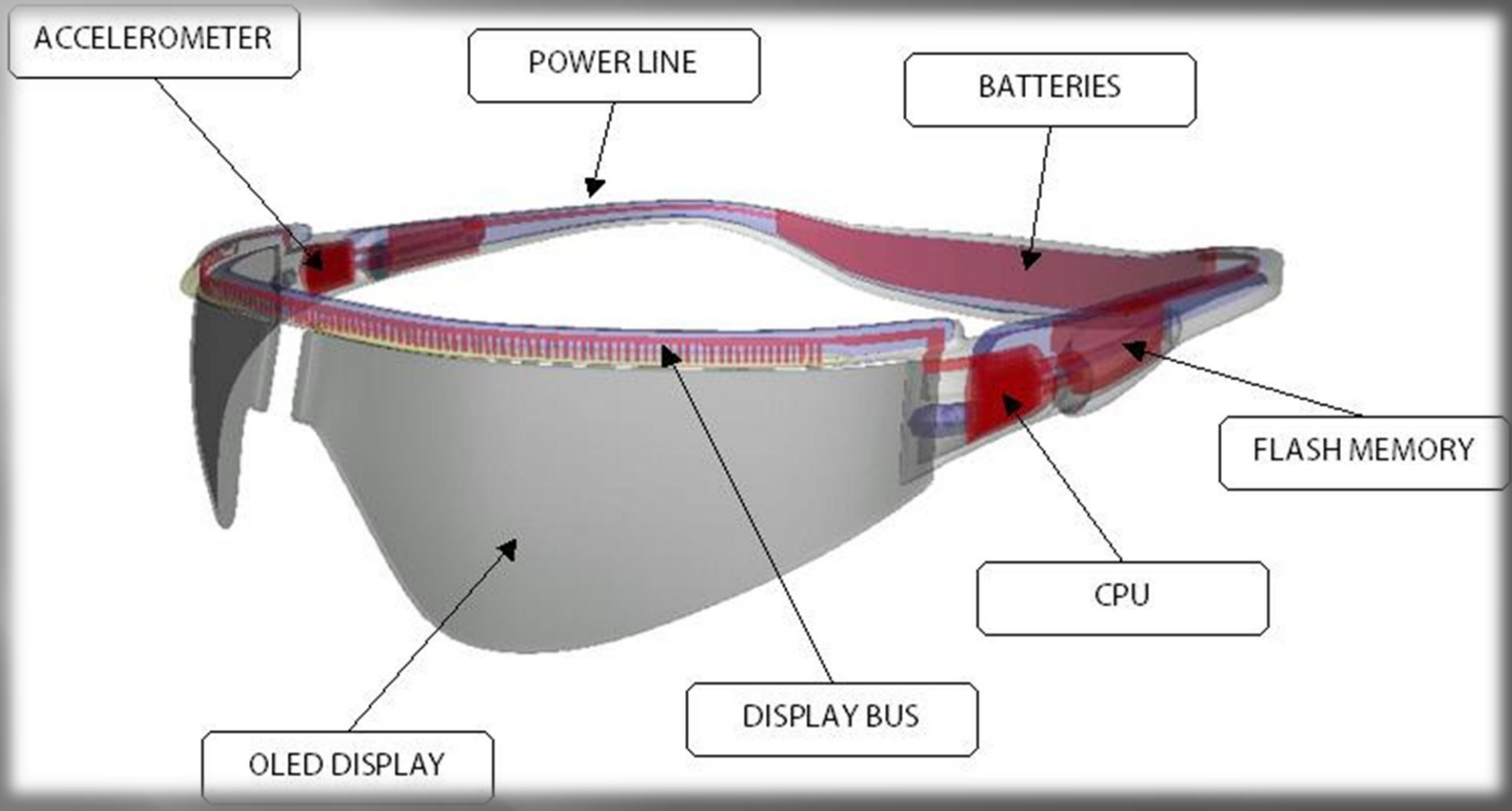
강 력
표 준
급 속
조용조용
란제리/울
절전삶음
이 불
삶 음
헹굼+탈수
전 원
동작/일시정지



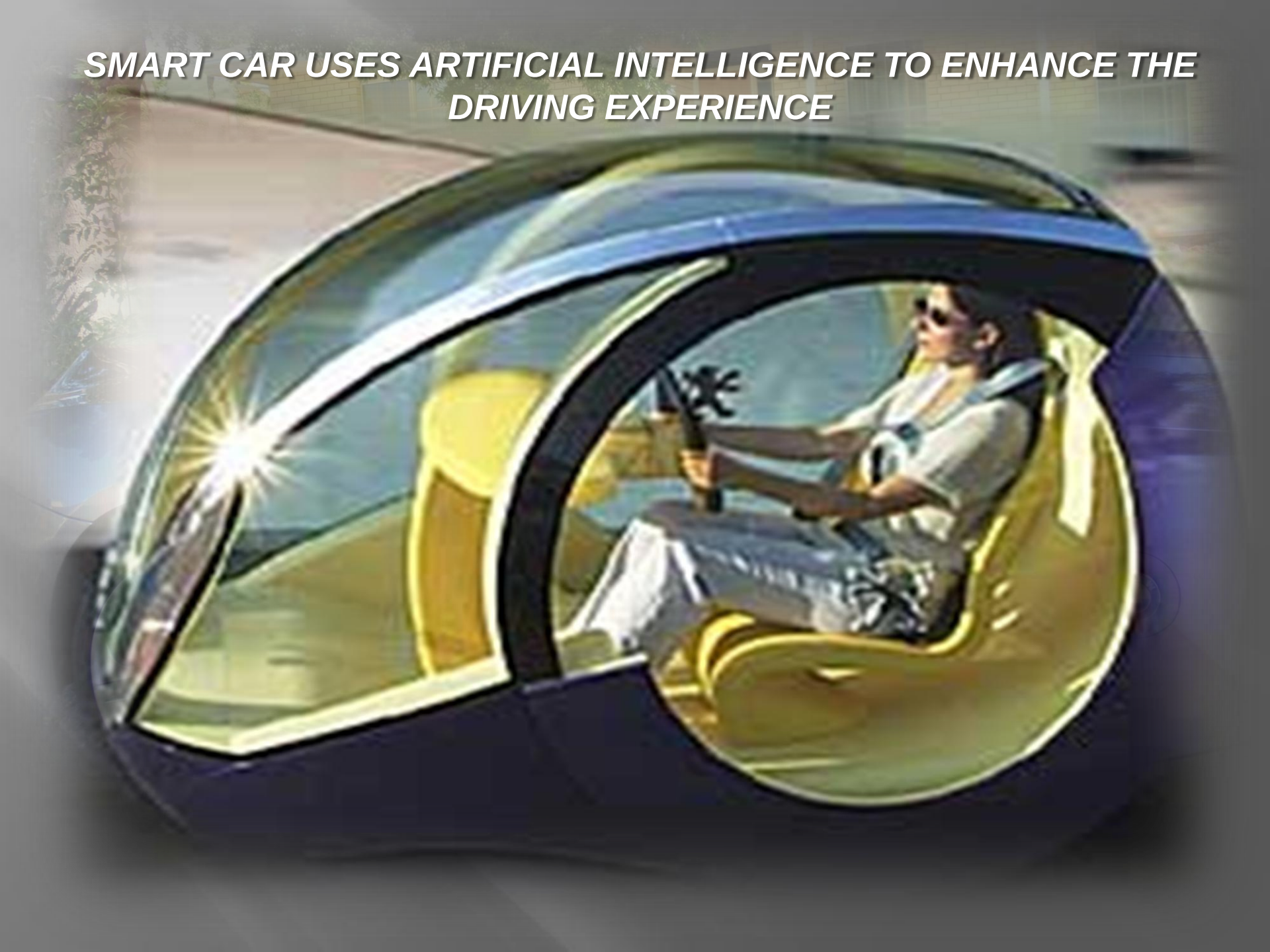
Smart Glasses

I wish I could Read Korean!

Can there be a technology roadmap to match the 1.5kgm grey matter – the brain?


ACCELEROMETER
POWER LINE
BATTERIES
FLASH MEMORY
CPU
DISPLAY BUS
OLED DISPLAY

SMART CAR USES ARTIFICIAL INTELLIGENCE TO ENHANCE THE DRIVING EXPERIENCE



Medicine

W. L. Bragg
1915 Nobel prize
X-ray crystalogr.

M. L. E.
Deut
Trit
Heli

R. A. Fisher
Fisher info.
Max. likelihood
F-K Equation

J. R. Warren
2005 Nobel prize
Ulcers

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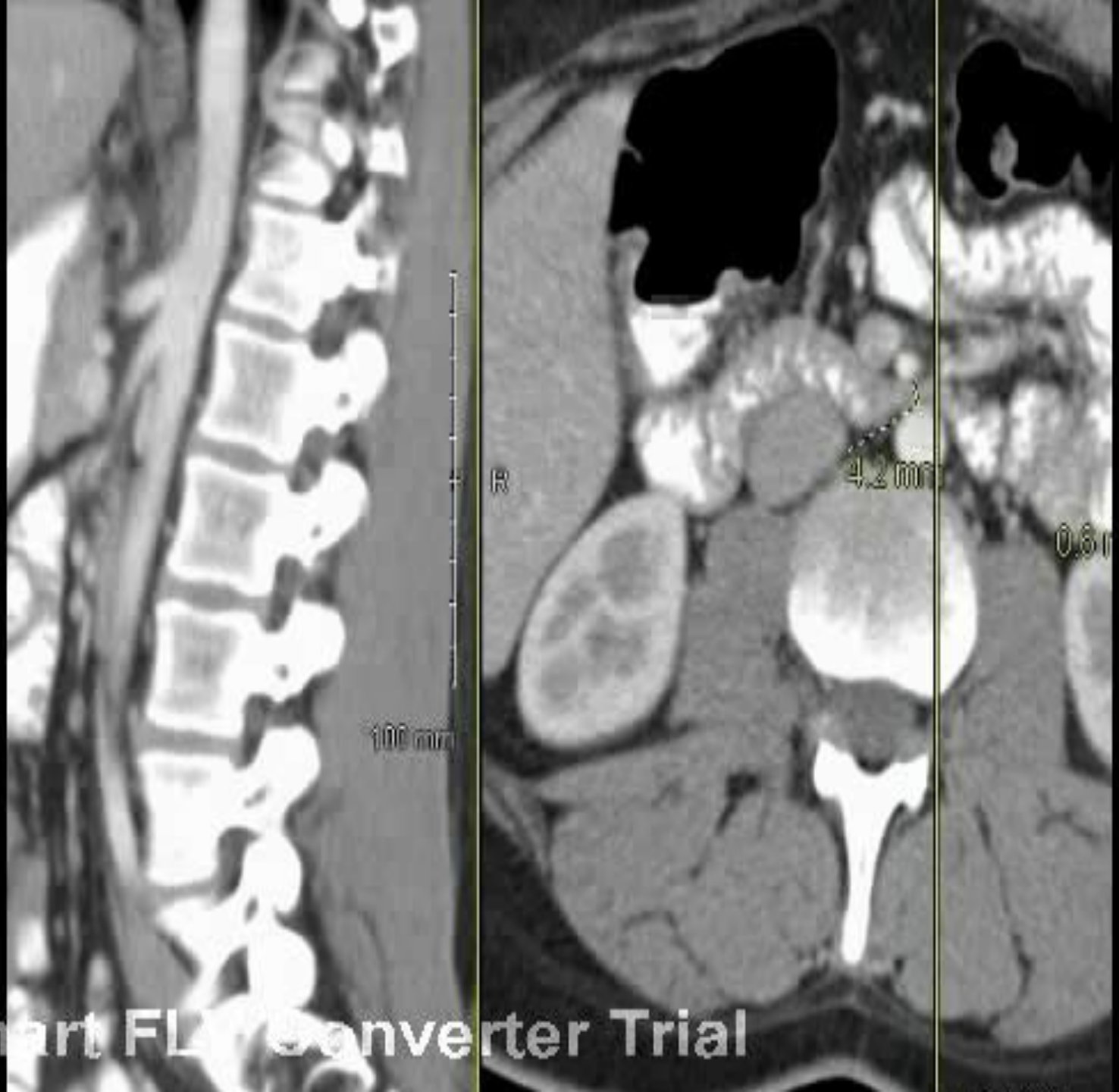
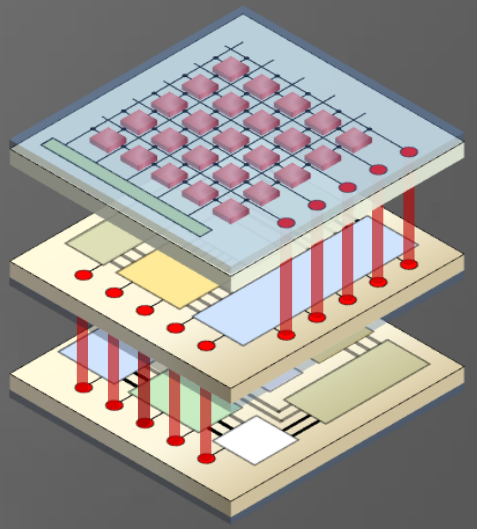
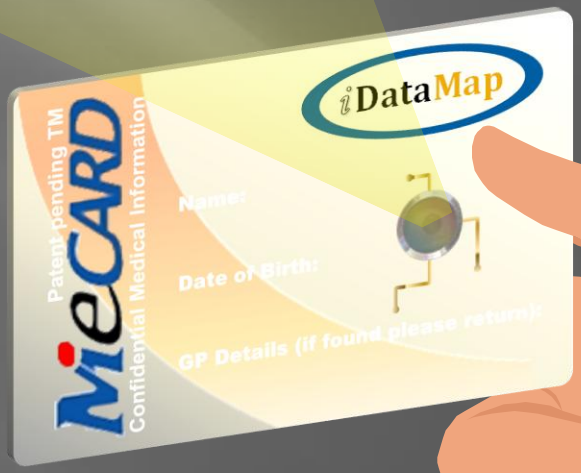
RadCard
(Card is empty)
POWERED BY
iDATAMAP
RadCard Access
Imaging
Reports
History
Videos
Home
Patient ID
Sync
Help
Exit
3.6G /4G
8% used


R
4.2 mm
100 mm
Smart FL converter Trial





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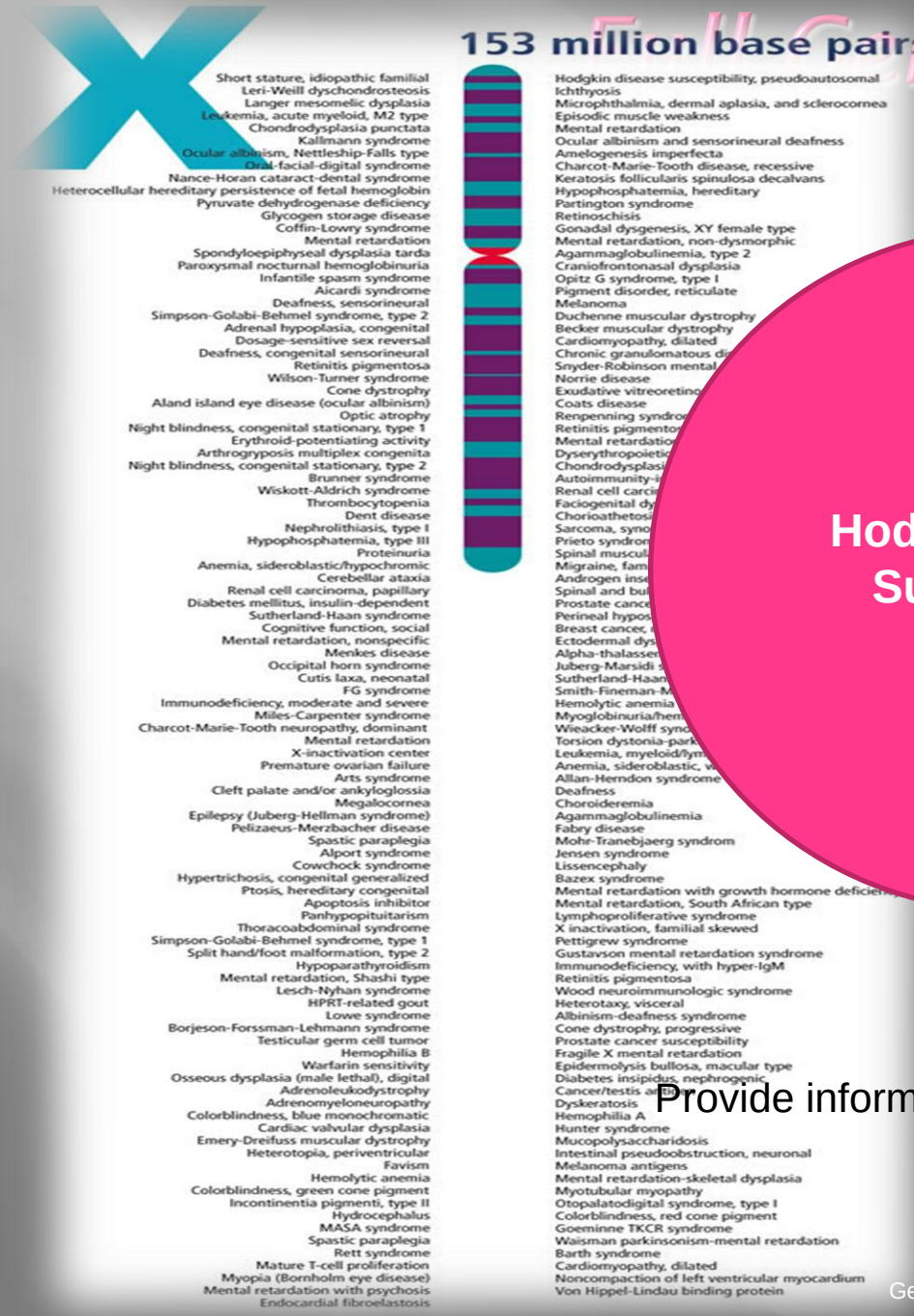
Rad-Tag
Patient's Card Detected...
iDataMap
25 – May – 1976
I.D.: 123-44-4321
Last Name
First Name
Emergency Contact
Insurance I.D.
Group #
POWERED BY iDATAMAP

Full Genome Sequencing



Hodgkin Disease Susceptibility

Predictive Medicine

Provide information on all 6B bases in the human genome

Genome Management Information System, Oak Ridge National Laboratory

Appear when illu ated

2 p.m.

10 a.m.

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BRAIN WAVES

Relaxed ears are Down

Concentrating ears are Up

Amused one ear wiggles

RIVERCAT
RIVERCAT

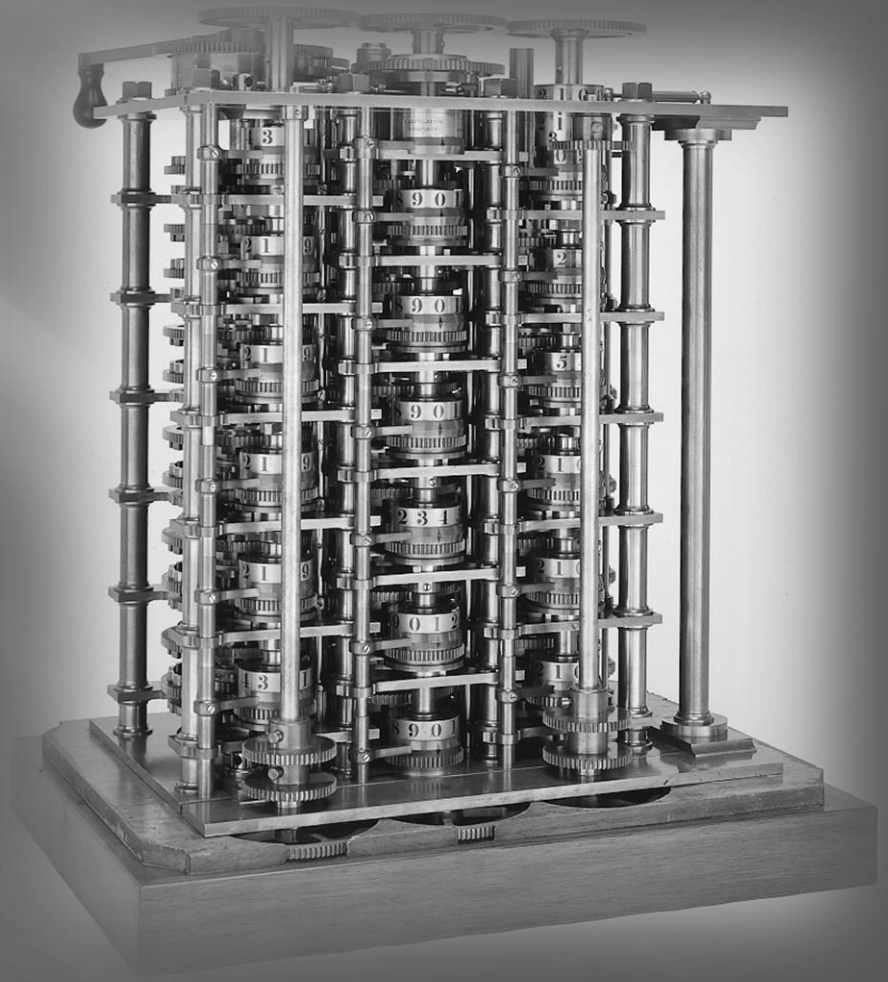
Perth – Western Australia

Computational Capacity

City of Light
Baha'i Gardens
Haifa

The Babbage Difference Engine

- 1832
- 25,000 parts
- cost: £17,470



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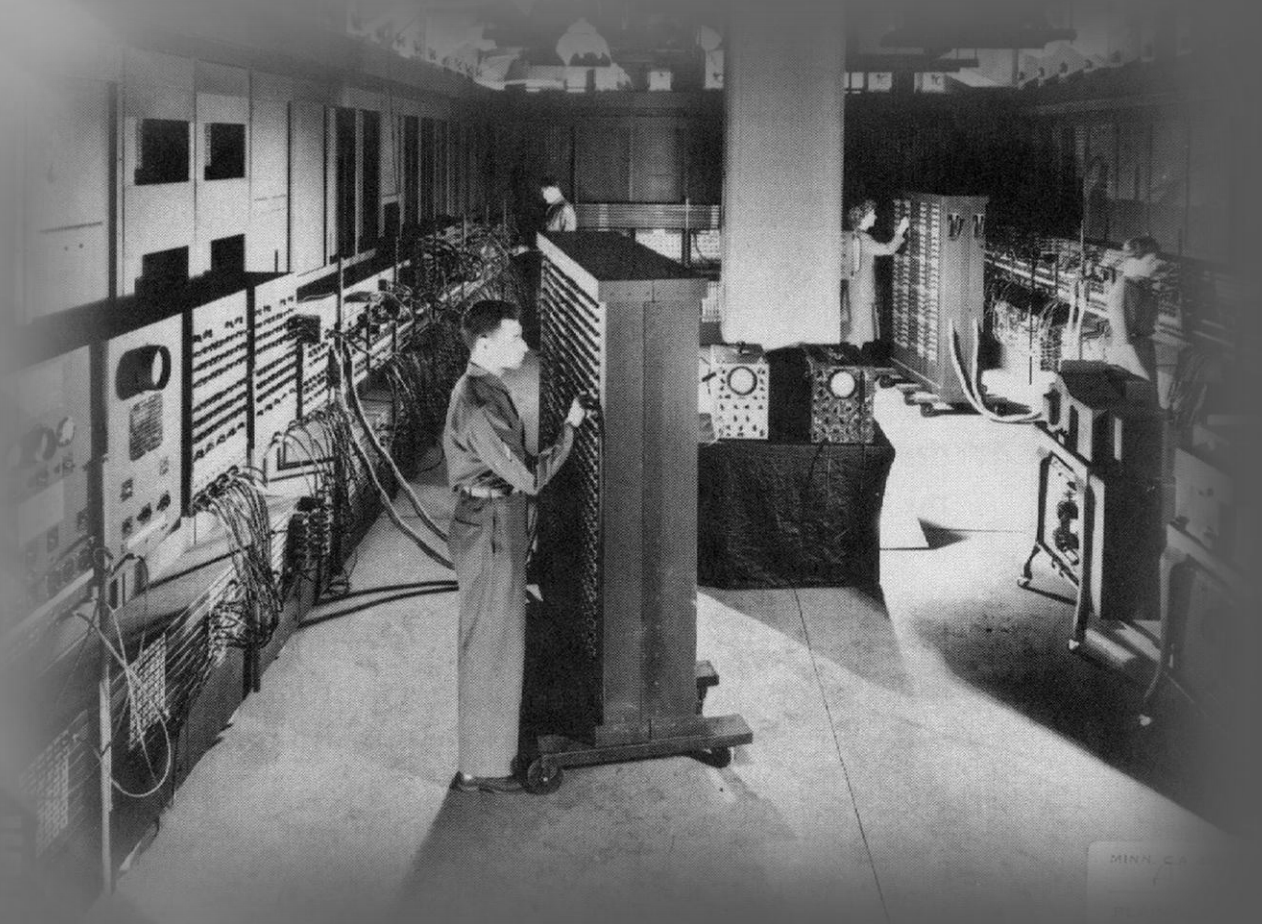
ENIAC

1946: The first electronic computer



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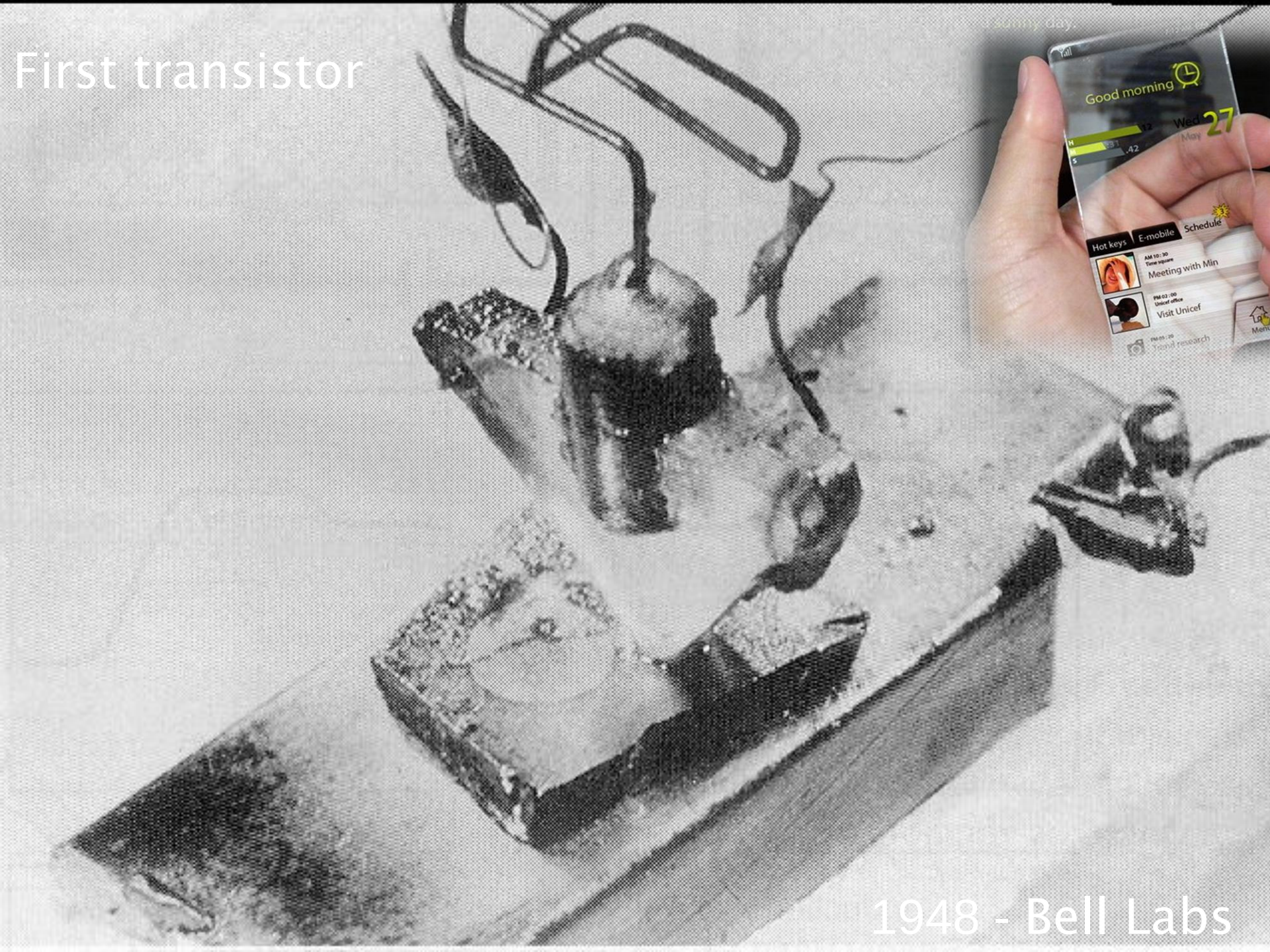
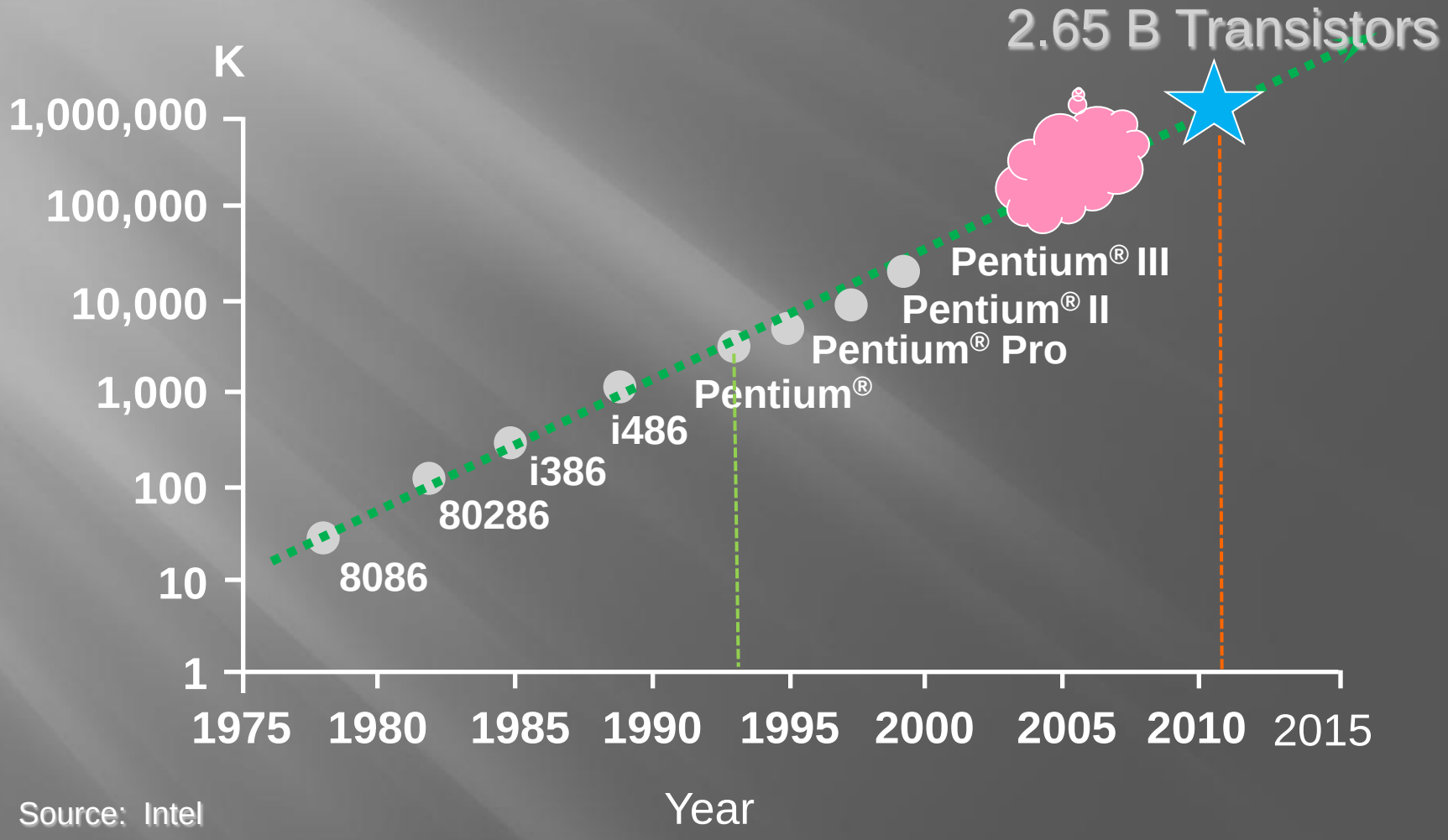
First transistor



1948 - Bell Labs



Source: Intel

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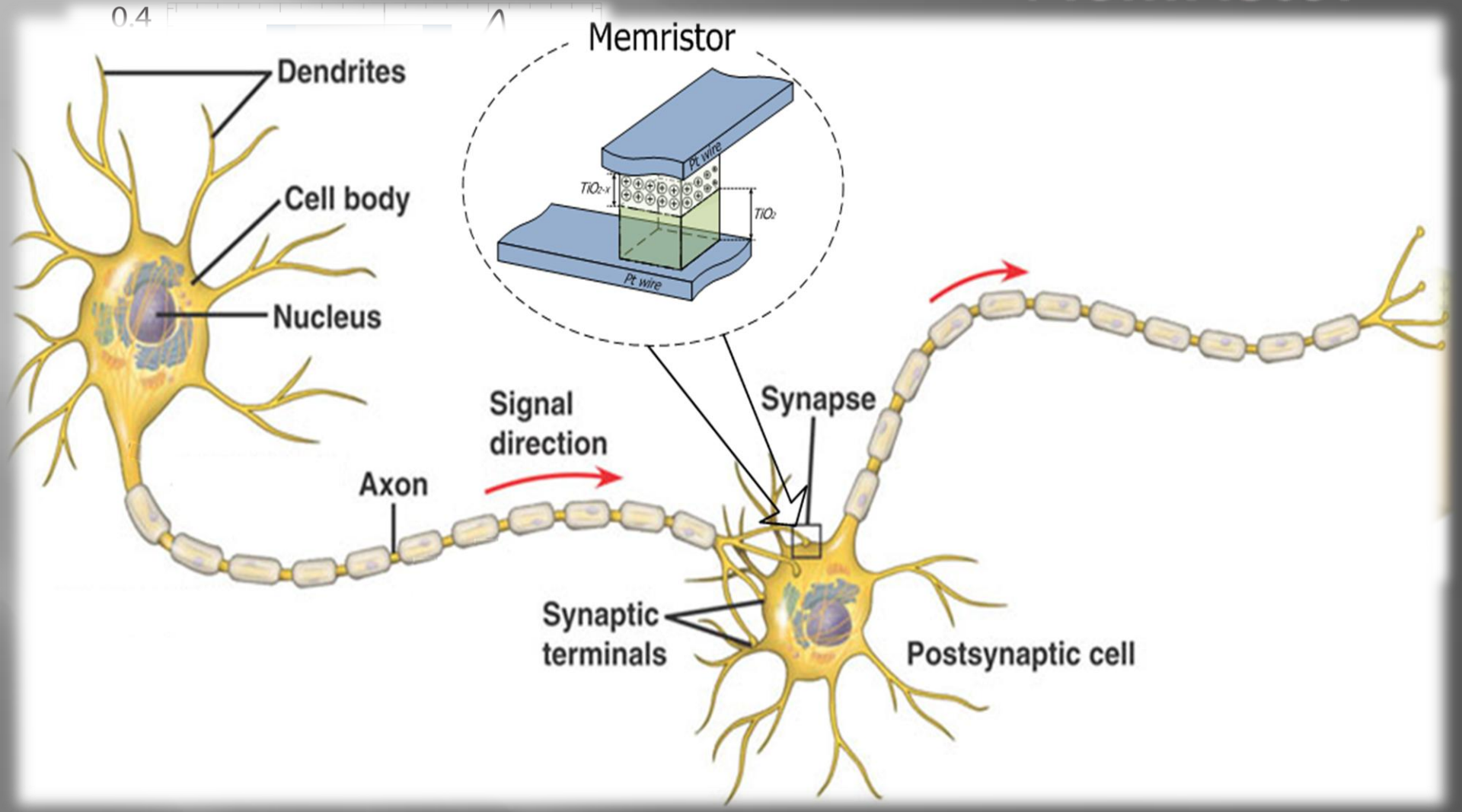
4th Fundamental Circuit Element: Memristor



- No. neurons 10^{11}
- No. synapses 10^{14}
- No. input neurons 10%
- No. output neurons 90%
- Storage capacity 10^{13}-10^{15} b
- Utilisation factor 10%
- Firing frequency 50-100 Hz
- Signal propagation speed 5-125 m/s
- Average brain weight 1.5 kg
- Dissipation 10 Watts

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Travelling Through 300 years

- Investors are telling business, government leaders and academia:
  - in a globalized, fast paced world value is based upon:
    - what you know, and
    - when you know it

INFORMATION

Agricultural-based Economy

- 300 years back the world's wealthiest people owned land.
- In an agricultural-based economy, most human resources were deployed in food and shelter production.
- Globally, owning land was the most valuable thing.

Industrial Revolution

- 120 years ago - **Industrial Revolution**.
- Productivity rose
  - applying new machines to jobs carried out by workforce.
  - age of manufacturing was based on productivity of machines and the application of industrial processes to what formerly was hand labor
- Some industrialists captured this value of greater productivity.
- Henry Ford and the like became wealthiest of the wealthy.

Engines *Automobiles* *Airplanes*

Henry Ford
(ca. 1919)
(Photo credit: Wikipedia)

Catalyst

- 1950s - America's farmers were forced to create much larger farms to remain in business,
  - subsidies to stay alive via
  - price controls
- 1980s family farms going bankrupt,
  - agricultural land values dived
  - ability to create value by growing or processing food became very difficult.

Movement of Wealth

- As part of survival in agriculture
  - Needed machinery more than land,
  - Vast tracts could be farmed with few people,
    - but with enormously expensive equipment.
  - Industrial products **DETERMINED VALUE**, and not the land.
- **Movement of wealth from hands of landowners into hands of industrial companies**

Information Economy

- 1990s - massive movement towards Information Economy
- Companies able to drive new levels of productivity
  - creation,
  - management,
  - use and sale of information to create significant value.
- Companies with little technology – cannot create value.

Integration of Technologies: New Platform

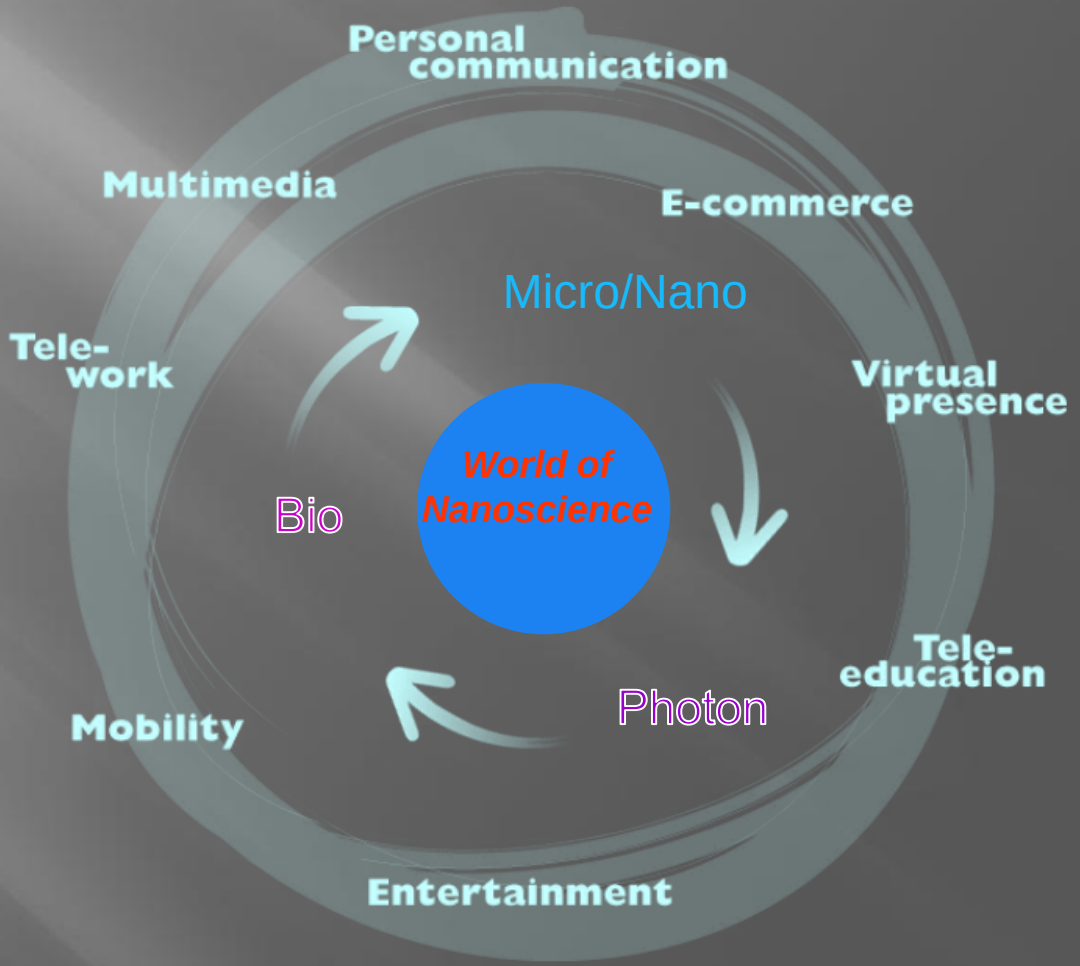
- **Technology Pillars:**
  - Nano/Micro
  - Bio
  - Photon

- **New Research**

- **New Applications**

- **New Opportunities**

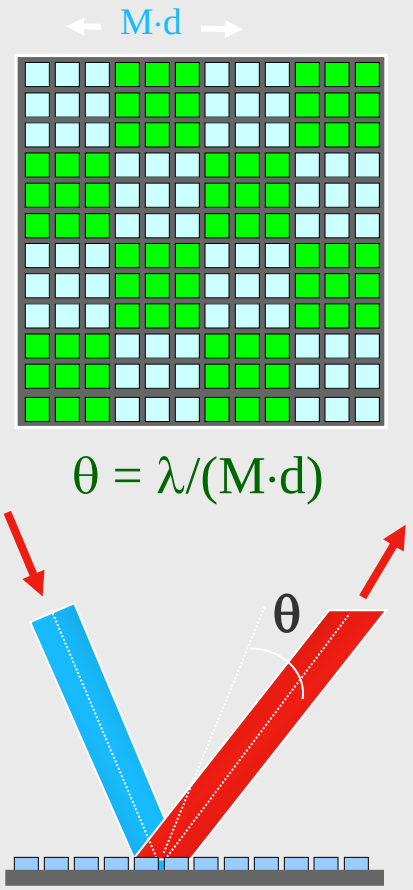
The **Benefactors** ????



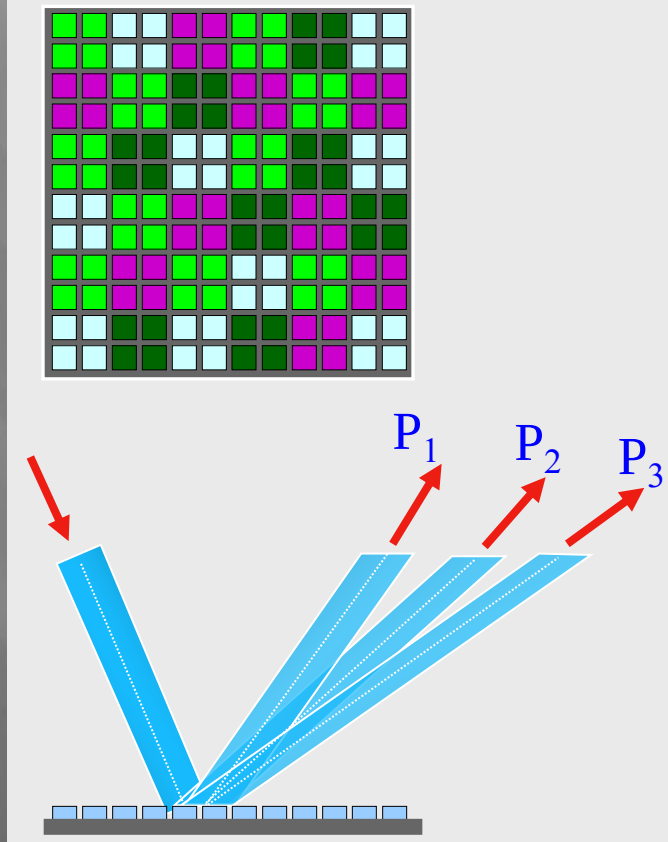
eMirror

Memristor - multilevel storage that would allow realization of multi-phase pixels.

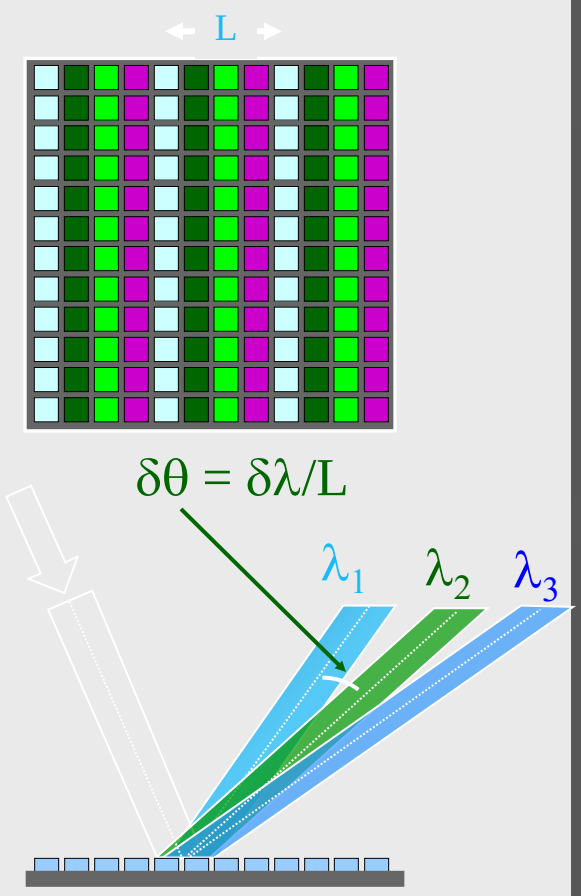
Steering Hologram



Multicasting Hologram



DEMUX Hologram



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Future :
10 Inventions Needed

- **Free Energy**
- **Transporter** - *uncertainty principle of quantum mechanics*
  - work in Tokyo and sleep in Paris
- **Replicator Technology**
- **Universal Communicator**
- **The Cure** *- holy Grails of medical research*
  - regenerating brain cells
- **Fountain of Youth** - *without surgery?*
  - Ladies choice
- **Protective Force Field**
- **Flying Cars** - *Highway in the Sky*
- **The Battery Operated Butler -** *i*Robots
- **The Time Machine** - *Time Travelers*

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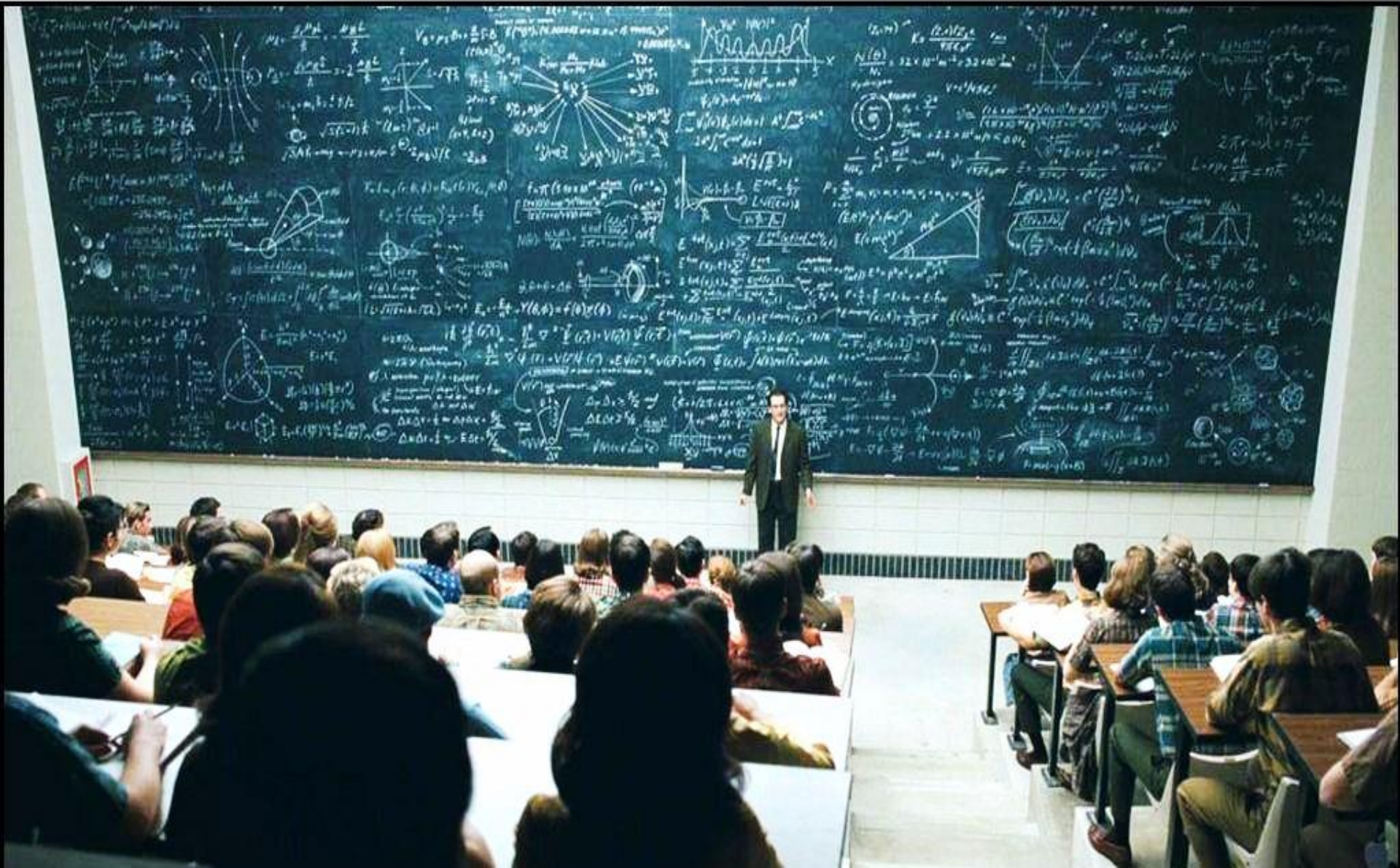
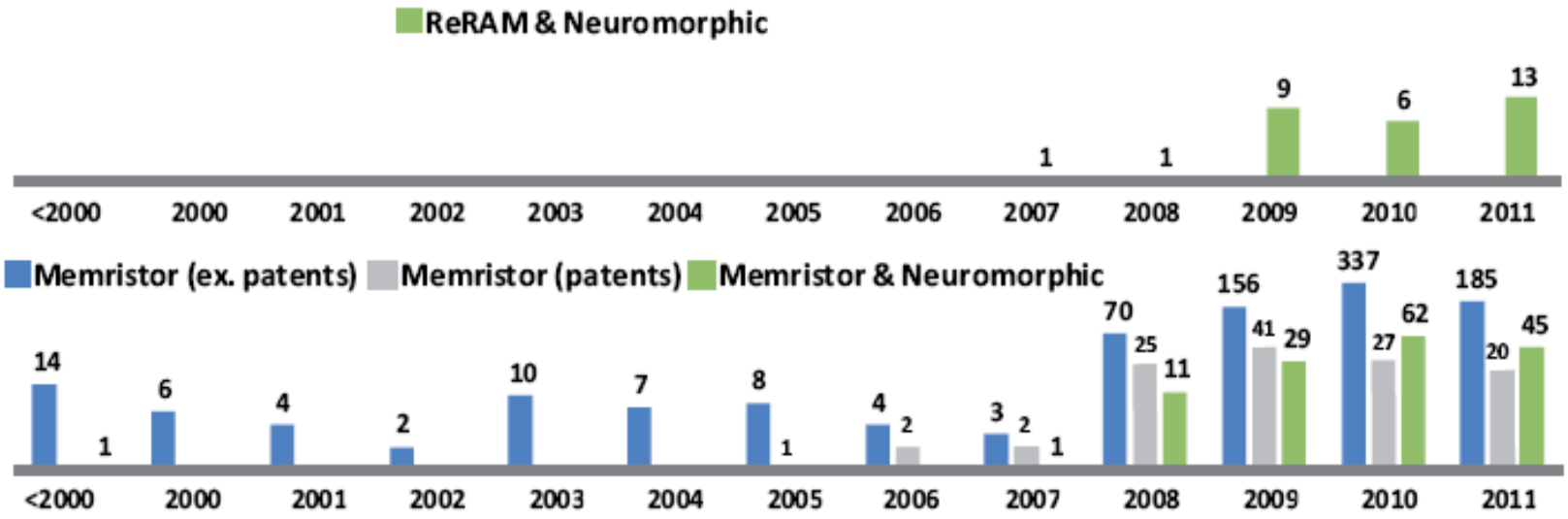
Understanding the Mathematics of: Business, Education and Government



4th Fundamental circuit Element

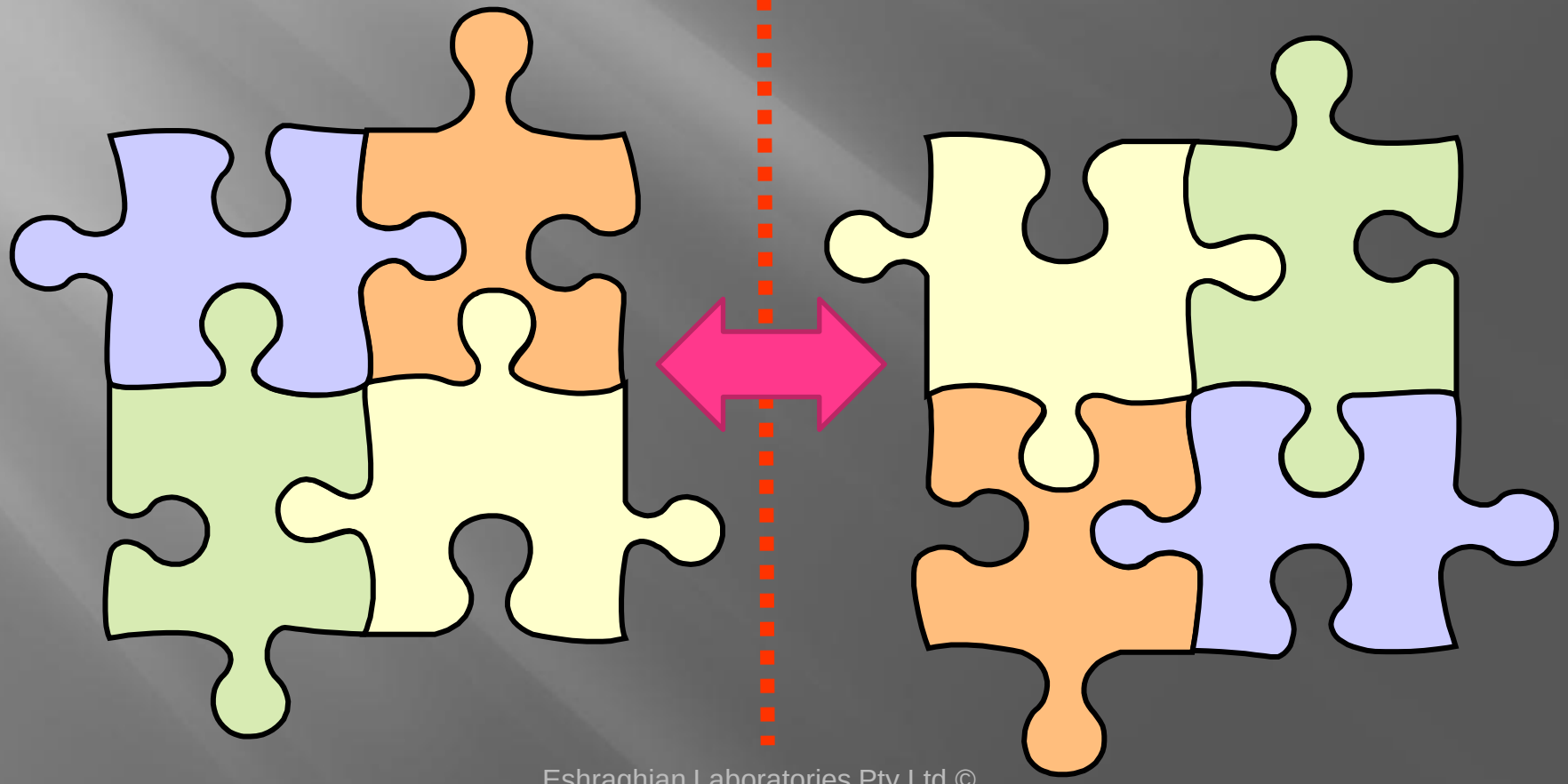
- Patents (Total number of patents are extracted from Blaise Mouttet's blog):
  - Memory (nonvolatile): 1322
  - **Logic and computing**: 23
  - **Neuromorphic**: 3



Connectivity Through Education

Intellectual Energy

Government Agencies



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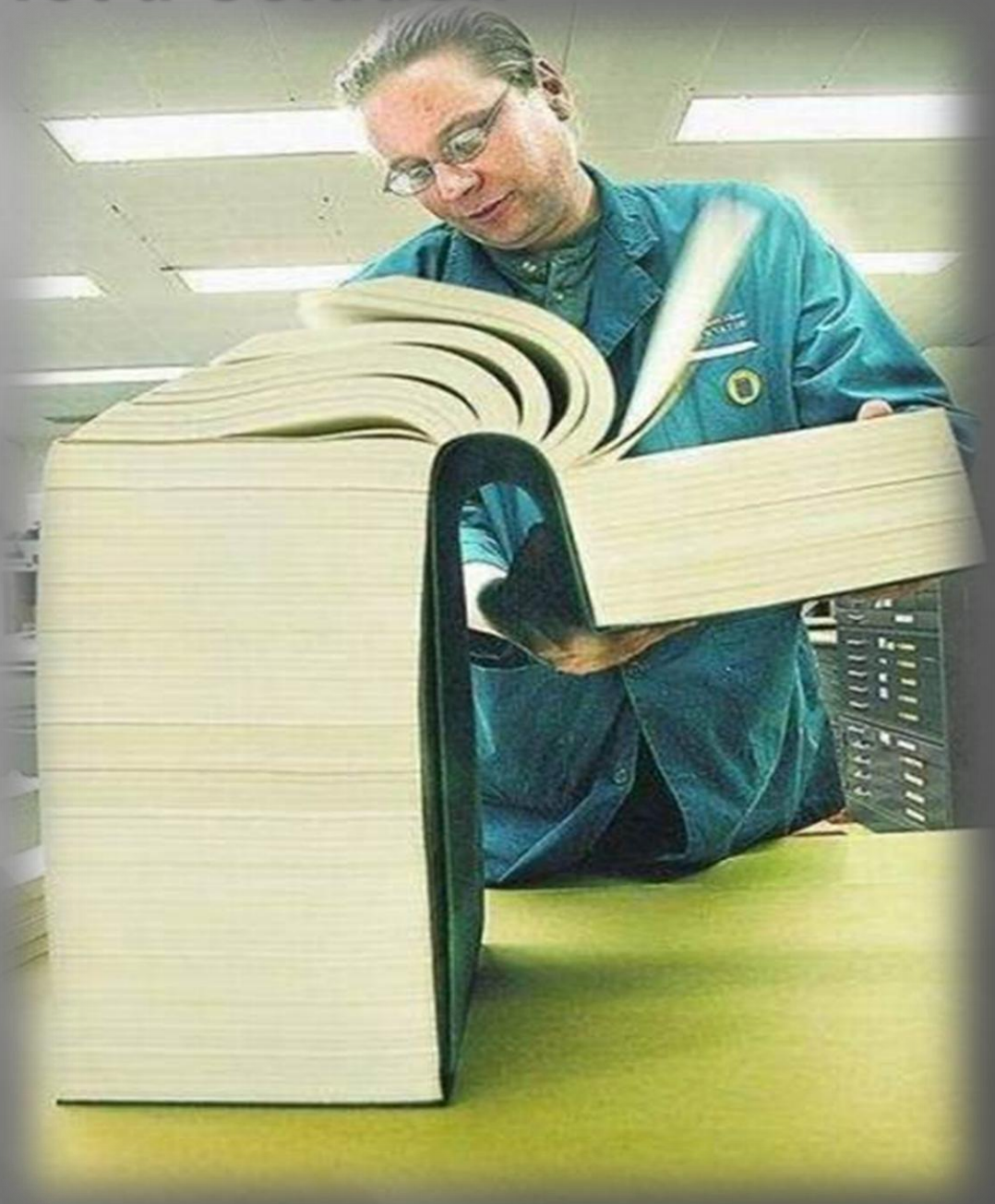
This is Not a Solution



MoneyGame Chart of the Day