

# On Big Science

Kemal A. Delic

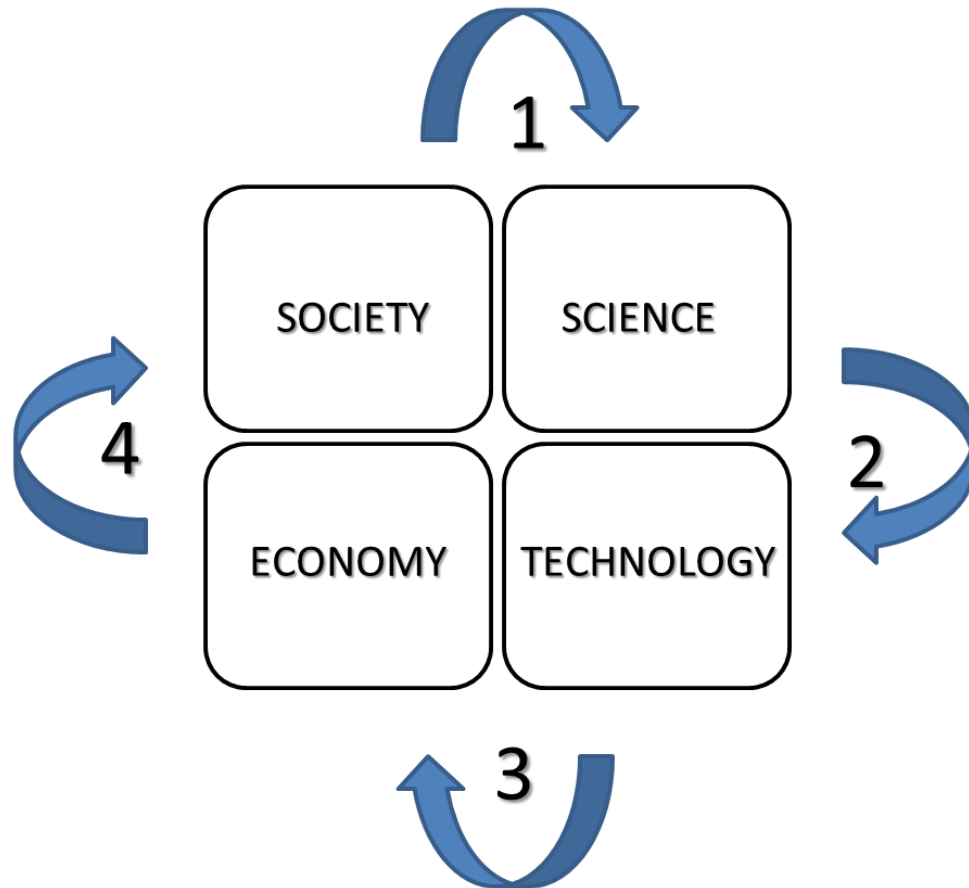
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i-KNOW 2015  
Graz, October 22/23

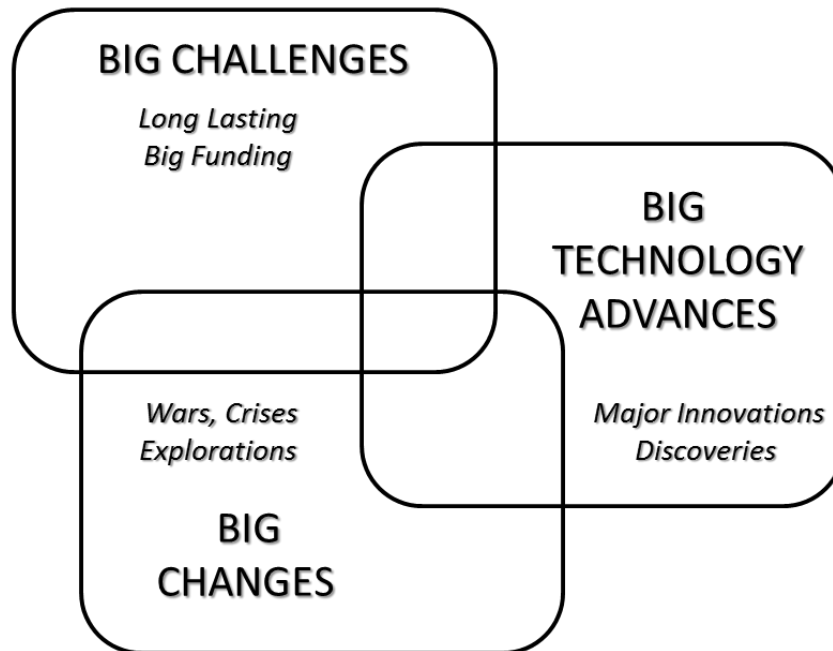


## Big Picture of the World

Possible  
Interpretations  
Global .. Think Climate ..

## Big Science

- + addressing hard, long-lasting problems
- + requiring big resources
- + having durable budget
- + marked by big, shiny optimism
- + need important reserve of nerves,  
brave persistence over many years  
etc.



## Typical Triggers

Some Examples ..

### **Challenges**

+ Space Travel, Moon Visit,  
Comet Landing ..

### **Changes**

+ Radar, Nuclear Bomb, Computers

### **Major Innovations**

+ Nanotechnology, Quantum Computing

Big  
Science

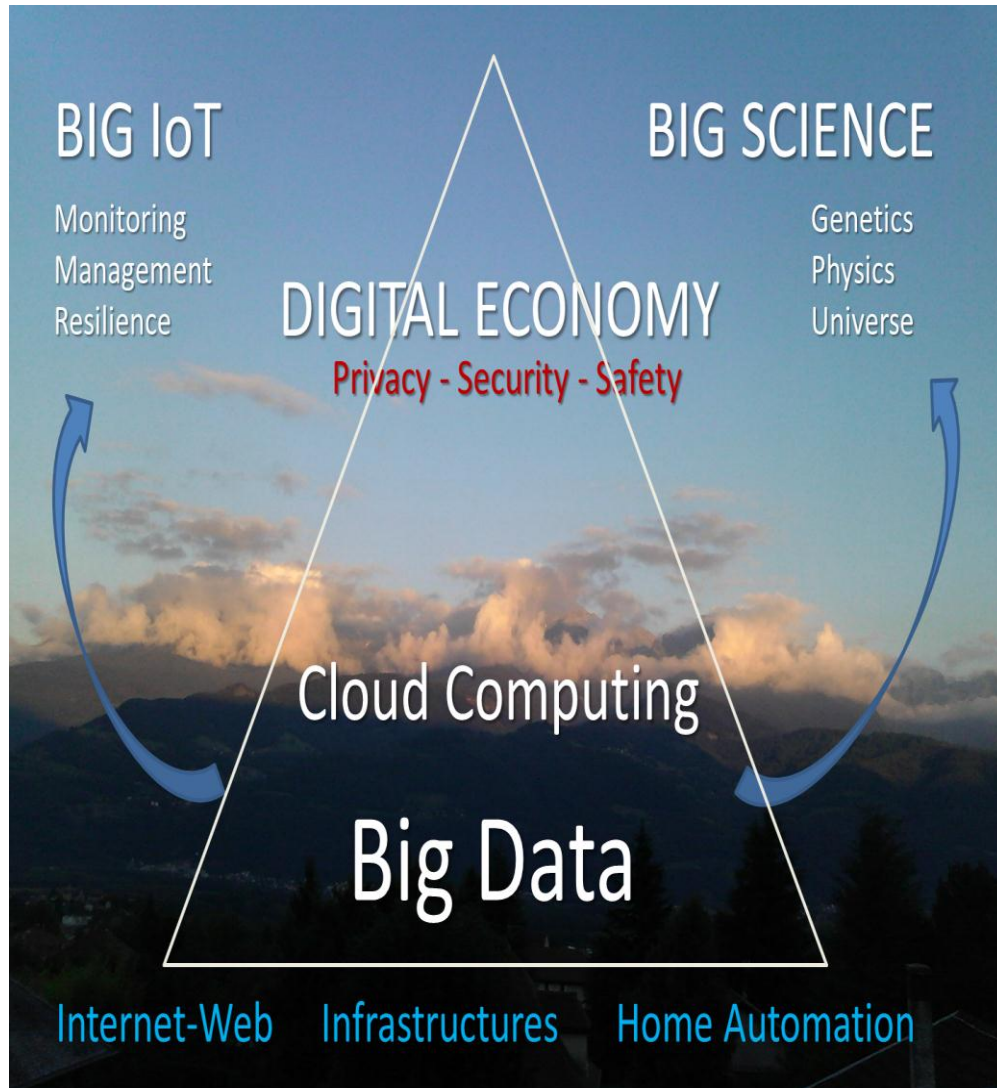
Big  
Data

Big  
Iron

- + Cancer
- + Brain
- + Genetics

- + Volume – NSA 3-12 EB –  $10^{18}$
- + Velocity – CERN 1 PB/Sec –  $10^{15}$
- + Variety – FB 1BUsers/Day –  $10^9$

- + High Density Computing
- + Exascale Computing
- + Quantum Computing



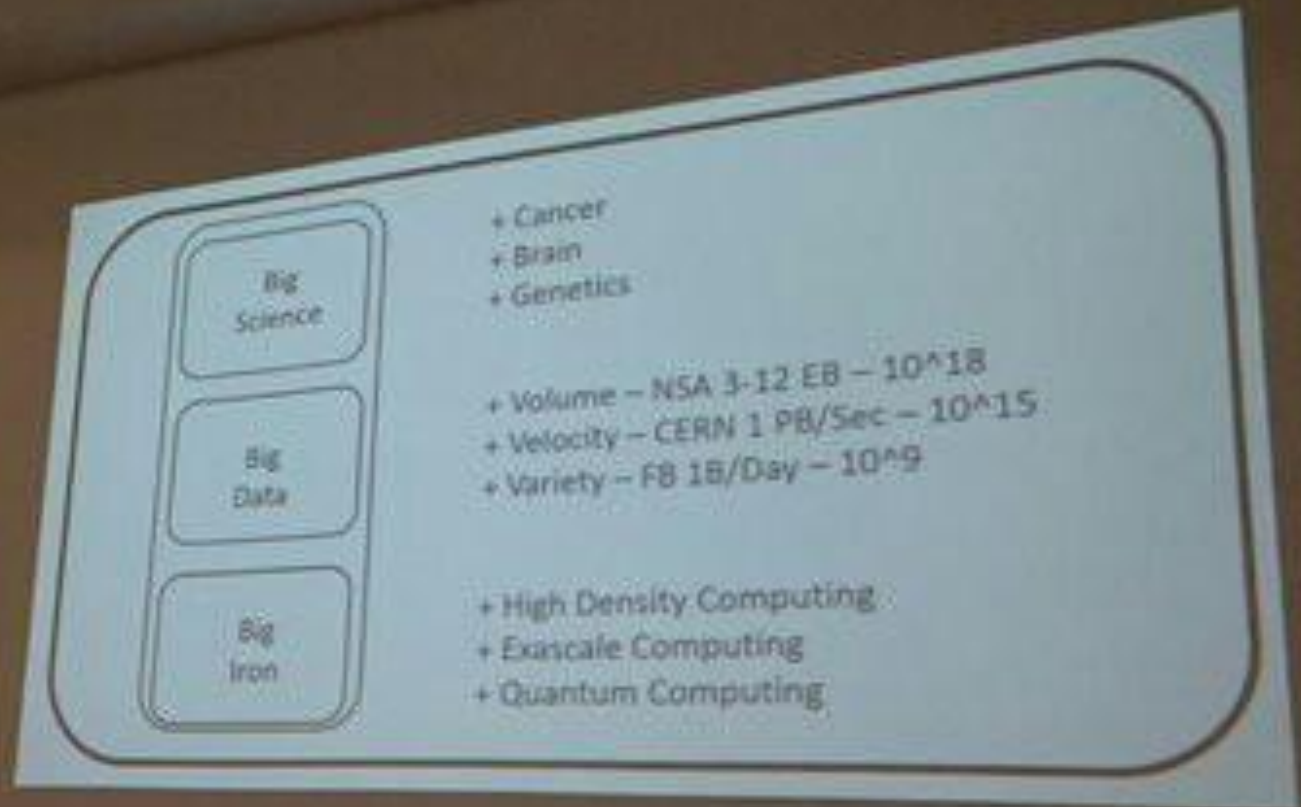
Kemal A. Delic - January 2015

<https://ec.europa.eu/digital-agenda/events/cf/big-data-networking-day/item-display.cfm?id=14426>

## CONCLUSION

### Key Takeaways

- + two camps : big vs small science
- + no final judgement before more research is done & confirmed
- + current best guess is – balanced combination of big and small
- + but how ?



.. Big Science is here to stay .. (1961-2015)..