CCDSC Panel

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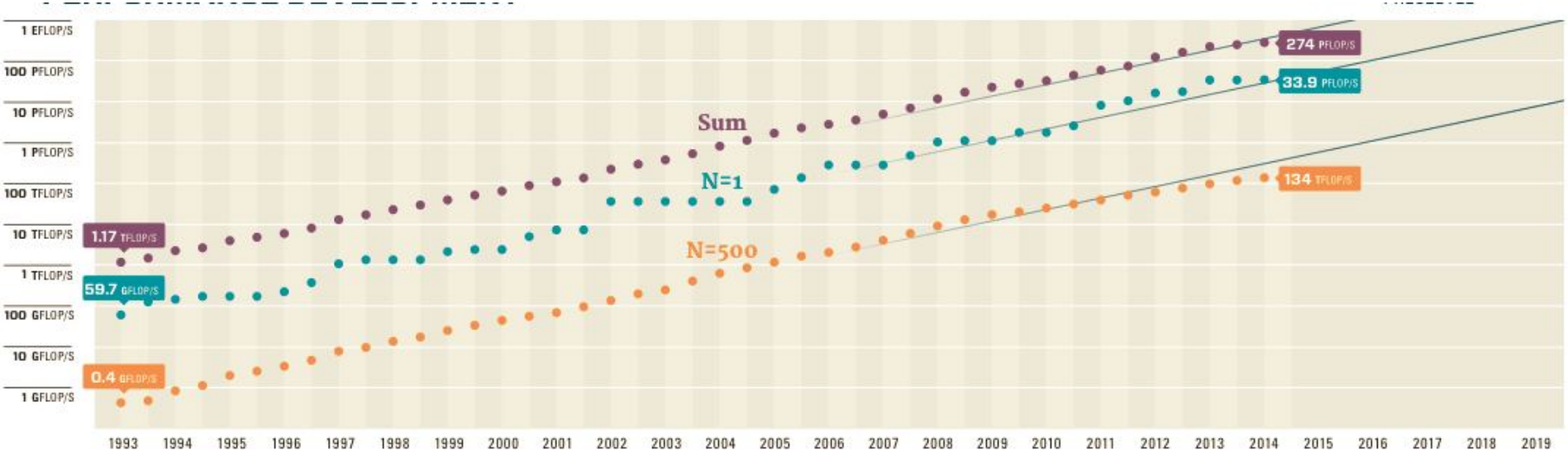
Exascale question

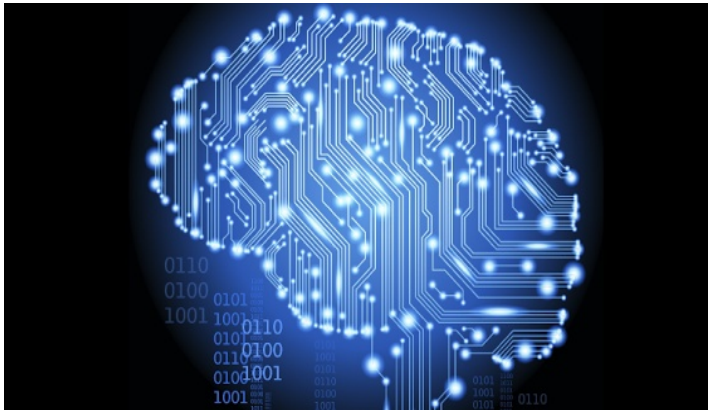
- When will we have an exascale machine?
  - Guess the year



  - *2020: But it may not look like anything we have now*
  - Why will it take this long? *Lack of driving forces for traditional archs*
  - Why wont it take longer? *New paradigm – power, programming, popularity*

Exascale question

- Continued
  - What will it look like ?



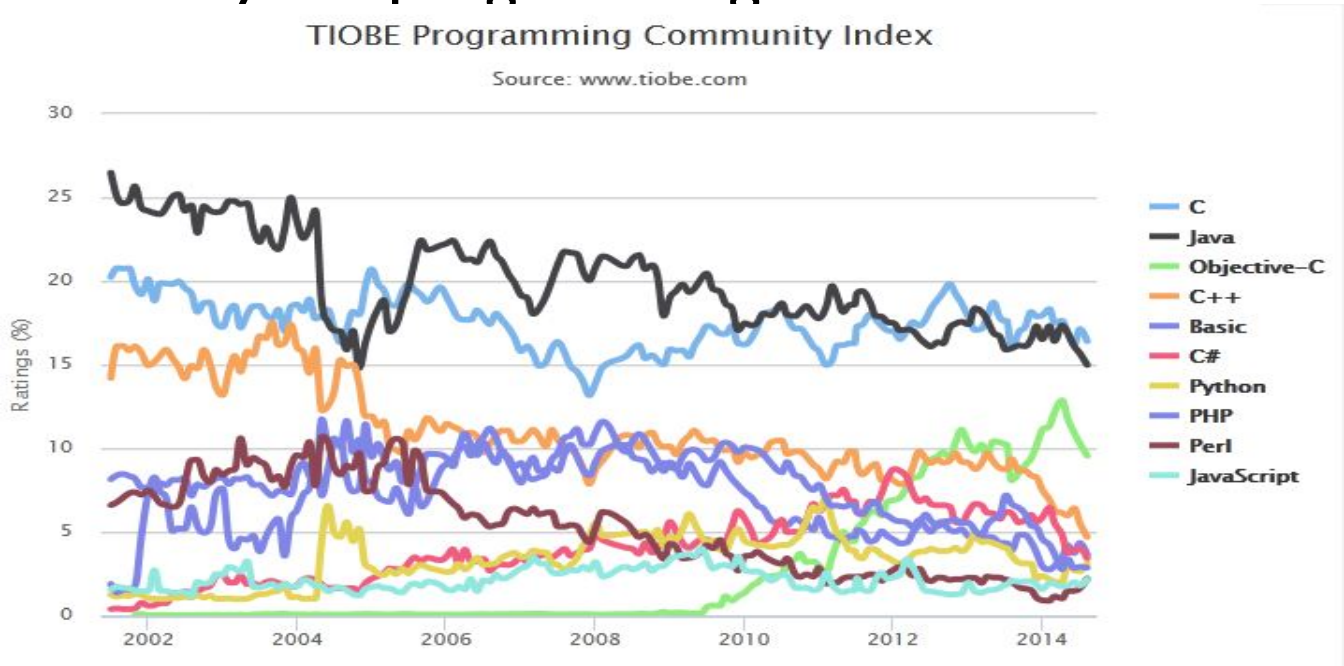
  - What programming technologies will it use?
    - *Fortran*
    - *(Enhanced) von Neumann architecture == imperative programming*
  - *Editorial comment re: Exascale question*
    - *Does exascale really matter?*

World's fastest computer, Tianhe-2, might get very little use

The Tianhe-2 has been hailed as an example of China's tech muscle, but some experts say it may be too powerful for most tasks

Programming question

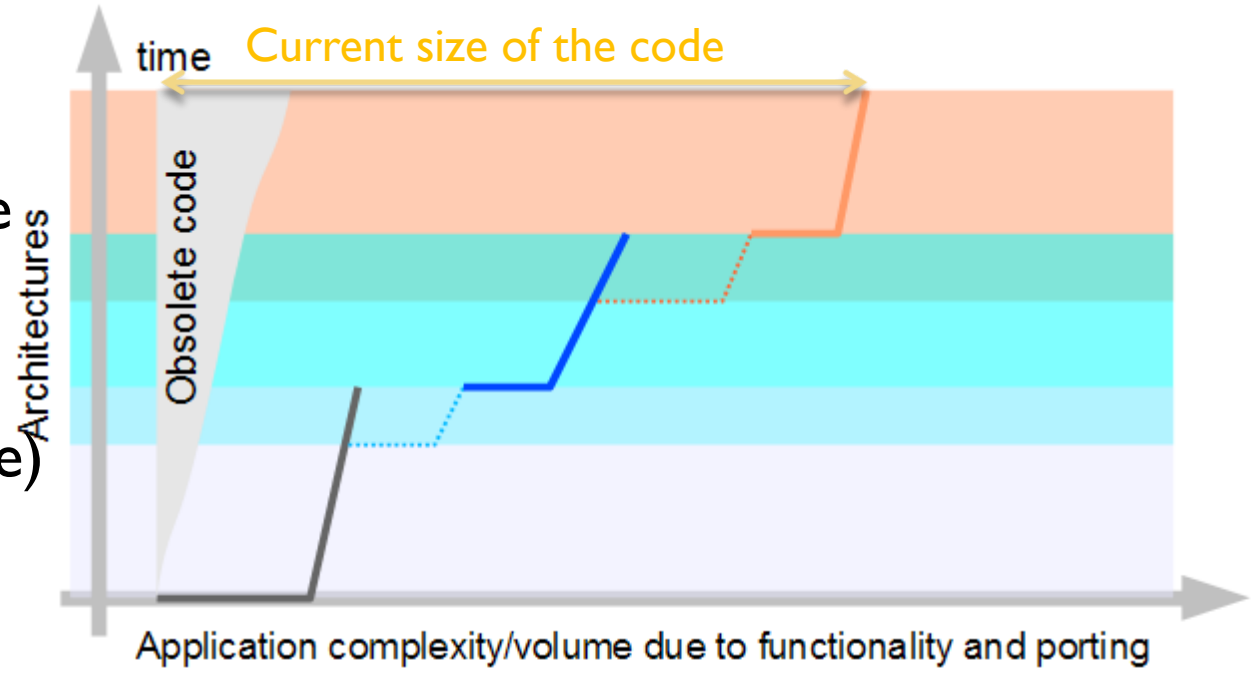
- Why isnt everyone programming in D?



- Matlab(21), D(28), R(30)
- New projects vs. legacy code
- Paradigms/languages too stateful

Legacy applications

- Architectures and particular machines come and go
- Applications stay (and evolve)
- And add more code for
  - Performance
  - Functionality
  - Porting
  - Dead code



- Also true for build systems

Fault tolerance and Big data

- What detection/recovery mechanisms do you see now?
  - @$#&^!! and resubmit!
  - Traditional methods unsuitable at these levels
  - What will be needed? *"Tolerate" faults – perhaps we already are?*

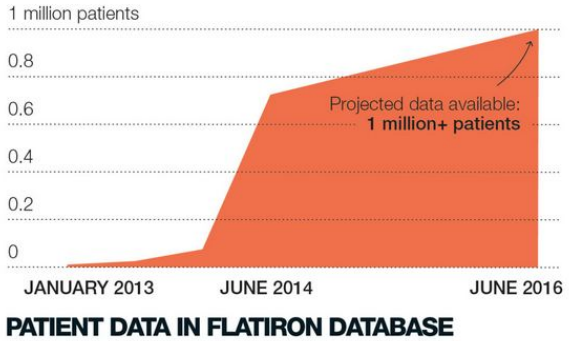
- What is the Big Data equivalent benchmark?
  - Benchmarks usually "X" per "Y", or higher abstraction
  - Data: value derivable without compromising privacy/security


TECH FORTUNE DATA

Can Big Data cure cancer?

by Miguel Helft @mhelft JULY 24, 2014, 7:31 AM EDT

  - Privacy/security a major obstacle

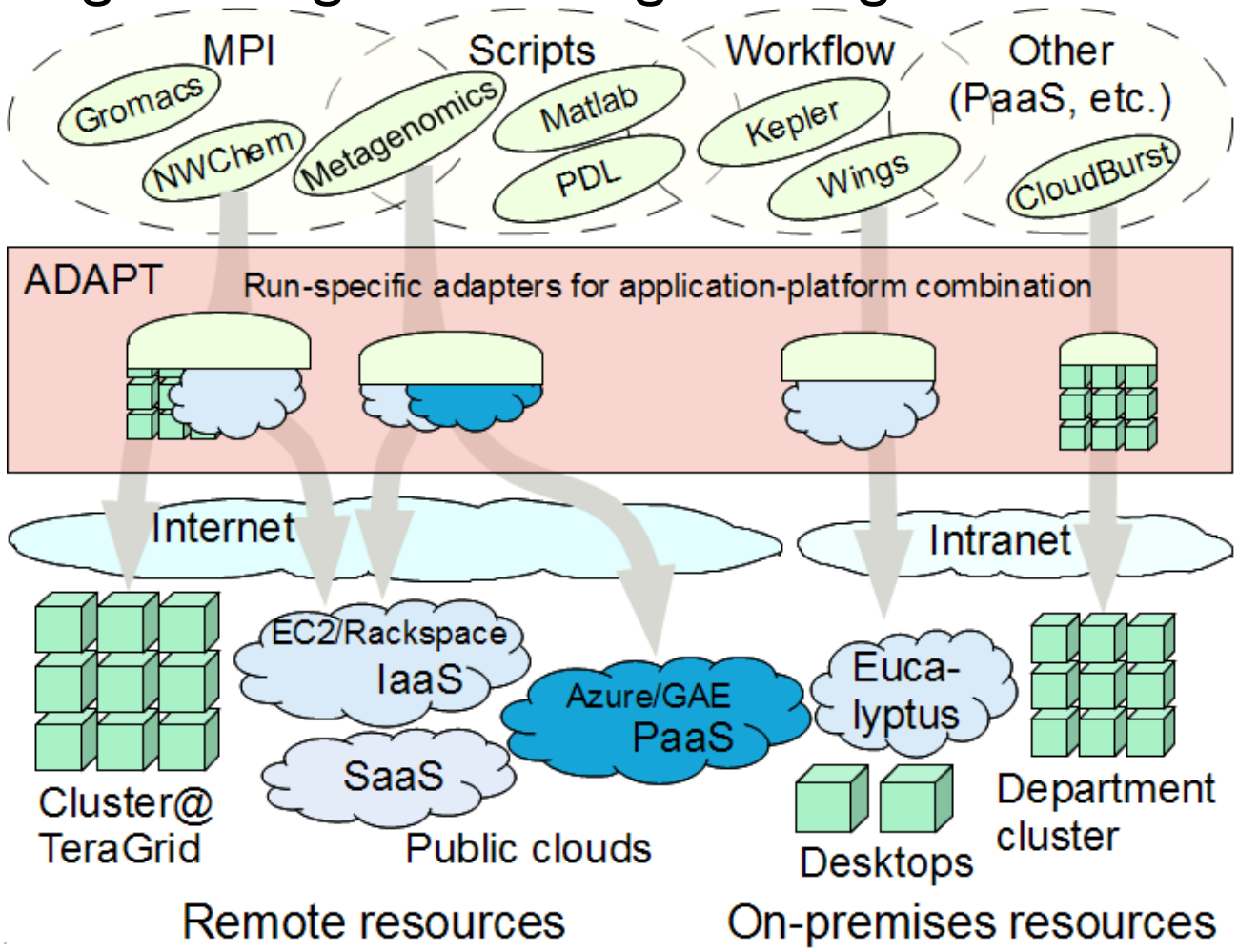


PATIENT DATA IN FLATIRON DATABASE

Selfie question

- What are *you* doing to bring about the golden age of CS?
  - Teaching
  - Adaptation

  as an approach to utility computing



Megalomainia/Rephrase

- If you had €100M
  - 1000 points of light – encourage innovation rather than grandeur
- What is (another) really important question
  - Is there a scalable computing model that is stateless and tolerant of uncertainty/failure?