ICE-DIP workshop - technology

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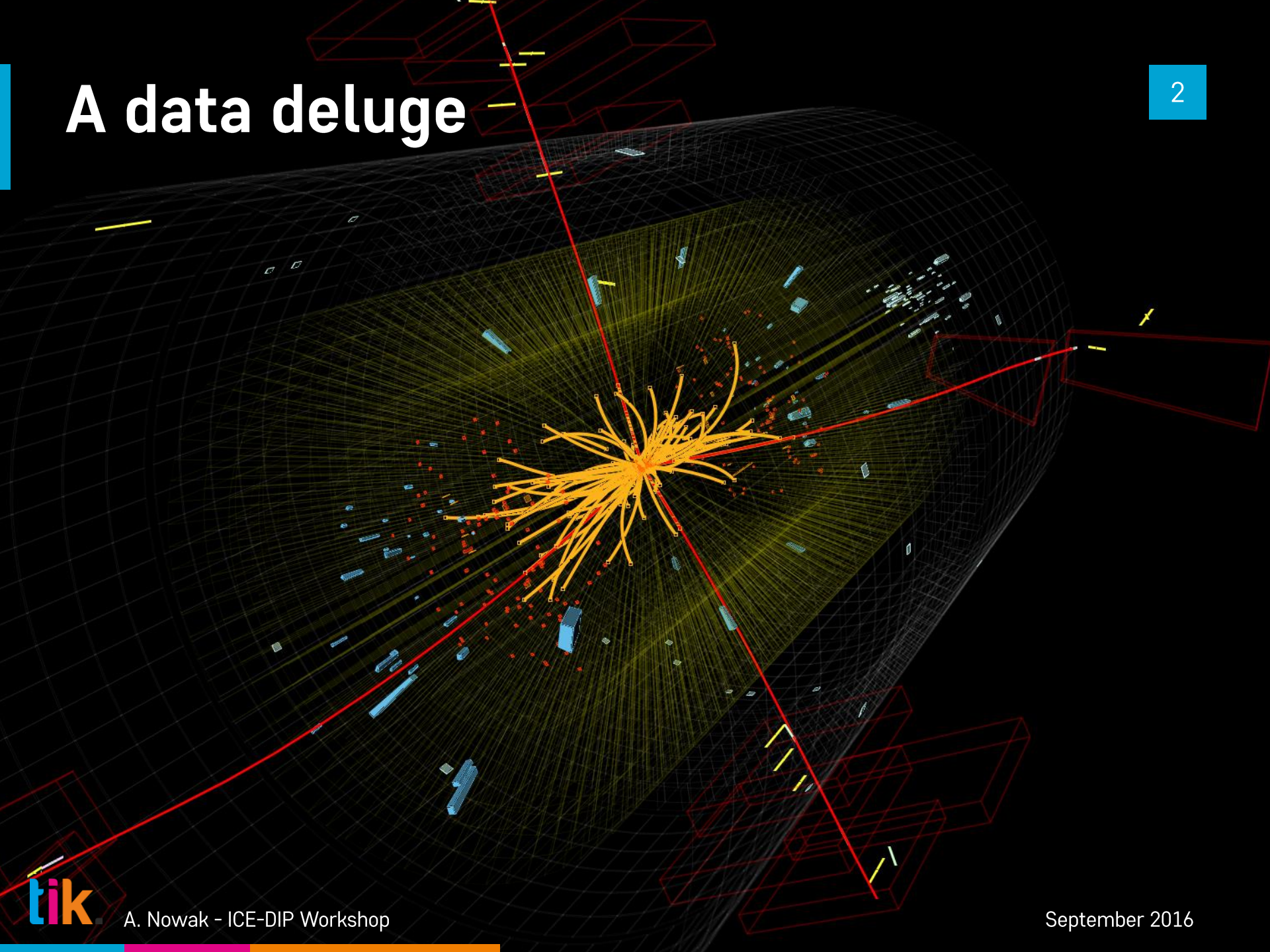
Andrzej Nowak

http://tik.services

A data deluge



Data production today

~PB/s

(thousands of hard drives filled up every second)

Data storage

25-30 PB/year

(25’000-30’000 hard drives filled up)

Data production “tomorrow”

100x ?

The Hype Cycle
As seen by Gartner, Inc.

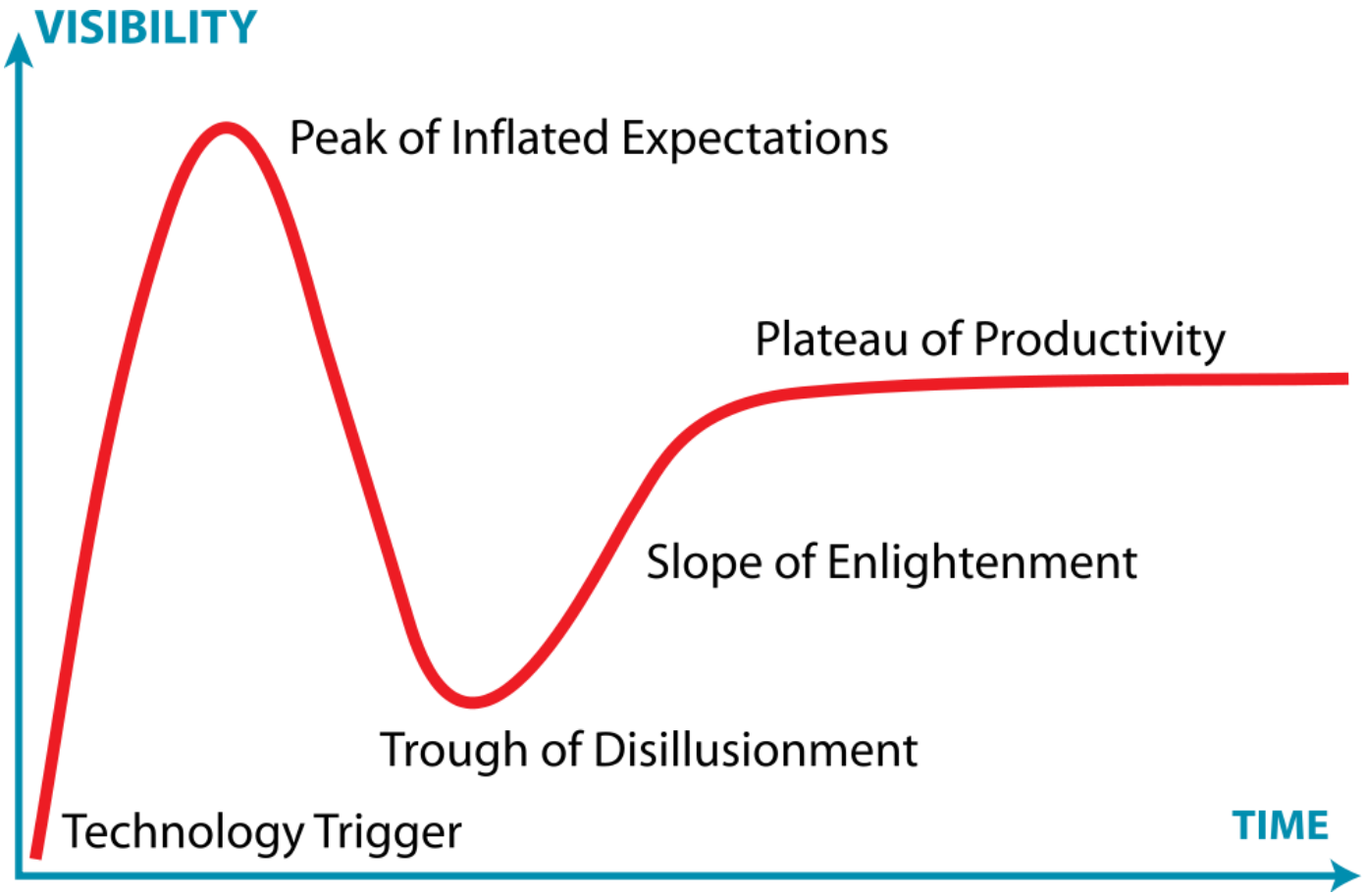


Image: Wikipedia

The ICE-DIP work packages

Theme	WP	ESR	Challenge	Research
Silicon Photonics	WP1	ESR1	Need affordable, high throughput, radiation tolerant links	Design, manufacture, test under stress a Si-photonics link
Reconfi-gurable Logic	WP2	ESR2	Reconfigurable logic is used where potentially more programmable CPUs could be proposed	A hybrid CPU/FPGA data pre-processing system
DAQ networks	WP3	ESR3	Bursts in traffic are not handled well by off-the-shelf networking equipment	Loss-less throughput up to multiple Tbit/s with new protocols
High performance data filtering	WP4	ESR4	Accelerators need network data, but have very limited networking capabilities	Direct data access for accelerators (network-bus-devices-memory)
		ESR5	Benefits of new computing architectures are rarely fully exploited by software	Find and exploit parallelization opportunities and ensure forward scaling in DAQ networks

EID specifics

- A doctorate program in collaboration with the industry
- Can hire up to 5 full time employees, called Early Stage Researchers (ESRs)
  - The recruiting party is CERN
  - ESRs will be hired on fellowship contracts
- ESRs
  - Are seconded by CERN to partners
  - Must be enrolled in a doctorate program
  - Must spend 50% of their time in the industry
  - May be recruited from any country

Thank you

e-mail: an@tik.services

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