



Big Data for Pharma Quality

PDA Conference, Tel-Aviv, January 2017

About Halo

- Founded 2014
- 20 Employees
- Industrial IoT Company
- Active in Automotive and Pharma

About me

- 20 years experience in Big Data and Cyber
 - National Security
 - Infrastructure
 - Financial
 - Industrial



LabSentinel™

The Laboratory Operating System

Continuous Monitoring, Full Visibility

- Non-intrusive
- Non-disruptive
- Plug-and-play installation





Warning:
Technology Ahead

**BIG
DATA**

+

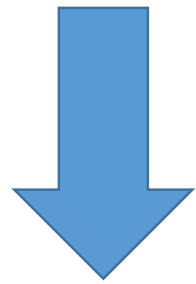
The
**INTERNET
of THINGS**

+

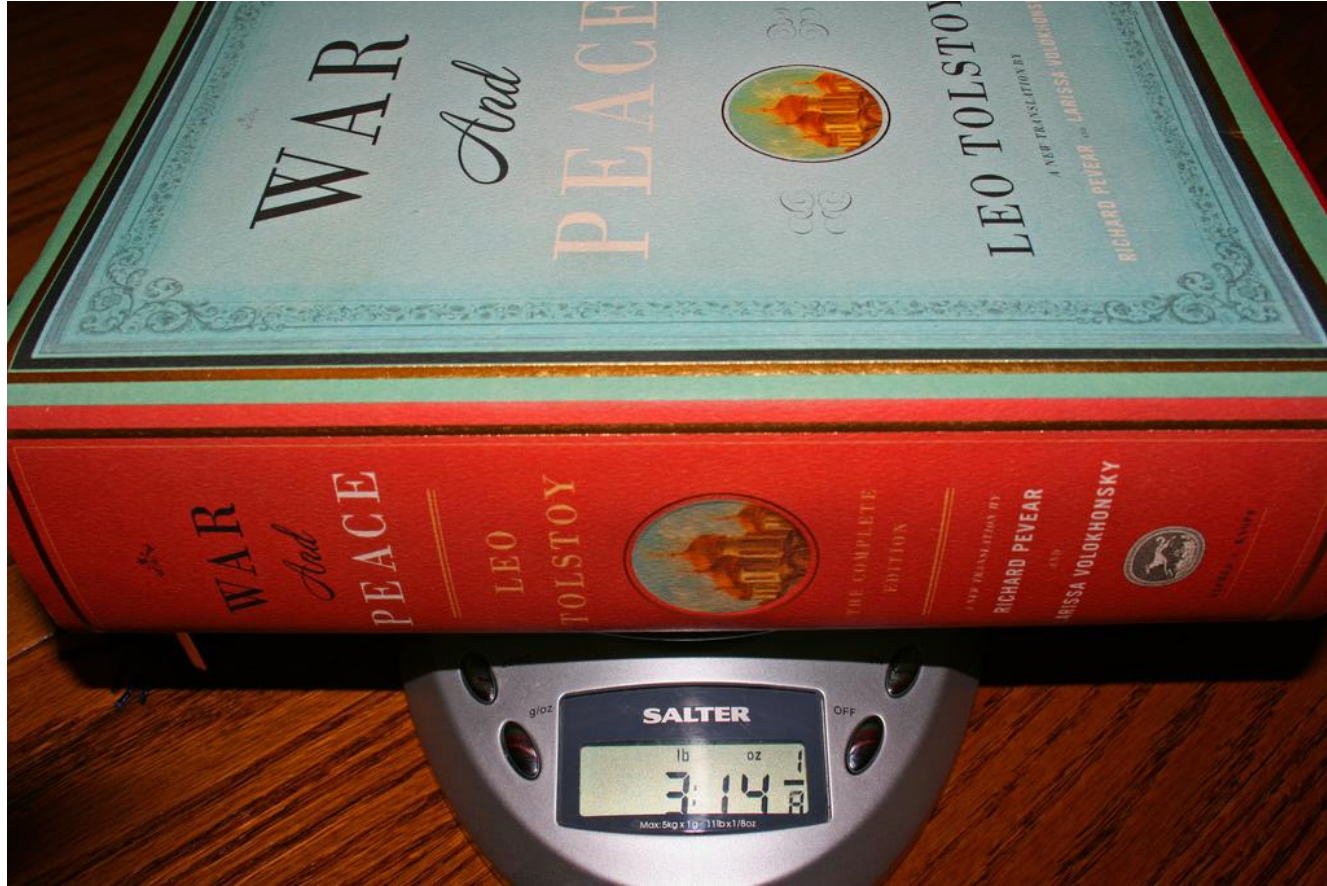
 **bitcoin**

=





1 Mb/hr



How Much Data is Produced Every Day?



2.5 Exabytes are
are produced
every day

Which is equivalent to:

🎵 530,000,000 millions songs

📱 150,000,000 iPhones

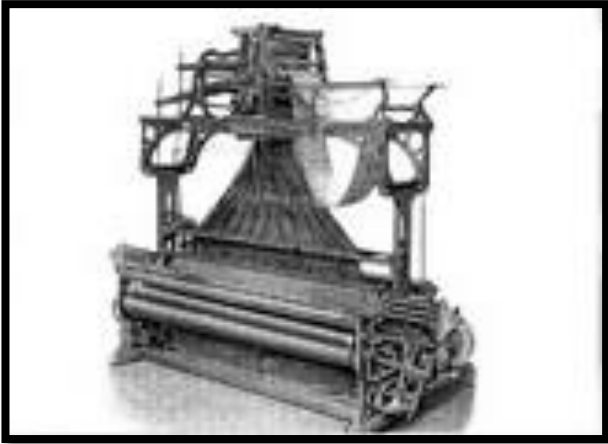
💻 5 million laptops

📖 250,000 Libraries of Congress

📺 90 years of HD Video







1784

Industry 1.0

Mechanical production
Powered by water & steam



1870

Industry 2.0

Mass production
Powered by electricity



1969

Industry 3.0

Programmable control
system



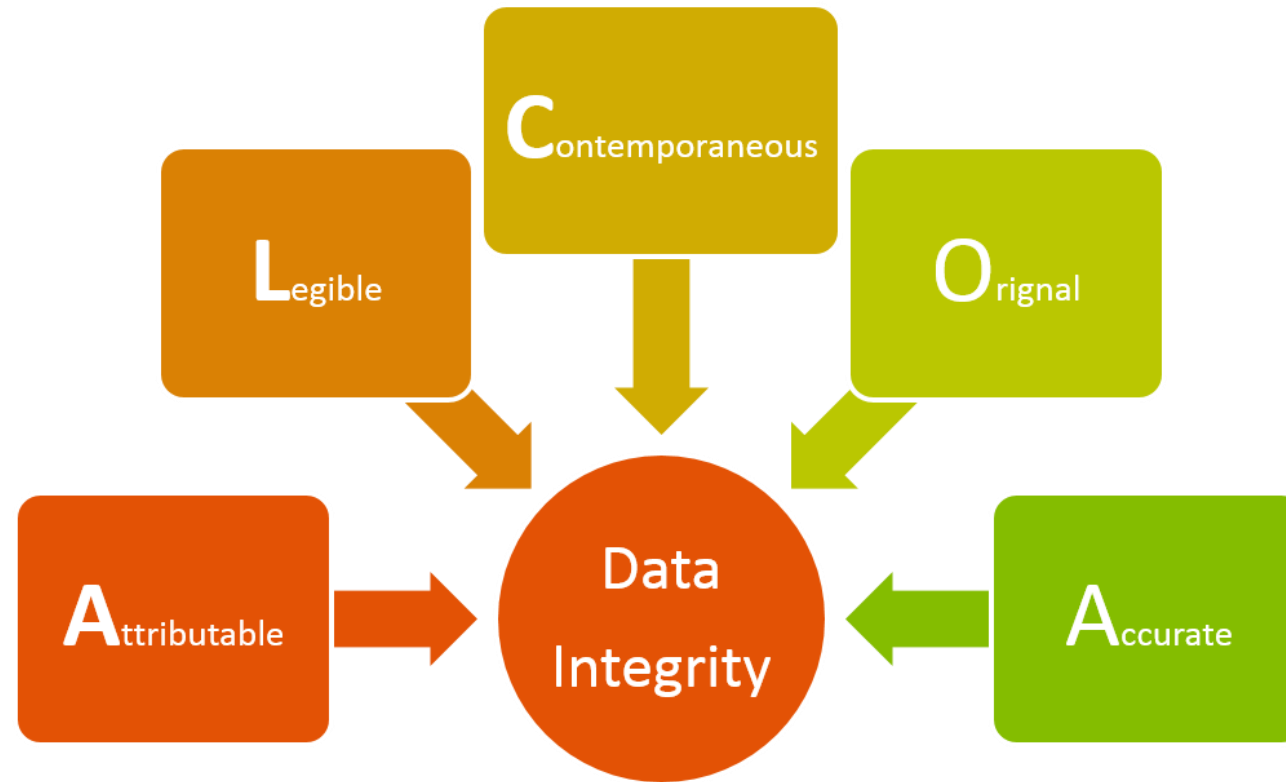
Today

Industry 4.0

Cyber-physical integration
Powered by IoT & big data

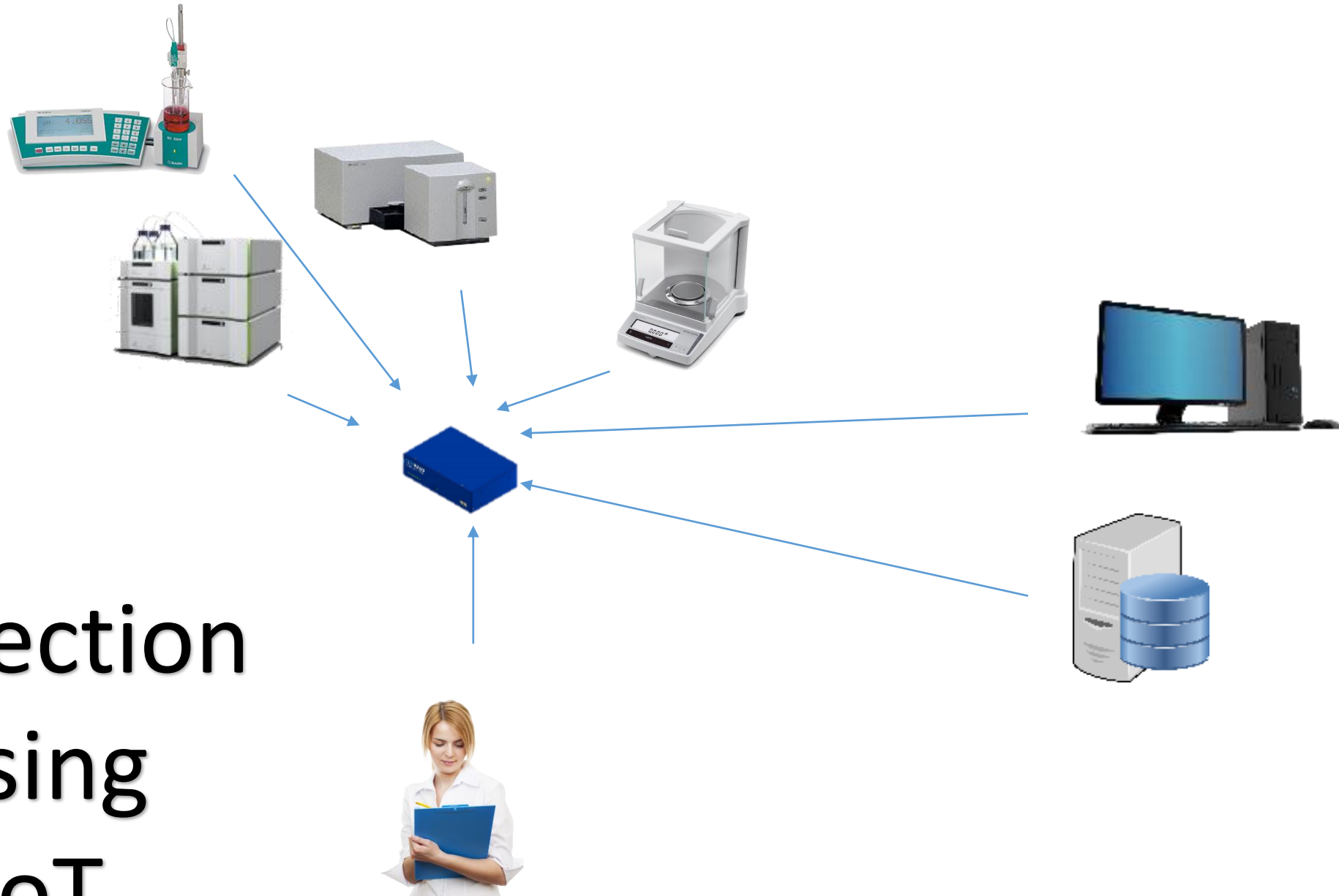


ALCOA: FDA's Data Integrity Focus



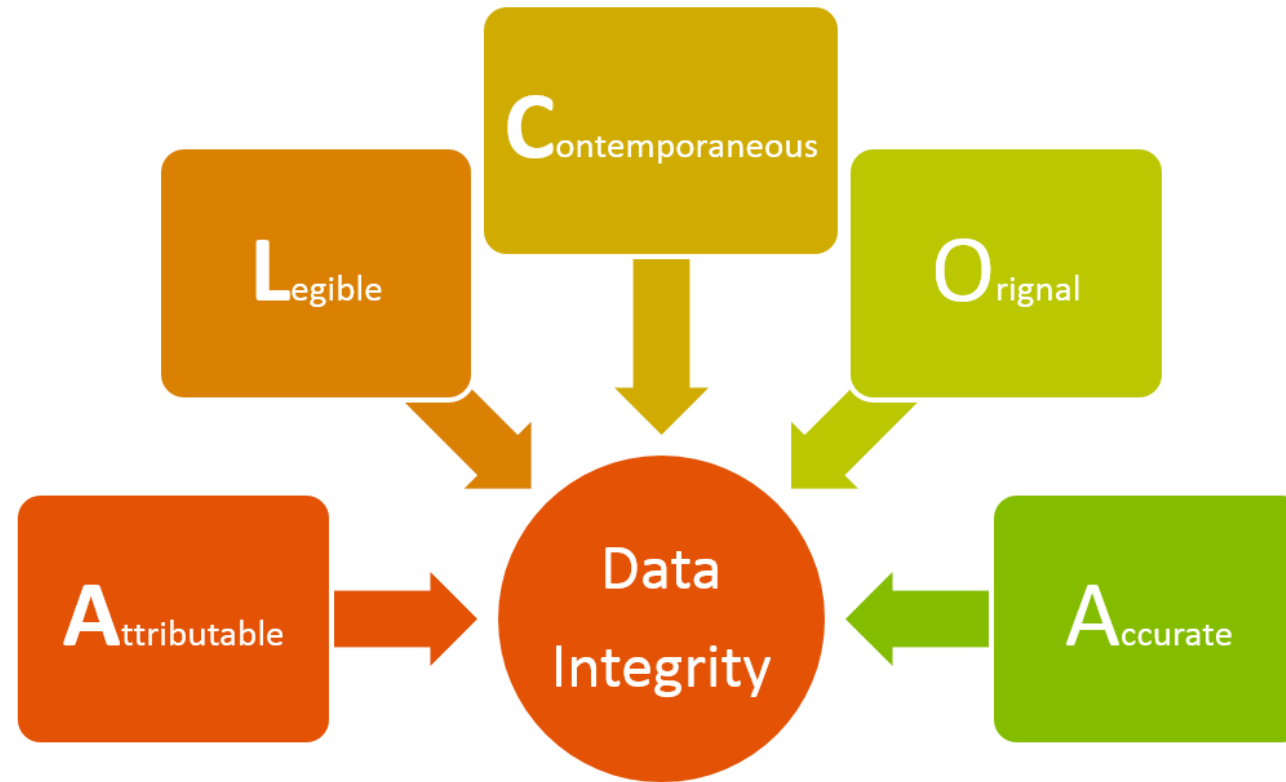
Collection

Integrity



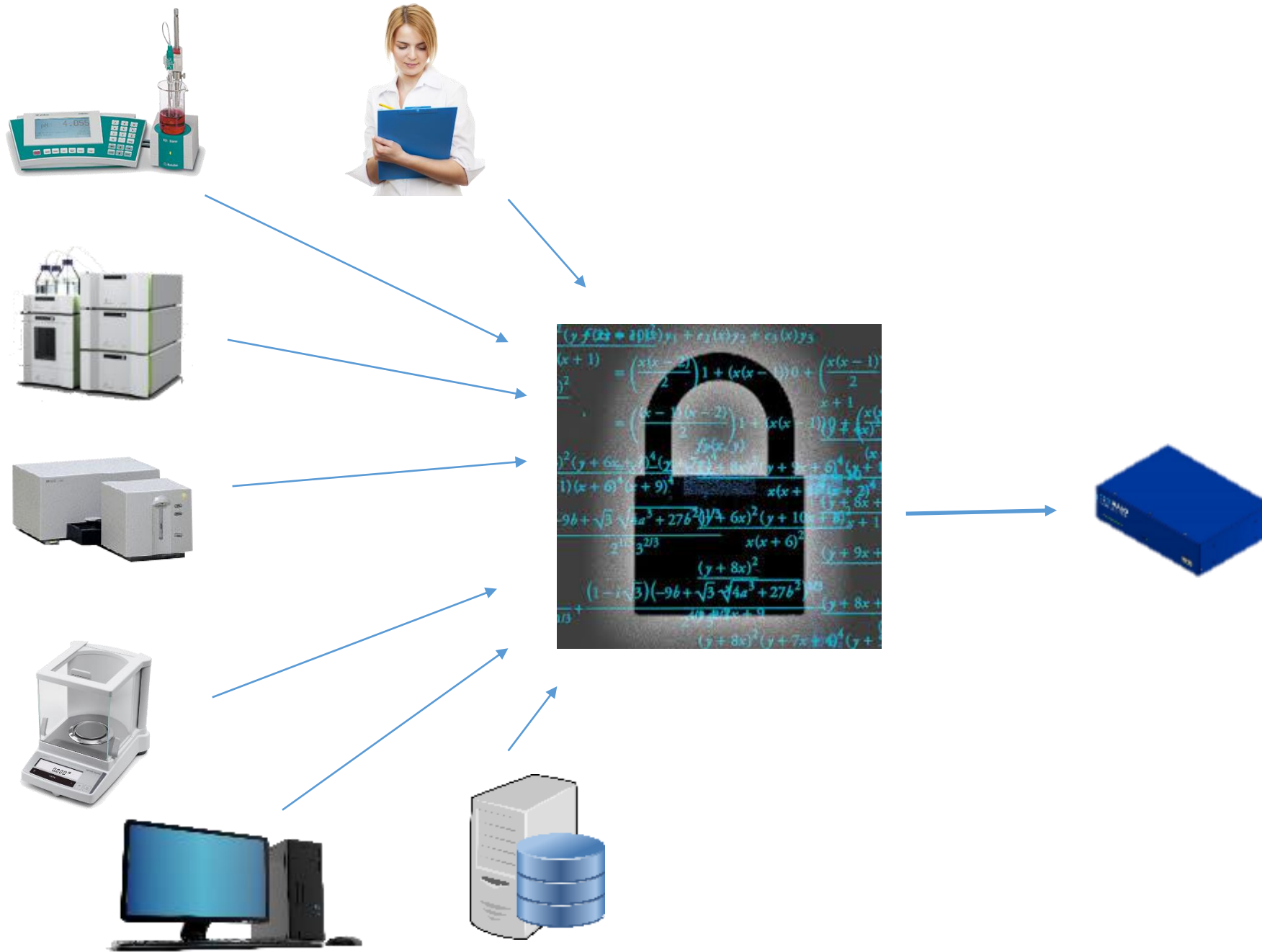
Collection
using
IoT

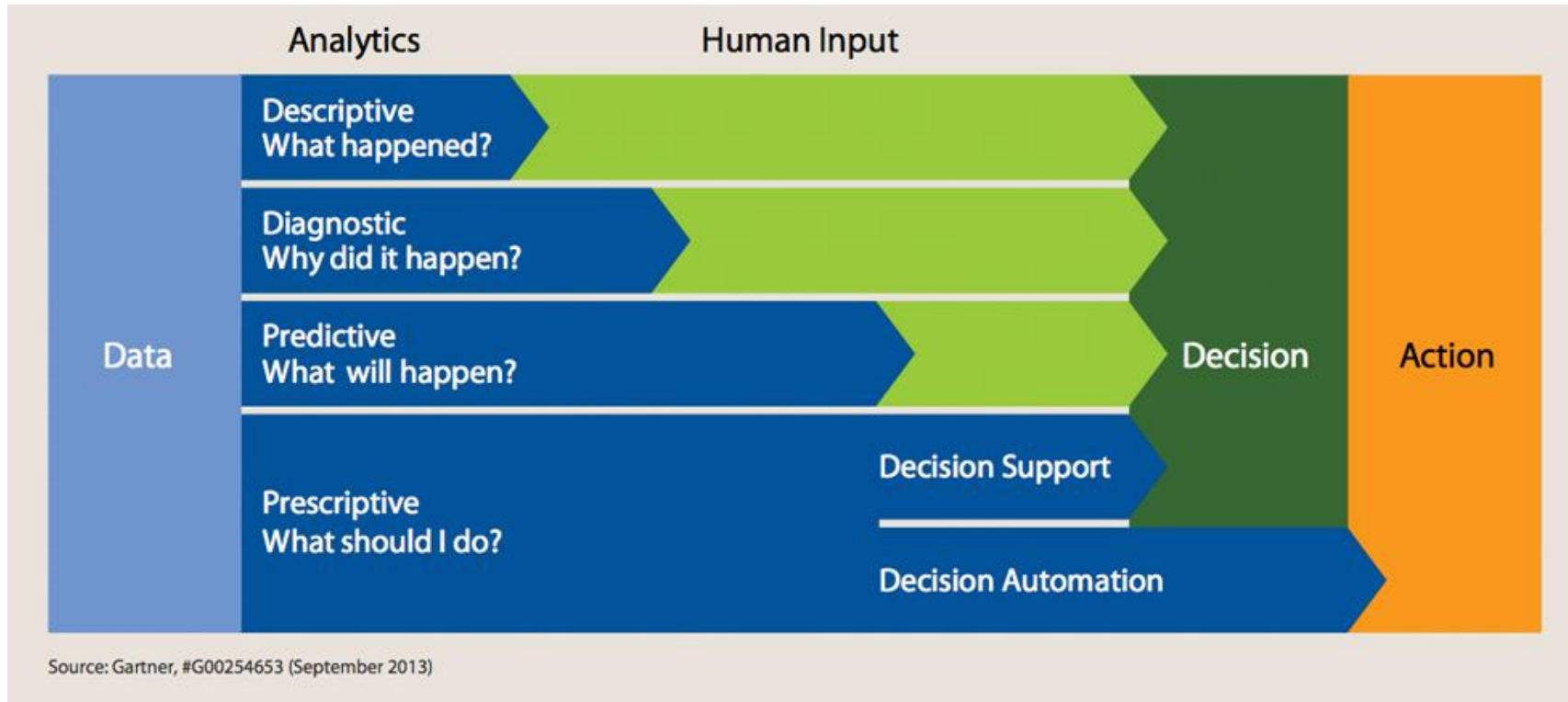
ALCOA: FDA's Data Integrity Focus



Collection

Integrity







Generic User

Data Integrity

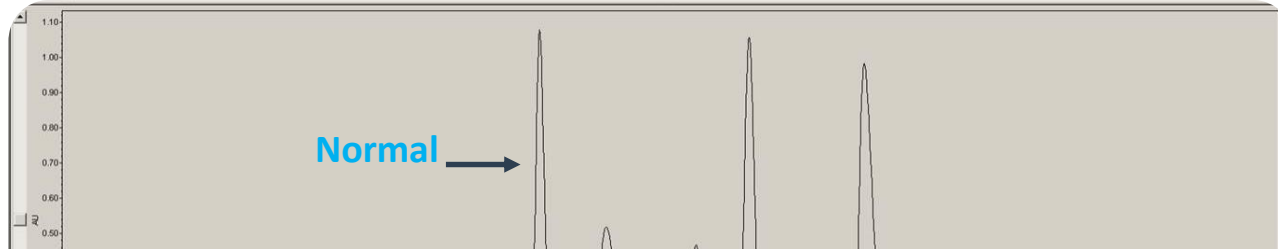
09 May 2016 9:21

Chemstation Username: Admin

Network UserName: Steve Smith

Cancel

Dismiss



Project Statistical Variation

Trend Monitoring

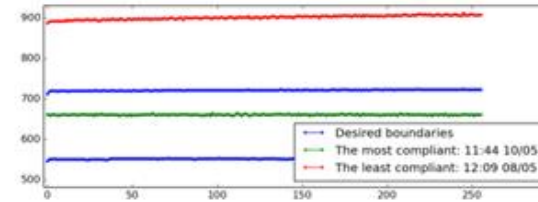
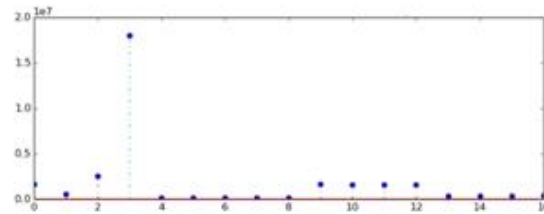
10 May 2016 22:14

Project Name: IMPRESLIZUMA

Sample Set: TT_SVETA_1

Method Set: SE_HPLC_114

Machine: HPLC114_UV



OK

**BIG
DATA**



Processing



The
**INTERNET
of THINGS**



Visibility



Quality

 **bitcoin**



Integrity



Thank you !!