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PANEL
FUTURE COMP/COMP TOOLS/BUSTECH

New Approaches for Technology-oriented Businesses

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Coming now…. already here…

- **Immersive computing [Virtual Reality]**

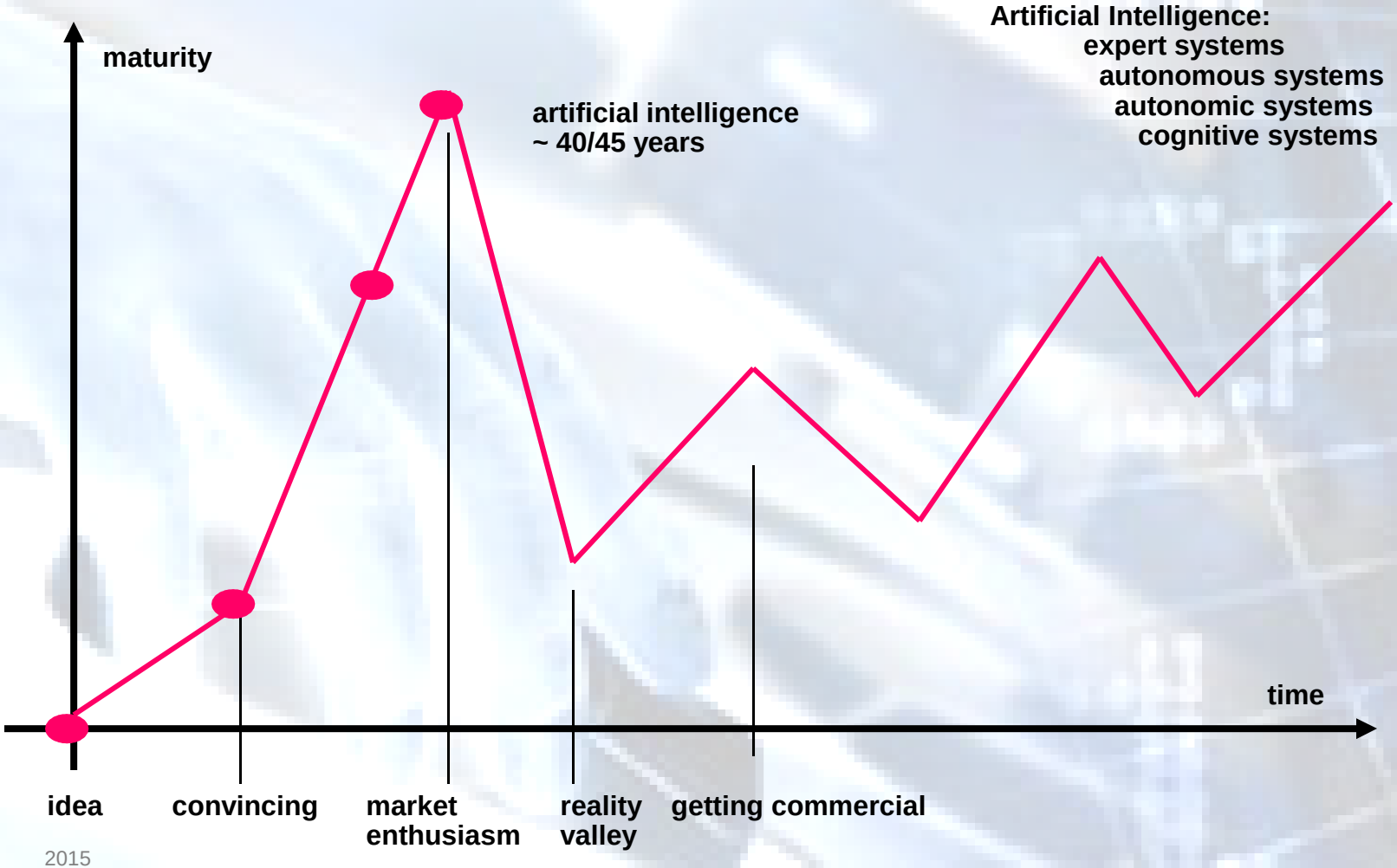
  Immersion into virtual reality (VR) is a perception of being physically present in a non-physical world. The perception is created by surrounding the user of the VR system in images, sound or other stimuli that provide an engrossing total environment.]

- **5G [Wireless Services]**

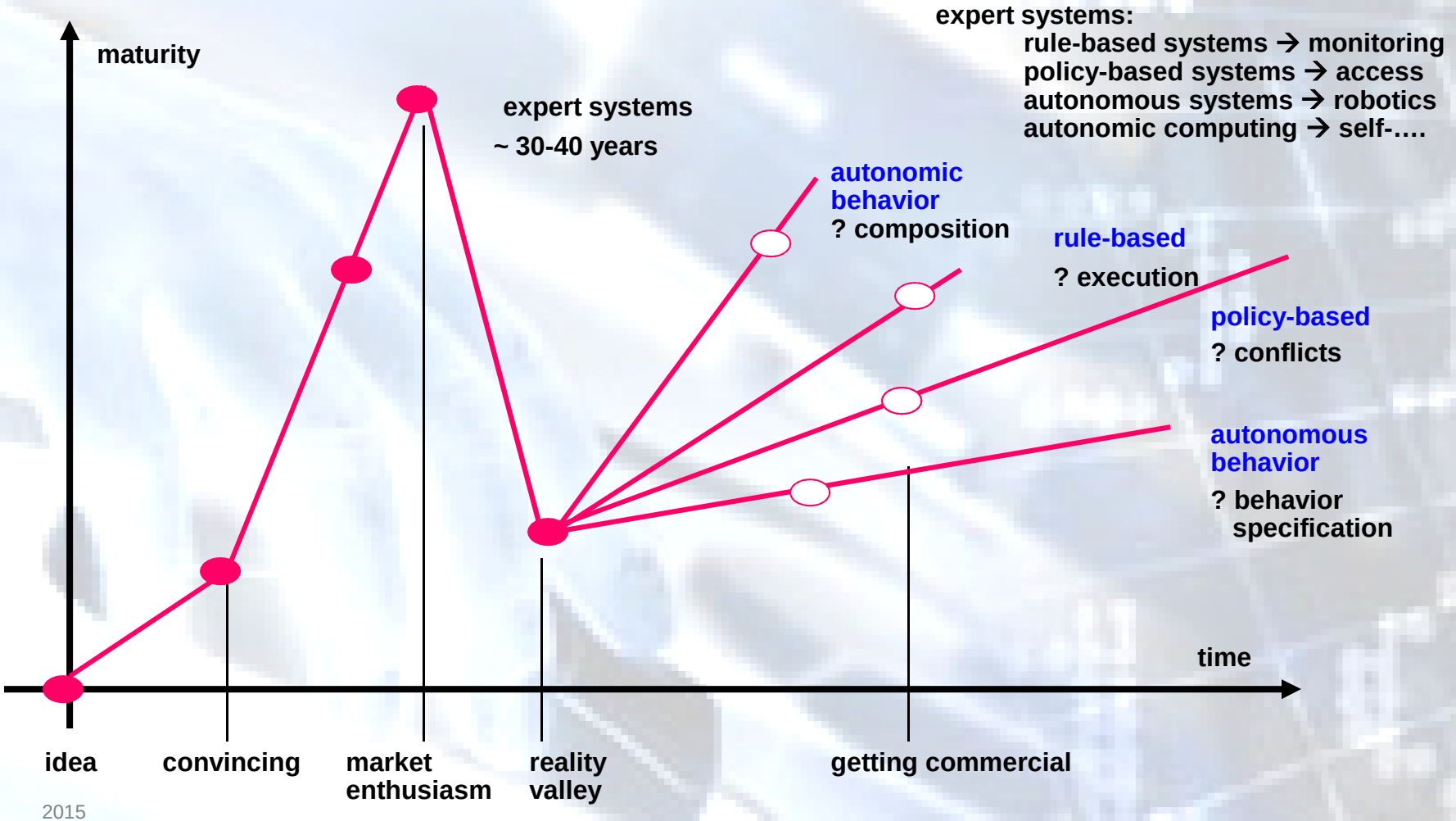
  NGMN Alliance or Next Generation Mobile Networks Alliance define 5G network requirements as:
  - Data rates of several tens of Mb/s should be supported for tens of thousands of users.
  - 1 Gbit/s to be offered, simultaneously to tens of workers on the same office floor.
  - Up to Several 100,000's simultaneous connections to be Hybrid intelligence

- **Fog computing [super-Cloud]**
- **Approximate computing [Big Data]**
- **Eventual consistency [Replicated Data]**
- **Programming paradigms**
- **Designing paradigms**
- **Machine learning**
- **etc.**

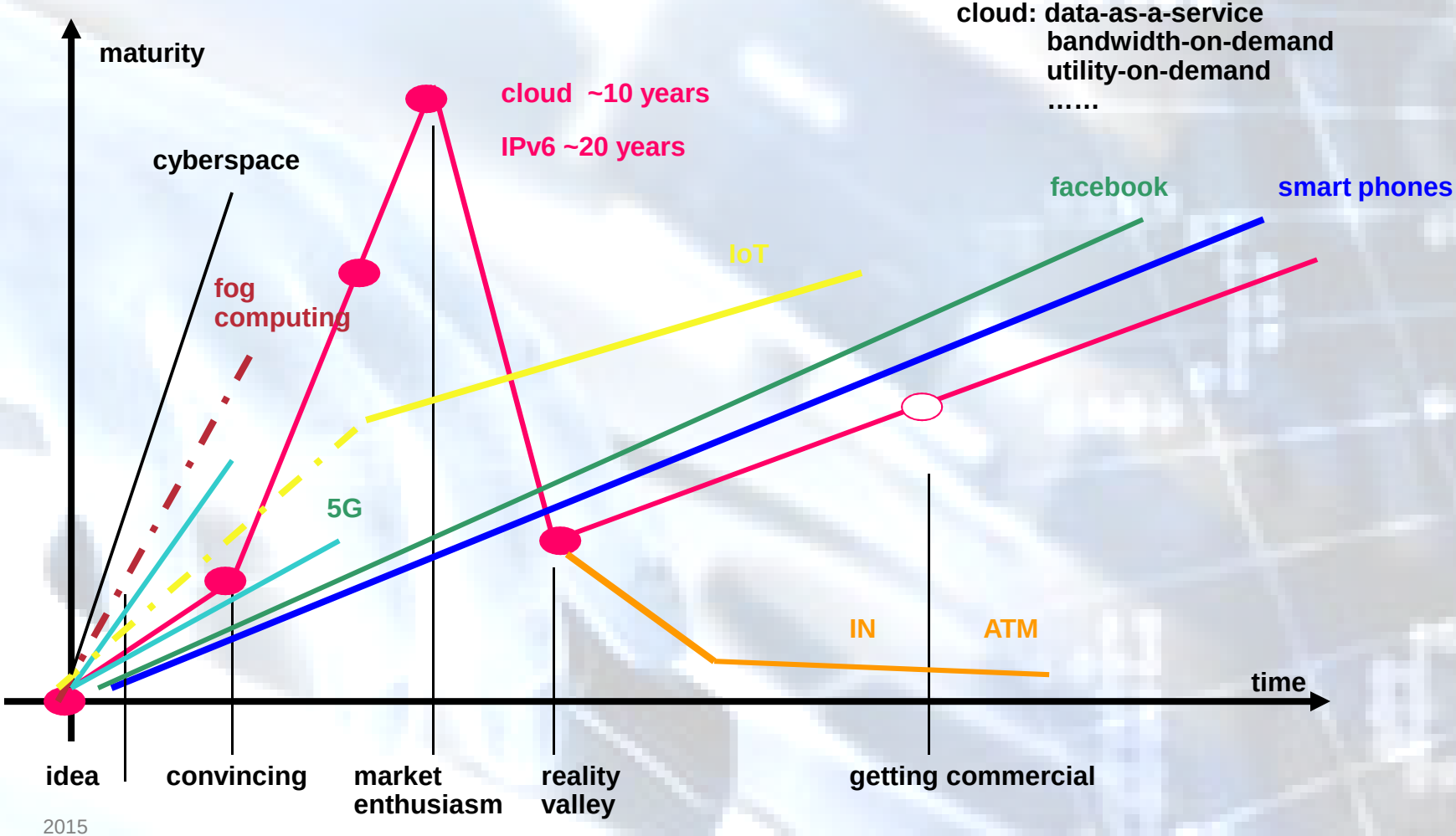
Technology Lifecycle



Technology Lifecycle



Technology/Maturity Lifecycle



Today's Panelists

- **Moderator**
  Petre Dini, Concordia University, Canada / China Space Agency Center, China
- **Panelists**

  Zulkifly Mohd Zaki, Sains Islam University, Malaysia | trust on tools

Mohamed Eltoweissy, Virginia Military Institute and Virginia Tech, USA | cyberspace

John Talburt, University of Arkansas - Little Rock, USA | data-as-a-service

Qs & As

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Panel: New Approaches for Technology-Oriented Businesses

BUSTECH 2015
Nice, France
March 25, 2015

John R. Talburt
University of Arkansas Little Rock
Black Oak Analytics, Inc.
jrtalburt@ualr.edu

UALR | UNIVERSITY OF ARKANSAS AT LITTLE ROCK

Data as a Service (DaaS)

- Software has become commodity
  - Open Source Software
  - Cloud Services
  - Software-as-a-Service
- The new opportunity
  - Ability to extract information from Big Data
  - Primarily Social Media

Extending CRM to Social Media

- Businesses have are good at customer data integration (CDI) for structured data
- Missing the Social Media component
  - Twitter
  - Facebook
  - SnapChat
  - Tumblr
  - InstaGram

Noisy Channels

- Spamming
- Low data quality
- Low information content
- Irrelevant information

Analysis Elements

- Hash tags
- Text elements
- URLs
- User rankings

Biggest Opportunities

- Product reviews
  - Comments to product sites
- Marketing campaign reaction
  - Comments to others
- Trigger events
  - Looking for a car
  - Going to sell my house
- Customer Preferences
  - How, what, when to communicate

Thank You!

Questions?

IoT Security:
Goodbye Silos, Welcome Platforms

Security/Resilience as a Service

Mohamed Eltoweissy, Ph.D.
Virginia Military Institute & Virginia Tech

Panel

March 25, 2015

“Thing” connected to the internet

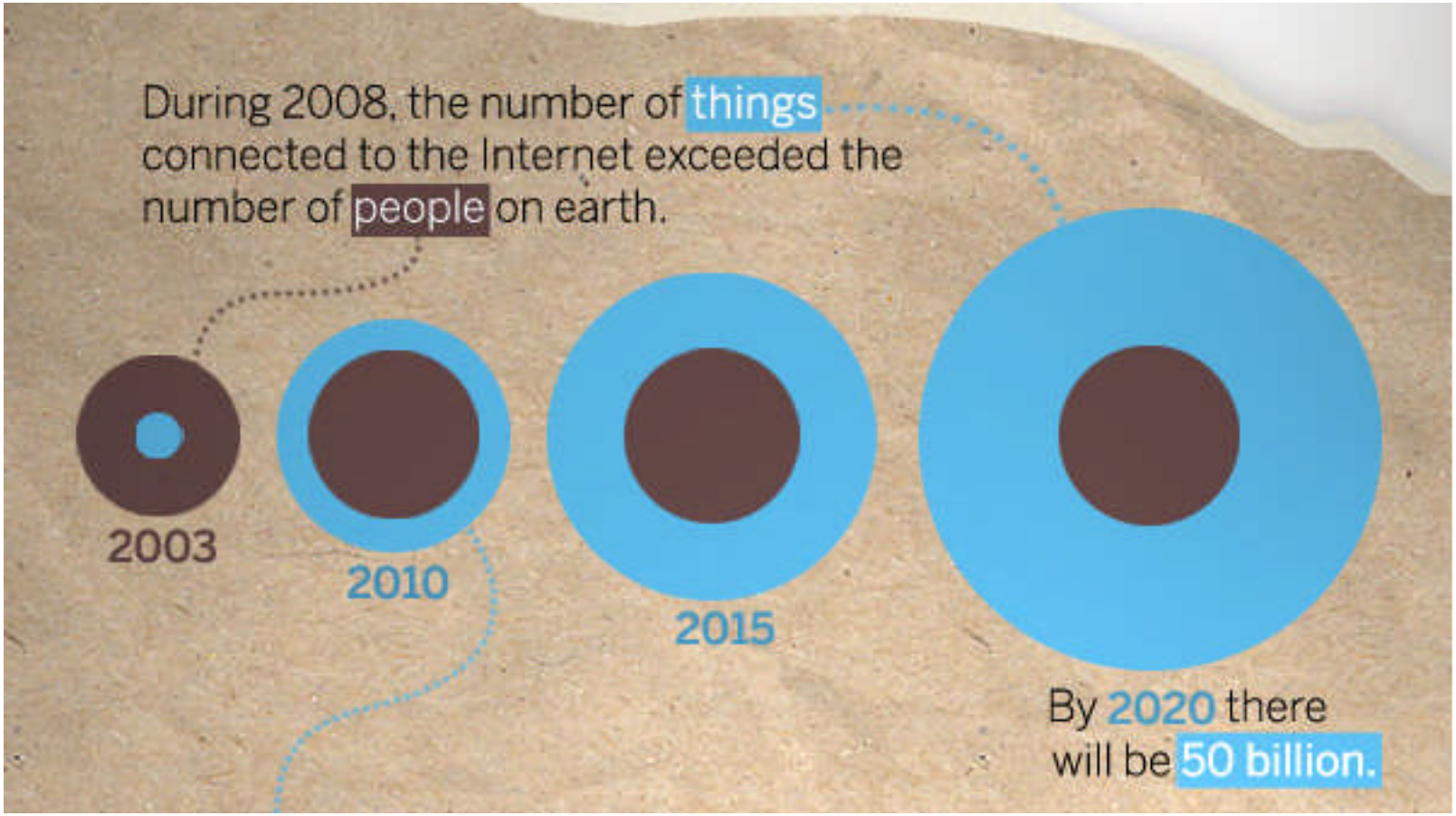

Image Courtesy: : CISCO

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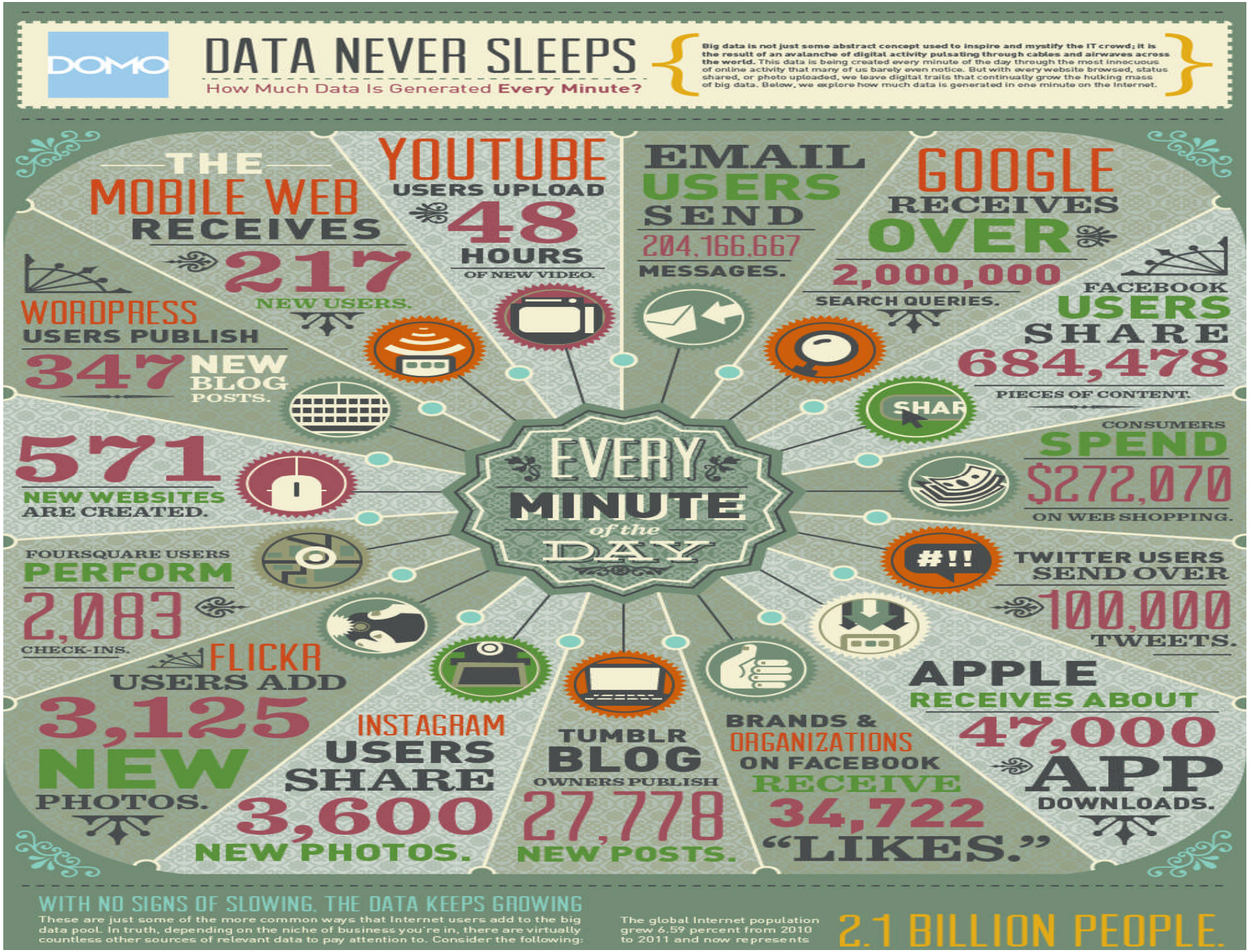

DOMO
DATA NEVER SLEEPS
How Much Data Is Generated Every Minute?
Big data is not just some abstract concept used to inspire and mystify the IT crowd; it is the result of an avalanche of digital activity pulsating through cables and airwaves across the world. This data is being created every minute of the day through the most innocuous of online activity that many of us barely even notice. But with every website browsed, status shared, or photo uploaded, we leave digital traits that continually grow the hulking mass of big data. Below, we explore how much data is generated in one minute on the Internet.
THE MOBILE WEB RECEIVES 217 NEW USERS.
YOUTUBE USERS UPLOAD 48 HOURS OF NEW VIDEO.
EMAIL USERS SEND 204,166,667 MESSAGES.
GOOGLE RECEIVES OVER 2,000,000 SEARCH QUERIES.
FACEBOOK USERS SHARE 684,478 PIECES OF CONTENT.
WORDPRESS USERS PUBLISH 347 NEW BLOG POSTS.
571 NEW WEBSITES ARE CREATED.
EVERY MINUTE of the DAY
CONSUMERS SPEND $272,070 ON WEB SHOPPING.
FOURSQUARE USERS PERFORM 2,083 CHECK-INS.
TWITTER USERS SEND OVER 100,000 TWEETS.
FLICKR USERS ADD 3,125 NEW PHOTOS.
INSTAGRAM USERS SHARE 3,600 NEW PHOTOS.
TUMBLR BLOG OWNERS PUBLISH 27,778 NEW POSTS.
BRANDS & ORGANIZATIONS ON FACEBOOK RECEIVE 34,722 "LIKES."
APPLE RECEIVES ABOUT 47,000 APP DOWNLOADS.
WITH NO SIGNS OF SLOWING, THE DATA KEEPS GROWING
These are just some of the more common ways that Internet users add to the big data pool. In truth, depending on the niche of business you're in, there are virtually countless other sources of relevant data to pay attention to. Consider the following:
The global Internet population grew 6.59 percent from 2010 to 2011 and now represents
2.1 BILLION PEOPLE.

IOT Creates Opportunities

Merging computing and communication with physical processes has numerous benefits:

- Safer and more reliable
- Reduced operation cost
- New capabilities – Smarter X

Security threats pose

- **significant risk to health and safety of human lives**
- **severe damage to environment**
- **adverse impact on economy**

Sectors	Opportunities	
Mission critical	Highway systems that allow traffic to become denser while also operating more safely. A national power grid that is more reliable and efficient	
Defense	More capable defense systems; defense systems that make better use of networked fleets of autonomous vehicles	
Internet of Things	Health and Biomedical: In-home healthcare delivery. Networked biomedical systems that increase automation and extend the biomedical device beyond the body.	
	Agriculture: Energy efficient technologies. Increased automation. Resource and environmental impact optimization. Improved safety of food products.	
	Transportation: Aircraft that fly faster and further on less energy. Automobiles that are more capable and safer but use less energy.	

The IOT Security Challenge?

How to effectively and efficiently defend IOT and ensure their resilience given:

- **4Vs for devices and data**
- **Complex large-scale heterogeneous compositions** of cyber and physical components with varying capabilities that must simultaneously satisfy dependability, real-time safety and security requirements
- **Increased automation** resulting in significant increase in volume of data flowing between cyber and physical processes exceeding the analysis and investigation capabilities of current defense solutions
- **Patching cannot be fully automated in large-scale operational IOT** as operation and interaction occur at multiple temporal and spatial scales

The IOT Security Challenge?

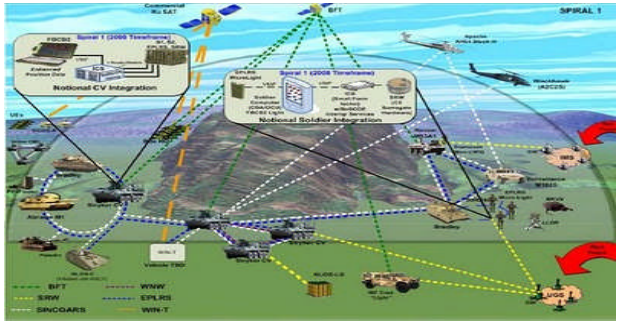
- **Legacy compatibility and lack of coherent security metrics** limits security system capabilities to deeply analyze and correlate behaviors at runtime
- **Isolated situation-oblivious defense service provisioning**
  - Cyber and physical security isolation might increase conflicts
  - Possible privacy policy violation limits sharing of information
- **Adversary asymmetric advantage**
  - Low cost of entry
  - Widely available resources
  - COTS security products makes it easy for attackers to discover possible security system flaws
  - Software monoculture facilitates attack re-application/diffusion

CARD Objectives

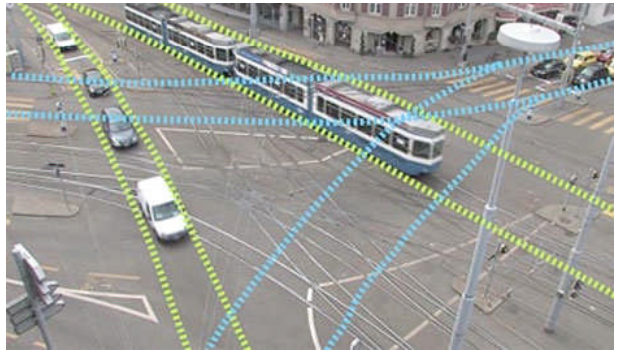
Explore the fundamental science and technology to provide a defense platform that would enable security and resilience through:

- Accurately detecting, analyzing predicting, and containing attacks in a timely manner
- Ensuring resilient operations in presence of persistent and evolving attacks and failures
- Enabling cooperative defense crossing organizational boundaries for shared defenses and understanding
- Achieving asymmetric advantage to defenders, prohibitively increasing the cost for attackers

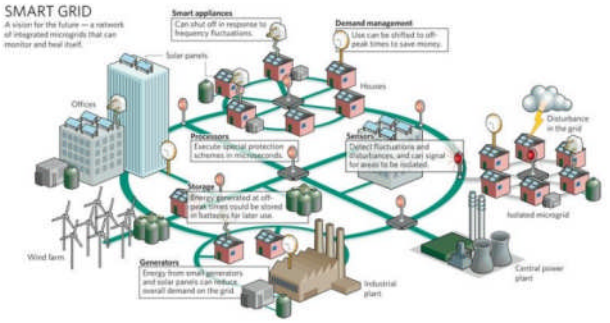
Smart Battlefield



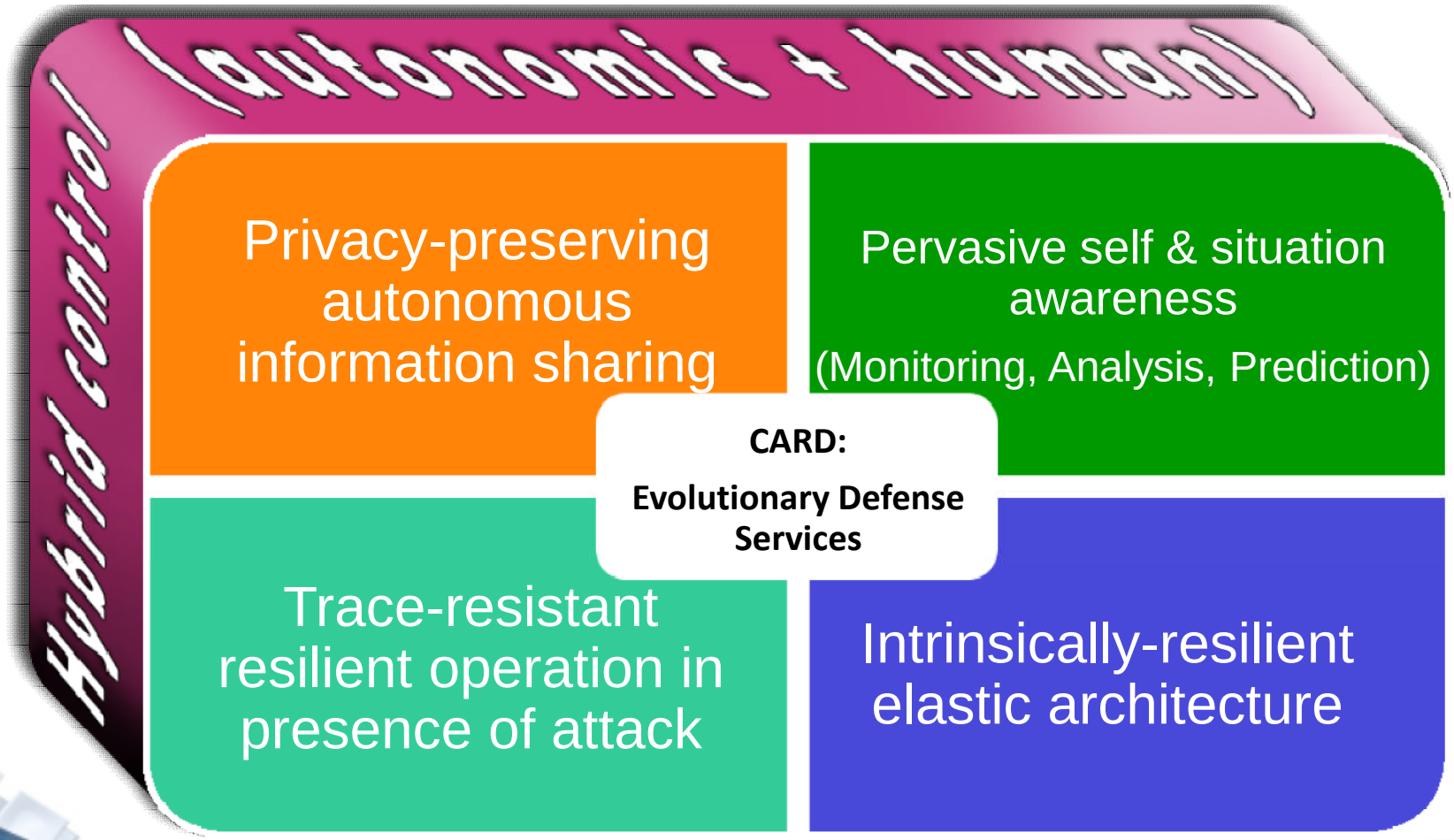
Intelligent Transportation



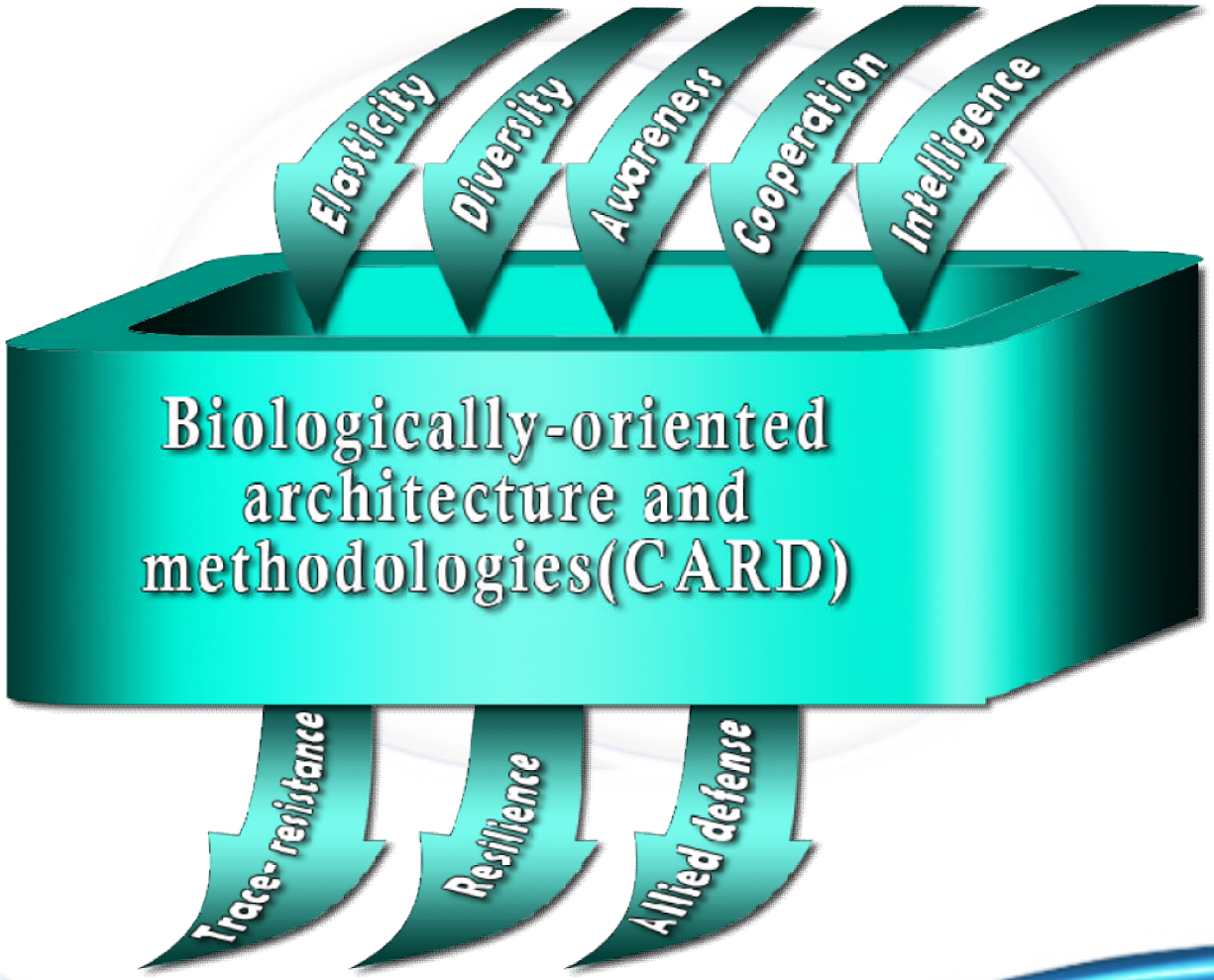
Smart Power Grid



Cooperative Autonomous Resilient Defense



CARD Conceptual View



IOT-CARD Platform in a Nutshell


Thank You.

UNIVERSITI SAINS ISLAM MALAYSIA
جَامِعَة العُلوم الإسْلامِيَة المَالِيزِية
ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

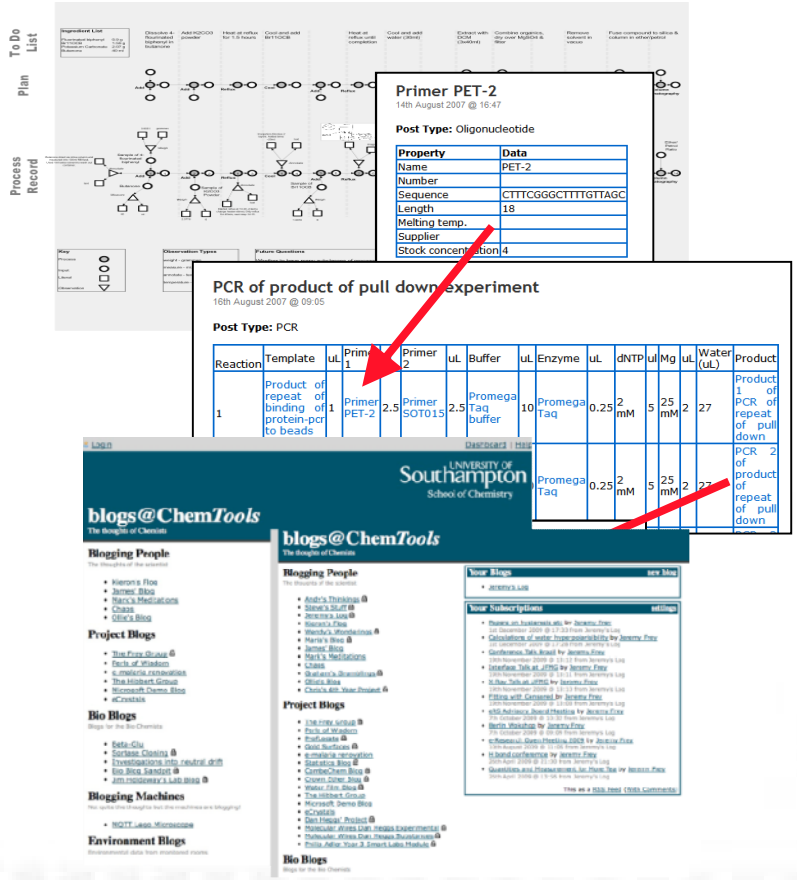
Knowledgeable • Disciplined • Devout

How far do users trust a central repository?

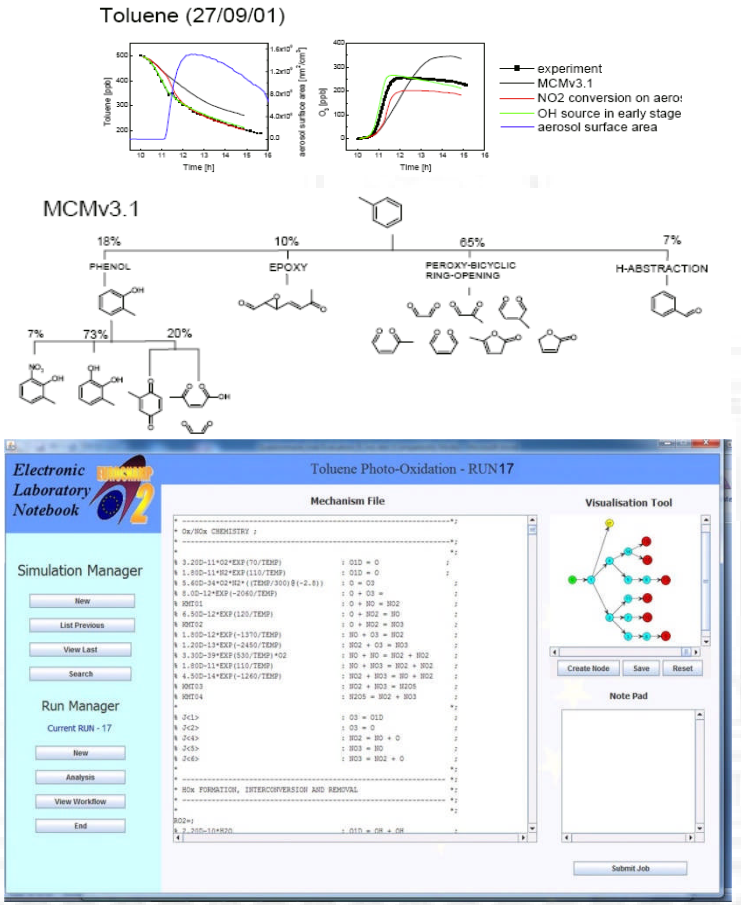
Zulkifly Mohd Zaki, Ph.D
Universiti Sains Islam Malaysia
(USIM)

"Simply Inspiring"

Electronic Laboratory Notebooks



ChemTools, University of Southampton



User-Orientated ELN, University of Leeds

Towards the Sustainability

- Are all my data save?
- How do I ensure that nobody is using my experimental data before publication?
- Is it possible that the data might be manipulated?
- Are the data readily accessible when it is needed?

Further Investigation Needed

- Option for users to perform their experiments locally and online
- Option for users to store their data in their personal system as well as online
- The online version can be made as a backup to their personal system
- Third party to administer the repository