



AI & Machine Learning

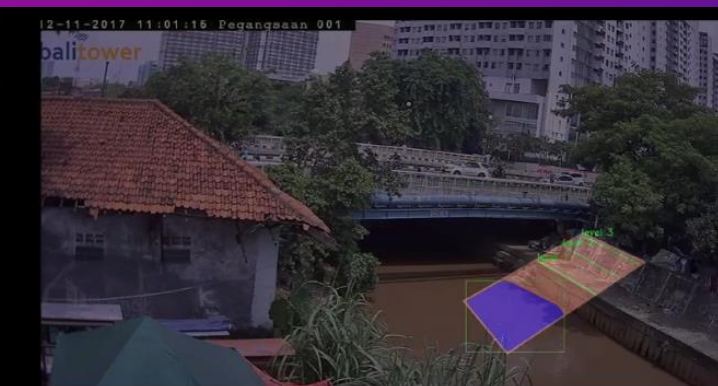
Towards Industry 4.0



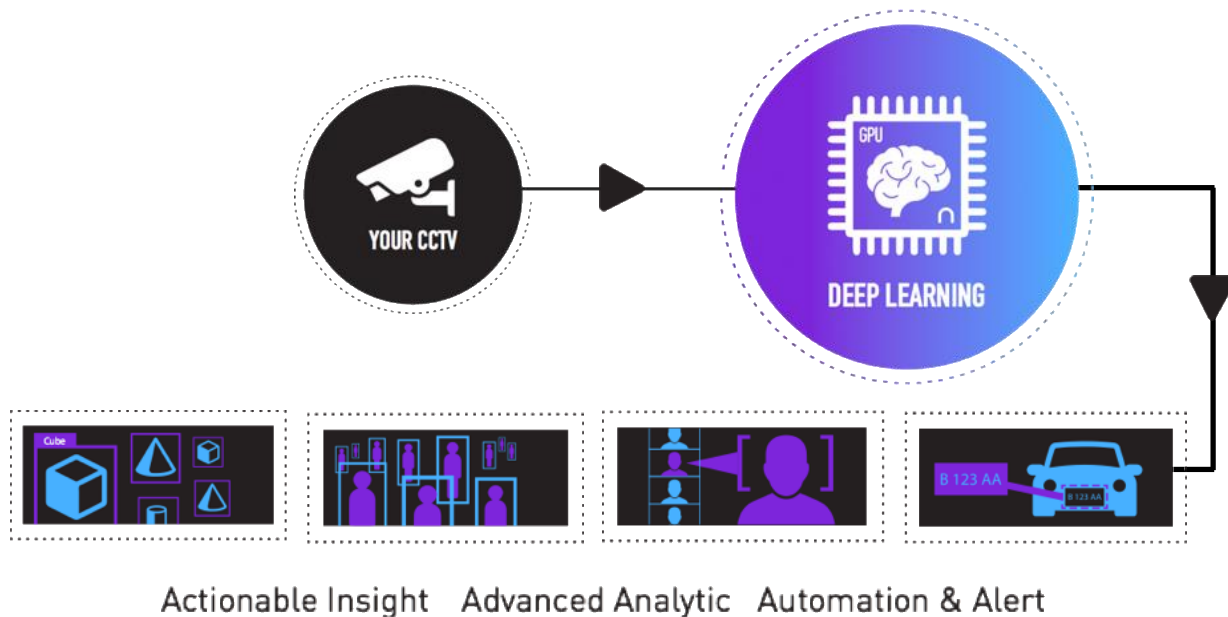
Faris Rahman | CTO & Co Founder Nodeflux

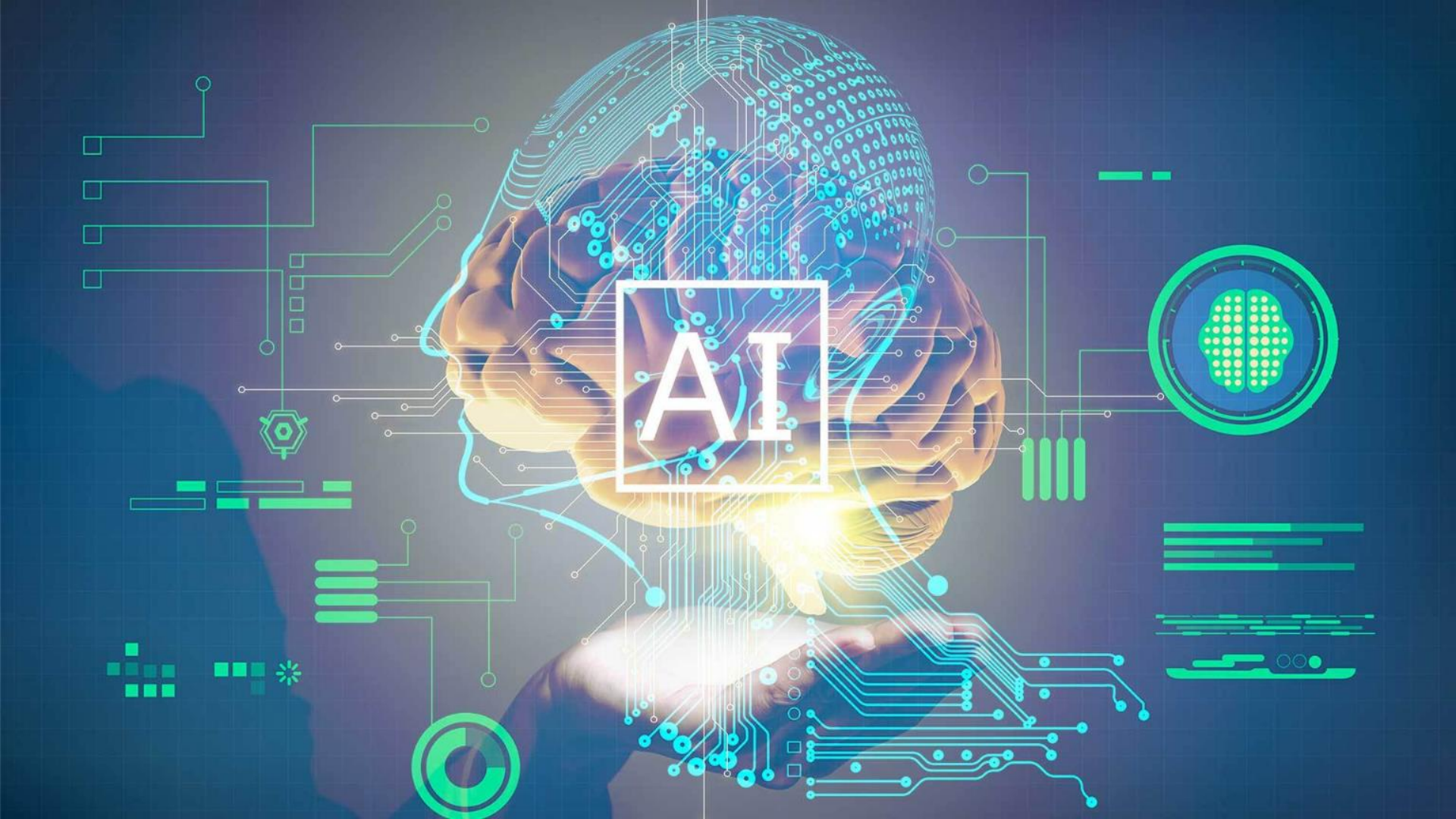


Deep learning & Computer Vision



HOW IT WORKS





ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



MACHINE LEARNING

Machine learning begins to flourish.



DEEP LEARNING

Deep learning breakthroughs drive AI boom.



1950's

1960's

1970's

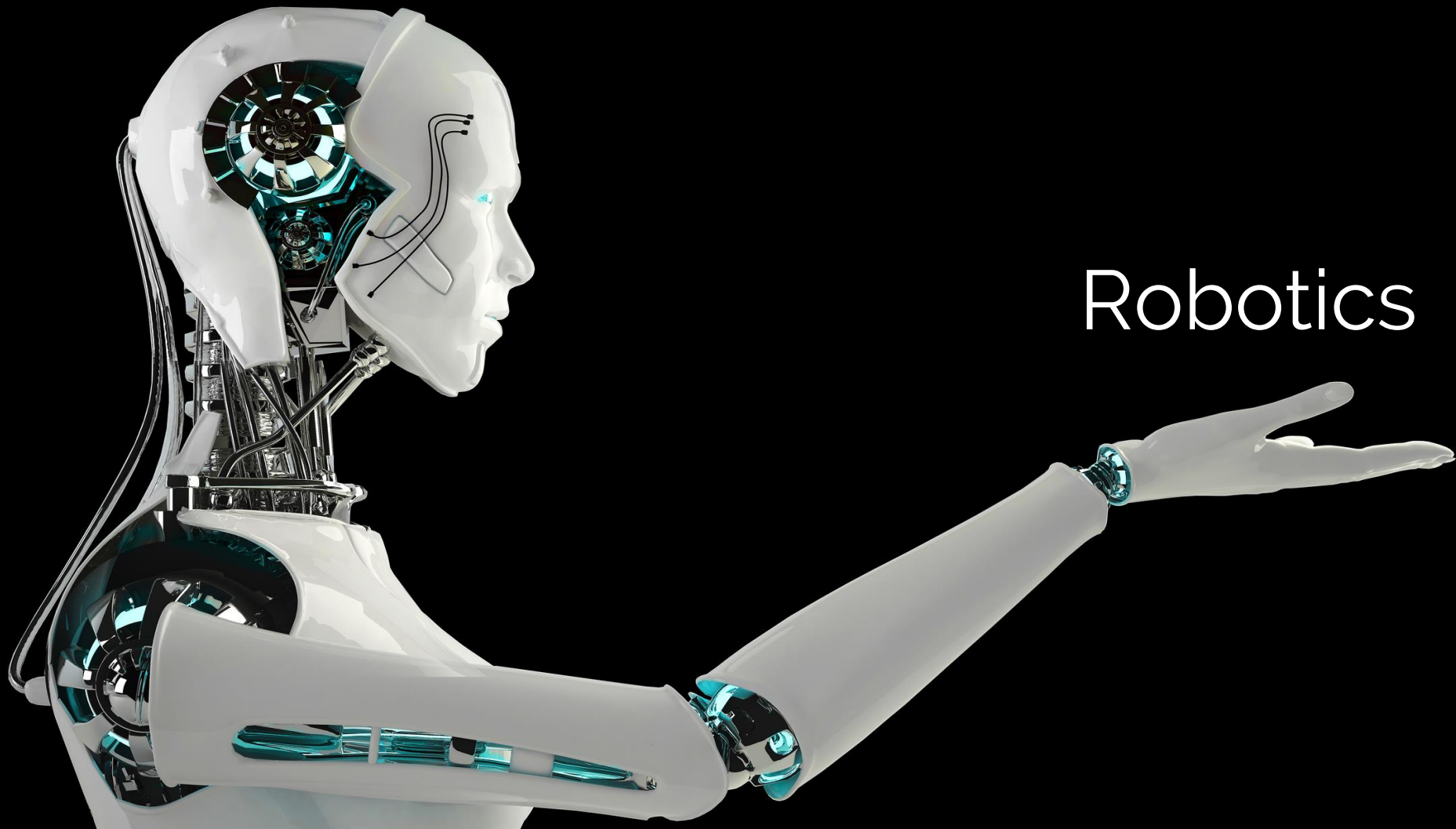
1980's

1990's

2000's

2010's

Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.

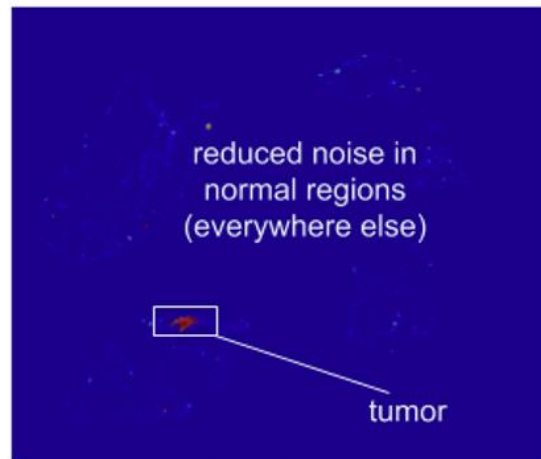
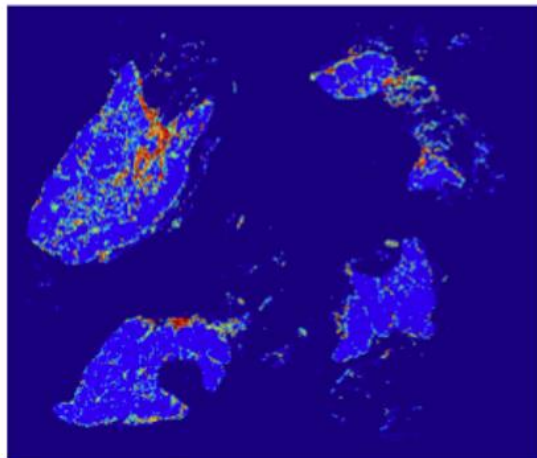
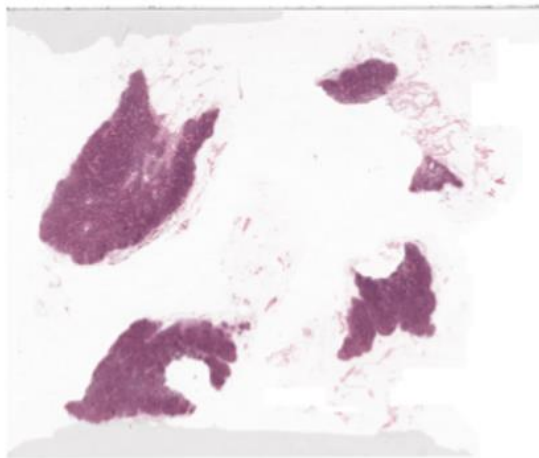
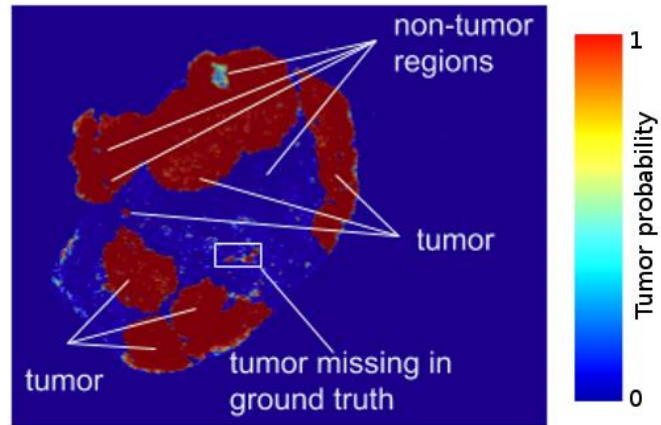
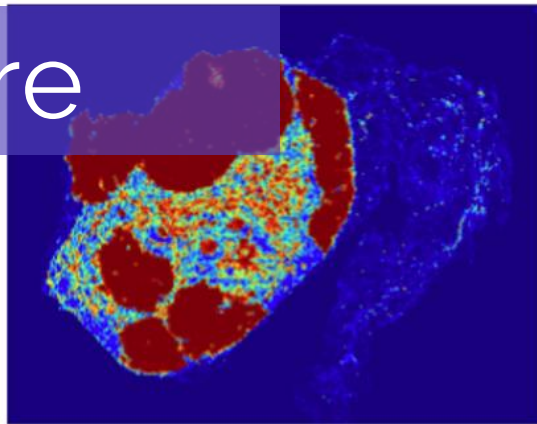
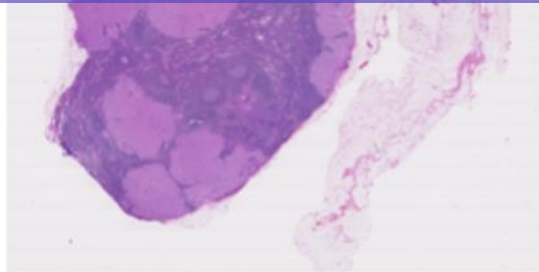


Robotics



Self Driving Car

Healthcare



INDUSTRY SOLUTION



DEFENSE AND SECURITY

- Face Recognition
- 2D to 3D Face Reconstruction
- Time Compression Analysis
- Pixel Enhancement
- License Plate Recognition
- Crowd Behaviour Analysis



SMART CITY

- Traffic Monitoring
- Road and River Monitoring
- Flood Monitoring
- Vehicle Detection
- Illegal Parking Detection
- Dynamic Traffic Lights



STORE ANALYTICS

- Visitor Counting
- Visitor Trajectory Flow
- Visitor Heat Map
- Product View Rank
- Queue Analysis



ADVERTISING

- Audience Gender, Age, Emotion
- Audience View Duration



TOLL MANAGEMENT

- Vehicle Counting
- Vehicle Classification
- Vehicle Flow
- Vehicle Speed
- Incident Detection



18th ASIAN GAMES

**Jakarta
Palembang
2018**



nodeflux
Extending Vision Beyond Integration



Search to 180 Million Indonesian Citizen (EKTP) Database





Acquire data from environment to give insights



PLATE DETECTION| property of nodeflux



Hikvision_Traffic

License Plate Recognition

Jalan merdeka [Show on Map](#)

Realtime detection



F135IAE

Today, 22:13

B6743SC

Today, 22:13

B3523V0

Today, 22:13

B2429SYF

Today, 22:13

B2428SYF

Today, 22:13

B1644KJE

Today, 22:12

B2224UFA

Today, 22:12

B2529KFU

Today, 22:12

B1655UYP

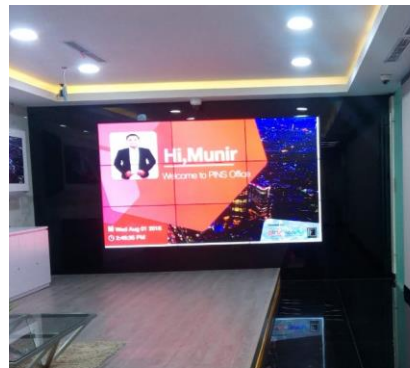
Today, 22:11

B1440KYN

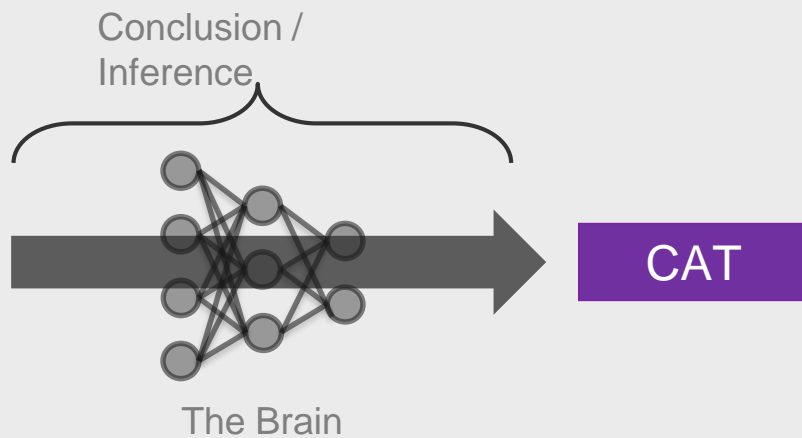
Today, 22:11

B1165RFK

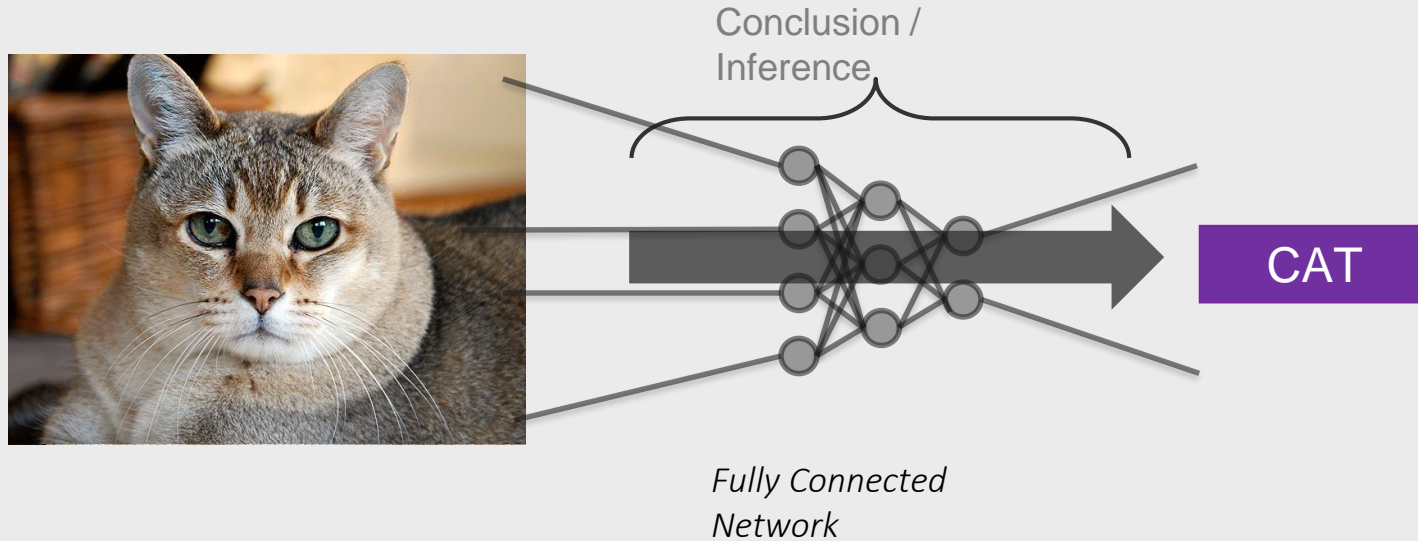
Today, 22:11



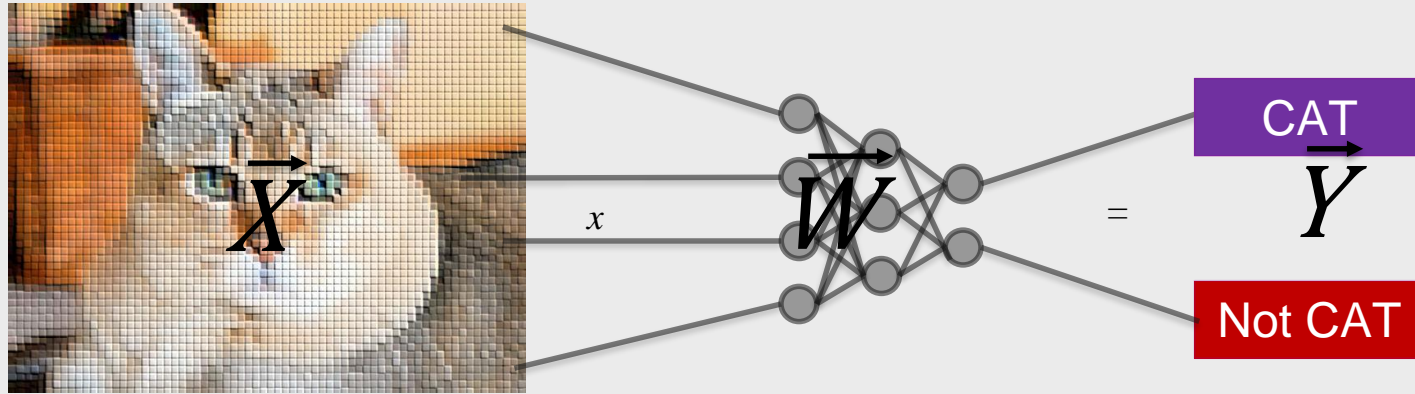
Machine Learning at a Glance



Artificial Intelligence at a Glance



Artificial Intelligence at a Glance



Artificial Intelligence at a Glance

$$\vec{X} \times \vec{W} = \vec{Y}$$

2 4 8



Learning Process



Artificial Intelligence at a Glance

$$\vec{X} \times \vec{W} = \vec{Y} \div$$

Not work for a non linier equation

Artificial Intelligence at a Glance

$$|2 \times \vec{W}| = \theta$$



Taking guesses through iteration

Learning Process

$$| 2 \times \vec{W} - 8 | = ?$$

$$0 \quad 8$$

$$1 \quad 6$$

$$2 \quad 4$$

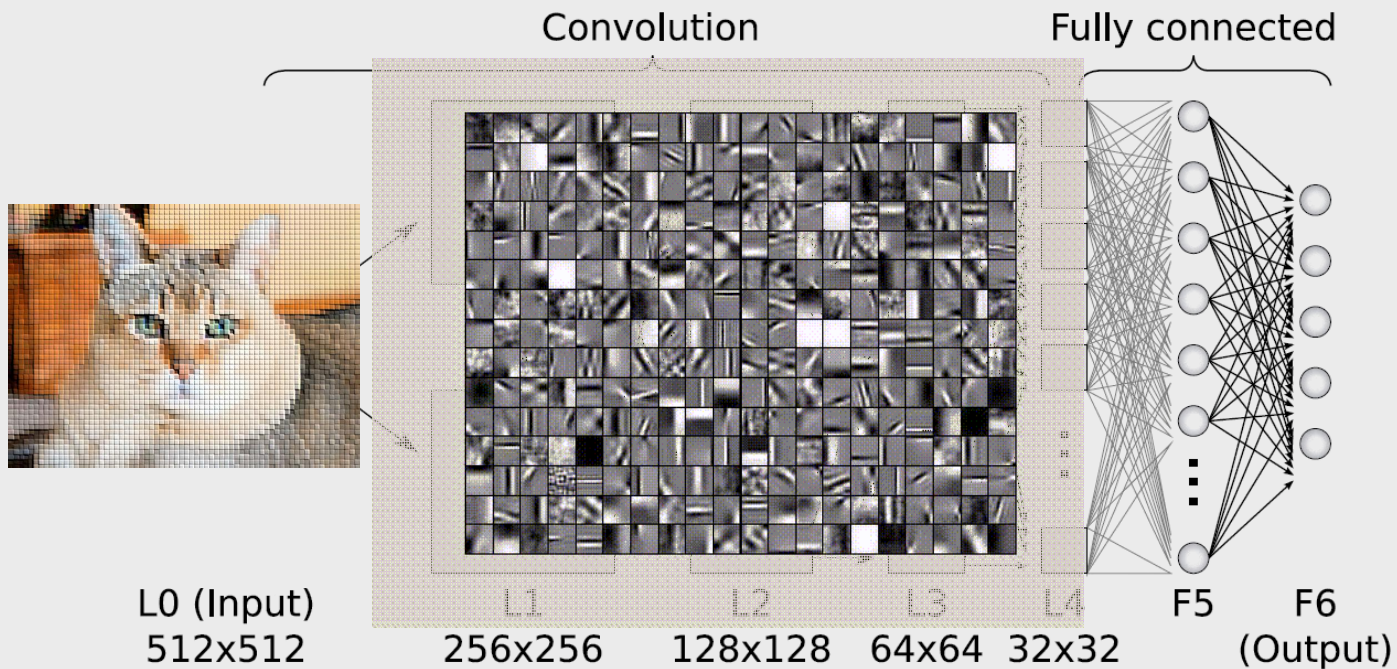
$$3 \quad 2$$

⋮

$$3.9999$$

$$0.0002$$

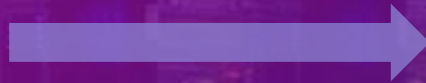
Deep Learning



Industry 4.0 - Technological pillars



Cognitive Computing



AI & Deep Learning

Pose estimation

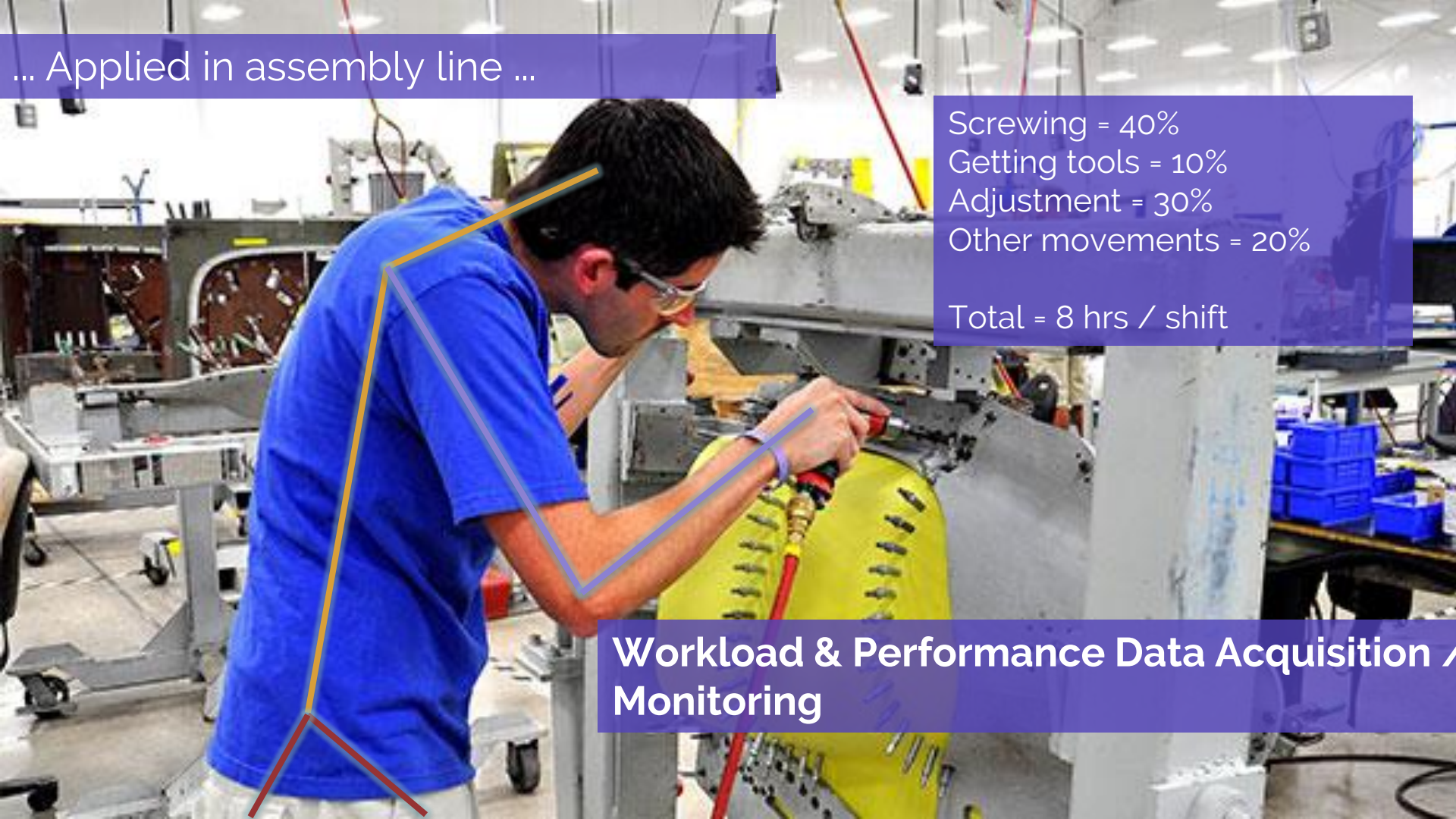


... Applied in assembly line ...

Screwing = 40%
Getting tools = 10%
Adjustment = 30%
Other movements = 20%

Total = 8 hrs / shift

**Workload & Performance Data Acquisition /
Monitoring**

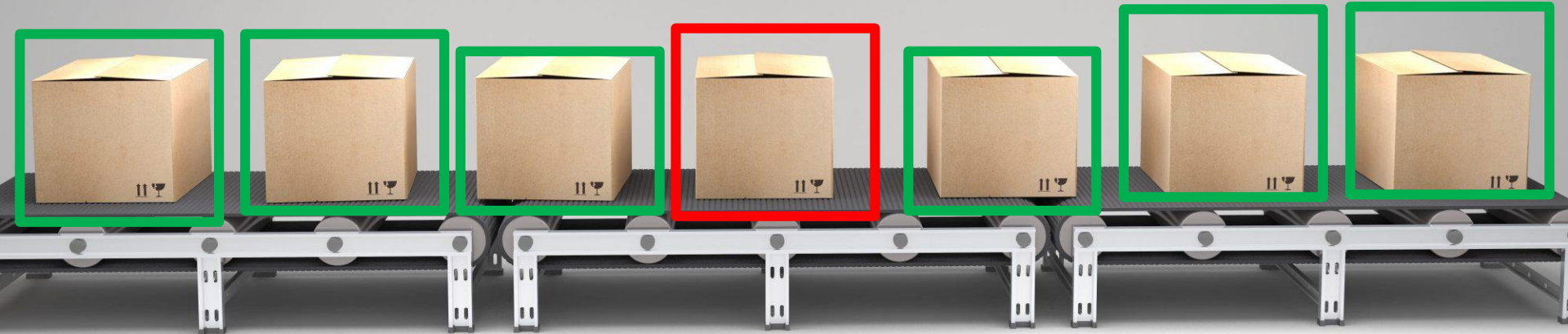


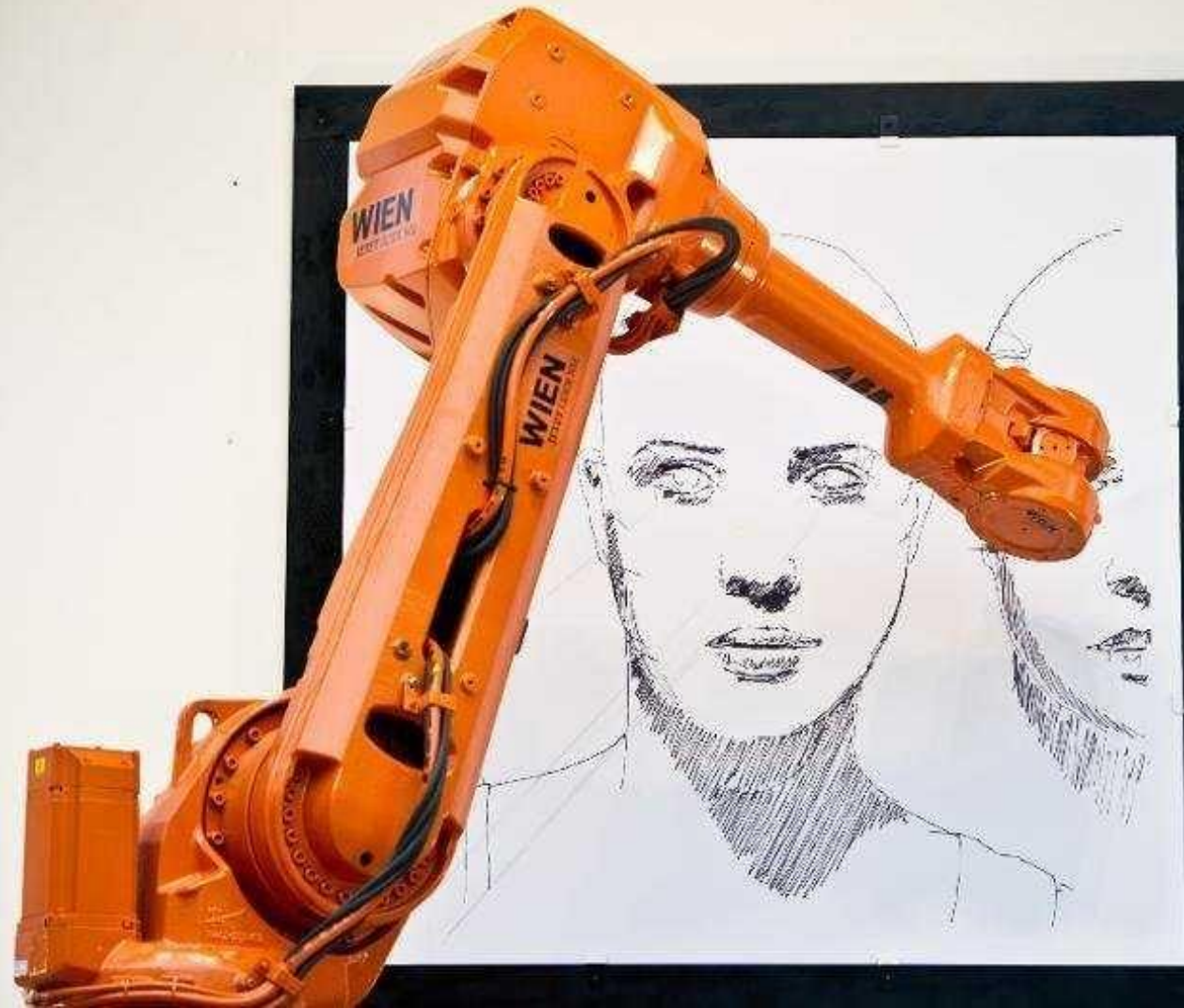
Quality Assurance & Inspection

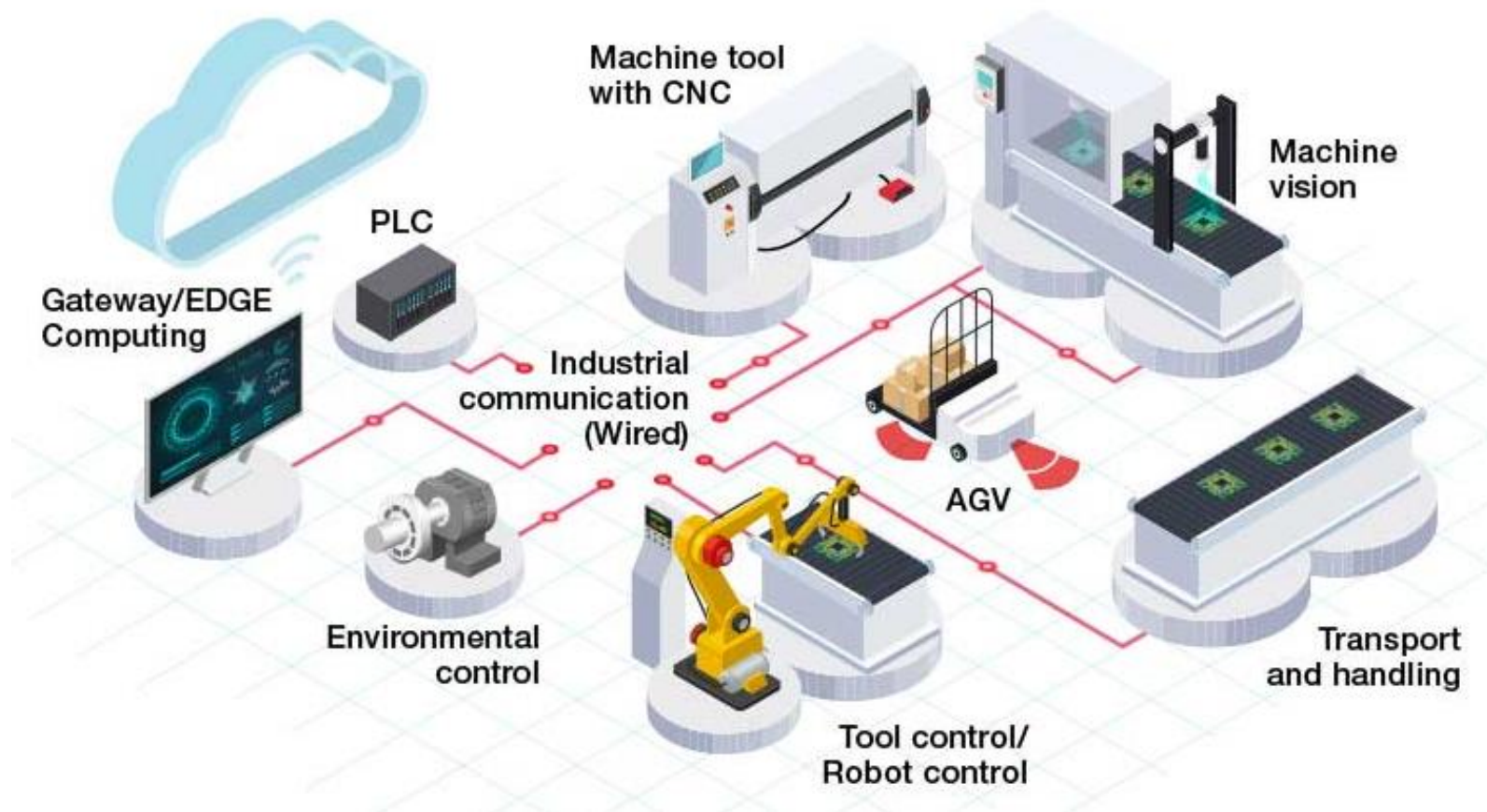
Stock Management

count = 7

count_defect = 1



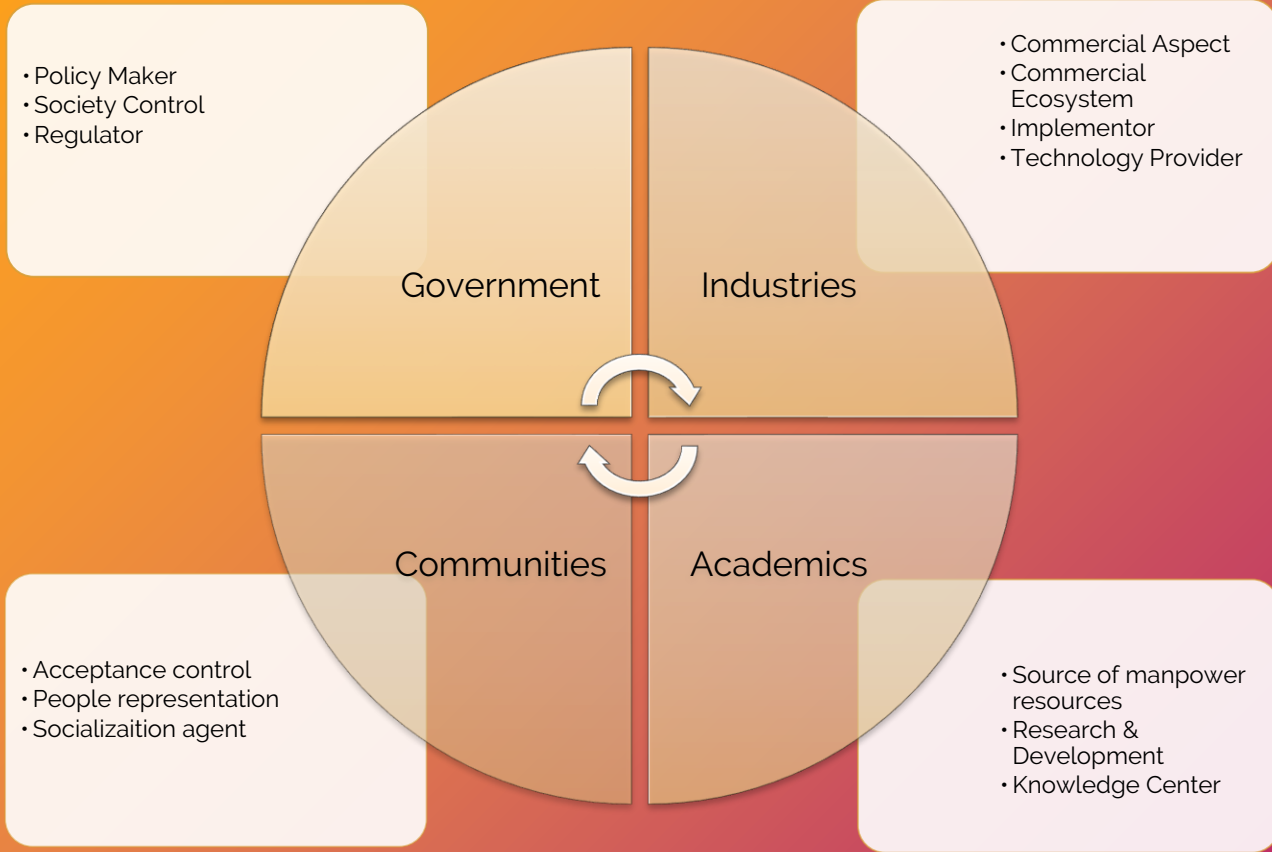




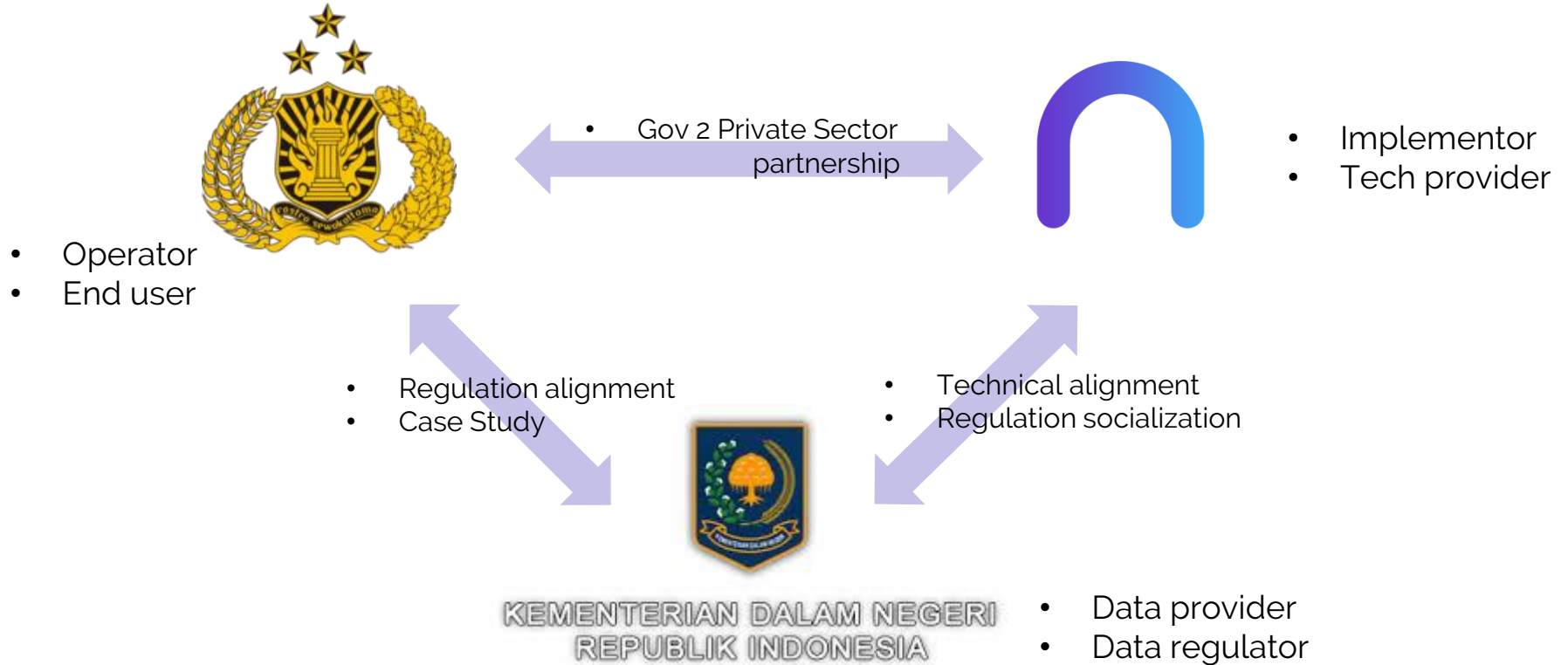
Industry 4.0 - Technological pillars



Collaboration is
needed



AI Powered Massive Surveillance System



Birokrasi Masih Jadi Hambatan Investasi di Sektor Pertanian

Penulis: Michael Reily

Editor: Pingit Aria

Rabu 17/10/2018, 15:36 WIB

TOP NEWS | TERKINI | RILIS PERS

Antaranews.com

Tentang Kami



Perizinan teknis untuk investasi di sektor daerah.



Wapres: Birokrasi Indonesia harus lebih ringkas

Senin, 8 Oktober 2018 15:48 WIB



Jokowi Pangkas Birokrasi Pencairan Dana untuk Korban Gempa Lombok

Reporter: Friski Riana

Editor: Juli Hantoro

Senin, 15 Oktober 2018 17:02 WIB

0 KOMENTAR



Sejumlah warga duduk di dekat selter darurat di Dusun Apitaik, Desa Guntur Macan, Gunungsari, Lombok Barat, NTB, Senin, 8 Oktober 2018. ANTARA/Ahmad Subaidi

Biocartion is still major problem in implementing collaborative technology In Indonesia

Connectivity

AI & Cyber Security

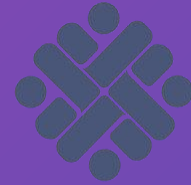
Industrial Technology



KOMINFO



KOMINFO



KEMNAKER



KEMENTERIAN PERINDUSTRIAN
REPUBLIK INDONESIA

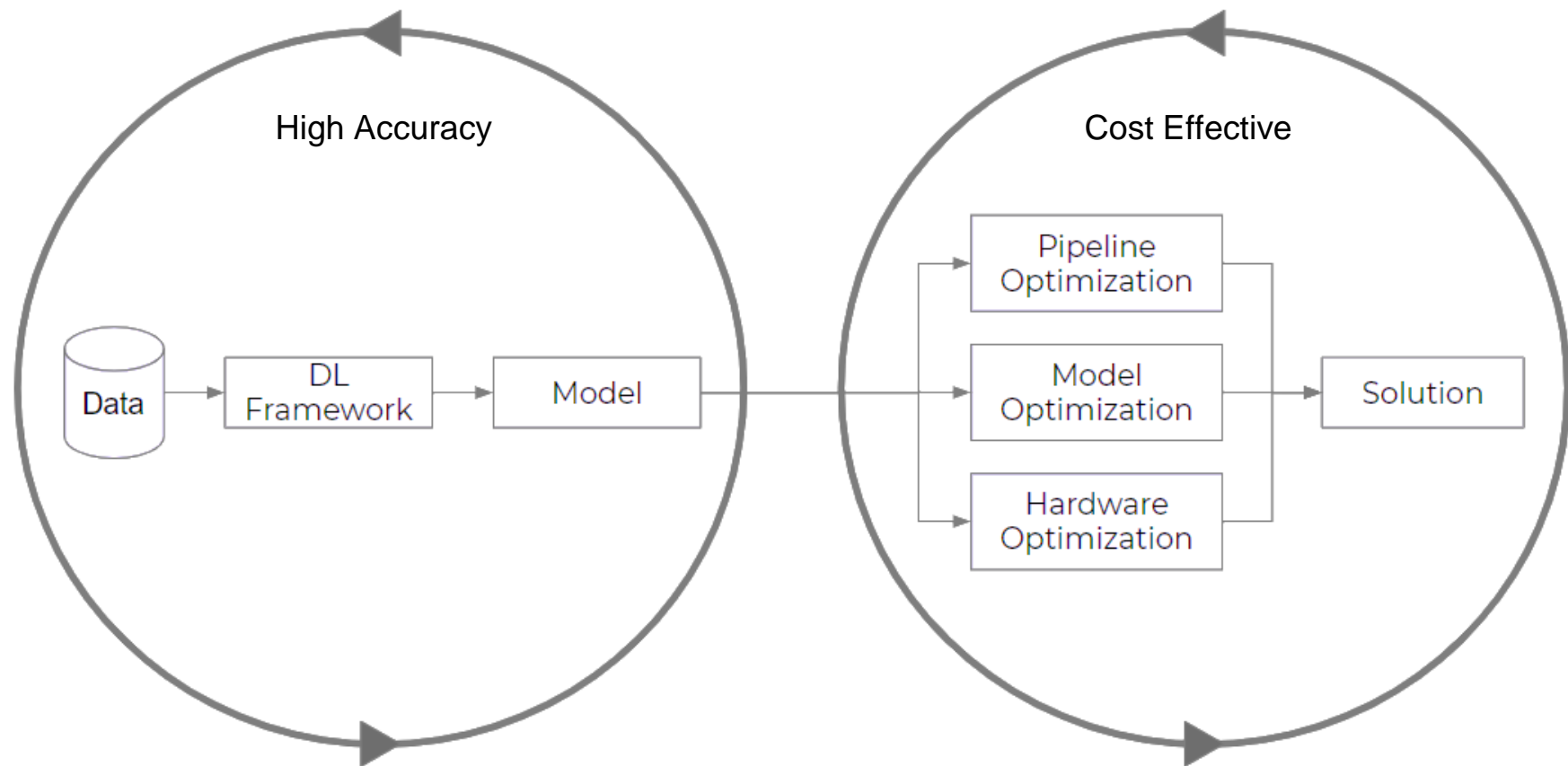


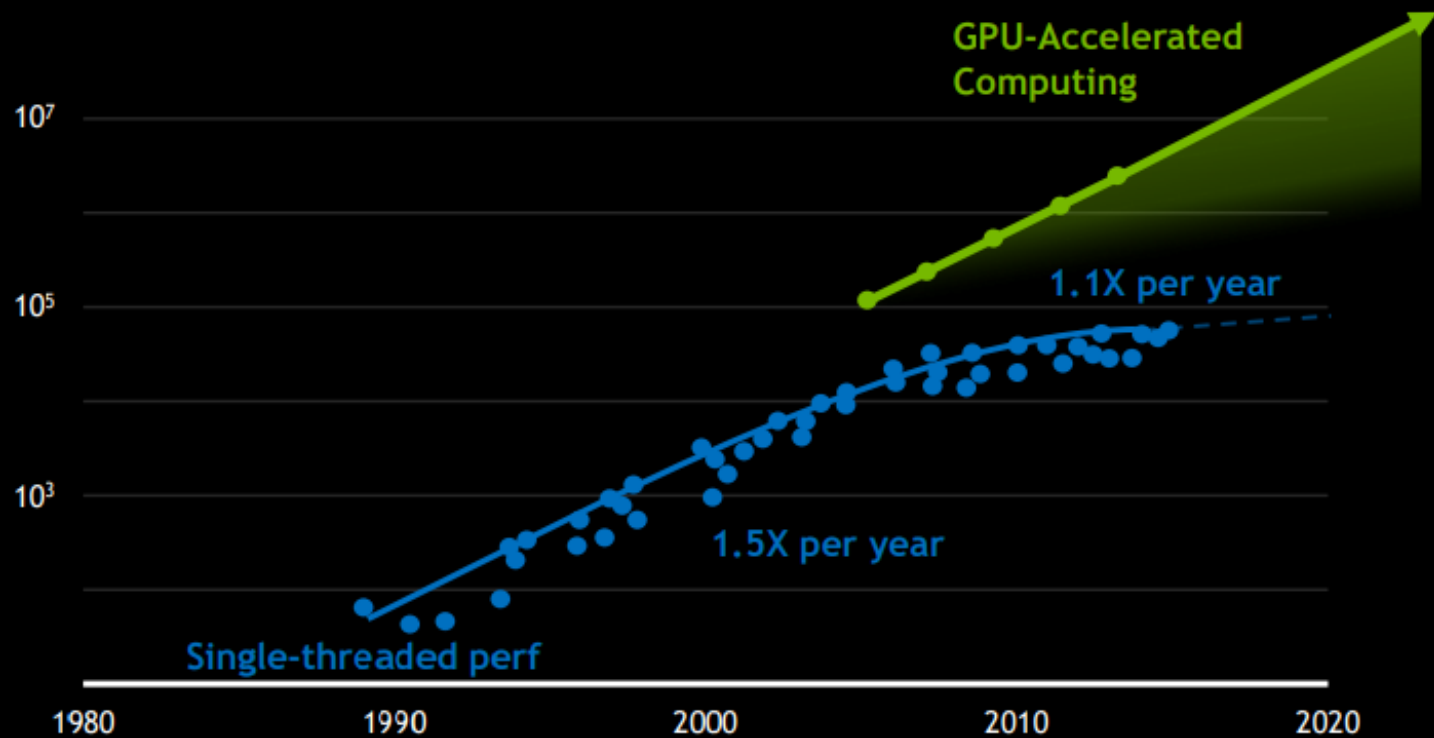
Massive AI & Deep Learning

Technical Challenges in Implementation

1. Heavy lifting computation for higher accuracy (Mix CPU – GPU)
2. Require scalable infrastructure architecture for growing
3. On-premise infrastructure require high investment / capital
4. Require huge data to train (supervised learning)

Analytics - General Workflow





40 Years of CPU Trend Data

DATA CENTER TODAY

Well-suited For Transactional
Workloads Running on Lots of Nodes



Commodity Computers Interconnected with
Vast Network Overhead

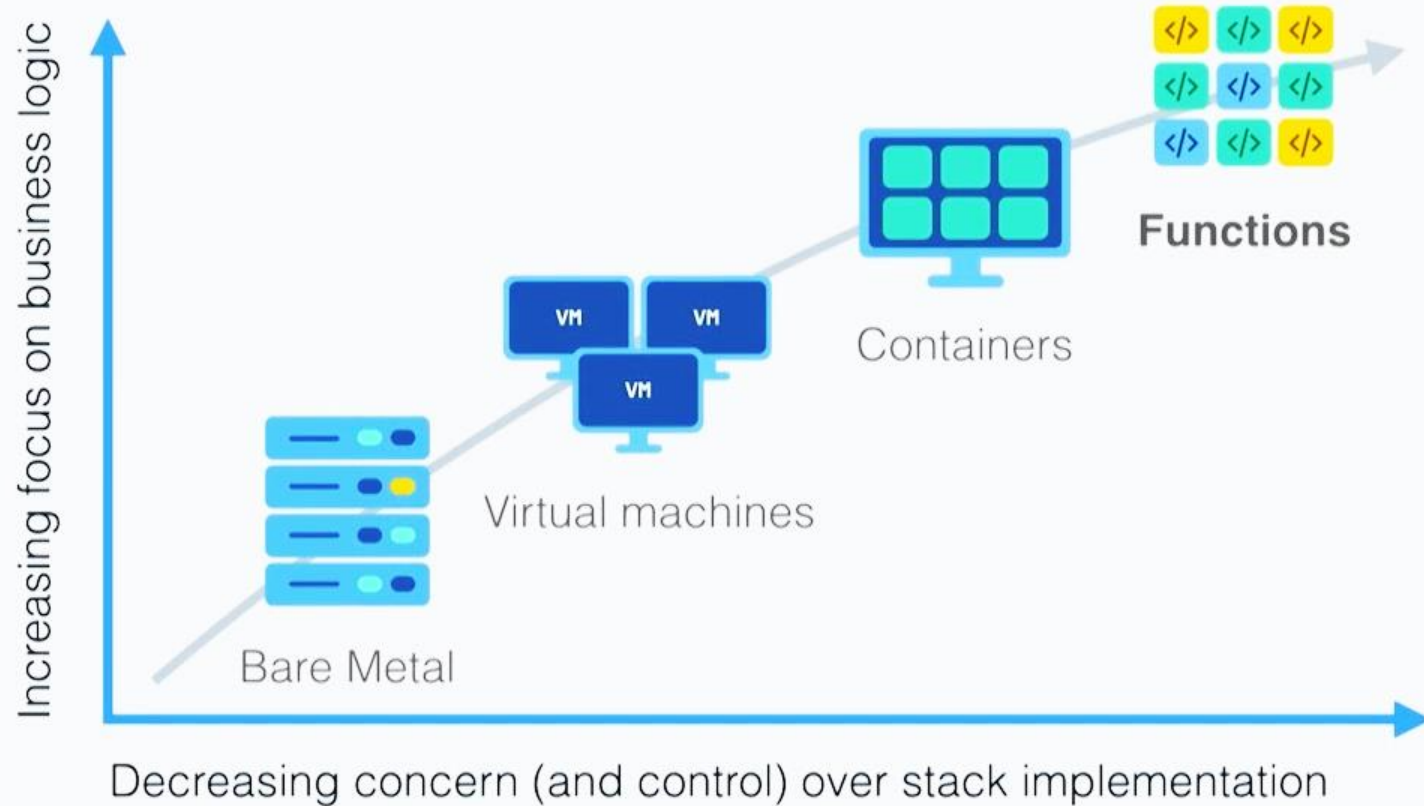
THE DREAM

For Important Workloads with
Infinite Need for Computing



Few Lightning-Fast Nodes with Performance
of Thousands of Commodity Computers

Serverless Era in Cloud Computing



Why Build Serverless Application?



Benefit from a fully
managed service



Scale flexibly



Only pay for
resources you use



Enhance developer
productivity



Seamless
Connections



Develop Intelligent
Apps

Industry 4.0 - Technological pillars





The background of the slide is a deep purple. It features a faint, stylized image of a hand holding a globe. Overlaid on the globe is a network of white dots connected by thin white lines, suggesting a global or digital network. The text 'Thank You' is prominently displayed in the center-left in a large, white, sans-serif font.

Thank You

Faris Rahman | CTO & Co Founder Nodeflux

