Chen Hsong

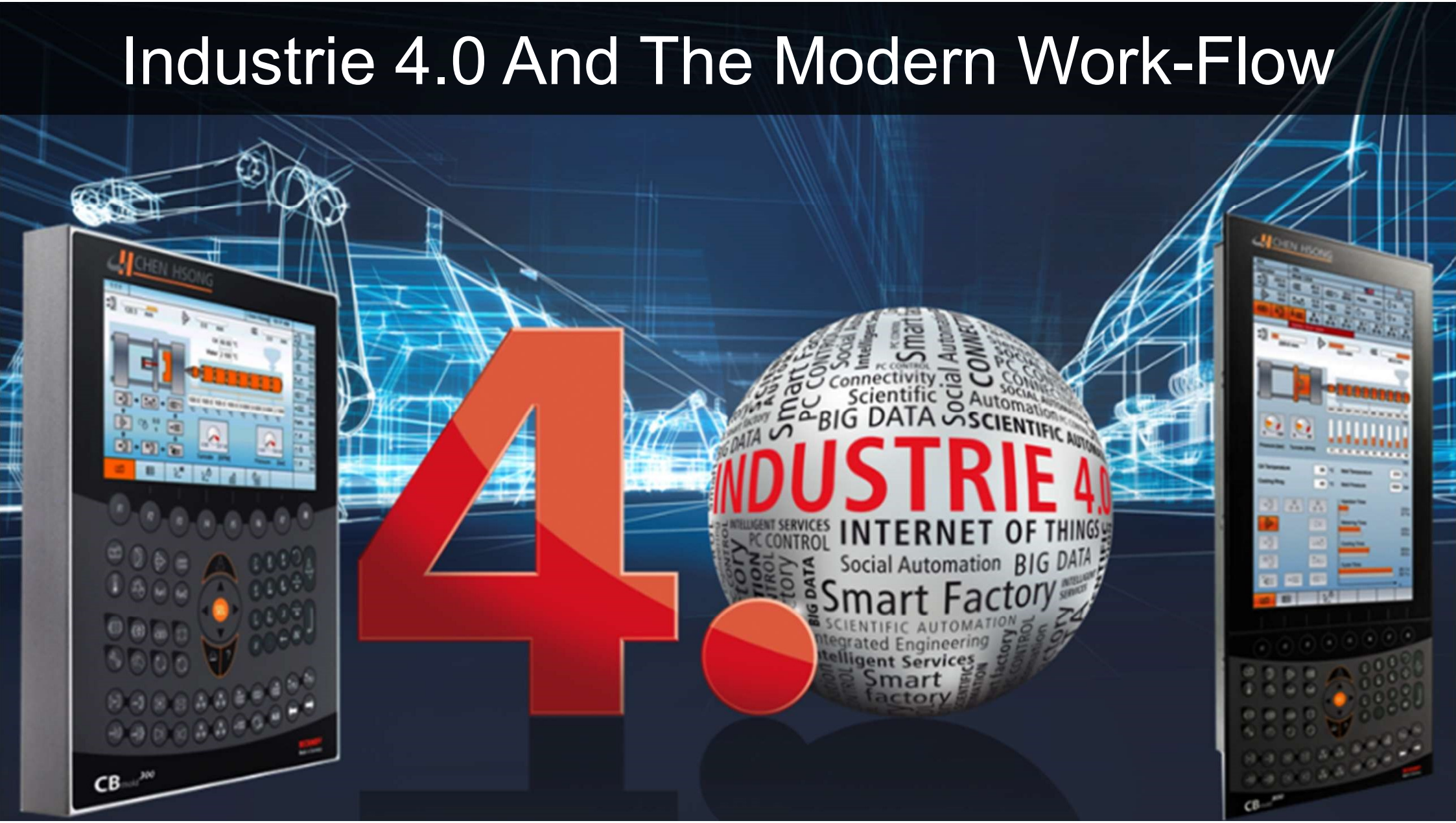
Welcome!

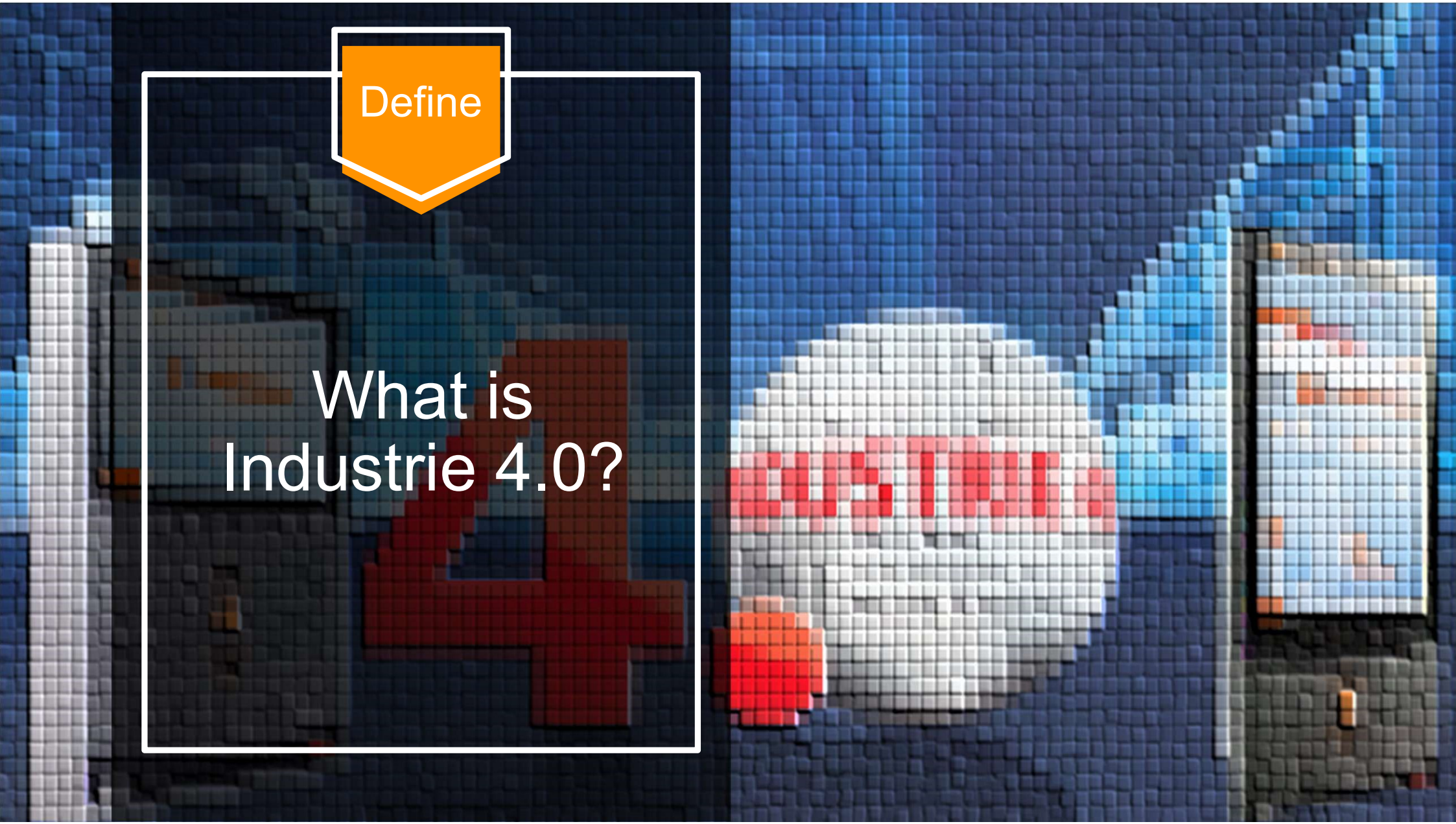
Chen Hsong – Who Are We?

One of the largest producers of injection moulding machines in the world

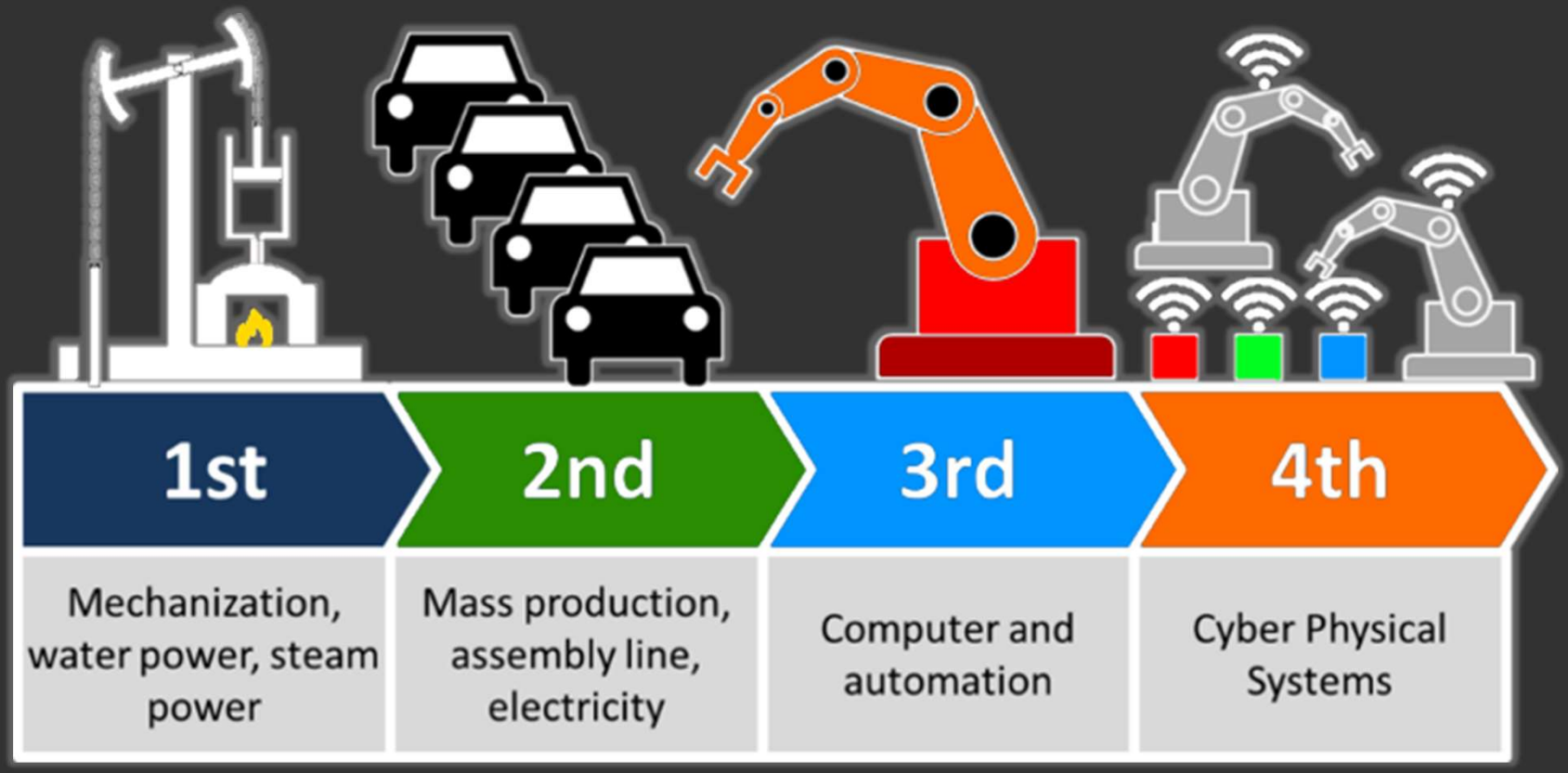
Annual production exceeds 15,000 machines

Industrie 4.0 And The Modern Work-Flow




Define
What is
Industrie 4.0?

The Four Stages of Industrial Revolution



What is Industrie 4.0?

- Originated in Germany in the 2000's
- Termed "Cyber-Physical Systems" (CPS) in the USA
- Driven by needs of an aging population and rigorous demands of modern life-styles
- It is a *research goal* – there is *no* Industrie 4.0 factory yet

Defining Characteristics of Industrie 4.0

- Interoperability
- Virtualization
- Decentralization
- Real-Time
- Service Orientation
- Modularity

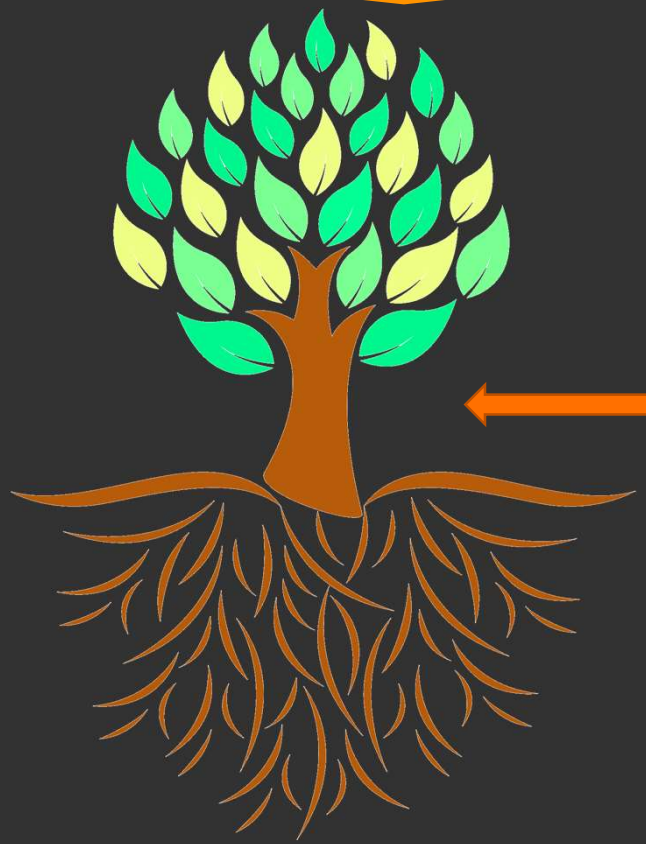
Source: *Design Principles for Industrie 4.0 Scenarios*, 2015, Hermann et al

Industrie 4.0 – Simplified View

Branches

Trunk

Root



Communi-
cations

AI

BIG DATA

The Goals of Industrie 4.0

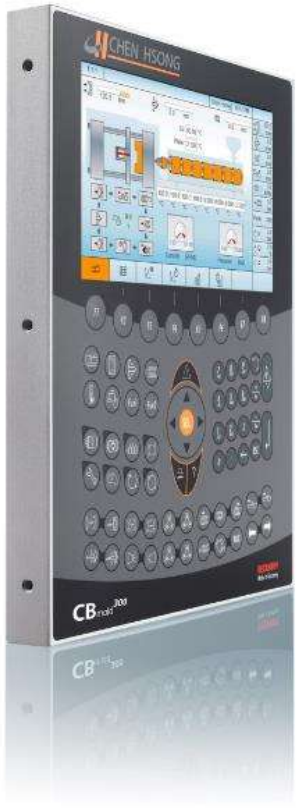
- Cyber-Physical Systems =
  Bridge Cyber (Computers) and Physical (Machines)
- Let the Machine Think (so you don't have to)
  - compare with 3.0 – Let the Machine Work
- Mass Customization = Mass Personalization
  - the coming of penultimate individualism
  - 3D printing technology likely to accelerate trend
- Individualized Service a Possibility (or the norm)

What does it *mean*, really?

- At Hannover Messe 2016, then President Obama of the USA visited the Siemens booth, asking the same question
- Siemens CEO Joe Kaeser gave him a golf club which was custom-designed and custom-manufactured to perfectly fit Obama's size and swing style
- Such a personalized golf club cost no more to make than a regular, mass-produced model


#1
BIG DATA
The Basis of Everything

First You Must be Able to Collect All That Data…

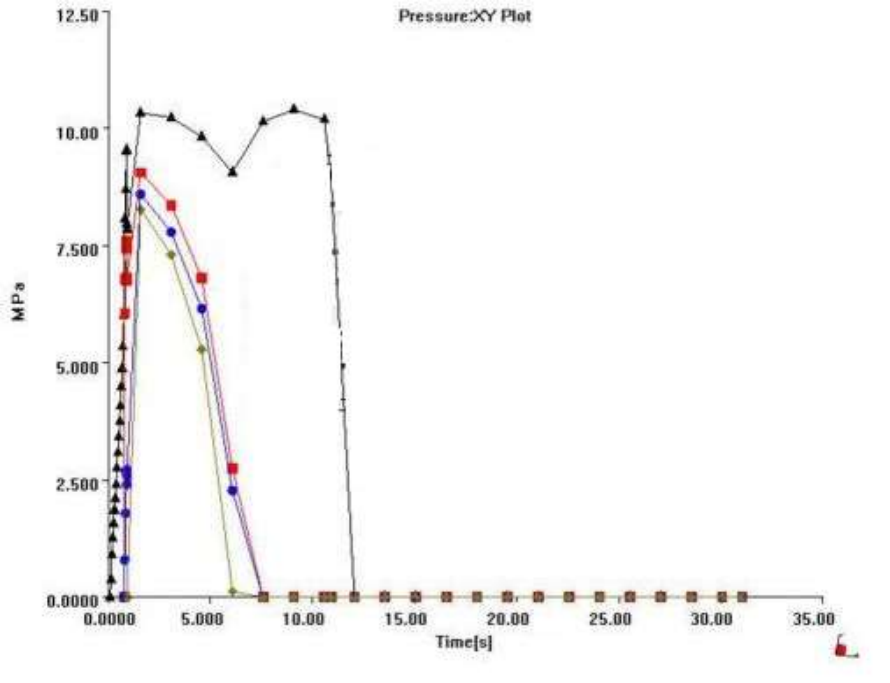


Entering the era of
BIG DATA

Basic	1GB flash storage
Advanced	8GB flash storage
Enterprise	16GB flash storage
Ultimate	32GB flash storage

is your equipment **BIG DATA**-ready?

Then What Can You Do With It?

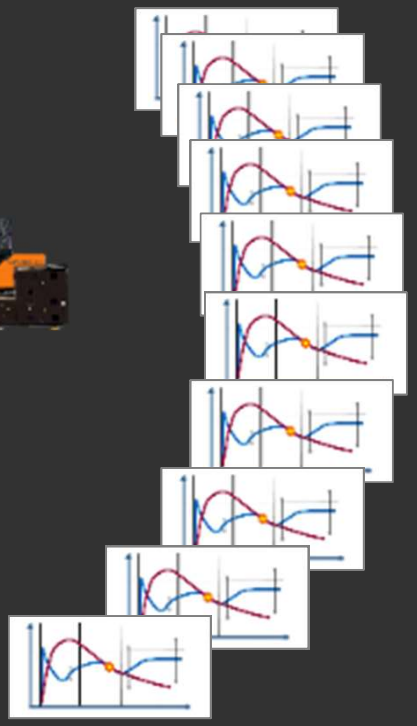


EXAMPLE:

Stores the injection speed and pressure curves of EVERY cycle within the past month.

Store All That Data into The Cloud

Injection moulding machine

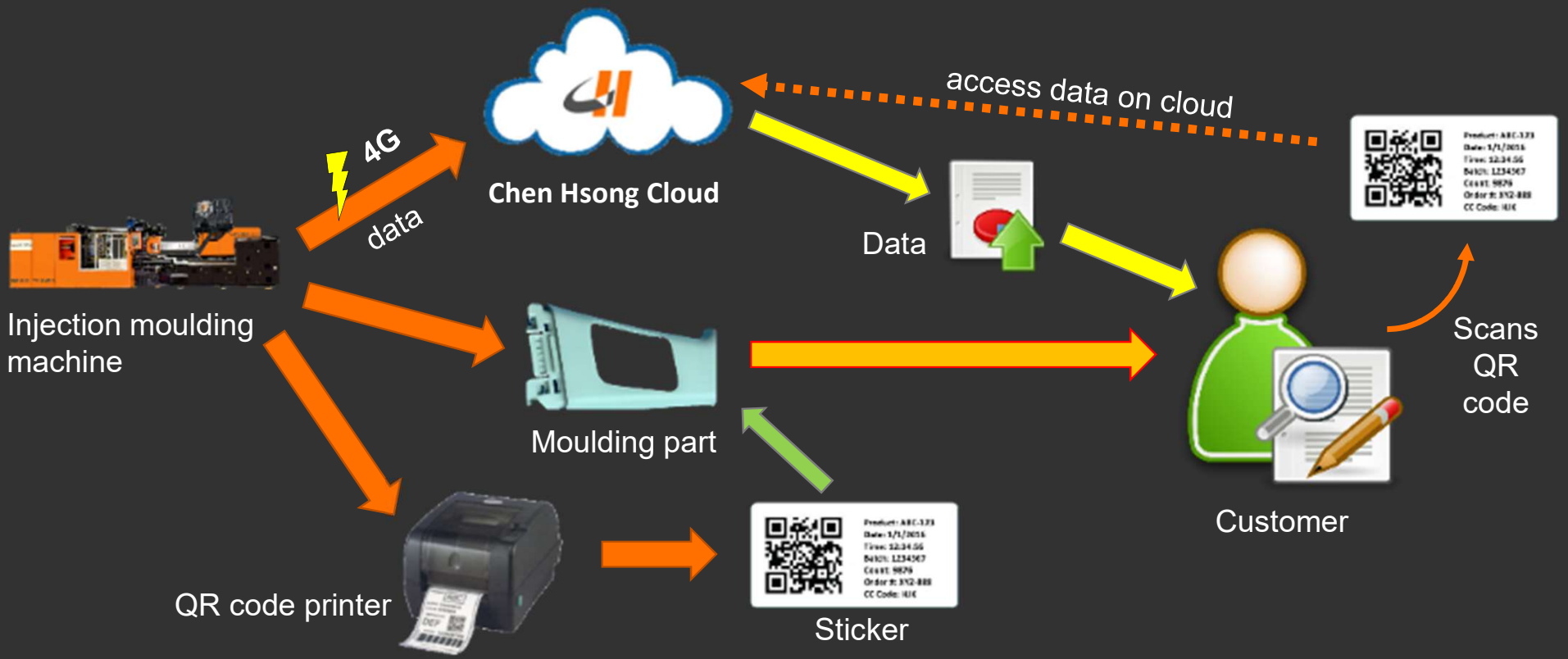


Injection curve for each cycle

Chen Hsong Cloud Database

But Then What?

Cloud-Based Data Management



What's Good About This?

- Easy
- Secured
- Zero Maintenance
- Zero Labour
- No Fuss

iChen™ 4.0 Cloud Intelligence

Chen Hsong Cloud Database

Big Data Map-Reduce (MR) processing and Machine Learning (ML) on trends prediction and pattern recognition

Trends & Intelligence

Alerts & Alarm Triggers

Advanced Analytics

Service Implications

How can BIG DATA help improve service levels?

Chen Hsong Cloud Preventive Maintenance

3G/4G

Injection moulding machine

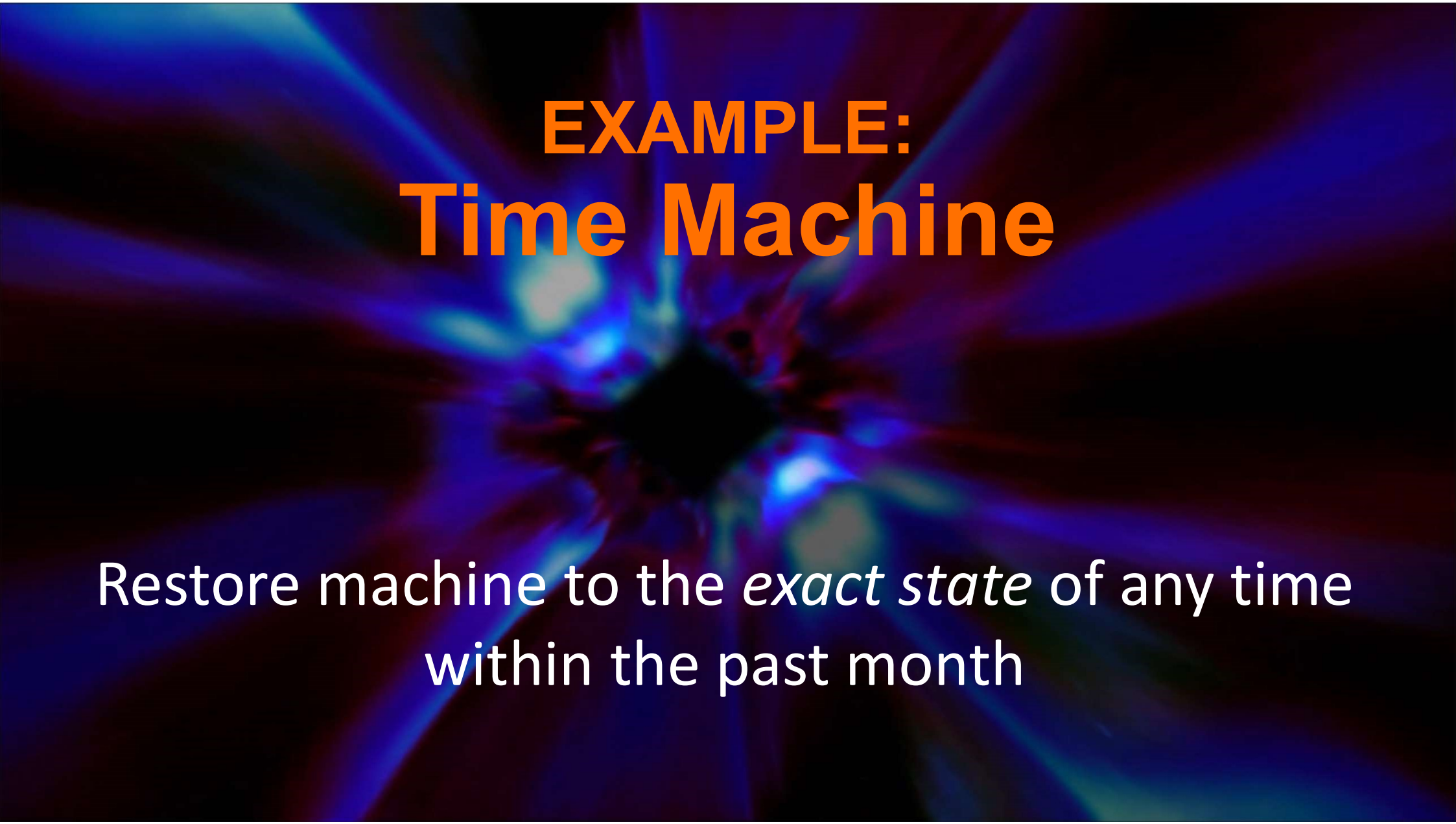
Coming Soon!

Chen Hsong technicians show up **before** problem occurs

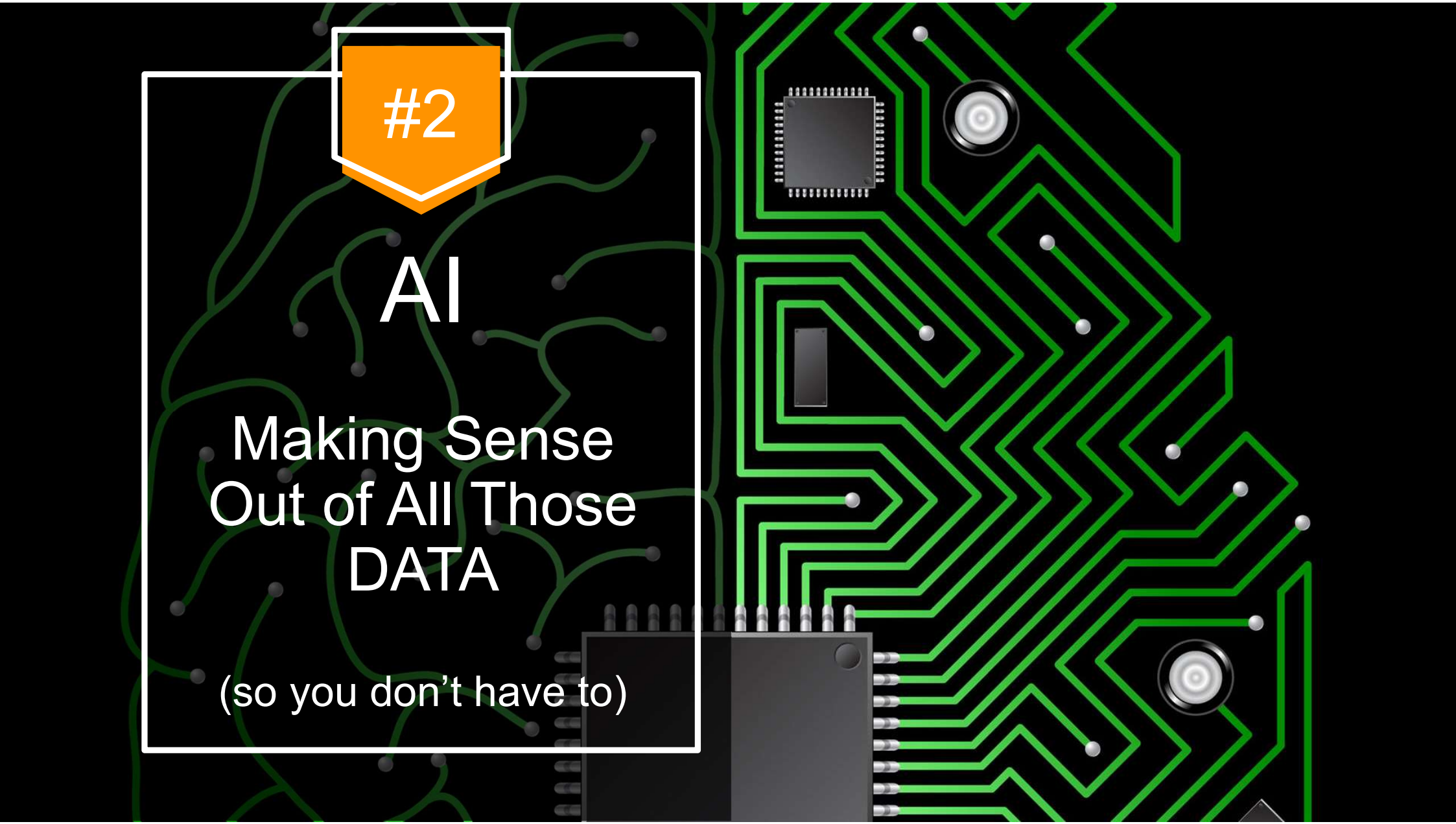
- Cloud-based, with BIG DATA calculations, continuously monitors sub-systems performance
- Monitors parts wear and tear
- **Discovers potential failures *before* they happen**

Work Flow Implications

How can BIG DATA help
stream-line work flows


EXAMPLE:
Time Machine
Restore machine to the *exact state* of any time within the past month

Time Machine – In Action

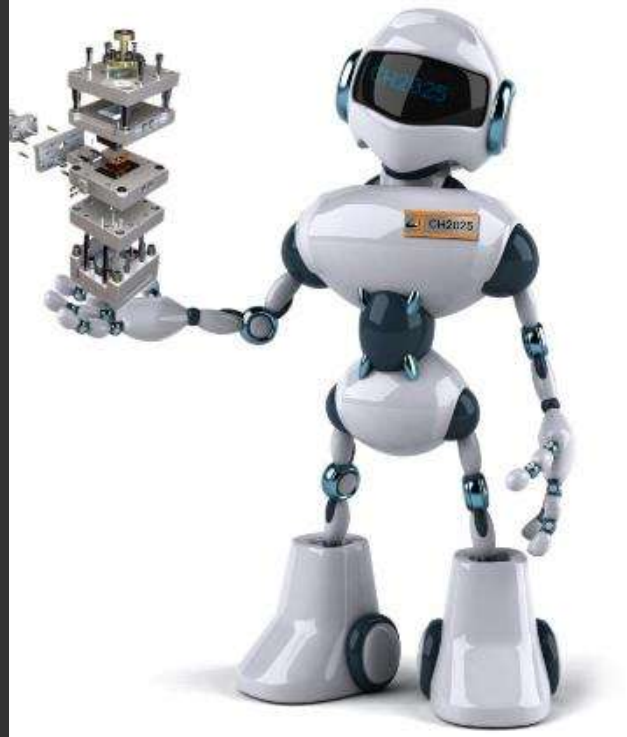

#2
AI
Making Sense
Out of All Those
DATA
(so you don’t have to)

China's Big Problem: Fewer and Fewer Workers

** Population aged 15-19 minus 50-54 and new university students*

Source: CEIC, UN, CS

Artificial Intelligence to the Rescue



CBmold **AI Auto-Tune**

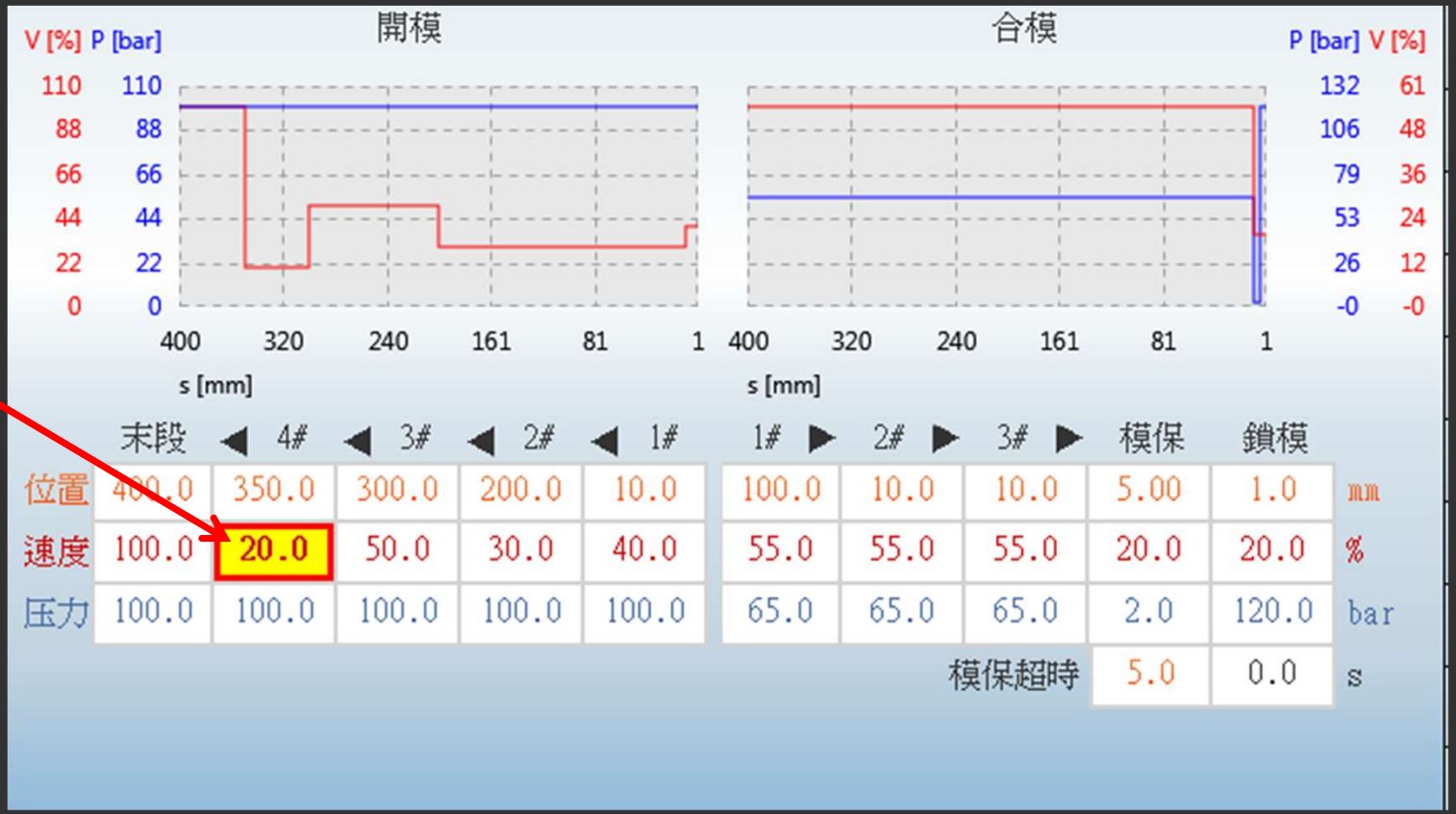
Through *machine learning* processes, the controller automatically sets and fine tunes moulding parameters without human interference. Now **That's** smart.

*** Click-Once ***

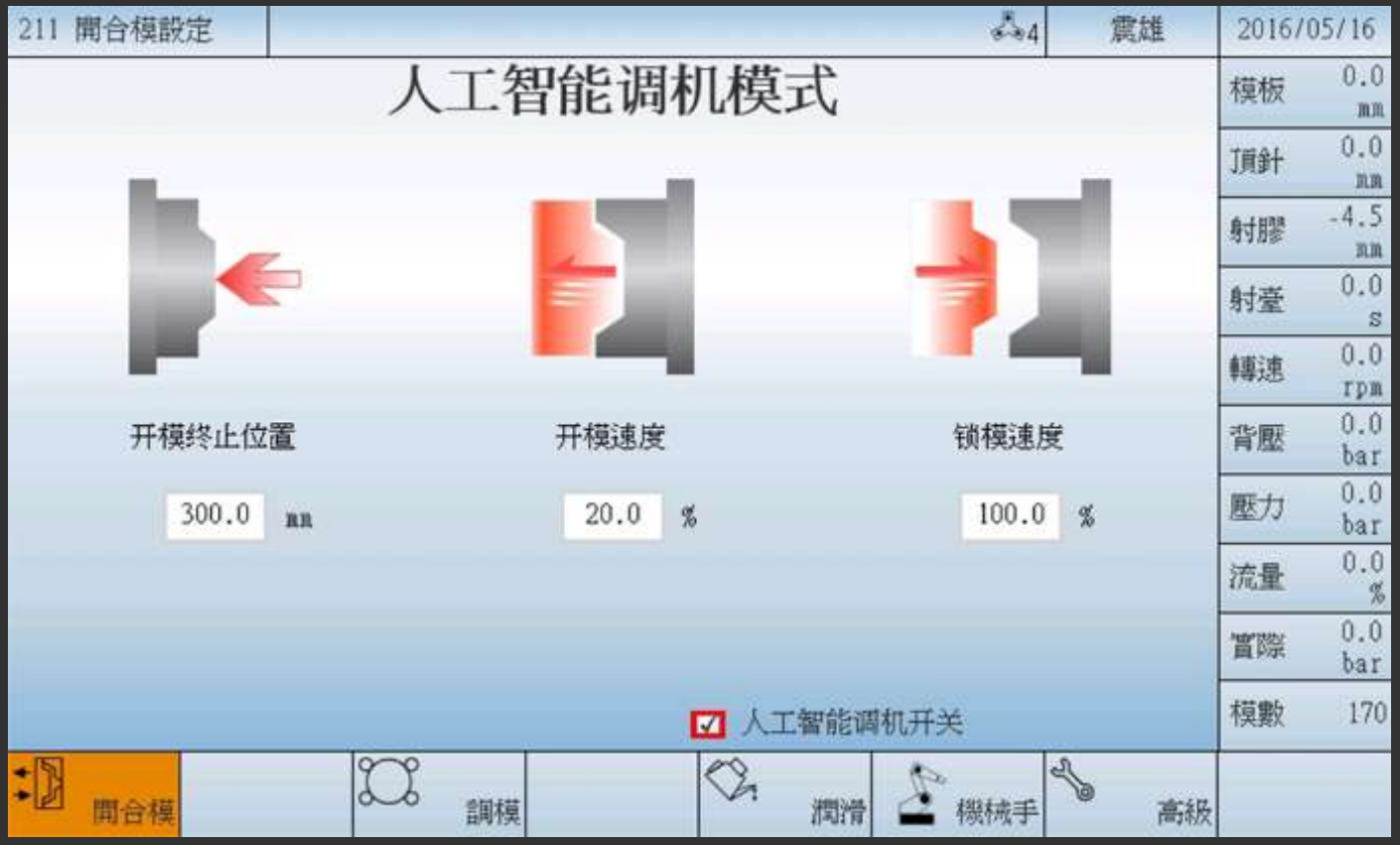
Traditional Machine Controller Setup Screen

Mistakes are Just Too Easy…

Oops!



AI Auto Setup – No Trained Technicians Needed



How AI Alleviates Labour Shortages?

- Knowledge-base
- Auto check-up’s and diagnostics
- Auto monitoring
- Worldwide data mining of stored data
- Patterns recognition and proactive actions
- Reminders and alerts

Leaving humans to what they are best at: Solve Problems and Make Decisions


#3
Communications
The Way We Talk to Machines
or How They Talk to US

Common Myth: Industrie 4.0 is Complicated

MYTH BUSTER

NO.
If it is complicated, it is *not* Industrie 4.0.

What Do Humans Use to Communicate?

- WhatsApp
- WeChat
- Facebook Messenger
- iMessage
- LINE
- Skype
- Email
- SMS
- Good Old Phone Call

Machines Learning to Talk to **US**

CBmold + WeChat ®

Equipment = Friend

Management = Chat Group

Conclusion
Remember This Tree

BIG DATA

Data underlies **EVERYTHING**

AI

Think for us

Communications

Talk to us

Chen Hsong

Thank You!