



Nvidia AI Innovation Day 2019

Beyond the promises – operationalizing AI

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Certis

Year 2000: World's first 1-TeraFlops
Cost: \$46 million
Space: 1,600 sq ft





**Investments in
Digital Transformation
will reach \$1.18 trillion in 2019**

(IDC, 2019)



(Oliver Wyman Forum 2019)

Singapore tops list of 105 cities most ready for AI disruption

Vision vs Lidar

L2 vs L4

- Vision Sensors + Deep Learning
 - **Pros:**
 - Highest resolution information
 - Feasible to collect data at scale and **learn**
 - Roads are designed for human eyes
 - Cheap
 - **Cons:**
 - Not accurate (without **a lot** of data)
 - Not explainable, not consistent
- Lidar + Maps
 - **Pros:**
 - Explainable, consistent
 - Accurate
 - **Cons:**
 - Does not improve over time
 - Expensive



Example L2 System:

Tesla Autopilot
1+ billion miles



Example L4 System:

Waymo
10+ million miles

Predictions: The Full Spectrum




Elon Musk, Tesla

- **February 2017:** "My guess is that in probably 10 years it will be very unusual for cars to be built that are not fully autonomous."
- **February 2018:** "The upcoming autonomous coast-to-coast drive will showcase a major leap forward for our self-driving technology."



Rodney Brooks

- **=2031:** A major city bans manually driven cars from a non-trivial portion of a city.
- **>2045:** Majority of US cities ban manually driven cars with drivers from a non-trivial portion of a city.



**“We can make roads safer
for (autonomous) cars
instead of the other way around”**

Andrew Ng

Certis – Digitally transformed



Evolved from **Physical Guarding Provider** to **Advanced Integrated Security Services Organisation**
Awarded **29 patents** related to **use of Technology**



Grew from S\$200m in 2005 to a **S\$1.5b company** in 2018
Present in 8 countries, key markets are **SG, AU and HK**
Largest in SG and **3rd largest** in AU



Safeguard leading airports: Changi, Sydney and Qatar Airports
Changi Airport ranked highest for Security at **Airport Service Quality (ASQ)**
Worldwide Ranking for 2016, 2017 & 2018
Technology Services: Largest CCTV installer in Singapore

SECURITY+



**Advanced
Security**



**Smart
Operations**



**Design
Thinking**

SECURITY+ is a unique service offering from Certis. With security at the core, we apply technology to integrate and orchestrate multi-service digital operations that include facilities management, guest services or other critical, non-core services.

Bridge silos, co-innovate and achieve greater value with customers

Certis principle of Operations-Design First

20-30% decrease in manpower deployment in major retail malls

135,700 sqm

280 retail and F&B stores

>5,000
sensors

>700
CCTVs

12
different systems



- Security Specialists
- Experience Concierge
- Rangers
- Technician Specialists

Mega mall,
Jewel Changi Airport



“Operational Design First” – The key to operationalizing AI

- **Concept of Operations**
- **AI that makes sense to operations**

Certis Centre for Applied Intelligence



Mosquito Species Differentiation

Video analytics to identify 13 different species of mosquitoes

Workplace Safety

Anomaly detection for safety violations at construction sites

Energy Consumption Prediction

Machine learning to predict energy consumption for smart building

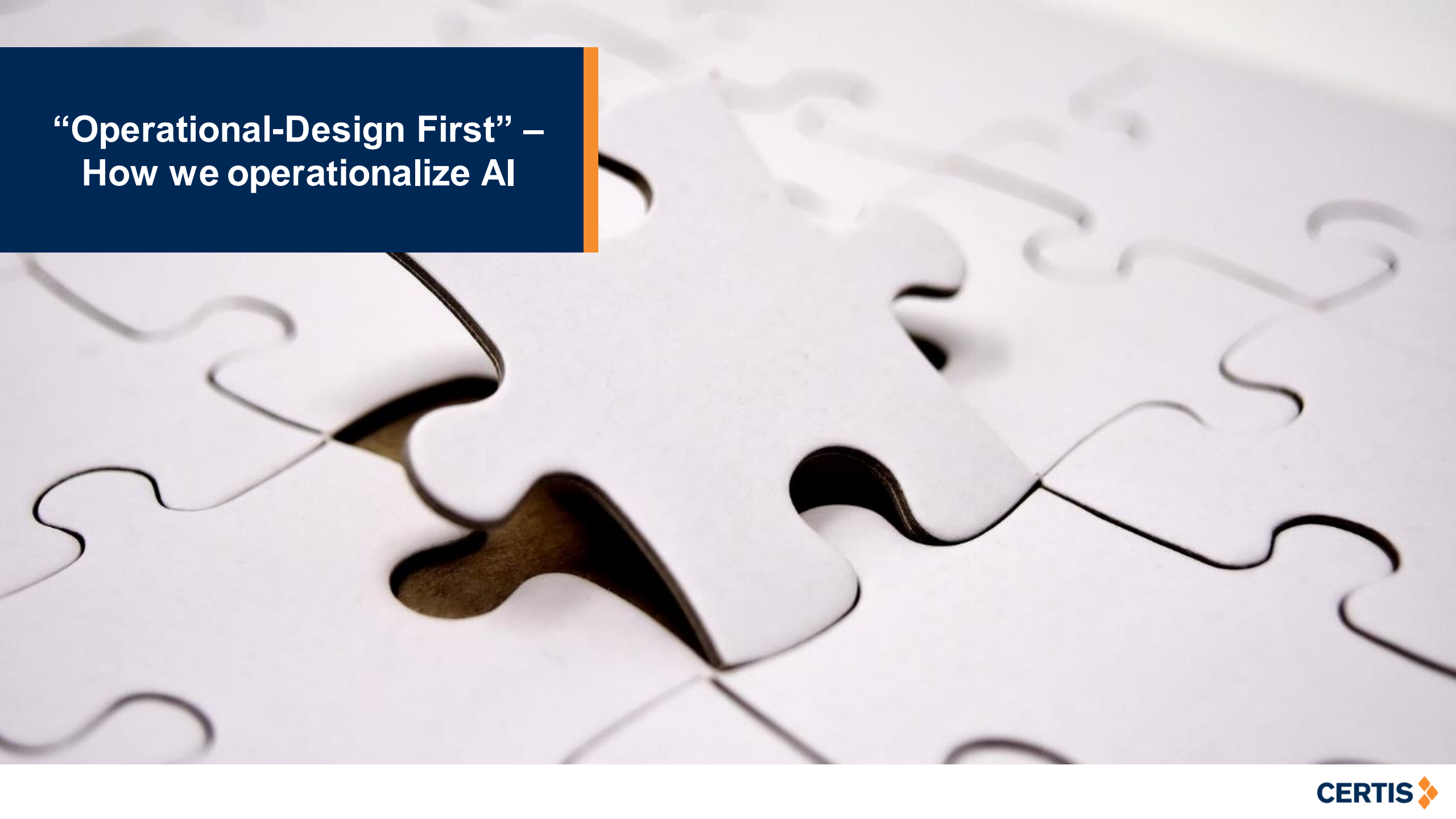
Decision Support System for Manpower Deployment

Reinforcement learning to improve efficiency with multiple rapidly changing variables

**Award-winning
autonomous robot in
operation**



**“Operational-Design First” –
How we operationalize AI**





THANK YOU!

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