



第107回中央教育審議会
第3期教育振興基本計画の策定について

A Point of View 視点のインプット

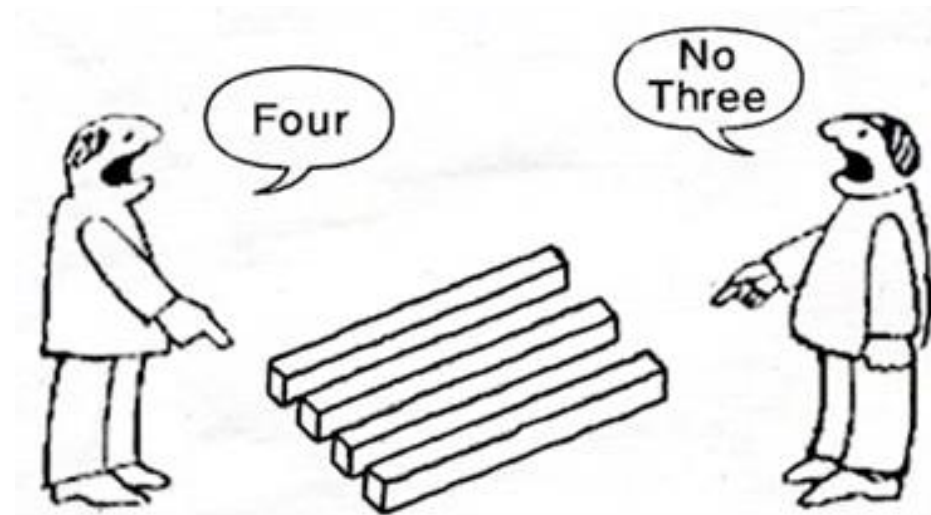
委員 中根滋
2016年5月30日

Safe Harbor:

Everything we hear is an opinion, not a fact.

Everything we see is a perspective, not the truth.

Marcus Aurelius



日本の教育・研究は
世界産業革命の起こす変化に対し
後手を踏んできた

I1.0



Watt's Steam Engine 1769

18世紀末 機械化

水と蒸気を応用して生産機械を動かす



鎖国で後手

I2.0



Ford Production Model T

19世紀後半 電化

電力を使用して大量生産とワークシェアリングを実現



戦争で後手
追い越した

I3.0



20世紀後半 コンピュータ化

エレクトロニクスとITを使用して生産の自動化を実現



物理系・ハードに偏重
ソフトウェアに後手

I4.0



21世紀初頭 インターネット化 (進行中)

サイバー・物理的システムを使用してビジネスのネット化と
アウトカム経済モデルへの産業のトランスフォーメーションを促進



ソフトウェアに後手
IOTモノづくりに後手
起業に後手

Technology Singularity 技術的特異点

世界産業革命を推進する科学技術の進歩に対して
先手となる教育・研究を行うべきだ

未来技術動向を予測した
教育内容・研究内容のP D C Aを回すべきだ

何を・誰が・どうやって・どこで

2025年迄に実現が予測されている革新

**A \$1,000
Human Brain**

**A Trillion-
Sensor
Economy**

**Perfect
Knowledge**

**8 Billion
Hyper-
Connected
People**



2025年の予測
Singularityhub.com

**Disruption of
Healthcare**

**Augmented
and Virtual
Reality**

**Early Days of
JARVIS**

Blockchain

1. A \$1,000 Human Brain

a computer able to calculate at 10^{16} cycles per second

2. A Trillion-Sensor Economy

more than 100 billion connected devices, each with > a dozen sensors collecting data.
\$19 trillion.

3. Perfect Knowledge

with a trillion sensors gathering data everywhere (autonomous cars, satellite systems, drones, wearables, cameras), you'll be able to know anything you want, anytime, anywhere, and query that data for answers and insights

4. 8 Billion Hyper-Connected People

global connectivity to every human on Earth at speeds exceeding one mega bps. 3bil now to 8bil.

5. Disruption of Healthcare

Existing healthcare institutions will be crushed as new business models with better and more efficient care emerge.

Biometric sensing (wearables) and AI will make each of us the CEOs of our own health. Large-scale genomic sequencing and machine learning will allow us to understand the root cause of cancer, heart disease and neurodegenerative disease and what to do about it. Robotic surgeons can carry out an autonomous surgical procedure perfectly (every time) for pennies on the dollar. Each of us will be able to regrow a heart, liver, lung or kidney when we need it, instead of waiting for the donor to die.

6. Augmented and Virtual Reality

a new generation of displays and user interfaces. The screen as we know it — on your phone, your computer and your TV — will disappear and be replaced by eyewear.

7. Early Days of JARVIS

AI research will make strides in the next decade. If you think Siri is useful now, the next decade's generation of Siri will be much more like JARVIS from Iron Man, with expanded capabilities to understand and answer.

8. Blockchain

bitcoin, which is the decentralized (global), democratized, highly secure cryptocurrency based on the Blockchain. But the real innovation is the Blockchain itself, a protocol that allows for secure, direct (without a middleman), digital transfers of value and assets (think money, contracts, stocks, IP).

研究・開発・商品化・普及・EOL

サイクルタイムが超高速化している
教育と研究の革新をスピードアップしなければならない

新しいものの普及速度

Speed of Infiltration no. of years to penetrate first 50,000,000 users

