

Towards ‘IoT Fabricator’ from ‘3-D Printer’

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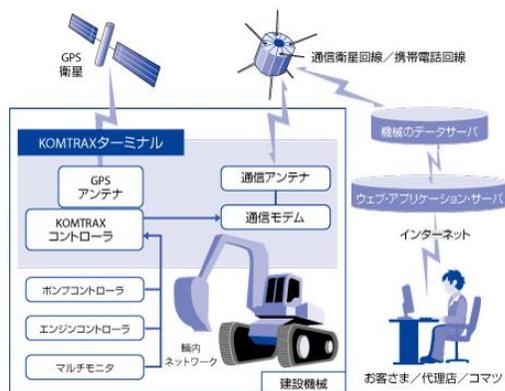
Research Director, the Center of Innovation Program, Keio University



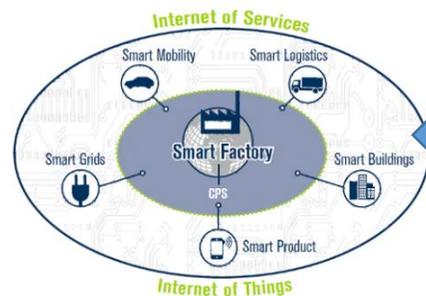
2 Types of “IoT”

Networking existing Things
IoT (Internet of Things), M2M型

■KOMTRAX (Komatsu Machine Tracking System) の構成



How to Make



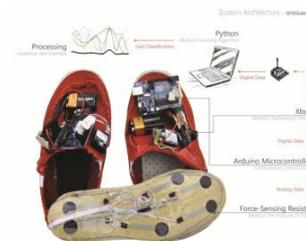
製造業

Industrial IoT

Sensor, Monitoring
“SMART”
Improvement型

Creating new products on ICT
IoT (Internet of Things), FAB型

What to Make



ICT企業

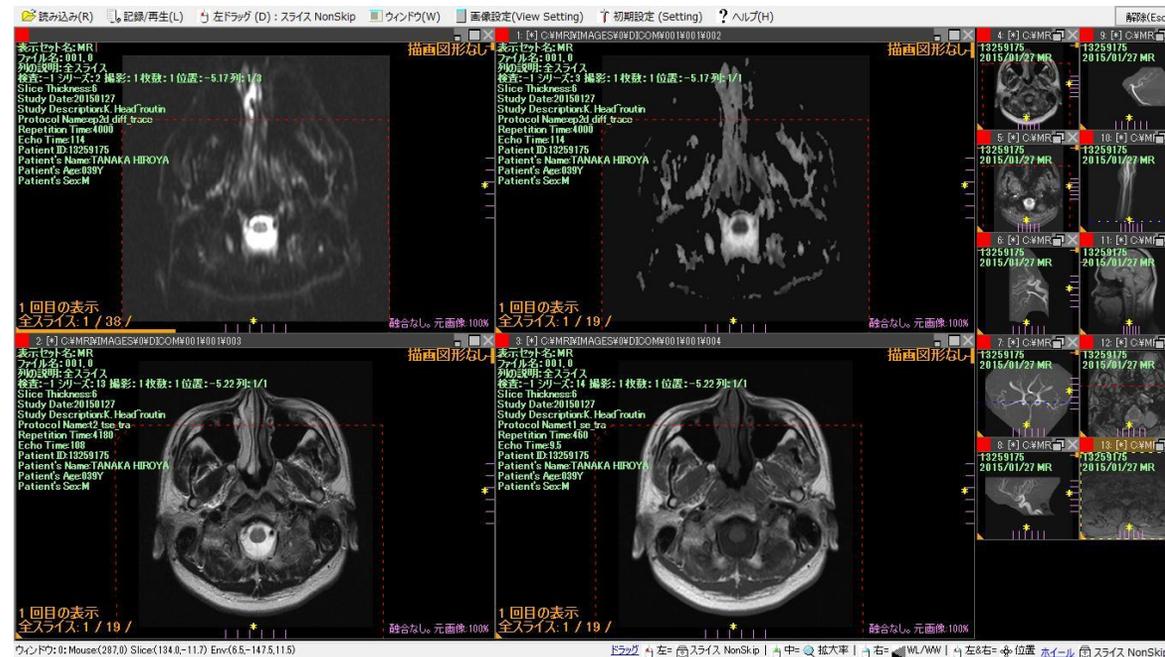
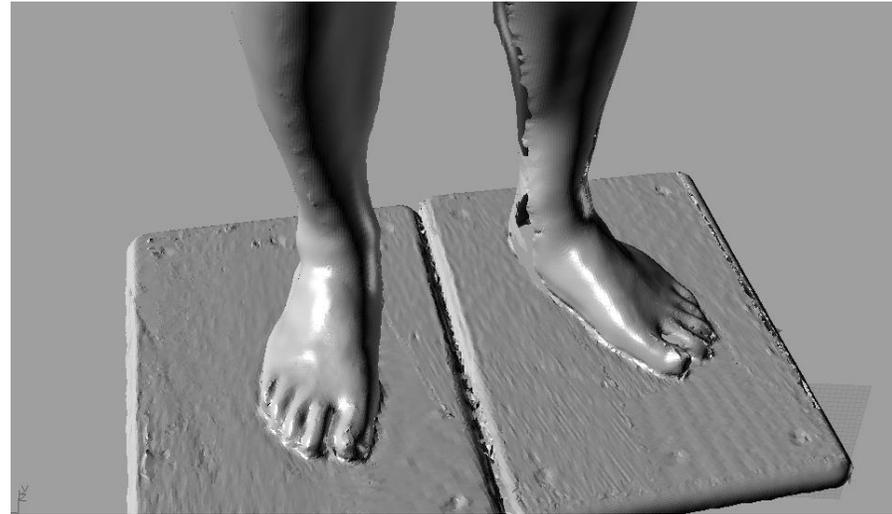
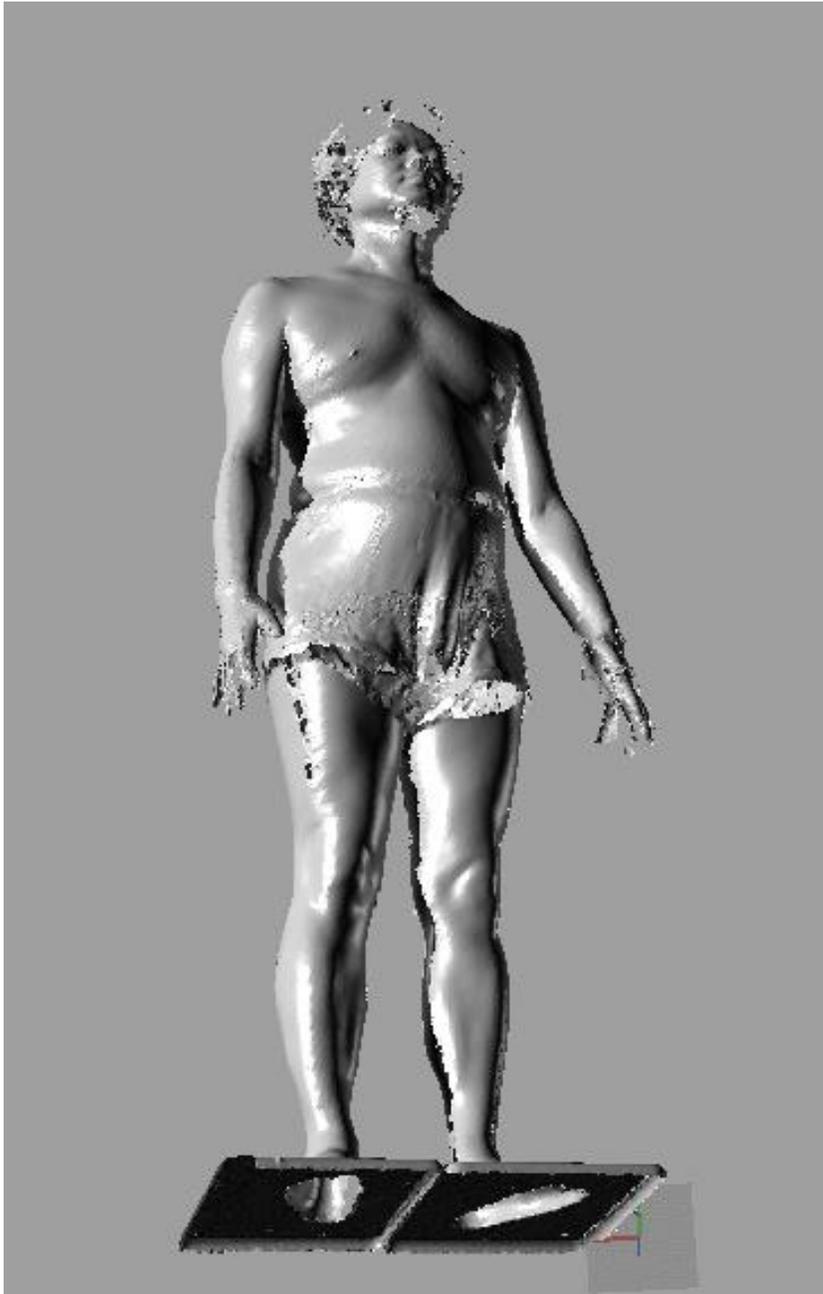
Individual IoT



3D Printer, Chip Mounter
“CREATIVE”
Innovation型



Medical Application



Materialization of MRI 3D Body Data





The Cortex Exoskeletal cast shown fitted snugly on the patient's arm giving lightweight but super strong support exactly where needed for this particular wrist fracture. No more heavy weight, malodorous bulk for this lucky patient.



Discreet and thin there is no problem wearing a shirt and suit jacket over the Cortex Exoskeletal cast.



Fully washable and shower friendly and eco friendly too.

Designed by Jake Evill, New Zealand

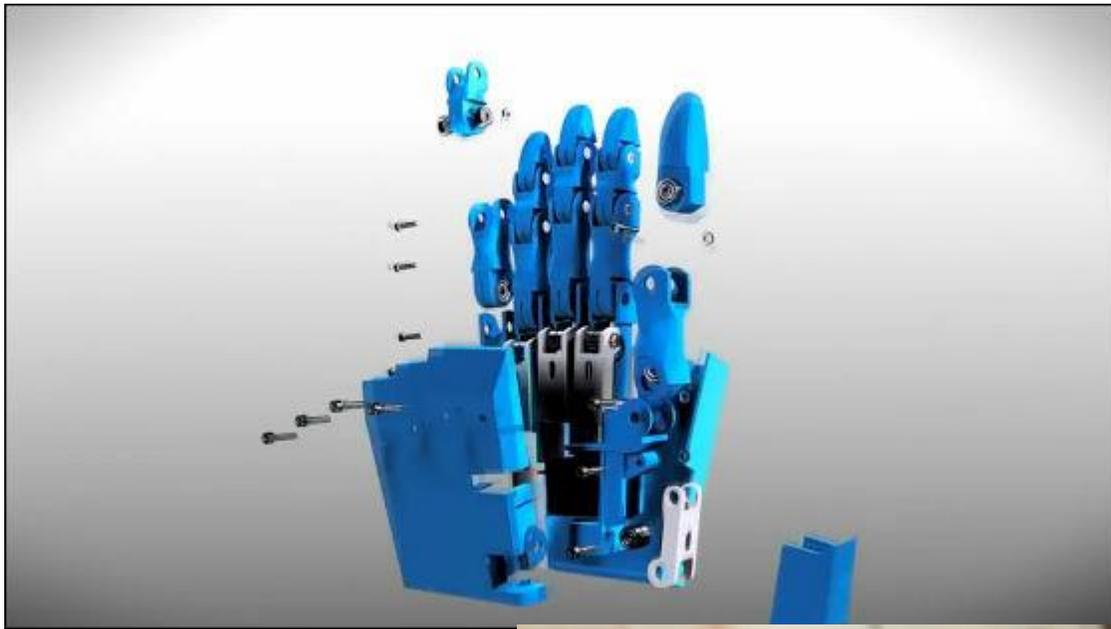


Keio University



Designed by Jake Evill, New Zealand





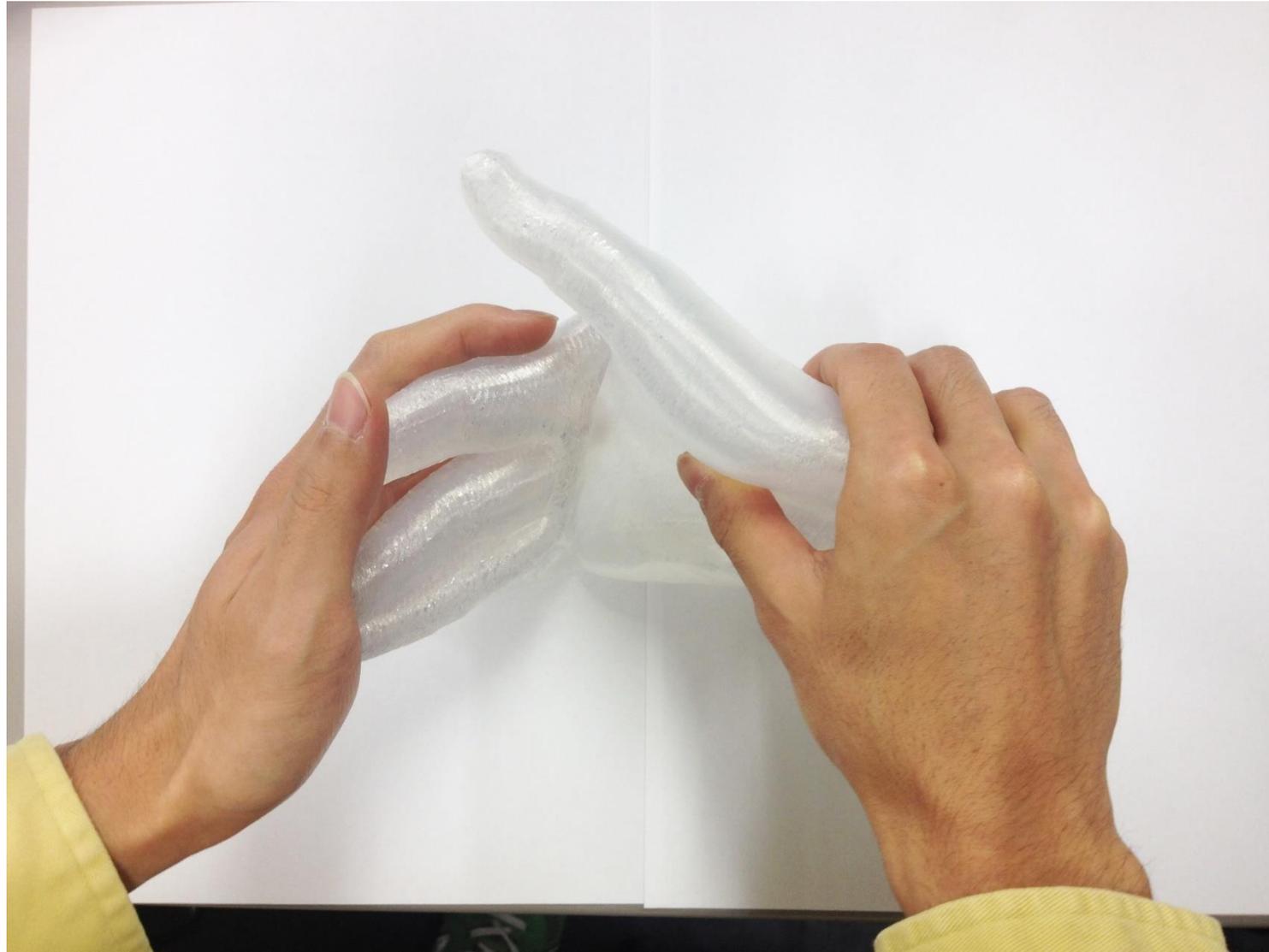
prosthesis



Scan and Print



Flexible Medical Elastomer Filament with JSR Company

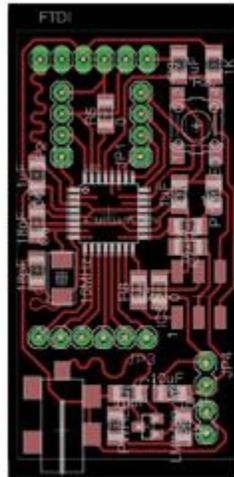
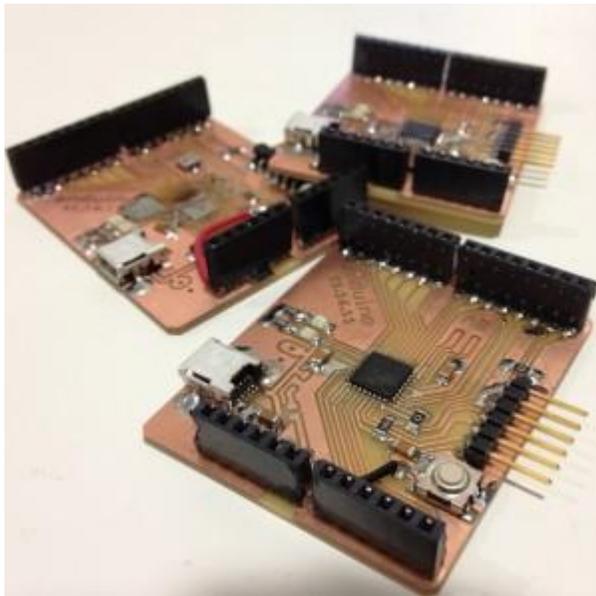


From 3D-Printer to IoT Fabricator ?

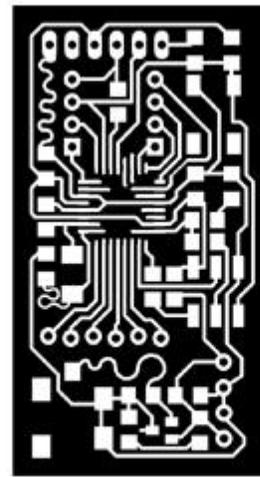


Today's IoT – Sensors and Wireless Network

e.g. BLE (Bluetooth Low Energy)



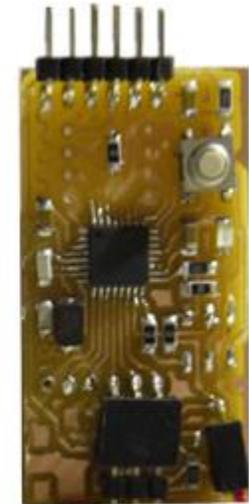
Circuit and Components



Mill 1/64 bits



Cut 1/32 bits



Board

“Circuit Board Embedding”



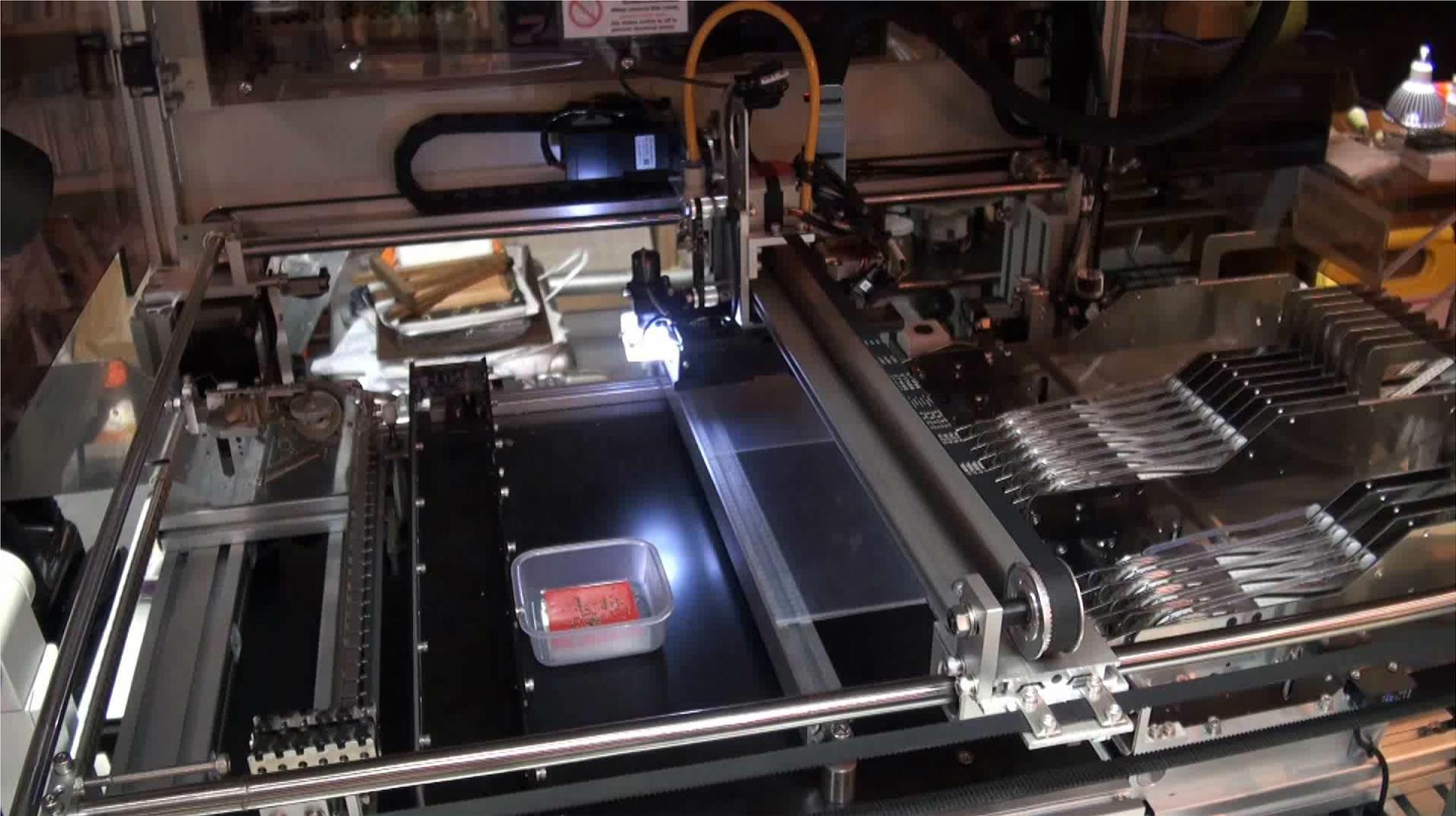
Personal Chip Mounter by Dr. Noriyuki Aibe

MDC (<http://mdc-smt.co.jp/>)

SUSUBOX

FabLab Tsukuba



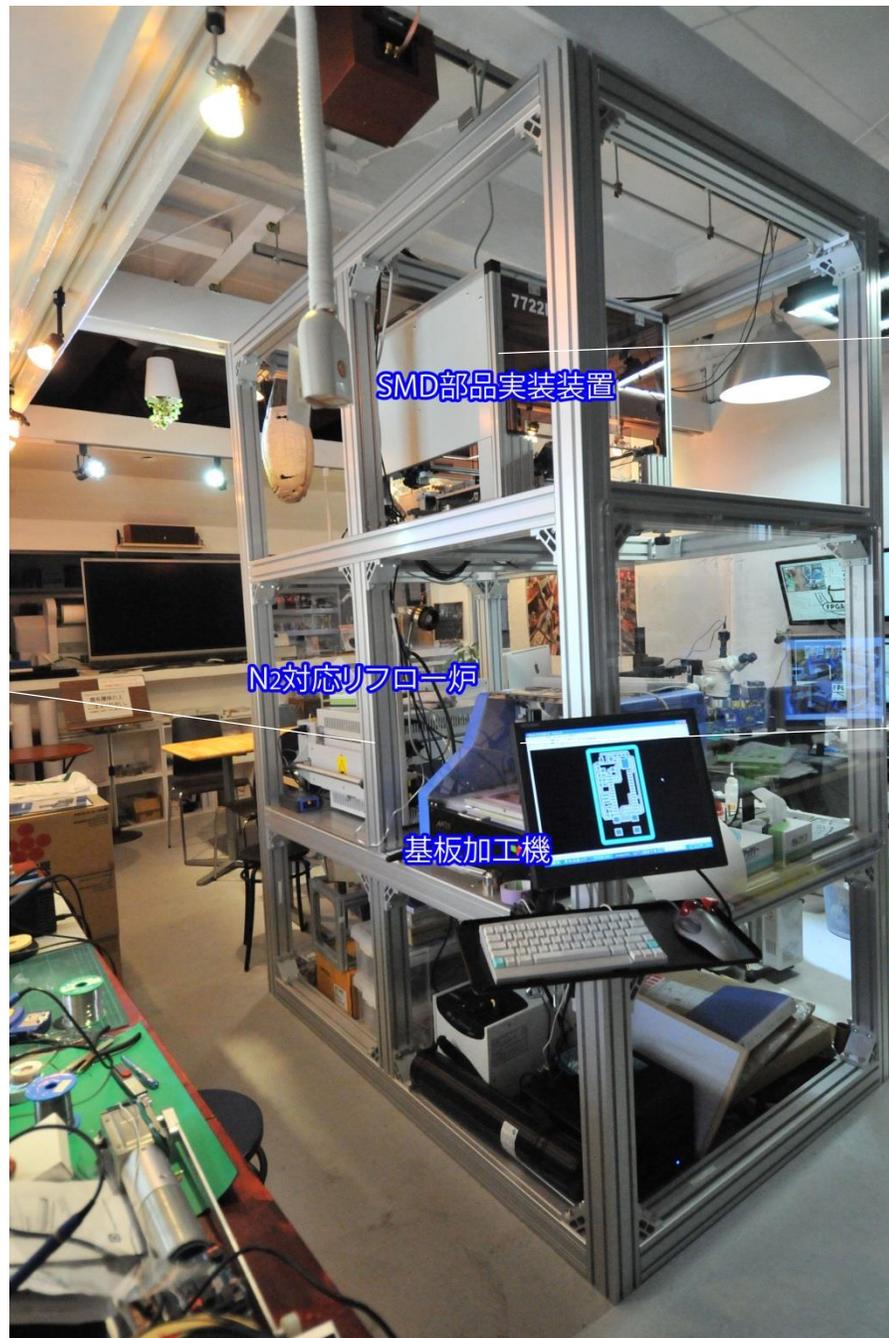


FPGA-Café/ Fab Lab Tsukuba



(C)2012 N.Aibe

(C)2013 SUSUBOX

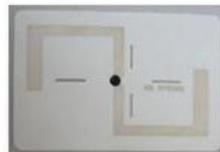
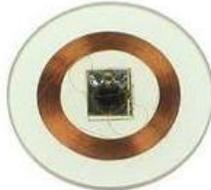
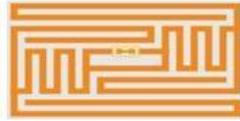
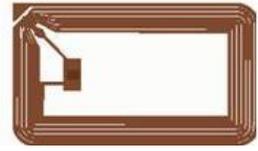


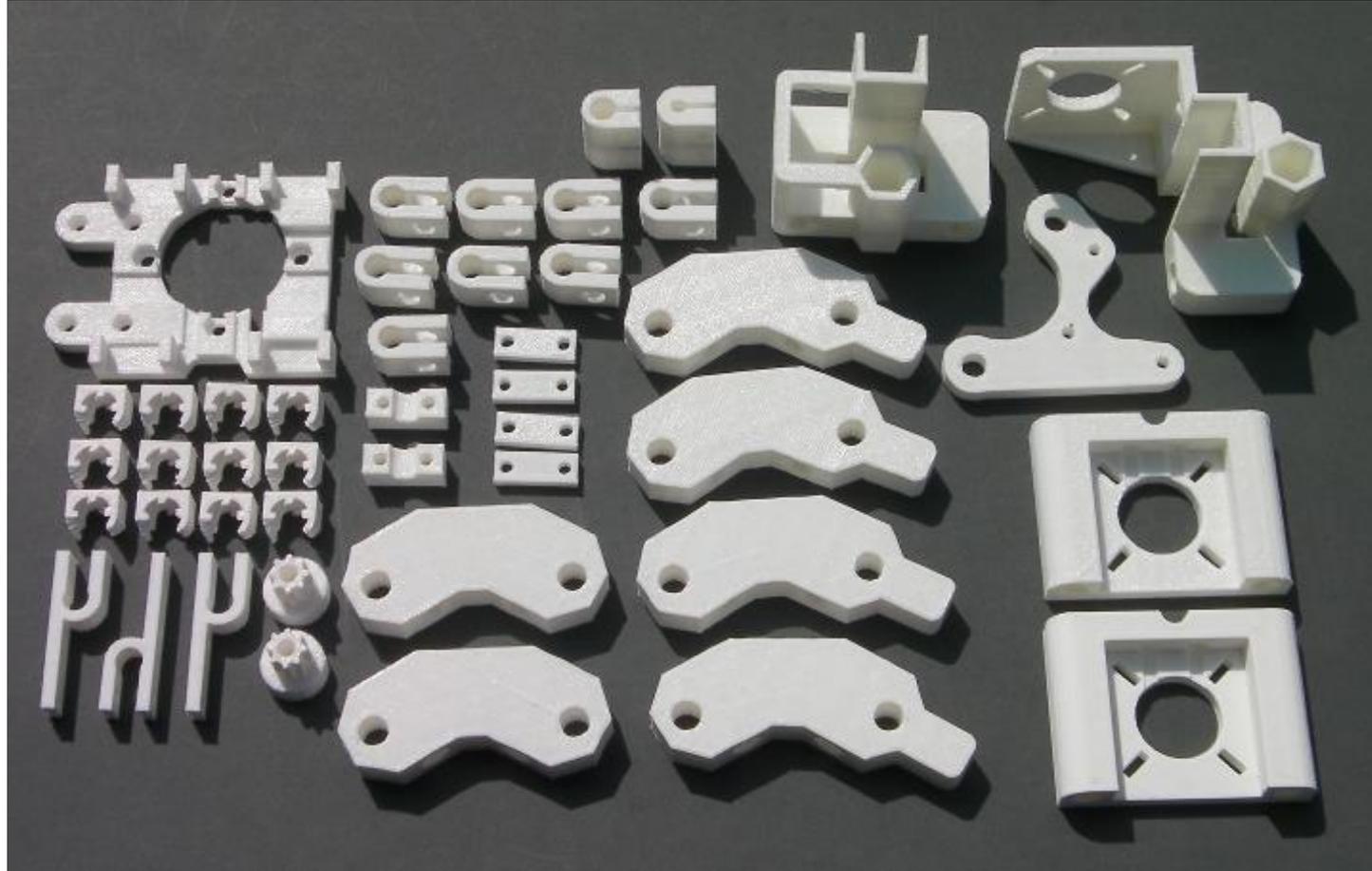
SMD部品実装装置

N2対応リフロー炉

基板加工機

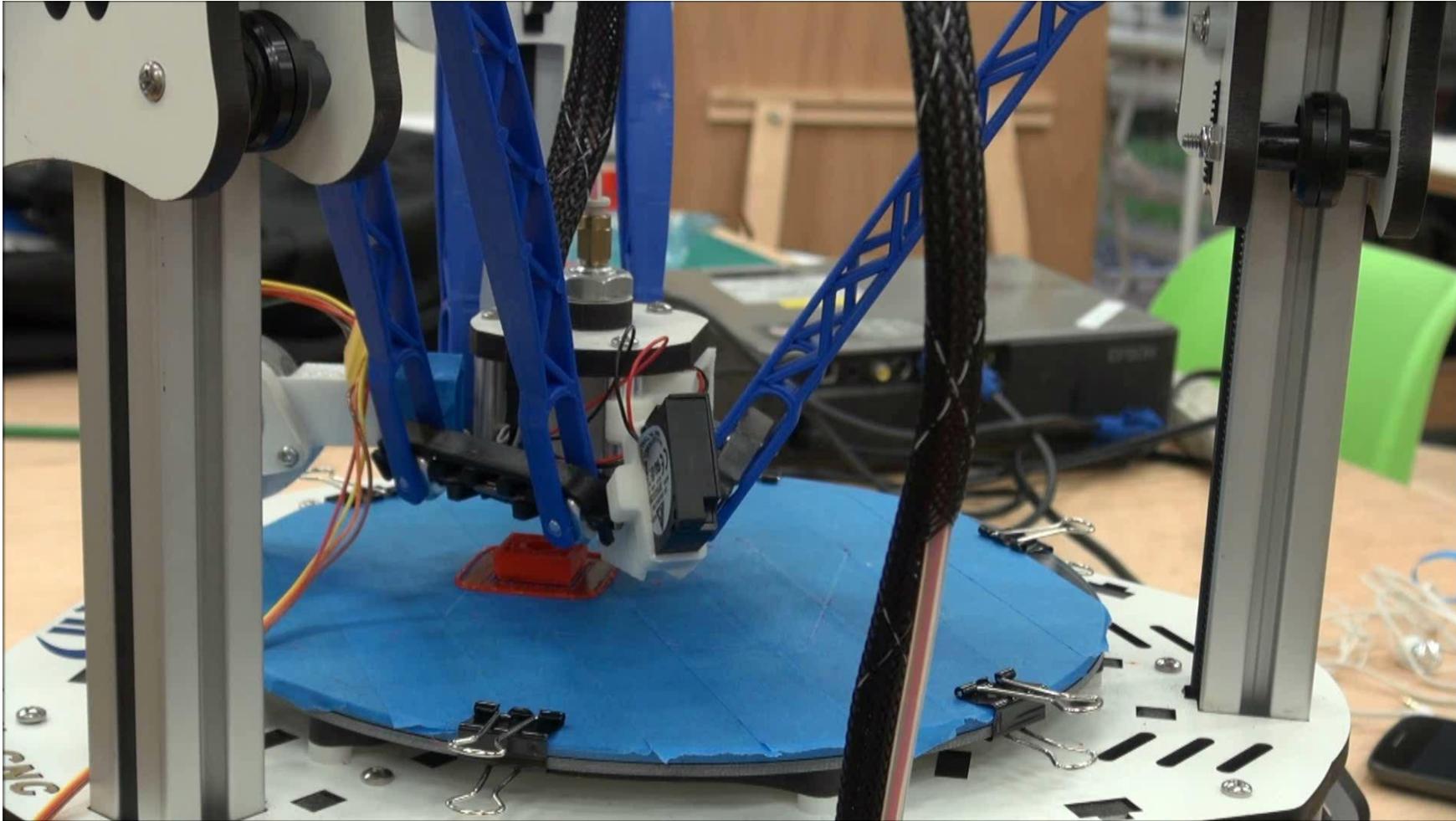
RFID for Unique ID







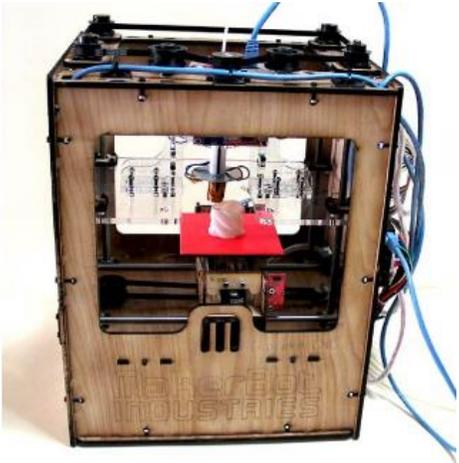
3D Printing with RFID Embedding



RFID Read/Write with Smart Phones



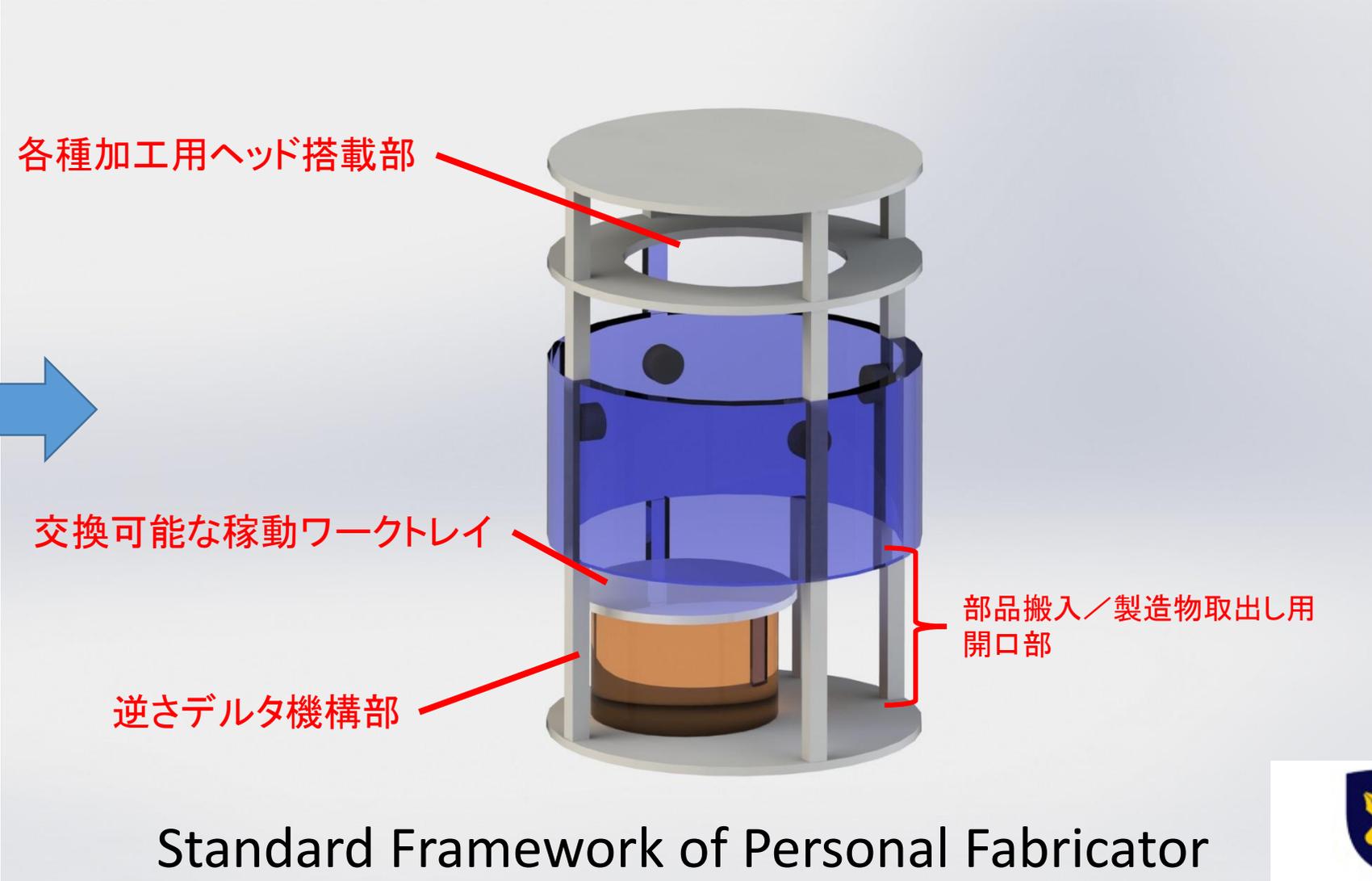
WorkStation Machine for IoT Products



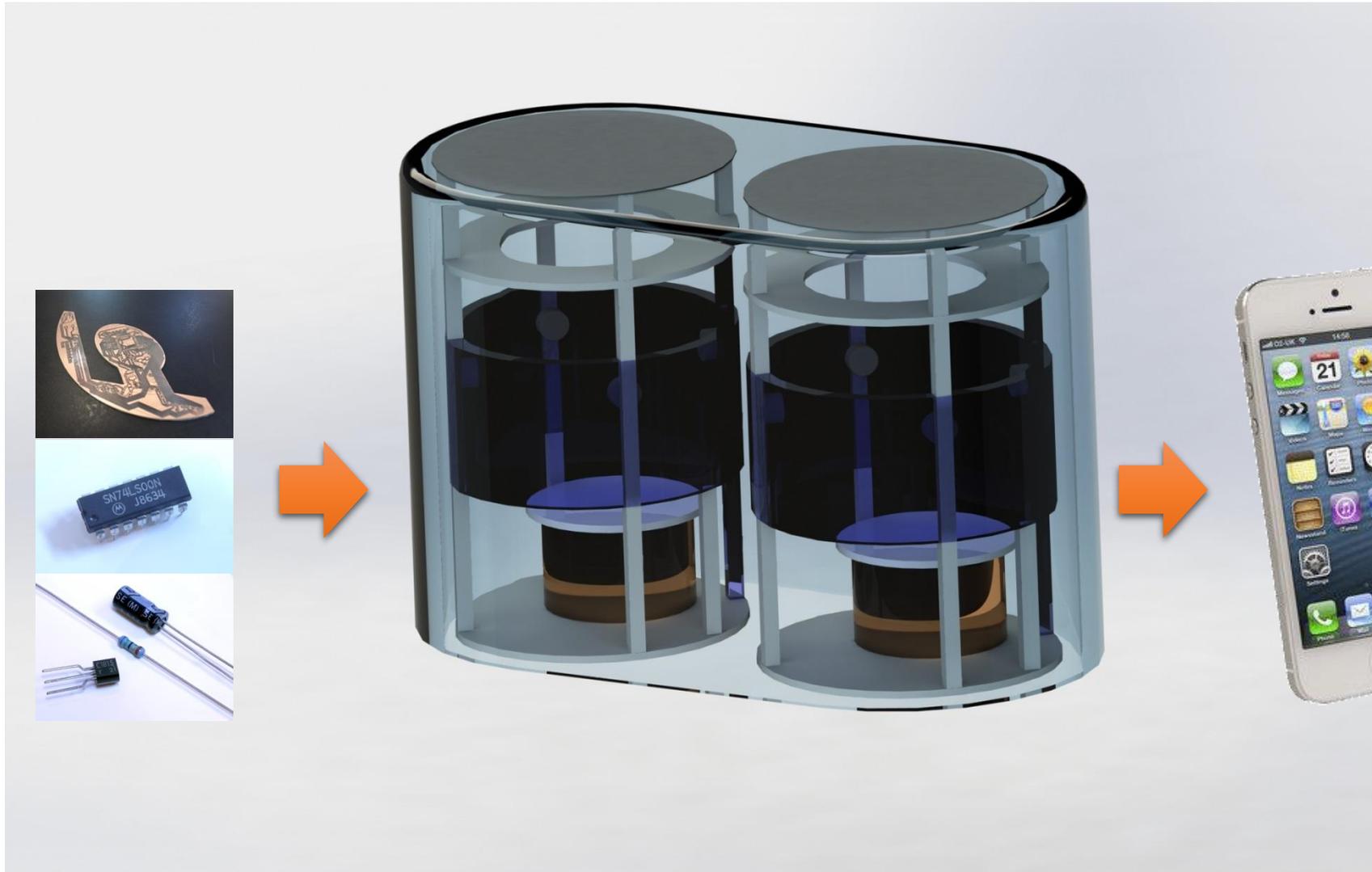
3D Printer



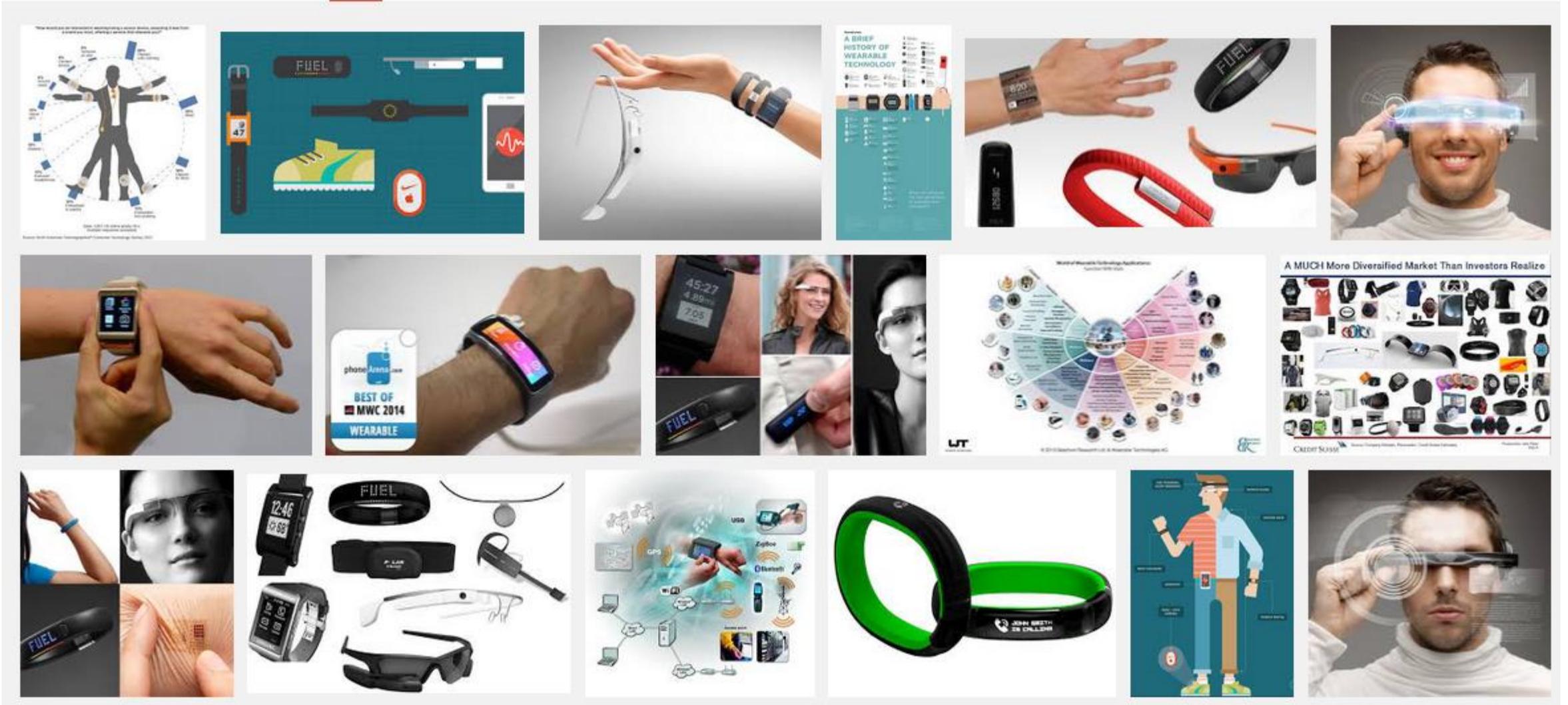
Milling, Dispence, Mount, Solder



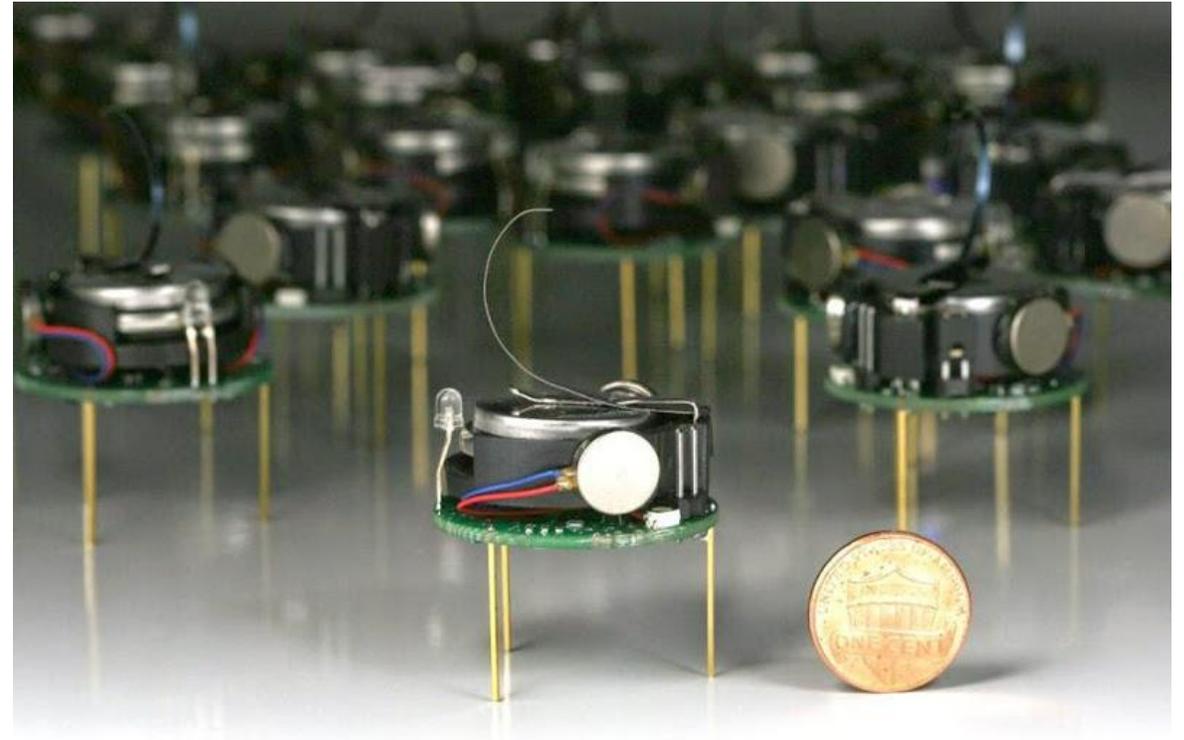
~2020



Wearable Devices?



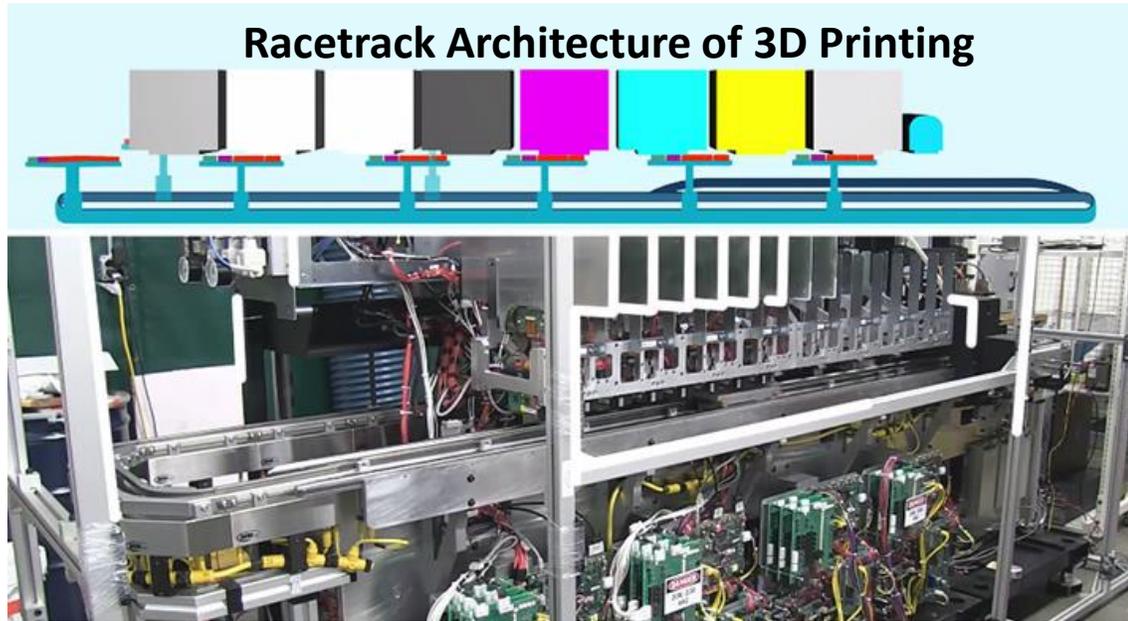
Swarm Robotics



“Kilobot” Self Organizing System Research Group, Harvard Univer
<http://www.eecs.harvard.edu/ssr/projects/progSA/kilobot.html>



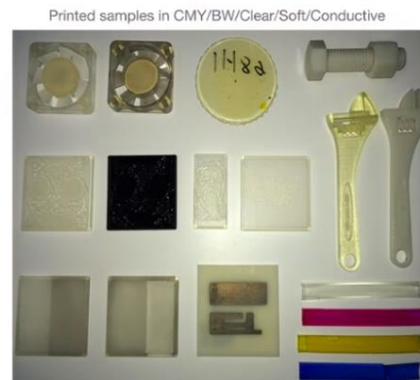
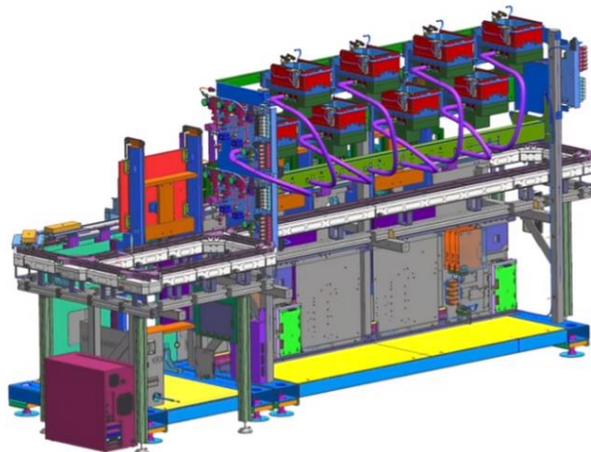
Google 「Factory in the Room」

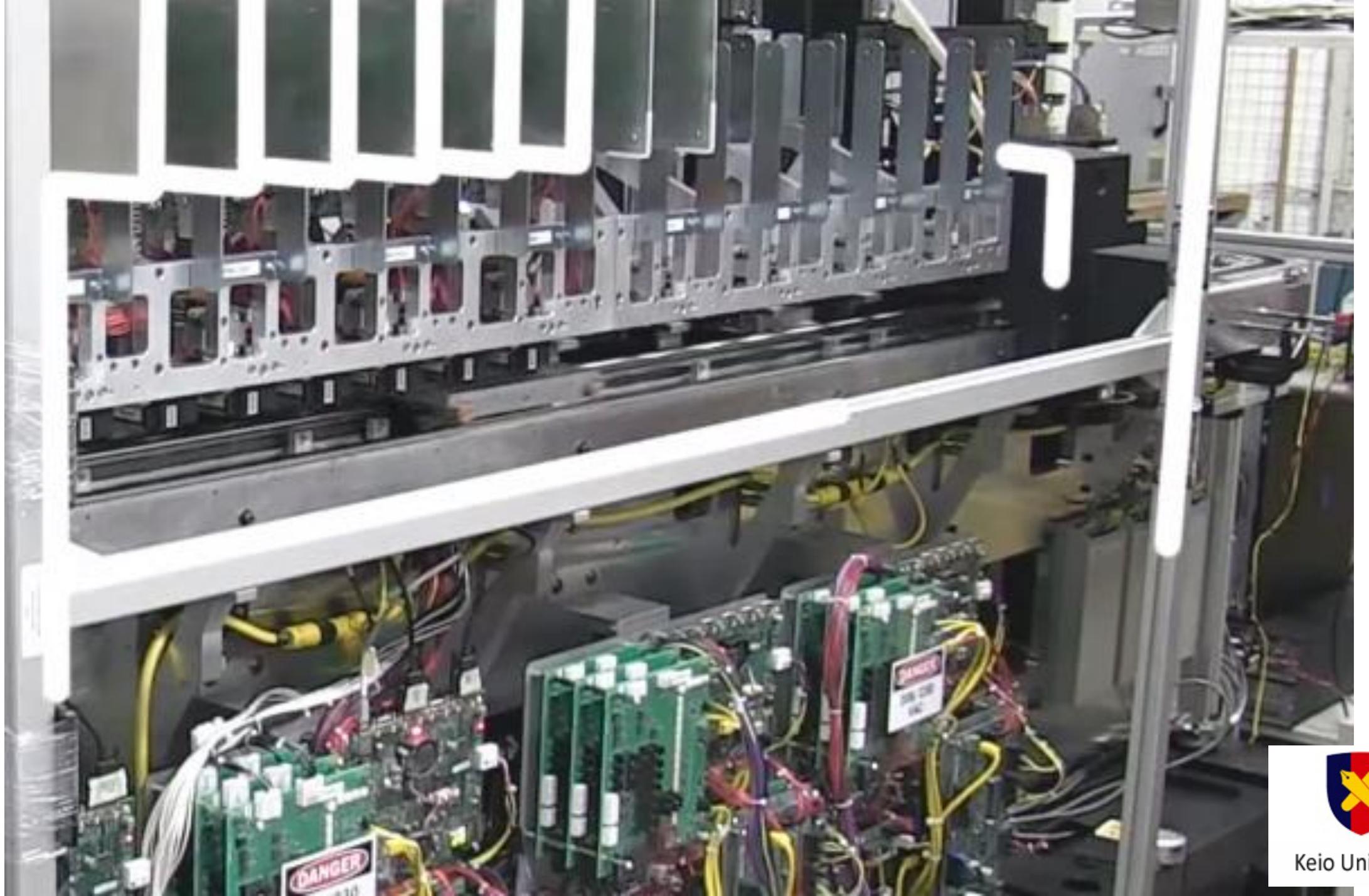


Project Ara production 3D printing platform

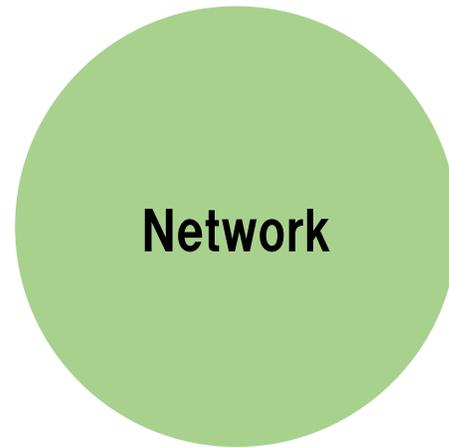
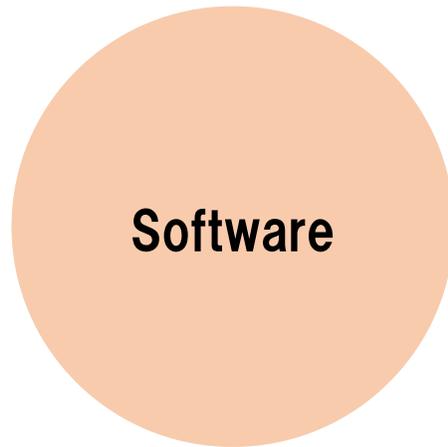
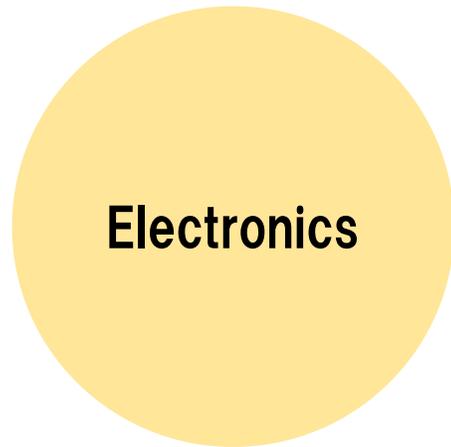
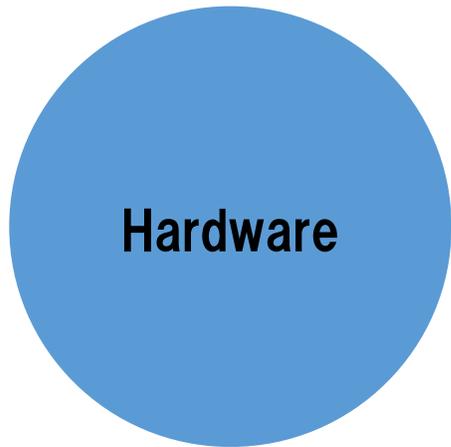


“Project Ara”





Manufacturing

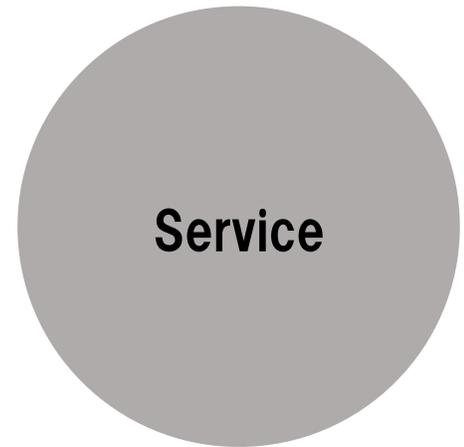
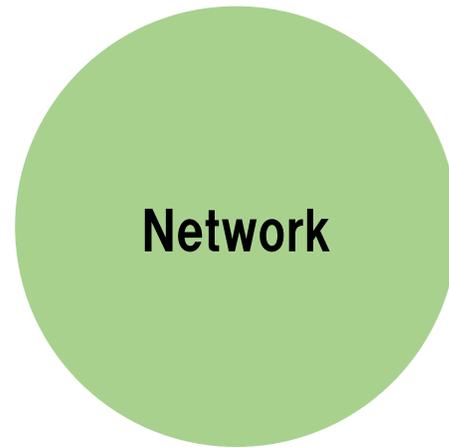
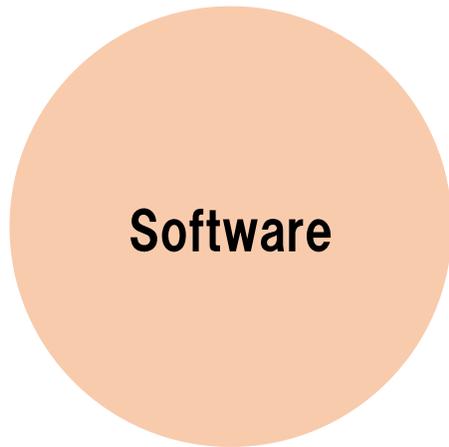
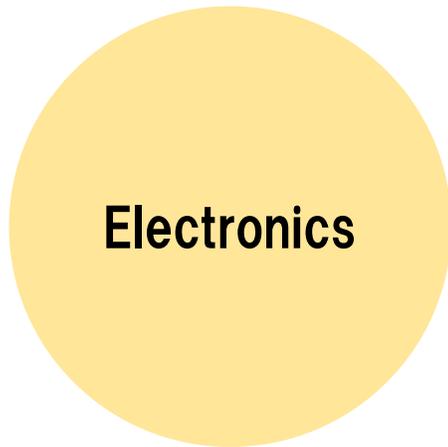
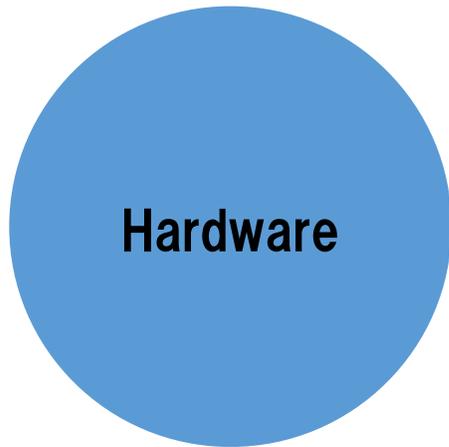


Internet of Things



Manufacturing

ICT Industry



Internet of Things

Computer

Fabricator

L
M
S



Main Frame



Factory



Workstation



Rapid Prototyping



Personal Computer



Personal 3D Printer

Industry4.0
Orin (Denso)

Fab Capsule

Individual

