

オープンイノベーションとファブラボ

慶応義塾大学環境情報学部

SFC研究所ソーシャルファブリケーションラボ代表

Fab Lab Japan Founder/ Fab Lab Asia Foundation Board

田中浩也

ファブラボ

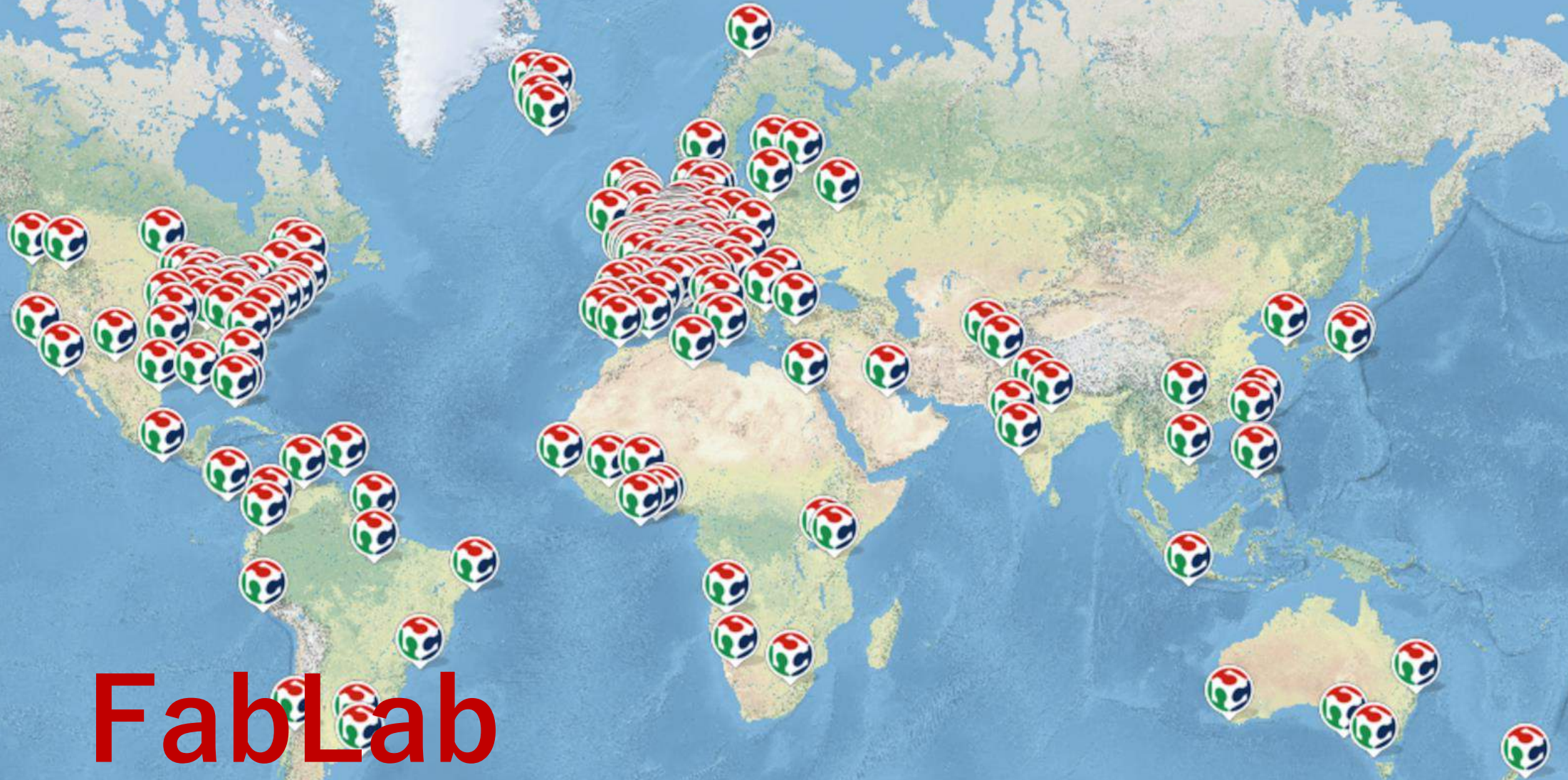
デジタルからアナログまでの多様な工作機械を備えた実験的な市民工房のネットワーク



3つの特徴

1. デジタルファブリケーション
2. グローバルインターネット
3. オープンイノベーション

89 Countries, 603 FabLabs (2016.1.24)



FabLab

The Network of Fabrication Laboratories all over the world

FABLAB MAP OF ASIA



FabLab Asia Network

Japan

- 01. FabLab Kamakura
- 02. FabLab Tsukuba
- 03. FabLab Shibuya
- 04. FabLab Kitakagaya
- 05. FabLab Sendai
- 06. FabLab Kannai
- 07. FabLab Oita
- 08. FabLab Hiroshima

Korea

- 09. FabLab Seoul

Taiwan

- 10. FabLab Tainan
- 11. FabLab Taipei
- 12. FabLab Dynamic

Philippine

- 13. FabLab Bohol

Singapore

- 14. FabLab Singapore

Mongolia

- 15. FabLab Mongolia

India

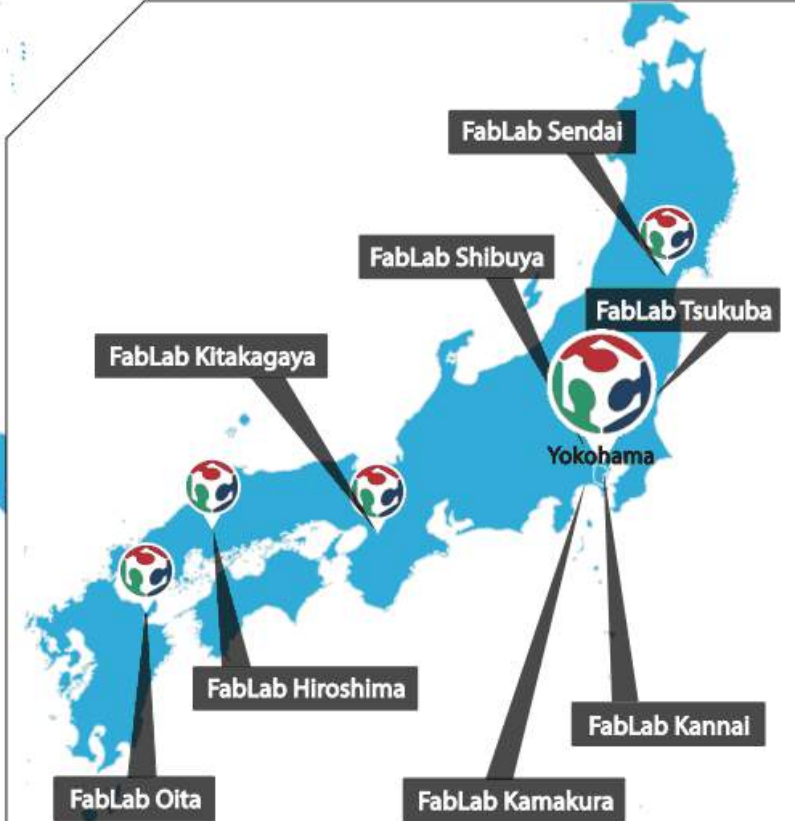
- 16. National Innovation Foundation
- 17. Vigyan Ashram
- 18. College of Engineering, Pune
- 19. Netaji Subhas Institute of Technology
- 20. Indian Institute of Technology

Indonesia

- 21. HONFablab

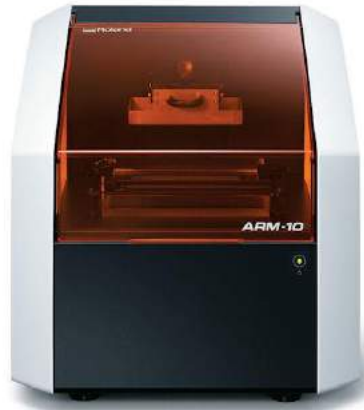
Afghanistan

- 22. FabLab Afghanistan



2011.4

コモディティ化したデジタルファブリケーション機器 (デジタル→フィジカル)



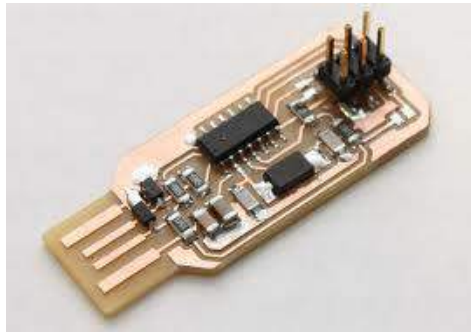
3Dプリンタ



ペーパーカッター



ミリングマシン



回路切削

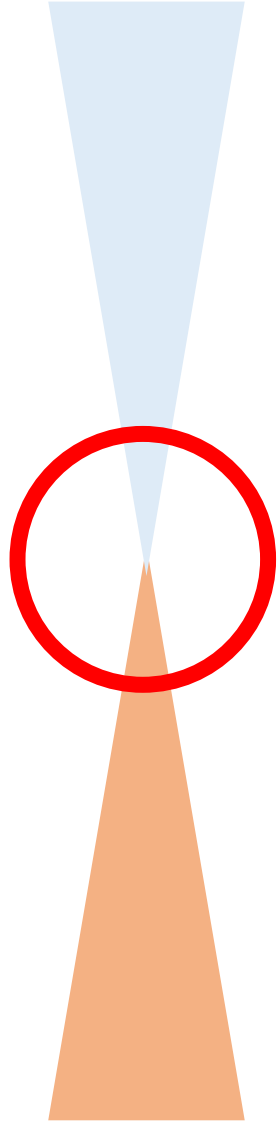


レーザーカッター



デジタル刺しゅうマシン

新しい使用法



コンピュータ



大型計算機

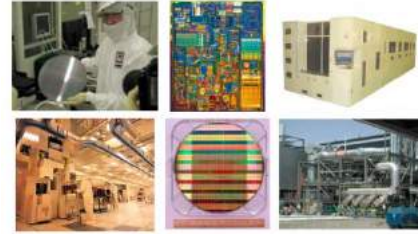


コンピュータークラブ



パーソナルコンピュータ

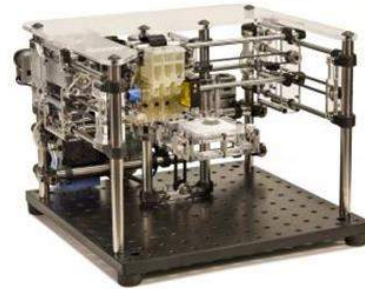
ファブリケータ



大型工作機

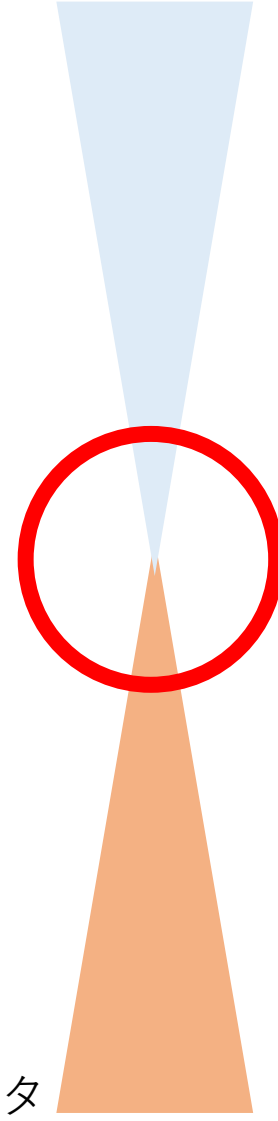


ファブラボ



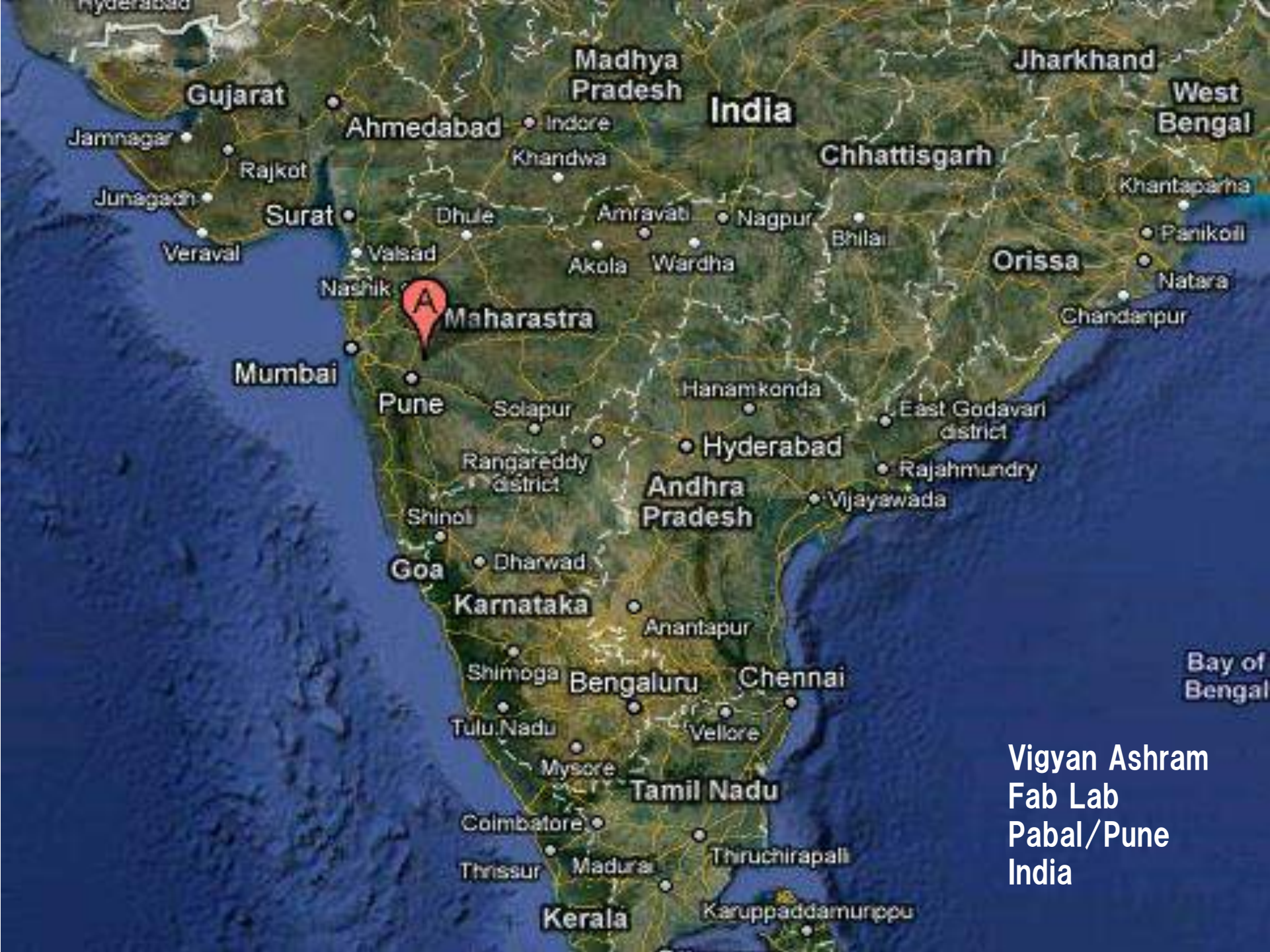
パーソナルファブリケータ

新しい使用法





ファブラボ・インド (2002)



Vigyan Ashram
Fab Lab
Pabal/Pune
India







The Fab Charter



Mission: Fab labs are a global network of local labs, enabling invention by providing access for individuals to tools for digital fabrication.

Access: You can use the fab lab to make almost anything (that doesn't hurt anyone), you may learn to do it yourself, and you must share use of the lab with other users.

Education: Making in the fab lab is based on doing projects and learning from peers; you're expected to contribute to documentation and instruction.

Responsibility: you're responsible for:
- safely knowing how to work without hurting people or machines
- cleaning up, leaving the lab cleaner than you found it
- operators: assisting with maintaining, repairing, and reporting on tool supplies, and incidents.

Security: designs and processes developed in fab labs must remain available for individual use although intellectual property can be protected however you choose.

Business: commercial activities can be incubated in fab labs but must not conflict with open access; they should grow beyond rather than within the lab, and they are expected to benefit the inventors, lab networks that contribute to their success.









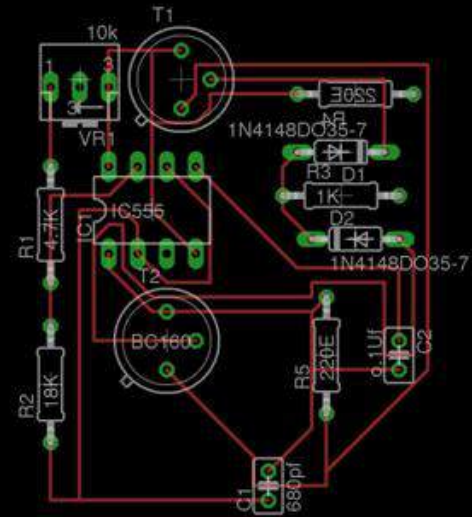








\$100 ウェザーデータロガー



超音波を発信して野犬を撃退する装置



人力発電機



ソーラークッカー



FabFi



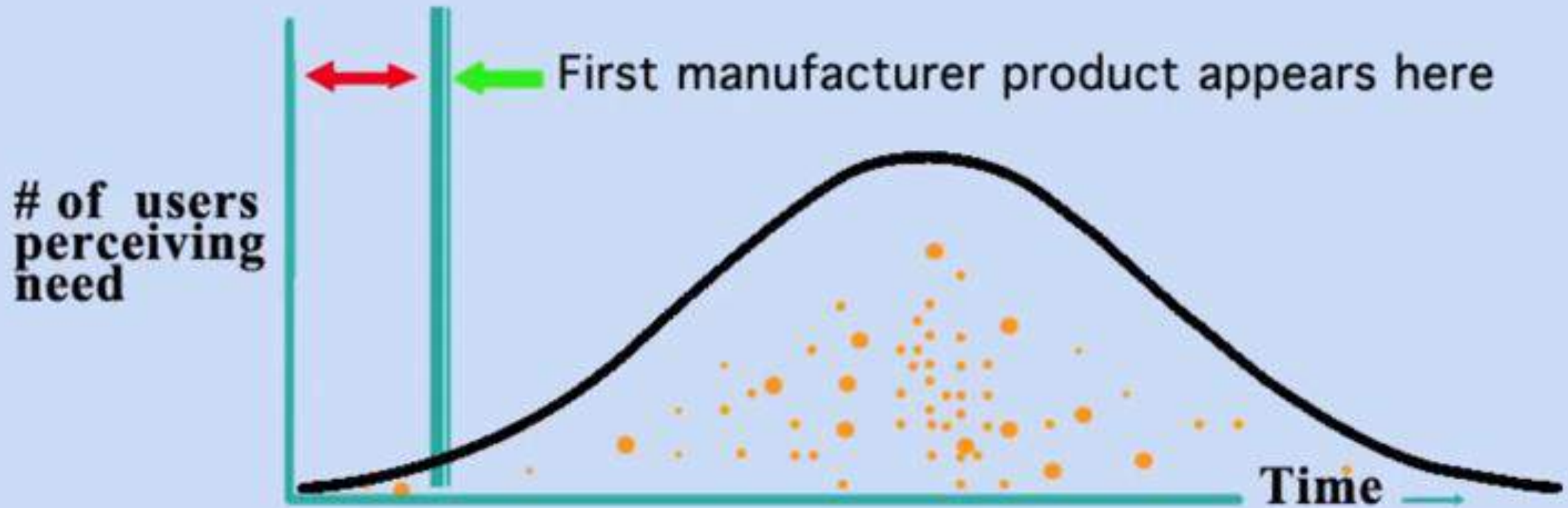
アフガニスタン

ユーザーイノベーション

マサチューセッツ工科大学教授 エリック・フォン・ヒッペル氏
Prof. Eric Von Hippel (Massachusetts Institute of Technology)



<http://coi.sfc.keio.ac.jp/coi/video/>







DYVIKDESIGN

CONCEPT DESIGN INTERACTION

KULUSKA + Jens Dyvik (FabLab Oslo)



MCU connections



Fab Academy

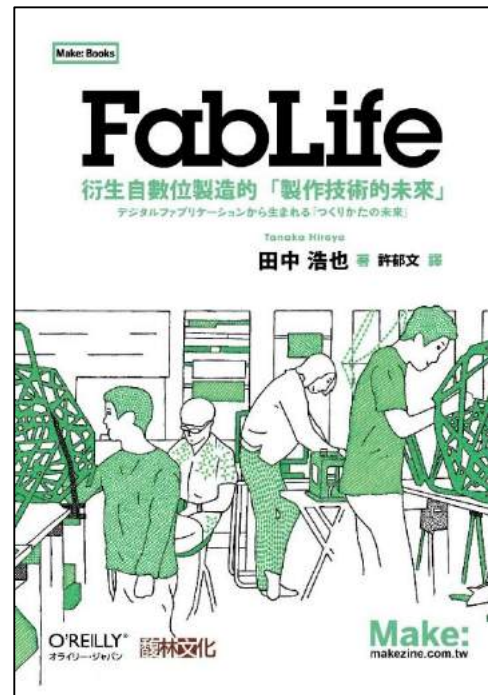


ファブラボの当初の目的(2000)

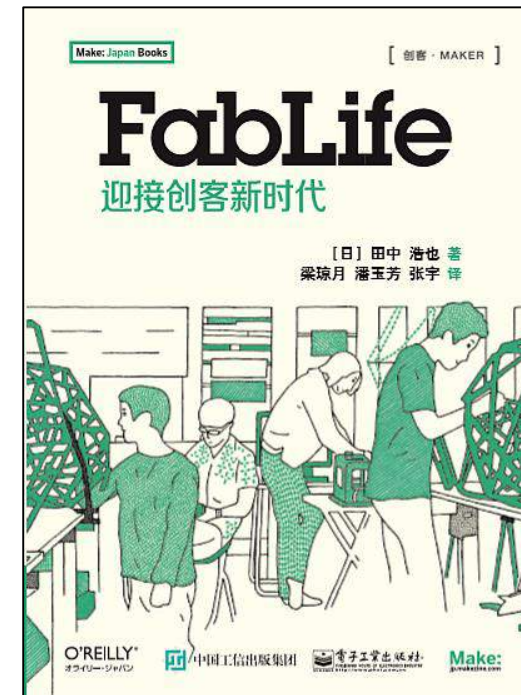
コンピュータ／デジタルの力を『**実際の生活改善に役立てる**』ために、
フィジカル世界での『**ものづくりと接続する**』必要性が明らかになった



Japan



Taiwan



China



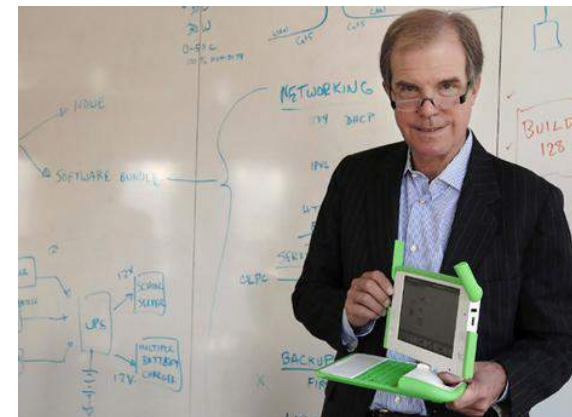
Children using proposed Dynabook, 1968



One Laptop per Child, 2000



Dr. Alan Kay



Dr. Nicolas Negroponte



Bajo licencia de creative commons © One Laptop per Child

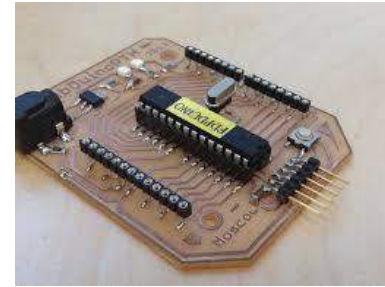
‘FabLab’: コンピュータを配布するのではなく、 コンピュータをつくる道具を配布する

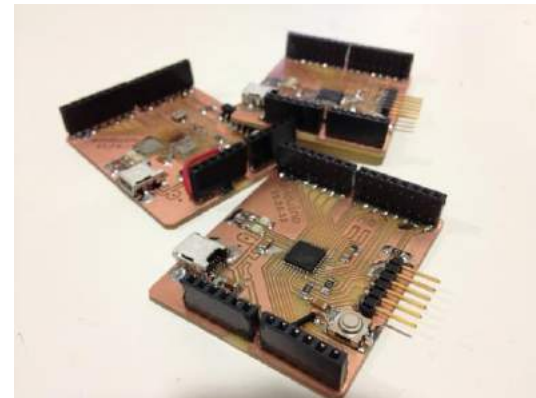
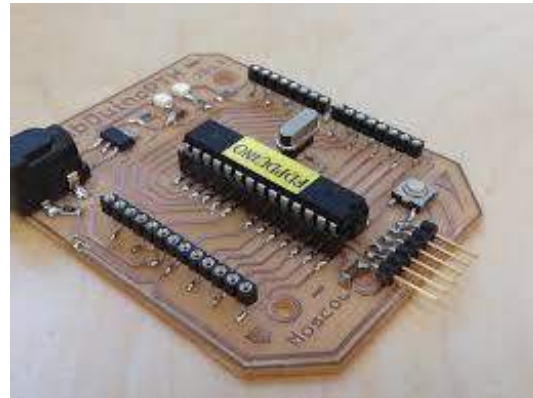


Computer



Computational Power
->Embed into everyday objects



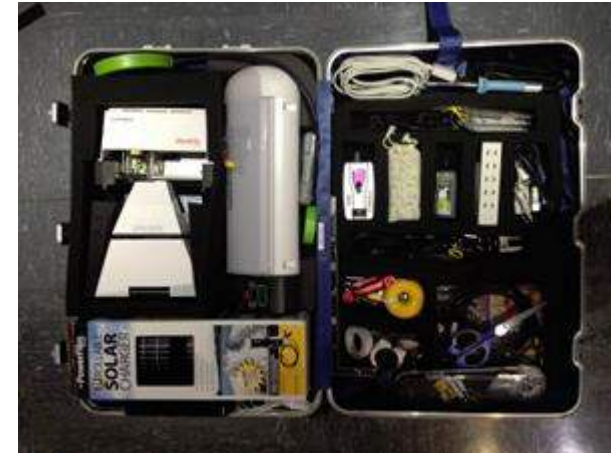




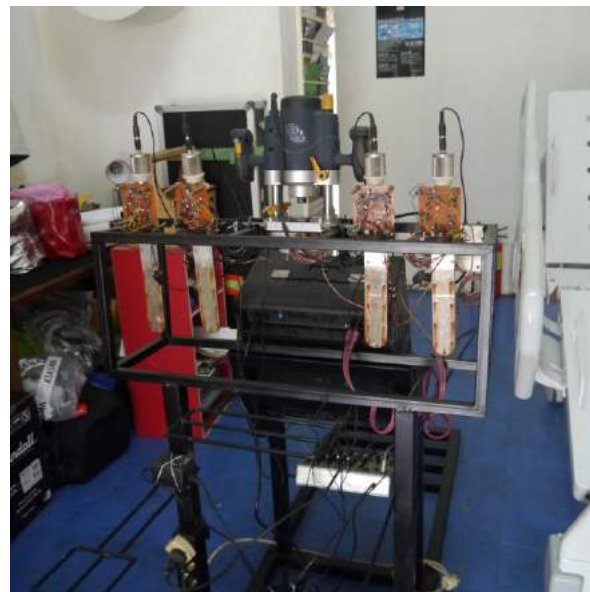
100\$ Prosthesis (Indonesia)



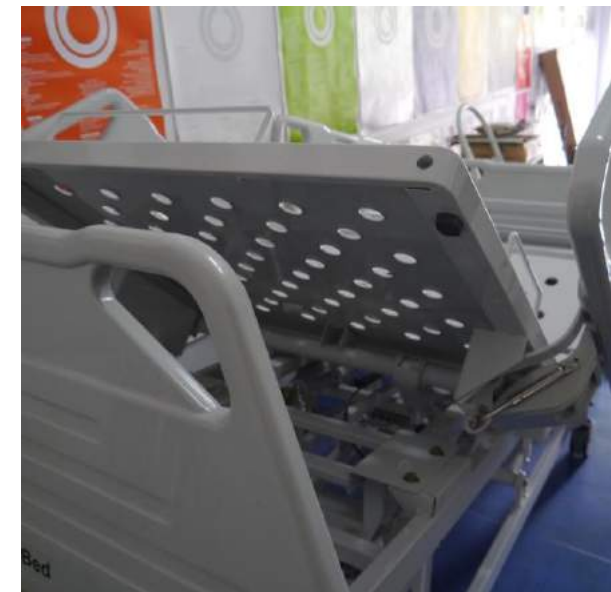
GPS sensors for sweeps (Norway)



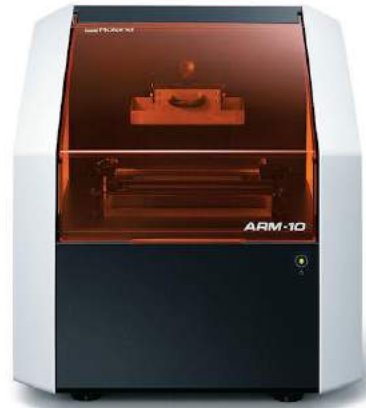
Egg-Counter (Ghana)



Robotic Beds In Hospitals (Indonesia)



共通化されたデジタルファブリケーション機器 (デジタル→フィジカル)



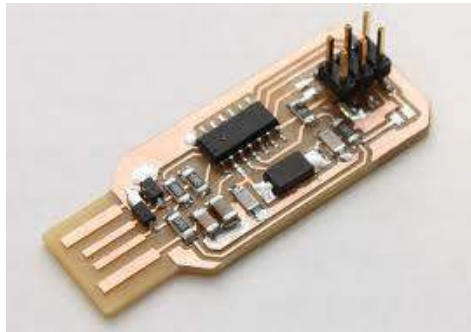
3Dプリンタ



ペーパーカッター



ミリングマシン



回路切削



レーザーカッター



デジタル刺しゅうマシン

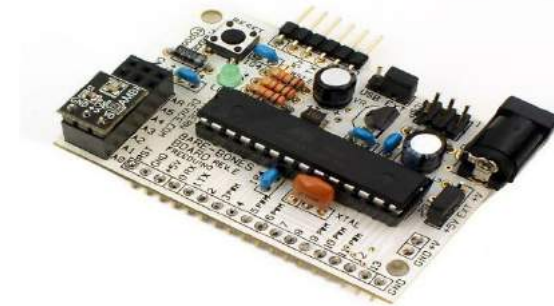
Microcontroller



Arduino

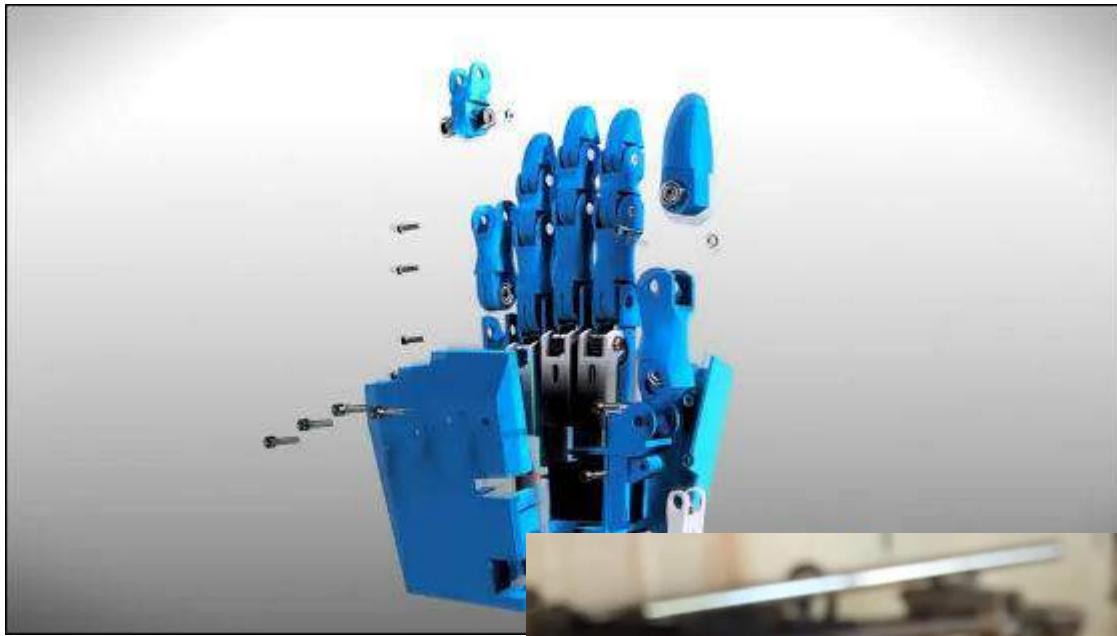


Raspberry Pi



Bare Bones Board

Open Source OR ¥3000



Robot Hands/ Artificial Arms

NIH (National Institute of Health) e-Nable





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



Designed by Jake Evill, New Zealand



Do It With Others (異なる専門性の人々と) = ファブラボはメンバー探しの場所

2つのオープンイノベーション

- 「閉じた組織を外に“開く”」 = 組織のオープン化
- 「混沌とした状況の整理」 = 標準化（パッケージ化）
= データのオープンな流通を下支え（プラットフォーム化）

“FabLab+”

現在のFabLabの標準機機チョイスは「IoT」に特化したもの、しかし・・・

- **Medical Fab** (病院向けFabLab)
- **Farm Fab** (農業向けFabLab)
- **Bio Fab** (バイオテクノロジー向けFabLab)
- **Metal Fab** (自動車向け?)



MakerNURSE™

Powered by MakerHealth

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Welcome To MakerNurse

Nurses are fabricating solutions to challenges on the front lines of care every day.

MakerNurse seeks to bring nurse making to the forefront of health care.

Learn how we are partnering with nurses and health care institutions to nurture creativity and ingenuity and improve patient care.



NURSES AS USER-INNOVATORS

July 8, 2015

The end of **'Give and Take'** Model

The beginning of **'Join and Share'** Model

MAKE



SHARE

LEARN