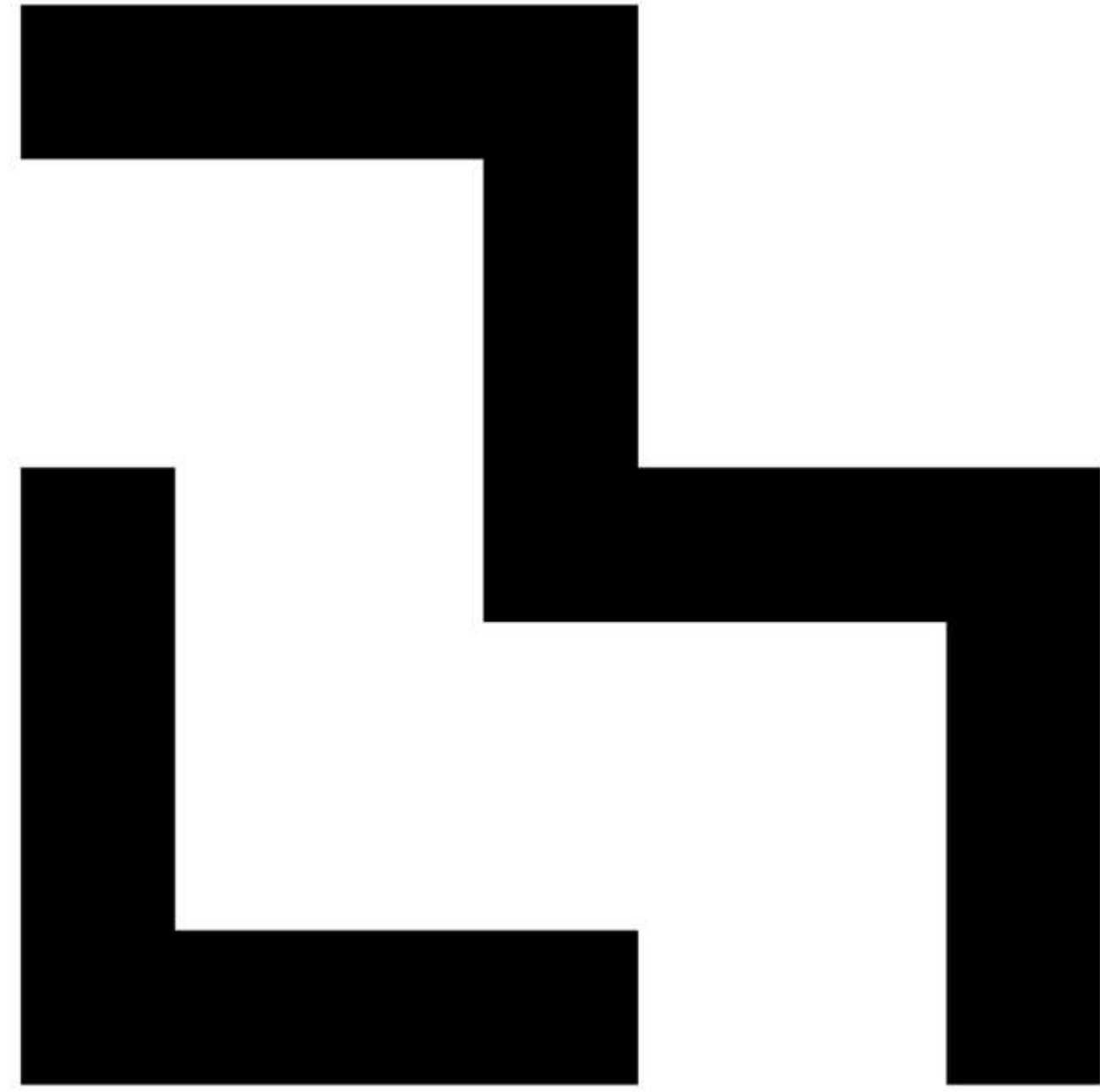




mit
media
lab

Algunos “cómo” para una ingeniería sostenible

Pedro Reynolds-Cuéllar



¿Sostenibilidad?

¿Ingeniería Sostenible?





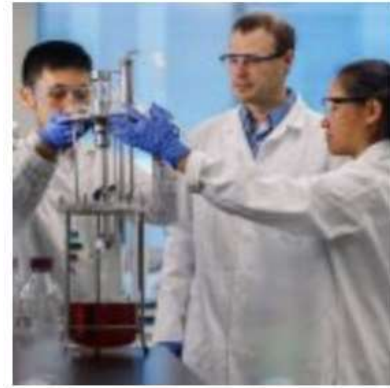
Aeronautics and Astronautics

Shape the next century of flight.



Biological Engineering

Crack the code of biology.



Chemical Engineering

Put molecules into action.



Civil and Environmental Engineering

Create smarter, better, faster infrastructures.



Electrical Engineering and Computer Science

Design, invent, or hack digital technologies.



Institute for Medical Engineering and Science

Go from the lab bench to the patient bedside.



Materials Science and Engineering

Redefine the material world.



Mechanical Engineering

Be at the heart of the maker movement.



Nuclear Science and Engineering

Advance nuclear technologies.



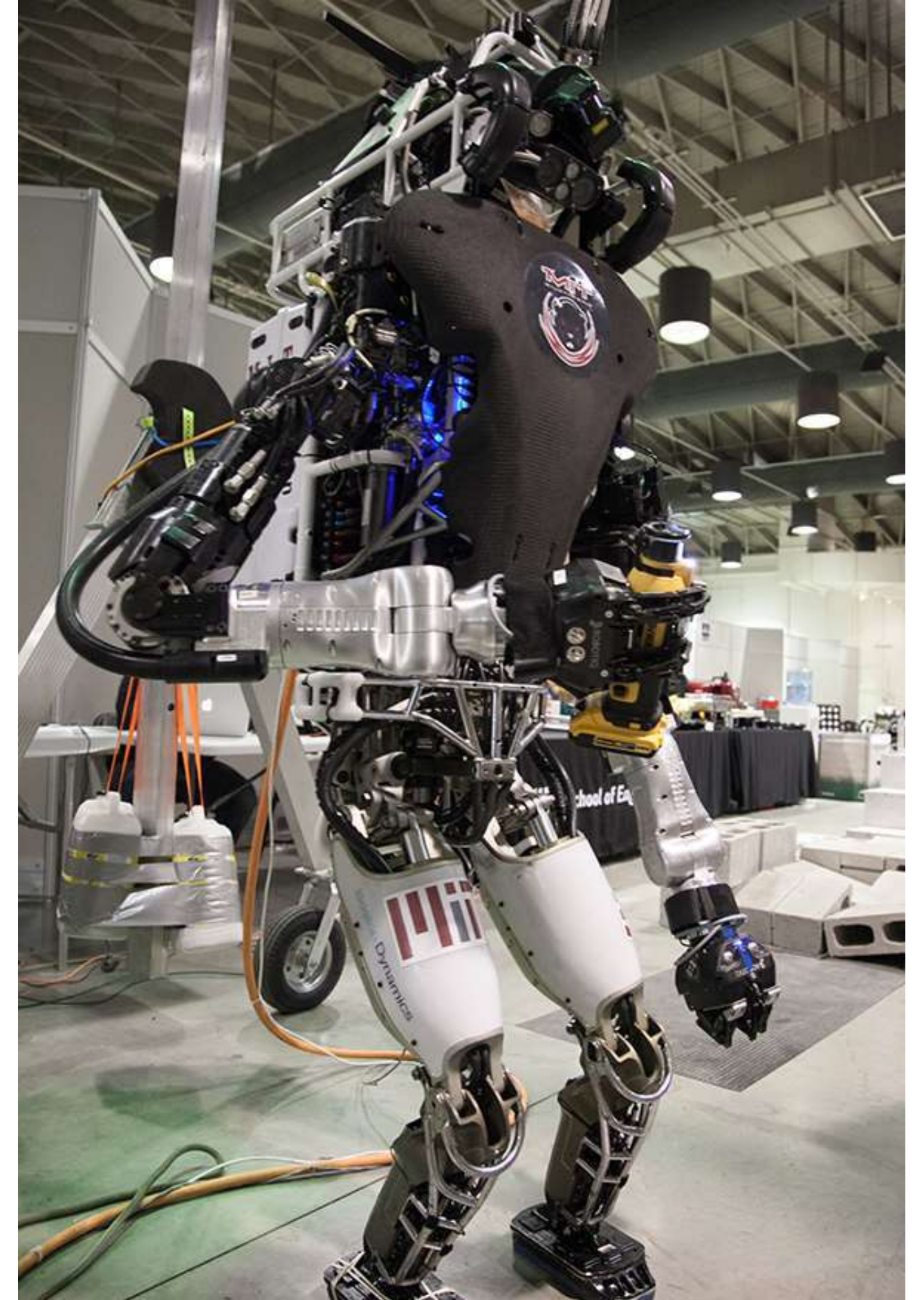
<https://engineering.mit.edu/academics/graduate/>

¿Qué salta a primera vista?

¿Qué mensaje quiere transmitir estas fotos?

¿Te identificas con alguna de ellas?





<https://www.nbcnews.com/mach/science/smart-technology-sees-through-walls-track-identify-people-ncna888721>

<https://t.co/fkFY5dN56t?amp=1>

<http://www.mit.edu/spotlight/forest-search-and-rescue/>

<https://www.digitaltrends.com/cool-tech/mit-alterego-technology-arnav-kapur/>

<https://www.ll.mit.edu/r-d/space-systems-and-technology>



Diseño *para*

Diseño *con*

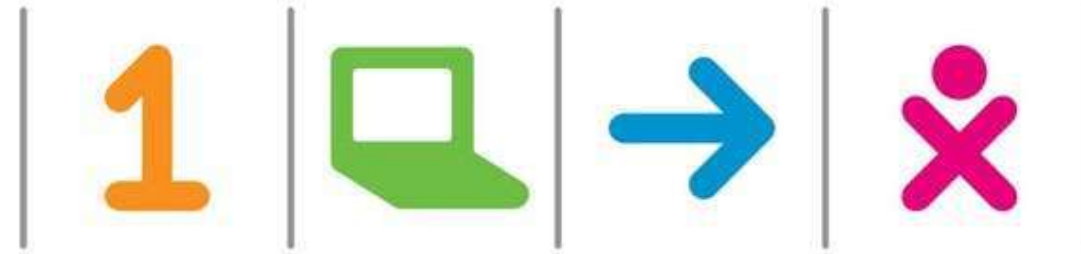
Diseño *por*

Propuesta por Amy Smith. MIT D-Lab

MITD-Lab

designing for a more equitable world





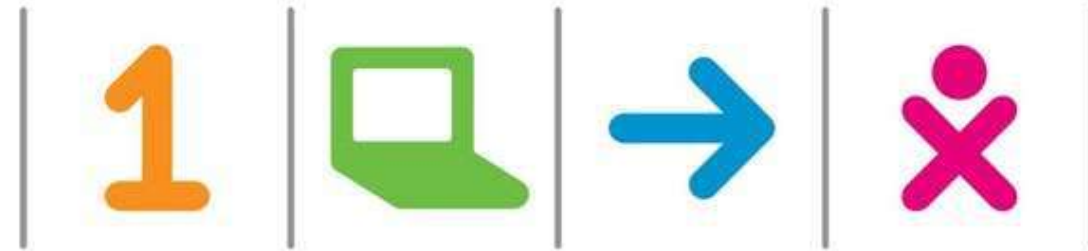
worldwide over 3 million children and teachers have xo laptops



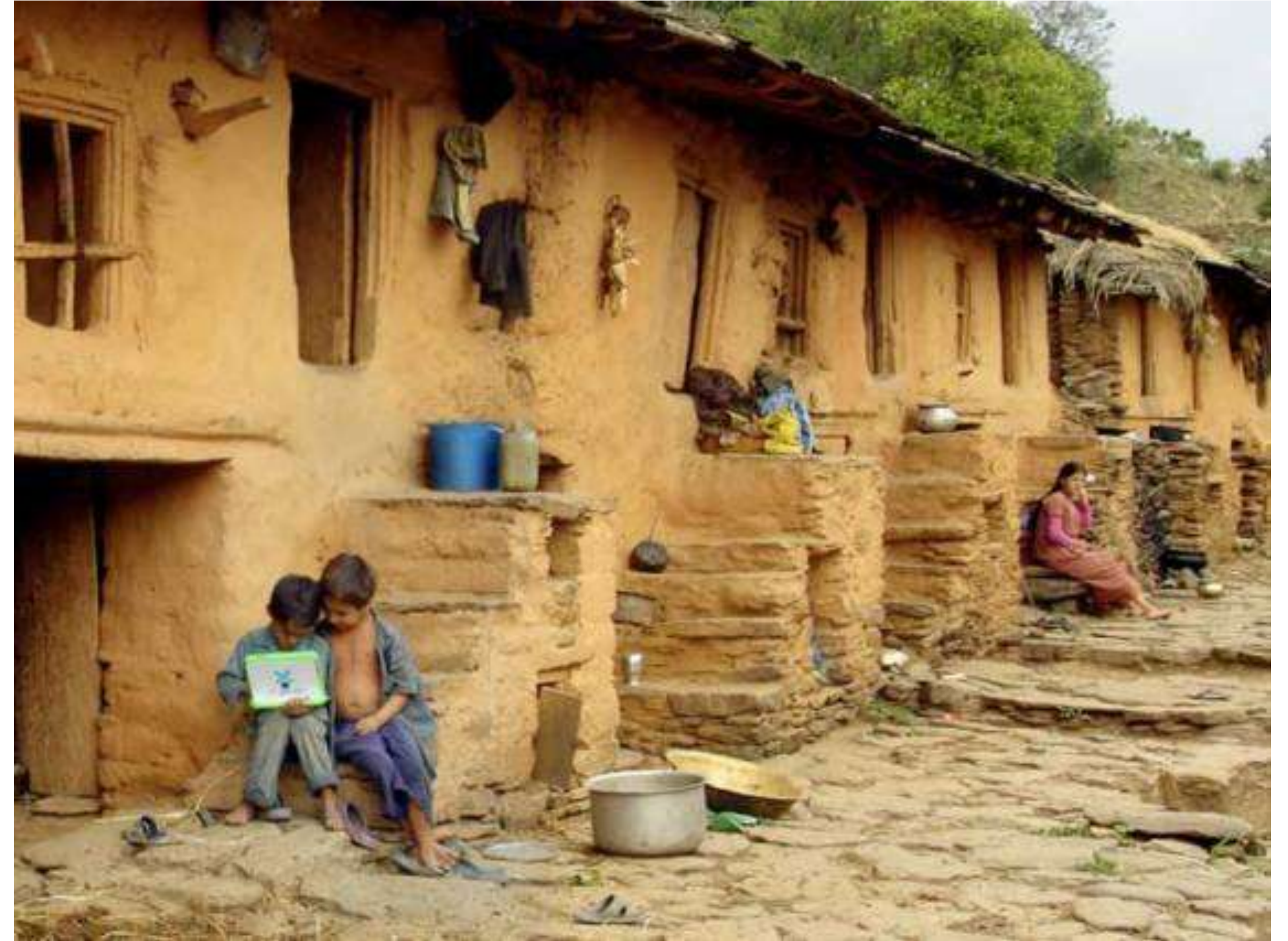
<http://one.laptop.org/sites/default/files/hardware-left-side-view.png>

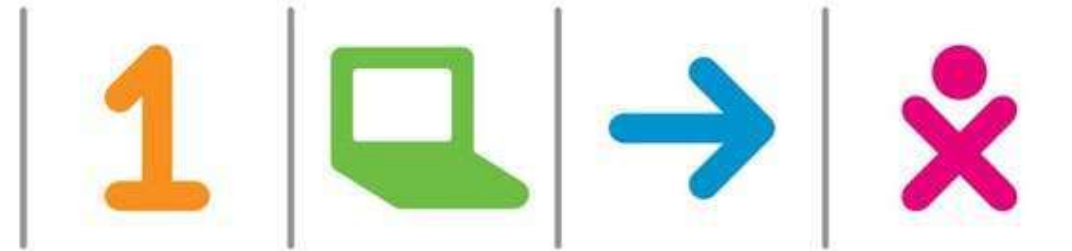


www.laptop.org/map



<https://larrycuban.wordpress.com/2018/05/05/whatever-happened-to-one-laptop-per-child/>







IDB WORKING PAPER SERIES No. IDB-WP-304

Technology and Child Development:

Evidence from the One Laptop per Child Program

FORMULATIONS & FINDINGS

One Laptop per Child Birmingham: Case Study of a Radical Experiment

Inter-American Development Bank
Education Division - SCL
Working Paper #2



OLPC Pre-Pilot Evaluation
Report (Haiti)

Home Computer Use and the Development of Human Capital

NBER Working Paper No. w15814

54 Pages • Posted: 15 Mar 2010 • Last revised: 18 Sep 2010





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Ingeniería “para”



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Ingeniería “con”, pero... ¿con quién?





Peruvian weavers, Rayampampa, Peru.



Arhuaco weavers, Sierra Nevada de Santa Marta, Colombia.



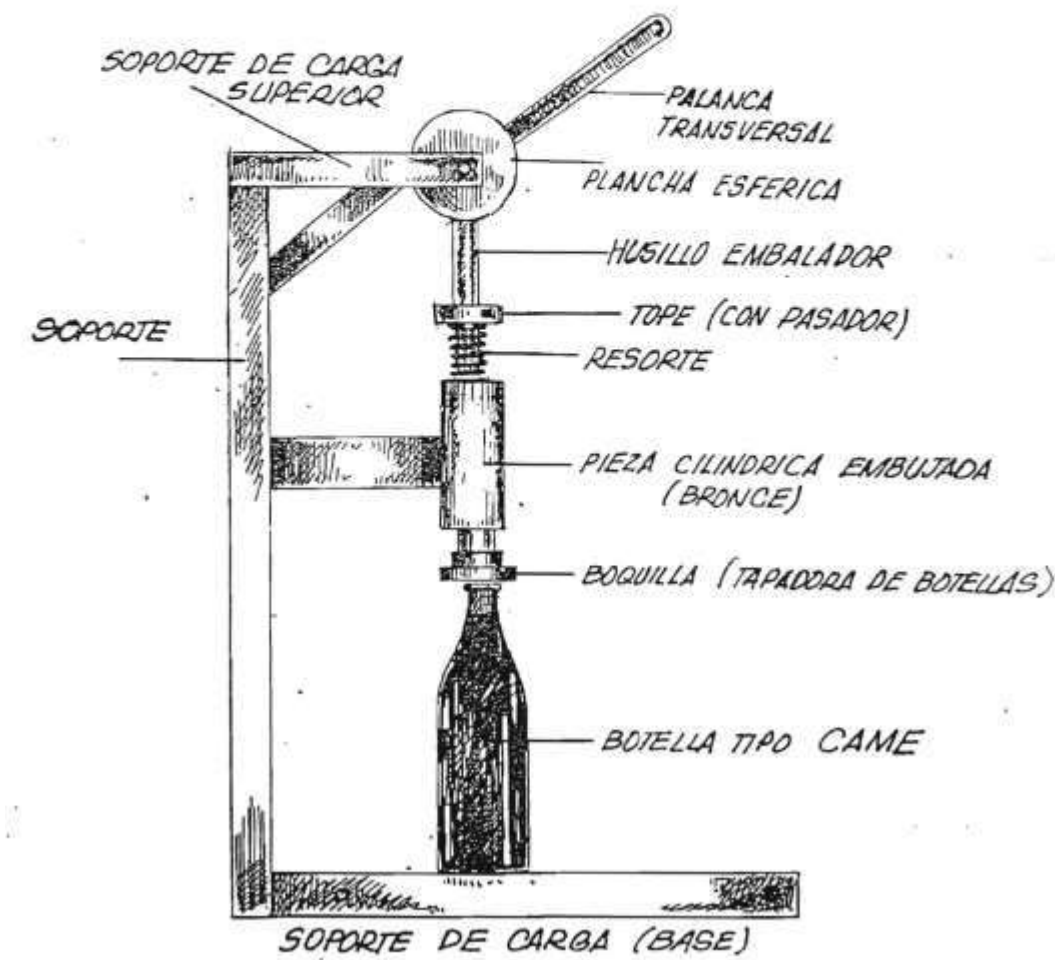
Collective ideation, Bolivian Andes. From *Tecnologías Campesinas de Los Andes*. Editorial Horizonte, 1988

TAPADORA DE BOTELLAS

Partir de una base a la cual se suelda un tubo vertical. Luego soldar una planchuela a 90° del tubo vertical, que a su vez lleva soldada una pieza cilíndrica de bronce embujada, por la cual pasa el eje donde va la cuchilla (tapadora). En la parte superior del tubo vertical se suelda una pequeña asa a 90° para fijar la palanca que presiona una chapa esférica al eje de la boquilla, y ésta retrocede por la acción de un resorte.

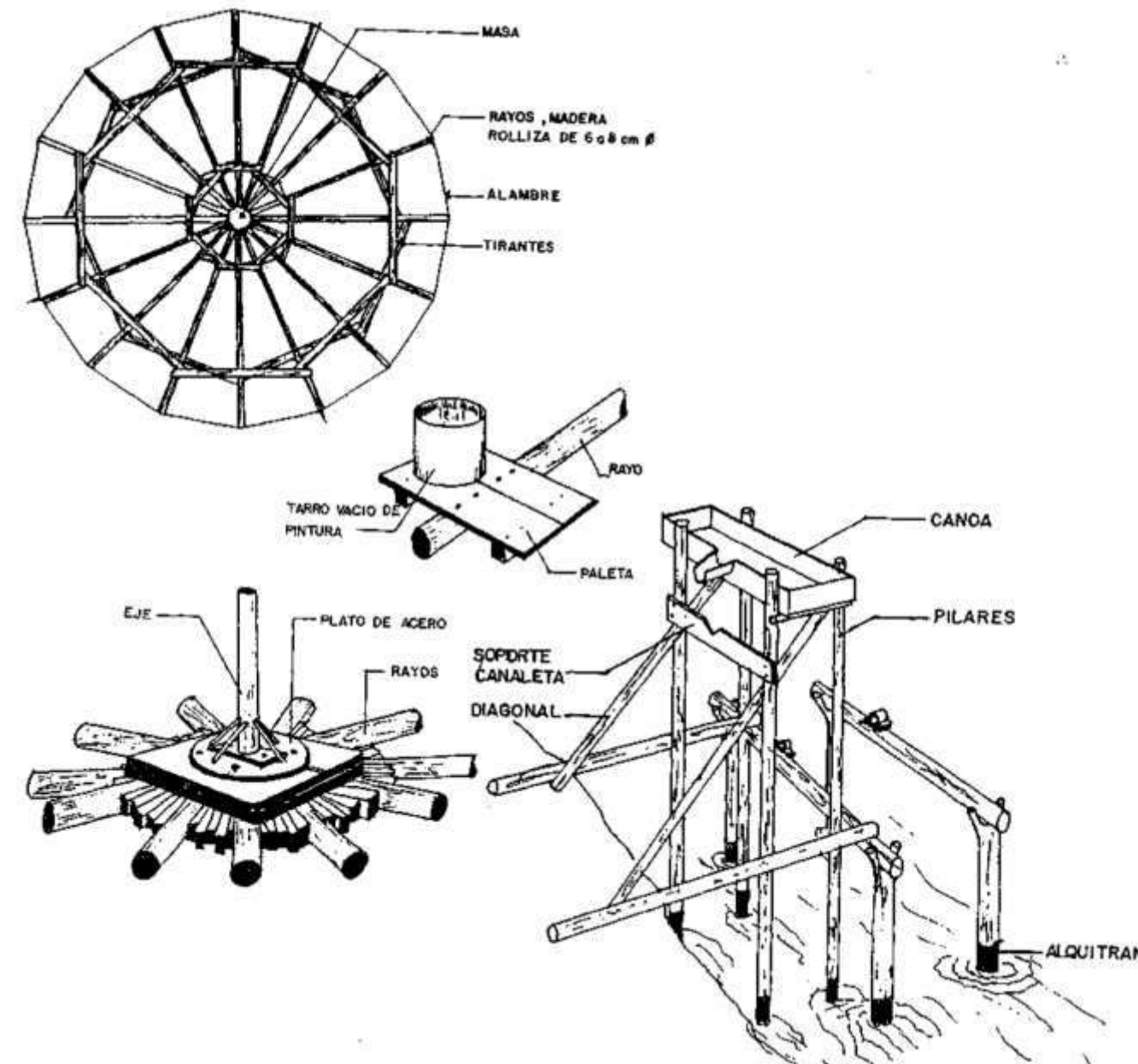
Esta pequeña base lleva soldadas dos pies de apoyo al tubo vertical. La boquilla es independiente del eje y esto permite la fabricación de distintas boquillas para el tapado de diferentes pomos y botellas.

Guane, Pinar del Río.

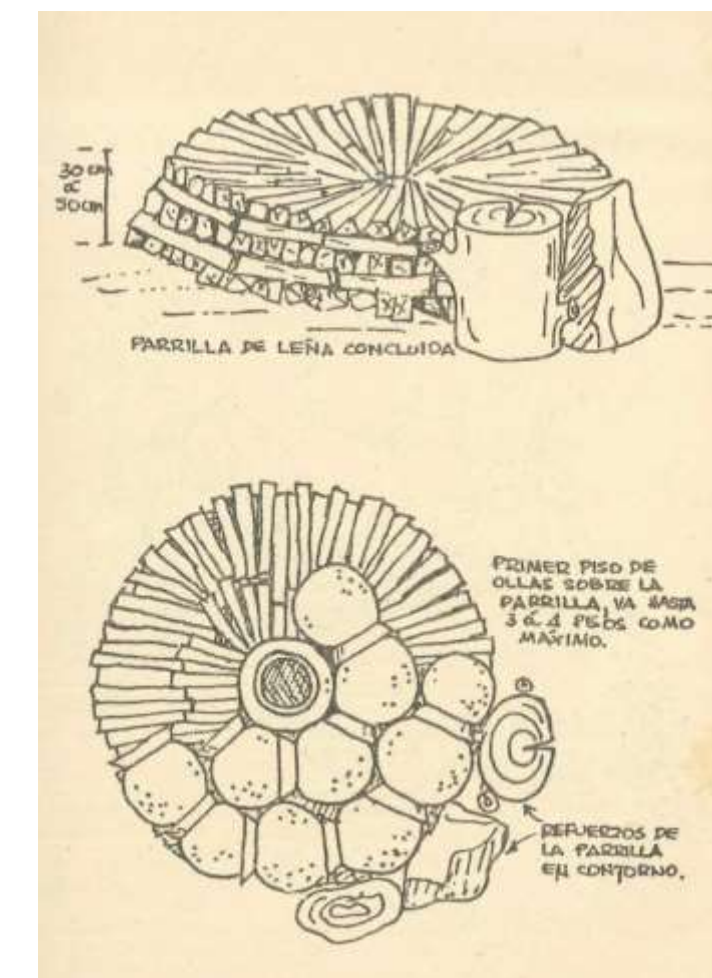


90

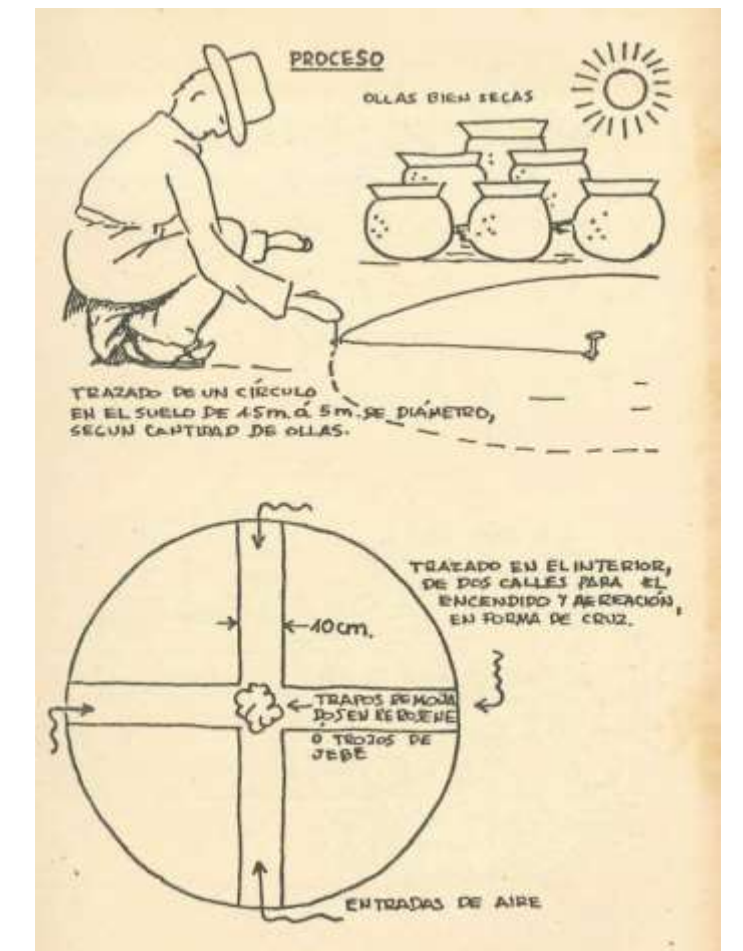
Con nuestros propios esfuerzos (With Our Own Efforts). Editora Verde Olivo, Cuba, 1992.



Tecnologías para la erradicación de la pobreza. PNUD. 1987.
<https://www.ideassonline.org/innovations/techn.php>



Tecnologías Campesinas de Los Andes. Editorial Horizonte, 1988





*Don Gregorio, coffee grower, Guavio Alto, Cundinamarca, Colombia.
Photo: Anping Wang*



*Mamos Arhuacos, Sierra Nevada de Santa Marta, Colombia.
Photo: Anping Wang*



*Carlitos, beekeeper, Quinini, Cundinamarca, Colombia.
Photo: Anping Wang*



*Doña Flor, coffee grower, Tibacuy, Cundinamarca, Colombia.
Photo: Anping Wang*



*Lucely, traditional Arhuaco weaver. Sierra Nevada de Santa Marta, Colombia.
Photo: Felipe Condon*

La otra Sostenibilidad







Coffee roaster with coffee cooling and ventilation systems.

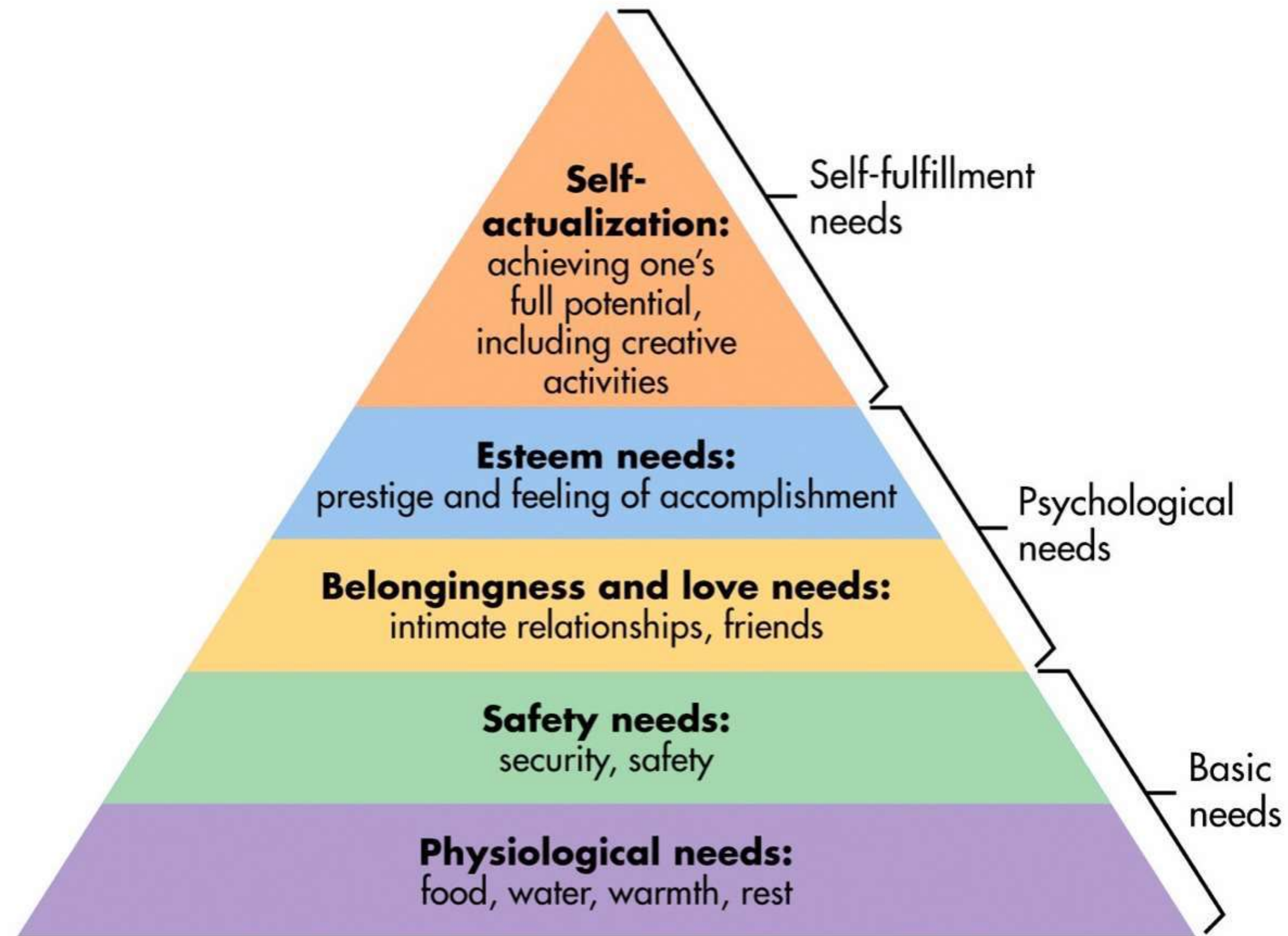


Arduino-based roasting curves automatized system



Car rearviewmirror used to track coffee beans color shading inside the roasting drum

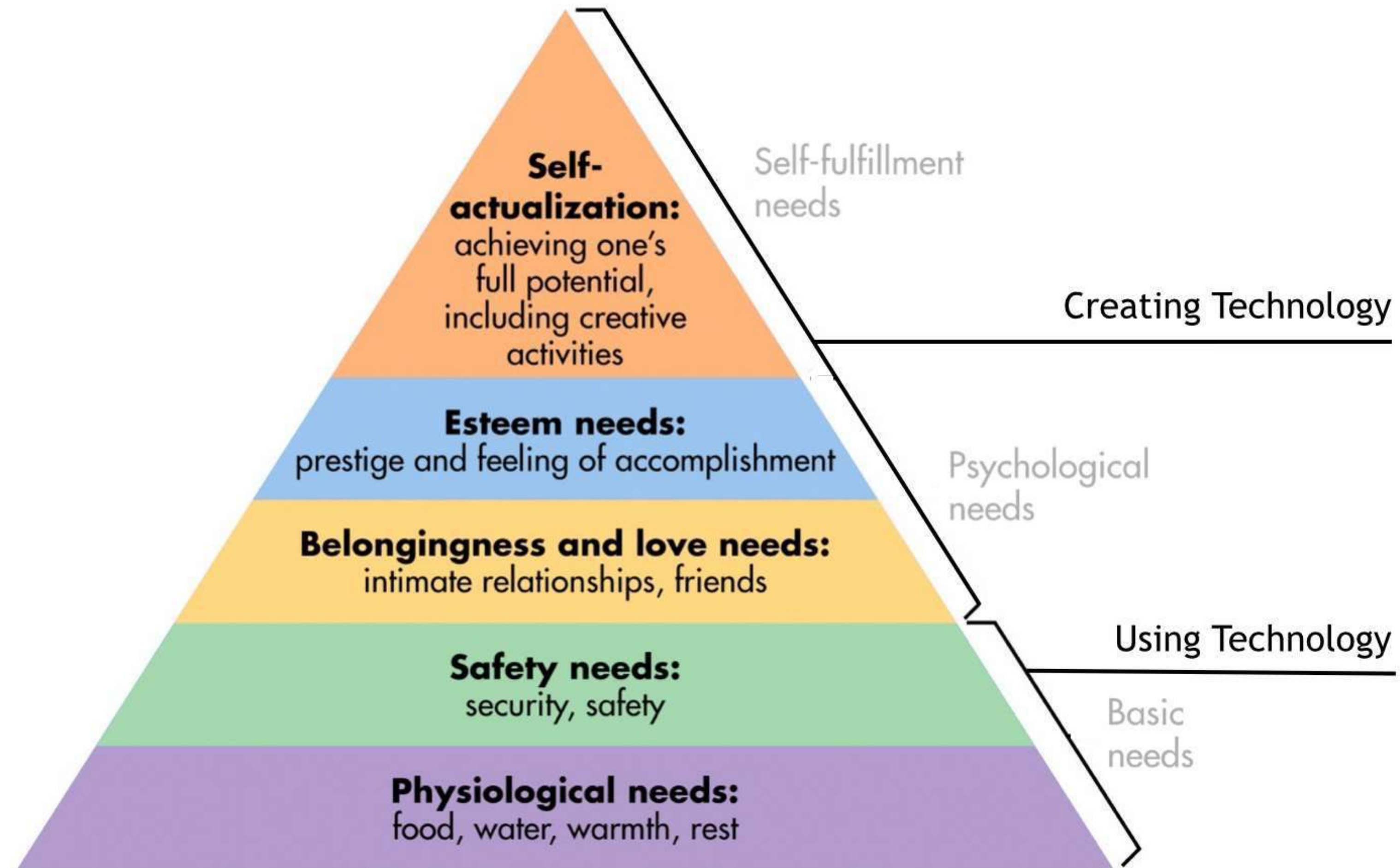
Maslow Hierarchy of Needs



<https://www.simplypsychology.org/maslow.html>



Maslow Hierarchy of Needs



<https://www.simplypsychology.org/maslow.html>



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Sostenibilidad 100%

Localidad vs. Globalidad



a) No más un educador del educando.

b) No más un educando del educador.

c) Sino, un educador - educando con un educando - educador.

Eso significa:

1) Nadie educa a nadie.

2) Nadie se educa solo.

3) Los hombres se educan entre sí, mediatizados por el mundo.

La Educación como práctica de la libertad – Paulo Freire 1965





Es tu turno de encontrar el “cómo”
Y la sostenibilidad que te identifica
en de tu práctica de ingeniería

Gracias

pcuellar@mit.edu

