

careables.org

RRI practices in healthcare

Dr. Barbara Kieslinger, Centre for Social Innovation - ZSI,
Vienna, Austria



Careables.org is managed by the Made4You project and has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 780298.

careables is a mixed community of people and organisations committed to the **co-design and making of open, personalised healthcare for everyone**, born from the EU-funded collaborative H2020 project Made4You

Lupo







Lupo's cane tip



A definition

Careable

a **solution** that aims to **improve the quality of life** for people with unmet needs or facing physical limitations.

open = co- designed, replicable, accessible, adjustable, and shareable online, using digital technologies.

a **new category** that promises readily customized solutions and a **horizontal and collaborative approach to health and care**.

Slide N Shop



from Katharina Hailer, Thimo Planert, Madini Liebscher, Dennis Knoll, Amélie Cayré

Stomanoir



from Anna John, Rutger Oomkes, Sanne Muiser (Amsterdam, Niederlande)

Nailcutter for one hand



by Benjamin Nisker

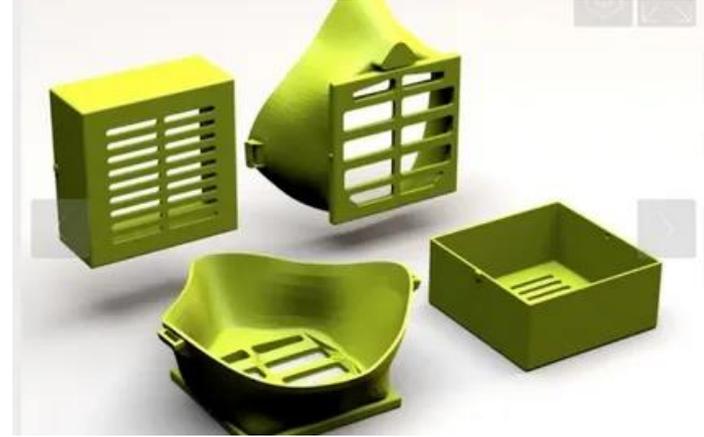
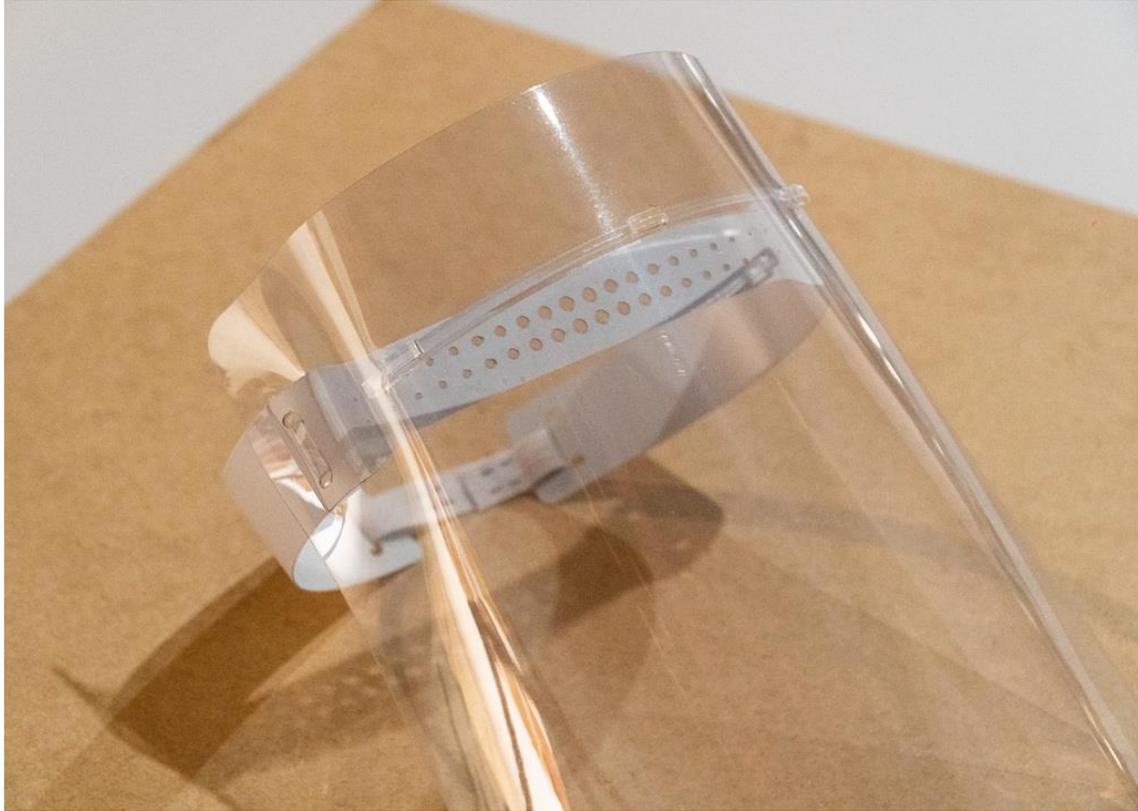


by Leopold Seiler

+ methods for co-design & documentation



... and then came Covid-19



COVID-19

stories

resources

projects

< BACK TO STORIES

CASA CRIATURA
PROTECTIVE GEARS
RELATED STORIES

Safety gear thanks to 'Casa Criatura'

A great initiative in reaction to COVID-19 in Brazil



CASA CRIATURA

In Olinda, a historical site in Brazil, the Casa Criatura has started to locally produce medical protection masks and donate them to the municipality's Health Department in their support to fight COVID-19.

When faced with the Coronavirus, Casa Criatura acted rapidly and adapted their plans to the production of safety gear and protection products. So far, all the products were manufactured with their own resources, using mostly 3D printing. Casa Criatura now counts on donations so that this work does not stop.

PROTECTIVE GEARS

COVID-19 stories resources projects

Training kit



PPE Playbook for Makers

A Playbook made by designers and doctors for anyone at home to create Personal Protective Equipment (PPE) and

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Principles

Coronavirus Tech Handbook

Coronavirus Tech Handbook

Sourcing and sharing reliable information on COVID-19 is vitally important and the Corona Virus Tech

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Principles

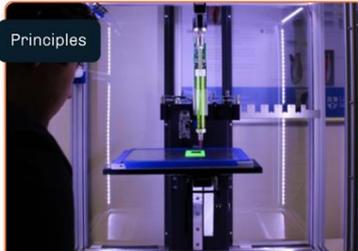


Digital Solidarity

In a time when social distancing has become the center of our lives, DIGITAL SOLIDARITY wants to help you out while

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Principles



Corona Care Maker Initiatives

A very useful list of projects that shows makers' responses to the Covid-19 outbreak. Careables wants to try to

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Training kit
Kit

prototyping series for
OpenSource healthcare
innovation.

careables.org



Careables Training Kit

The toolkit provides a set of guidelines and templates to organise participatory co-design process in open source

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Methodology



Share4Rare Toolkit for Patient Advocacy

A practical guide to patient advocacy, specifically connected to rare diseases

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COVID-19

38 projects

careables

Design for care collection

Careables is an open and inclusive approach to healthcare for citizens based on digital fabrication, distributed manufacturing and collaborative making.

www.careables.org

Tagged with:

COVID-19



MY FACE MASK

Custom 3D printed mask with replaceable filter, obtained from a 3D scan of the wearer.

3d Printing COVID-19 Self Care



Hospital Scrubs

Lightweight and disposable clothing worn in a hospital setting.

COVID-19 Healthcare



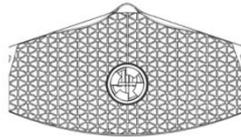
Posterior Harness

Ear saver for healthcare workers.

3d Printing COVID-19 Healthcare

welder.app/careable

S



3D Hope Mask

The 3D printable mask is easily adaptable to any face shape, washable and reusable.

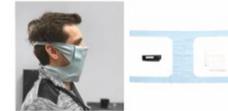
3d Printing COVID-19 Adaptive Morphology Digital Fabrication



DIY COVID-19 protective mask-Scien...

DIY laser cut & ready to assemble PET plastic face shield for preventing virus infection.

COVID-19 Digital Fabrication Laser Cutting



Protective Face Mask

An emergency mask in a time of crisis and lack of proper Personal Protective Equipment.

COVID-19 Healthcare Low-Cost Fabrication Self Care



How are projects
documented on
welder.app/carables/?



Easy COVID 19

📶 4

Emergency mask for hospital ventilators.

COVID-19

Easy COVID 19

COVID-19 Careables

updated Apr 1, 2020



CLONE



FOLLOW

4

CC Attribution

Overview

Files:

- > File for Mares mask
- > File for Ocean Reef Mask
- > Files for Decathlon Mask



Summary

Isinnova, in collaboration with Dr. Renato Favero (Gardone Valtrompia Hospital), has studied the possibility of creating valves with 3D printing capable of transforming a common snorkeling mask into an emergency respirator.

Thanks to the CAD drawing provided by the ideator, producer and supplier of the snorkeling Easybreath mask (Decathlon), Isinnova team was able to design a new component to guarantee the connection to the ventilator: the Charlotte valve.

The prototype was printed in 3D. It has been tested on one of their colleagues directly inside the Chiari Hospital, connected to the ventilator body, and has proven to be correctly working. The hospital itself was enthusiastic about the idea and decided to test the device on a patient in need. The testing was successful.

Usage by the patient is subjected to the acceptance of use of an uncertified biomedical device, by providing a signed declaration.

Whereas the effectiveness of the project, Isinnova decided to urgently patent the link valve (Charlotte Valve), to prevent any speculation on the price of the component. The patent will remain free to use, because it is in our intention that all hospitals in need could use it if necessary.

3D files

In the file tree panel it's possible to find files for:

- the Decathlon Mask
- the Ocean Reef Mask
- the Mares Mask

3D Print Settings

- Summary
- detailed instructions
- 3D files
- assembly guide
- contact details
- license information
- bill of material

Easy COVID 19

COVID-19 Careables

updated Apr 1, 2020



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Overview

Files:

- > File for Mares mask
 - adattatore_ffm_m_al.stl 7 MB
- > File for Ocean Reef Mask
 - ania for charlotte.stl 2 MB
- > Files for Decathlon Mask
 - > Charlotte valve
 - Charlotte Valve 1.dwg 710 kB
 - Charlotte Valve 1.stl 3 MB
 - Charlotte Valve 1.stp 858 kB
 - > Dave Valve
 - Dave Valve.dwg 98 kB
 - Dave Valve.stl 2 MB
 - Dave Valve.stp 95 kB
 - > Reinforcement jacket
 - Instructions for...at 734 B
 - camicia7.stl 223 kB
 - camicia8.stl 222 kB



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→ 180 careables projects

→ 38 Covid-19 projects

Tagged with:

COVID-19



BauhausUniVisor - One-Minute Laser 1

BauhausUniVisor - Open Source Lasercut Faceshield that can be made in less than a minute!

COVID-19 Laser Cutting Low-Cost Fabrication
Techforcare



Fu Face Mask with lining for filter 1

Large Cover Protection Face Mask, with lining filter space and metal wire for nose adapt.

COVID-19 Daily Living Self Care



Face Shield Model Tropic al Bauhaus 1

Based on the Bauhaus model, a lighter shield.

COVID-19



COVID-19 Decontamination Toolkit 1

A toolkit useful to extend the life of your masks using UV-C light.

COVID-19 Healthcare



Intubation Boxes Recap 1

Inexpensive, practical and easy solutions for safe intubation procedures.

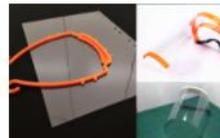
COVID-19 Alarm Makeintaly Techforcare



Door Openers Recap 1

Solutions to avoid opening doors with your hands.

COVID-19



Faceshields Recap 1

Face shields are one of the most proposed and replicated projects in the maker community.

COVID-19 Makeintaly Techforcare



IntuPlex-3mm 1

The clear box to protect doctors during intubation. Made with 3mm PMMA, no glue no screws.

COVID-19 Caution Makeintaly



Print your mask 1

Print your mask. Just paper, tape and some string.

COVID-19 Low-Cost Fabrication

responsible making principles

- 1. Make things that make sense:** Create solutions that answer to real personal problems or needs.
- 2. Co-design with others:** Make space for diverse skills, competences, knowledge, and experiences to merge and come to new and meaningful solutions.
- 3. Empower people:** Teach others so that everyone can become more technologically literate and see the potentials.
- 4. Share How You Make:** Openly document the making of the project enabling its replication and choose the most appropriate licenses for your project.
- 5. Be aware of limits:** Consider any gaps of knowledge when you design for health and care, ask the people you design for and clinicians for support and feedback and follow quality and safety standards.

legal & ethical guidelines

- privacy and data protection
- IPRs
- liability
- ethics
- medical device regulation

Recommendations for makers developing OSH for healthcare				
	HACKING an existing solution	UPLOADING a DESIGN on a Collaborative Platform	HOUSEHOLD Activity	COMMERCIAL Activity
HYPOTHESIS	 <p>The design of a novel solution is a 'hack' of an existing object or medical device.</p>	 <p>The solution is a functioning DIY prototype. Anyone can access the documentation to reproduce, use, test, improve or study it.</p>	 <p>The solution is produced for one person or a few persons by a designer/maker and to be used by that person(s) in his or her daily life.</p>	 <p>The solution can be mass produced or manufactured on a small scale and distributed by a third party (i.e., a non profit organization, a tech for good company or by any future social enterprise).</p>
RECOMMENDATIONS	 <p>The involved stakeholders should make sure that they have the right to 'remix' the design of the solution.</p>	 <p>Designers should take all the necessary steps to provide the complete documentation of the solution. They may add warranties and safety notices on the solution and describe its intended purpose.</p>	 <p>The involved stakeholders are responsible for the diligent design and manufacturing of the solution. They should reflect on how to ensure safety of the users.</p>	 <p>The involved stakeholders may be strictly responsible for the design and manufacturing of the solutions. They should evaluate whether and how to meet the legal requirements foreseen by medical devices legislation.</p>



Careables Global
careablesglobal.slack.com

capacity building events
Summer School
HackAdemy



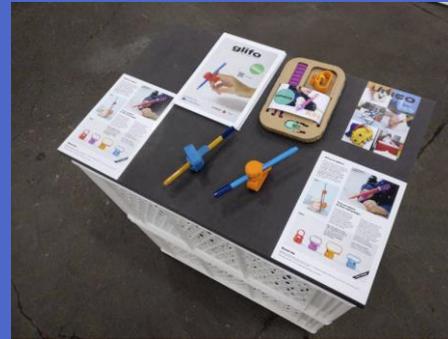
Careables Social Media
Channels



GIG careables channel



moving exhibition



partners

ZSI, Austria

OpenDot, Italy

Agile Heap, Germany

Waag, Netherlands

KUL, Belgium

Together to Go, Italy

GIG, worldwide

contact

kieslinger@zsi.at





COVID-19

ABOUT

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 careables



able / having necessary power, skill, quality. Being able expresses the possibility and capability of doing something

Questions?



 careables.org