

REACH

Mass-produced Mobile Classroom for Regional Non-Profit / Pittsburgh, PA / 2018
Urban Design Build Studio (UDBS)

REACH is a mass-produced mobile classroom for a Pittsburgh-based non-profit specializing in humanitarian computer outreach. Essentially a classroom in a box, the REACH cart allows any space larger than 9 feet by 18 feet to be quickly turned into a learning center for eight students. The carts help the non-profit, Computer Reach, administer computer literacy courses, which provide low-income and elderly residents in the Pittsburgh region with basic skills in computer operation, communication, and technology and help elevate their prospects for job placement and economic mobility. Currently deployed at twelve Carnegie Library locations throughout Western Pennsylvania, there are aspirations to expand the REACH of this initiative regionally, nationally, and potentially even globally.

The design of the REACH cart is predicated on a central, omni-functional box that creates a rigid core for the cart and facilitates all required functionality via use-specific detailing at targeted locations across the box. Folding tables are hung vertically along the flanks of the cart using custom steel clips to allow a potentially elderly instructor to easily remove them during the classroom set-up. Three item-specific holsters line the front of the cart for secure storage of the projector screen, projector, and power strip. When all equipment has been removed from the cart, the top of the cart itself is used as the teacher's table. Branding was developed for the carts in order to create a unified identity and greater visual presence for Computer Reach's outreach initiative. The system is designed to allow an elderly instructor to set up the classroom in less than 20 minutes.

Designed for mass-production, the carts are assembled from CNC-milled MDO panels that incorporate pocketed joints and pre-drilled holes to expedite assembly. Each cart box can be assembled by one carpenter in under 50 minutes.

Years

Design 2017-2018
Completed 2018

Client

Computer Reach

Design

John Folan, UDBS Director; Garrett Rauck, UDBS Fellow

Construction

PROJECT RE_

Partners

Trade Institute of Pittsburgh, Construction Junction,
Standard & Custom

Contributors

Dave Sevick, Computer Reach Executive Director; Alise
Kuwahara Day, UDBS Fellow

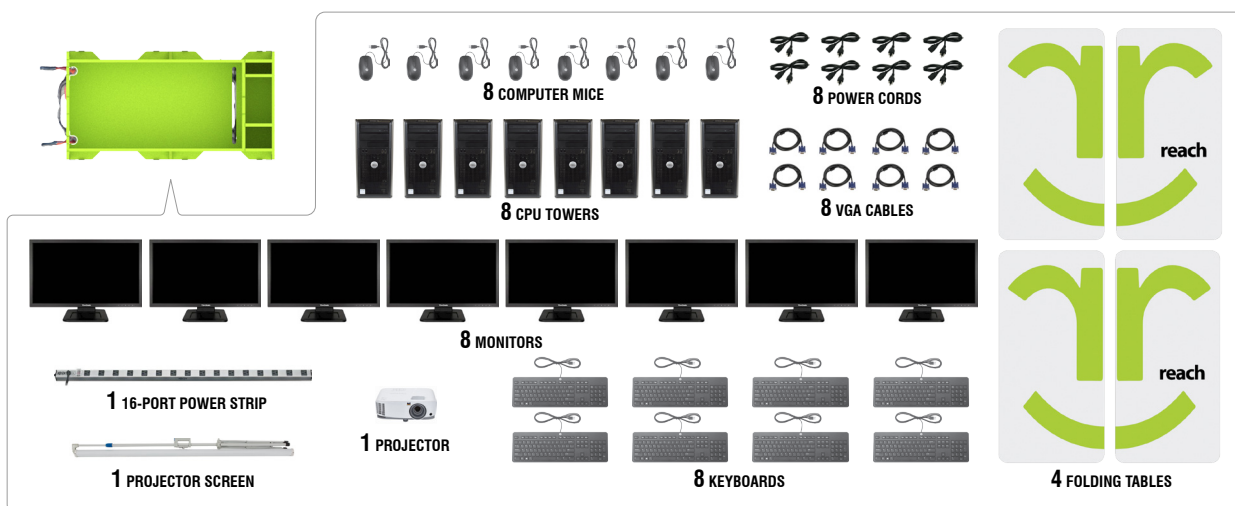
Recognition

-AIA Pennsylvania 2018 Bronze Award, Impact Design
-AIA Pittsburgh 2018 Honor Award, Design + Innovation

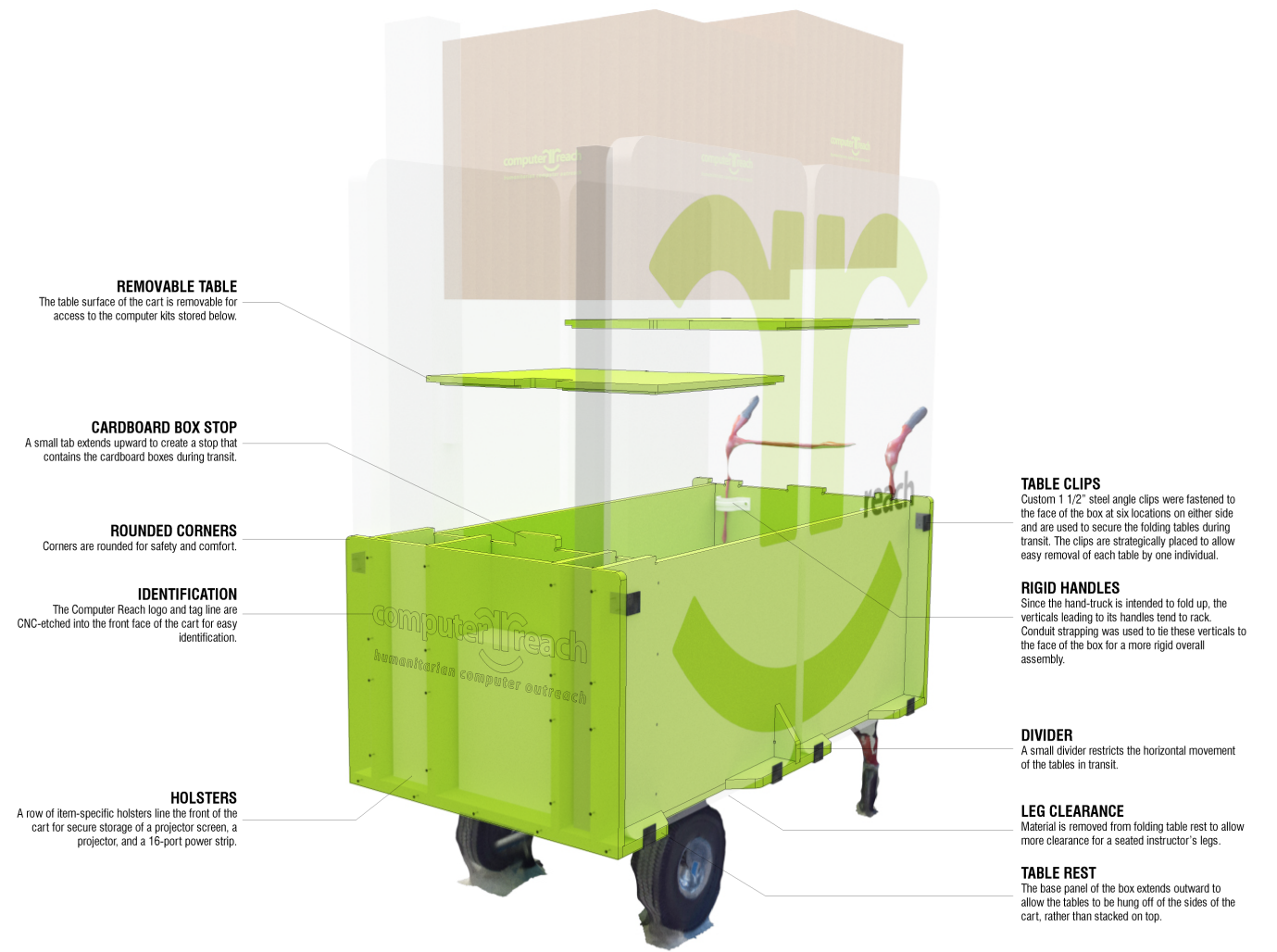


(Above) REACH carts prior to deployment. (Opposite) Side elevation photograph of the REACH cart. The primary goal of branding the cart was to increase the visual presence of Computer Reach's outreach initiative within the community.



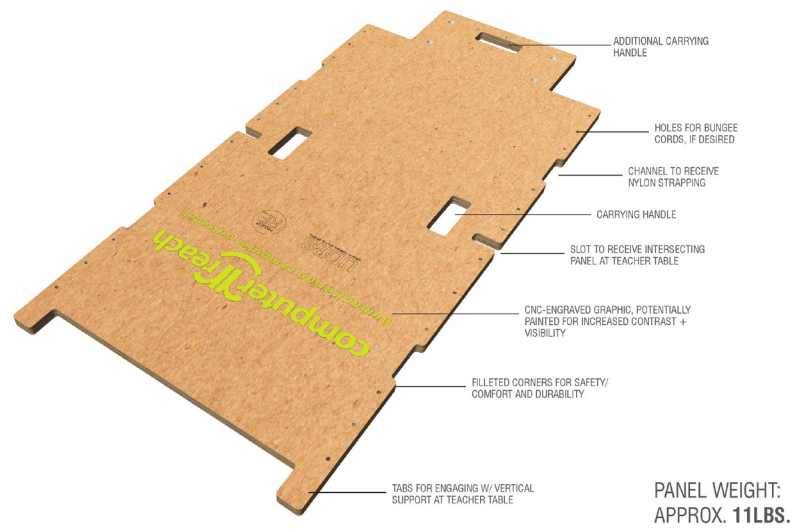


(Top) Essentially a classroom in a box, the REACH cart allows any space larger than 9 feet by 18 feet to be quickly turned into a learning center for eight students. (Bottom) The REACH cart is designed to provide storage for all equipment needed for Computer Reach's outreach courses including, 8 computer kits—each consisting of a computer tower, monitor, keyboard, mouse, power cord, and VGA cord—, 4 folding tables, 1 projector, 1 collapsible projector screen, and 1 power strip. (Opposite) Photographic sequence illustrating unpacking of REACH cart into a classroom. The system is designed to allow an elderly instructor to set up the classroom in less than 20 minutes.

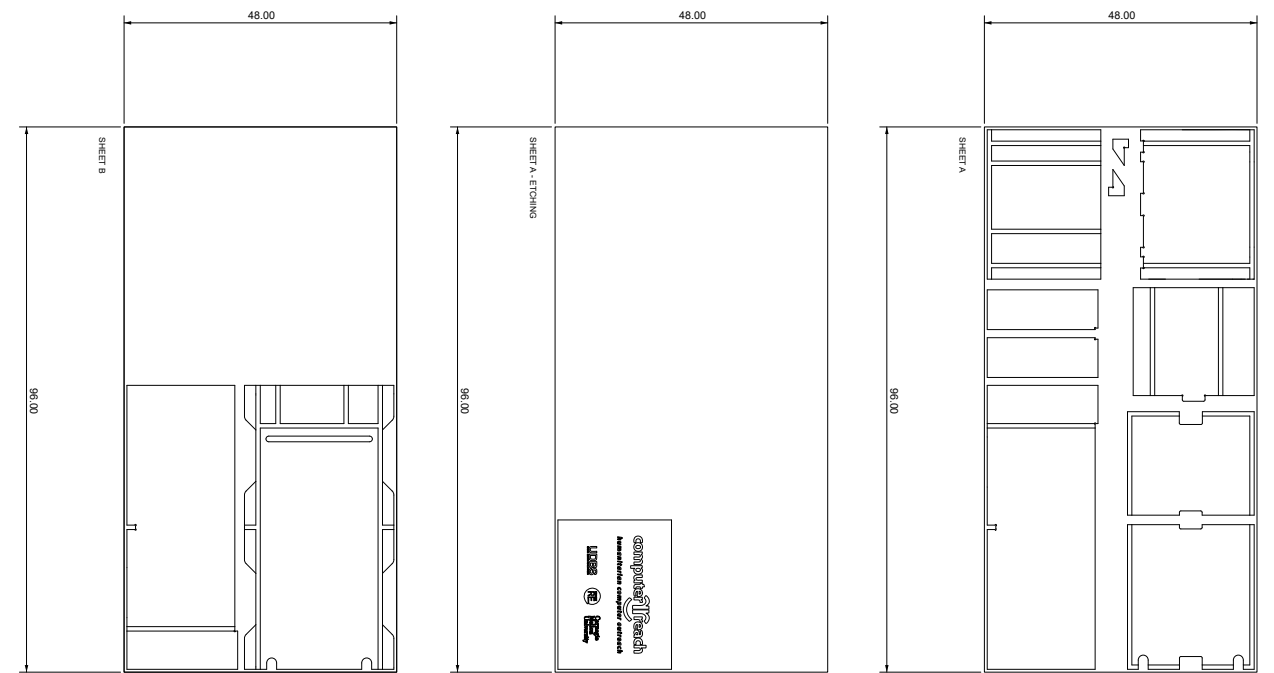


The REACH initiative targets low-income and elderly residents in the Pittsburgh region who have little to no computer literacy. Upon passing course examinations, each student is given a computer and a certificate of literacy, elevating their prospects for job placement and social and economic mobility. Currently deployed at twelve locations throughout Western Pennsylvania, there are aspirations to expand the REACH of this initiative regionally, nationally, and potentially even globally.

The REACH cart was conceived as an omni-functional box on wheels. The central "box" was augmented with use-specific detailing at targeted locations across its surfaces in order to support storage of all equipment. The cart is 4' long by 2' wide—the maximum allowable size given restricted storage space at many of the deployment library locations—and short enough to fit through a typical 7' door."



Renderings of initial "universal flat-pack panel" scheme.



CNC part layouts.



The REACH cart is the result of an iterative design, prototyping, and evaluation process directly involving the client. An initial prototype sought to create the cart from four universal panels that could be flat-packed when not in use. It proved difficult to incorporate the necessary functional, stability, and durability requirements into a single universal panel, however, and it was decided that a core box strategy would be explored instead.



The REACH cart was designed for mass-production. Each cart is comprised of CNC-milled MDO panels that can be reproduced rapidly and with a high degree of mechanical precision. All dados, rabbets, and screw holes were routed into the panels by the CNC, allowing the carpenter to quickly align and assemble each cart. Each cart box can be assembled by one carpenter in under 50 minutes.