Possideo Manus: Inexpensive Prosthesis for Those Who Truly Need Them

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Across the world, 26 000 people per year become limb deficient. For those children that live in developing countries where there is little financial support, an industrial prosthetic hand costs approximately $1875.00 which could be beyond their means. The solution is to deliver cheap plastic limbs, to enable amputee children to continue their livelihoods. Initial designs, focussed on the upper body, were drawn to mimic the movement of their biological counterparts and made exactly to scale to make the transfer to digital easier. Using an online sketching tool, components were traced on selectable blueprints, produced using a 3D printer, and modified and redesigned as needed, so they could be assembled into a complete unit. Components have a "clip together" look about them, but once assembled can withstand the harshest conditions of isolated living. The primary movement, grasp, is ideal for holding tools in farm work. The thumb consists of a ball joint with a rubber casing to allow for extended movement. The wrist is designed so when the fingers are drawn in, it locks the whole hand in position so it can withstand more weight. The upgradeable parts are cheap and totally self-replaceable. The simplistic 3D printed design allows for the manufacturer to send improved version packages to amputees to assemble on their current model. The amount of plastic, power and functionality were continually reduced and redesigned so that a full hand, forearm and electric system can be produced for just over $17.00 per arm per child.

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