



Sambaza Watts: a nano-grid for accessing and sharing energy

Bret A. Orner, David E. Reilly, Andrew Chase, Vishwas Deokar, Stephen Paul Linder

I.T. Business, Schneider-Electric, Boston, U.S.A.

{bret.ornor, david.reilly, andrew.chase, stephen.linder}@schneider-electric.com

Pragun Goyal, Joseph A. Paradiso, Ethan Zuckerman

M.I.T. Media Labs, Cambridge, U.S.A

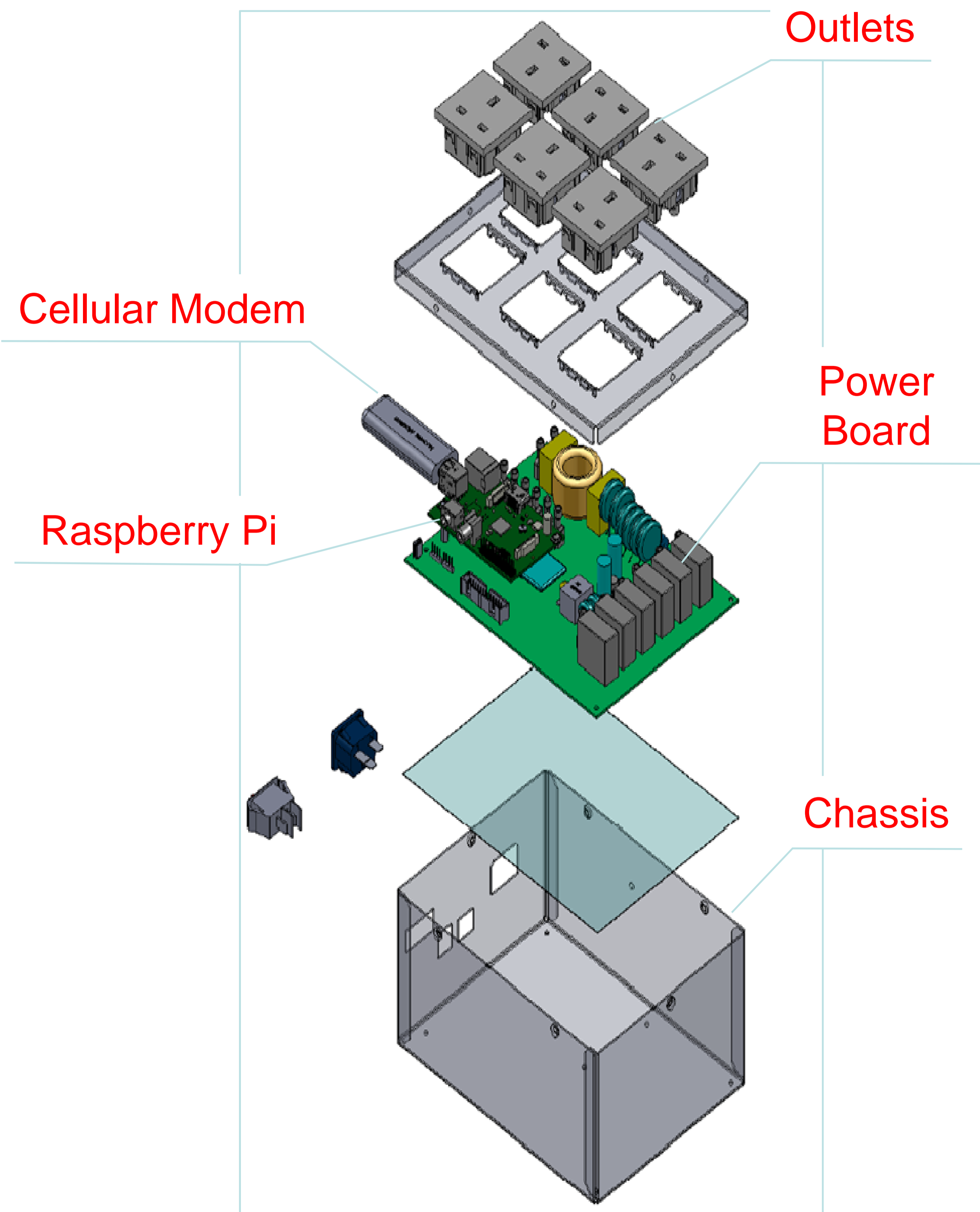
{sambazawatts, joep, ethanz}@media.mit.edu

Abstract

Developing countries and rural areas face an endemic lack of adequate electrical infrastructure. Electrical energy availability is critical in the alleviation of poverty and enables rural residents to participate in the broader economy. Ad hoc solutions form electrical nano-grids which consist of local electrical generation (typically using diesel generators, wind turbines or solar arrays) with electrical distribution done typically with household extension cords. Usually no metering is performed by the power producers, and therefore a flat rate is charged to all customers. The M.I.T. Media Lab and Schneider-Electric have a proposed low cost solution based on rugged, open source hardware and software which is easily, customized, and enhanced by entrepreneurs.



An ad hoc nano-grid used to charge cell phones.



Sambaza Watts prototype. By providing metered power payable using the M-PESA, a mobile phone-based micro-payment system, communities can establish local energy cooperatives. By using Sambaza Watts to distribute power these cooperatives can more easily obtain capital for purchasing new generation equipment because they now have a consistent and predictable income stream.



M-Kopa - a solar nano-grid that uses the M-PESA payment system and a GSM modem just like Sambaza Watts.

