National Centre for Flexible Electronics

Call for
Expression of Interest
Solar Cells on Flexible Substrate

25th August 2015

Solar Cells on Flexible Substrates

Panels shown deployed in picture above are from UNI SOLAR, INC.

Background

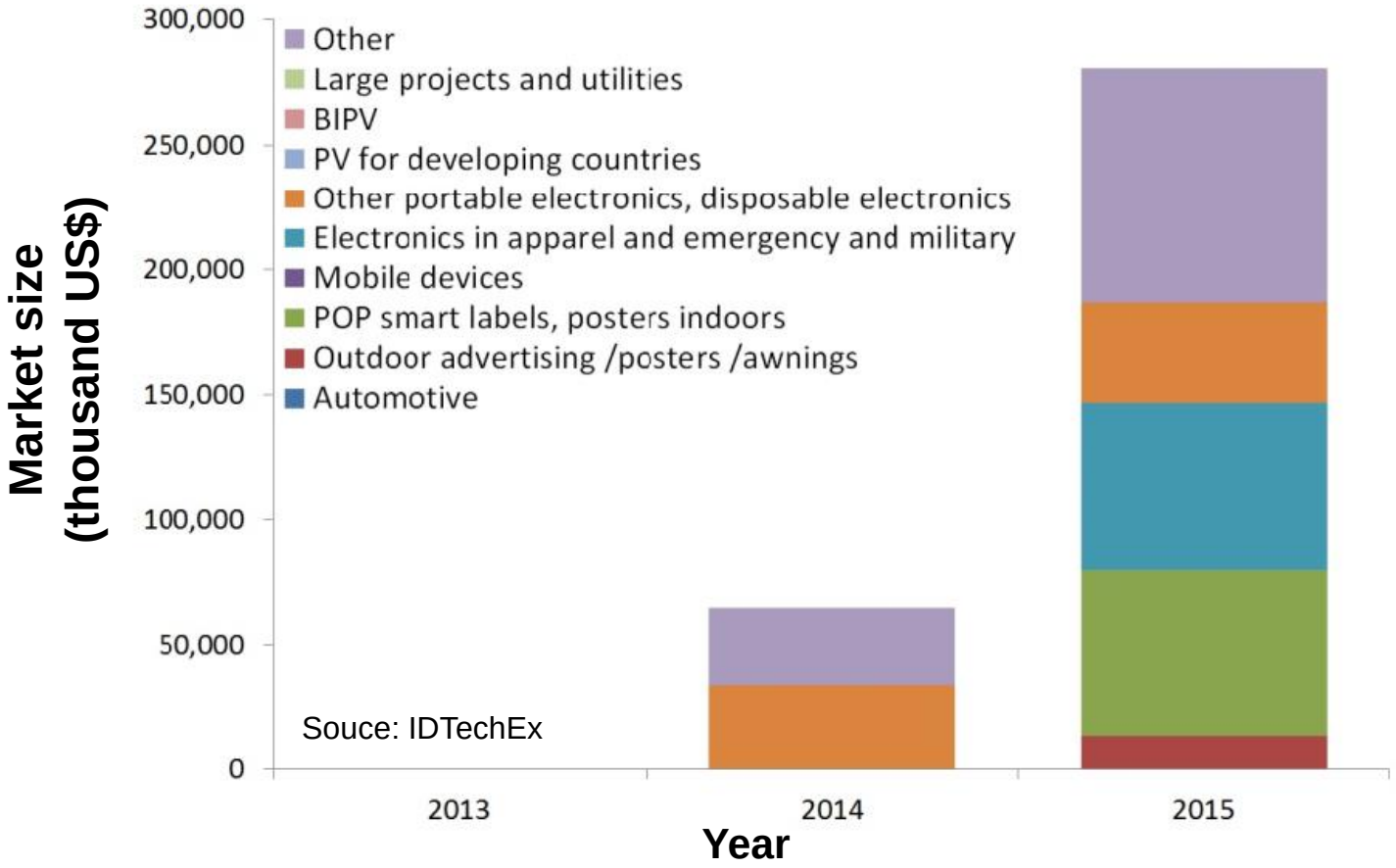
- Potential exists for creating unique markets through flexible photovoltaic technologies, especially in off-grid or unstable grid areas.

Flexible PV may be used for powering Irrigation pumps in rural areas.

Flexible PV modules on parking lot canopy: Konarka Technologies, Inc.

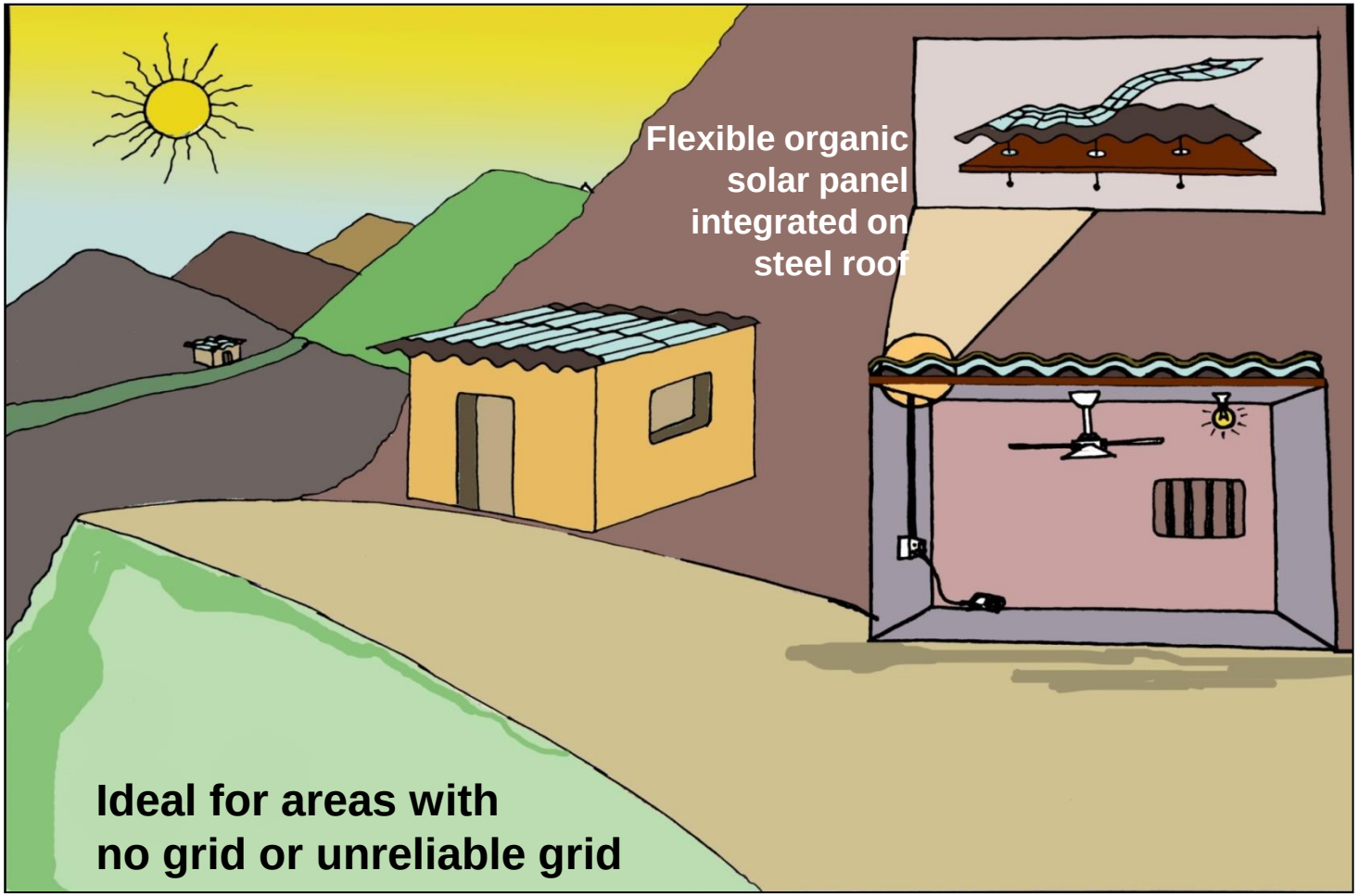
- Flexible Photovoltaic technology can provide solutions to bridge the energy access gap and is especially suitable for lightweight, conformal and distributed power generation sources.

Market Size and Potential



Flexible PV is a disruptive technology that can create new applications and markets well beyond what is visualized today

Flexible PV integrated on Steel Roofs

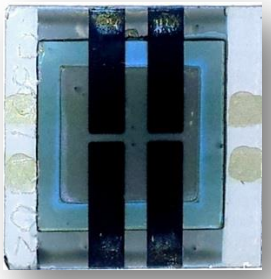


Consumer Electronics Applications

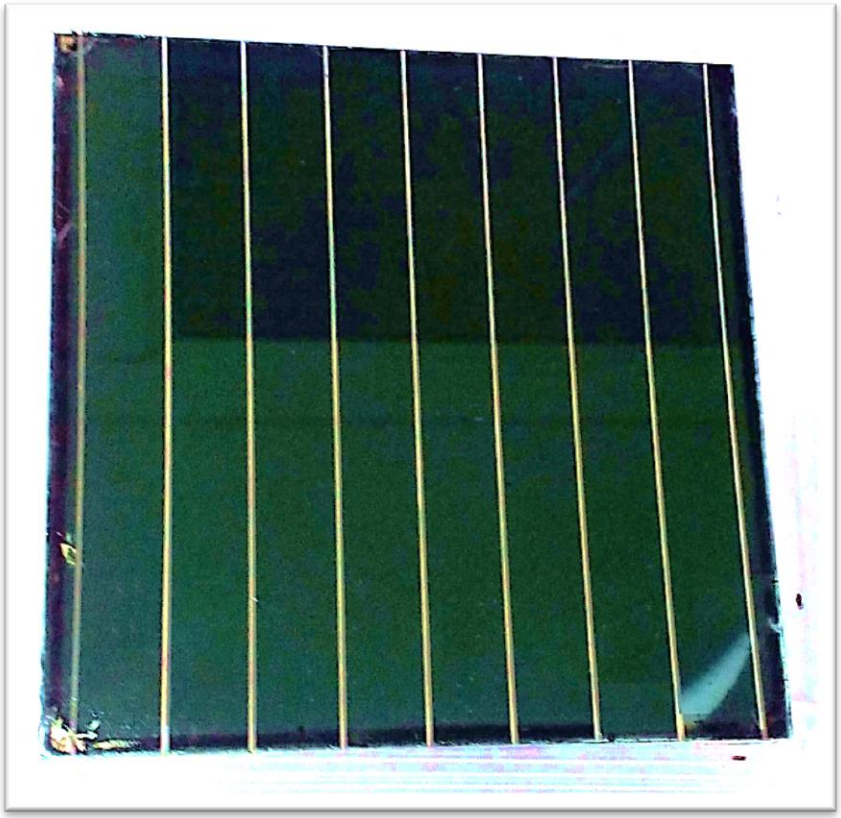
Powering small motors, LEDs and other devices in Innovative consumer products

Powering up portable appliances

From Cell to Sub-Module



~ 2 mm x 2 mm cells



10 cm x 10 cm sub module

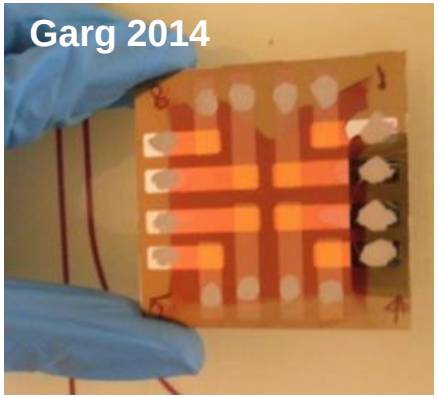
Cell efficiency ~ 6.5% and module active area efficiency ~ 4%

Goal: > 5 years life , > 5% efficiency

Substrate: glass, plastic, steel or paper

Proposed Solutions

Solar Cells on Steel Substrate

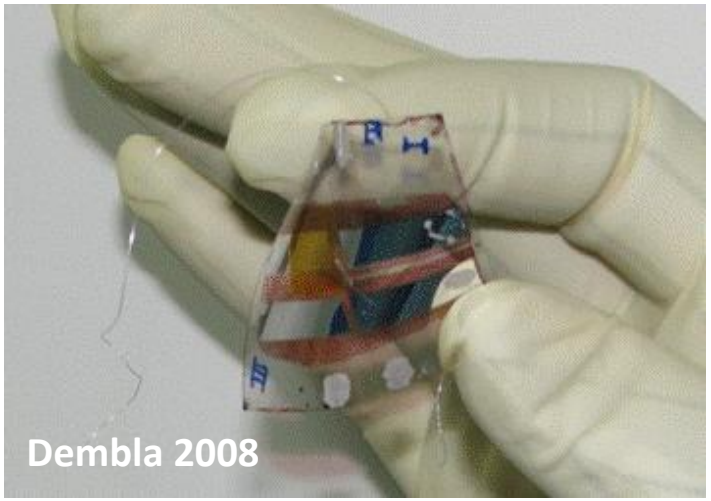


Open circuit voltage (V_{oc})	0.6 V
Short circuit current (J_{sc})	7.9 mA/cm^2
Fill factor (*FF*)	42 %
Power conversion efficiency (*PCE*)	2.01 %
Area of the device	9 mm^2

Solar Cells on Plastic Substrate

Open circuit voltage (V_{oc})	0.73 V
Short circuit current (J_{sc})	12.3 mA/cm^2
Fill factor (*FF*)	49 %
Power conversion efficiency (*PCE*)	4.4 %
Area of the device	21.24 mm^2

Advantages of Proposed Solution

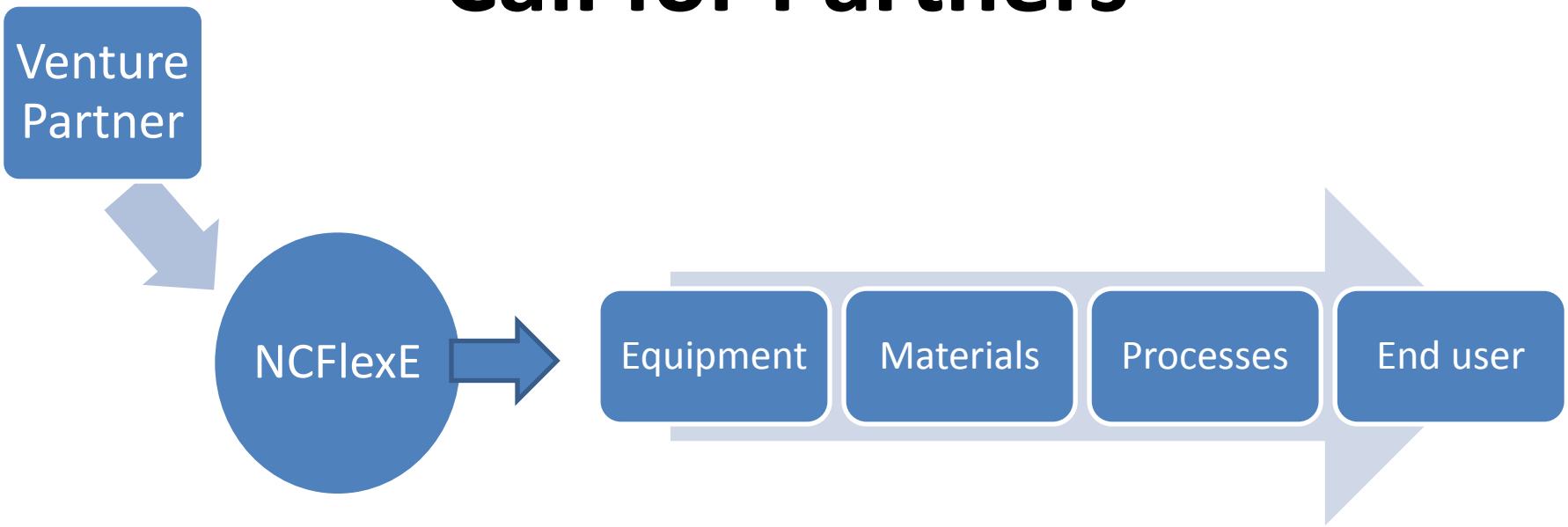


- Light weight substrates
- Flexible substrates
- Monolithic integration with electronics on flexible substrates

Potential for

- High throughput production
- Large volume production
- Low cost devices & fabrication

Call for Partners



- ✓We are seeking partners across the value chain shown above
- ✓We are looking for partners to enable the scaling and manufacturability of the developed processes
- ✓Preferential terms for early partners

Contact Information

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Also visit our webpage for more details on partnership models and other technology domains: www.ncflexe.in