

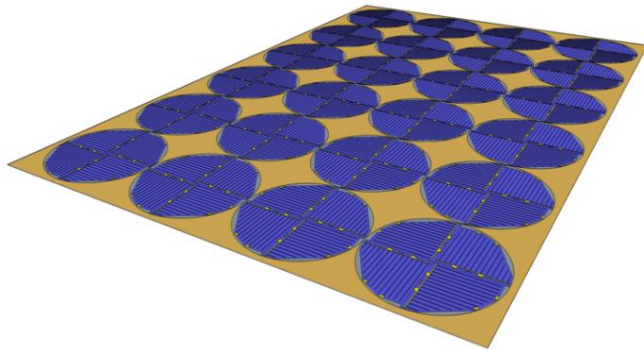
# Panel-Scale Digital Manufacturing of Thin-Film Solar Cells for Terrestrial Applications

America Made Solar Prize

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## CONCEPT

Order-of-magnitude improvements in manufacturing cost, throughput and reduced capital investment possible using panel-scale digital manufacturing.



## APPROACH

- Digital manufacturing refers to computer-controlled additive and subtractive manufacturing processes.
- Panel-scale processes enable 24 solar cell wafers to be processed in same time as single wafer using conventional approaches.
- PCB industry for flex circuits has advanced digital manufacturing methods that can be exploited for III-V solar cell production: Laser direct imaging (LDI), laser cutting, grid plating.

## IMPACT

- This program will establish a partnership with a local, high-end PCB foundry (Sunrise Electronics) to transfer MicroLink's thin-film space solar cell fabrication process into existing production platform at Sunrise:
- Two important benefits:
  - 10X reduction in solar cell manufacturing cost (labor & materials)
  - 10X reduction in required capital investment for high-volume manufacturing scale-up

## CONTEXT

- MicroLink manufactures thin-film ELO IMM solar cells with very high efficiency, low mass and high flexibility → ideal for automotive and off grid charging applications.
- Emerging Green economy → rapid growth in solar cell demand, requirement for high production capacity and much lower cost.
- Investment in U.S. industrial base important to drive innovation and competitiveness in global market.

