



redB

Lumenbrella

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stores daylight + redelivers
it when you need it most

who?

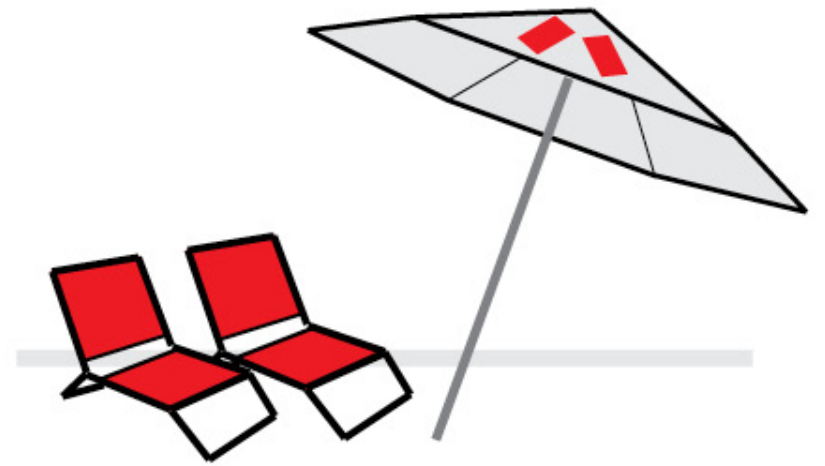
customers who
like to spend their
time outside but
who are limited by
daylight hours

(they have to leave once it's dark!)



how?

embed solar panels
on patio umbrella



harness power to
generate **flexible**
lighting for users

- light temperature
- varying colour
- portable
- light arrangement

challenge?

1. what light possible with solar panels on the market + optimal panel configuration for portability
2. what LED configurations provide functional lighting

(1) results

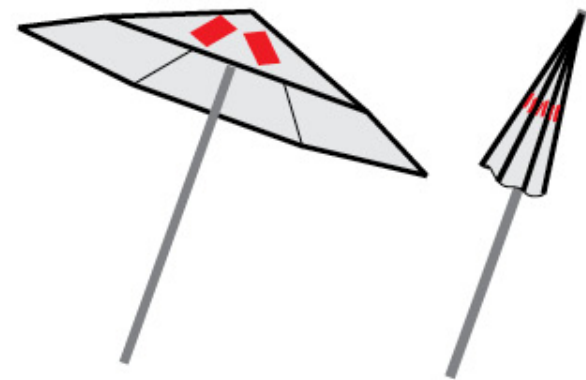
conservative estimate

need 10W to charge battery

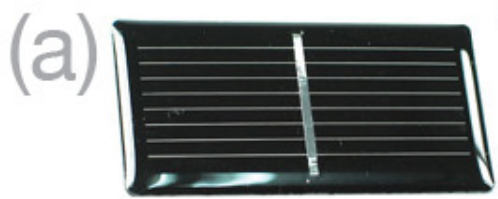
for 6hr of light at a 5W output

(losses due to battery, solar cell configuration)

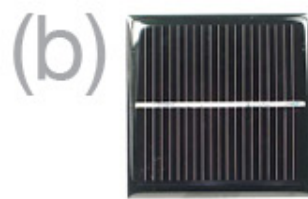
easy to fold and transport!



(1) solar configurations



96 solar cells
0.1W ea
9.6W total



32 solar cells
0.3W ea
9.6W total



12 solar cells
0.9W ea
1.1W total



8 solar cells
1.5W ea
12.W total



(2) LED configurations

- (a) LEDs around rim
dim lighting

- (b) inner reflective surface
spotlight LEDs aimed up
bright lighting

market?

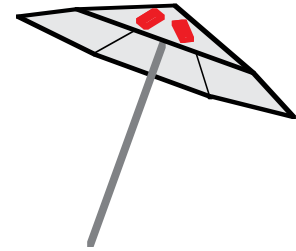
Sintai patio umbrella
manufacturing firm

1M umbrellas/year
\$45M revenue

LED lighting

\$1.2B (2011) }
\$0.5B (2010) } **doubled!**

benchmarking



	Strong Camel Umbrella	Solar Sidewalk Lights	Archipelago Umbrella Light	Lumenbrella
Power	Solar panel on stem	Panel staked into ground	Battery powered	Cell array on canvas
LEDs	Umbrella ribs	Strip	Like a lamp	Reflected

future development?

ambiance

light temperature

colour change

solar tracker