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Copper (II) Sulfide Solar

Cleantech to Market

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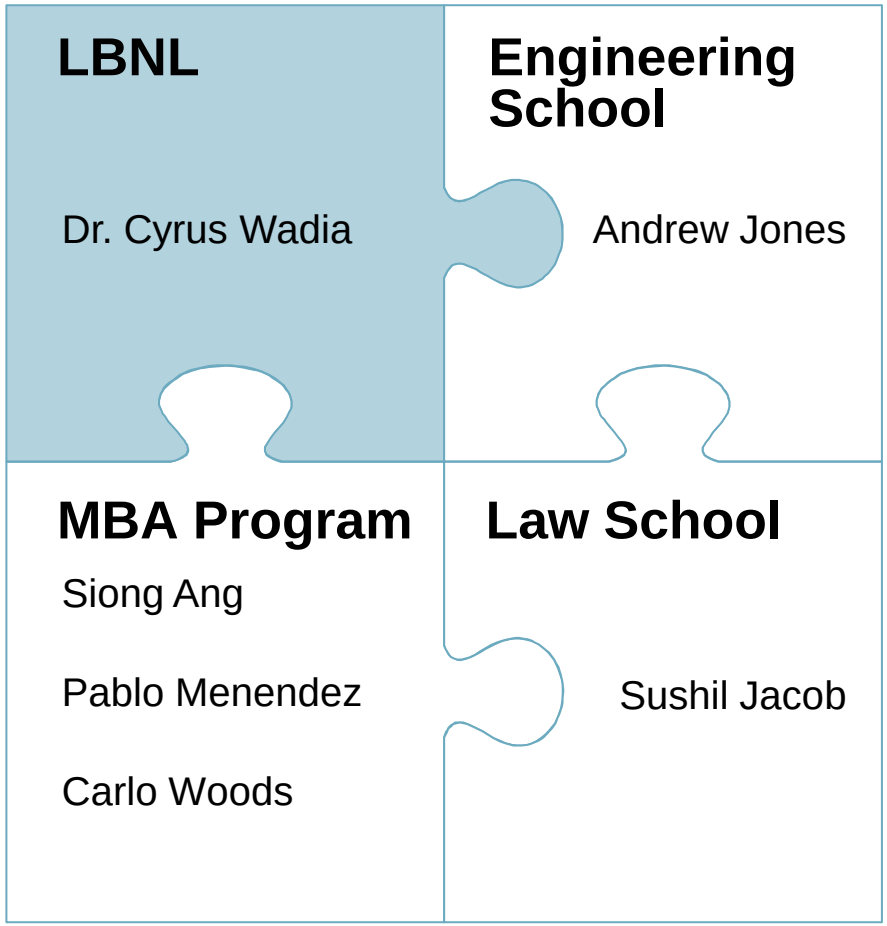
Our team combines expertise in chemistry, engineering, law, and business



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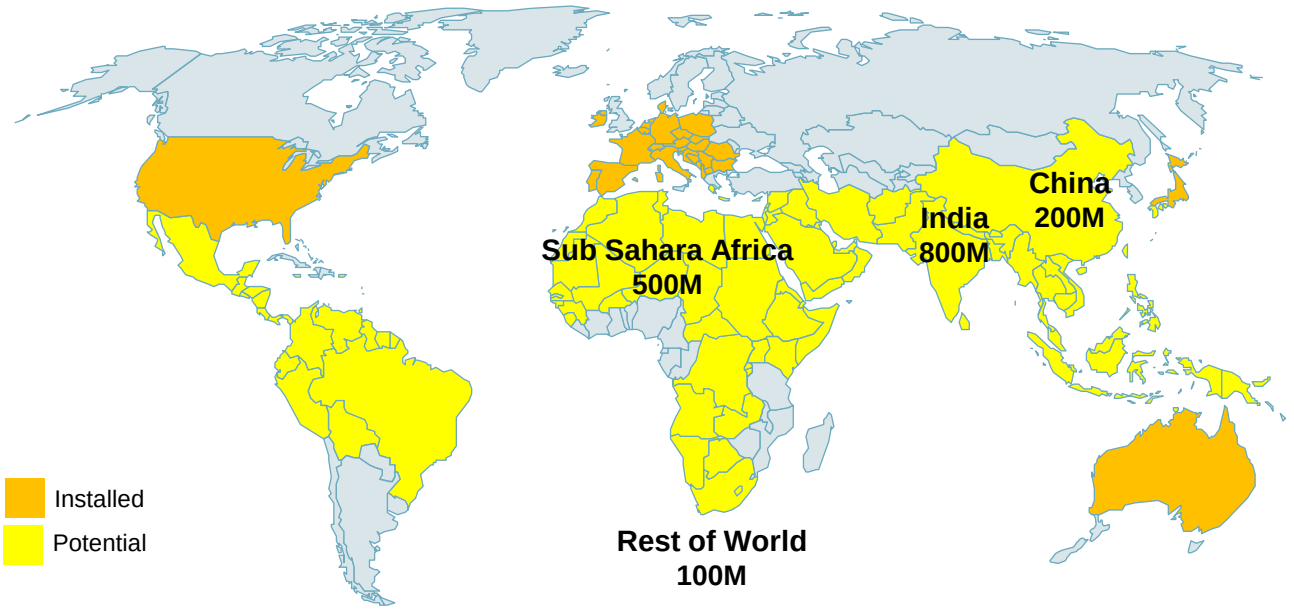
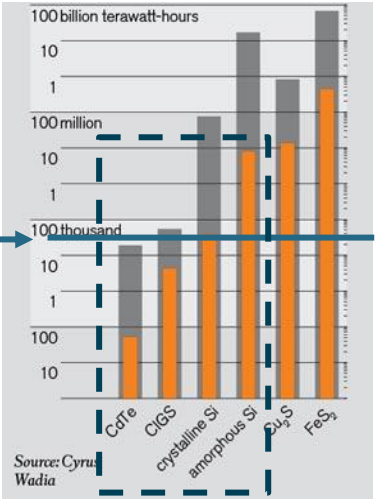
Limited scale and cost structure of current PV technologies leave 1.6 billion people without access to electricity

Major solar PV installations around the world



Potential Energy

Annual Worldwide Energy Demand 17,000TWh

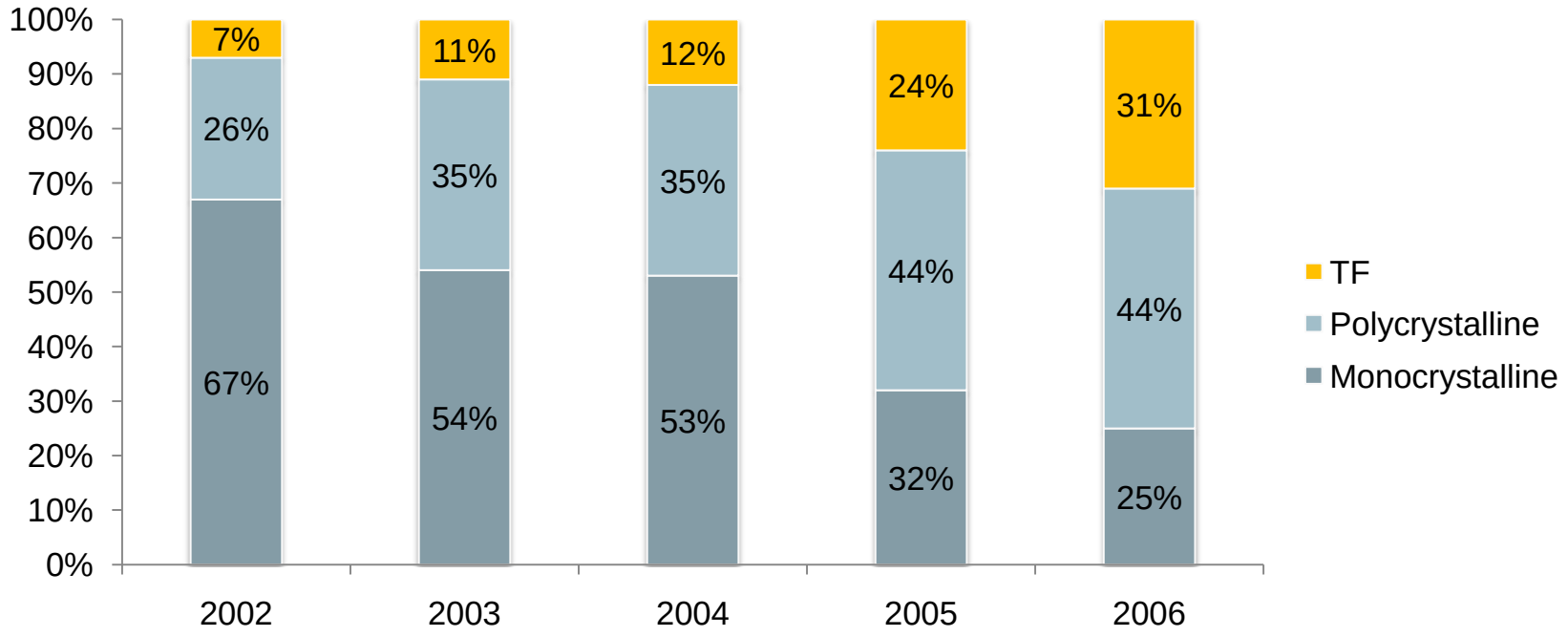


Current PV Technologies

Sources: PV Research, Global installed PV base, 2005 and WEO, 2004

Thin Film Technology addresses many of the challenges with crystal silicon technology

US PV Shipments: Crystal Silicon and Thin Film Cells (2002-2006) (% MW)



Source: SBI

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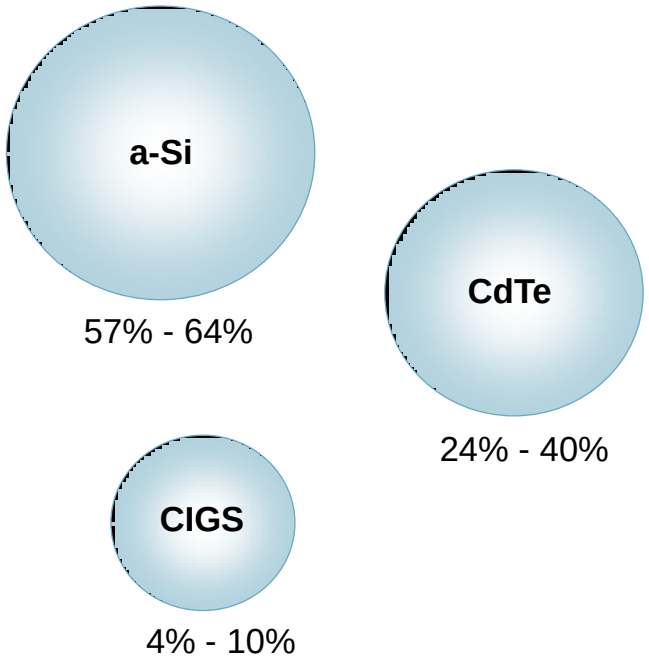
Current Thin Film technologies do not address the scale issues

Estimation of Thin Film market share segmentation by technologies (2006)



Drawbacks of current Thin Film technologies

a-Si

- Dependent on Si
- Silicon shortage already jeopardized PV solar growth in 2004 and 2005

CIGS

- Thin film materials used include: Copper, Indium and Gallium
  - Indium and Gallium are rare materials and could potentially face supply limitations

CdTe

- Potential shortage in Te, a rare metal that tripled in price over 2006-2007
- Cd is toxic. Needed to create an insurance and recycling program to enter Europe
- Inflexible glass used in its solar cells

Source: SBI

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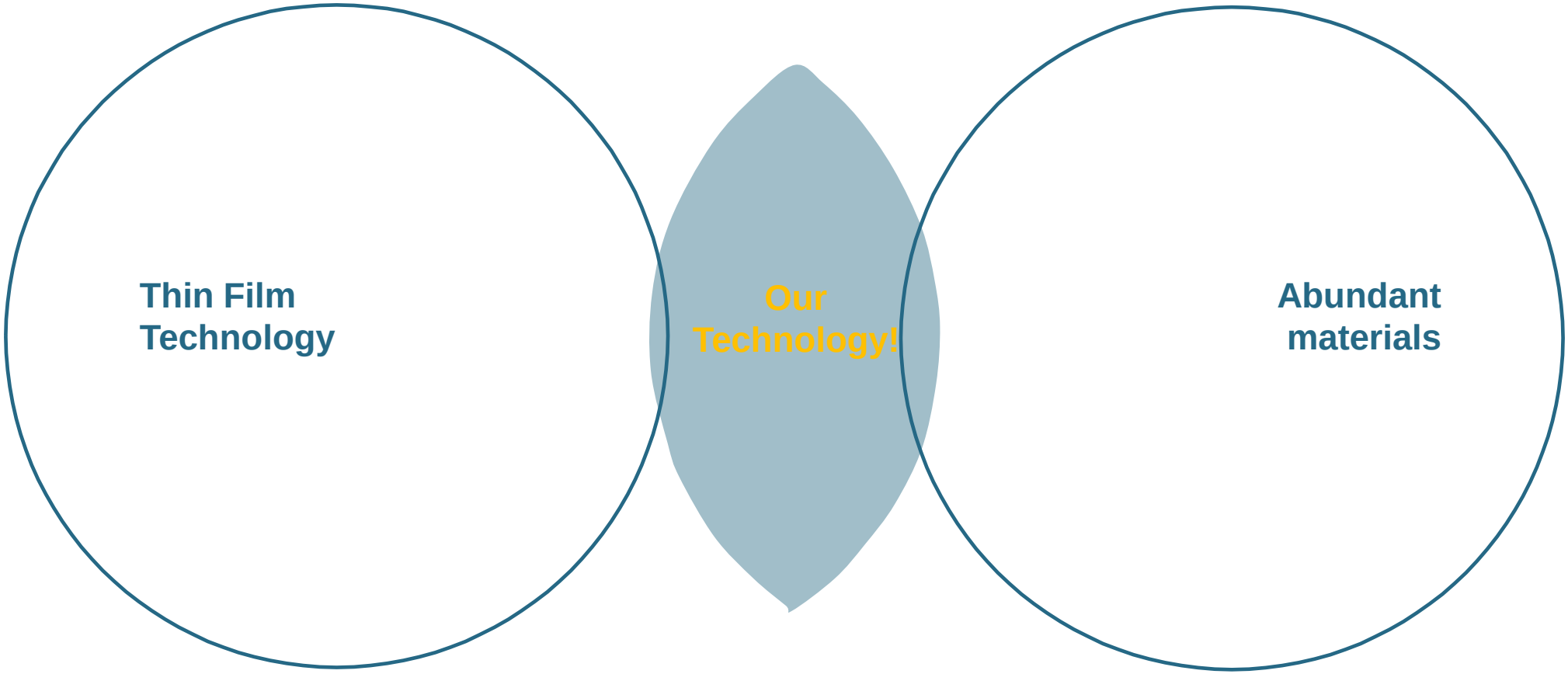
Our solution combines the strengths of Thin Film technology with abundant metals that can be scaled



Source: Team analysis

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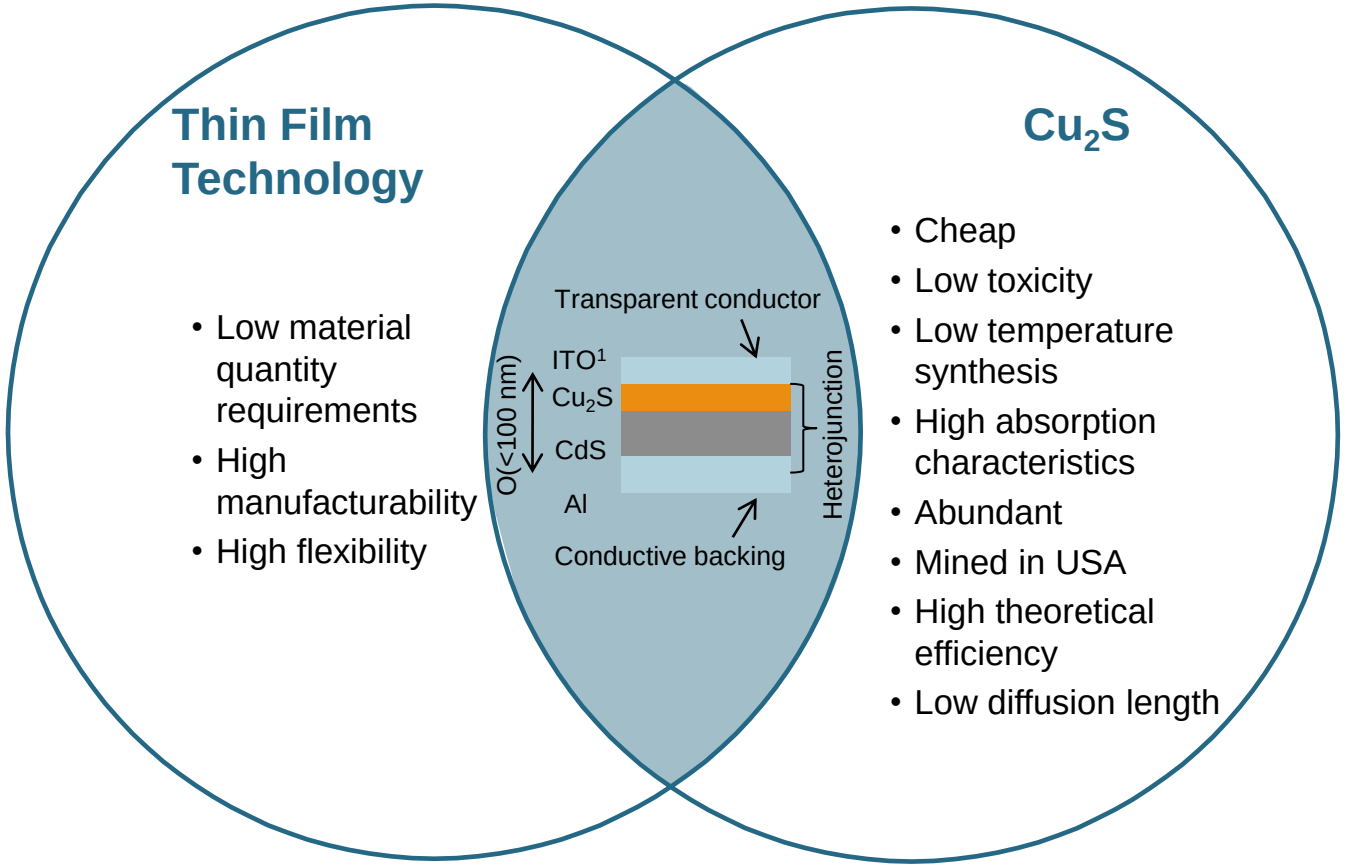
Our technology replaces CdTe with Cu_2S, lowering toxicity, price, thickness and temperature synthesis



1 International PCT (WIPO): #WO 2009/111388 A2

1) Also may include thin layer of PEDOT:PSS

Source: Study Group Team

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Cu_2S provides several competitive advantages, though its 1.6% lab efficiency remains a hurdle to commercialization

Key Components	Properties	Cu2S	
Thin-Film Technology	Flexibility	High	✓
	Thickness	Low – Very Low	✓
	Weight	Low – Very Low	✓
Materials (Cu_2S)	Cost	Low – Very Low	✓
	Manufacturability	High	✓
	Abundance	High	✓
	Toxicity	Low	✓
	Efficiency	Low	✗ Theoretical efficiency > Si

Source: Study Group Team

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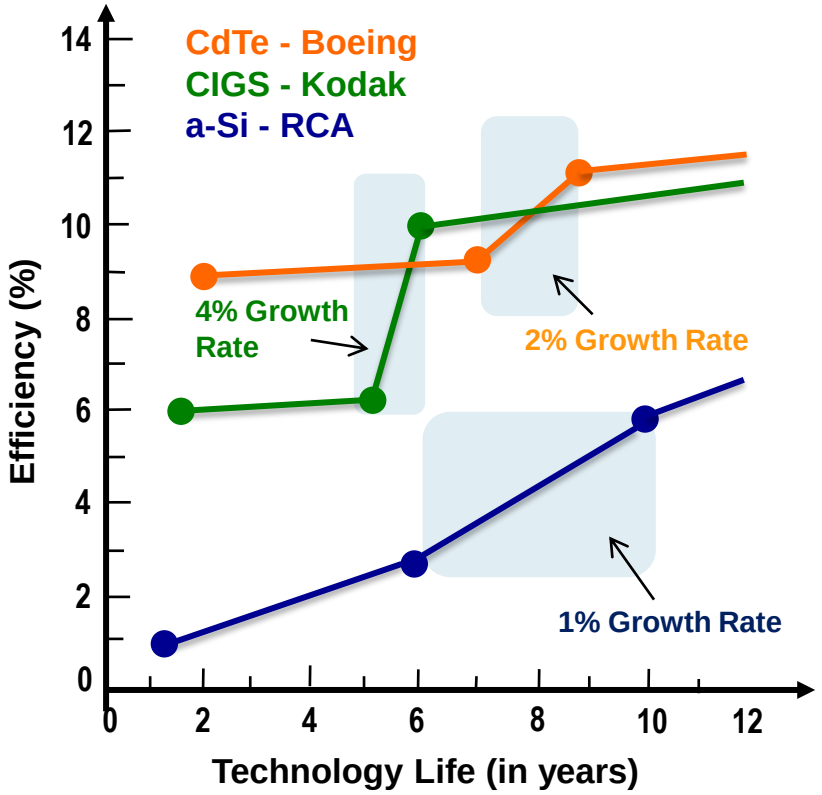
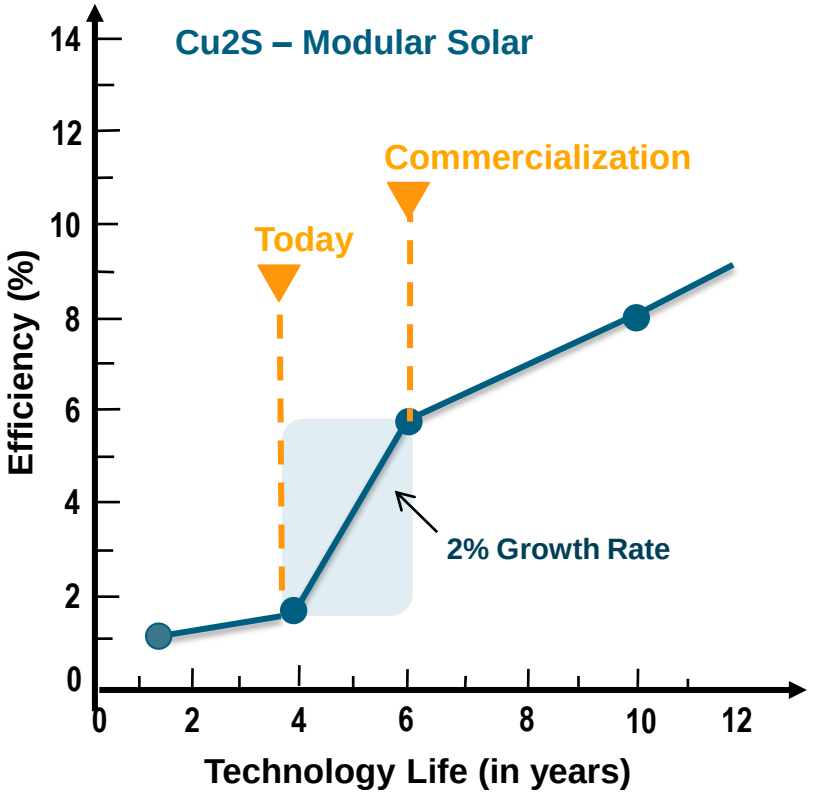
Cu_2S could be ready for commercialization with 2 years of research outside the university laboratory

Growth rate of other TF technologies on the past



Potential growth rate of our TF technology



Source: Study National Renewable Energy Laboratory

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At present our technology is best-suited for the emerging off-grid market.

Market	Applications	Segments	Potential
DEVELOPED WORLD: Centralized generation (Grid-tied)		Utility-Scale Power Plants	• Technology needs 20 years of proven durability • Extra land needed to compensate for cell's low efficiency
DEVELOPED WORLD: Distributed generation (Grid-tied)		Residential Commercial Industrial Gov't buildings	• Too many Thin Film incumbent players with higher efficiency • Limited space creates an opportunity cost from net metering
EMERGING MARKETS: Distributed generation (Off-grid)		Rural Electrification Consumer and Portable Electronics	• Few incumbents in rural market • Utilizes our technology's key strengths

Source: Team analysis

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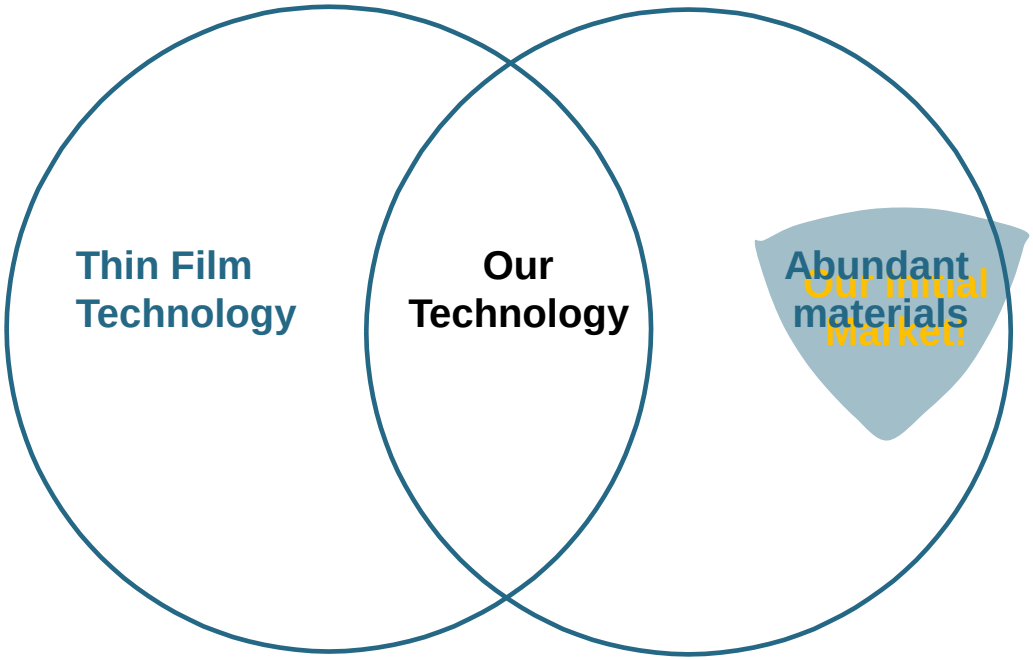
Characteristics of the rural, off-grid emerging market match our technology attributes: Low energy demand, low income consumers



- Potential Rural Market = 800M people
- Rural India represents 50% of national GDP
- India growing at 8.5% annually
- Stable, unified democratic country with progressive solar incentives

Indian Market

Source: The Hindu Newspaper; VNL, Census of India, Team Analysis

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The Indian rural customer has basic needs (lighting) and growing sophisticated needs (cell phone charging)

Issue	Lighting	Phone Charging
Problem	Dirty kerosene lamps	Low access to charging source
Income Bracket	Bottom of Pyramid (< $1/day)	Low income ($2-6 /day)
Market Size	400 M	294 M
Penetration	56% of rural households lack reliable access to electricity	58% of rural areas covered by cell phone networks
Value Proposition	• Better lighting • Save on yearly kerosene costs • Cleaner indoor air quality	• Convenient, reliable cell phone charging source

Source: Team Analysis; Interviews; Census of India, FICCI

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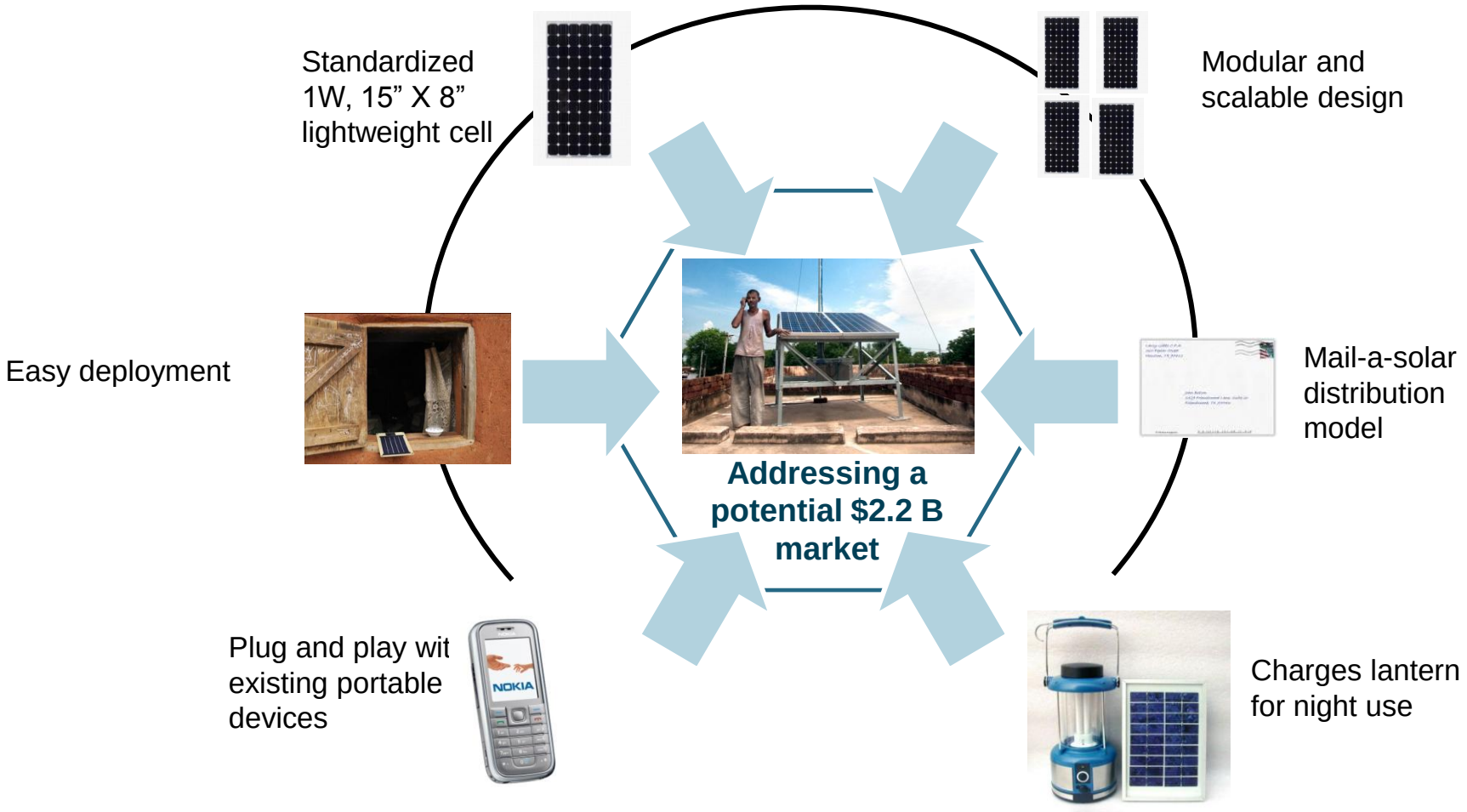
Our Product: 1 Watt, flexible, modular, scalable and mail-able solar panel that costs $0.50-$0.70 / W to produce



Source: Team analysis

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We are differentiated from major thin-film competitors by our target market, lower cost and choice of a highly abundant metal

	First Solar	nanosolar	Solexant	Our Technology
Markets				
Target Market	Utilities Power Plant	Utilities Power Plant	Thin Film Solar Manufacturers	Off grid; portable electronics
Cost Per Watt	$0.93	$1.00	Not disclosed	$0.50-0.70
Technology				
Metals	Cd Te	Cu, In, Ga, Se	Inorganic	Cu(II)S
Cell Efficiency	11.1%	16.4%	9%	1.6% (6% in 2014)
Abundance	Low	Medium	Low	High

Sources: First Solar, Q12010 Investor briefing; Nanosolar White Paper, Sep 2009; Solexant raises $4.3M for new thin film solar cell, Aug 30, 2007

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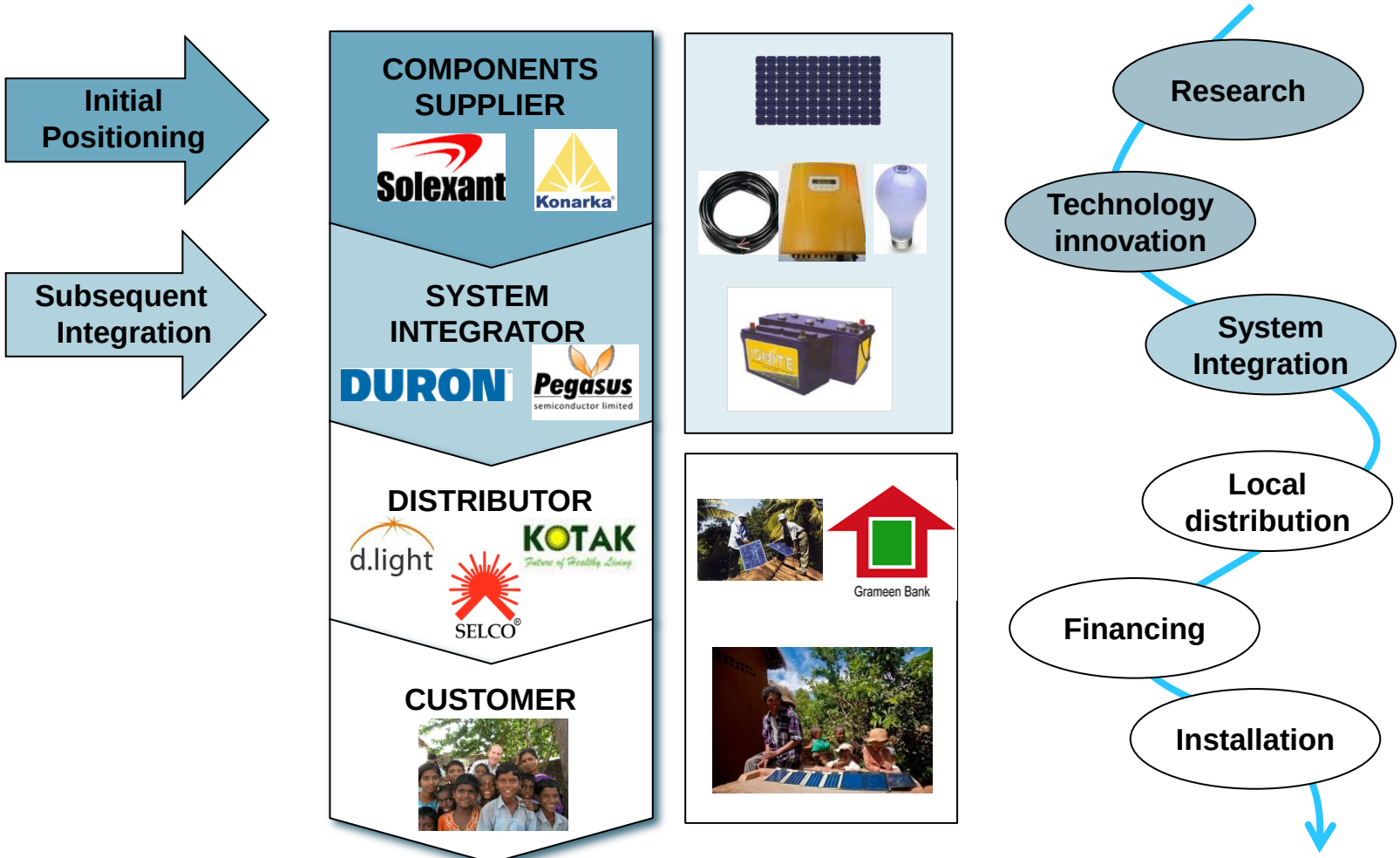
Our core competencies lie in technology innovation and research. We will partner with local distributors to get our product to market



Source: Team analysis (phone interviews and email exchanges)

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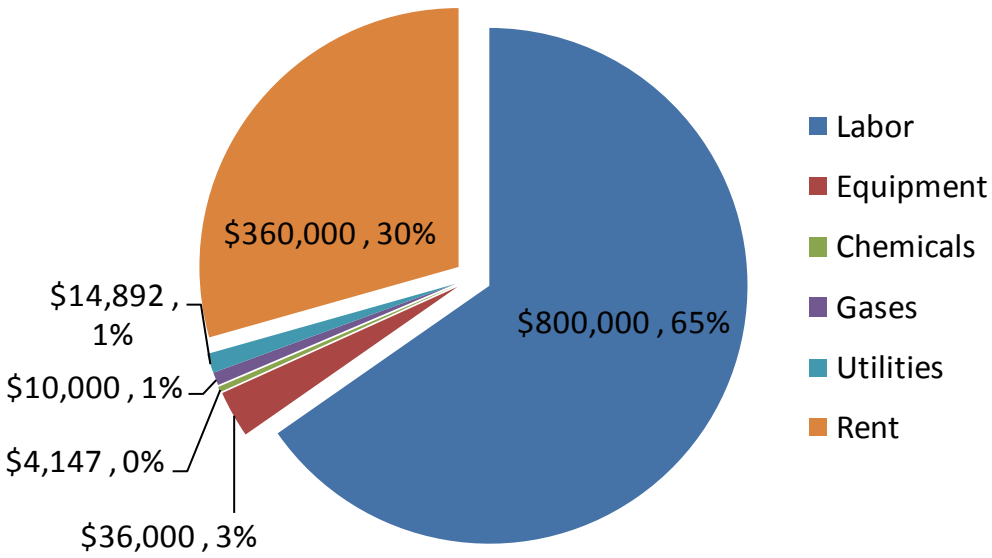
Cu2S technology can reach 6% milestone in 2 years for around $1.5M

Associated Costs



Target areas for cell improvement

1. Improve uniformity and purity in layers
2. Improve back and front contacts
3. Improve uniformity at heterojunction

Total Projected Cost: $1.245 M

Source: Study Group Team

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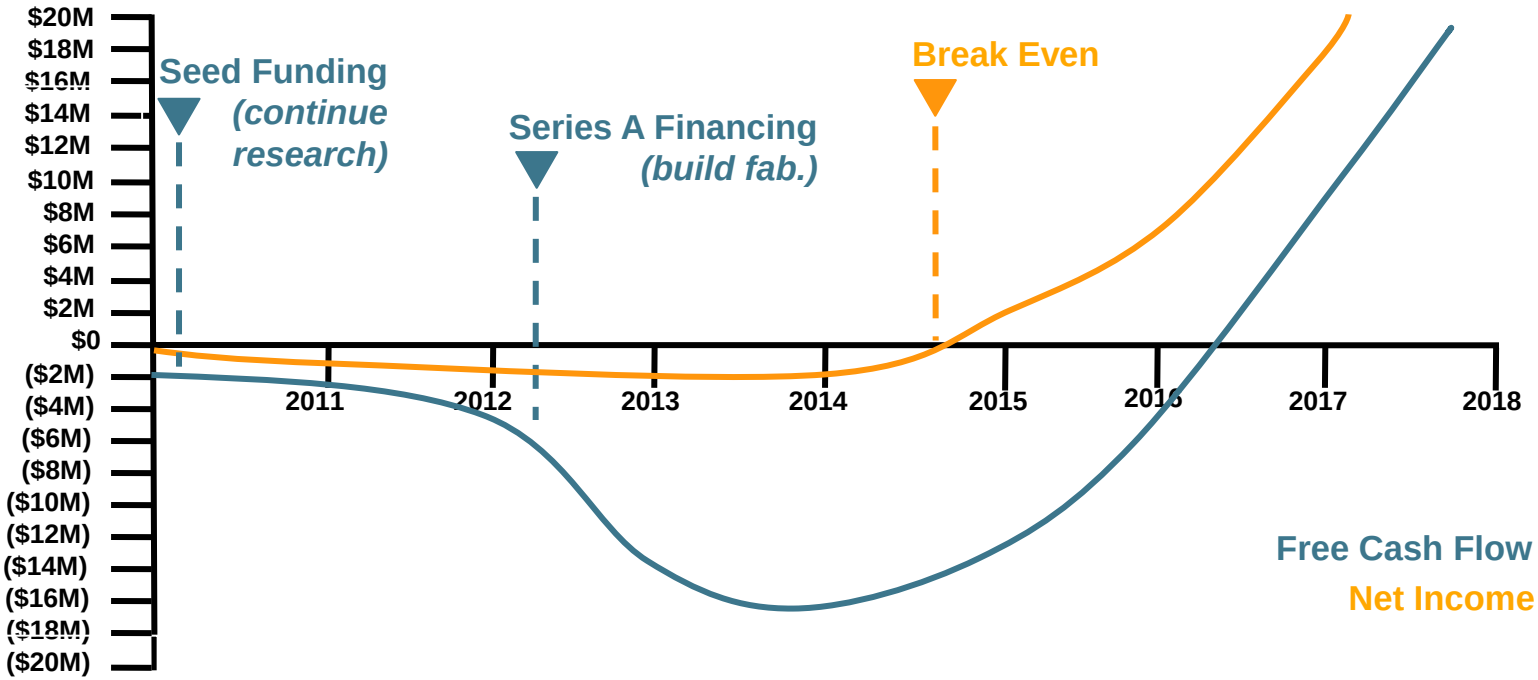
With $2M seed funding and $15M series A in 2013, our technology will turn a profit in 5 – 7 years and generate a 5x return in 10 years

Projected Investments and Revenue



Source: Team analysis