LEDsafari

SmartHelio

Solar asset management using sensors and AI

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Confidential@smarthelio 2019

SmartHelio is a clean-tech start-up based in Lausanne Switzerland. We optimise the return on investment for both solar roof-top companies and their clients using our IoT sensor and AI-based data analytics.

Opportunity

Urban Solar roof-top has following challenges:

- Highly distributed (small scale): hard to manage
- Reduced yield: due to dust, shawdowing, bird poo, pollutant, degradation of solar panel modules
- Risky investment profile : No loans

Existing remote monitoring solutions:

- Expensive for small scale plant
- High wirelss data usage, which is expensive
- None provide simple, actionable data-driven preventive maintainence tips

Solution

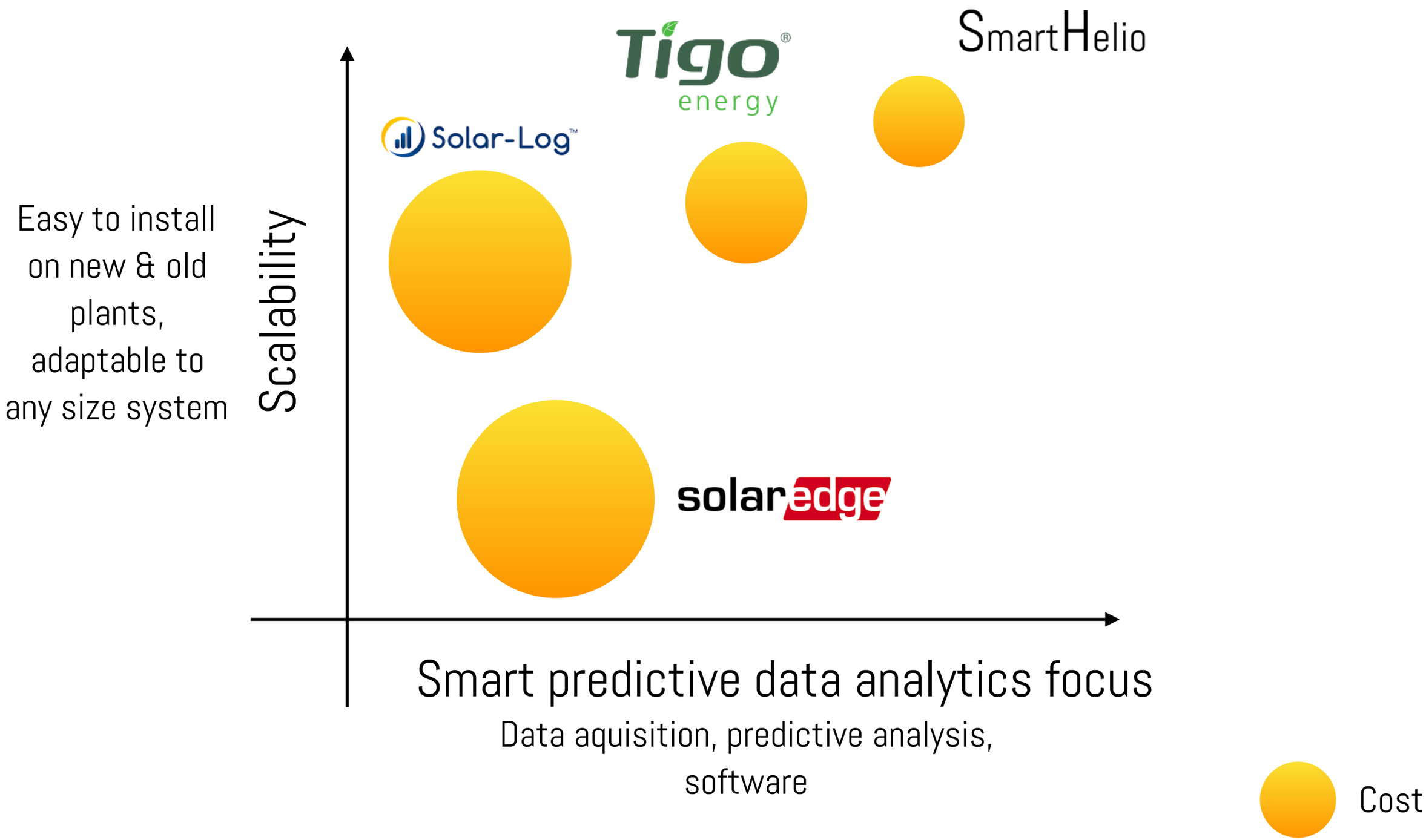
SmartHelio©
Asset management using sensors and AI

HelioApp
Data Analytic App

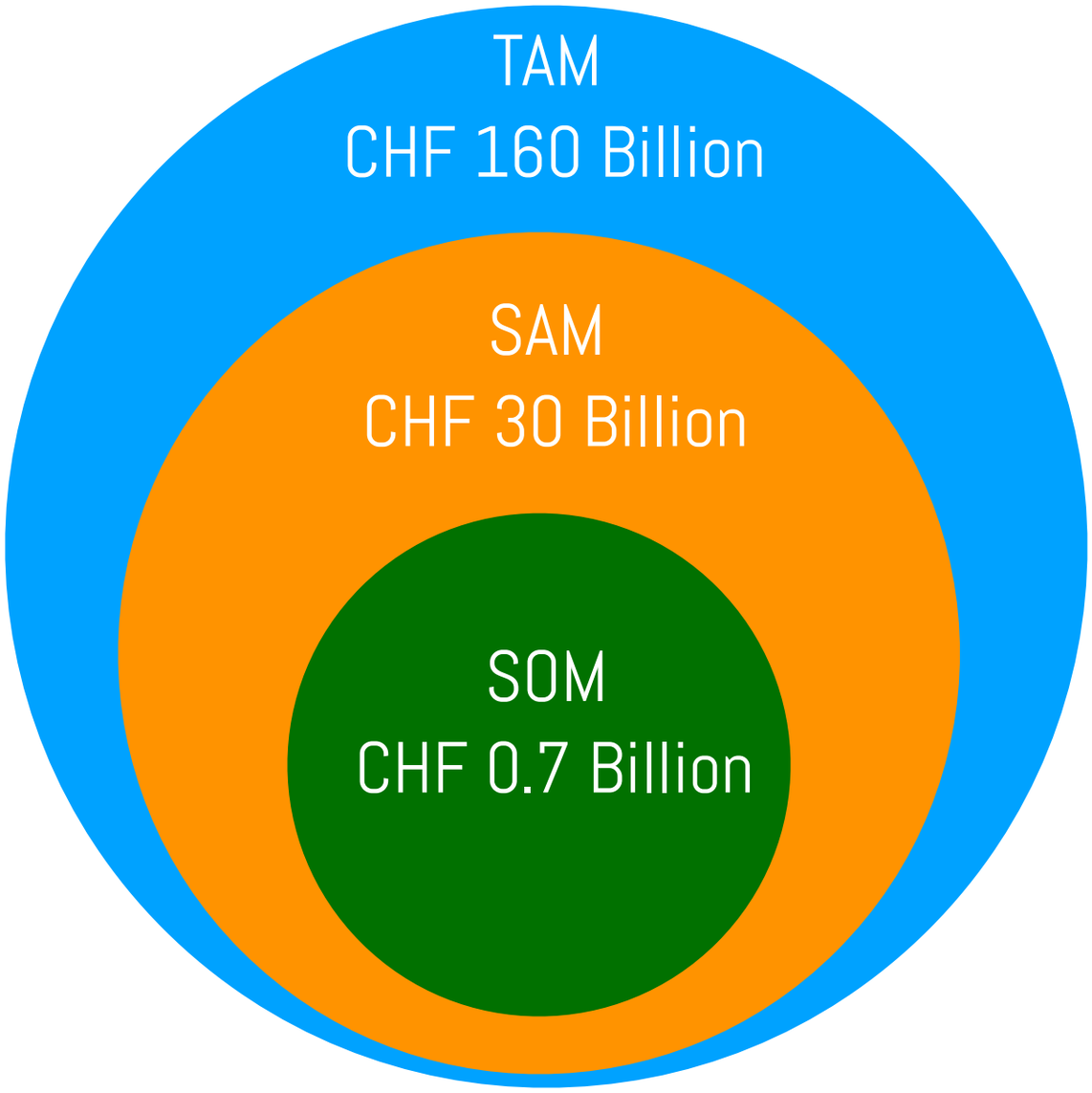
- Affordable,
- Easy to install on old & new plants,
- AI-based technical & financial optimization
- Reliable communication: GSM based

HelioHealth
Remote monitoring device

Competiton


Easy to install on new & old plants, adaptable to any size system
Scalability
Solar-Log
Tigo energy
SmartHelio
solaredge
Smart predictive data analytics focus
Data aquisition, predictive analysis, software
Cost

Market



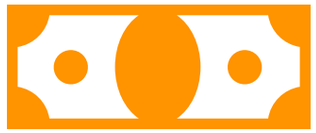
Global solar remote monitoring

Target market: India roof-top

"Solar as a service/OPEX model"
Companies who own the solar plant and sell power to the user.

Source: Global Market outlook for solar power/2019-2023

Business Model



3 USD per month per 5 kW system

Subscription Model to solar installer (B2B)

Our monitoring help solar installers to have doubled their productivity over 10 years.

They can have break-even on the service cost in 2 years.

They save money on less human intervention and extra production.

Off-grid microgrid: 25 kW (India)

Roof-top: 20 kW (EPFL, Switzerland)

Off-grid roof-top: 2 kW (India)

Roof-top: 30 kW (Switzerland)

Timeline

2019

- Hardware is fully functional
- App/platform ready
- Raised 0.5 Million USD

2020

- Finish data analytic
- Finish pilots in India, Switzerland
- Raise USD 1 million
- Install 1000 sensors

2021

- Scale-up in India
- Consolidation
- Partnership for EU/US market
- Raise Series A
- Install 10,000 sensors

2022

- Develop monitoring for batteries
- Apply for battery patents

2023

- Series B/Exit

Team

FOUNDERS

Govinda Upadhyay

8 years of experience in Solar
(technical and business), Degrees
from Stockholm, Eindhoven, Lausanne

Naomi Savioz

Graduate in Law from Geneva
Handling patent and regulations,
Deloitte Tax consultant

Frederic Goumen

Embedded system engineer
EPFL Microelectric
Working on the hardware

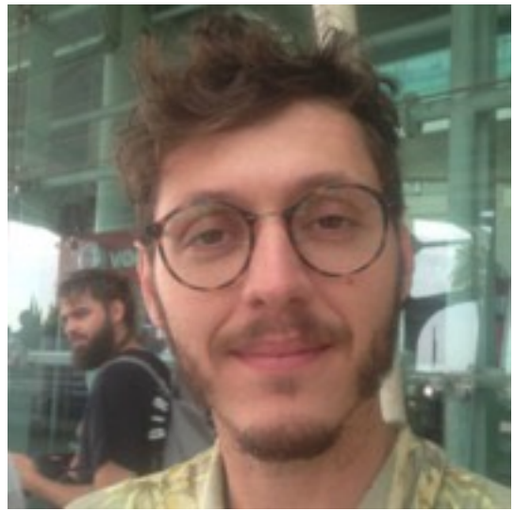
TEAM

Neeraj Dasila

Project Manager, IoT expert
IIT Bombay, Indian Government

Shankaransh Srivastava

Business developer, Roof-top expert
University of Michigan



Eduardo Sarquis

Machine learning expert
Phd Portugal

SmartHelio

THANK YOU!

Get in touch with us
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CLEAN
Clean Energy Access Network

Alliance for Rural Electrification
Shining a Light for Progress

EPFL

swissnex

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

INTERNATIONAL SOLAR ALLIANCE

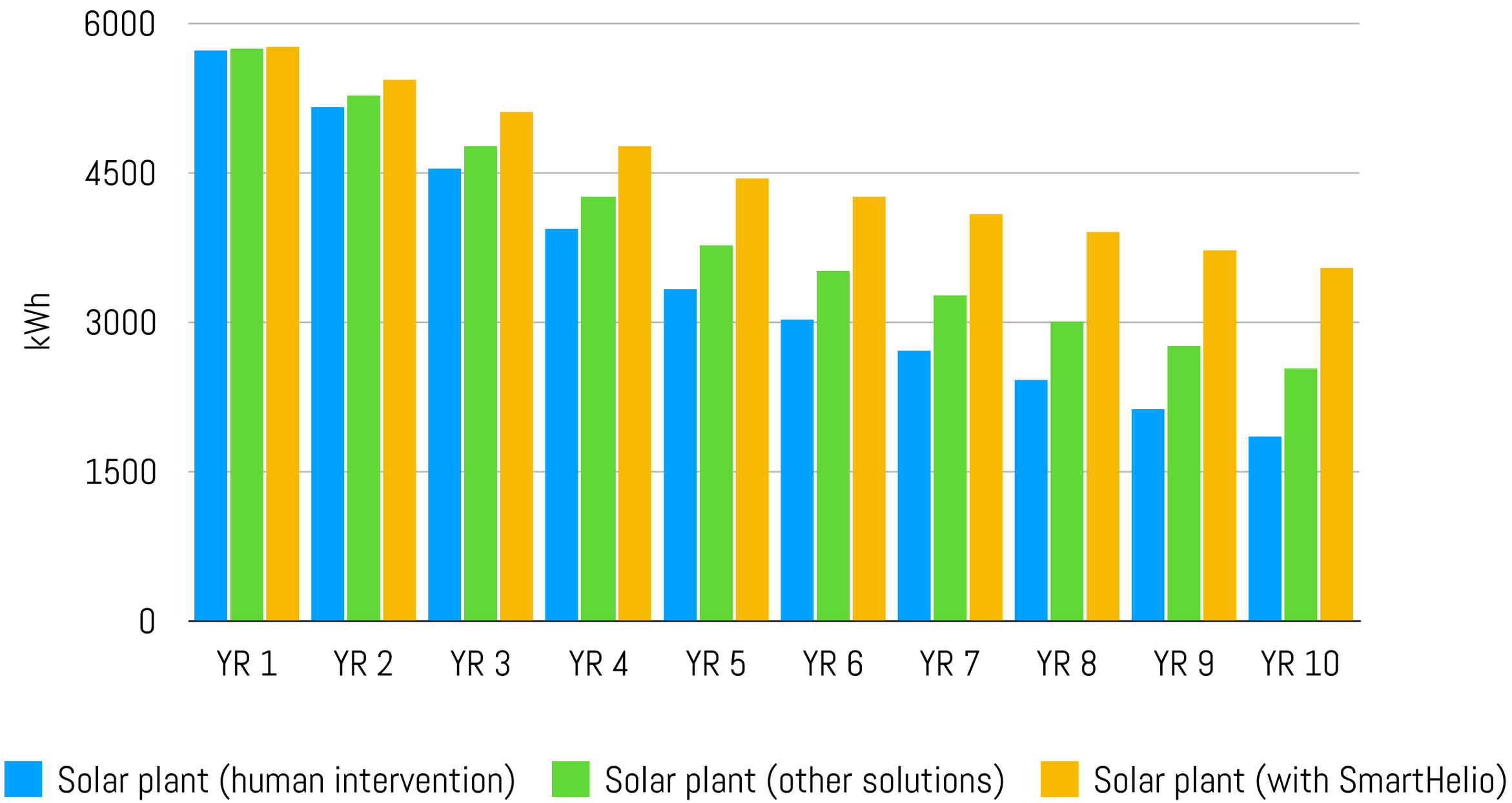
Extra Slides

Customers

S.No	Company Name	Size (MW), 2018	No. of sensor needed
1	Tata Power Solar	250	50000
2	Ujaas Energy	235	47000
3	CleanMax Solar	170	34000
4	Mahindra Susten	150	30000
5	Fourth Partner Energy	120	24000
6	Harsha-Abakus Solar	110	22000
7	Orb Energy	100	20000
8	Amplus Energy Solutions	100	20000
9	Renew Power	40	8000
10	Sunsure Energy	20	4000
11	Suryaday	15	3000
	TOTAL	1310	262000

Cost saving

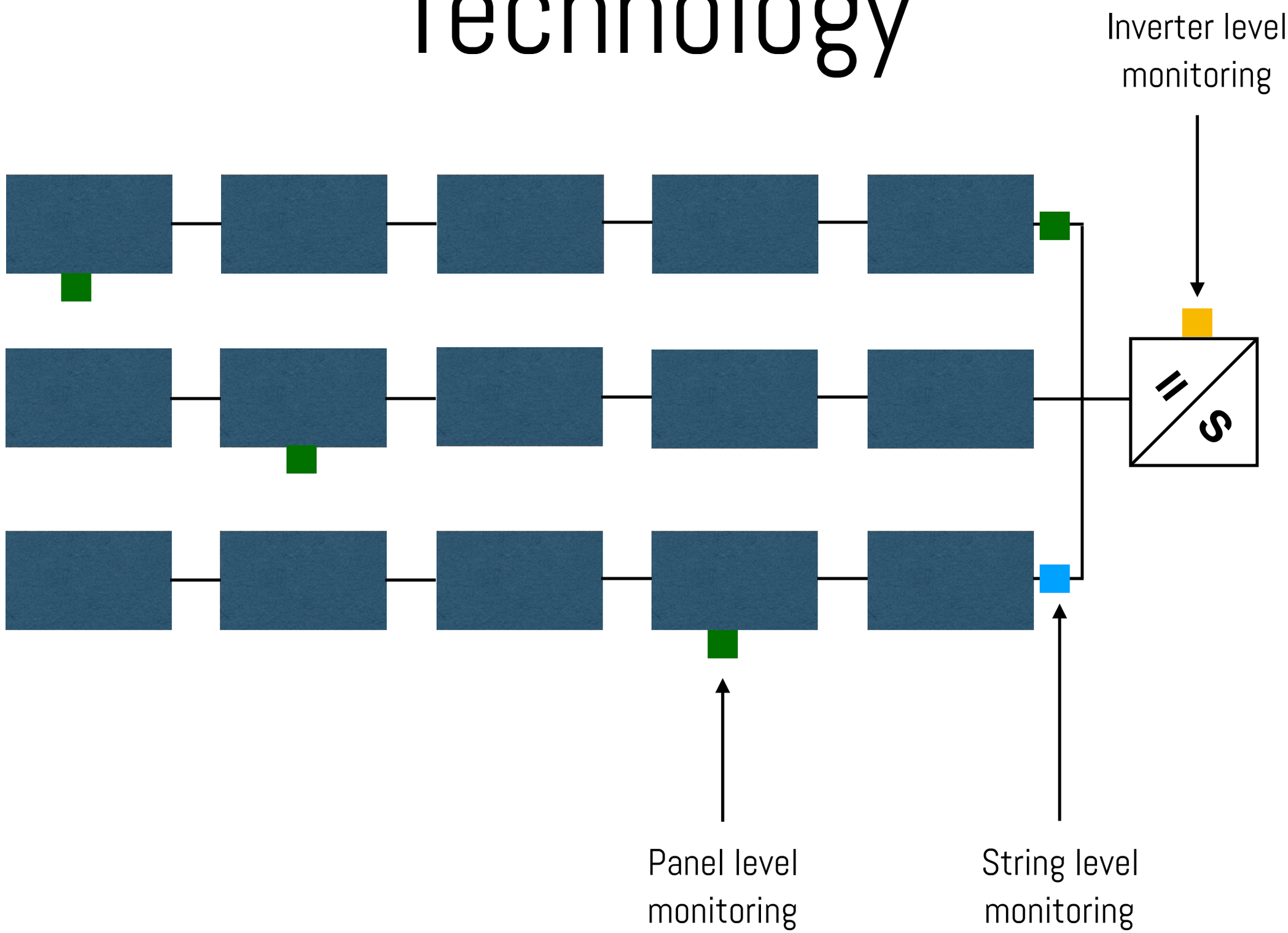
5 KW solar roof-top plant production



Market trends

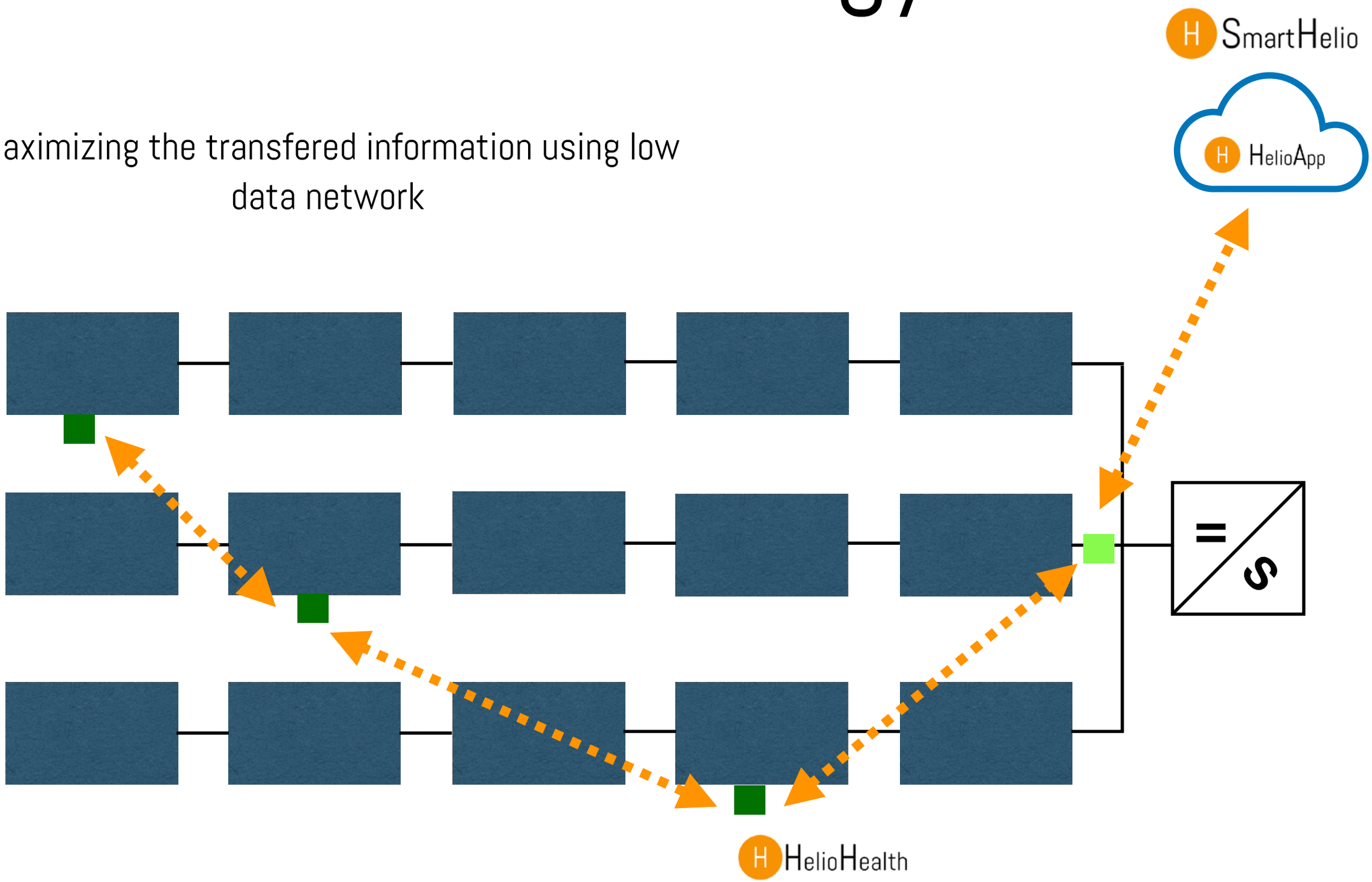
- Market size for panel level monitoring will 1.3 billion CHF in 2020 (SME report)
- 2016, SME took stake in Tigo energy at 74 million CHF evaluation.
- 40-60% of energy will be distributed in future (beyond 2020) and data-based business model will replace asset based business model.

Technology


Inverter level monitoring
Panel level monitoring
String level monitoring

Technology

Maximizing the transfered information using low data network



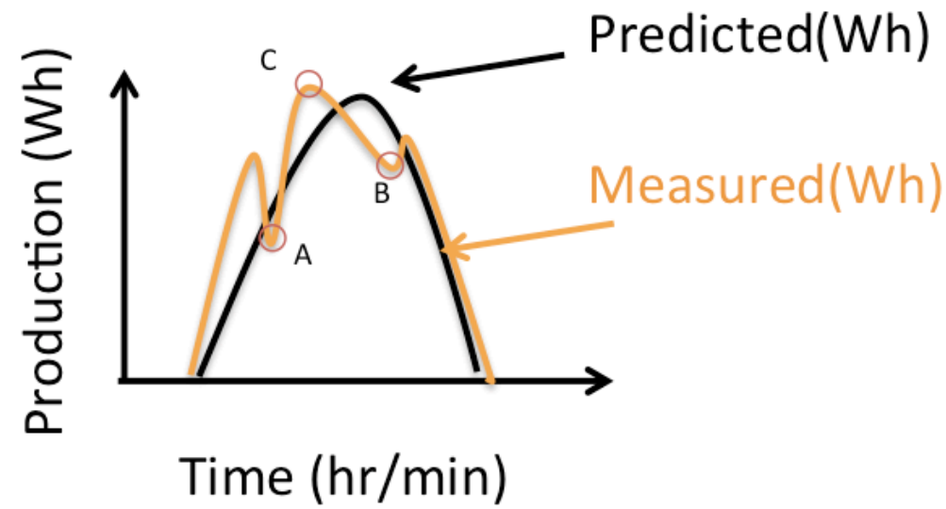
Optimization

- Data are recorded when there is a drop in production.

- Point A, B and C are recorded
  - This decreases the number of points which need to be transmitted to the main sensor and to the cloud.

- Further, these points are compared with the neighboring sensor to check the consistency to determine the relevance of the anomaly

- These point further used in the cloud to improve the algorithm



Type of Anomaly

Short term: Shadow, short circuit, disconnect, bird poo: Easy to detect with using neighboring sensors

Long term: dust accumulation, degradation in panel: Analysis using weather data

Current customers

- Customers
  - Switzerland: Romande energie: (Solar utility), Amaudruz: Solar installer
  - India: DESI power, MeraGoan Power, Oorja Private limite, Smart Power India pvt limited
- Research partners
  - SUPSI Ticino Switzerland
  - EPFL, Lausanne, Switzerland
  - IIT Bombay, India
- Manufactureres
  - HemaGroup Switzerland
- Supports & Funds
  - GENILEM, REPIC, Platinn, InnoVaud, InnoSuisse, EIT

Data analysis

- Optimization of O&M staff, mainatence days etc.
- Providing yeild performace and recommendation on
  - Raising funds (carbon market, equity, debt, RECs, green bonds)
  - Selling the Assets
- Helping on the future expansion based on the current customer analysis and performace of the solar plants.

Growth

	2020	2021	2022	2023	2024
New sensors	1'000	9'000	20'000	50'000	40'000
Sensor number	1'000	10'000	30'000	80'000	120'000
MW monitored	5	50	150	400	600
Market Size	0	0.01	0.04	0.1	0.15
Human Resource	6	28	61	129	139

60% of the HR is sales and marketing