

Smart Solar International (SSI)



Tomita's Laboratory



SOLAR QUEST

Research Center of Advanced Science & Technology ,U-Tokyo (Komaba Campus) since 2008.

- NEDO Projects for Innovative Device Technology
- Research
 - Quantum Dot Solar Cell
 - Multi-Junction Solar Cell
 - Organic Solar Cell



GENNAI

(Global Energy Navigating & Nature Apprehension Interdisciplinary)

- Think Tank for Renewable Development
- International Relations with Foreign Universities and Institutes
- Expanding ways to contribute to society through academic activity
- Research
 - New Silicon Process
 - Innovative CPV System
 - International Standard and Certification
 - New Solar Architecture

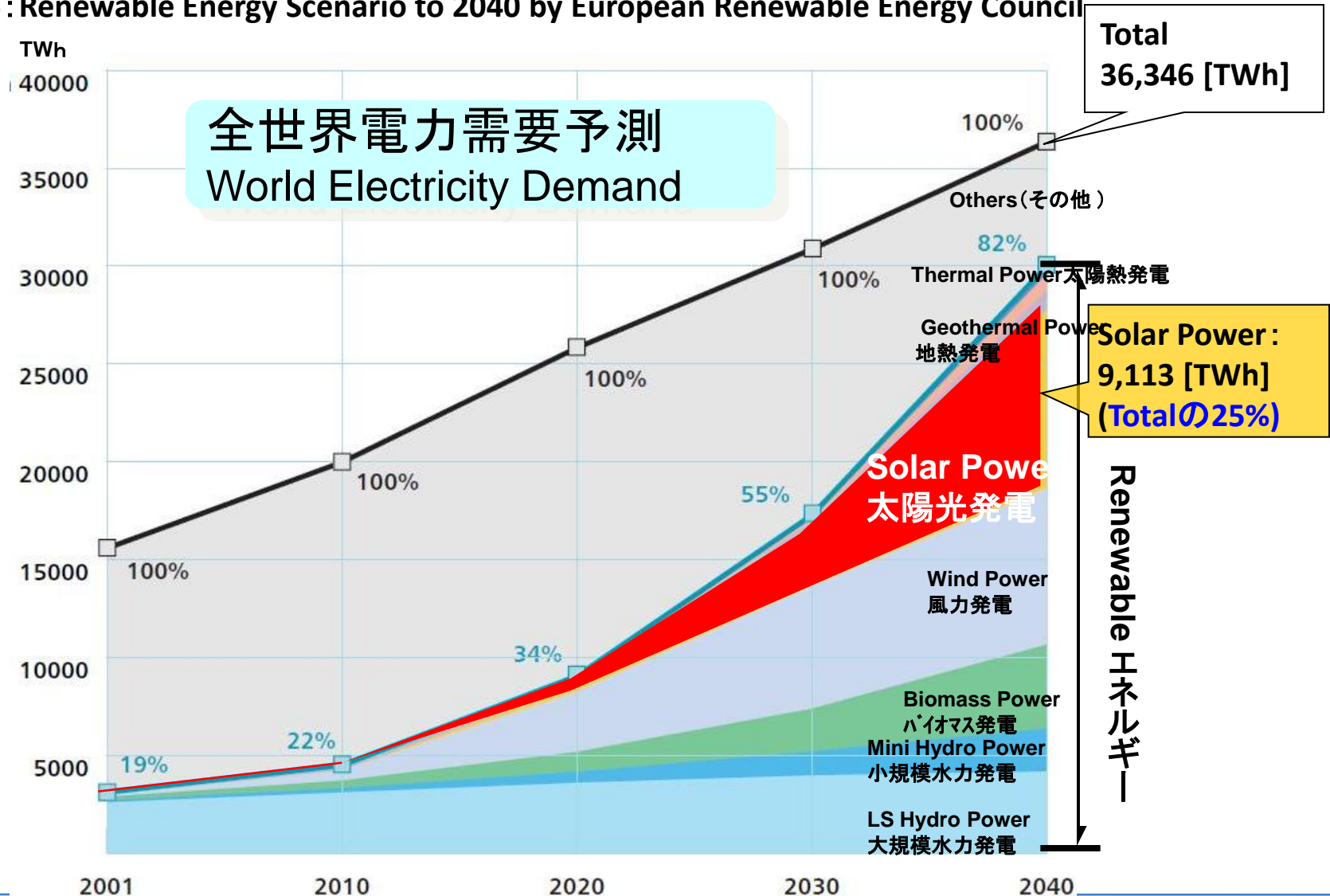


Formation of
New Startup
Hongo Campus

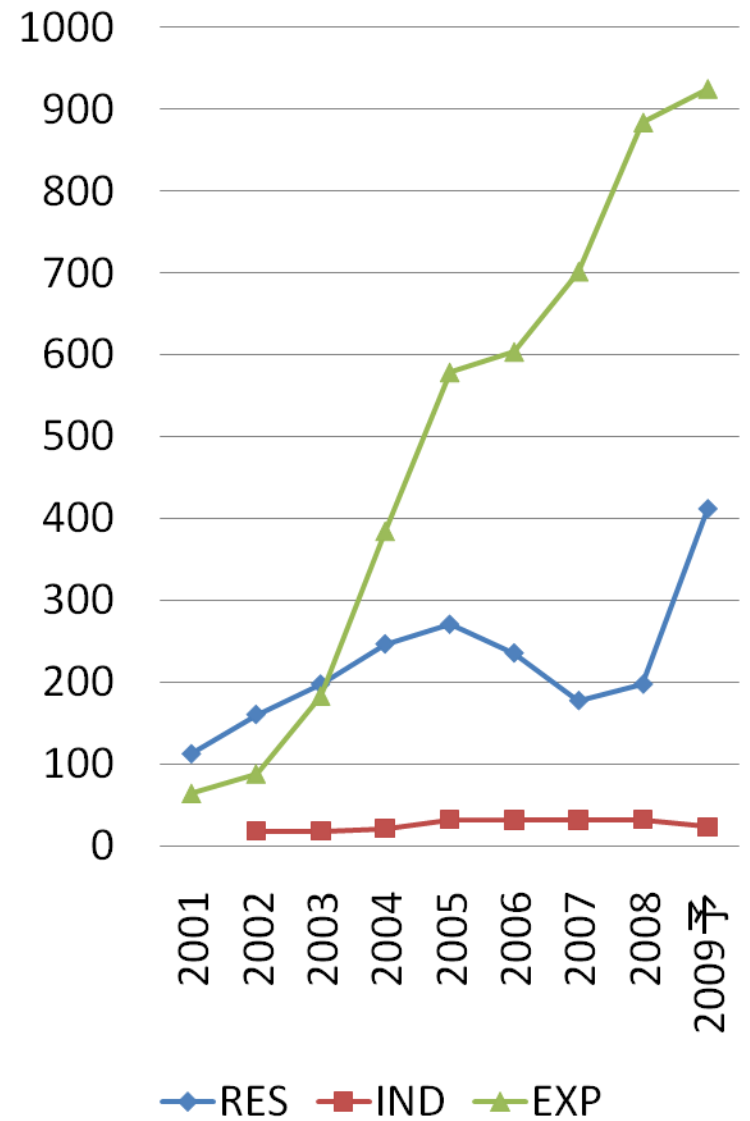
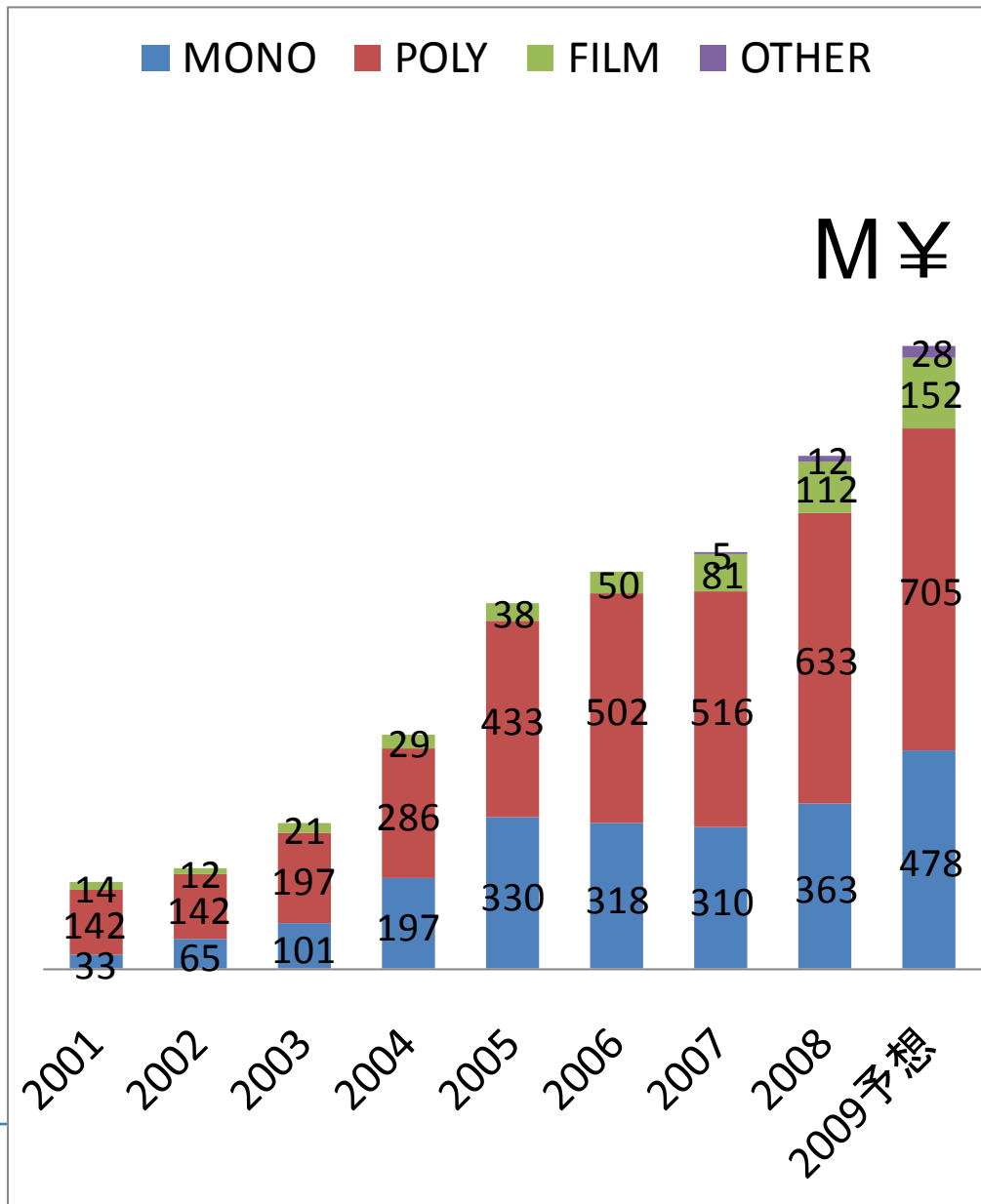
Vision of OECD Electricity Demand

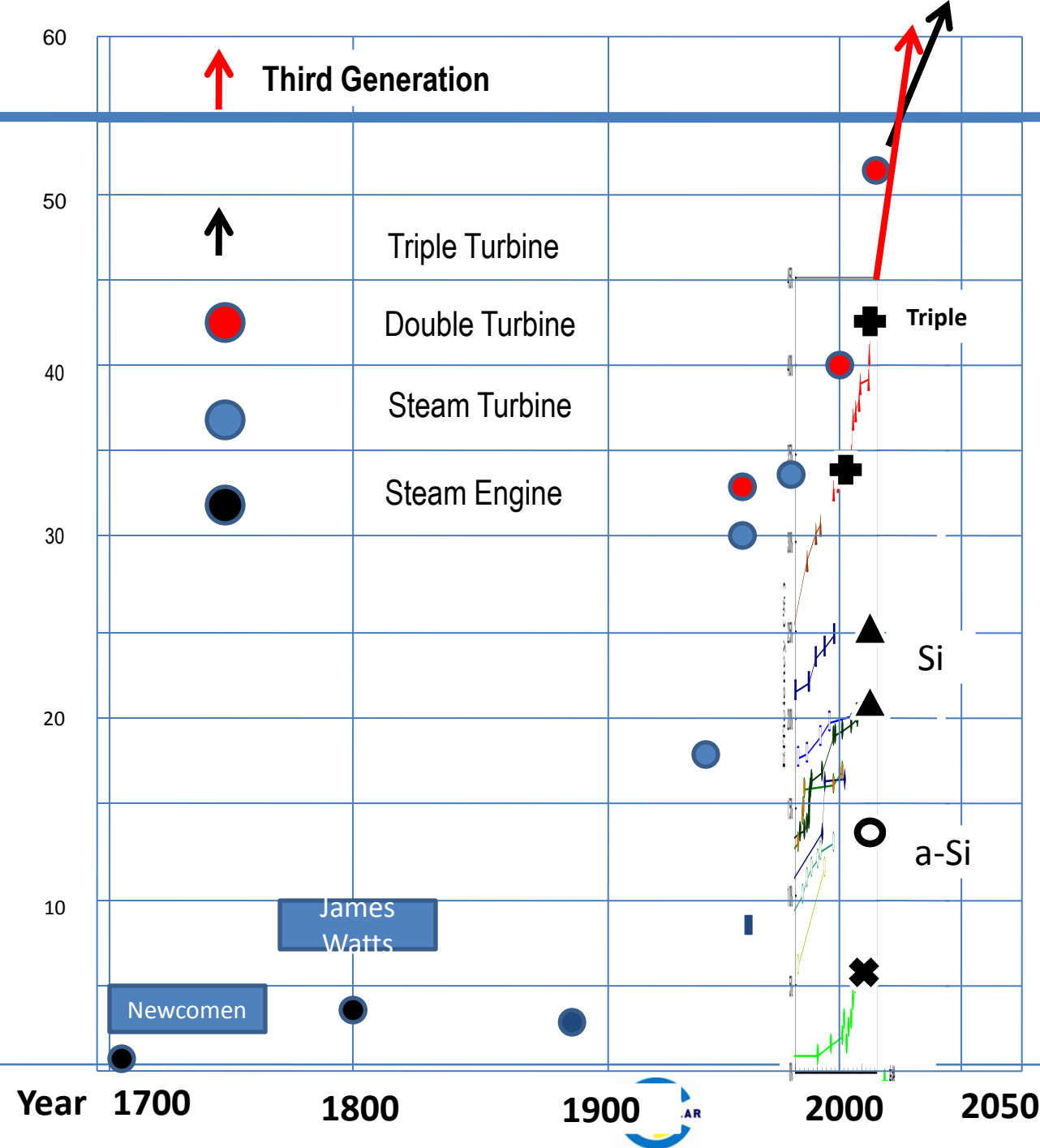
世界の電力需要と太陽光発電への期待

出典: Renewable Energy Scenario to 2040 by European Renewable Energy Council



Japan Solar Shipment





Transition of efficiency

Courtesy of Prof. Kaneko

Step-up is dependent on Technology shift.

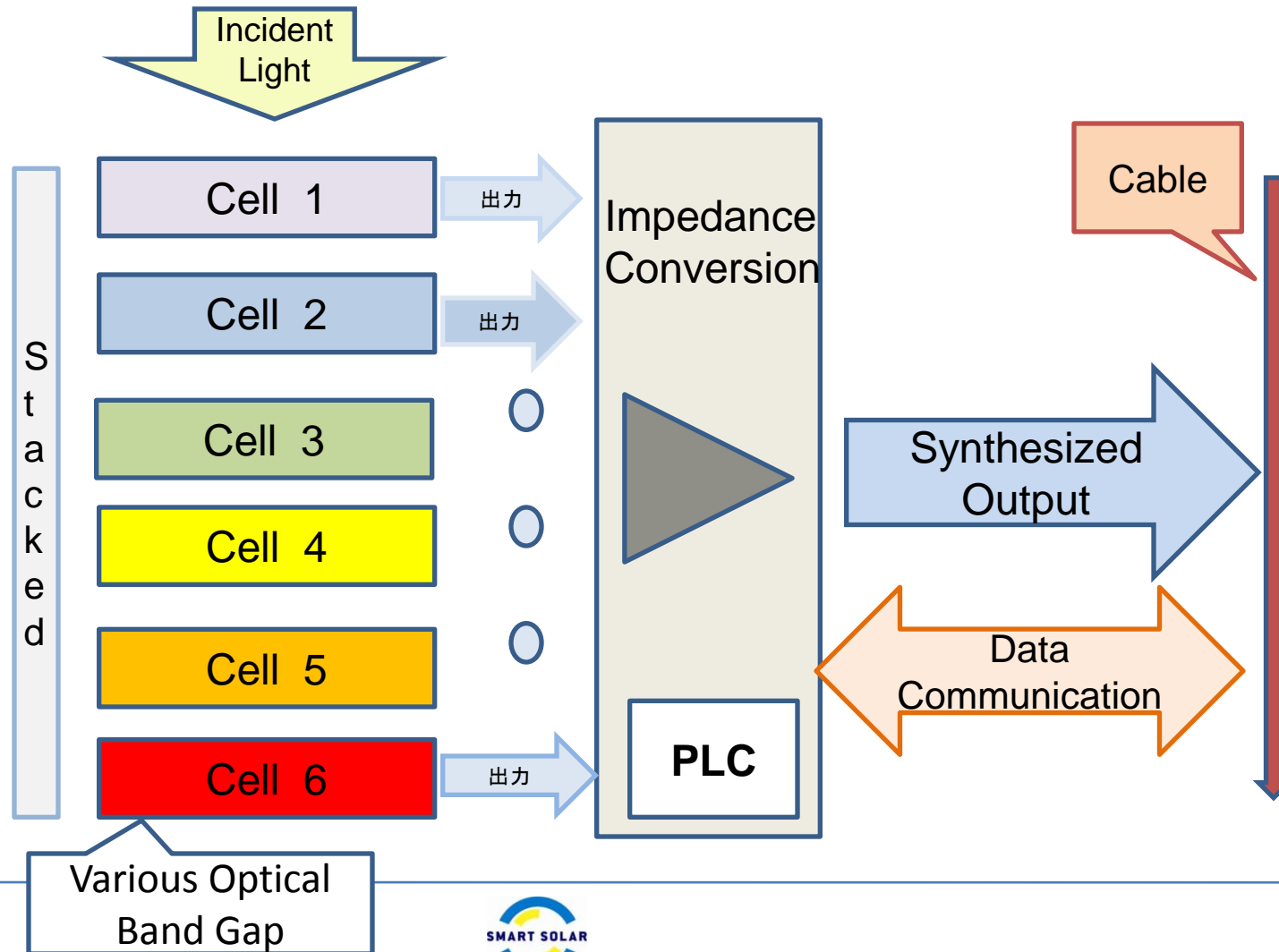
Double, Triple Combination (Junction) is effective. **However....**

Thermal and PV show similar trajectory.

Can A.Einstein win J.Watt?

Smart Solar Architecture

1) T.Tomita, 'The Third Generation of Photovoltaic Electricity' Keynote Lecture of International Conference on Solid State Devices and Materials, Nov.(2009).



SSI Vision Statement

Startup success rate stats in Japan: 1% - 2%, US: 10% - 20%

Need to bring more academic technology into business

The most inexpensive & Cost Competitive electricity Supplier for customers in the world.
(Challenge and Break Carbon Foot print reduction issue)

By 2015, \$100M, <10 ¢ /KWh

Green

Become the industry standard setter in performance and value
RETURN TO NO.1 Position in the world.

Material, Technology, Cost, Durability & Efficiency

Next Gen PV

By

Build up the most admirable Brand from Top-class ACADEMIA technology
and unique business model

Marketing Strategy

Develop a list of potential targets for FIRST customers based on selection criteria:

Our marketing Plan

Identify potential partner through University consortium
GENNAI Solar Quest

Partner with DC/DC integrator company to install system in commercial buildings.

Begin project with Data center project

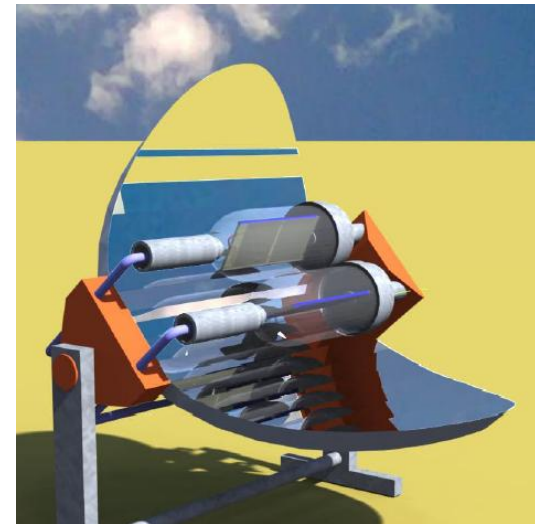
Develop a comprehensive sales and marketing plan

Preliminary list of targets

Industrial (24x7)

Commercial (not 24x7)

Island/Villages



Manufacturing Strategy

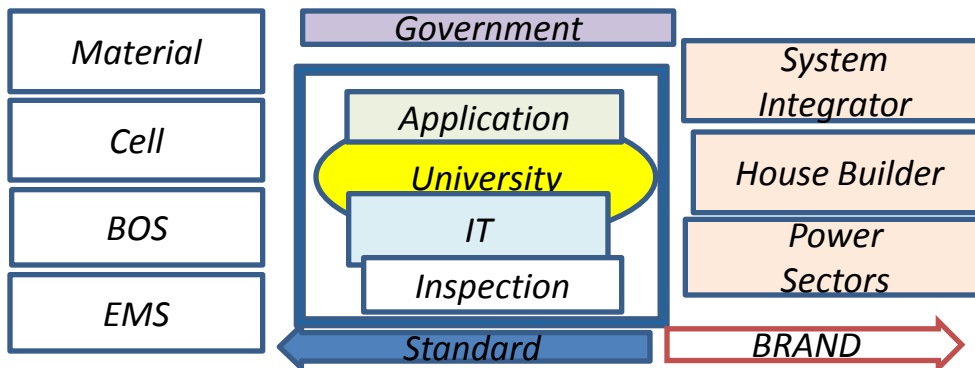
Digital Factory

Manufacture Service has spread into all of the world, not only in domestic but also developing countries

Serious concerns in factory operation and quality assurance due to lack of knowledge & management control

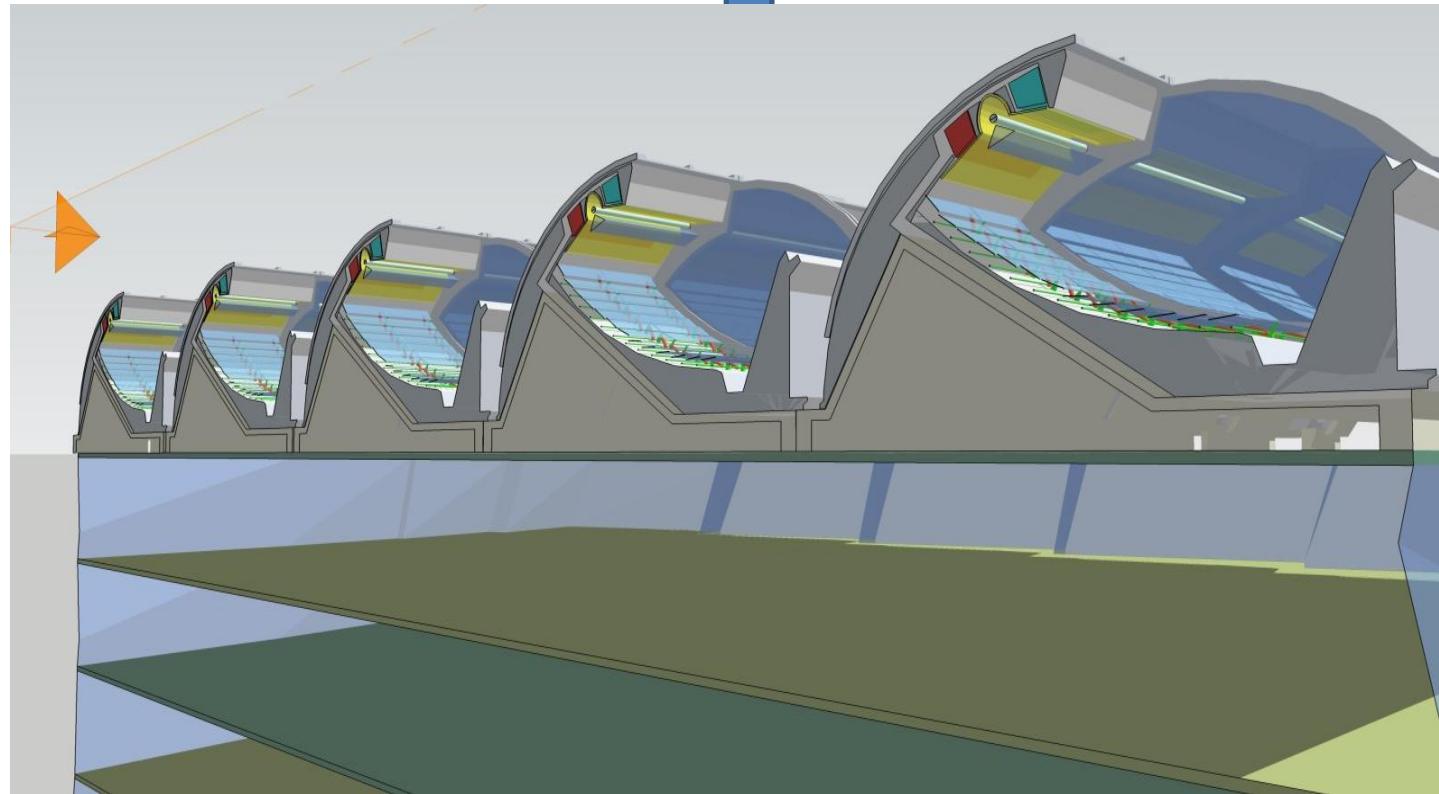
In order to solve these problems, the concept of DIGITAL FACTORY has been introduced by SSI for the first time in Japan.

Total Process Control based on various science, more sophisticated technology and Information network are the key to factory operation .



Product Image – Data Center

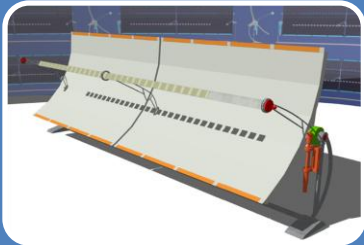
Solar Ship



SSI
Value

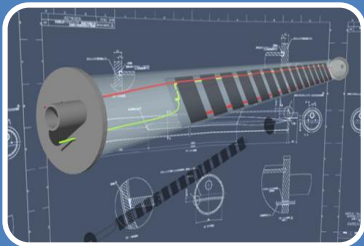
Customer
Value

Smart Architecture Differentiation



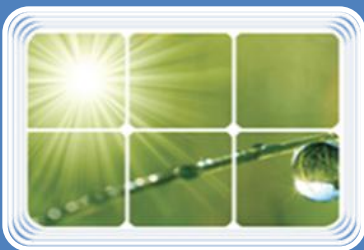
Unique Power-Free Cooling Technology

- No power required for cooling
- Temperature suitable for operation



Multi-Layer Optimized Cell Design

- Combined maximum power output from each cell (layer)
- Materials flexibility: each cell can be any materials (not limited to Si)



New Advanced Materials and New Si

- Better performing materials with lower cost
- Environmentally safe materials

Simpler, lower cost, higher efficiency

Cool Earth Energy Innovation

Project by Japanese Government

**Material Science will contribute to this Project.
We should think about the way of business.**

**Such technology transfer might be possible, but the
openness of infra-structure should be open even in
developing countries.**

Standardization and Digital Factory are important.



High performance power storage	Secondly battery Capacitor	Power electronics	Wide gap high semiconductor	Hydrogen Storage & Transport	Hydrogen absorber
Natural gas Power generation	Turbine materials Magnetic Materials	High Intelligent Transportation	Microwave Sensor	Eco House & Building	Sensor and Materials
Coal fired Power generation	High temperature turbine	Fuel Battery Vehicle	Separator Ceramics	High efficient Lighting	LED organic, inorganic
CO ₂ Capture & Storage	Catalysis	Plug-in , Hybrid Electric Vehicle	Li-ion battery Power device	Fuel Cell Battery For Home	Ceramics
High efficiency Solar power generation	Semiconductor Heliostats	Bio-Fuel Vehicle	Catalysis	High performance Heat Pump	High Performance Cylinder
Nuclear Power generation	Furnace Cooling,	Innovative Material & Process	Carbon Materials	Eco -IT equipments	Low power IC, display
Super Conducting Cable	Ceramics	Innovative Steel Production	High temperature	Energy Management Systems	IT technology Low power device