

**Panasonic**

# Panasonic Technology IR Panasonic Innovation Strategy

**November 29, 2017**

**Panasonic Corporation**

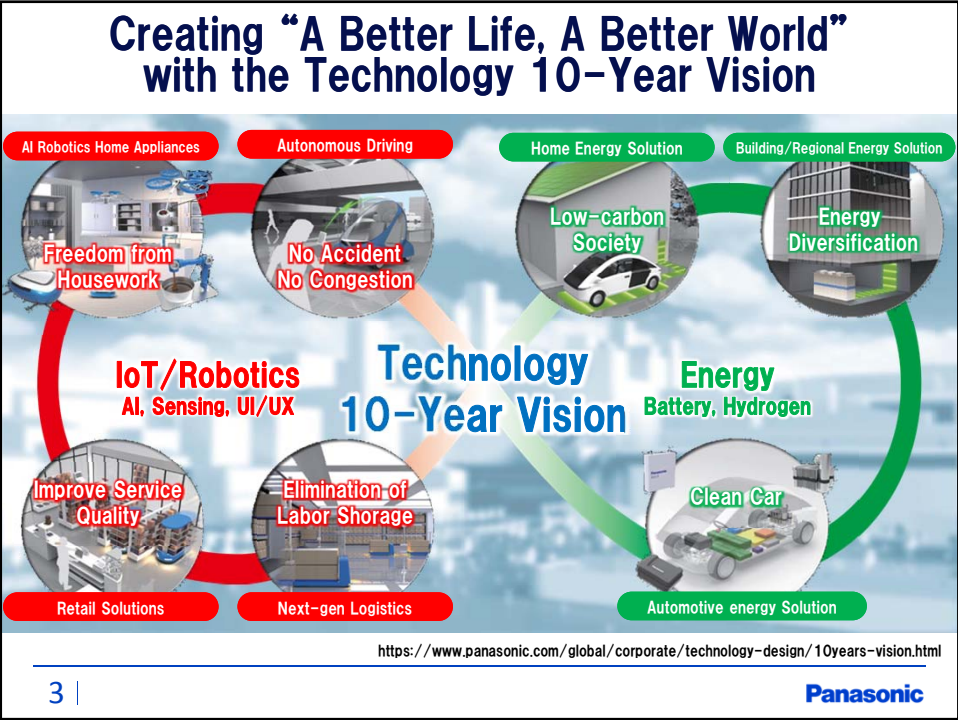
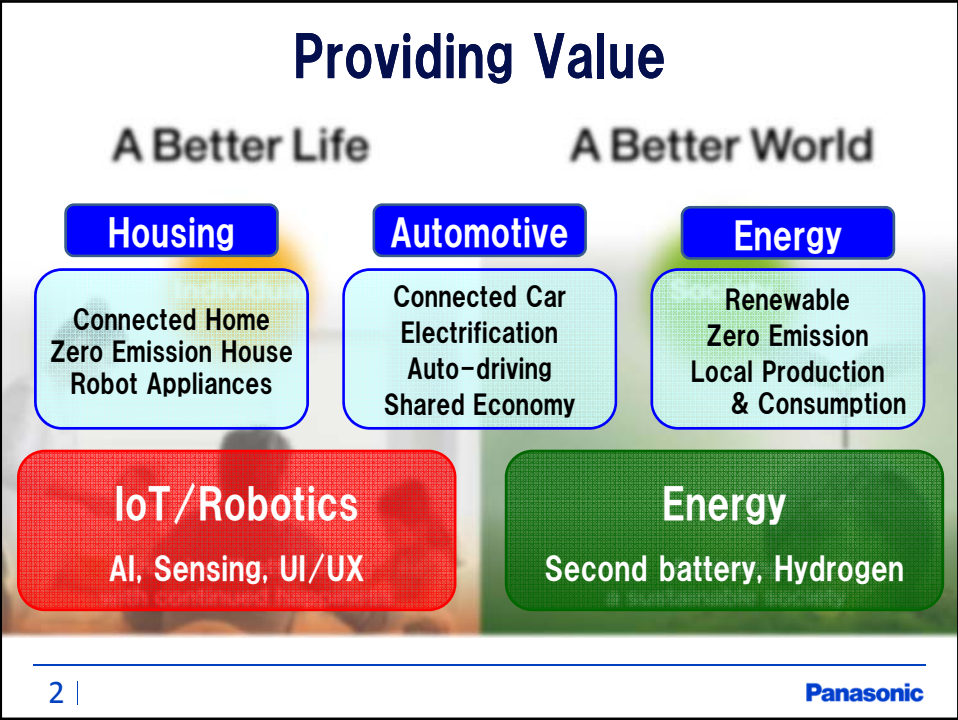
*Notes: This is an English Translation from the original presentation in Japanese.*

## Providing Value

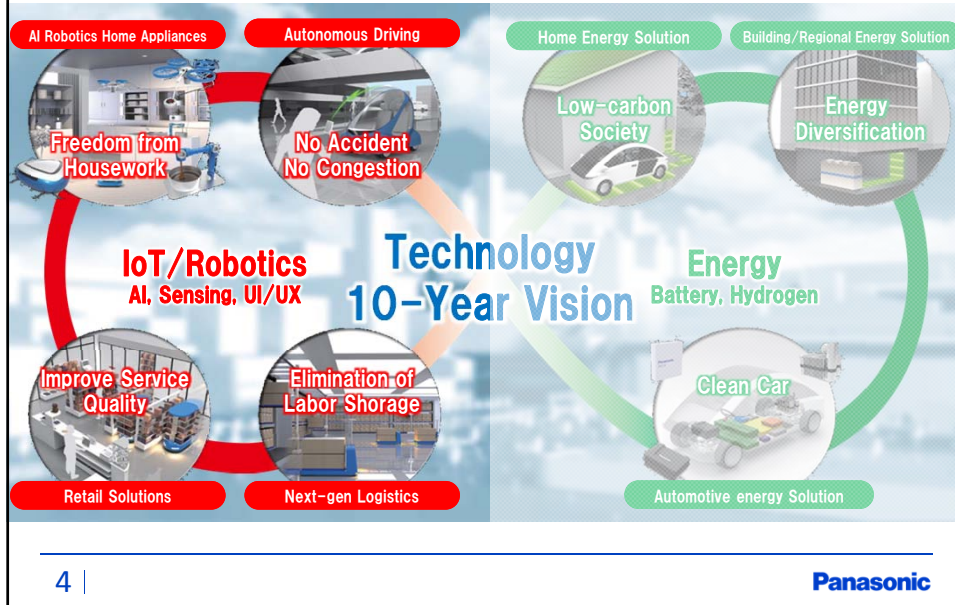
**A Better Life**

**A Better World**

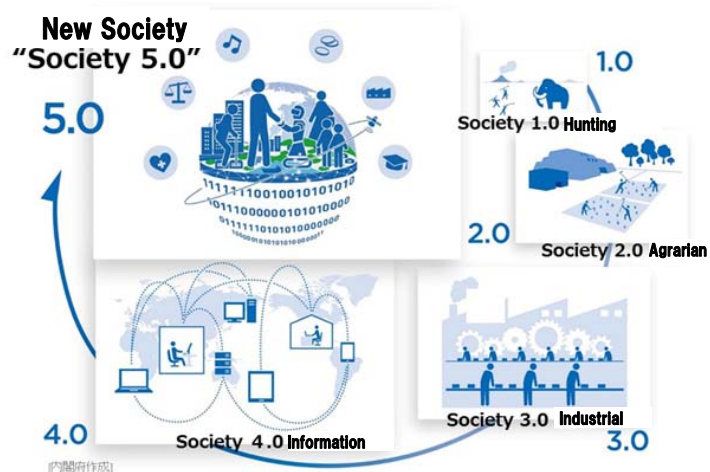




# IoT/Robotics



# Society 5.0: Super Smart Society



Based on material from Japanese Govt. [http://www8.cao.go.jp/cstp/society5\\_0/index.html](http://www8.cao.go.jp/cstp/society5_0/index.html)

## From “Keeping process” to “Customer Value First”

### Society 3.0 (Industrial Society)

- Mass production with good quality by defining and obeying processes.
- Focus hardware product innovation



### Society 5.0 (Super Smart Society)

- Customer value first, apply the best process for it.
- Innovation of all business models including hardware, software, service, etc.



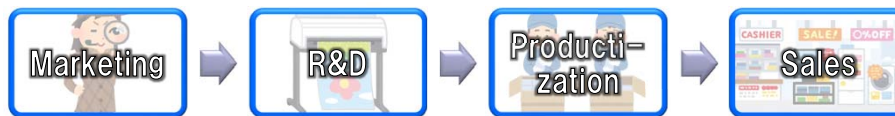
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## Direct communication with customers

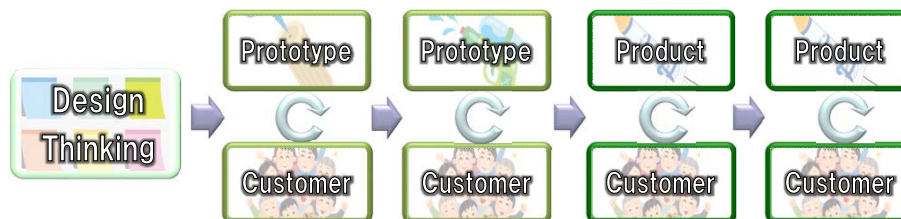
### Waterfall Process:

*Unspecified* Large Number of Customers



### Agile Process:

*Specified* Large Number of Customers

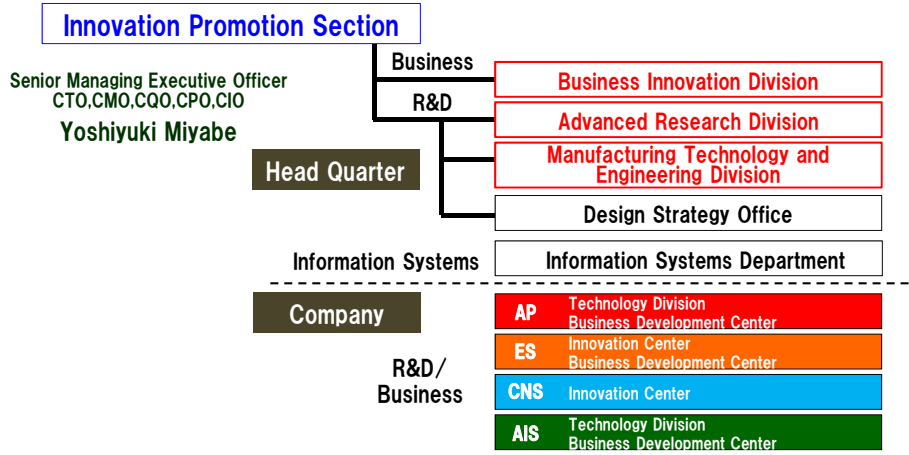


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## Restructuring Corporate R&D to promote innovation on April, 2017

Technology & Design Section → Innovation Promotion Section



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## Business Digitalization

**Business Innovation Division**  
**Wataru Baba**

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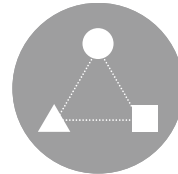
# Business Digitalization



**Construction of Digital Native Business**



**Establishment of Panasonic  $\beta$**



**Optimization in Innovation Promotion Division**

# Construction of Digital Native Business

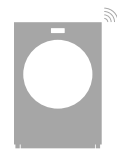
## HOMEX - Digital Business Model



A Platform Company



Winning Digital Ecosystem



Software Designed Hardware

## HOMEX - Digital Priority



Digital Customer



Digital Products



Digital Supplier



Digital Workforce



Digital Finance

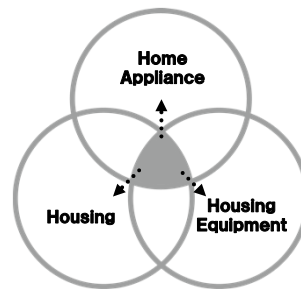
## Software Driven Type Living Space Hardware

Housing U Housing Equipment U Home Appliance < HOMEX

Housing n Housing Equipment n Home Appliance = HOMEX



Disrupt other industries  
by digital native business model



Growth through  
reinventing our industry

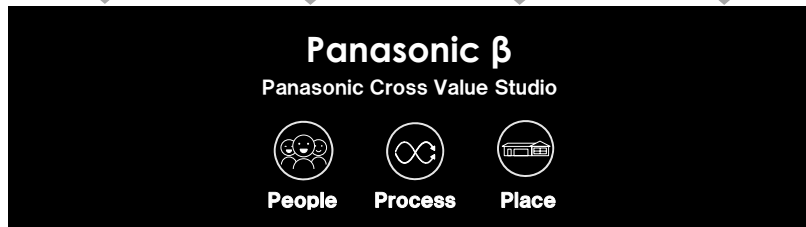
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## Panasonic β

Realization of Mini Horizontal Panasonic and  
Establishment of Mother Factory for Innovation Mass Production

Horizontal Panasonic about Job Function



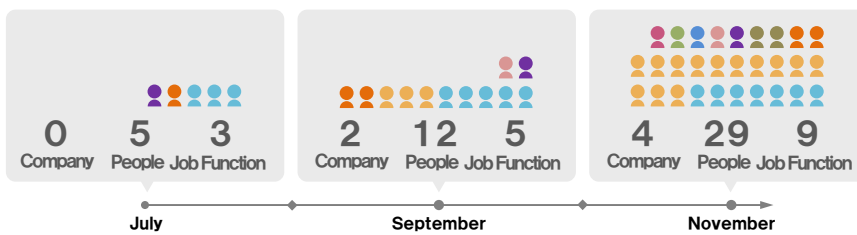
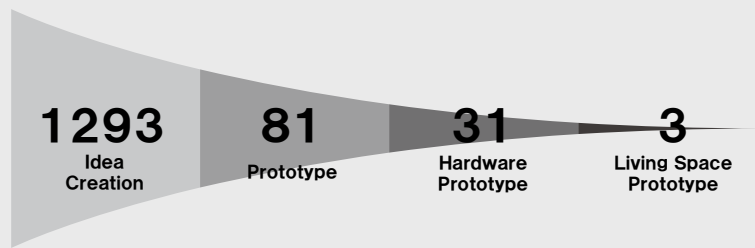
Horizontal Panasonic about Business Division

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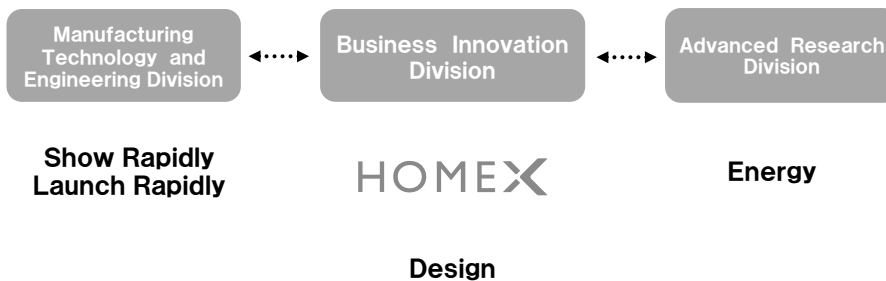
## Panasonic $\beta$ Involves the whole company

Cross Value Type Regrowth by Horizontal Panasonic about Business Division and Horizontal Panasonic about Job Function



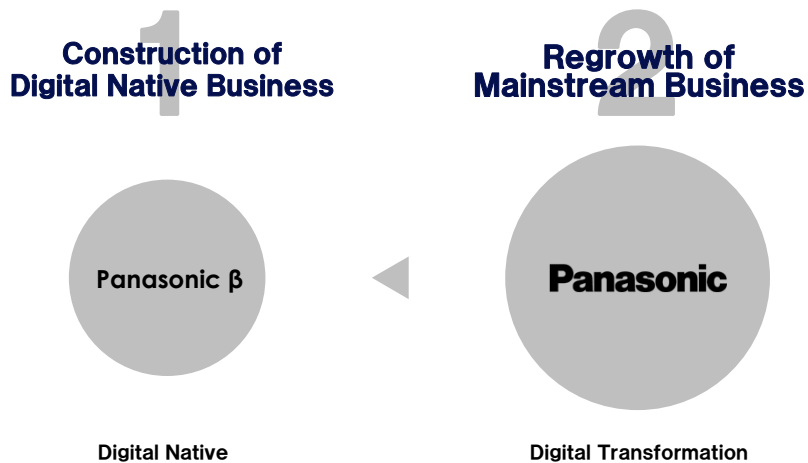
## Restructuring Business Process by Innovation Promotion Division

### Panasonic $\beta$





## Panasonic $\beta$ that leads next 100 years



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## Manufacturing that Embodies the Business Ideas from Rapid Prototyping to Mass Production

Manufacturing Technology and Engineering Division  
Tatsuo Ogawa

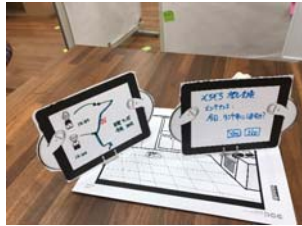
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# Show Faster

## Embody the ideas rapidly by prototyping

Improve the visualized concept by prototype with a feeling of touch



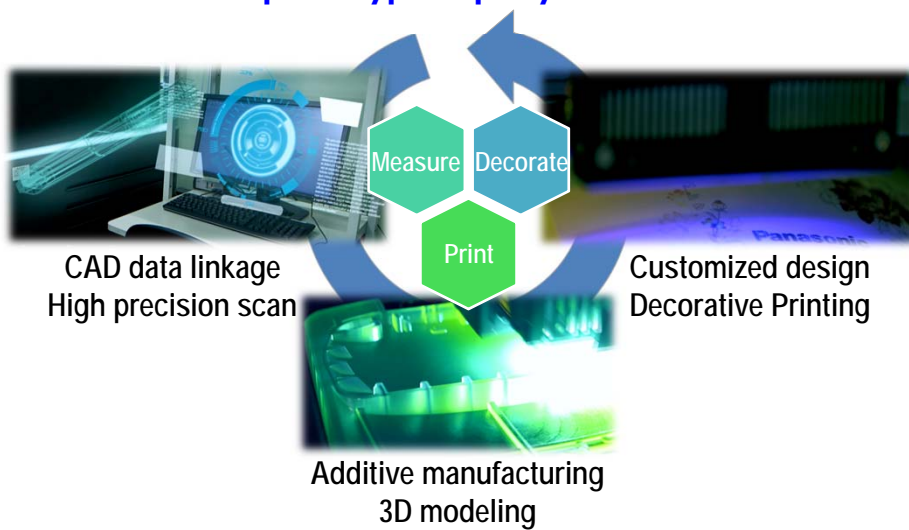
Model made with cardboard etc.



Usable prototypes

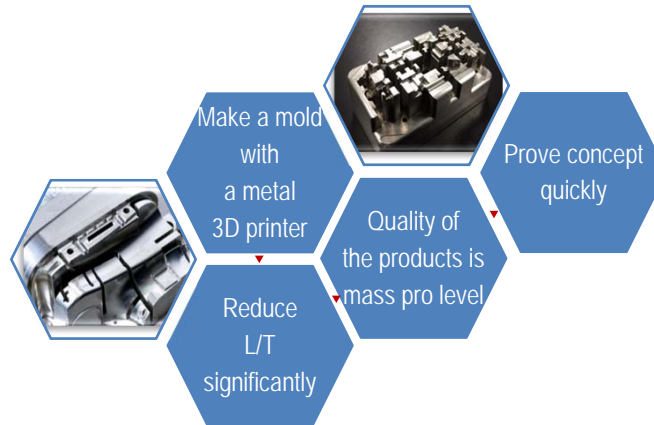
# Manufacturing that realizes rapid prototyping

## Produce the prototype rapidly from data creation



# Connect to the Business Faster

Produce hundreds units in a short time to examine the business model



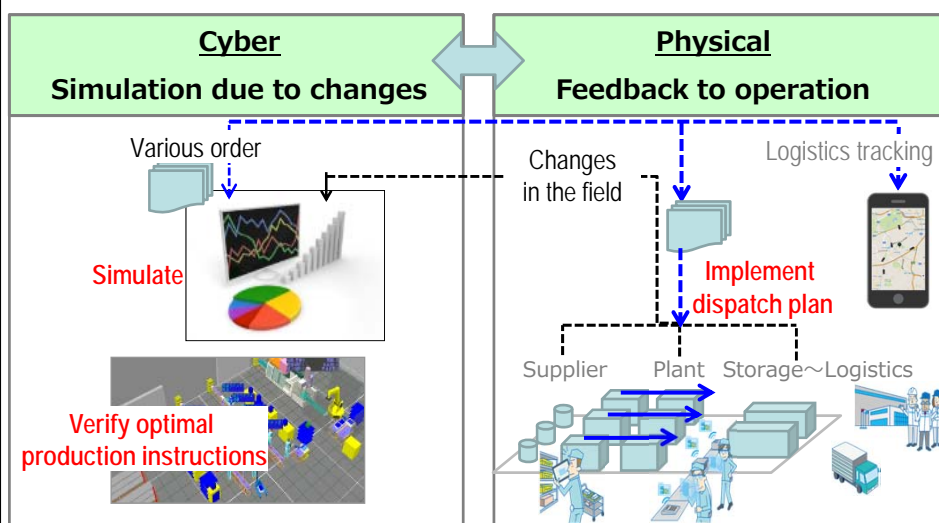
**L/T for mold : 1 moths → 1 week**

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# Digitalization of Mass Production

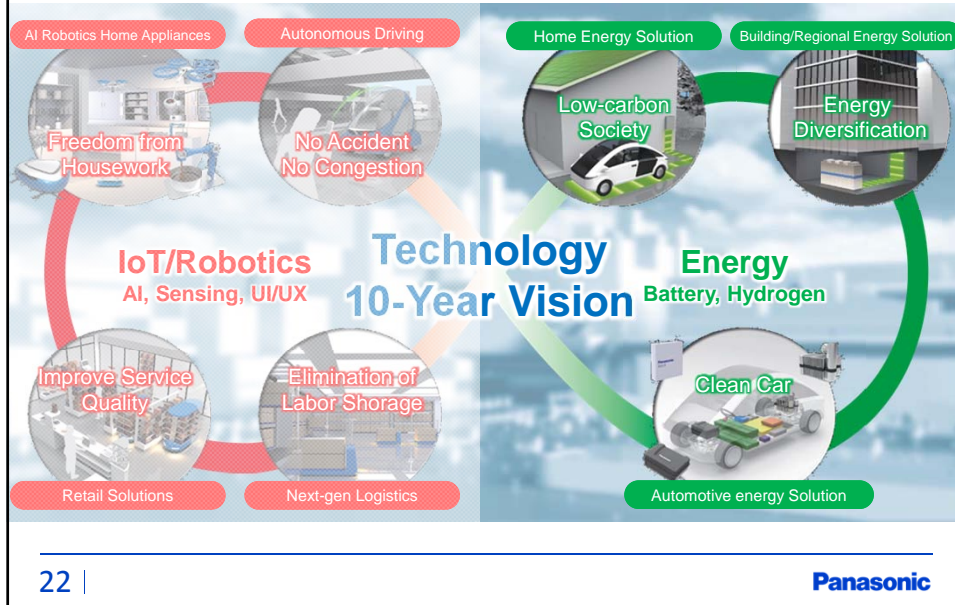
Manage the production instruction optimally for various order & demand change



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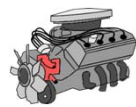
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# Energy



## Rechargeable battery is key device to reduce fossil fuel

### Gasoline-fueled Car



Gasoline Engine



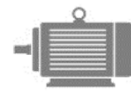
Gasoline Tank



### Electric Vehicle



Experimental Electric Vehicle



Motor



Rechargeable Battery

## Leading Rechargeable Battery Business



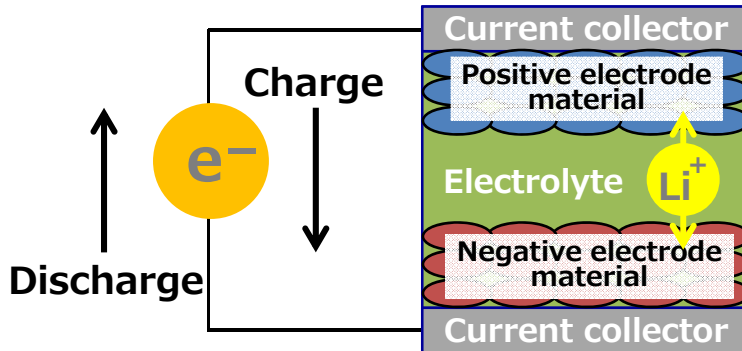
## Advanced Research in Energy Field

Advanced Research Division  
Masato Aizawa

## Importance of Materials for Battery Performance

### Importance of new materials development and analysis of atomic/molecular behavior

Rechargeable battery composition and charge-discharge

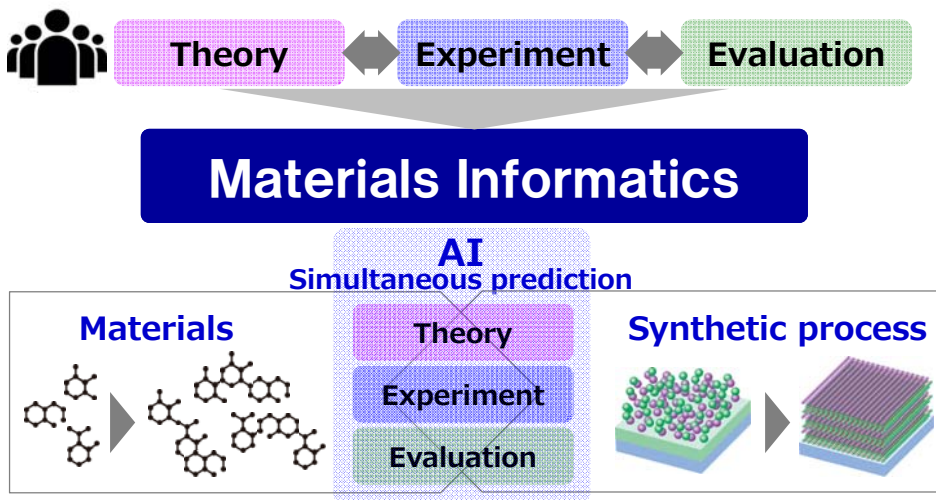


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## Shortening of New Material Development

Solution for drawbacks of a trial and error approach

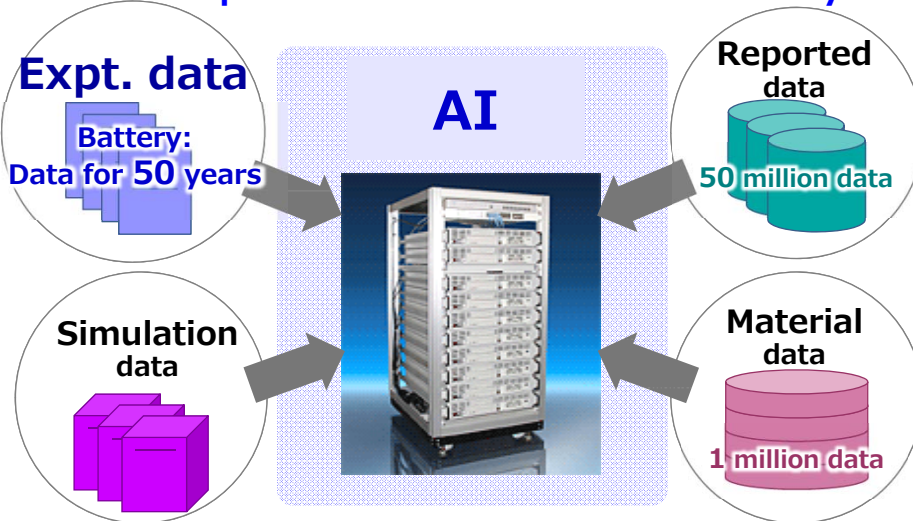


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# Data-driven Material Search

Structure prediction of functional material by AI

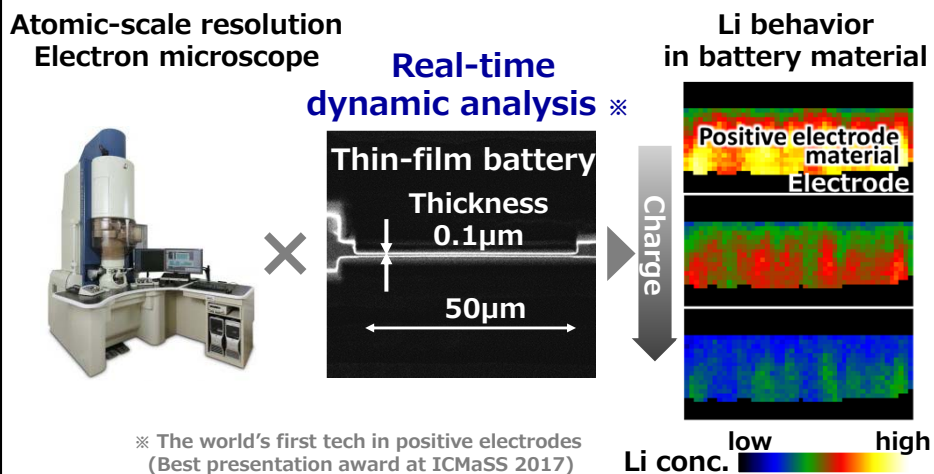


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# Elaborate Analysis and Evaluation

Analysis of atomic arrangement and behavior



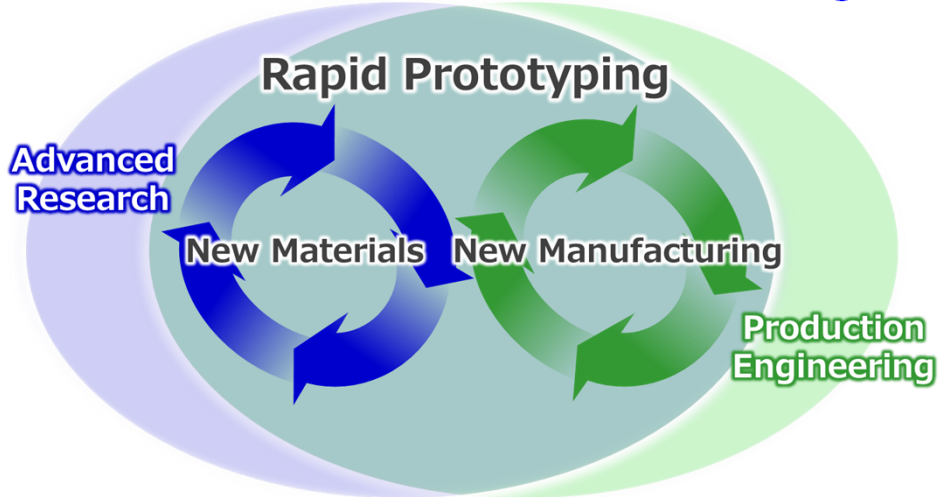
※ The world's first tech in positive electrodes  
(Best presentation award at ICMASS 2017)

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# Quick Launch Products into Markets

Close relationship  
between material search and manufacturing



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## Manufacturing that Quickly Realizes High-Performance and Safe Automotive Rechargeable Batteries

Manufacturing Technology and Engineering Division  
Tatsuo Ogawa

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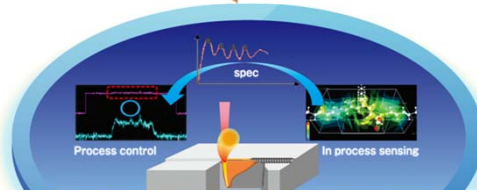
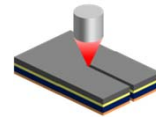
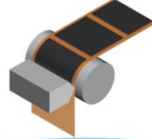
# Pursuit of Security & Safety in Manufacturing

Monitor physical properties & process point that we could not see before in real time

Knead • Disperse

Coat / Dry

Join • Cut



In-process physical properties / Characteristics sensing

Aim to provide 100% quality with zero defects facilities

# Evolution of Traceability by Visualization of Factory

Aggregate & analyze the all information in factory, reflect decision on production site instantly

(To Zero Defect from Quality Control)

① Discover & digitize on-site information

Awareness

MES/Equipment • Inspection log

Daily report • check

Sensor data

IoT  
Big data  
AI

② Process & store into handleable data

Select data

DB

Distributed processing

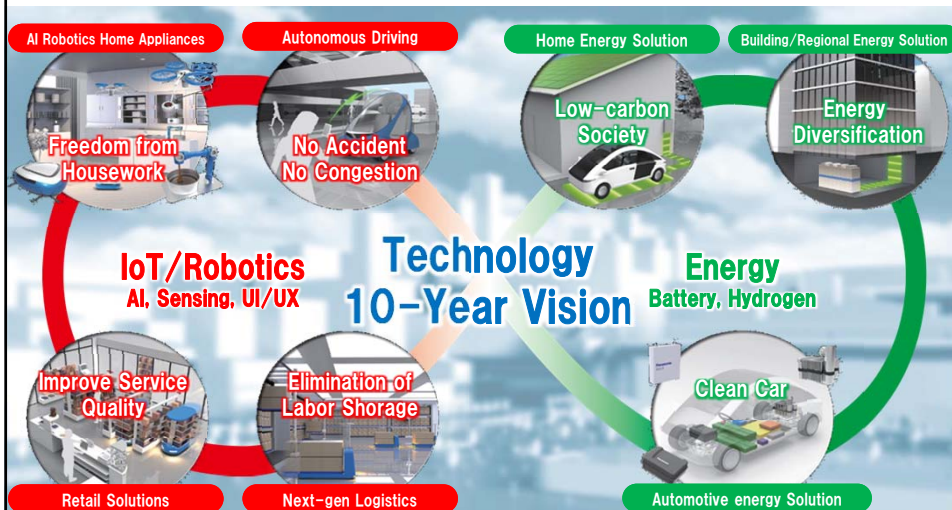
③ Visualize & analyze process quality in real time

Trend monitoring

Visualize the characteristic distribution

# Conclusion

## HQ Changes itself and Leads Innovation



<https://www.panasonic.com/global/corporate/technology-design/10years-vision.html>

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## A Better Life, A Better World

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