

# Industry's Perspective on MDEP Activities

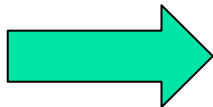
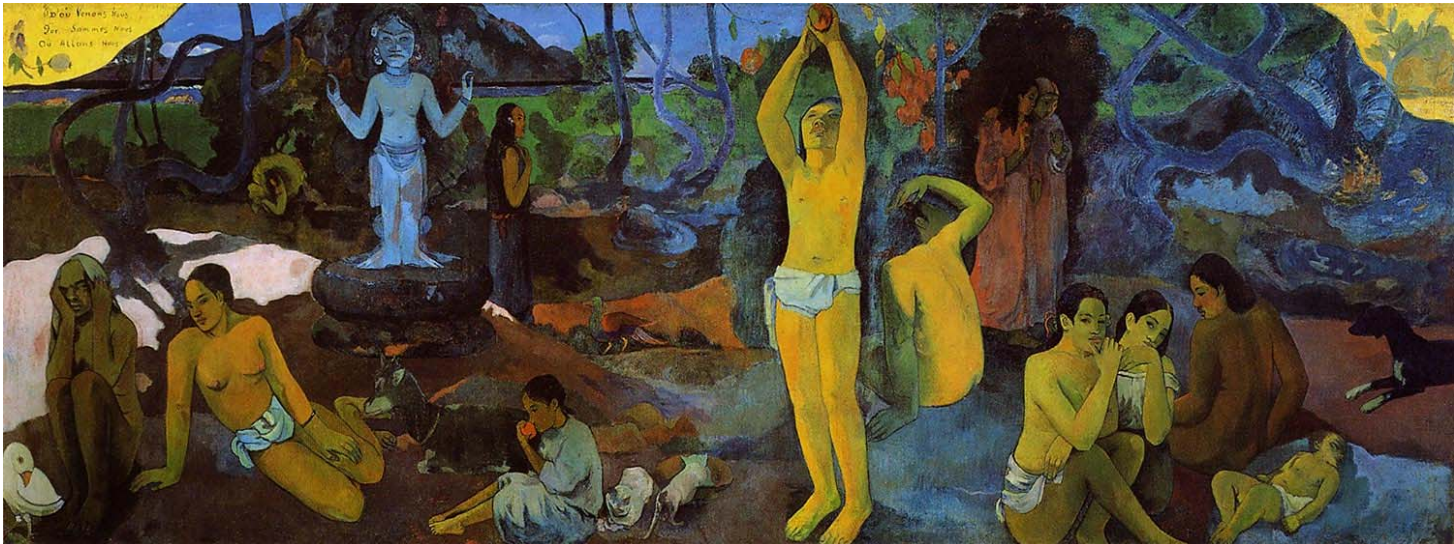
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**NEA/MDEP Conference  
Sep.10-11**

**Japan Atomic Industrial Forum, Inc.  
Takuya HATTORI**

# MDEP ?

**D'ou venons-nous ? Que Sommes-nous ? Qu allons-nous ?  
by Paul Gauguin(1848 ~ 1903)**



**Where Do MDEP Come From ?  
What Are MDEP ?  
Where Are MDEP Going ?**

# Look back to the past Experience in Japan

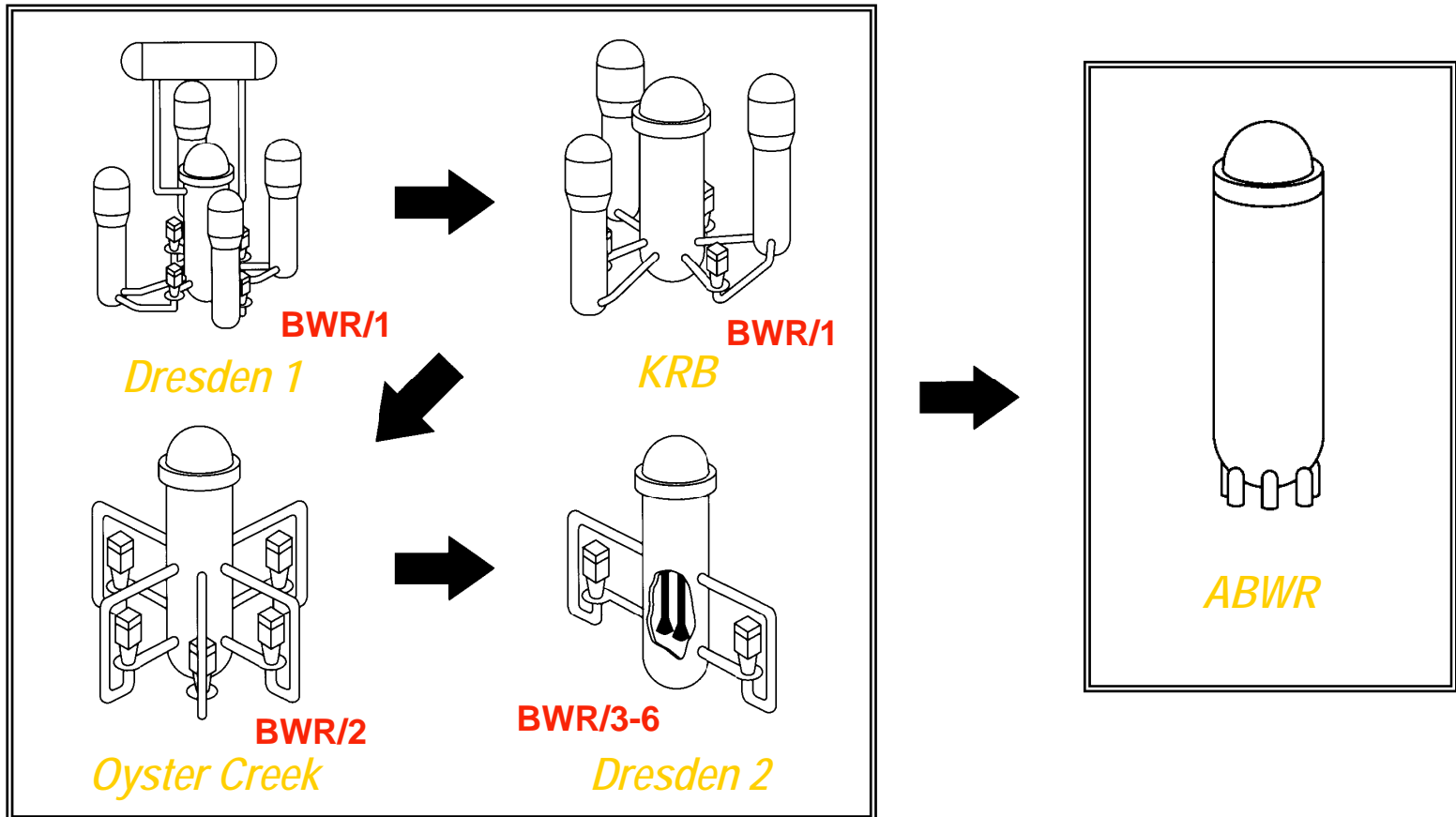
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## Nuclear Development Program in Japan

- \* Introduction the Nuclear Tech. from UK & USA
- \* Accumulation of Const. & O&M Experience
- \* Improvement of Sys. & Component based on the Feedback of Const. and O&M experience
- \* Improvement & Standardization Program
- \* Development of advanced Rx (ABWR & APWR)

# Evolution of BWR Technology

“Simplification” is the Key Concept



# Improvement and Standardization Program in Japan (1)

- **Improvement and Standardization Program in Japan**
  - \* **Phase I (1975 ~ 1977)**
  - \* **Phase II (1978 ~ 1980)**
  - \* **Phase III (1981 ~ 1985)**
- **ABWR & APWR is the final outcome of the Phase III**

# Improvement and Standardization Program in Japan (2)

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## Objectives of the Program

- \* Enhance Safety
- \* Improve Operability
- \* Improve Maintainability
- \* Reduce Radiation Exposure
- \* Improve Availability Factor
- \* Improve Constructability

# Improvement and Standardization Program in Japan (3)

- **Application of State of the Art Technology**
  - \* Advanced I&C (Digital Control Sys.)
  - \* Latest Analytical Design Method (FEM)
  - \* Simulation Technique
  - \* PSA Methodology
  - \* Advanced Manufacturing Method  
(ex. Welding and Forging)
  - \* Advanced Construction Method
  
- **The Basic Policy is “Test before Use”**
  - \* Qualification Test program by Full Size Mockup

# Improvement and Standardization Program in Japan (4)

- **Feedback** from Const. and O & M experience
- **Lessons Learned** from Accidents
  - \* Fire Protection ····BF
  - \* Human Factor ····TMI
  - \* Man Machine Interface ····TMI
  - \* Emergency Preparedness ····TMI
  - \* Severe Accident ····TMI/Chernobyl
  - \* Safety Culture ····Chernobyl
- **Adoption of latest Knowledge and Data Set**



# Improvement of Management Sys.

While the Improvement and Standardization Program executed, **management sys.** have been continuously improved to enhance operational safety, quality and reliability.

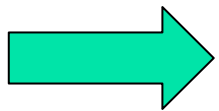
- \* Enhancement of QMS
- \* Improvement of Emergency Preparedness
- \* Improvement of Human Performance
- \* Adoption of the Third Party's Review  
(WANO peer review, IAEA OSART etc.)
- \* Enhancement of Knowledge Management Sys.

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# Where are we standing now ?

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- **Safety, Quality and Reliability** have been reaching nearly to the acceptable level.
- **What's next ?**



Realization of the **Nuclear Renaissance !**

- How can we **cooperate internationally** to realize the Nuclear Renaissance ?

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# Nuclear Renaissance

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- MDEP Activity could be the **strong leverage** for realization of the Nuclear Renaissance.
  
- **What and How ?**

A large green arrow pointing to the right.

Can we learn and share any **lessons** from the past experience ?  
( e.g. ABWR development )

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# MDEP(1)

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## Experience of **ABWR** Development

- Qualification of **new design concept**
  - \* V&V of Digital I&C sys.
- Establishment of **manufacturing process**
  - \* Large component by forging
- Establishment of **advanced const. method**
  - \* Modularization of sys., structure & components
- Certification of the **Standard Design**
  - \* Design Certification (DC) by US-NRC



## MDEP(2)

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### Expected **outcome** of MDEP activities

- \* internationally harmonized **qualification process** for new design concept
- \* internationally harmonized **code & standard** for Rx. Pressure boundary
- \* internationally harmonized **basic safety principle**

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# MDEP(3)

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## Expected **benefits** for the Industry from MDEP activities

- \* minimize **Licensing Risk**
- \* **safety, quality** and **economy** level could be improved
- \* improve the **confidence of general public**



# Summary

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- **First priority is “Make the Nuclear Renaissance happen in timely manner”. So, MDEP should be practical in terms of scope and coverage.**
- **In order to contribute to the Nuclear Renaissance, Japanese Industry is prepared to cooperate together with the MDEP activities.**

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**Thank you for your attention !**