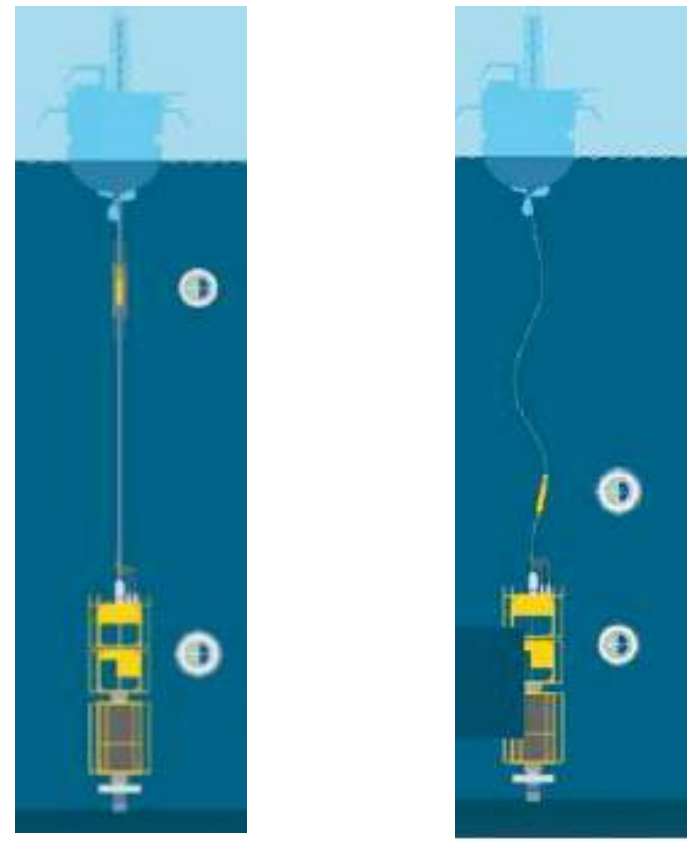


# Compact & Low Cost Offshore Drilling Work System



2018.10.02

# MAIN TARGET

## ■ Oil & Gas Well

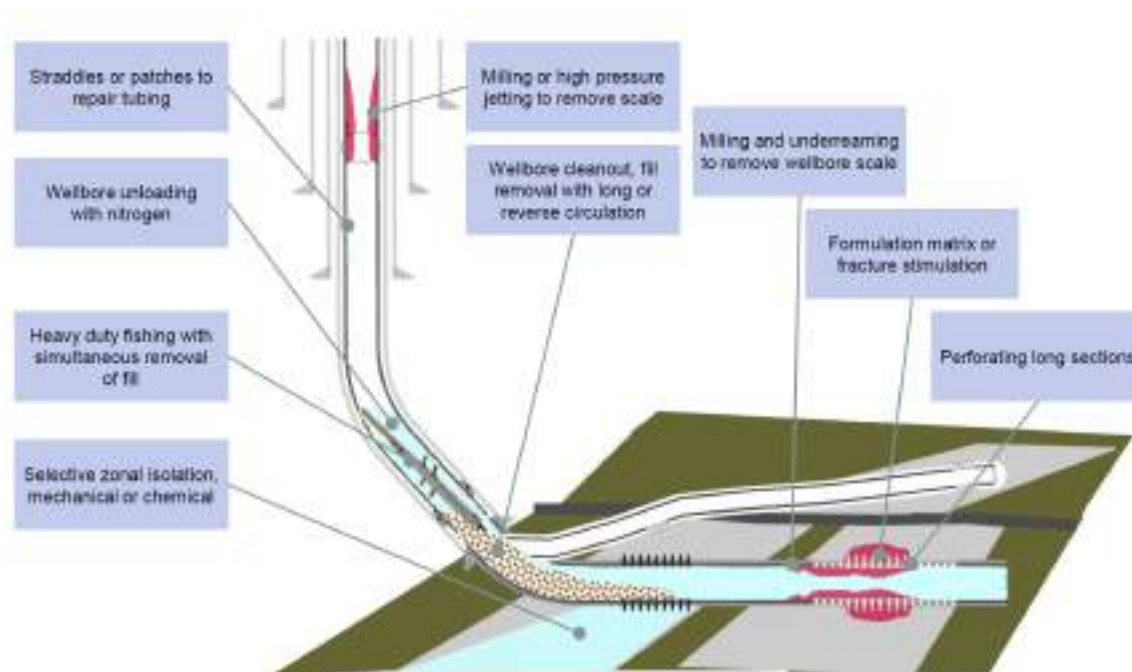
- Shallow Well Drilling (Top Hole Drilling)
- Work over for improving well productivity
- Plug & Abandon

## ■ Offshore Development

- Methane hydrate production well
- CCS offshore injection well

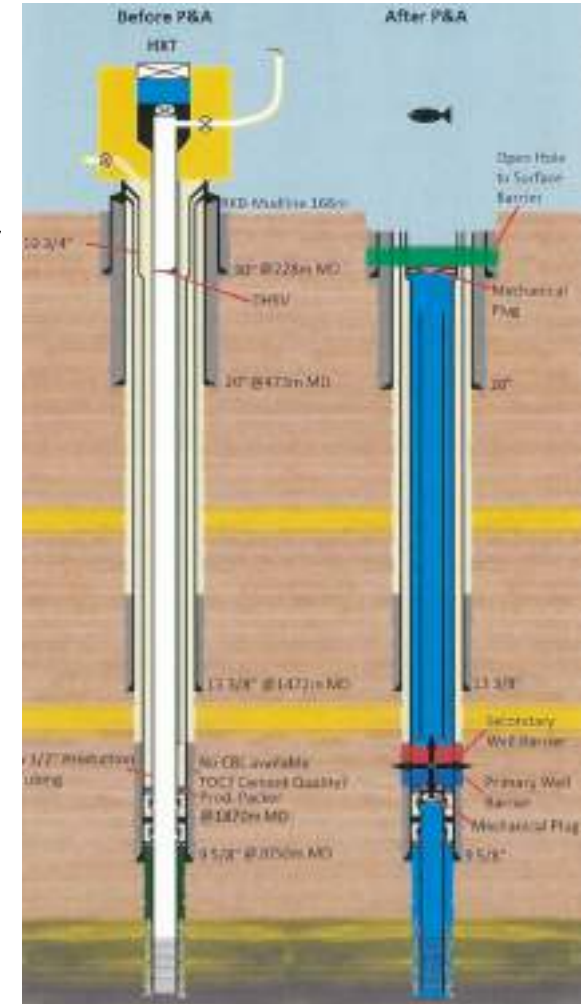
# WORKOVER to improve well productivity

- Well cleaning and removal of fill/well bore scale
- Straddle/patch/exchange worn tubing
- Chemical injection



# PLUG & ABANDON

- Remove or cut production tubing
- Set primary and secondary well barrier by cementing (cement plug)
- Set surface barrier



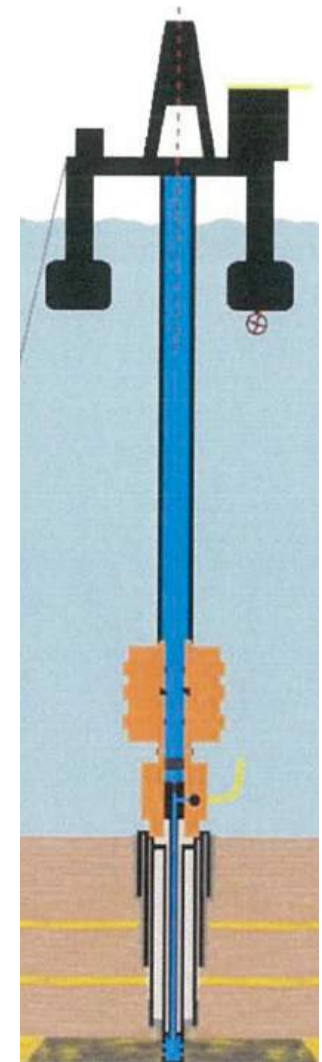
## TRADITIONAL TECHNOLOGY

### ■ MODU operation

- Large size floater for deep water drilling
- Using high day-rate MODU, drilling riser and heavy well control equipment
- Long period operation for running and retrieve of riser and well control equip.

### ■ Hydraulic well control

- Complex hydraulic operated system
- Heavy well control equipment (BOP) for deep water operation



## **DEVELOPMENT OUTLINE**

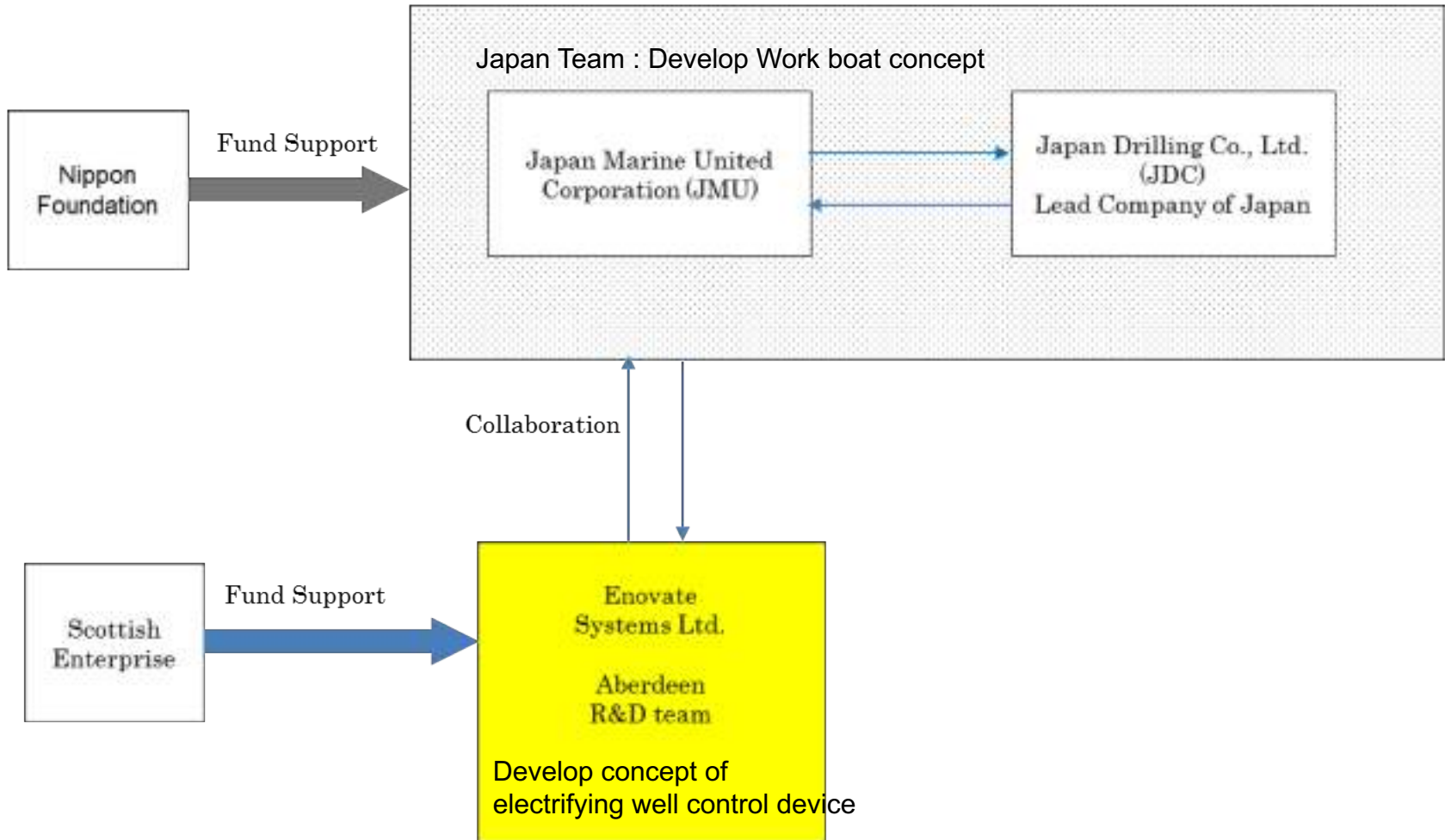
### **■Objective**

- Optimize well control by developing all-electric metal-to-metal cut and sealing device.
- Topside and subsea equipment will be reduced in size and weight. System complexity will be significantly improved.
- The compact work-boat concept will be developed aligned with this development and enable integration to simplify the system in particular umbilical and rotating equipment.

### **■Outcome within 2-years of R&D Work**

- Concept of the Offshore Drilling Work System with an all-electric well control device
- Concept Approval in Principle (AIP) of work boat by Class Authority
- Concept for electrifying the well control device.

## DEVELOPMENT WORK EXECUTION SCHEME



# Development by Scotland side

## ■ Electrification of well control device

- Enabling faster and reliable valve control
- Reducing the hydraulic distribution and storage system (accumulator etc.) at topside and subsea WCP
- Allowing simple and more intelligent system
- Reduced Weight and cost



En-Tegrity - Safety Head  
For isolation of well



Electric Actuator



Well Control Package  
(WCP)



# Development by Japan side

## ■ New concept of drilling work boat

- Develop purpose specific work boat using slim work over riser and electric well control system
- Compact size and low day-rate work boat
- Installing compact size derrick system
- Enabling to shorten the operation period including running and retrieve of riser and well control equip.



Sample Image (Skandi Aker)





**Compact & Low Cost  
Offshore Drilling Work System**



**Thank you for Attention**