

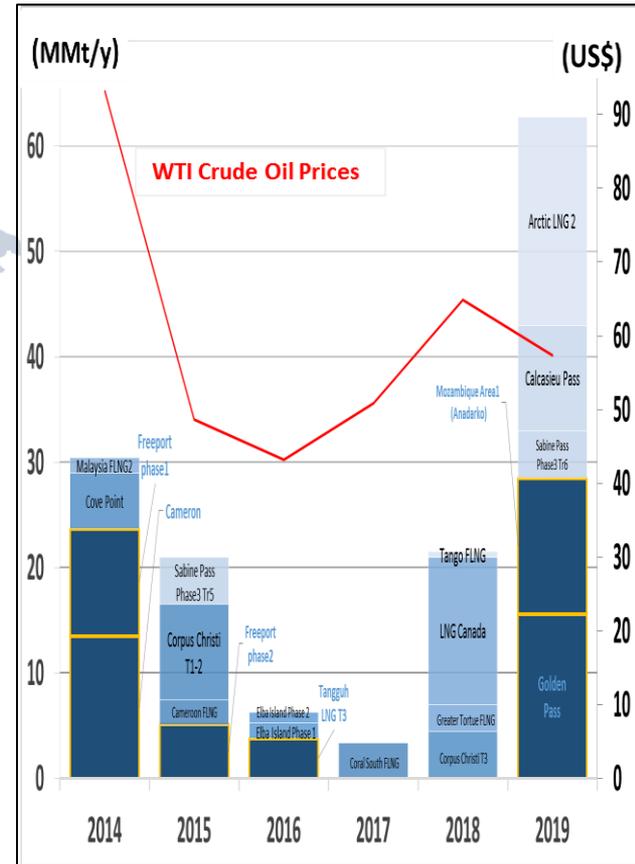
# Innovations to support further growth of LNG industry

- Latest trends of LNG project FIDs and its effect on cost
- Reducing construction/operational costs in LNG facilities by digital technologies

September 26 2019

Toshiya Momose  
VP Chief Digital Officer

# FID for LNG Projects during 2018-2019



# Digital Transformation from Upstream to Downstream

Upstream

Offshore Platform



Real Plant

Digital Twin



Midstream

LNG Export Plant



Courtesy of Qatargas Operating Company Limited



Downstream

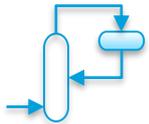
LNG Import Plant



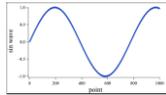
Courtesy of Tokyo Electric Power Company



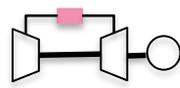
Engineering Technology



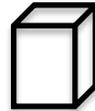
Process



Simulation



Mech.



3D

X

Digital Technology



Digital Twin



AI



Big Data



IoT



Robotics

# EPC Transformation by Digitalization and Advanced Work Packaging

## AWP Concept

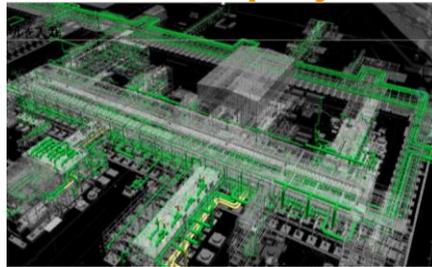
Engineering and Procurement

Digitalized EPC Execution  
Real time project monitoring



**'Just In Time'**  
Material  
Delivery

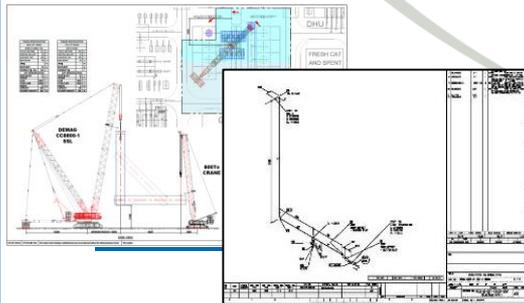
**'Just In Time'**  
Construction Drawing  
Issue



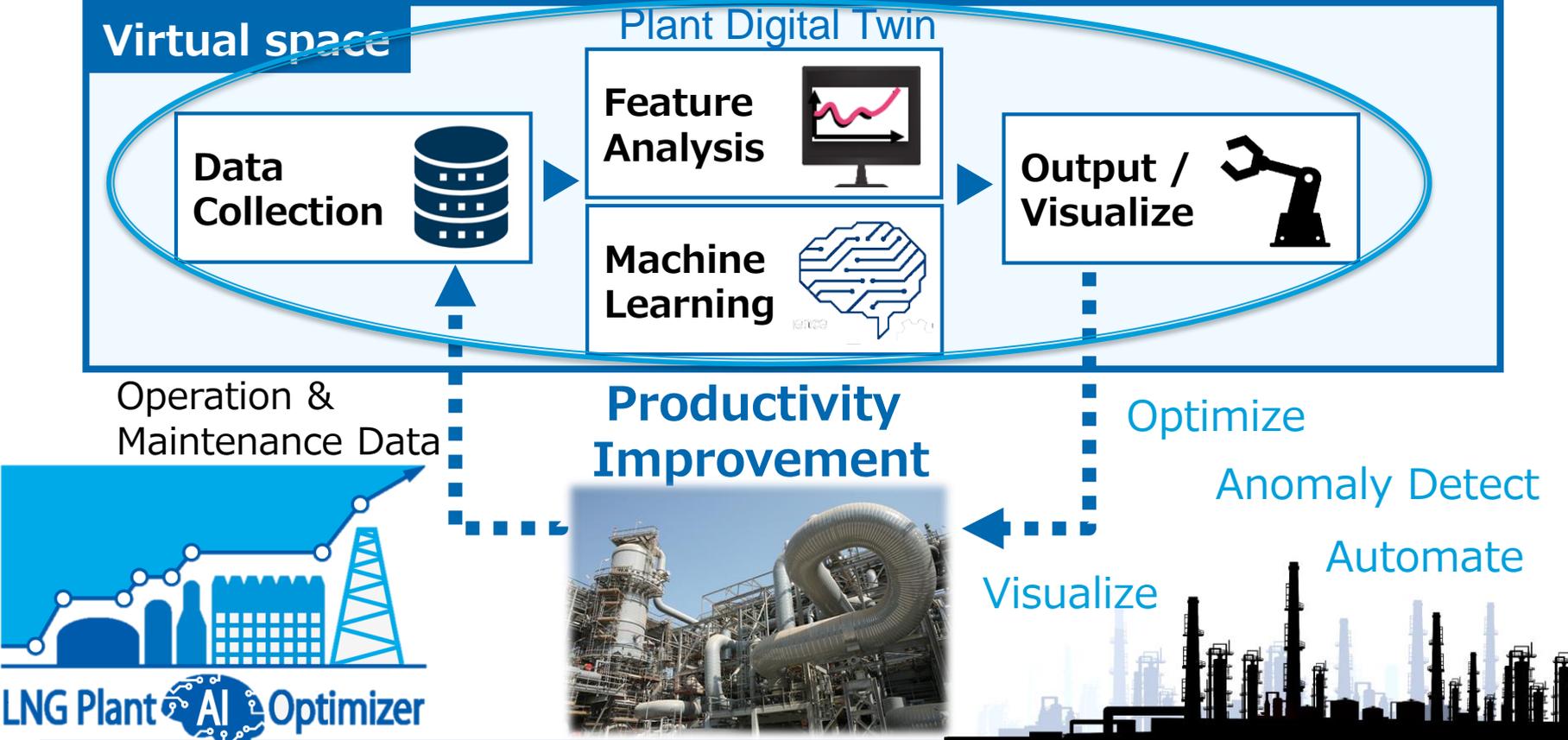
**Maximize productivity of  
construction and commissioning**



Construction and  
Commissioning



# O&M Improvement on LNG Plant with Digital Technology



# LNG Plant AI Optimizer™



Optimum Operating Parameters

Operation data, etc.

World's First  
LNG Plant AI Optimizer™ Success!!



Confirmed increase  
of LNG production at  
Donggi-Senoro LNG

## Feature of LNG Plant AI Optimizer™

- **Maximize LNG Production** by AI Technology
- Plant **Modification is NOT Required**
- **NO interface issue** with plant control system
- **NO change to plant operation procedures** is required
- Suggests the BEST operation parameters timely and continuously **like a car navigation system**