

Digital Transformation (DX)

“Yokogawa Approach and Solutions”

Yokogawa Electric Corporation

Downstream Sales Leader

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Key industry challenges

Digital transformation



Changing business environment

Supply chain visibility and optimization



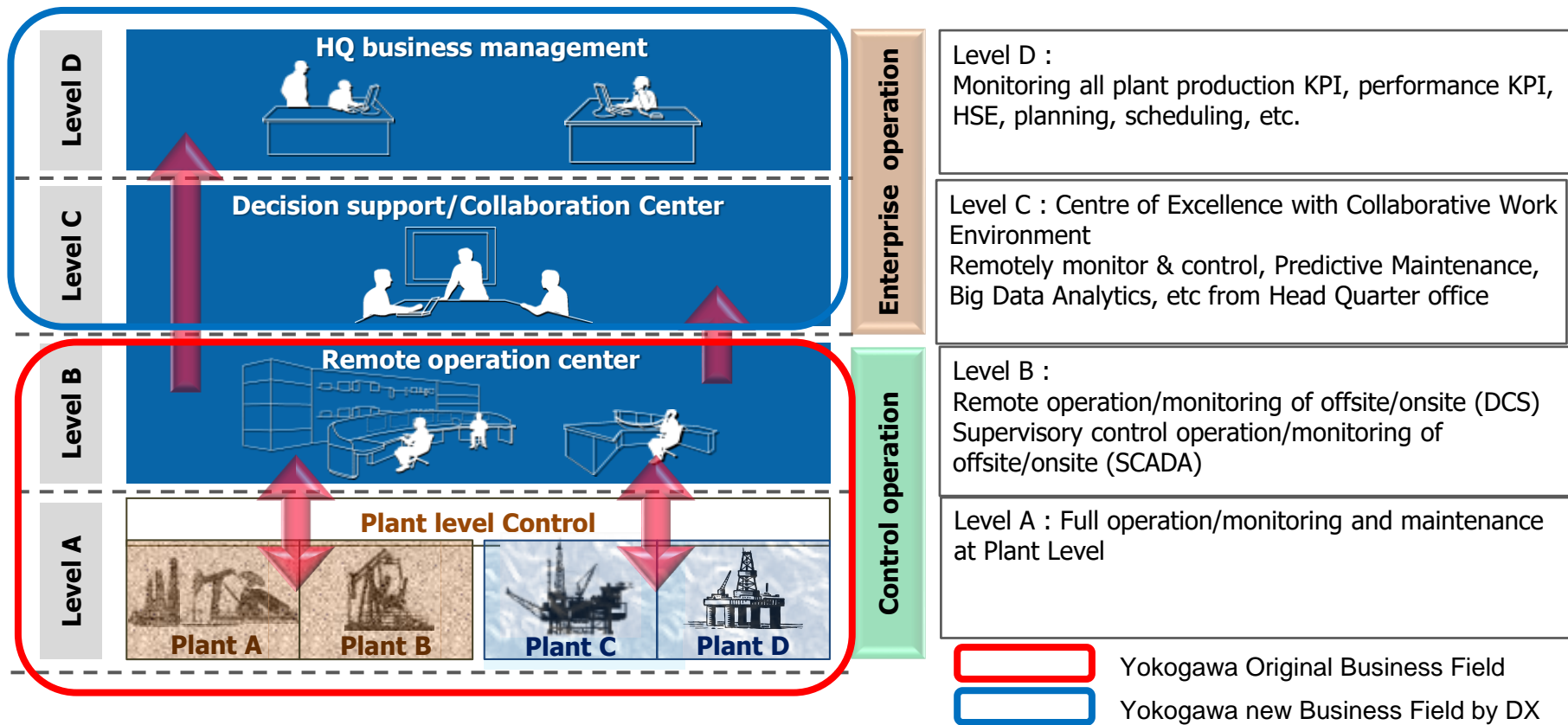
Sustainability and circular economy

Profitable operation with TOTEX optimization

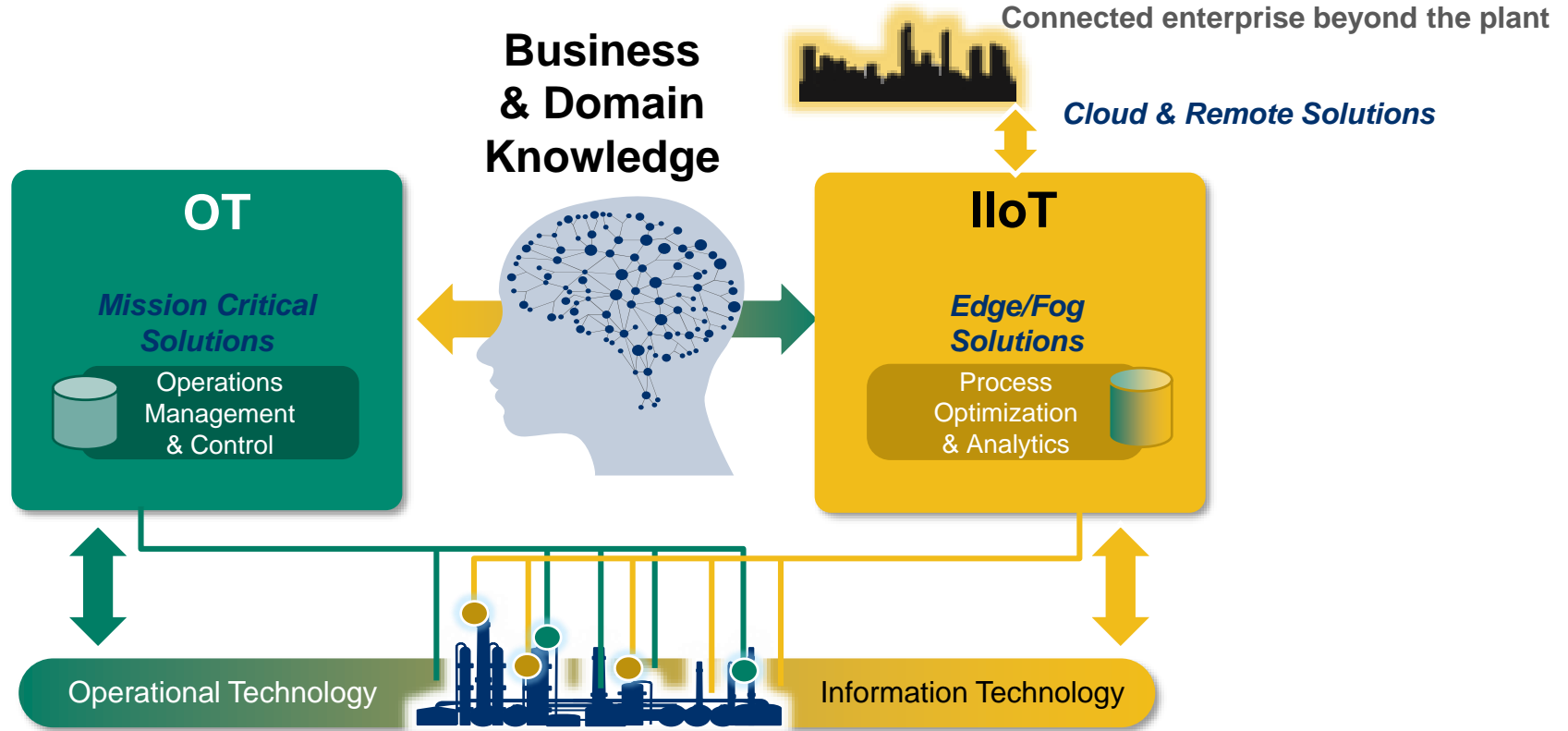


Changing workforce

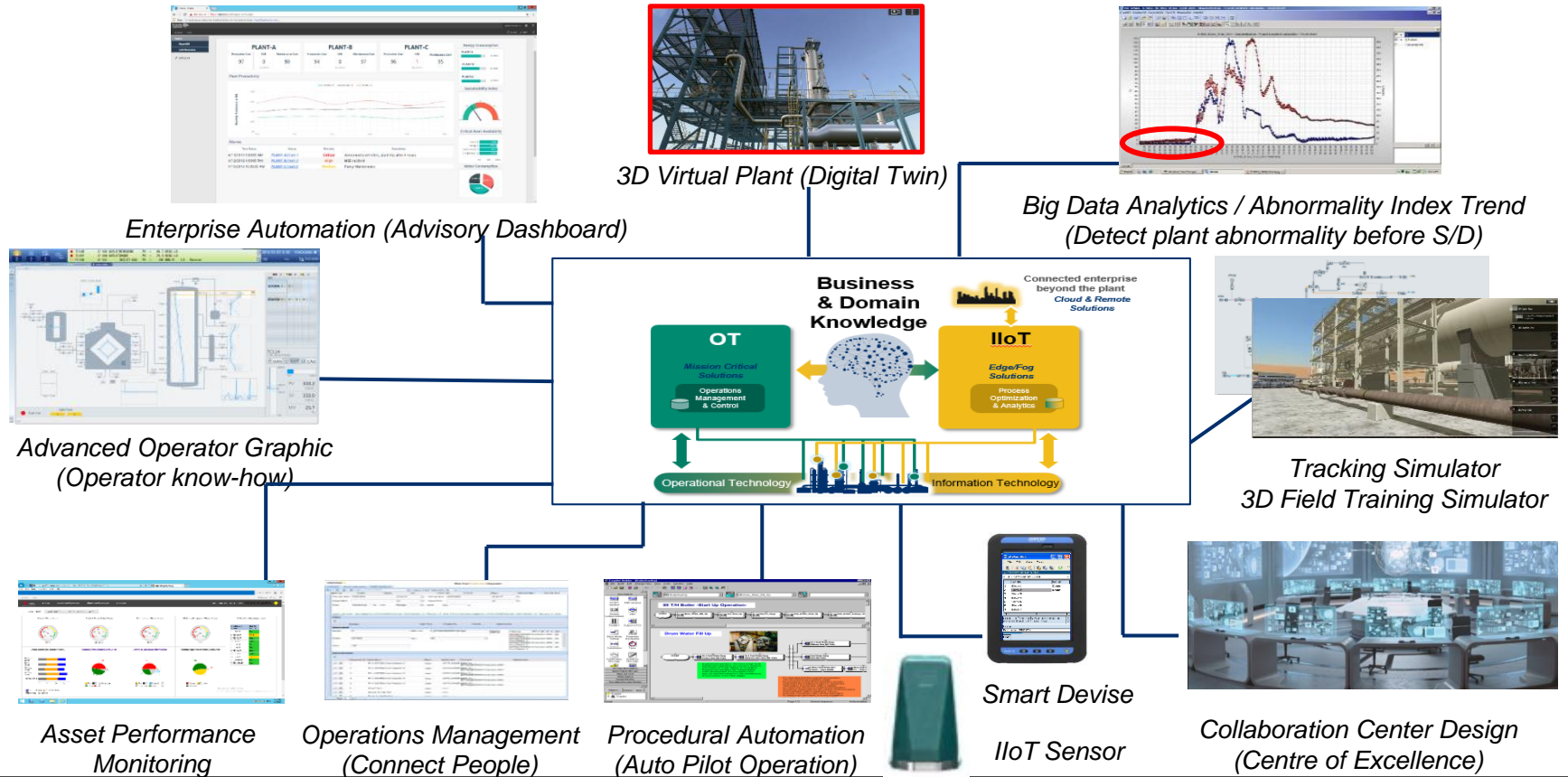
Digital Transformation (OT/IT Convergence)



The realization of Digital Transformation

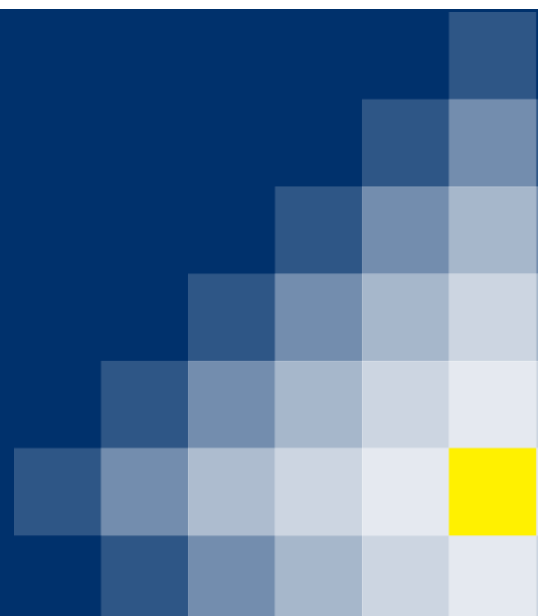


Yokogawa Digital Transformation (DX) Solutions



3D Digital Twin Solution

for Immersive Industrial Field Operations



3D Digital Twin: Interactive 3D/VR Training Solution

Physical Environment

Virtual Environment

Real Plant

3D Virtual Plant



TWINS



Challenge

Solution

Physical limitations
(time, location, etc.)

DCS

Dynamic Simulator

Operator

- Realistic 3D virtual environment
- Built on existing 3D plant model
- Integrates with existing Plant Simulator
- Supports training and test modes
- Assess field operators
- Store employee's training records

Upscale 3D Graphic Quality



Example-1) Link with Technical Drawings

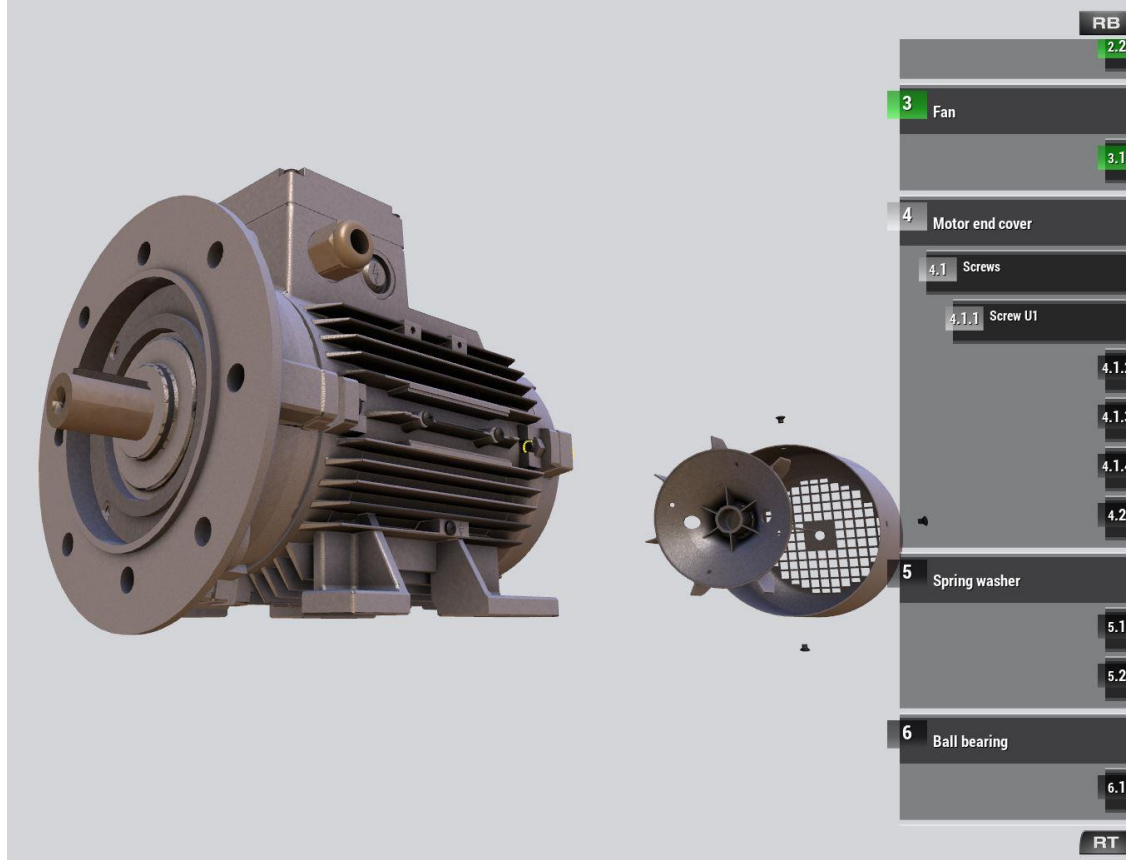
LB
TASK LIST
MESSAGE HISTORY
IMAGE GALLERY
DRAWING
OPTIONS
RB

ITEM	PART	MATERIAL	QTY
01	BODY	PVC / CPVC / PP / CLEAR PVC / PVDF	1
05	STEM	PVC / CPVC / PP / CLEAR PVC / PVDF	1
06	BALL	PVC / CPVC / PP / CLEAR PVC / PVDF	1
07	SEAT	TPV / PTFE	2
08	SEAL CARRIER	PVC / CPVC / PP / CLEAR PVC / PVDF	1
10	HANDLE	ABS	1
15	UNION INUT	PVC / CPVC / PP / CLEAR PVC / PVDF	2
17	UNION END	PVC / CPVC / PP / CLEAR PVC / PVDF	2
18	CAP	ABS	1
41	ORING	EPDM / VITON	2
42	ORING	EPDM / VITON	1
43	ORING	EPDM / VITON	2
44	ORING	EPDM / VITON	2

SIZE	d	d1				d2				D	L		L1		L2	L3	W	H1	H2	F	M	I	operating torque (Nm)
		ANSI	DIN	JIS	CNS	ANSI	DIN	JIS	CNS		ANSI / JIS / CNS	DIN	ANSI / JIS / CNS	DIN									
1/2" (15)	15	21.54	20.30	22.30	22.40	21.23	20.10	21.70	21.90	54.00	104.80	92.00	22.30	16.00	60.00	52.00	84.00	52.50	27.50	31.90	—	M6	2.0
3/4" (20)	20	26.87	25.30	26.30	26.40	26.57	25.10	25.70	25.90	63.00	113.00	100.00	25.50	19.00	62.00	54.00	90.00	59.00	32.00	33.00	—	M6	2.5
1" (25)	25	33.65	32.30	32.33	34.50	33.27	32.10	31.67	33.90	73.50	127.20	114.00	28.40	22.00	70.00	62.00	106.00	67.50	37.25	40.00	—	M6	4.0
1 1/4" (32)	32	42.42	40.30	38.43	42.50	42.04	40.10	37.57	41.90	84.50	142.00	130.00	32.60	26.00	78.00	70.00	116.00	77.50	42.75	52.00	—	M8	5.0
1 1/2" (40)	40	48.56	50.30	48.46	49.60	48.11	50.10	47.54	47.90	98.00	157.50	151.50	35.00	32.00	87.50	79.50	128.00	90.00	50.00	52.00	—	M8	7.5
2" (50)	50	60.63	63.30	60.56	60.60	60.17	63.10	59.44	59.90	118.00	171.00	—	38.00	95.00	85.00	140.00	104.00	60.00	70.00	—	M8	8.5	
2 1/2" (65)	63	73.38	75.30	76.60	76.70	72.85	75.10	75.87	75.90	150.00	238.50	—	47.00	144.50	132.50	210.00	136.50	76.50	84.00	45.00	M10	13	
3" (80)	75	89.31	90.40	89.60	89.70	88.70	90.10	88.83	88.90	169.00	268.00	—	51.00	166.00	150.00	235.00	149.50	86.00	84.00	45.00	M10	16	
4" (100)	97	114.76	110.40	114.70	115.00	114.10	110.10	113.98	113.80	211.00	318.00	—	61.00	196.00	172.00	260.00	175.00	107.00	121.00	49.00	M12	25	

Close
Previous
Next
Zoom
Pan

Example-2) Pump Assemble/Disassemble



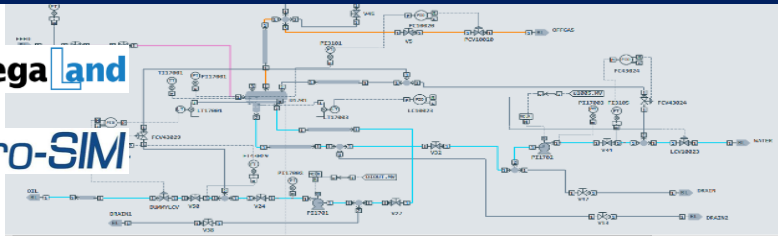
Summary of Yokogawa 3D Digital Twin Solution



Integrated Virtual Reality 3D Plant with Simulator

Omega Land

Petro-SIM



Challenges

- Create 3D Virtual Plant
- Integration with Simulator as Digital Twin
- Integration with Control System/PIMS for real time plant data display

Solutions

- Utilize 3D CAD drawing for 3D plant graphic
- Omega Simulator or KBC Petro-Sim for Plant Simulation
- Support OPC for the connection between 3D graphic and Simulator, PIMS and other systems.

Benefits

- Monitor Plant data in Virtual Plant
- What if analysis is available
- Predictive Maintenance
- Reduce field operator miss operation



Co-innovating tomorrow™

Thank you

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