Intelligent manufacturing practice of COSMOPlat cloud platform
COSMOPlat is the first industrial Internet platform with Chinese independent intellectual property rights in the world, and also is to introduce users' whole process participation experience.
Three major features of the COSMOPlat platform

1. **Mass customization model**
   - Create a user lifetime value
   - Subverting the traditional industrial system

2. **Seven node Zero distance establish connectivity**
   - Seven node Zero distance establish connectivity

3. **The world's resources To create a win-win situation**
   - Seven node Zero distance establish connectivity
COSMOPlat platform - enabling global enterprise transformation and upgrading
Interconnected Factory

- 3 external interconnections
  - Factory interact User
  - Factory interact Smart appliance
  - Factory interact Resources

- 3 internal interconnections
  - machine interact machine
  - machine interact material
  - human interact machine
User experience: seamless, transparent, visual

Direct delivery rate
- **71%**

CCC
- **-10天**
Intelligent Manufacturing IT Solution

- Precision operation
- Material Flow
- Flow traceability
- Quality Error-proofing
- Production Visualization
- Logistics synergy
- Intelligent Platform
- Transparent inventory
- Material Flow
- Intelligent Platform
- Laboratory equipment
- Equipment interconnection
- Self-guide AGV
- Mold interconnection

COSMOPlat Cloud Factory

APS

MES

WMS

IOT
Technology Innovation

- Leading IT Technology
- Cloud+Edge Deployment
- Modular Configuration
- IOT
Microservices Architecture

- **Back end development**:
  - Spring Boot
  - Spring MVC
  - Spring framework (IoC, AOP)
  - Dubbo
  - MyBatis

- **Front end development**:
  - React+Redux
  - webpack
  - EMACScript6
  - SASS

- **Technology components (recommended)**:
  - Redis
  - RabbitMQ
  - Zookeeper
  - Redis
  - MongoDB
One Architecture One Platform

Front End

Main-web
- User
- Permissions
- Resources
- Configuration
- Model

MES-web
WMS-web
APS-web

Service

MES - Business Services
- Plan Service
- Equipment Service
- Logistics Service
- Inspection Service

WMS - Business Services
- Management Service
- Product Service

APS - Business Services
- Strategy Service
- Work Service
- Event Service

Public Application Services

Data Storage

MySQL

Public data
- User
- Permissions
- Res
- Cfg
- Model

MES Business Data
WMS Business Data
...

Cache
- Redis

Files
- MongoDB + FastDFS
Cloud+Edge mode not only meet the factory's real-time data requirements, but also to achieve unified management of the group

Cloud

Edge

- Zhongde industrial Park
  - Print
  - Online
  - Error proofing
  - Offline

- Wuhan industrial Park
  - Print
  - Online
  - Error proofing
  - Offline

- Tianjin industrial Park
  - Print
  - Online
  - Error proofing
  - Offline

Factory

1. Management standardization, integration and unification
2. Factory-side real-time and reliable
3. Integrated operation and maintenance, unified management and control
4. Flexible deployment, high speed and stability
➢ System more flexible, reduce project cycle, and reduce development and implementation costs.

1. Flexible Function
2. Flexible Process
3. Support group, Multi-plant management
4. Business needs quickly achieved
Combination of public microservices and personalized microservices can produce more than 300 business functions.
Process Modelling

- Through digital management, binding the work unit with quality, technology and other production factors
- Through the process engine, organize the work unit to meet the business requirements of the production line
Customized Interface

- UI and the backstage function is loose coupling
- Easy to config the interface

Loosely coupled design of operation interface and backstage function
Support 97 equipment protocols
Support 6 network protocols
Business Innovations

AI
Lean Manufacturing
Collaborative Production
Event Driven
Transparent Visualization
AI

- Consolidate digitization, explore intelligence

**AI**
- Production Arrangement Intelligence Scheduling

**Quality Improving**
- Air conditioning abnormal noise inspect
- Improve the foaming quality
- Improve the Inner and outer barrel assembly

**Efficiency optimization**
- LOB optimization

**logistics improving**
- Intelligent factory logistics
- Optimization of distribution path

**Big Data**

**Data Source**
- IOT
  - Production equipment
  - Logistics equipment
- Laboratory equipment

**Application System**
- MES
- WMS
- LIMS
- APS
- MPLM

**BigData Platform**
Lean Manufacturing

- From coarse to fine

**Assy Plan**
- Pre-process plan
- Material plan
- Process plan
- Equipment plan
- Human plan

**Plan**
- Day → Minute

**Execution**
- Line → Station

**Storage**
- Reservoir area → Location

**Scheduling level**
- Line → Machine

**Data collection**
- Line → Station

**Material transfer**
- Line → Station
Collaborative Production

Whole Production Process

- Adsorption
- Forming
- Cabinet
- Door
- Final Assy

Collaborative Center

Computing engine

- Production Plan
- Process scheduling
- Information real time display

Production Plan

Process scheduling

Information real time display
Event Engine

Real-time Data
- Quality
- Production execution
- Equipment
- Process Parameters
- Andon
- Material inventory

Real-time Data

Event engine

Real-time notification

Real-time display
Audible alarm
Real-time reminder

Reach person in real time

Closed off the difference

Trigger
Transparent Visualization

- Order progress and quality of the entire process of visual
- Production scheduling and progress
- Process real-time display
- Business real-time control
- Real time monitoring
- Abnormal treatment in time
- Station dashboard
- End User
- Planner
- Warehouse Keeper
- Warehouse real-time operation monitoring
- Deliveryman
- Material distribution visualization
- Driver
- Vehicle booking and real-time scheduling
- Supplier
- Material requirements planning and inventory real-time visibility
- Operator
- Site Manager
- Production Manager
Visualization Implementation

Big screen

Station dashboard

Mobile APP

iHaier

SMS/e-mail
World ECONOMIC FORUM 2018

How do we build an ethical framework for the Fourth Industrial Revolution?

1
Haier: the only Chinese company selected

9
Companies nominated

1000+
Companies participated
融合・协作・共赢
共同把握工业互联网的历史机遇

THANKS！