工业互联 智见未来
Industrial Interconnection, Intelligence Enabling the Future

HUAWEI
碎片化严重是行业面临的最大挑战
The market is slowly revealing its true value, but highly fragmented and customization heavy

Market Observations

- Number of IoT use cases is still growing rapidly; 600+ B2B use cases tracked by Gartner
- Very few use cases have achieved replicated adoption yet (1:many > 20 customers)
- Highly fragmented market with 400+ players
- Market players seeking market share through pilot/incubation programs, partnering and aggressive discounting policies
- Most customers still lack converged IT/OT sourcing capabilities and governance which lengthens sales cycles and slows market adoption

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<thead>
<tr>
<th></th>
<th>Overall</th>
<th>B2C (Asset-intensive)</th>
<th>B2B (Non-asset-intensive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGR (%)</td>
<td>31.9%</td>
<td>40.2%</td>
<td>18.6%</td>
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OT产业面临诸多挑战，OT与ICT融合，合作共赢是产业的共同期望
OT heavy industries like manufacturing face manifold challenges, OT and ICT collaboration in cross-industry ecosystem

Gartner Predicts

1. By 2020, 25% of midsize organizations engaging in digitization strategies will collaborate in cross-industry ecosystem initiatives, up from 10% in 2018.

2. By 2021, the effectiveness of manufacturing IoT initiatives will be tracked by business outcomes continuously through their life cycle, up from less than 20% today.

3. By 2022, more than 50% of all people collaborating in industrial IoT ecosystems will utilize virtual assistants or intelligent agents.

Challenges

1. Platform and Ecosystem
2. Quality and Design
3. Customer Experience
4. Costs
5. Revenue
6. Customer Intimacy
7. Business Models

From: Gartner
The industry coming together to explore new architecture for new industrial IoT market
面对行业诸多挑战，华为提供连接和使能平台，联合合作伙伴，面向工业企业提供基于工业场景的解决方案

Huawei Provides an Enabling Platform and Connectivity, With Joint Partners to Provide the Solutions for Industrial Enterprises

<table>
<thead>
<tr>
<th></th>
<th>Industry Platform</th>
<th>Industry Know-How</th>
<th>Industry Services</th>
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<td>典型</td>
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<td>Process Industry</td>
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<td>Evaluation</td>
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<td>Discrete industry</td>
<td>Discrete industry</td>
<td>Maintenance</td>
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<td>使能平台 – FusionPlant</td>
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<td>Huawei</td>
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Industrial Intelligence: enabling customer intelligent Enter the Intelligent Era

- **Enterprise Intelligent Enablement Technology**
- **Optimization algorithm**
  - Optimization algorithm
  - Dynamic programming algorithm: container loading, path planning, etc.
- **Image recognition**
  - Based on deep learning, image recognition accuracy exceeds 97%.
- **Real-time processing**
  - Based on stream processing technology, implement real-time analysis engines, build real-time decision-making capabilities.
- **Multidimensional analysis**
  -具备千万维度数据分析能力，实现复杂因素场景下的快速分析。
- **语音识别**
  - Voice recognition
  - Industry-leading voice recognition engine
- **Root Cause Analysis**
  - Root Cause Analysis
- **Intelligent scheduling**
  - Intelligent scheduling
- **Predictive maintenance**
  - Predictive maintenance
- **Material estimation**
  - Material estimation
- **Precision marketing**
  - Precision marketing
- **Root Cause Analysis**
  - Root Cause Analysis
- **Flexible QC**
  - Flexible QC
- **Intelligent scheduling**
  - Intelligent scheduling
- **Predictive maintenance**
  - Predictive maintenance
- **Material estimation**
  - Material estimation
- **Precision marketing**
  - Precision marketing

**Build a common smart entity based on the smart EI of the enterprise.**
5G预计能满足70%以上工控场景，无线创新服务工业互联，连接人机物，助力未来无线工厂

5G wireless innovation service industrial connectivity, connecting people, machine and things, expected to cover 70% industrial automation scenarios

<table>
<thead>
<tr>
<th>场景 use case</th>
<th>运动控制 motion control</th>
<th>机器间控制 Inter-machine control</th>
<th>移动面板 Moving Panel</th>
<th>移动机器人 mobile robot</th>
<th>大规模连接 Large connection</th>
<th>工业AR及监控 AR&amp; monitor</th>
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<tr>
<td>uRLLC</td>
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<td>mMTC</td>
<td>eMBB</td>
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对5G诉求 request to 5G

华为和SMART FACTORY
联盟联合展示
Joint innovation with SMART FACTORY

华为展台基于5G低延时的稳定球展示showcased the stable ball based on the 5G low latency.

华为和BECKHOFF联合展示机械臂同步性 Joint innovation with BECKHOFF

华为5G创新亮相
2018汉诺威自动化展
Huawei’s Innovation in 5G at 2018 Hannover

Huawei
华为eLTE-U工业无线专网助力生产不间断运行

Huawei eLTE-U Solution Enables Uninterrupted Hours Production

- **No Coverage Blind Area**
  - Only through 25% base stations complete 100% WLAN AP coverage

- **No Interruption during Moving**
  - Cross-zone switching 50ms delay, allowing automation vehicles to move without interruptions

- **Always Online under Interferences**
  - Wireless signals operate without interference, ensuring real-time operation of all equipment

- **High-density Terminals supported**
  - Support for >80 AGV at the same time, <20ms transmission delay

- **Shanghai Yangshan Port**
  - 4 people/AGV → 4 AGV/person
  - 28 containers/hour → 40 containers/hour

- **Dongguan Sinotrans Warehouse**
  - 10+ AP → 2 AirNode, 5000 square meters of warehouse coverage without blind spots
  - Save 80% of equipment installation and cabling costs, lower latency, AGV mobile business without interruption
The digital economy raises increasing requirements for computing, Green Computing enable the industry in the Future.
华为积极参与产业组织构建，推动产业发展

Huawei Actively Participates in the Construction of Industrial Organizations to Promote the Industry Development

- Core member and contributor
- As deputy chairman, deputy secretary general, and chairman of several working groups
- Core contributor to IIRA, Test Bed, and Industrial Internet White Paper.

- The member of the SC Executive Committee and serves as the chair of several working groups.
- Contributed to the first test bed in the China
- Core contributors such as network groups, edge computing groups, and data analysis groups

- The sponsor, the main contributor to the organization design of the alliance business.
- Serving as chair of several working group
- The major contributor to the Edge Computing Reference Architecture 1.0, 2.0
- Alliance Testbed core contributor
我们的愿景和使命
把数字世界带入每个人、每个家庭、每个组织，
构建万物互联的智能世界。
Bring digital to every person, home, and organization for a fully connected, intelligent world.