



Hello Industry 4.0 _we connect you



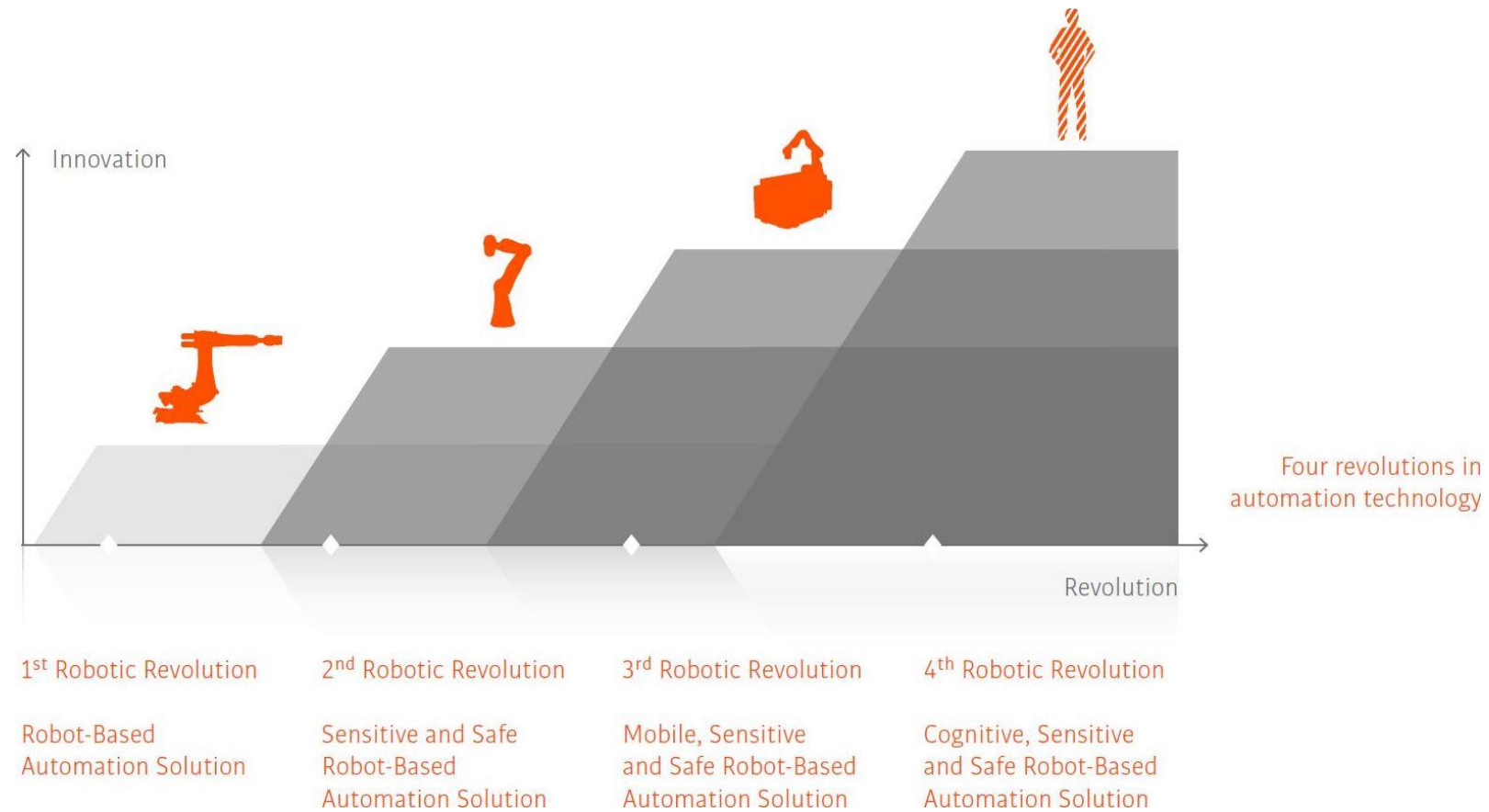
Let's talk about Industry 4.0

- Industry 4.0: Evolution of KUKA's product portfolio
- Human – Robot Collaboration LBR iiwa
- Mobile Robotics KMR iiwa
- KUKA Connect
- Questions





Our responses and contributions Fourth revolution in automation technology





CORE STEPS TO INDUSTRY 4.0

Which essential steps bring you to your smart production?

CONNECTIVITY

“We help you connect your devices and sensors”

Why

- Explosive growth in usage sensors and smart devices on the production floor
- Fundament for smart production

TRANSPARENCY

“We help you to focus on the right metrics”

Why

- Gaining insights of your assets and knowledge of your processes
- Big data to smart data

EFFICIENCY

“We deliver business value”

Why

- Smart data to value data → Data analytics
- Optimize integrated processes
- Business model innovation

Industry 4.0 by KUKA

- Human – Robot Collaboration (COBOTICS)
- Mobile platforms – Collaborative robots Collaboration (COBOTS)
- KUKA Connect





Human – Robot Collaboration (HRC)

LBR iiwa is an acronym and stands for:

- (i) intelligent
- (i) industrial
- (w) work
- (a) assistant



An intelligent assistant
for future-oriented
production concepts



1. ... is sensitive
2. ... is safe HRC – able
3. ... has 7 axes
4. ... is light



Human – Robot Collaboration

- The human acts, the LBR iiwa reacts.
- Torque sensors in each axis allow real control of joint torques.
- The robot's stiffness behaviour can be easily programmed via the software.
- Flexible adaption of the robot's characteristics to the individual task.
- Tasks are solved by the means of compliance rather than programmed positioning.



Human – Robot Collaboration – Safety

- The human needs protection, the LBR iiwa provides protection
- Simplified integration into existing system concepts
- Its sensors allow direct and safe interaction with the human body
- New possibilities for cell concepts without fences or optical safeguards
- LBR iiwa offers a configurable safety controller for HRC applications according to valid standards (ISO 10218, 13849, TS15066)



Human – Robot Collaboration – Teaching by demonstration

- The human teaches, the LBR iiwa understands.
- Torque sensors in each axis enable programming by intuitive manual guidance.
- Reduced time for programming
 - Easy and fast capturing of positions
 - Programming of paths by demonstration
- Combination of automation and operator-guided motion.





Mobile robotics for Industry 4.0 – KMR iiwa



HRC able - Safe work between human and robot



Maximum flexibility and unrestricted maneuverability



Autonomous navigation



Freely scalable modular system



Utmost precision



All driven by one control
Simple engineering setup

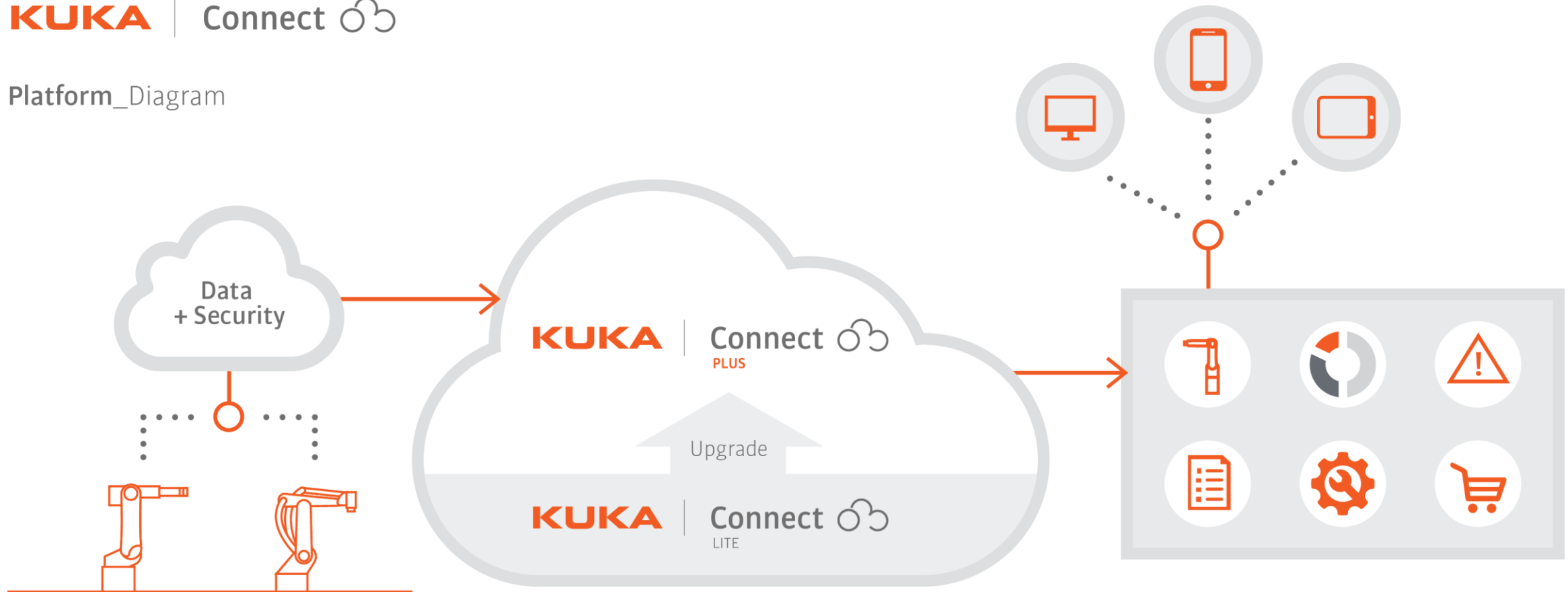


Autonomous, sensitive, intelligent for unlimited productivity



KUKA | Connect

Platform_Diagram



connect.kuka.com

Thank you for your attention!



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