TOFAŞ R&D CENTER
Production Technologies Department

Industry 4.0 Approach
29/11/2016
1. TOFAS
2. Industry 4.0 Approach
   1. Technological Aspirations
   2. Major Project Themes
   3. Expected Impact
   4. FoF Scenario
3. ROBO-PARTNER
   1. Summary
   2. Human Robot Interacted Scenario
   3. IMAU

Prediction: 10min presentation + 5min questions & comments
TOFAS
1.1. Introduction

- TOFAS founded in 1968,
- Equal shareholders as Koç Holding and Fiat Chrysler Automobiles (FCA),
- One of the two R&D centres of FCA in Europe.
- The fifth largest industrial enterprise of Turkey,
- Annual capacity of 400,000 vehicles
- With 10,000 employees.
- Operating on a land of 1 million m² with an indoor area of 350 thousand m²
INDUSTRY 4.0
APPROACH
### 2.1. Technology Aspirations

- High number of body types due to the commercial vehicle customer demands for the options
- Varying capacity usage per annum and per month
- Lower life span of models
- Turnover rates in the new generation
- Aging society

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#### Increase Process Capability

- Effective use of resources to produce more vehicles (labor, equipment, time, area)
- Traceable, absolutely safe and ergonomic operations

#### Enhancing Management Modules Flexibility

- Fast response to production regime variations in terms of multi models, fluctuations in quantities
- Fast adaptation of new production personnel

#### Increase Design Capability

- Fast response to customer demands and regulations
- 0 error in designing the production lines
- Data driven decision systems
2.2. Major Project Themes

1. **ICT (INFORMATION & COMMUNICATION TECHNOLOGIES)**
   1. Big Data Analytics
   2. Horizontal/Vertical Software Integration
   3. Internet of Things

2. **ADVANCED ROBOTICS**
   1. Human Robot Interaction
   2. Autonomous Mobile Robots
   3. Flexible Robot Actuators
   4. Robot Guiding by Vision

3. **SIMULATION & VISUALIZATION**
   1. Augmented Reality
   2. Quality by Tele-Cameras
   3. Data Driven Decision Support Systems
   4. Wearable Technologies

- 3D printing (in coordination with Auxiliary Material Admin)
- Virtual Reality (Support to Commercial Projects)
## 2.3. Impact

### Industry 4.0 Project Fields

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<tr>
<th>IT</th>
<th>Productivity Improvement</th>
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<td>ICT</td>
<td>Product Quality</td>
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<tr>
<td>1. Big Data Analytics</td>
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<td>2. Software Integration</td>
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Factories of the Future - Vision 2020
ROBO-PARTNER
Seamless Human-Robot Cooperation for Intelligent, Flexible and Safe Operations in the Assembly Factories of the Future

Large-Scale Integrating Project (IP)

FoF.NMP.2013-7

Work programme topics addressed:
Objective FoF.NMP.2013-7 “New hybrid production systems in advanced factory environments based on new human-robot interactive cooperation”

Grant agreement no: 608855
Seamless Human-Robot Cooperation for Intelligent, Flexible and Safe Operations in the Assembly Factories of the Future

Duration: (42 months) 01.10.2013-31.04.2017
Budget: 8 m€
Consortium: 14 partners from 8 countries

TOFAŞ is the 1st Coordinator Company in EU FP NMP (Production Technologies) programmes in Türkiye.
3.2. Consortium
3.2. Consortium

Consortium as a whole 😊

World’s 1st robotic selfie = ROFIE
3.3. H/R Interacted Assembly

Robo-Partner
Seamless Human-Robot Cooperation
for
Intelligent, Flexible and Safe Operations
in the
Assembly Factories of the Future

LMS
Laboratory for Manufacturing Systems & Automation

TOFAŞ TÜRK OTOMOBİL FABRİKASI A.Ş.

AUTOMOTIVE Industry
Rear Wheel Group Assembly

Video
Video
Thanks...

http://www.youtube.com/user/ROBOPARTNER