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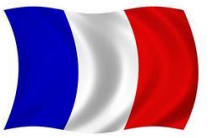
France : new jobs – new competences

FRANCE



New jobs / new competences for the aerospace, defence and security industry

February 2017

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Aim and outcome

Identification, among the companies of the aeronautical and space fields, of the new jobs with specific skills that will require recruitments at short-medium term.

➔ Industry of the Future

↳ impacts on jobs and competences

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Method and procedure

Gathering of information

- bibliographical and internet surveys
- Participation to a conference near Paris in December 2016 ➔ Convergence - Industry of the Future
- internal discussions with CFDT trade unionists

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Industry of the future

5 main stakes in different levels

- **Market**
- **Technological**
- **Organizational**
- **Environmental**
- **Societal**

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Industry of the future

Market level

- Political and economic uncertainties
- Increased competition – new competitors
- Real capacity for customers (airline companies,…) to generate profits and so to buy products and services
- Customer marketing ≠ product marketing
- Global solution with associated services
- Acceleration of the launching to market

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Industry of the future

Technological level

- Big data / cloud computing / Industrial Internet of things (IIOT) …
- New materials / new assembling methods
- Security / Safety
- Predictive maintenance

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Industry of the future

Technological level

Robots

Number of industrial robots in the world :

- In 2015 : 1,6 million
- Estimation for 2019 : 2,6 million

- use of cobots (collaborative robots)
- direct interaction with workers

↳ **qualitative and quantitative impacts on jobs**

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Industry of the future

Organizational level

- Connected factory (at the heart of its industrial eco-system)
- Horizontal/vertical integration of production processes

- Collaborative concepts :
  - Collaborative innovation / open innovation / crowd sourcing
  - Manufacturing as a service (MaaS)

  - new space organization
    - ➔ by customer or by activity rather than by skills
    - ➔ Supplier teams more integrated with the customer teams
    - ➔ Lean management / Value stream mapping (VSM)

  - Digitalization / new computing solutions

  - Common training sessions
    - ➔with suppliers/other companies of the same geographical area

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Industry of the future

Environmental level

- Eco design
- Circular economy
- Economy of service functionality
- Jet fuel and carbon price evolutions
- Noise around airports
- Greenhouse gases emissions
- Problem of the dismantling of planes (recycling)

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Industry of the future

Societal level

- Corporate Social Responsability policy (CSR)
- New stake-holders (citizens, NGO,…)

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cobots

Principle : association in real-time of the robotic capabilities (strength, precision, repetition,…) and skills of a human being (Know-how, analysis, decision)

Interests : improvements of working conditions

Decrease of the direct exposure to dangerous environments

Improvement of the human productivity (By allowing him to dedicate itself in high value-added tasks)

↳ Risk of work intensification !

Example : hand musculoskeletal disorders reduced thanks to automatic fastening

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New skills needed : Engineers and technicians

- Design
- Advanced automatic device
- Multisensory perception
- Signal and image processing
- Artificial intelligence
- Applied mathematics
- Embedded hardware and software architectures
- Computer programming
- Equipment installation and maintenance

Necessity to develop transversal and multidisciplinary training courses (integrating engineering sciences, life sciences, design, psychology and sociology)

↳ Multidisciplinary knowledge and collaborative work

↳ ! Cyber-security

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SEE YOU at the final conference…

…For more details about

- Robots, cobots, connected objects, virtual reality and impacts on associated jobs
- Thanks to some examples coming from aeronautical companies

for your attention