

# New forms of work: agility, flexibility, precariousness

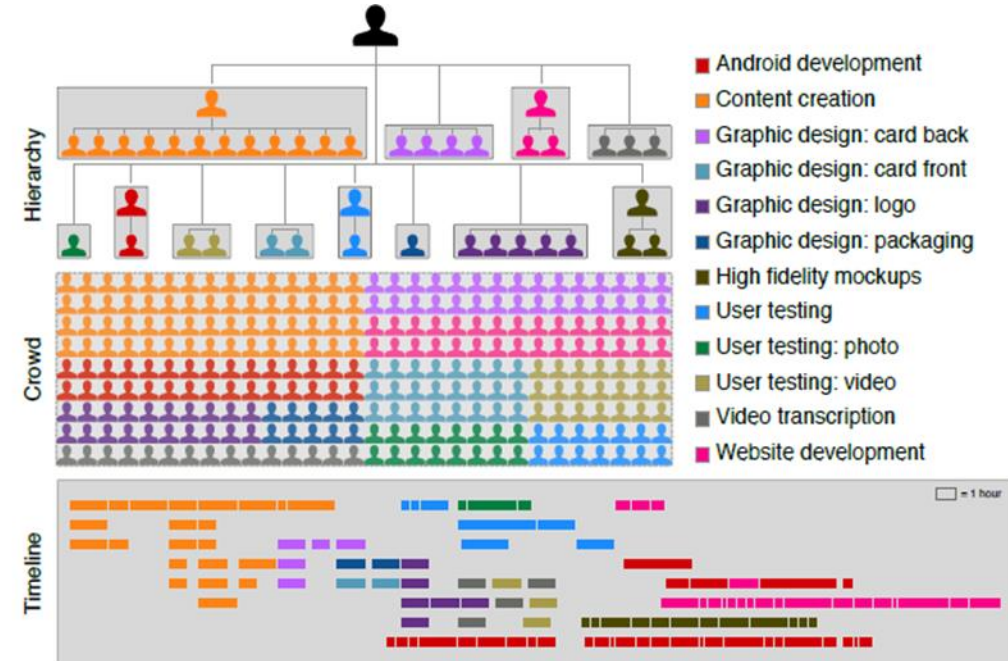
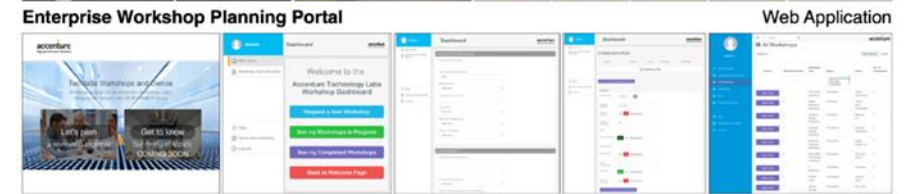
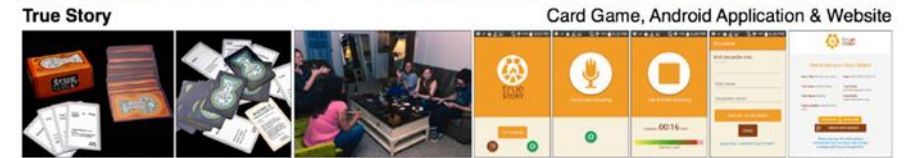
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# A new magic word in the work world: Agility!

- An information can be transmitted immediately anywhere in the world; In the era of Amazon, a customer can get anything he wants within 24 hours
- A work organization must be able to respond almost immediately to any request from a client
- To be agile, work organizations need the workers to be agile as well
- Consequences for workers:
  - Acceleration of work paces
  - Versatility, capacity of performing the job of other workers
  - Multiple simultaneous tasks
  - Etc
- An activity often governed directly or indirectly by ICTs
- Drifts are possible...

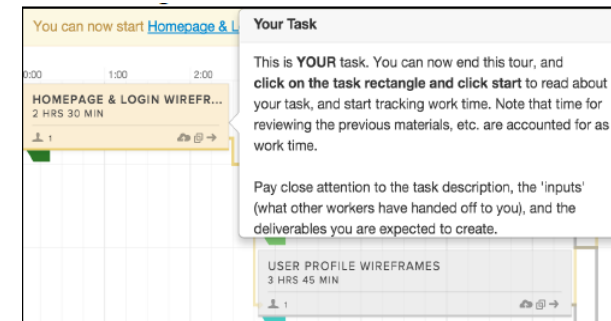
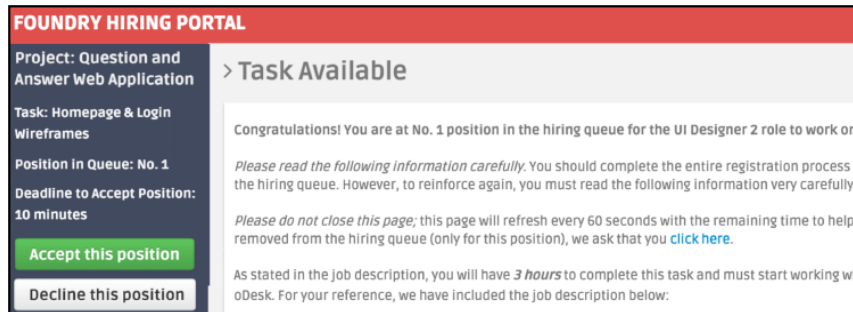
# Flash organizations - A project manager and some freelance workers

- How to make work on the same project 200 contributors whose none knows any of the 199 others
- Continuously, without borders, regardless of day or time
- An algorithm developed by Stanford University will manage:
  - the hiring of the workers,
  - the circulation and capitalization of information,
  - the evaluation of the methodology all along the work in progress.
- Its name is Foundry.



# A sequence of unitary actions

1. The project manager analyzes the work to be done and defines the first tasks
2. *Foundry* analyzes the skills required and looks for matching in freelance workers databases (*Upwork* for example)
3. The algorithm ranks potential candidates by priority: sending of job offers by *Foundry* - 10 minutes to accept or reject the proposal



4. Work begins immediately upon hiring (one to five hours missions)
5. Return of the service to the project manager via Foundry
6. Evaluation of the conditions of realization of the service by the freelance worker, who has the possibility to propose modifications in the methodology used
7. Iterative approach until the complete realization of the project

# Some methods of the gig economy are contaminating the classical economy

- Work with Foundry:
  - Work potentially 7 days a week, 24 hours a day
  - Each task proposal is accepted in 12 to 15 minutes
  - High reactivity of workers: many suggestions for improvements during the course of the projects

Pull requests	Leaders	Team leads	Workers
335	7.2%	92.8%	0.0%
113	21.2%	47.8%	31.0%
118	66.9%	17.9%	15.3%

- Each of the products manufactured was found to be superior in quality to products available on the market
- Consequences on the meaning of work...

- To make 80,000 people work together in 130 countries ...



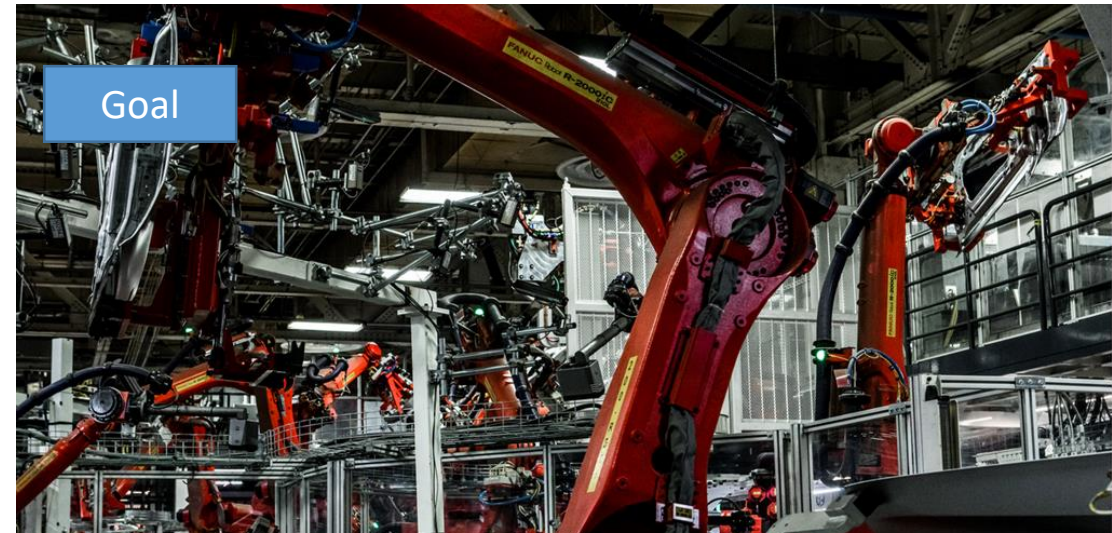
# Changes in the way of designing factories or processes

- In industry, a new installation and a new process were only put into operation after numerous tests
- Often occupational health and safety issues had not been sufficiently addressed but they had been taken into account to a minimum
- Feedback from the first operating periods was taken into account through a dialogue with workers or collectives of workers (unformal groups, trade unions...)
- Nowadays tech companies can use different methods...



# Tesla fully robotizes the production of Model 3

- Two fully robotic assembly lines were initially installed: serious malfunctions, despite spectacular technical successes, have required the return of human work alongside robots,
- Given the delay in production, it became necessary to set up a third assembly line that combines men and machines
- This line was set up in hurry on the car park: without thinking sufficiently about the cohabitation of men and machines



# Consequences in terms of OSH

- An explosion in the number of occupational accidents → heavy litigation with the company that refuses to recognize a large number of them
- Several examples of the use of chemicals exposing workers occupying workstations initially intended for machines (without installation of pollution collection device)
- Absence of danger markings on the ground which are normally painted in yellow... because Elon Musk does not like this color
- Many lawsuits have been filed by California's Division of Occupational Safety
- « *Excessive automation at Tesla was a mistake. To be precise, my mistake. Humans are underrated.* » (Elon Musk on Twitter)

**In French (and European) labor law, (Wo)man is at the center of the production system and it is work that must be adapted to her/him and not the contrary (dir 89/399/EEC)**



## However ICTs can be a real asset for improving working conditions

- Extensive definition of ICTs: Covers any product that will store, retrieve, manipulate, transmit, or receive information electronically in a digital form (e.g., algorithm, personal computers, digital television, email, or robots)
- ICTs improve communications between workers, they can bring a real betterment to work interest
- They are an essential means for automation of processes, namely to reduce occupational risks
- The costs are decreasing, allowing small companies to use them

# What small enterprises can do with reasonable financial means (1)

- Before



**In a poultry processing plant**



- After



# A return on investment over a normal period, like another investment

- No more extreme joint postures
- No jobs cut
- No increase in the pace of work



## What small enterprises can do with reasonable financial means (2)

### Robots and algorithms to facilitate and enrich the work of operators

Sector of disassembling of end-of-life vehicles

Regulatory obligation: recovery of 95% (mass) of the vehicles (usable parts resale, materials recovery)

Operators have a training of mechanics, (no existing initial training dedicated to disassembling)

- Car disassembling center
  - Many different models of vehicles (in very different states) must be treated,
  - Automation is impossible and the mental load of operators is high,  
→ Computerized tool for providing the information the operator needs at his working place



Photo : Philippe Castano pour l'INRS



# Examples of technologies used to assist the operator

- The operator and his know-how are absolutely necessary,
- Some mechanical devices have been implemented for curbing physical constraints of operators,
  - robotic arm to rotate the vehicle vertically,
  - use of pliers identical to those used by firefighters for extrication operations, equipped with a suspension system to lessen their weight

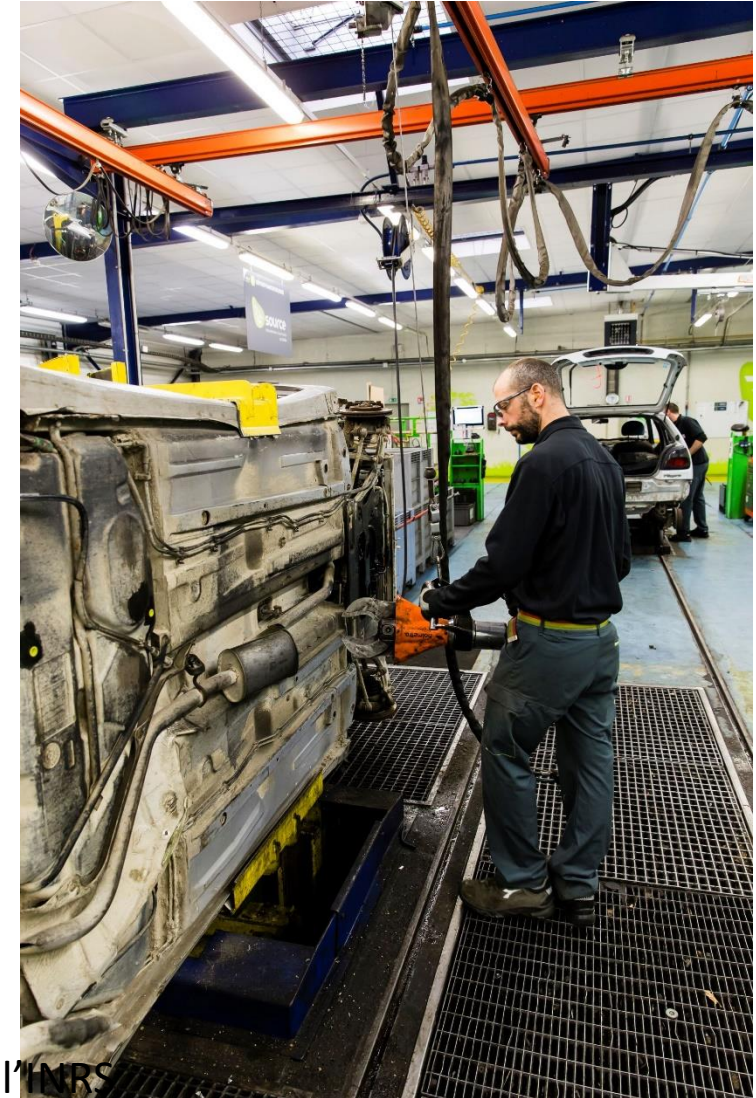


Photo : Philippe Castano pour l'INRS



## To summarize

- OSH policies are often funded through Social Security systems, what will happen if employment contracts become service contracts? With no responsibility of the real employer concerning risk analysis and prevention.
- (Wo)man can be subordinated to the machine: the technical possibilities of the equipment become the reference in the determination of the processes
- The separation between private and professional life is undermined
- While some workers benefit from ICTs because they are relieved of the most tedious tasks, others are confronted with a fragmentation of their activity (new Taylorism) in a context where tasks must more and more often be performed according to strict procedures
- Work becomes more and more individualized: workers are deprived of the competencies, the help and the support of their colleagues community. The colleagues community at work is also a good tool for identifying OSH issues and determining the prevention answers.

# Organizing OSH prevention in a new context

- Work organisation is evolving faster and faster
  - Companies (and workers) are requested to become agile
  - Some methods of the gig economy are contaminating the classical economy
- The logic of the gig economy is different: rapid growth at all costs to occupy the market and become unavoidable → *Winner takes all*
  - OSH policies is rarely a priority for these firms
  - Especially if there is no direct connection between the firm and the workers (contractors, freelancers, crowdworkers, etc.)

# Occupational hygiene specialists have to adapt to the new situation

- Shyness in the face of technique is growing
- Occupational hygiene specialists are often shy in the questioning of relevance of new technologies, while these latter mostly often reflect only political and economic choices rather than technical decisions and needs.
- Especially in the case of algorithms: We have to be able to go and see what is in the black box ("under the hood") of algorithms to get the necessary modifications that will take OSH into account
  - Pertinent for both gig economy and classical economy
  - Workers must continue to have their say about work

**Need of a new social deal: the former has been disrupted by the massive use of ICTs.**



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