



DISCUS PROJECT

Digital transformation in the construction
sector challenges and opportunities

Transnational conference

5 March 2021

Session 2 –

Digitalisation and Health safety

How can data make construction a safer industry? evidences from Italian cases

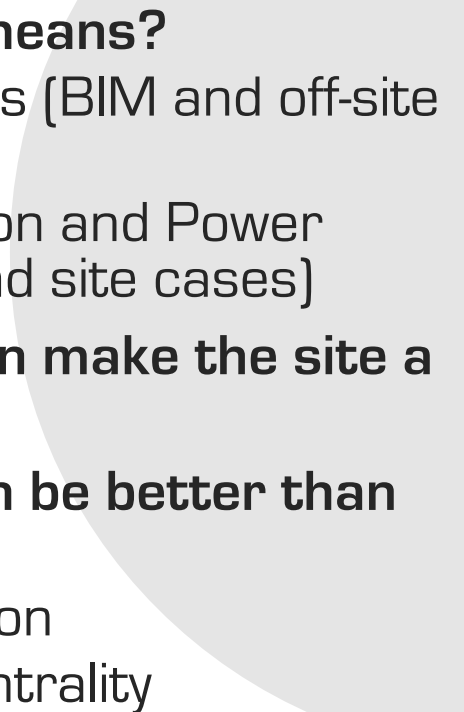
Gianluca De Angelis – Fondazione Di Vittorio



A short summary



Starting from evidences based on Italian Case-studies on BIM, digitalisation in sites and in off-site production for constructions.

- **What digitalisation means?**
 - Logic of innovations (BIM and off-site cases)
 - Technical dimension and Power dimension (BIM and site cases)
 - **How digitalisation can make the site a safer place?**
 - **How a «bracelet» can be better than another?**
 - Risks in digitalisation
 - Social dialogue centrality
- 



What does digitalisation mean?

- Logic of innovations
 - (BIM and off-site cases)
- Technical dimension and Power dimension
 - (BIM and site cases)

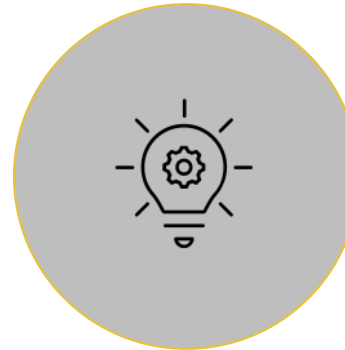
What does digitalisation mean?

How does digitisation appear

- Software
- Electronic devices
- Wearable tools
- Platform
- Badges

How does it work

- Rationalisation
- Transparency



Introduction of main innovations

- By a technical perspective



Logic of digitalisation

- To understand the process

If rationalisation is the aim of digitisation...

In this organisational level let's consider health safety a value in itself



Construction production in sites reduces the scale effect of organised production because of the fragmentation;

Coordination among value chain players;



The effective work time is less than 60% (McKinsey) and a large part of the time is wasted solving unexpected problems

Reduction of time waste;



The work cost tends to be unpredictable

Monitoring of costs (how many times to do something)

...data is the solution to make digitisation possible

Technical dimension

To be used data should be

- Reliable
- Univoque
- Immediate

Power dimension

As well as other kind of information, data also is

- Collected and archived
- Interpreted
- Exchanged

How digitalisation can make the site a safer place?

Evidences from the Brescia case



CHECK: a site dashboard

The introduction of a site digital platform called CHECK based on a badge system. A full site dashboard allows to reduce the paper use and make accessible all the information needed by value chain actors, and public authorities

In terms of Safety

It monitors the access to the site;
It limits the use of site machineries to the allowed personnel only;

More in general it helps the workers to be sure they can do what they are doing

CHECK



In terms of Safety

By monitoring the position of workers it reduces the risks based on proximity:

- To the action of machines,
- To area with risk of felt
- To other workers

Now the risk reduction is based on alarm systems, but it can be developed a sort of Emergency Breaking system

WEARABLE SMART DEVICES

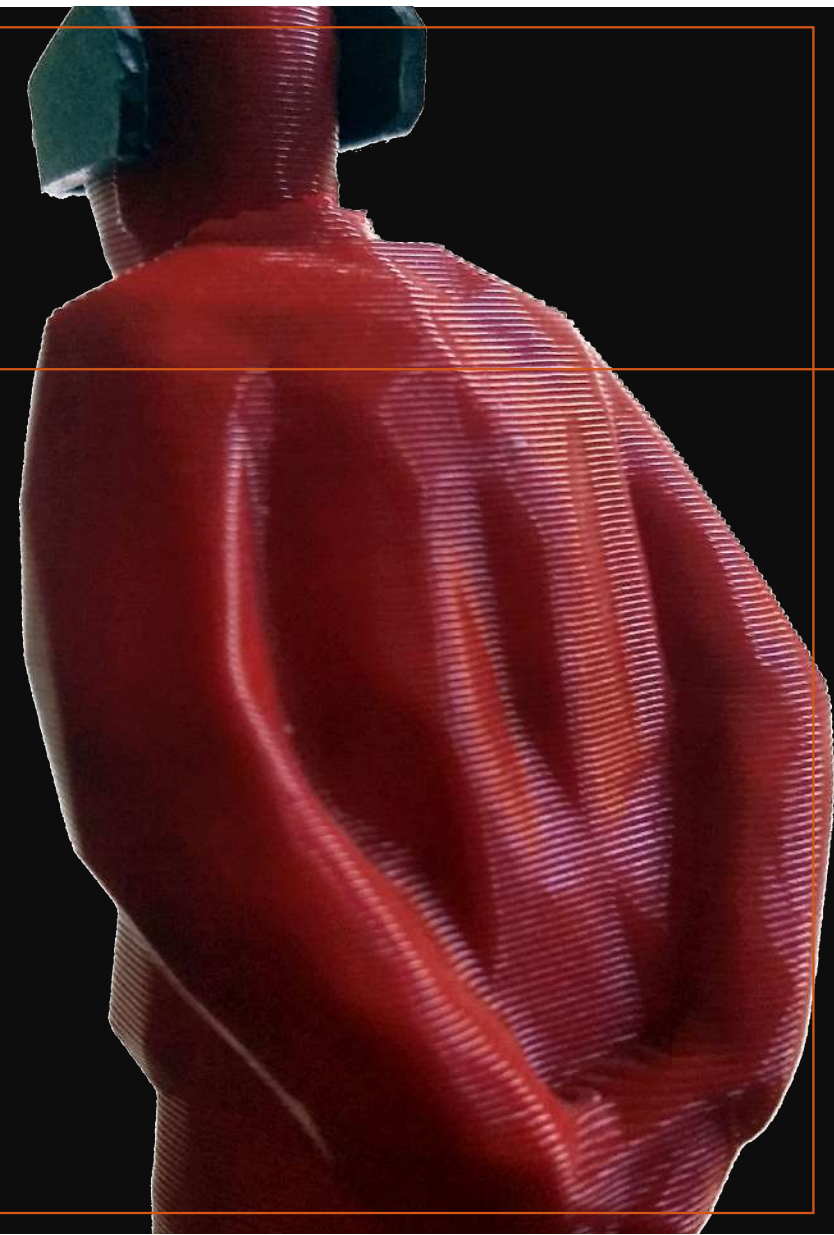
Wearable devices

Based on Ultra Wide Band connection, the devices have two main purposes:

- Collection of production data
- Continuous Monitor of health parameters and transmission to occupational doctor

How a «bracelet» can be better than another?

- Risks in digitalisation
- Social dialogue centrality




Both innovations contribute to make the site a safer place, but

Risks for work intensification and autonomy reduction

- It depends on organisation characteristics: where the wrench-time is less than 50% the intensification may be less significant.
- It depends on regularity of work conditions: is a problem in irregular condition of work, where piece rate system prevails.

Risks for surveillance increasing

- It depends on organisation of data. Who can access to individual data? Where data are stored?

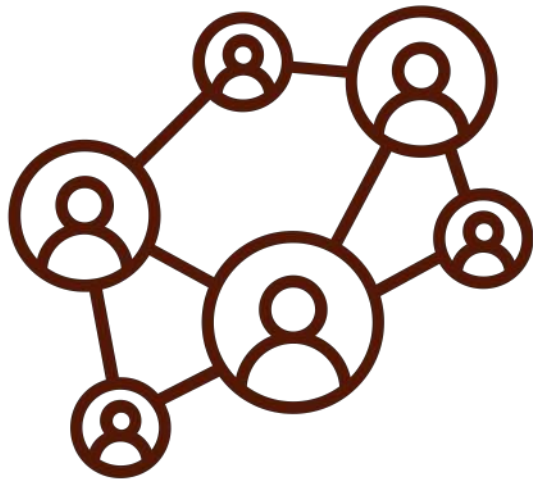


What did we learn from pandemic experience?

- As observed by the OIL, the construction sector has marginally been involved by sars-cov-2 diffusion;
- But if we think the sector in the wider context, pandemic favoured an increasing of attention on safety conditions.
 - On one hand making the intensification of work a problem above all for whitecollars and office clerks;
 - On the other, reducing the resistance dynamic with respect on surveillance dimension.

These elements could play a pivotal role in rewriting of balance between safety and security.



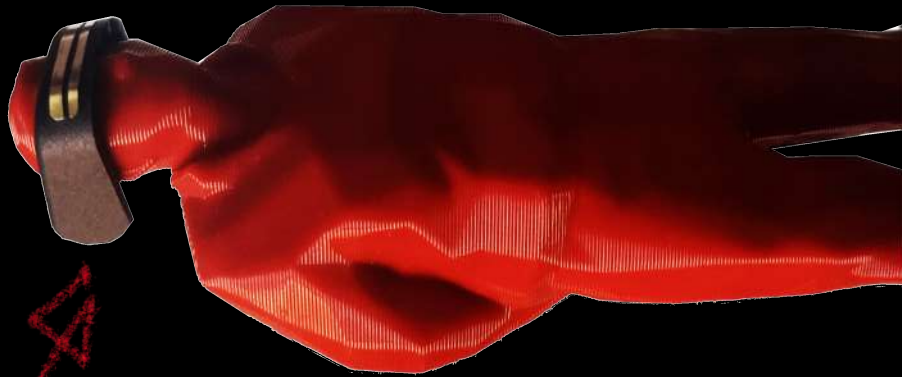


Can social dialogue be the answer?

- In the Brescia case innovations rised on a social dialogue reorganisation:
- Unions, employers, academics, lawyers, local representative and also tax police, are called to rewrite the balance between safety and security.
- This made such innovations interesting, by a research perspective, and trustable by workers perception.

Special thanks to FILLEA CGIL

(in particular from Brescia, La Spezia, Mantova and Modena)



**This mash is based on the original
Umarell by Superstuff**

- For BIM case:
 - C.M.B. Cooperativa Muratori e Braccianti di Carpi
 - ADR Infrastrutture
 - Exa engineering
 - Confindustria La Spezia
 - TECNE S.p.A.
 - ARTELIA S.p.A.
- For Brescia Case:
 - ANCE Brescia;
 - ESEB
 - Deldossi S.r.l.
 - Prof. Ciribini (Brescia University)
- For the off-site production
 - Gruppo Saviola

and thanks to, Nicoletta Brachini (CGIL) – for her contacts and exchanges