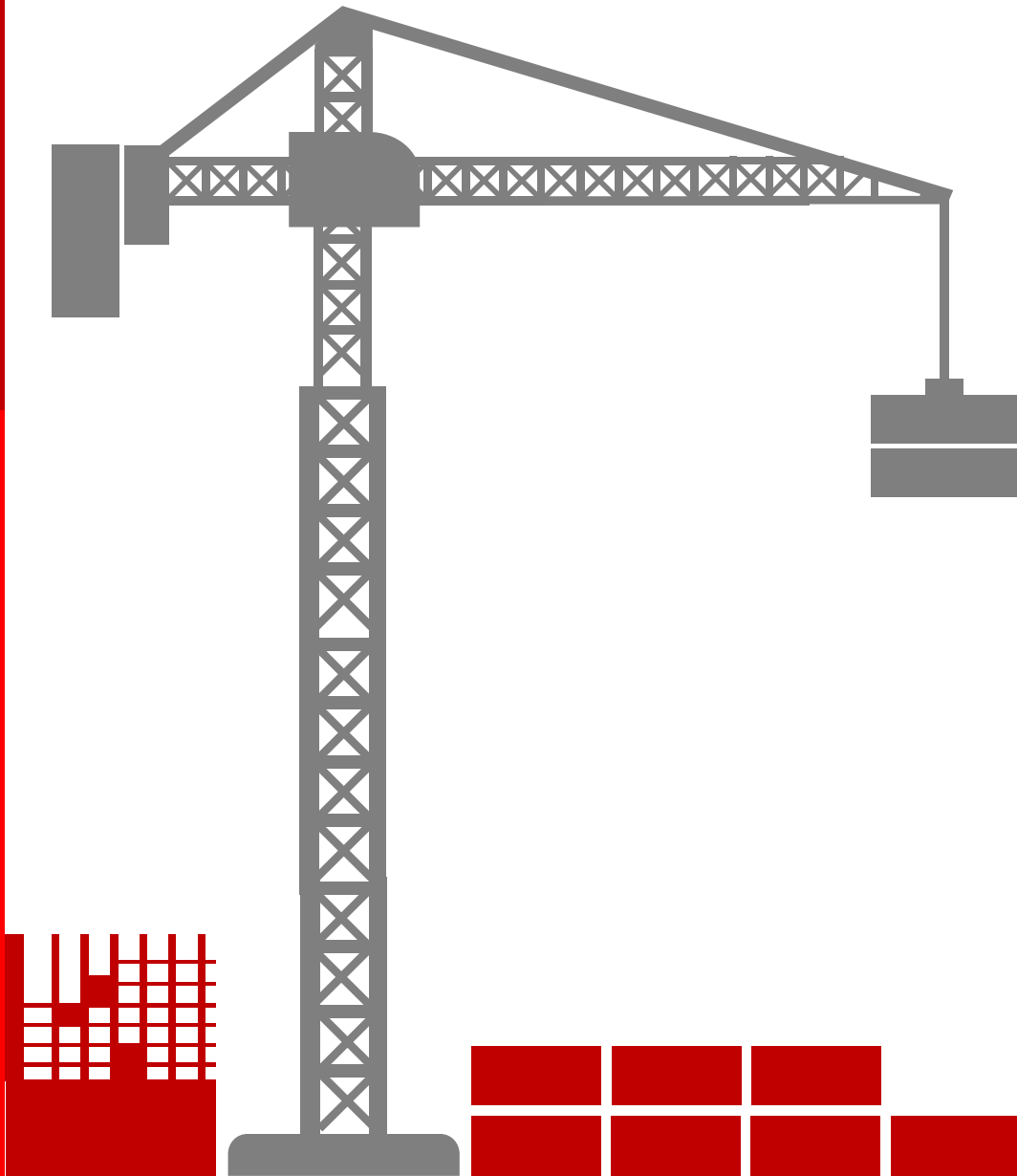


Innovations that will change our housing

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Key innovations: What and how?

- 01** Disruptive change
- 02** Digitalisation
- 03** Prefabrication
- 04** Design for Deconstruction
- 05** New business models
- 06** Conclusion

Construction going through disruptive change

- "Perfect storm"
 - Digitalisation and associated new technologies
 - New market entrants
 - Globalisation
 - Market demand
 - EU – policy demands
 - Circular Economy
 - Climate change
 - Energy efficiency
 - Health and Safety
 - Focus on citizen – comfort, convenience, accessibility, inclusion, etc.

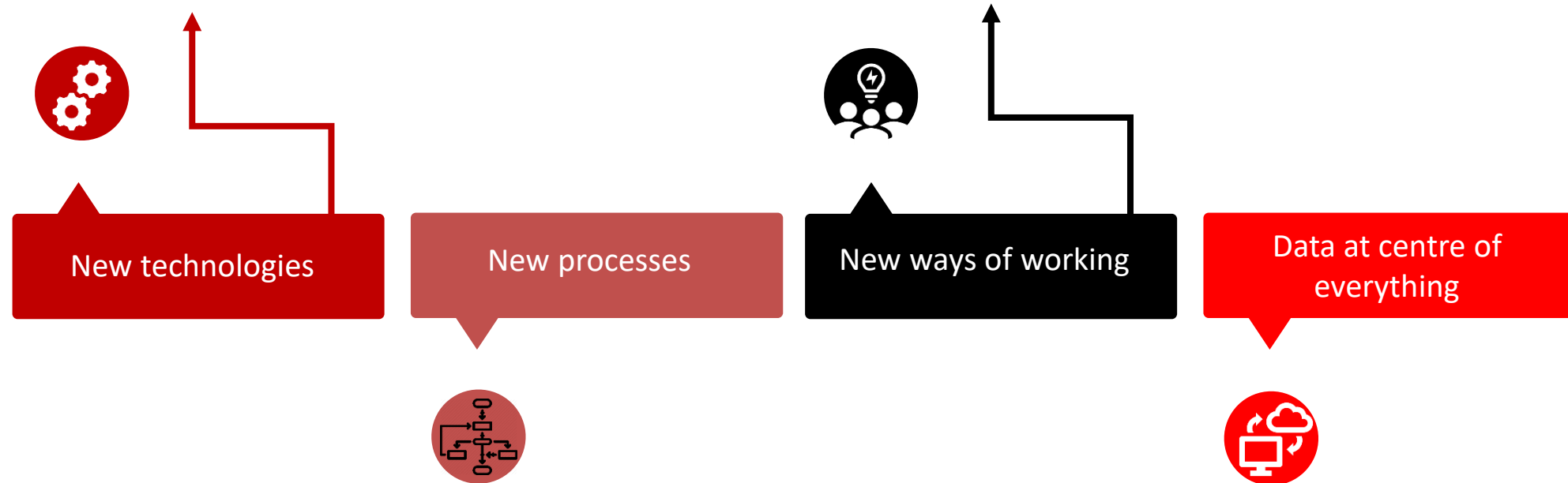


Digitalisation

Means many things

- Building Information Modelling (BIM)
- Virtual and augmented reality
- Robots and drones
- Smart, connected buildings and cities

- Collaboration
- Value chain becoming ecosystem





Prefabrication

- More off site – factory production
- Larger components
- "Standard" components

BENEFITS

1. Faster
2. Potentially more recyclable
3. Move towards assembly – automation – robots (cobots) and drones

CHALLENGES

1. Construction industry – ready for the change?
 2. Market/clients/occupiers – ready for the change?
 3. Structural stability
 4. Building safety and security
- Many challenges to overcome

Design for Deconstruction

- Starting point = end of life of building or change of use
- Creating buildings that can be disassembled easily
- Focus on recycling and re-use

BENEFITS

1. Recovering maximum of materials
– reduction of waste
1. Flexibility
2. Sustainability in broader sense

CHALLENGES

1. Lack of suitable recycling facilities
2. Only suitable for new buildings
3. No obligation
4. Not cheaper: incentive for buyer??



New business models

- "Servitisation"
 - Design, construct, manage, maintain
 - Use of data to provide new services
 - Automatic control of technical systems
 - Optimum control of energy consumption
 - Predictive maintenance
- Collaboration
 - Sharing of data
 - Ecosystem
 - Impact on contracts?
- New market entrants
 - Especially IT companies
 - Others – telecoms, Amazon etc.



Conclusion



- Disruptive innovation will impact housing – but how?
- Knowns (predicable to a certain extent)
 - More energy efficient
 - More resource efficient
 - Healthier buildings
 - Smarter buildings and cities
- Unknowns
 - Impact on affordability
- Renovation remains a big challenge!

CONSTRUCTION 4.0
COMPETITIVENESS
GROWTH
ENERGY NETWORKS
EMPLOYMENT
ENERGY EFFICIENCY
TRANSPORT INFRASTRUCTURE
IT-NETWORKS

CONSTRUCTION IS THE SOLUTION INDUSTRY

YOUTH EMPLOYMENT
RESOURCE EFFICIENCY
JOBS
SKILLS TRAINING/EDUCATION
CLIMATE CHANGE
RECYCLING
ENERGY PRODUCTION
STANDARDISATION
INFRASTRUCTURE
INNOVATION

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