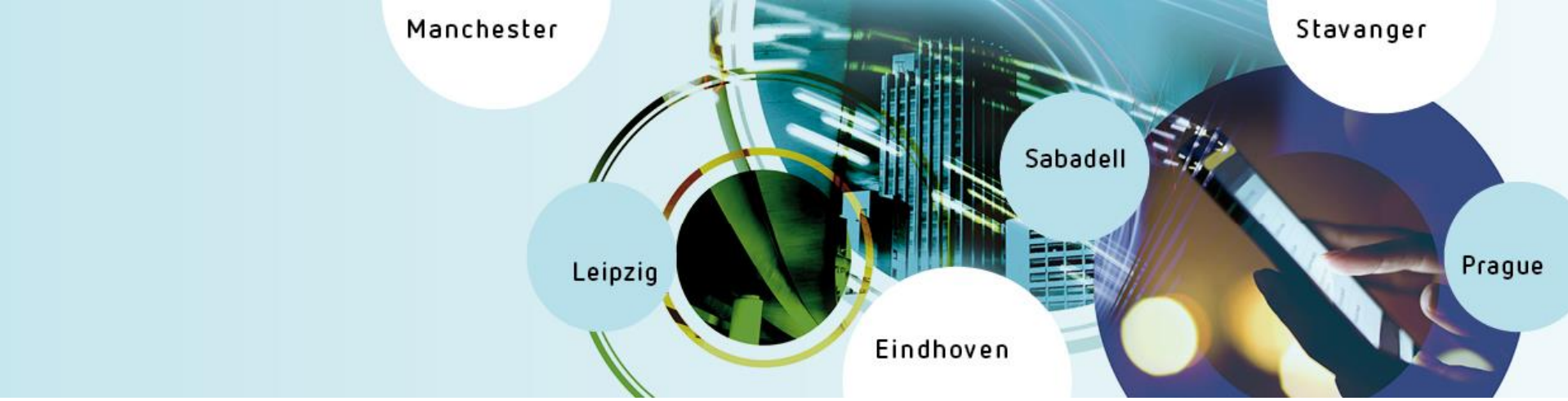

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DEMONSTRATE·DISSEMINATE·REPLICATE

International Conference

TRIANGULUM – Lighthouse City, Manchester
Ivan Hewlett, Siemens

Stavanger, 23 September 2019

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Triangulum International Conference
"Energising Cities: Innovations, Challenges & Solutions"
23 September 2019 in Stavanger

Manchester, what does TRIANGULUM do for climate change/CO2 reduction ?

Central Controller (WP1)

Providing a means to visualise, and optimise, disparate load and generation assets in response to simulated events

Grid Independence (WP5)

Emulate conditions for partial or full 'Corridor' independence from the grid

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Building Optimisation (WP2)

Implementing Energy Efficiency measures to improve incumbent control systems

Additional Capacity (WP3)

Install LCG assets throughout the Manchester Corridor and integrate with project controller

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SIEMENS
Ingenuity for life

Building Optimisation (WP2)

Implementing Energy Efficiency measures to
improve incumbent control systems

Manchester Art Gallery

Following a comprehensive 'Building Benchmark Assessment' process, Siemens identified the Grade 2 Listed Manchester Art Gallery as a building with potential to progress from a 'D' energy rating to a 'C'.

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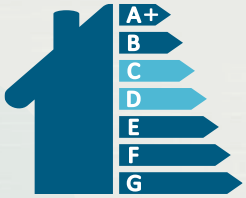
Building Optimisation (WP2)

Implementing Energy Efficiency measures to improve incumbent control systems

Manchester Art Gallery



From a 'D' energy rating to a 'C'

Gas consumption reduced by **24%**

Electricity

12%

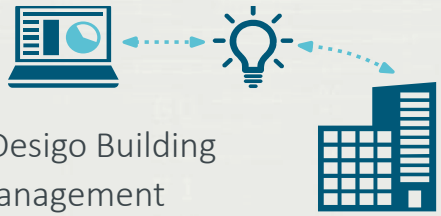
CO^2

15%

Savings of circa **€42,000** per annum

Improved graphical interface

The in depth audit though revealed various pieces of equipment not functioning



Siemens Desigo Building Energy Management System installed

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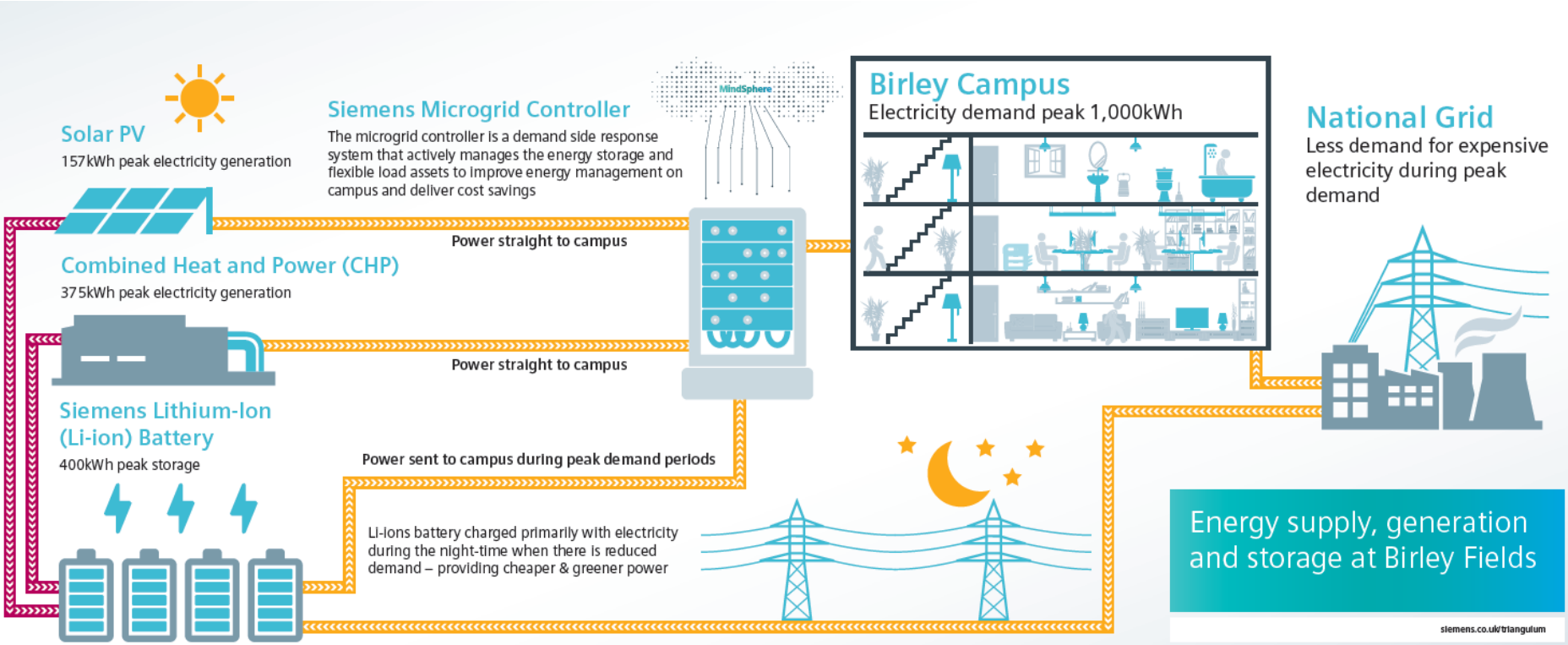
Additional Capacity (WP3)

Install LCG assets throughout the Manchester Corridor and integrate with project controller



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Grid Independence (WP5)

Emulate conditions for partial or full 'Corridor' independence from the grid

Network Assessment
6.2 Manchester Equivalent Network

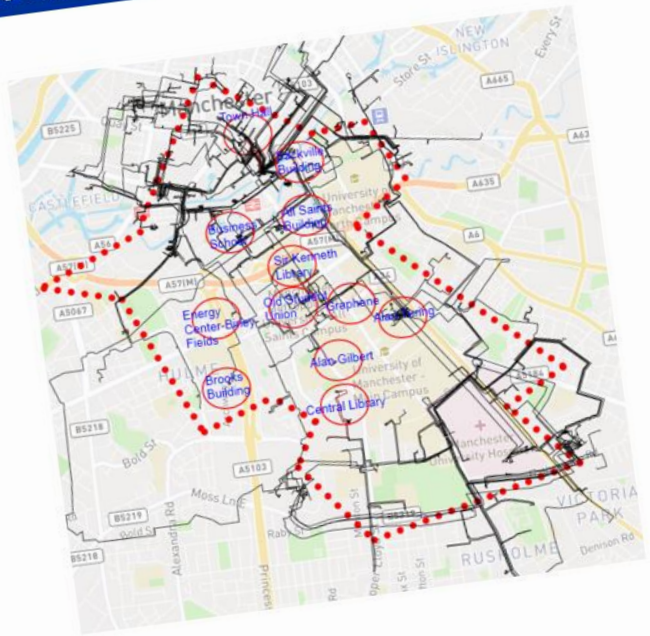
SIEMENS

Static Network Reduction:

- The static network reduction is the usual method of reducing a network for stationary analyses, i.e. for load flow and short circuit calculations
- Network reduction was applied to the following substation feeding Manchester corridor:

1. Bloom Street (33kV)
2. Longsight (33kV)
3. Bridgewater (6.6kV)
4. Deansgate (6.6kV)
5. Dickinson St Primary (6.6kV)
6. Piccadilly (6.6 kV)
7. Longsight Primary (6.6kV)
8. Manchester University (6.6kV)
9. Moss Side (6.6 kV)
10. Victoria Park (6.6kV)
11. Ardwick (6.6 kV)
12. Central Manchester (6.6kV)

Substations were represented by Power (P) and Reactive Power (Q) boundary infection after network reduction. Methodology of the electrical equivalent is described on the slide overleaf.



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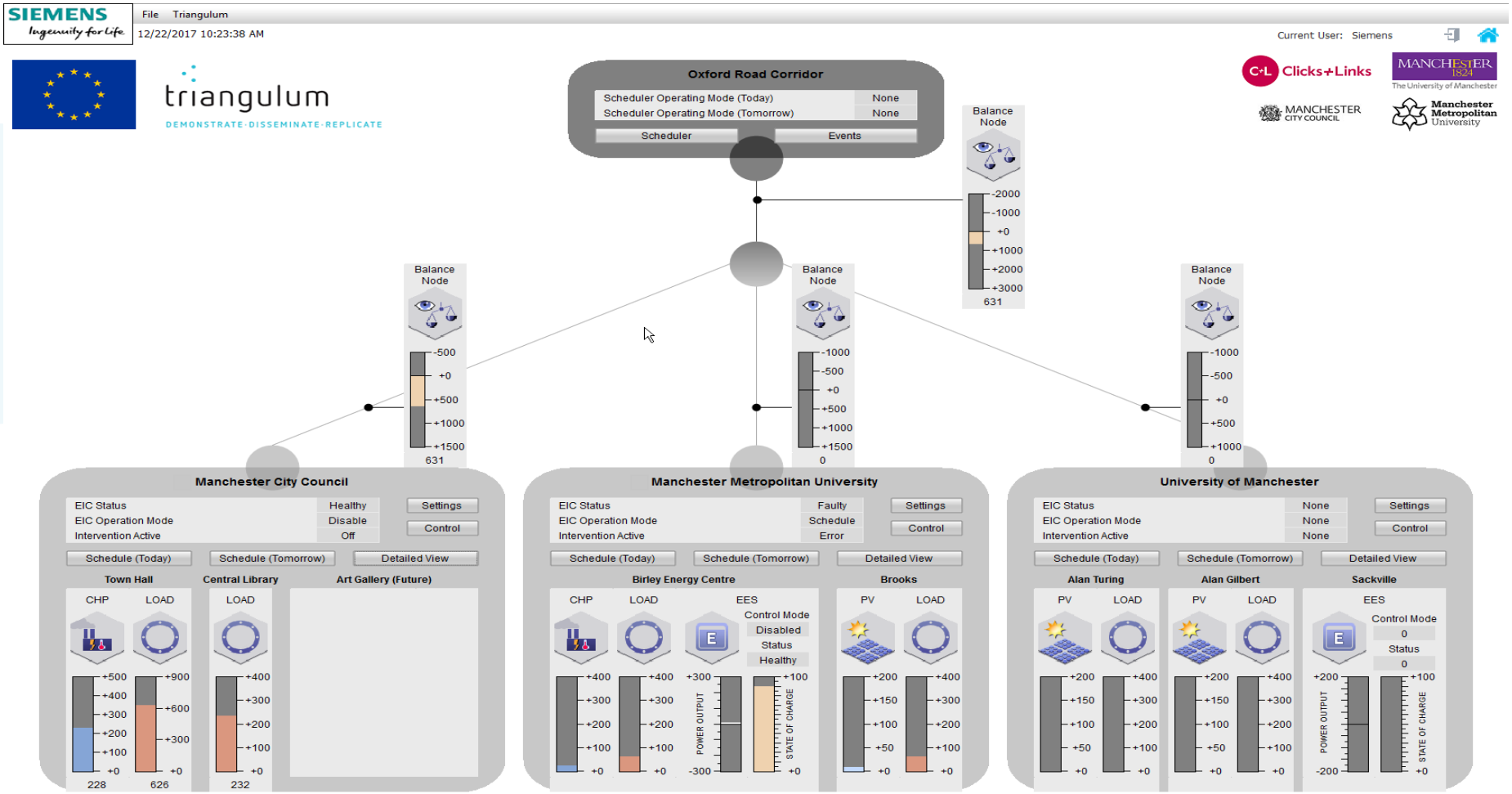
Central Controller (WP1)

Providing a means to visualise, and optimise, disparate load and generation assets in response to simulated events



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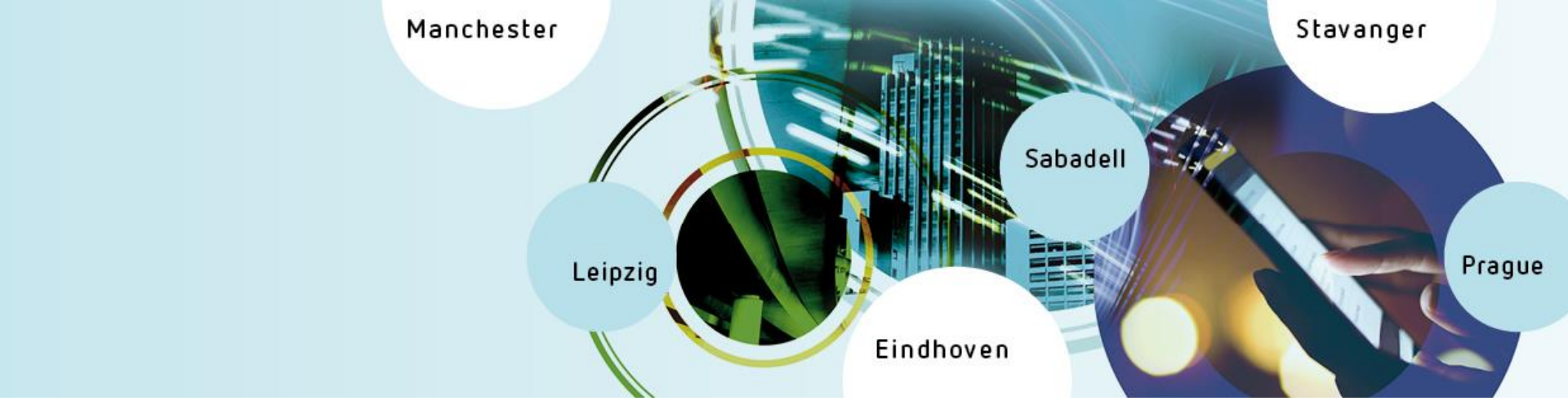

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THANK YOU!

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