

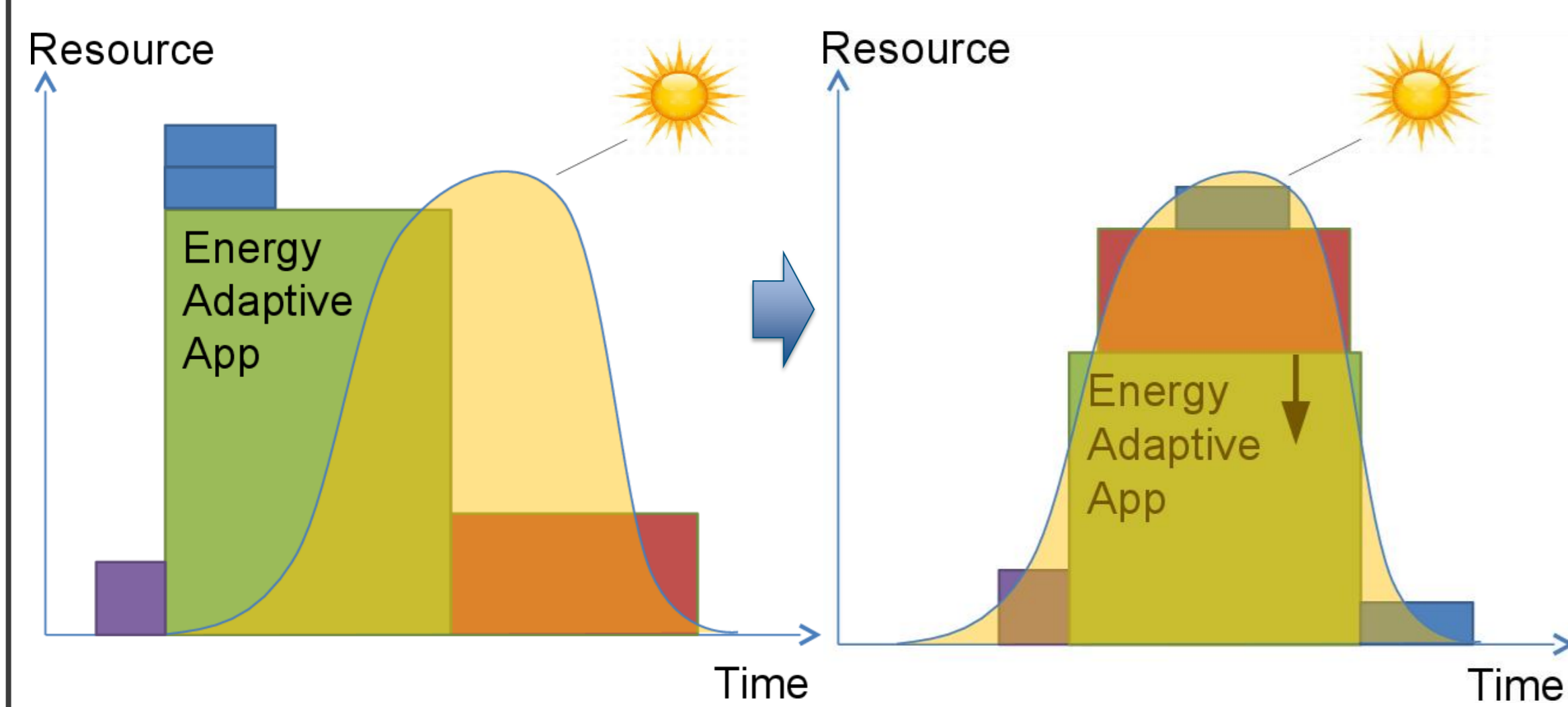
## DC4Cities: Better Usage of the Renewable Energies in Data Centres

### Problem

- Power DC with renewable energies
- High volatility of energy
- Low flexibility of workload

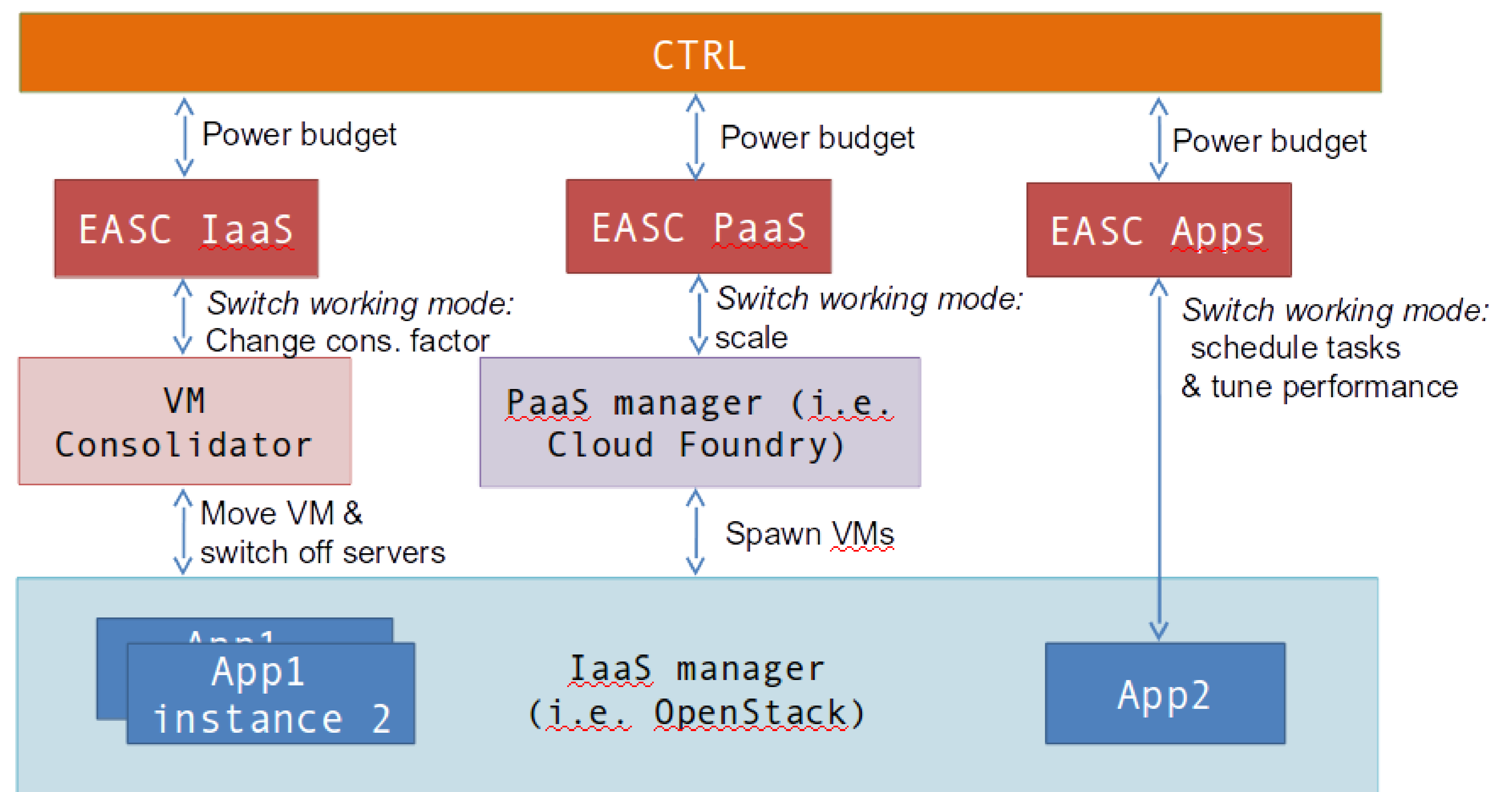
### Scenario

- Energy Management Authority within a Smart City
- DC wide energy objectives
- Applications have an energy budget

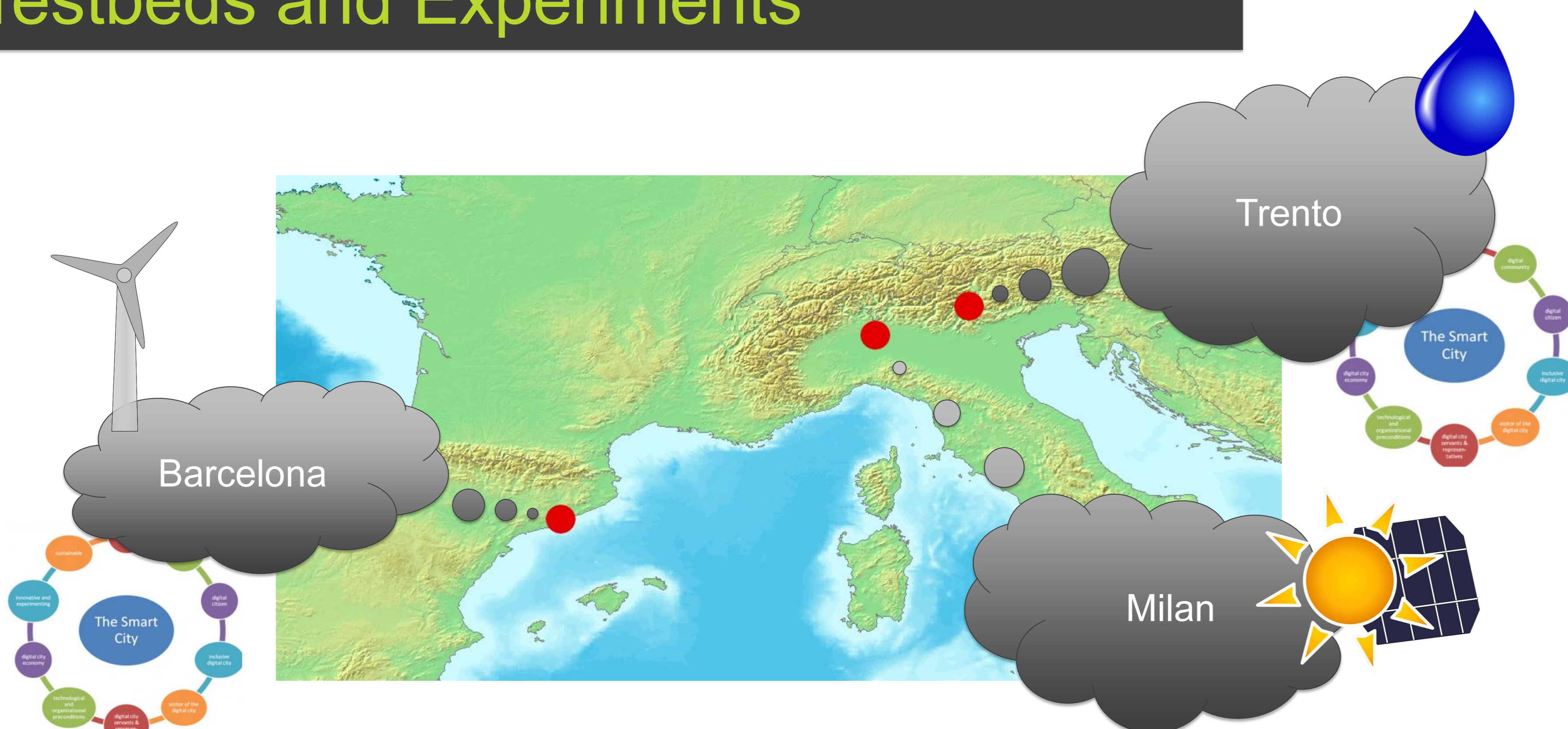


### Energy Adaptive Software Controller

- Application cooperation
- Smart use of application elasticity and scalability
- IaaS: adjust VM packing
- PaaS: scale applications
- Adjustable parameters: aggressiveness and eagerness



### Testbeds and Experiments



Renewable usage improvement:

**Trento:** from 43.1% up to 57.9%

**Milan:** from 60.6% up to 63.5%

**Barcelona:**

**CSUC:** from 40.09% up to 41.78%

**IMI:** from 41.74% up to 45.96%