PowerMatchingCity-II

New use cases

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New Use cases

> Wholesale processes
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> Network asset optimization and management

Hoogkerk living lab environment

› Established in the Integral-project

  › EU-FP7: http://www.integral-eu.com

  › VPP established

    › 25 households with heating system + heat storage connected

      › 50 % Stirling micro-CHP

      › 50 % Hybrid Air-to-air heatpump/Gas fired boiler

    › PV

    › Wind

    › 2 EV's

    › Operated in 7 use case applications

  › Coordinated via PowerMatcher-technology
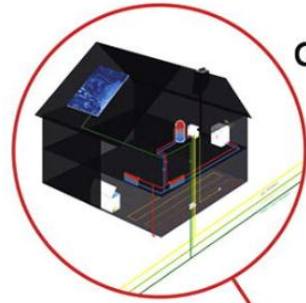
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Setting
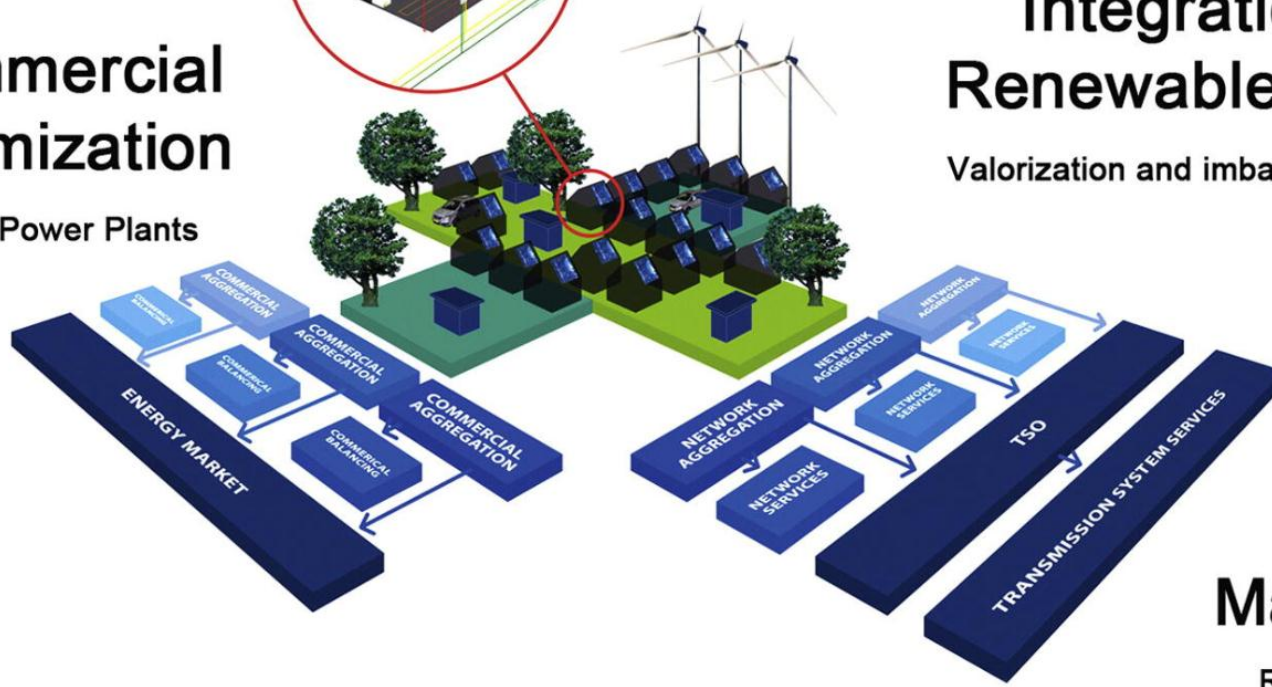
Tools
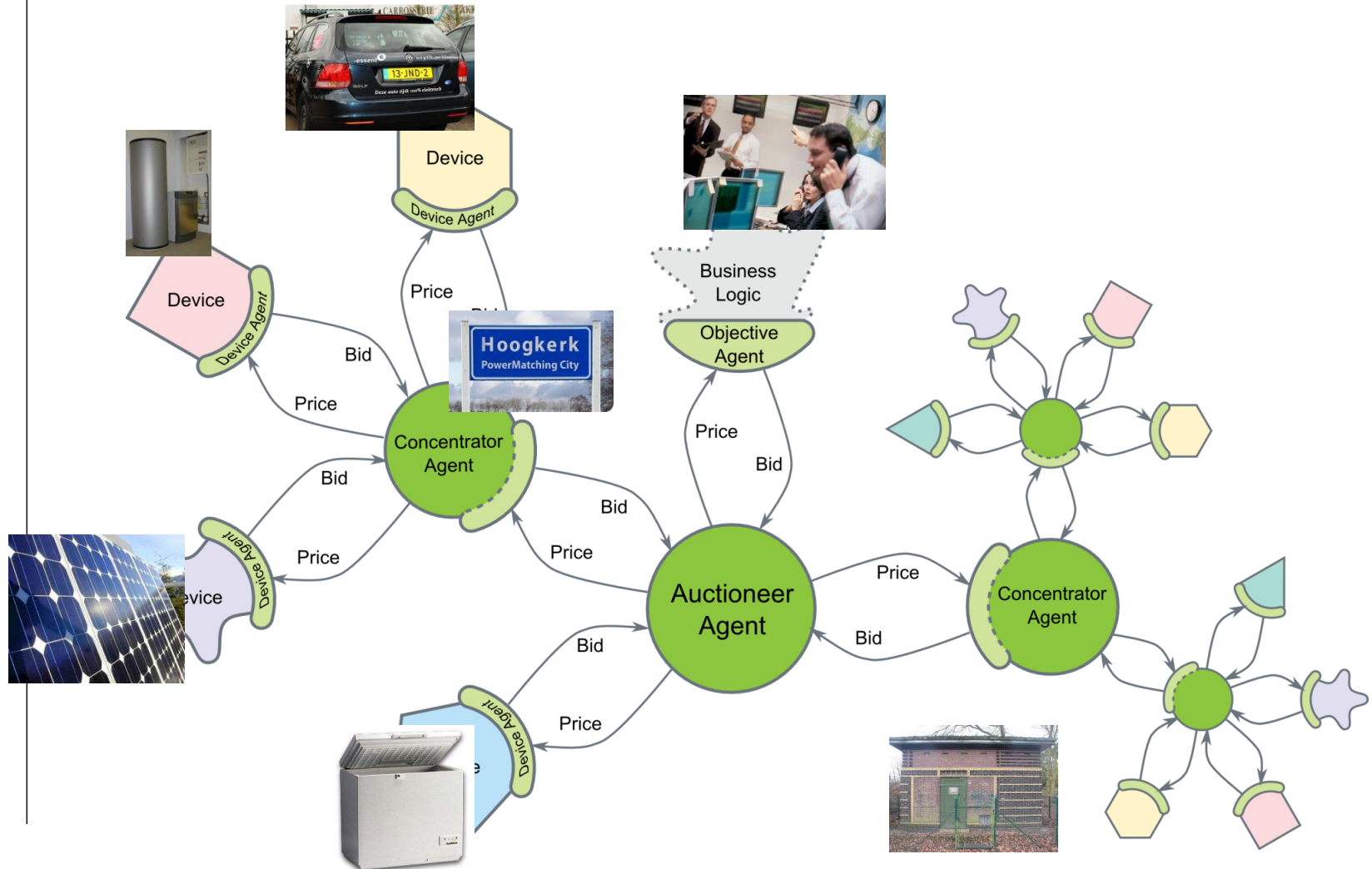
Types of agents

› Device agents: represent consuming and generating devices

› Concentrator agents:

  › Sum bid-curves of connected devices

  › Can apply transform on aggregated bidcurve

    › Coupled to home level

    › Coupled to a physical component of the grid

› Objective agents

  › Strive optimisation goal

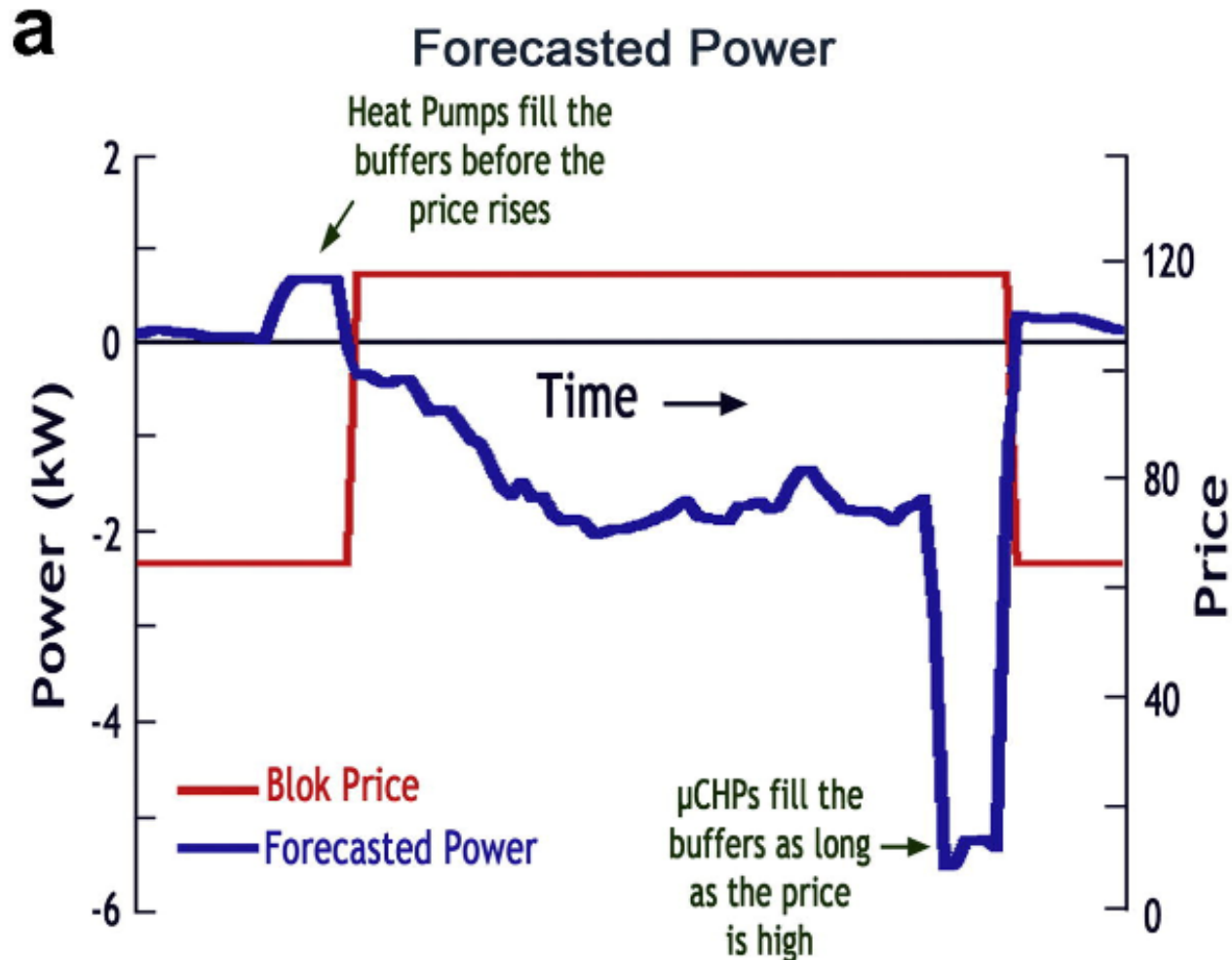 › Coupled to use cases : e.g. TDOA Trade Dispatch Objective Agent

› Auctioneer agents

Demand response potential: Heating buffer
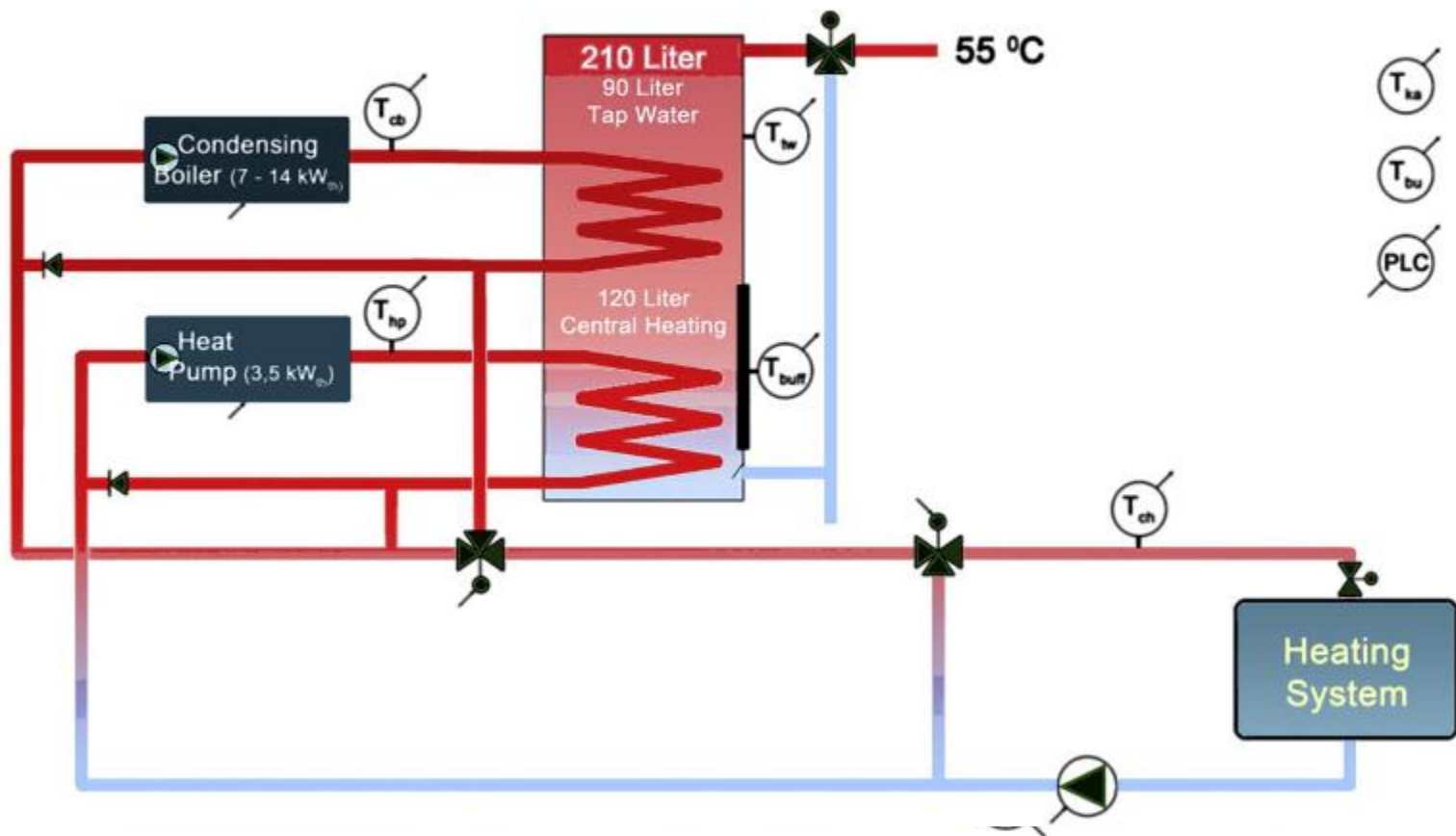
TDOA:Pre-emptive charging of heat buffers – Hybrid approach: Optimization on forecast and real-time adjustment
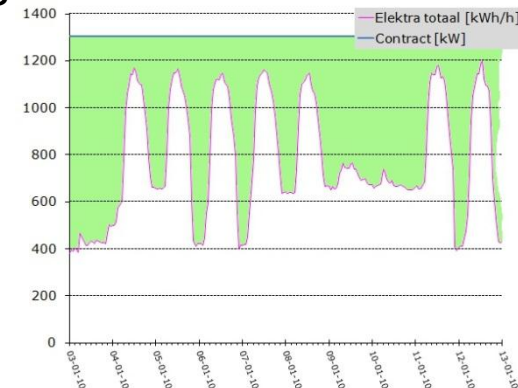
Continuation PMC-II

> PowerMatcherCity II (IPIN-project; Dutch SmartGrid program)

> > More heterogeneous cluster with more device types (scheduling dishwasher/washing machine)

> > Requirements for a 'Distribution-Agent' in a residential area

> > Coupling of agent transactions to wholesale processes

> > Coupling of agent transactions to billing processes

> > Agents on mainstream ICT platform -> embedded systems

> > Improved agent price models (marginal prices)

> > Capacity management EV charging in buildings

> > > According to emerging standards

> > > As a time-dependent capacity proposition

> > > Safe fast-charging

> > > Billing and grid transaction communication

Continuation PMC-II

› User portal

> Community formation and marketplace for communities; new role of retailer as mediator between communities

> One app on SmartPhone for energy management