

Creating a Local Circular Economy in NE

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Agenda

- Who We Are
- What We Do
- How to Collaborate



+about 20 PhD
students and RAs

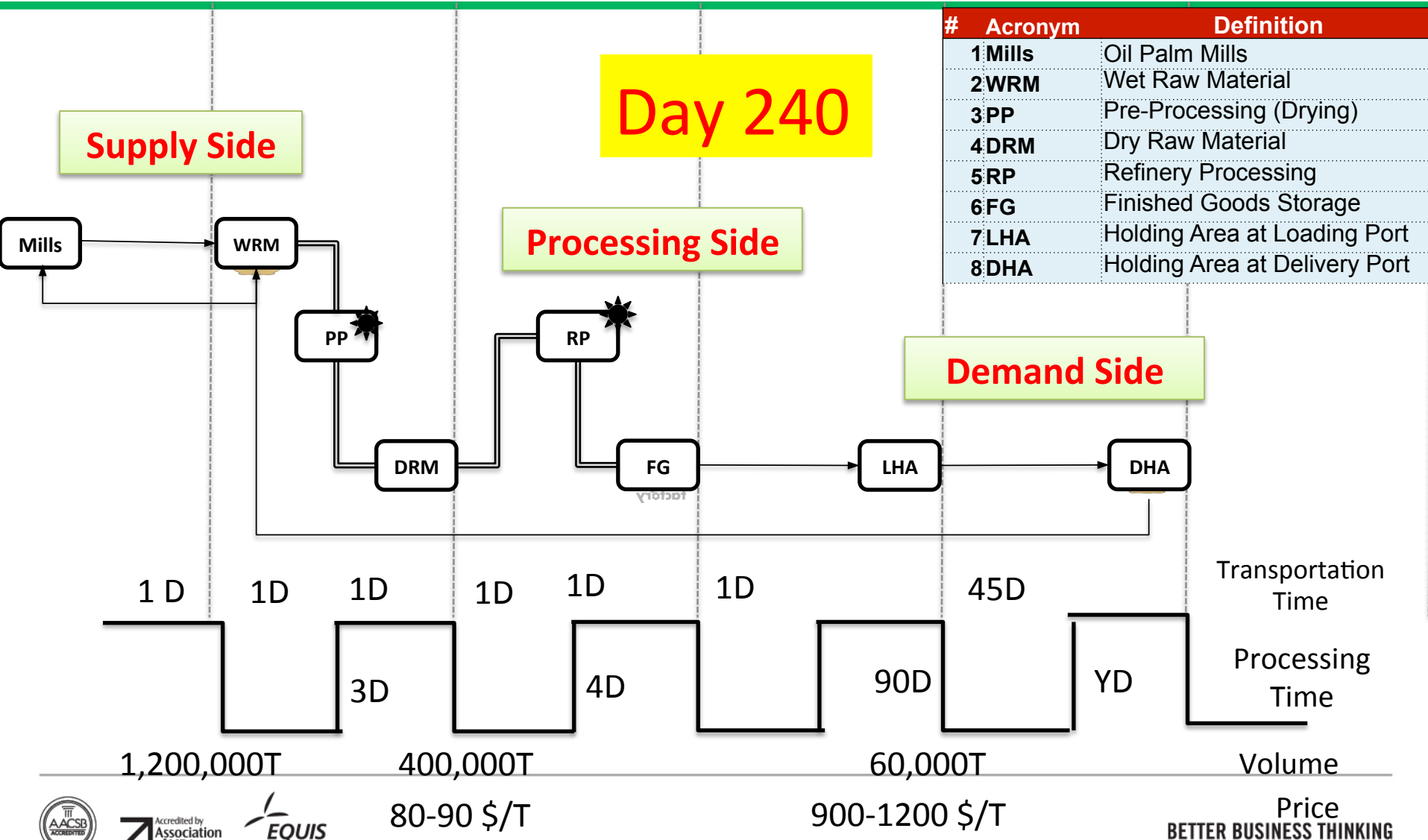


A diverse group of scholars with interest and
expertise in innovation

Our vision

- Open and collaborative
- Focused on rigour and relevance
 - Triggered by business and societal needs
 - Contributing to and supported by theory
- Aim for world-leading research

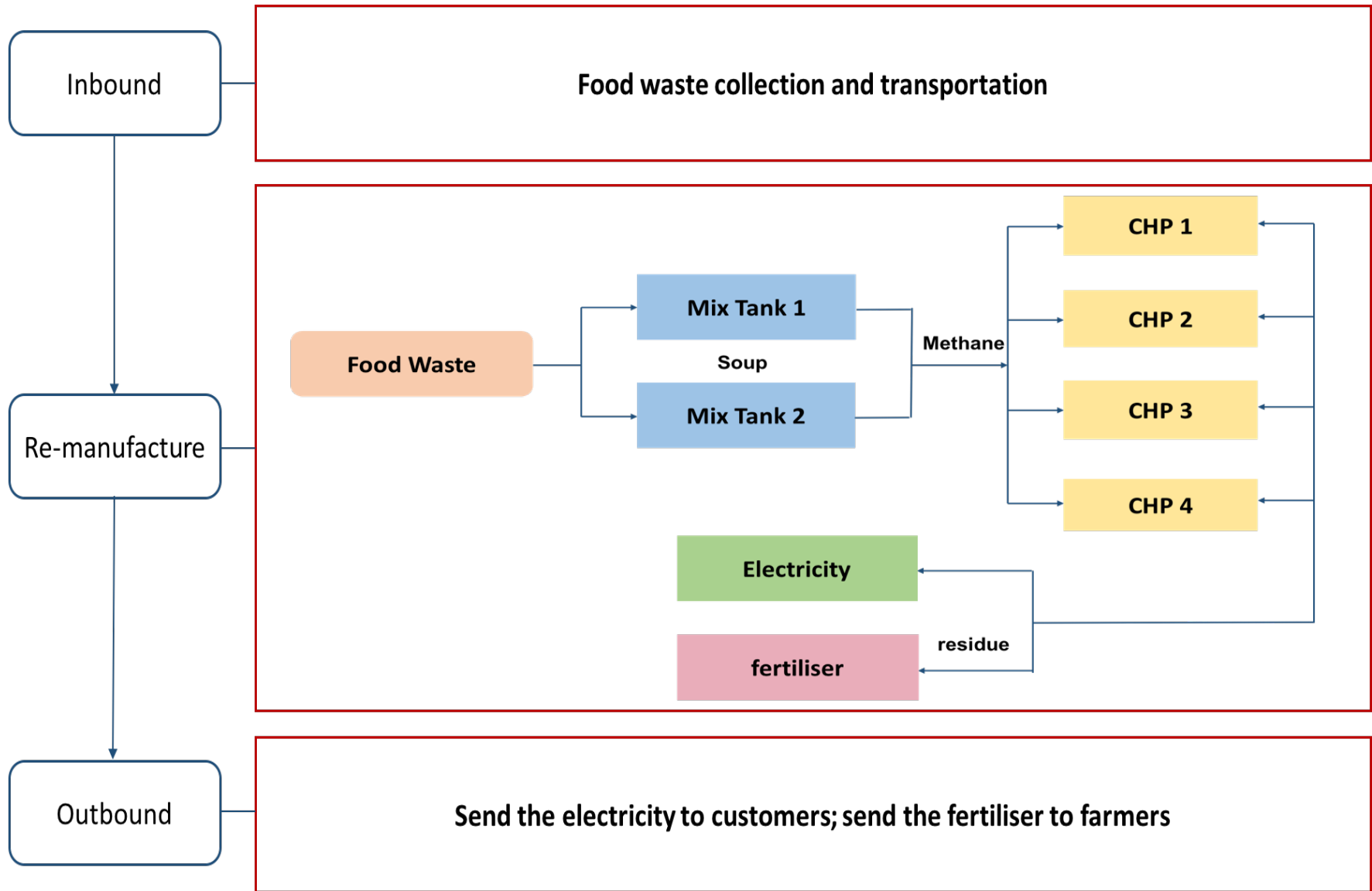
Example: BioMass Supply Chain



Recent Research Projects

- Framework for re-sourcing decisions in a circular economy supply chain
- Mitigating the risk of supply-side uncertainty creating Reverse Bullwhip Effect
- Identifying the Factors that Inhibit the Circular Flows in Apparel Supply Chains
- What is the best product take-back strategy for your business?
- Open Vehicle Routing Model for The Perishable Food Collection
- Designing an Efficient Waste-to-Energy Supply Network

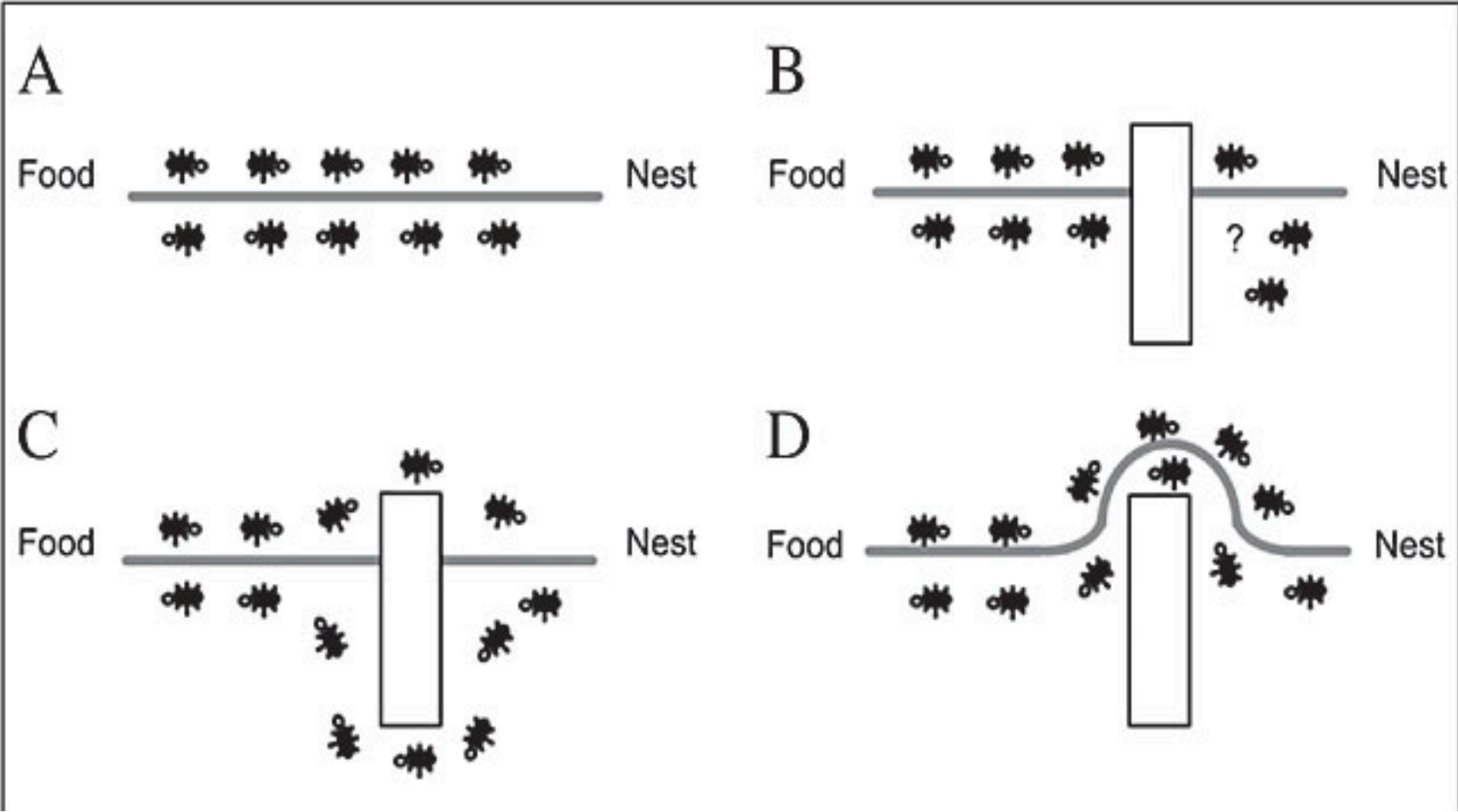
Designing an Efficient Waste-to-Energy Supply Network

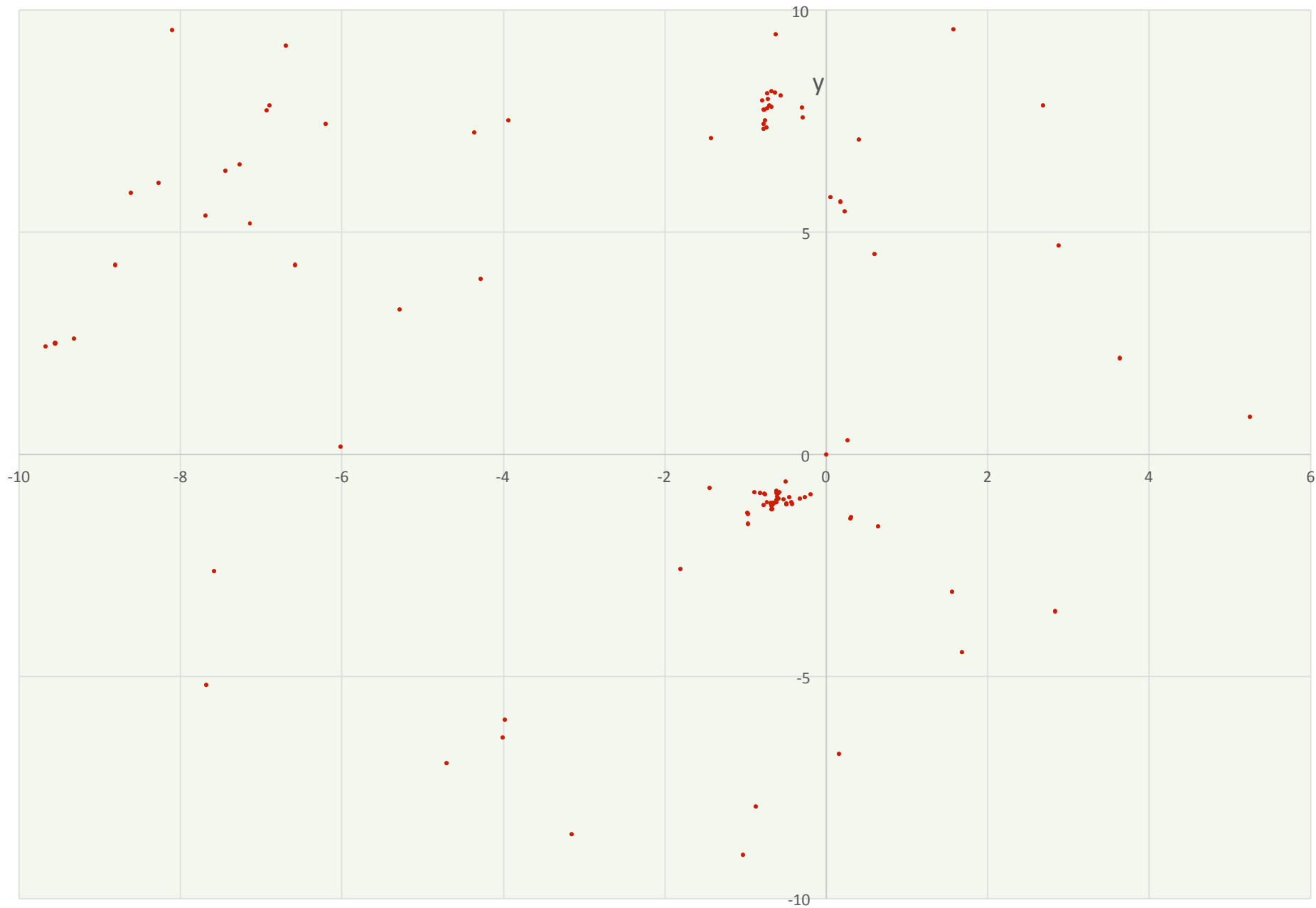


Vehicle Routing Problem with Time Windows

- There is a homogeneous fleet of vehicles for waste collection.
- The quantity of waste disposed of by each customer is known in advance.
- The delivery time window for each customer is known in advance.
- The total capacity of the vehicles is greater than the total quantity of food waste to be collected from the customers served.
- Any number of vehicles can be used, while there is a fixed cost for using one vehicle.
- Service time at each customer is fixed, and it is assumed to be 0.2 hours.
- A driver can not serve more than 50 customers per day.
- Food waste deteriorates continuously with an age-dependent exponential rate.

Ant Colony Optimization

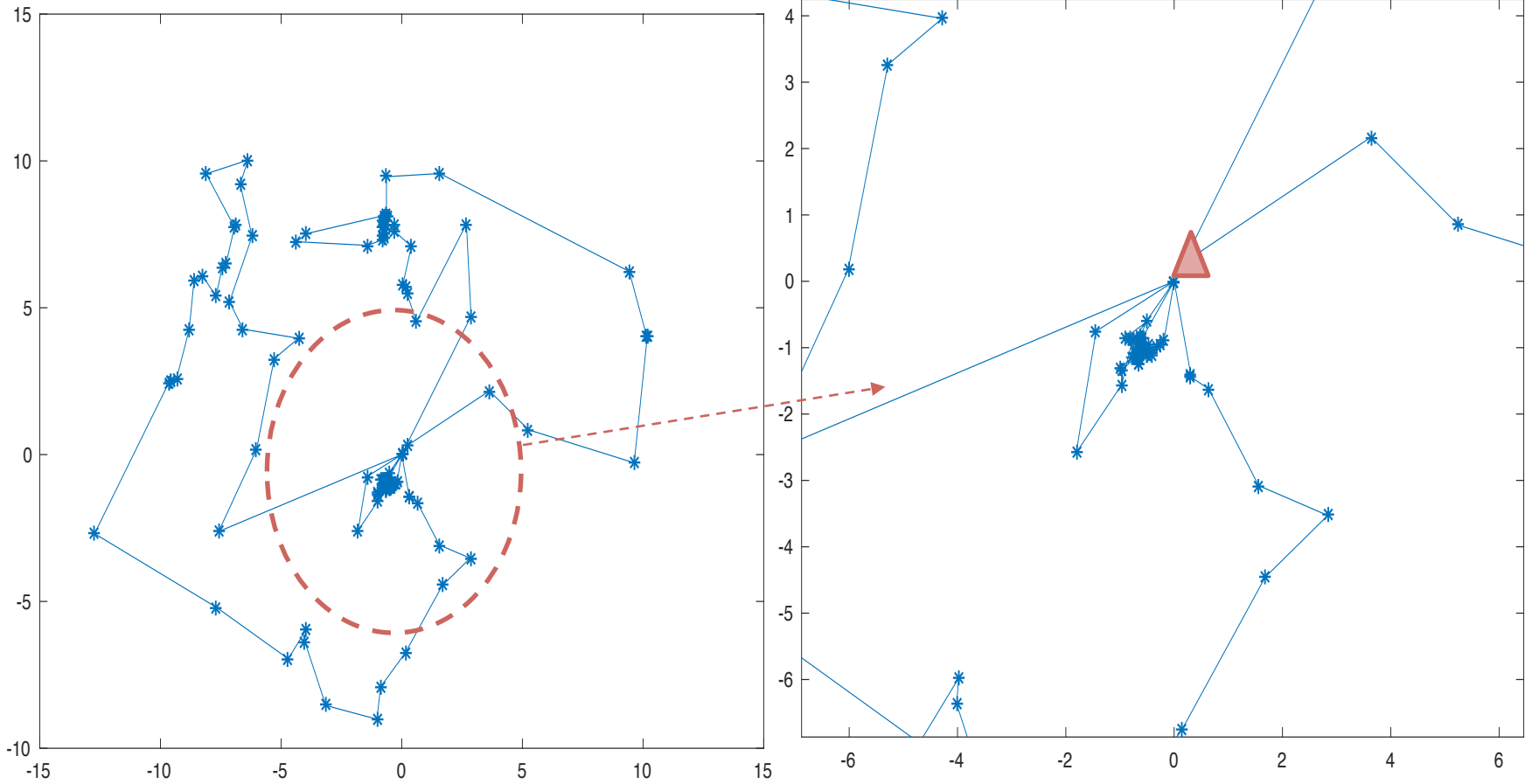




Problem Scenarios

Parameters	Problem 1	Problem 2	Problem 3
Number of customers	40	80	120
The service time at each customer (hour)	0.2	0.2	0.2
The fixed cost of using one truck (£)	850	850	850
The average speed of the truck (km/h)	28	28	28
The capacity of the truck (litre)	25000	25000	25000
The cost of travelling one kilometre (£/km)	0.2	0.2	0.2
The cost of using a vehicle for one hour (£/hour)	7.25	7.25	7.25

Vehicle Routes



Ways to Engage

- Guest Lectures
- Dissertation Projects
- Internships
- Small Projects/ Impact Acceleration projects
- Knowledge Transfer Partnerships
- InnovateUK Funding
- Other Large Funding
- Consultancy

Thank you