Party without a cake? Onto an inter-modal HitchHike logistics platform for passengers and products transportation

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Motivation

- Transportation is a necessary component of our contemporary society

- Transportation is essential for facilitating the efficient movement of people and products

- Yet confronted by challenges including:

  - Traffic congestion,

  - High operating expenses,

  - Longer commutes,

  - Parking challenges, and

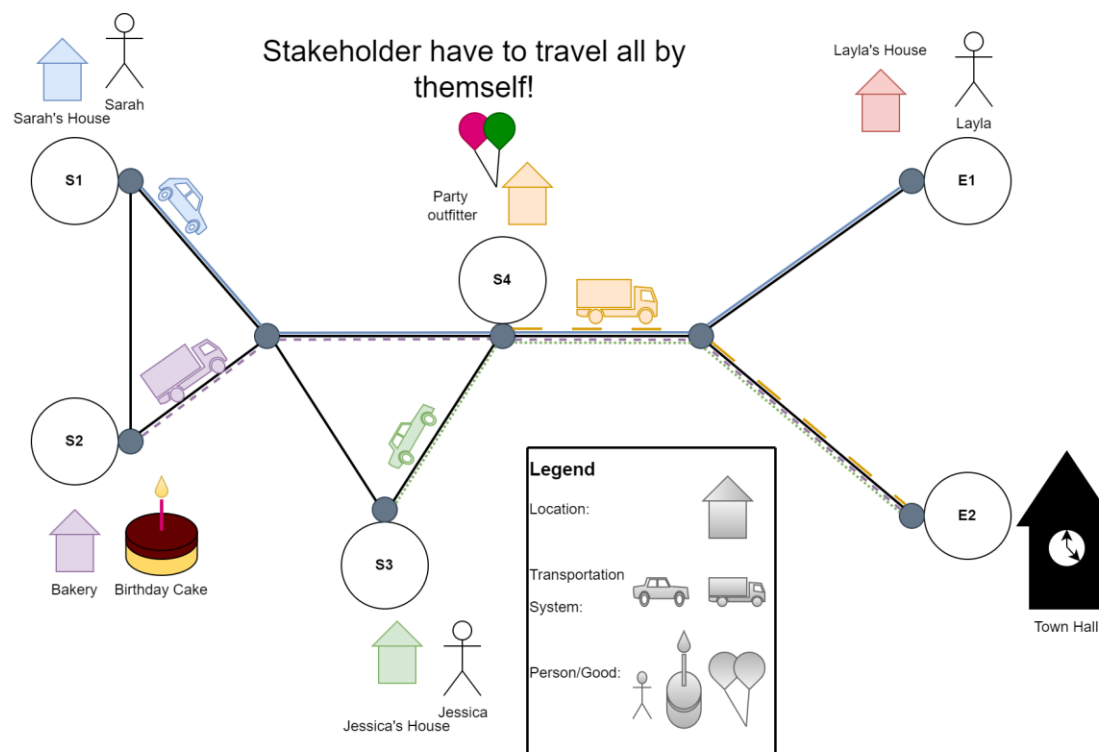 - Negative impact on the environment
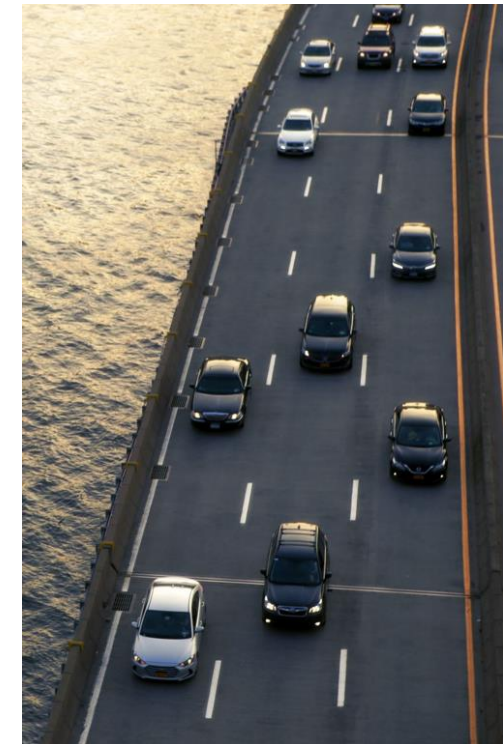
Problem Scenario

- Jessica is living in a small village (S3) and planning to celebrate her birthday in town hall (E2)

- The goods are planned to be delivered:
  - Bakery (S2)
  - Party outfitter (S4)

- Simultaneously, Sarah (S1) is driving to meet her friend Layla (E1)

Inter-modal transportation- Need and Challenges

- Inter-modal transportation aims to utilize a chain of network by synchronizing two or more modes of transportation

- However, major obstacles are preventing
  its widespread implementation:

  ➢ The lack of a cohesive network of transportation modes

  ➢ Majority of decisions in transportation planning are based on the theoretical aspects of future operations

  ➢ Involvement of a wide range of decision makers, planning activities, and stakeholders

To achieve sustainable inter-modal transportation…

- Enhance proactive engagement and effective collaboration among different service providers

- The logistics ecosystem must be open and distributed for the key stakeholders

- Focus on dynamic real-time route planning instead of probability-based planning strategies

- However,
  - Offering an open and distributed ecosystem compromises system reliability
 - High level of complexity and variability of service integration

Open service-based HitchHike logistics platform

- Supports multi-hop transportation segments by hitchhiking through the local hubs

- Management service registry

- Offered openness to integrate different service providers:
  - Box service provider
  - Transportation service provider
  - Route service provider
  - Hub service provider
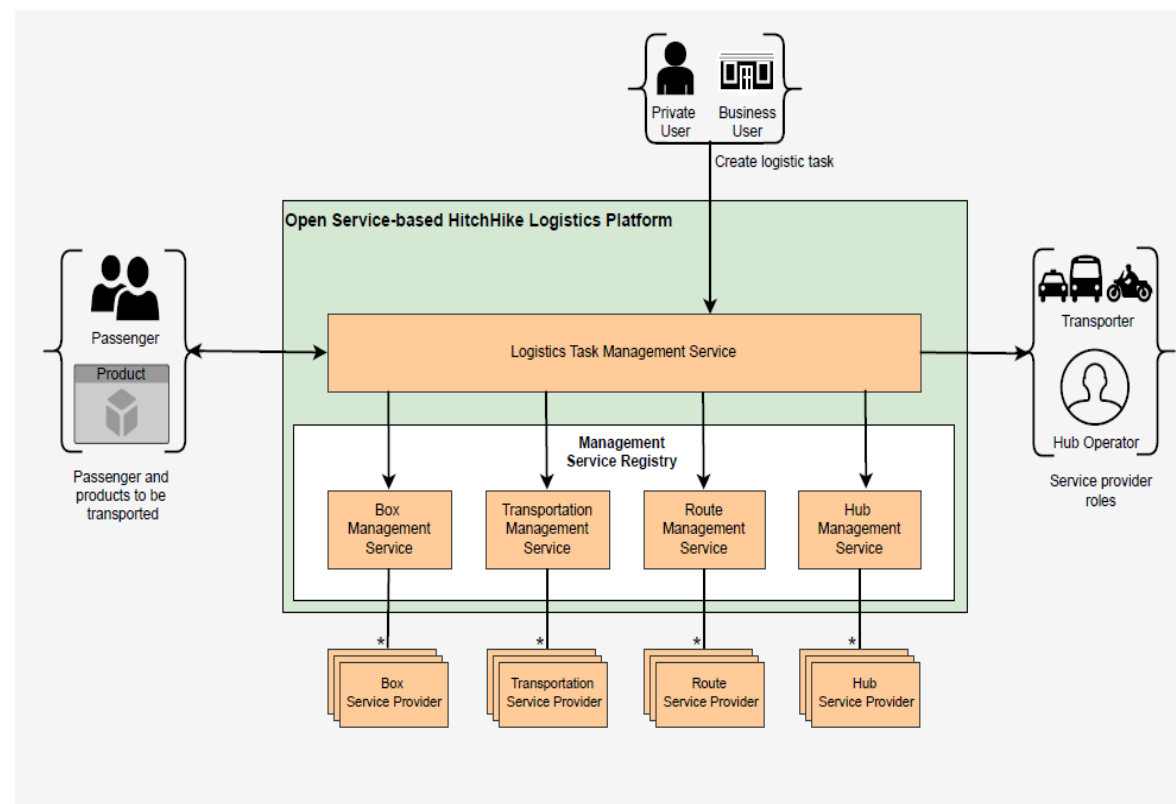
Open service-based HitchHike logistics platform

- Logistics Task Management Service
  - ➢ Handles the user requirements with the preferred optimization criteria
  - ➢ Interact with the management service
  - ➢ Coordinate with the passengers and corresponding service provider for the assigned role
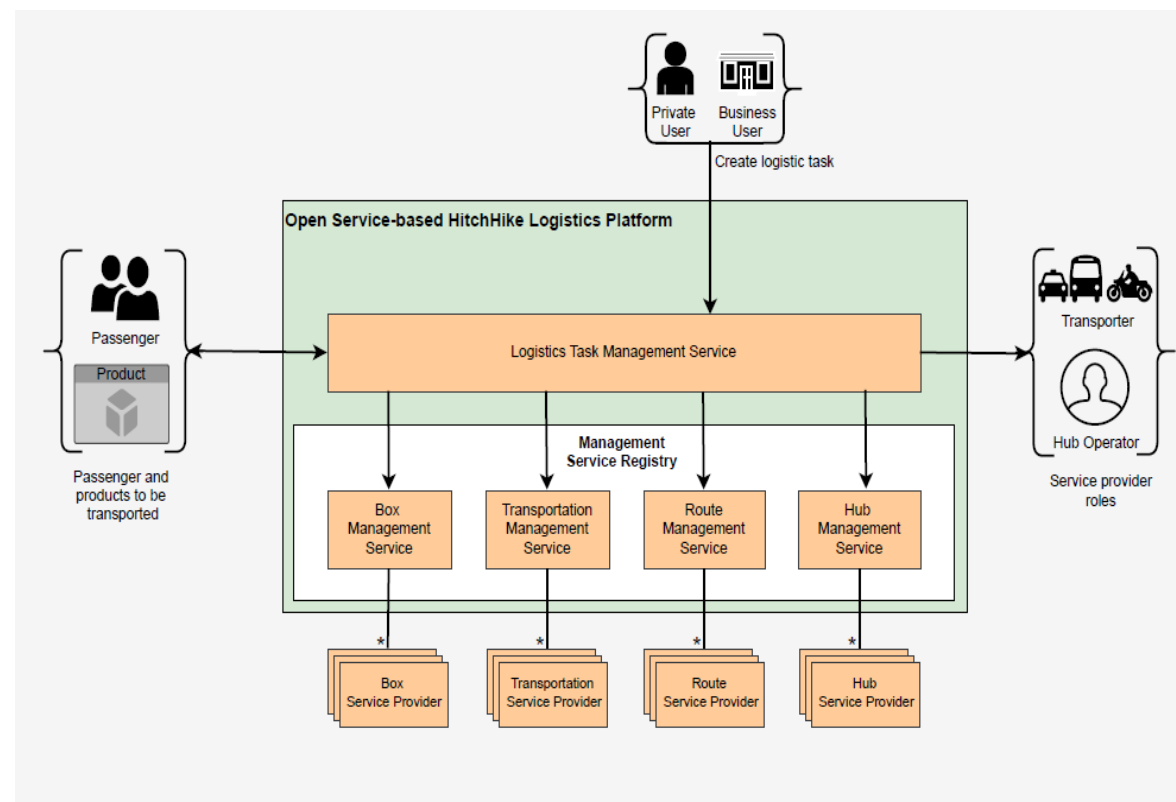
Experience with the HitchHike system

- A variant of the HitchHike system was already demonstrated and filmed

- The use-case addresses product transportation between the cities of Clausthal and Goslar in Germany

- The use case focus on, how:

  - The sender can create a delivery task

  - Successful drop-off and storage of the box at the hub

  - The box reaches the recipient utilizing inter-modal aspect

    of the system

HitchHike Use-case for Product Transportation

Summary

- The platform supports inter-modal transportation while offering an open ecosystem

- Therefore, the proposed logistic system offers:

  ➢ Effective collaboration between different service providers

  ➢ Combine inter-modal transportation for products and passengers

  ➢ Highly scalable and risk-mitigating logistics system

- The integrated functionality of the Hitchhike box to continuously monitor products is vital for sensitive products

- Sharing of responsibilities among the plugged service providers

Future Outlook

- The handling of rides and hub management by the HitchHike logistics platform

- Future work has to focus on establishing transparency and trust between the plugged service providers

- Investigating dynamic scenario handling further, could allow the system to respond in a more granular way

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Thank you very much for your attention!

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