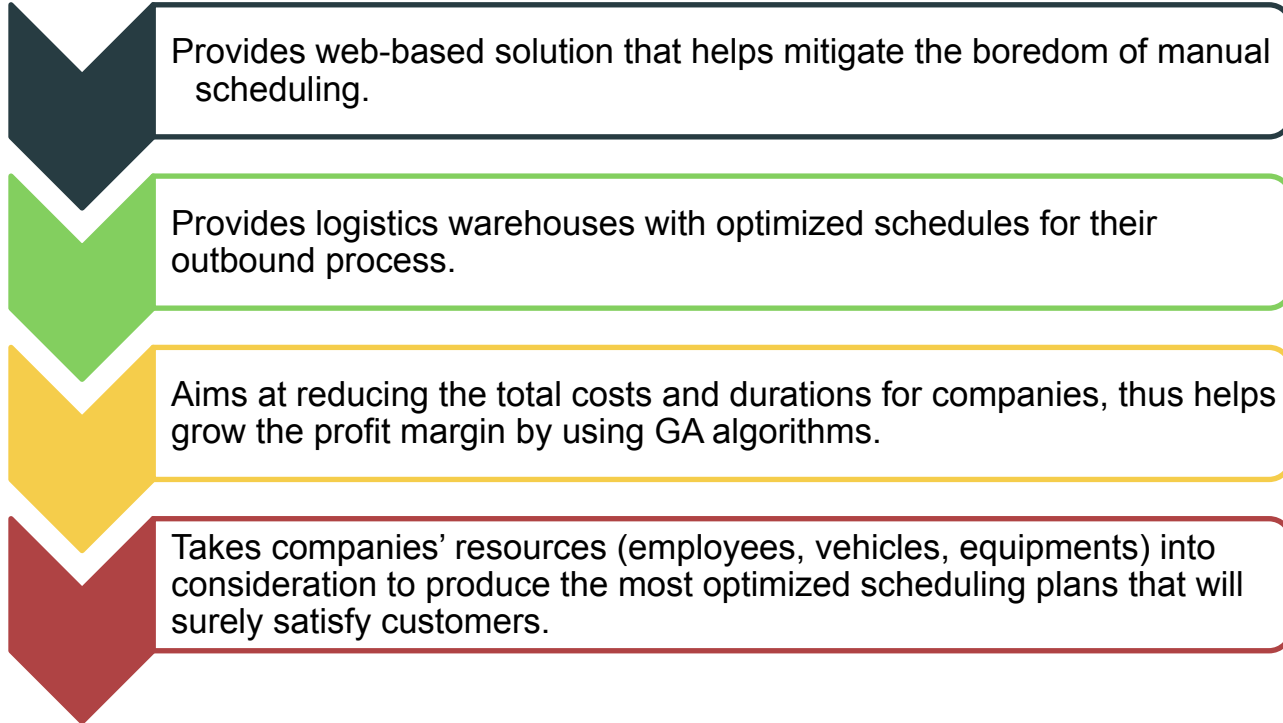


DX SCHEDULING

TECHFEST 2021
INNOVATIVE BUSINESS MODEL

DX-Scheduling



1. PROJECT'S NAME & COMPETITION TRACKS

Project's name: **DX Scheduling**

Competition tracks: Innovative Business Model

2. CORE TEAM MEMBERS PROFILE



Dr. Vu Thi Huong Giang
Team lead

Lecturer at
Hanoi University of Science
and Technology
Ideas and team management
Market planning

Year of birth:
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Tran Manh Cong
Team member

Graduate at
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Order Transportation
Optimization

Year of birth: 1998
Tel No.:
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Nguyen Thi Hong Anh
Team member

Undergraduate at
Hanoi University of Science
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Order Transportation
Optimization

Year of birth: 1999
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Email:
honganh3179@gmail.com



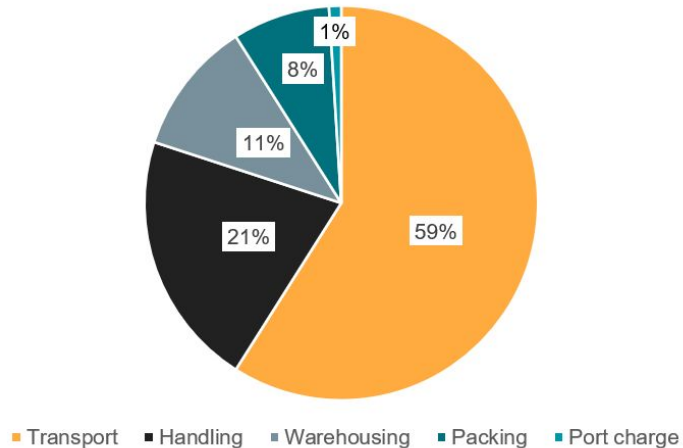
Le Hoang Anh Trung
Team member

Undergraduate at
Hanoi University of Science
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Order Transportation
Optimization

Year of birth: 1999
Tel No.: 0941067297
Email:
trung.lha100899@gmail.com

3. Context

Main components of logistics in Vietnam
(2014)



Overall logistics cost in Vietnam over GDP in 2018: 16.08% (1)

World's costs over GDP: 10.70% (2)

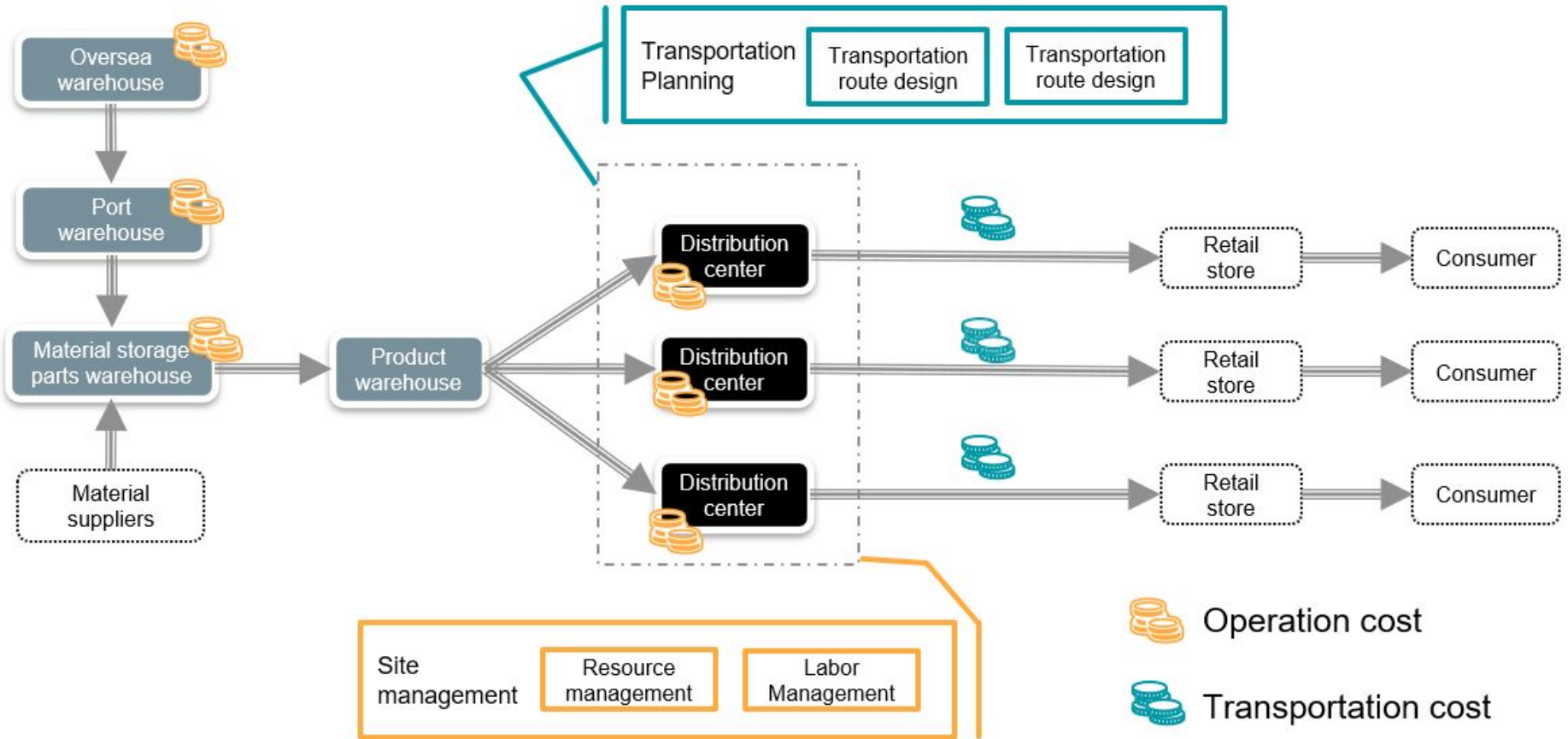
Logistics cost in Vietnam in 2014: transport- 59%, handling - 21%, warehouse- 8%.

Higher cost due to outdated machinery, technology.

(1) Vietnam Logistics Report 2020

(2) (Armstrong & Associate March 6, 2020)

3. Problem - Supply chain components



3. Problem and scope

Distribution center/warehouse costs include:

- **Handling:** labor, equipments
- **Storage**
- **Operations administration:** administrators, clerks, labors salaries
- **General administrative expenses:** Executive salaries

→ Scope: Work on the outbound process in the distribution center/warehouse, which include: Order selection and transportation

→ Approach:

- ◆ Focus on the optimization of resources (in terms of employees' salaries in the warehouse)
- ◆ Use flexible workforce rather than full-time employees

Transportation costs include:

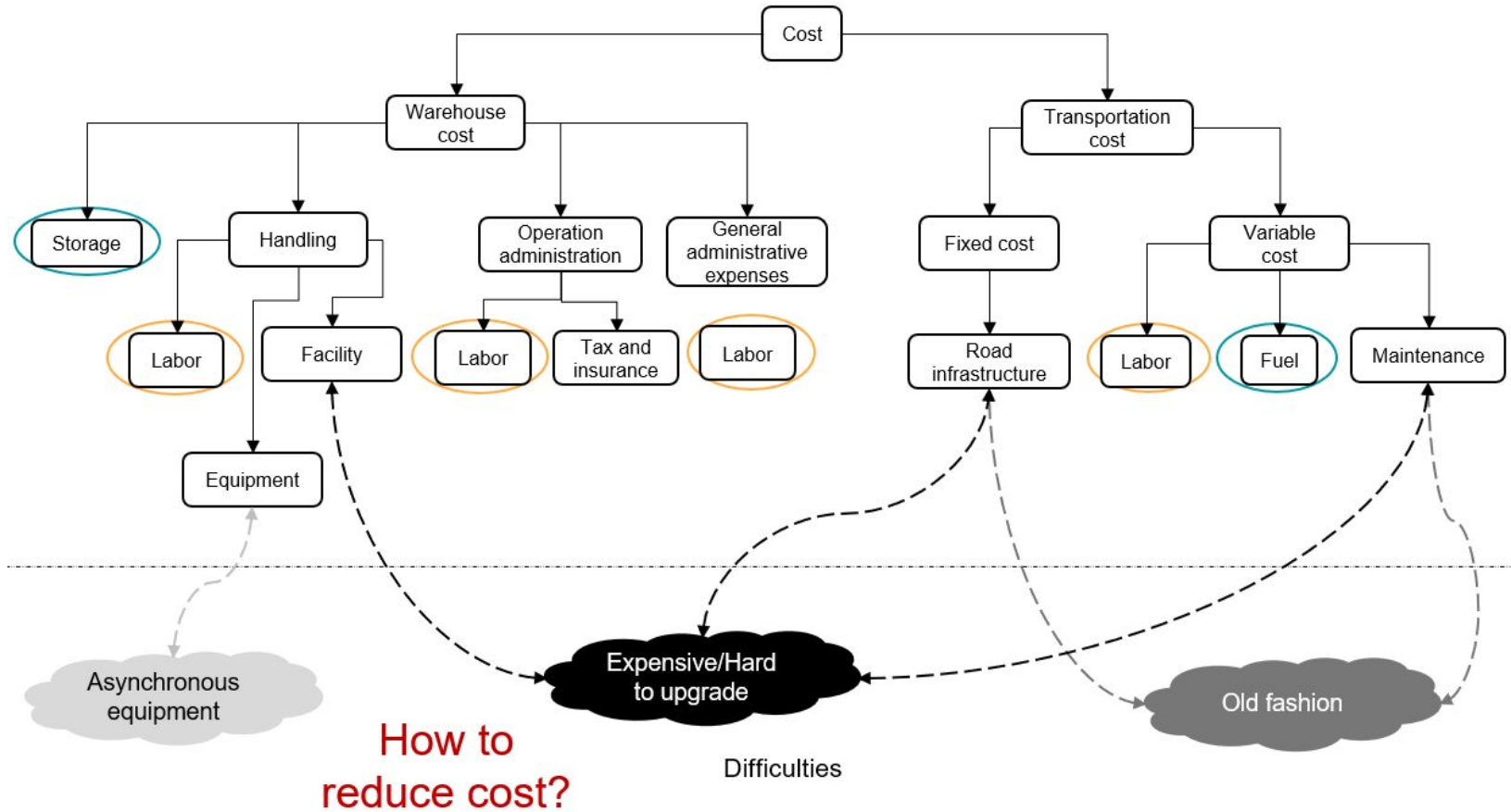
- **Fixed costs:** Road infrastructure
- **Variable costs:** Maintenance, Labor, Fuel

→ Approach: Reduce transportation costs by reducing variable costs, especially labor and fuel.

→ Labor wage is time-related whereas fuel is distance-related.

→ The goal is to transport as many orders as possible within the shortest time and distance and cost the least.

3. Problem - Difficulty



3. Solution

Reduce total costs by focusing on the following costs:

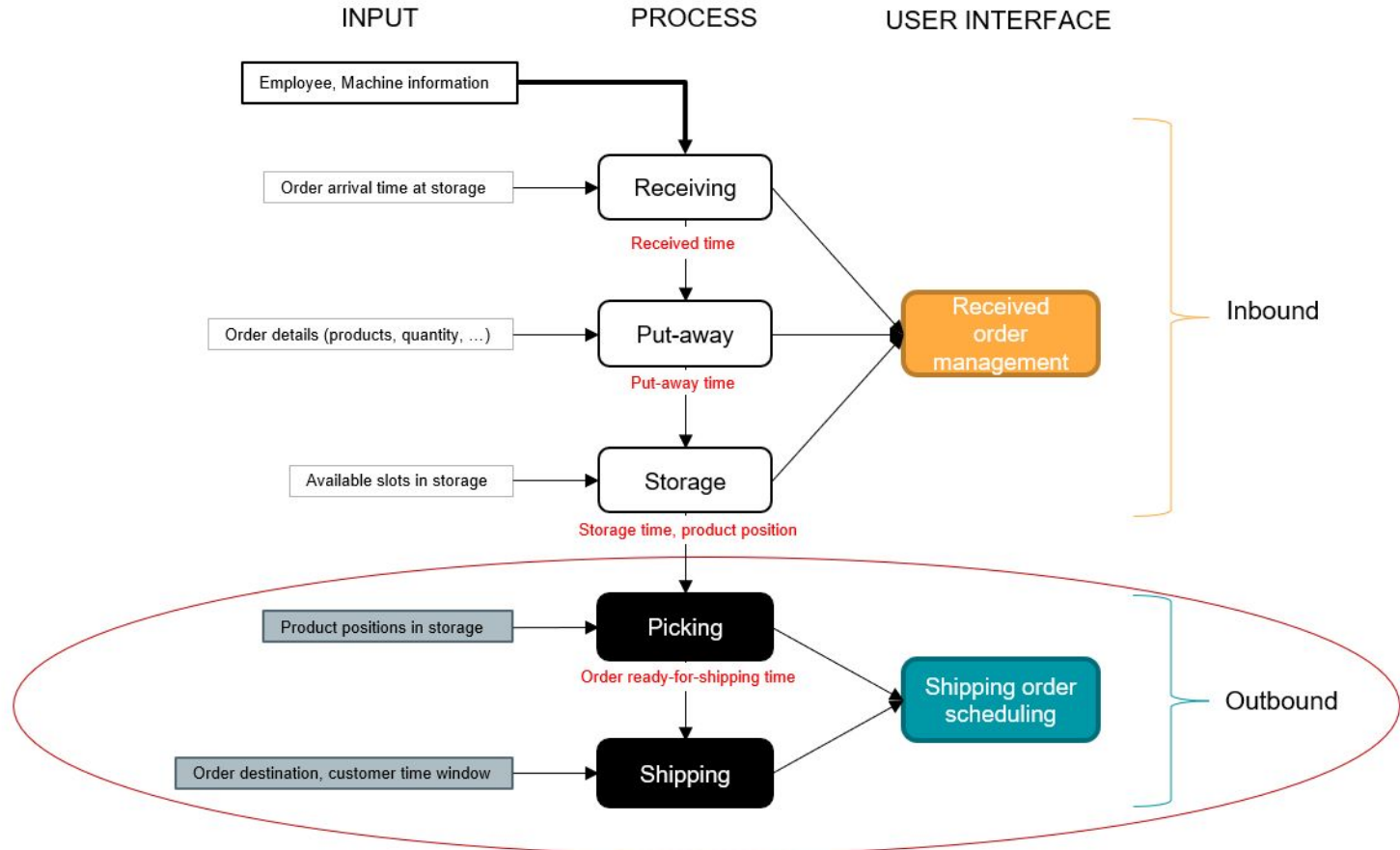
- Warehouse costs:
 - Storage
 - Labor expenses
- Transportation costs:
 - Fuel
 - Labor expenses

Approach:

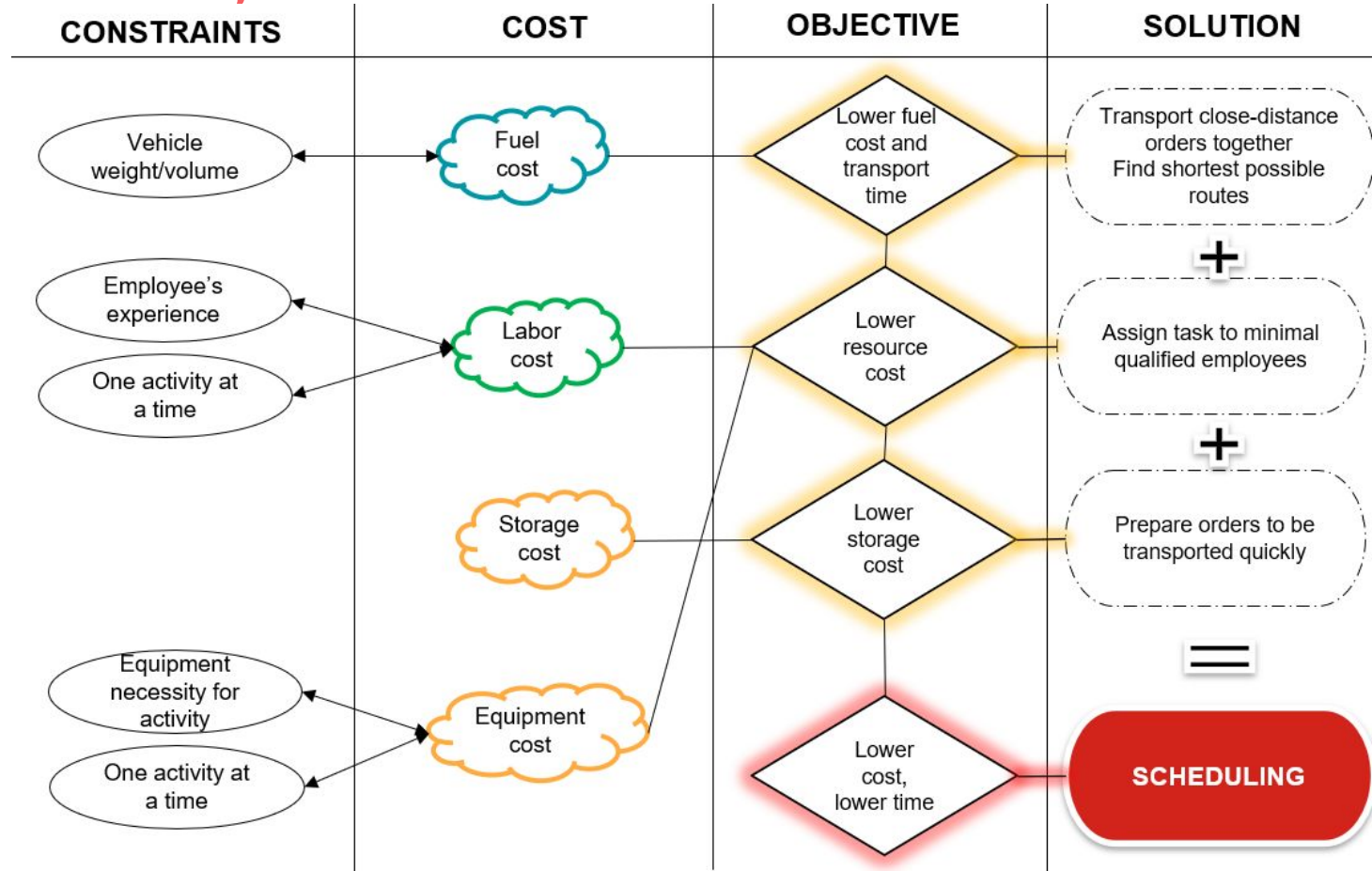
- *Labor expense*: Reduced by assigning tasks to minimal qualified employees
- *Fuel*: Allocate equipments efficiently, find the shortest routes for transportation
- *Storage*: Store incoming orders and prepare orders for transportation efficiently

→ Cost optimization problem can be solved by scheduling

3. Solution - Focus on outbound process



3. Solution - Objective



3. Solution - Algorithm

Scheduling:

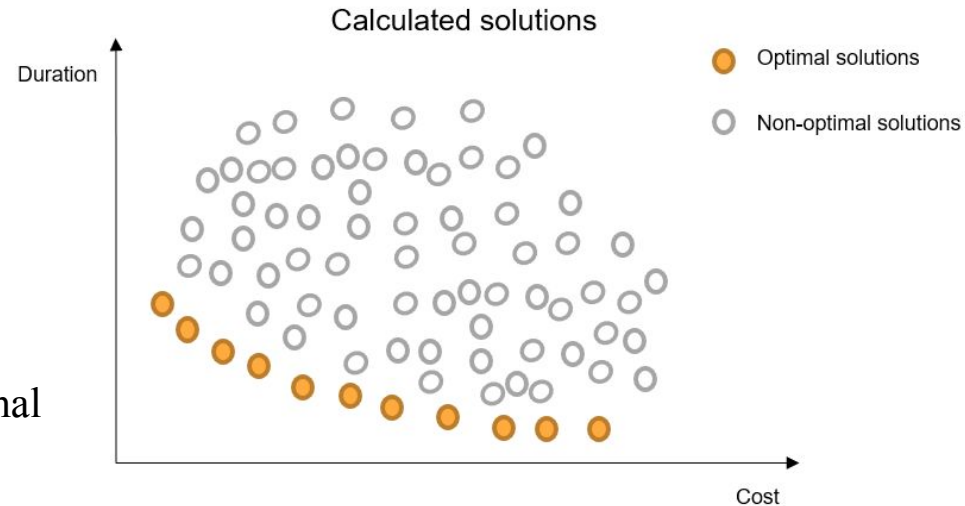
- Find all possible solutions that satisfy the defined constraints and reach the expected objectives (lower cost and lower time)

→ Multi-objective problem

→ Require multi-objective algorithms ~ NSGA-II

- NSGA-II plays as the core logic to find optimal solutions that can solve the problem.

→ Develop an application that fetches user's input and uses this algorithm to calculate the outputs.



4. PRODUCT / SERVICE

Help customer find the optimal scheduling scheme for inventory / transportation processes

→ **Minimize operation costs and total duration.**

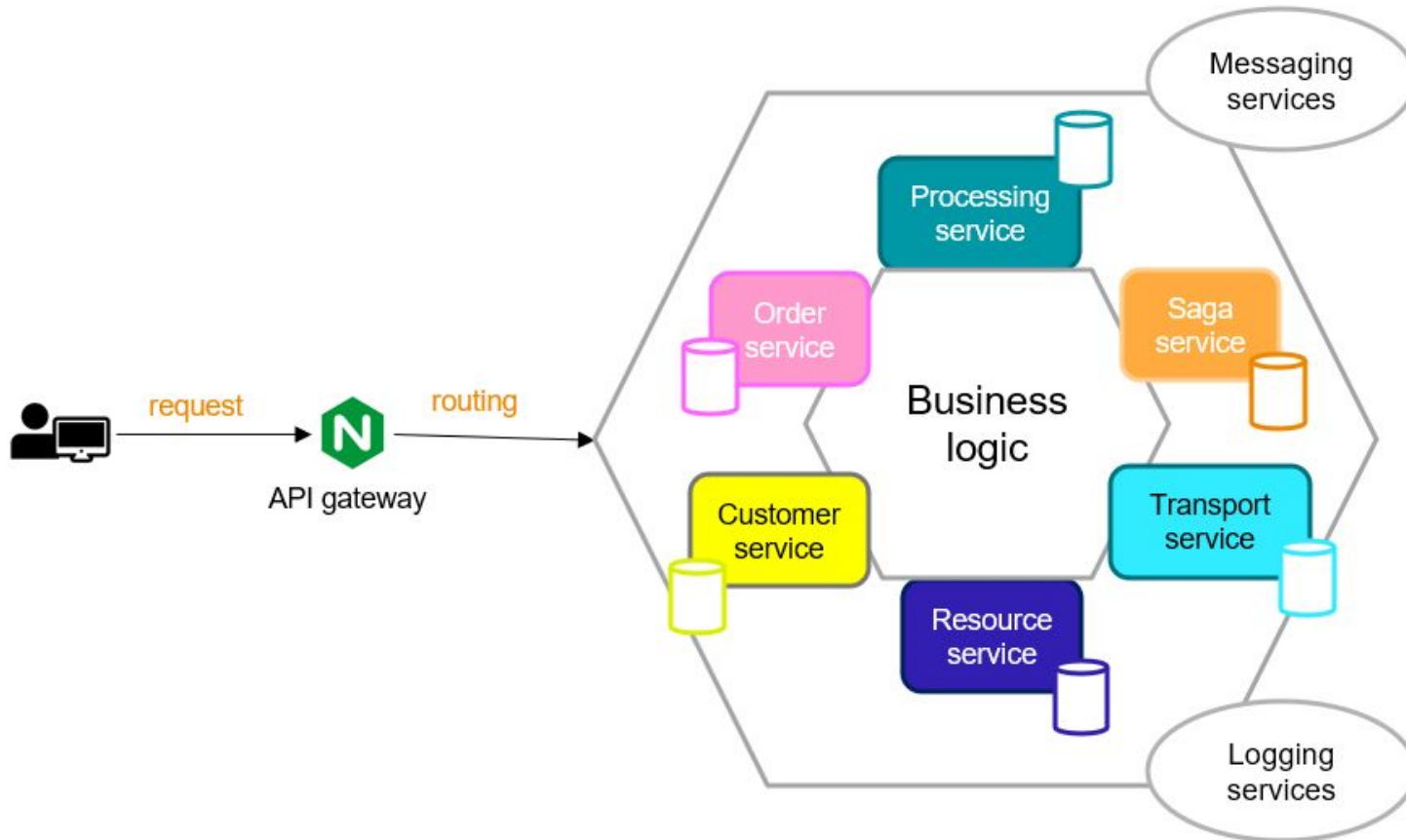
Main services:

- Scheduling for warehouse handling
- Scheduling for transportation

Constraints:

- Resource ability (employees, machine, vehicles)
- Customers' time window

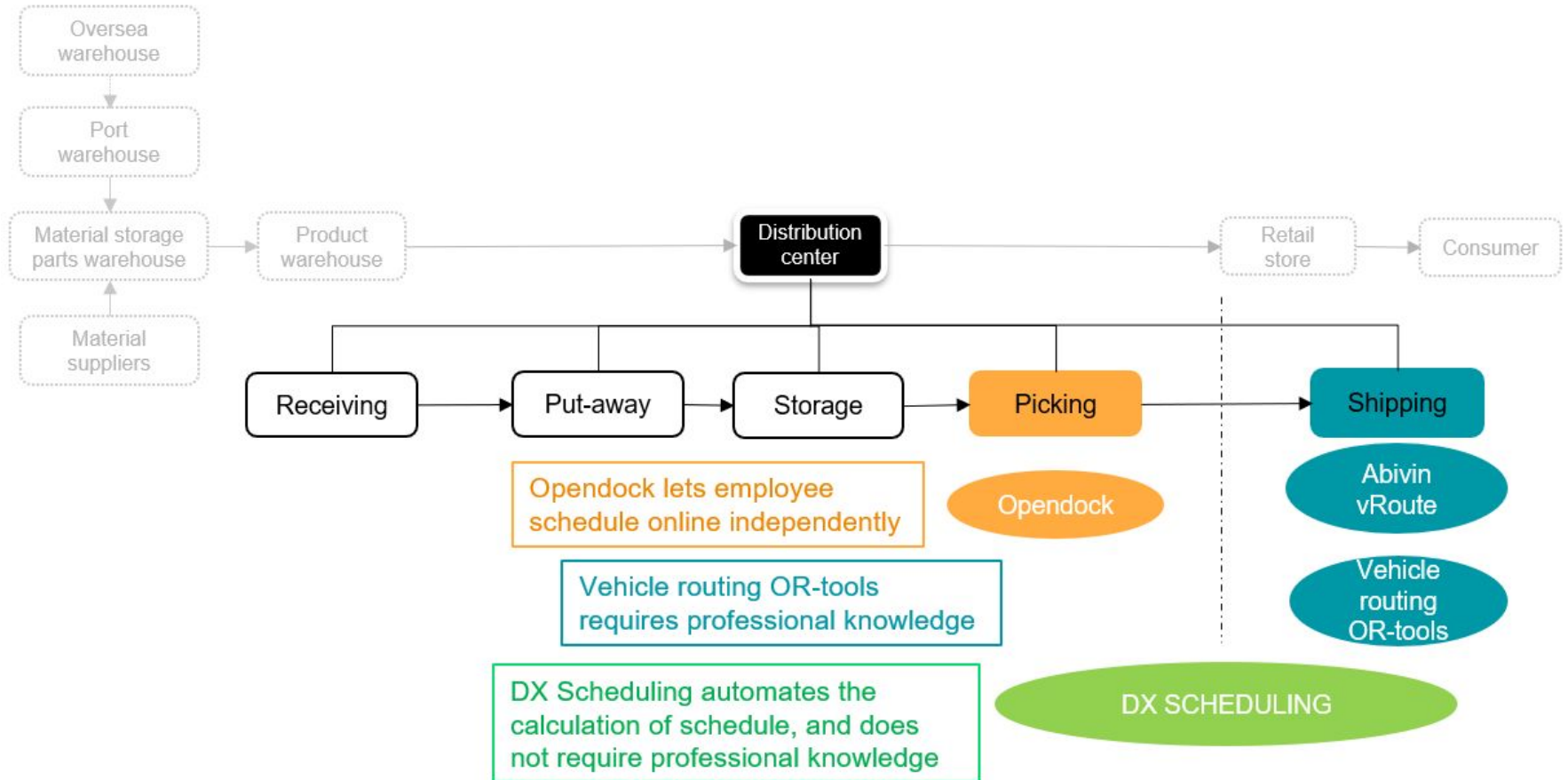
Detailed description



5. MARKET OVERVIEW AND COMPETITORS (1)

		Strength	Weakness	How it reduces costs
Processing phase	<u>Opendock</u>	Let employee schedule online independently	No automatic recommendation for scheduling	Online schedule booking instead of working at the company
Transportation phase	Vehicle Routing OR-Tools	Opensource, suitable for application development	Require professional background to implement	Calculate the shortest paths to reach the destination

5. MARKET OVERVIEW AND COMPETITORS



6. TARGET CUSTOMERS

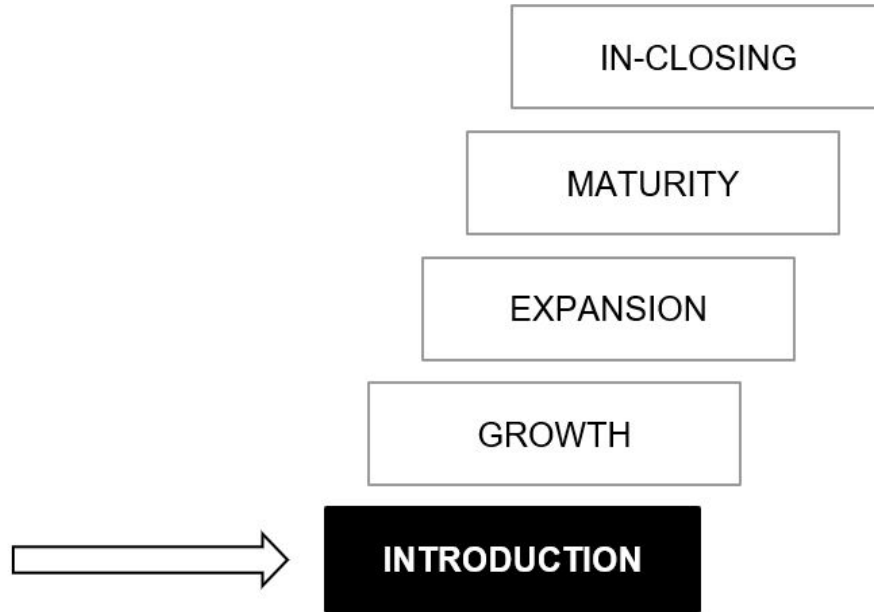
The target customers are small/medium companies that:

- Offer warehouse rental service and/or transportation service
- Manually schedule outbound process of orders
 - Order arrangement: manually assign employees to orders and tasks
 - Order transportation: merge orders on same truck without specific journeys
- Own different scheduling application for order preparation and transportation, thus lack of cohesion between the two process. Data migration between the applications is also burdensome.
- Yearn for efficiency boost through development and process planning.

7. COMPETITIVE ADVANTAGE

- Consideration for more practical constraints: employees, vehicles, customer's time window and destination, types of goods
- Increase cohesion between order preparation and transportation in the outbound process, increase work efficiency by 10%, decrease delay time between the two steps when scheduling by 10%

8. CURRENT BUSINESS STAGE



9. BUDGET AND/OR FINANCIAL STATUS

Investment plan

- Missions:
 - Market analysis
 - Product development:
 - Client-server side development
 - Testing and Integrating
 - Business planning:
 - Customer analysis
 - Product customization according to requests
 - Product tuning:
 - Tuning according to business analysis
 - Marketing plan
- Tactics:
 - Equity: 30%
 - Mobilized: 70%

Investment plan - Fundings

- Fundings:
 - Market analysis ~ 20%:
 - Product development ~30% :
 - Client-server side development ~20%
 - Testing and Integrating ~ 50%
 - Refining ~ 30%
 - Business planning ~ 30%:
 - Customer analysis ~50%
 - Product customization according to requests ~ 50%
 - Marketing plan ~ 20%

DELIVERABLES AND TIMELINE

Deliverables	Timeline
Market research and analysis	01/03/2021 - 31/05/2021
Software	01/06/2021 - 31/10/2021
Set up business plan	01/11/2021 - 31/01/2022
Product tuning	01/02/2022 - 31/05/2022
Set up marketing plan	01/06/2021 - 30/08/2022

10. PRODUCT IMAGE

Scenario 1: Check inbound orders, create new orders

- Check schedule's details, products, etc...

Scenario 2: Check outbound orders, create schedules:

- Processing schedule
- Transportation schedule

Click [here](#) to be redirected to our demo video.

11. BUSINESS LICENSE SCAN / PHOTO

SỞ KẾ HOẠCH VÀ ĐẦU TƯ
THÀNH PHỐ HÀ NỘI
PHÒNG ĐĂNG KÝ KINH DOANH

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

GIẤY CHỨNG NHẬN ĐĂNG KÝ DOANH NGHIỆP CÔNG TY CỔ PHẦN

Mã số doanh nghiệp: 0106340461

Đăng ký lần đầu: ngày 21 tháng 10 năm 2013

Đăng ký thay đổi lần thứ: 7, ngày 26 tháng 03 năm 2018

1. Tên công ty

Tên công ty viết bằng tiếng Việt: CÔNG TY CỔ PHẦN CÔNG NGHỆ AN TOÀN THÔNG TIN VÀ TRUYỀN THÔNG VIỆT NAM

Tên công ty viết bằng tiếng nước ngoài: VIET NAM INFORMATION AND COMMUNICATION SECURITY TECHNOLOGY JOINT STOCK COMPANY

Tên công ty viết tắt: VNIST., JSC

2. Địa chỉ trụ sở chính

Số 7D, ngách 378/39 Thụy Khuê, Phường Bưởi, Quận Tây Hồ, Thành phố Hà Nội, Việt Nam

Điện thoại: 02436230658

Email:

Fax:

Website:

3. Vốn điều lệ

Vốn điều lệ: 1.800.000.000 đồng

Bằng chữ: Một tỷ tám trăm triệu đồng

Mệnh giá cổ phần: 10.000 đồng

Tổng số cổ phần: 180.000

4. Người đại diện theo pháp luật của công ty

* Họ và tên: NGÔ HUY HOÀNG

Giới tính: Nam

Chức danh: Giám đốc

Sinh ngày: 31/10/1982

Dân tộc: Kinh

Quốc tịch: Việt Nam

Loại giấy tờ chứng thực cá nhân: Chứng minh nhân dân

Số giấy chứng thực cá nhân: 012030873

Ngày cấp: 23/07/2012

Nơi cấp: Công an thành phố Hà Nội

Nơi đăng ký hệ khẩu thường trú: Số 57 Hàm Long, Phường Hàng Bài, Quận Hoàn

Kiểm, Thành phố Hà Nội, Việt Nam

Chỗ ở hiện tại: Số 28 Quán Thánh, Phường Quán Thánh, Quận Ba Đình, Thành phố Hà Nội, Việt Nam



TRƯỞNG PHÒNG

PHÓ TRƯỞNG PHÒNG

Bs. Hồng Hạnh

12. COMPANY CONTACT

Full name: Vũ Thị Hương Giang

Company: Vietnam Information and
Communication Security Technology Joint
Stock Company

Email: office@vnist.vn

Position: Technical Consultant

Phone number: 0918454155

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