# ■ Risks of Construction Industry



#### The age of construction workers tends to slip

Fewer young construction workers are at odds with the country's need to build a bigger construction workforce.



#### The rise of service industry

Young people are more inclined to choose short and fast industries such as express delivery.



The epidemic has had a huge negative impact huge negative impact

Hiring is more of a problem.



#### The construction industry is in a downward cycle

The construction industry is cyclical, it's going down, it looks like it's in decline, but some of it is on the rise (rural construction, for example) and there may be some turnover.

# ■ When we try to interview young workers...



Young workers are really getting scarcer...



Construction workers in their 30s and 50s occupy the majority of the construction sites, while those in their early 20s and 50s are rare.

Young people, as "future Shifu", face a group crisis. So we concern about this group, in sociology, they are called the new generation of migrant workers. For the new generation of migrant workers who have entered the construction industry, the lack of professional sense of belonging becomes the biggest hindrance to their career development.



# Analysis of Group Characteristics





of migrant workers

# Age

Born after 1960 Born after 1980

#### Dress

Usually dressed as workers

Usually dressed as city youth

#### **Family Background**

Last generation were farmers

Last generation were migrant workers

#### **Financial Situation**

Living in poverty

Don't need to worry about food and clothing

#### Job Purpose

Just to survive, achieve economic goals

More for better development of the individual, the economic motivation has weakened

#### **Job Category**

Most are construction workers

Various job options

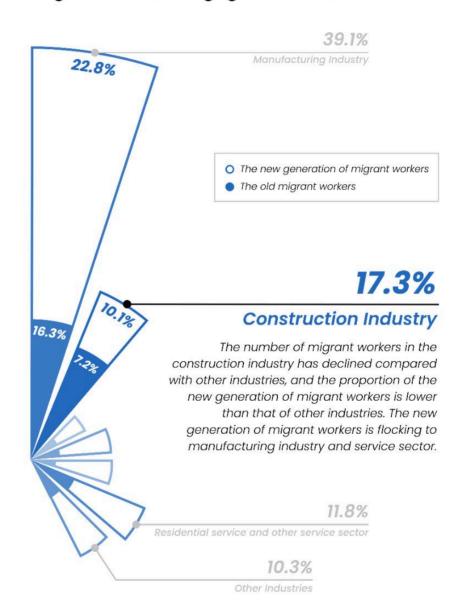
#### Sense of Identity

They think their hometown is still in the countryside and don't want to stay in the city for a long time

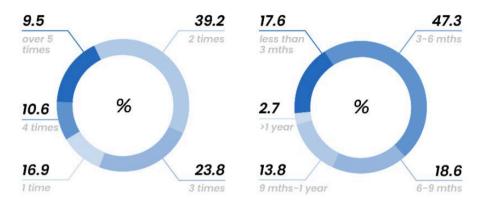
They consider themselves commuters and want to be urbanites

# Comparative Study and findings

# The proportion of different generations of migrant workers engaged in industries



# Migration times and Migration frequency of the new generation of migrant workers



The old generation of migrant workers usually moves between urban and rural areas. but we found that the flow experience of the new generation of migrant workers is extremely rich and complex in the desktop research.



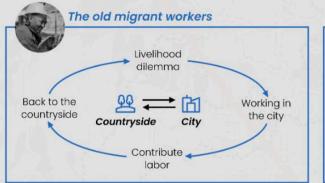
"Frequent migration is one of the important differences between the two generations of migrant workers."

# ■ The Spatial and Social Mobility

"Mobility is the basic living condition of the new generation of migrant workers."

The key word of workers is **wandering**. They move back and forth between urban and rural areas, and change jobs in different cities and between different factories.

### Layer 1: Mobility of Territory



The cycle of life trajectory

The new generation of migrant workers

Developing the career

Upgrading skills

Disengagement and Integration

The upward life trajectory

They attach to the land and unwilling to move and settle in their former social class.

They get rid off the land and be eager to break out of pre-determined social classes.

The new generation of migrant workers want to move up the social ladder and actively change their lifestyles to integrate into urban life. But for a variety of reasons, they are caught between a rock and a hard place.



### Layer 2: Mobility of Occupation

The second layer of mobility refers to the mobility of occupation, which is actually a kind of "horizontal mobility", which is reflected in frequent job and career changes. We interviewed two of the new generation of migrant workers born in the 1980s, who are typical representatives of two types of Mobility of Occupation.

#### Interview 1 - Horizontal mobility across industries



Ying Jin

Age

38

Occupation

Electrician

"I changed jobs 3-5 times and felt I had very few employable skills before becoming an electrician. But I want to get a good development when I am young so I often look for new job opportunities."



Interview 2 - Vertical mobility in the construction industry



and became a salesperson

Sujun Yang

Age
42

Occupation

Project Manager

manufacturing factory

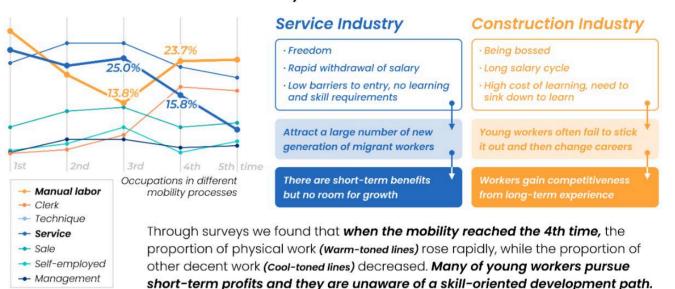
"I have been working in the same industry since I entered. While enhancing my craft, I use my spare time to improve myself. Now I become a project manager."

friend's introduction



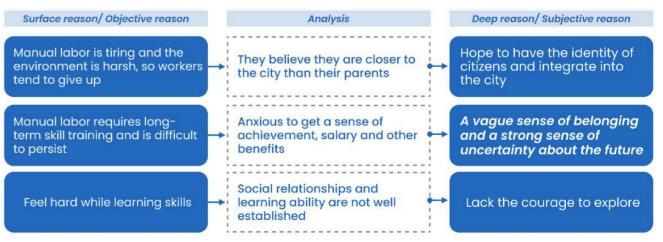
# Career Analysis

#### The Reason of Horizontal Mobility



#### Paradox Question

How can we help them **explore the upward movement behind the skills-based development**, so that **they can achieve vertical upward mobility?** 



# Persona

# The influence of workers' occupational identity on their job engagement



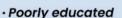
# Personas of the new generation of migrant workers

#### **Construction Worker**

- · Born after 90s
- · High school graduate
- Just enter the construction industry. is in the career exploration period
- Higher lever of education and pursuit
- Lower level of mental health
- Ambiguity of professional identity

#### **Foreman**





· Work on site for a long time and supervise other workers

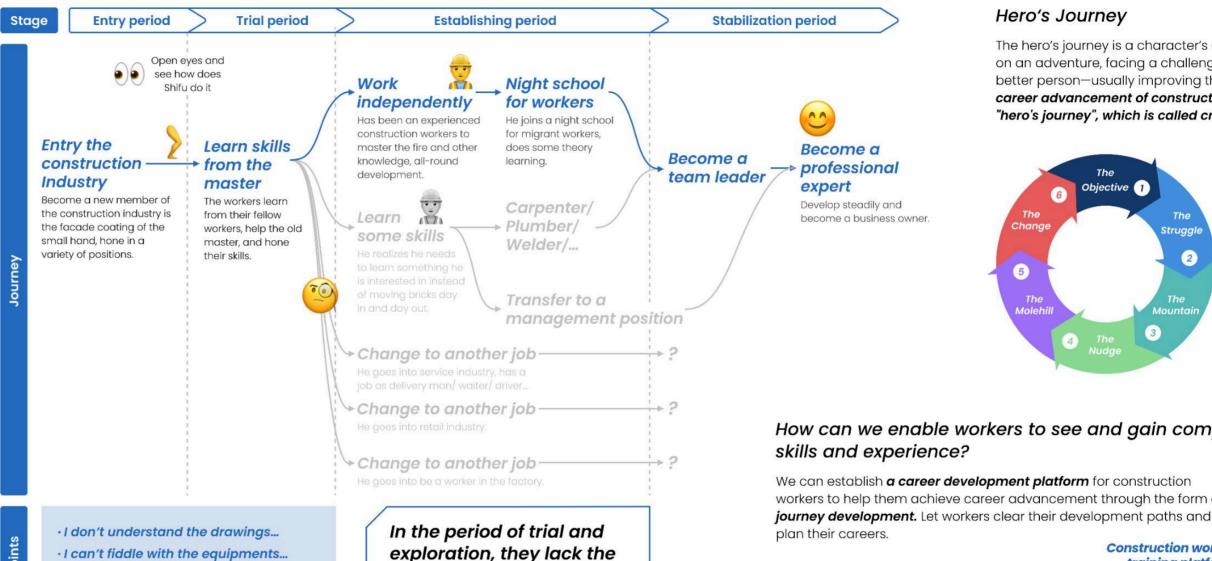
- · Lack of efficient management of workers
  - Limited overall control of the project
  - Communication problems with workers
- Difficulties in social integration

# Career advancement

· I don't know what to do and how to do... •

· I don't want to learn anymore...

· Should I try another kind of work?



sense of belonging so they

various uncertain mobility.

were confused about

# Design Concept

The hero's journey is a character's evolution. It is their process of embarking on an adventure, facing a challenge, and overcoming it to become a better person—usually improving the greater good along the way too. The career advancement of construction workers can also be regarded as a "hero's journey", which is called craftsperson journey by us.

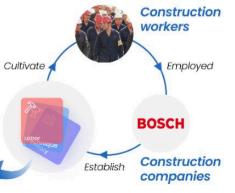


# How can we enable workers to see and gain competitiveness from long-term

workers to help them achieve career advancement through the form of

#### **Construction worker** training platform

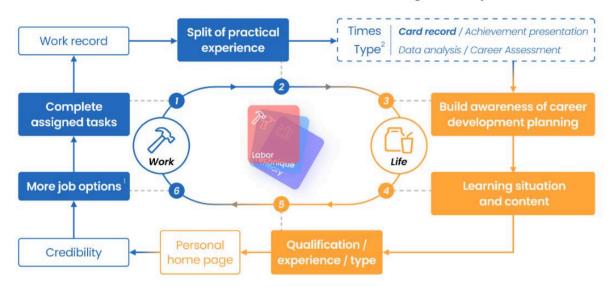
By labeling assignments and skill types, Help the industry to improve the vocational skills system, nurture construction workers.



### Main Functions

# Closed-loop Thinking

The digital platform helps workers form a closed-loop thinking of development planning, which connects **work on construction sites** with **further learning in their spare time**.



<sup>1</sup> More job options Promotion / Job hopping / Transformation / ...

<sup>2</sup>Type Labor / Technique / Theory

### Study Cards and Assignment Cards

Based on the survey of construction workers' work content, we have summarized three types of skills: Labor, Technique, and Theory. Each study card or assignment card corresponds to a skill type, and the completion status will be used as an evaluation reference for the corresponding skill.



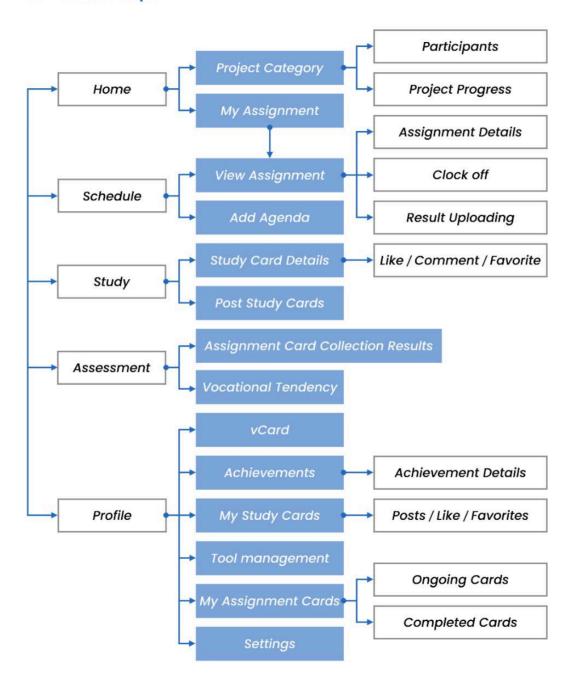
### Technique Card

Labor with a certain technical content

### **Theory Card**



# Sitemap



### Wireframes



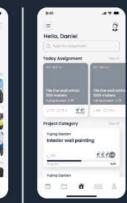
# ■ User Interface Design

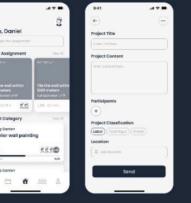


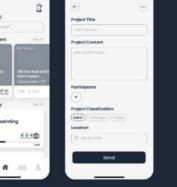










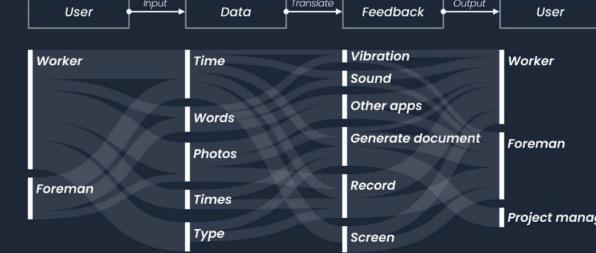




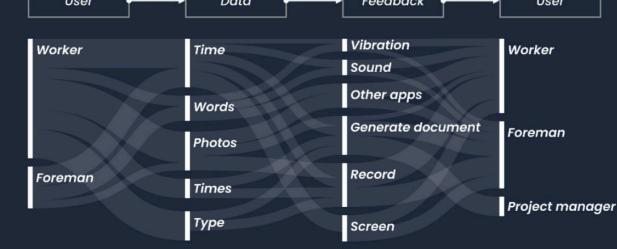
# Technical Architecture

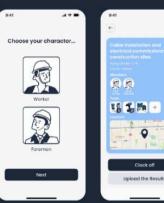
Interaction Flow

platform to help us design better. The user inputs data in different presentation forms. The data translated by the system is output to the user through various feedback channels.



We sorted out the input and output of information and feedback between users and the













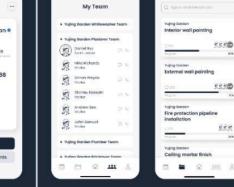












For Workers **◆ ▶** For Foremen

# Design Validation

#### Four Main Goals

Assess App experience for any usability issues.

**Check** if there is anything missing users would like to see.

**Determine** which design features are most important to include within the prototype. How can we prioritize what to focus on first?

Understand current painpoints users face when trying to use this App in their job.

#### **Usability Test and Heat Maps**





We create prototypes in Figma and embed the flows directly in *UsabilityHub* tests for quick feedback from workers.

We also use heat maps in neurons to record the attention of key information, which will serve as a reference for the subsequent optimization of information distribution.



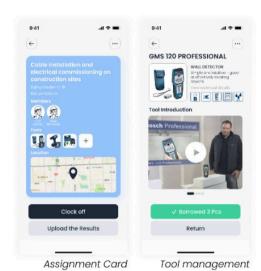




# ■ Specialized Function for BOSCH

### **Asset Management**

As a project partner and tool provider, how Bosch conducts project asset management is an important issue. Under the suggestion of Bosch, we specially added the project-based asset management function to facilitate the overall management of projects, personnel and assets.



#### Before work



#### Foreman

#### Worker

#### Warehouse

Clock off

- ware
- Publish assignments and tools lending permission
- 2 Borrow and return tools with the certificate on the app
- 3 Display tool usage information (Bluetooth)

#### After work



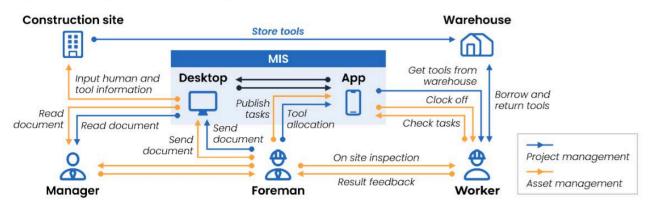
#### Take photos

#### Warehouse



- Take a photo and upload work results
- 2 Check that tools have been returned

### System Map about Assignment



### Business Model

#### Stakeholder Map

### The new generation of migrant workers

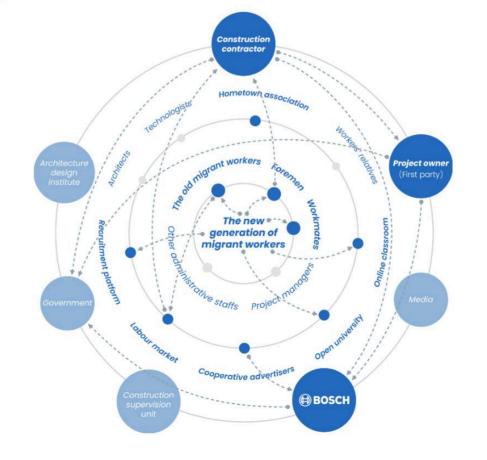
Record achievements and provide career assessment feedback, **establish** a traceable career path, and help establish self-planning awareness.

#### Construction contractor

**Strengthen the digitalization of construction site management** to improve efficiency, cultivate outstanding talents and improve employee well-being.

### Robert Bosch GmbH | BOSCH

Increase product exposure in a targeted manner, *establish a partner brand*, and enhance brand influence.



### Service and Eco-system



The platform forms an Eco-system by providing different types of services to multiple parties. The platform connects the construction contractor to the workers, better assists in the dismantling, distribution and acceptance of project assignments, and greatly improves the efficiency of construction site operations. The platform also aim at improving workers' career development and social recognition.

#### Future Blueprint

