

designing a sorting device for Mirakle Couriers



Prof. Athvankar

Vinish janardhanan

industrial design

08613003

- device for sorting
- fast and efficient delivery system
- a well engineered system can increase productivity, maximize efficiency and streamline the workflow.
- my objective in this project is to provide a compact furniture for sorting, ideally designed for limited spaces and easy adaptability to ensure an efficient processing of mails
- and customizing it for the special needs of Mirakle Couriers



- courier company with a difference, employ only deaf adults
- not a charity but a social business
- founder & CEO, Dhruv Lakra
- started in November 2008

why deaf?

- highest deaf populations in the world
- 'invisible' in India!
- not part of a productive labor force - disability, skewed education and low-income status
- suffers from seclusion and constant discrimination
- meaningful and sustainable employment opportunity for low-income deaf adults in India, thereby increasing their standard of living and making them economically independent



working the mirakle

- november 2008
- located at Churchgate and a new branch is to open at Andheri East
- area space at the main office is around 12sq.mt
- a total strength of 45 boys and girls
- one day delivery system
- service areas
- modes of travelling - local buses and trains for long distances and by foot for shorter distances
- clients include Mahindra & Mahindra, The Aditya Birla Group Victory Art Foundation, JSW Group, Indian Hotels Company, etc.
- trust issue
- other courier companies

mirakle workers

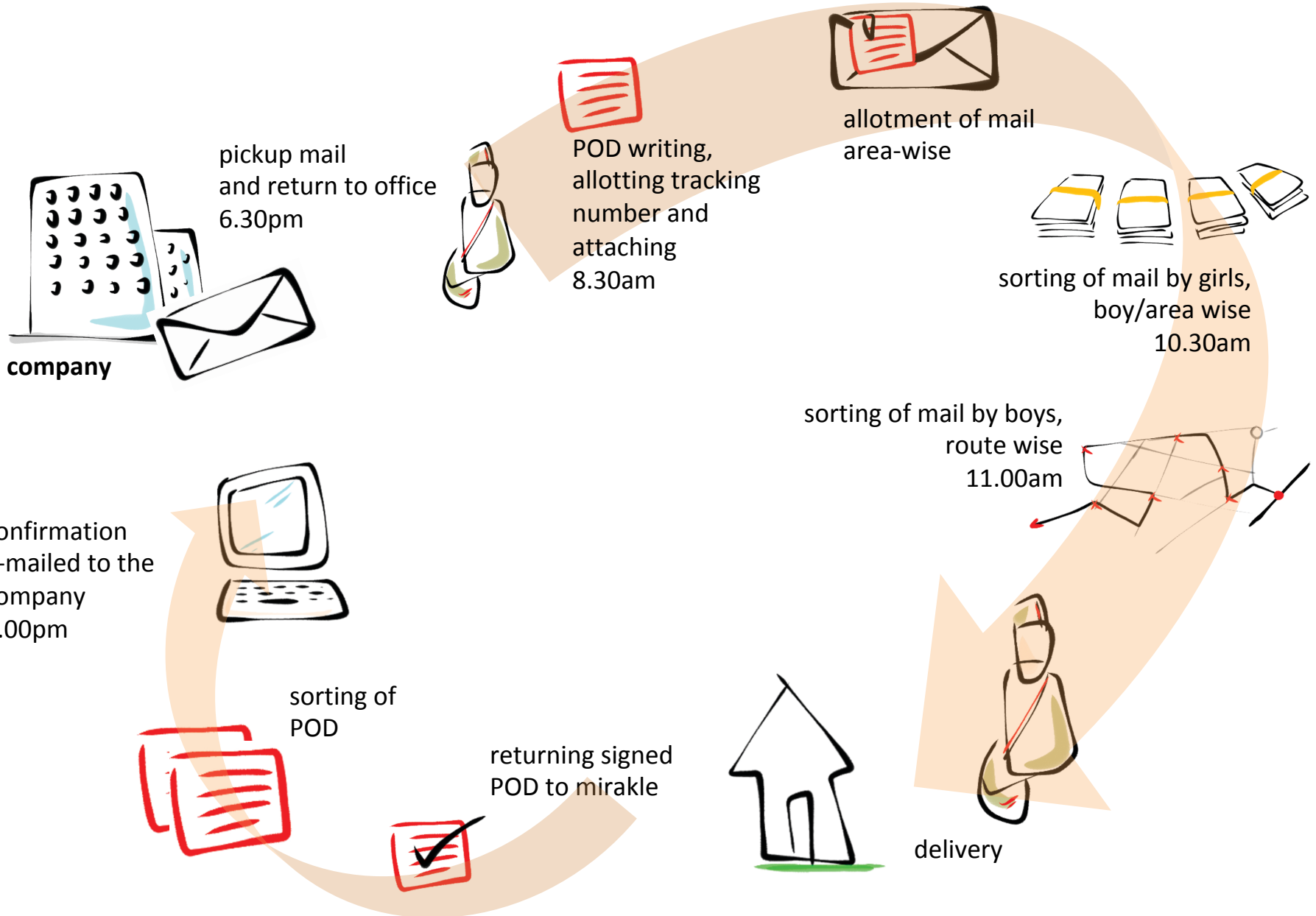
- a total strength of 45 ; 20 girls and 25 boys
- employees are underprivileged deaf boys and girls, 20-30 years of age
- boys go out to pick-up and deliver mail
- girls remain at the office for sorting, documentation and accounting
- Computers for accounting, documentation and updating mail status
- communicate by Indian sign language (ISL) and read lips.
- SMS
- not equally educated - reading cursive handwriting, simple multiplication ($2 \times 3 = ?$)
- lack in confidence



data collection and analysis

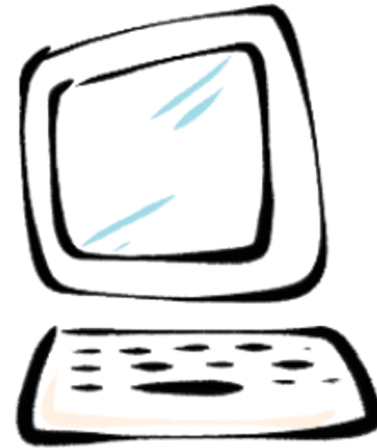
working of mirakle

- **Area** covered
Western Suburbs - From Churchgate to **Borivali**
Central Suburbs - From Victoria Terminus to **Mulund**
Harbour Line - From Victoria Terminus to **Mankurd**
- **clients**- corporate companies
- one-pick up daily
- Next Day delivery procedure
- Analyzing their work...



plans

- incorporating computers - 1 month
 - data entry
 - mail serial number
 - literacy factor
 - receipt
 - data
 - eliminating POD
- new branch at Dadar – 2010



working the mirakle

other systems

incorporating ideas

iit internal mail

Picked up and
delivery of mails by
respective office
boy



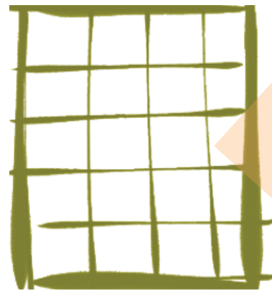
uploading data



stamping



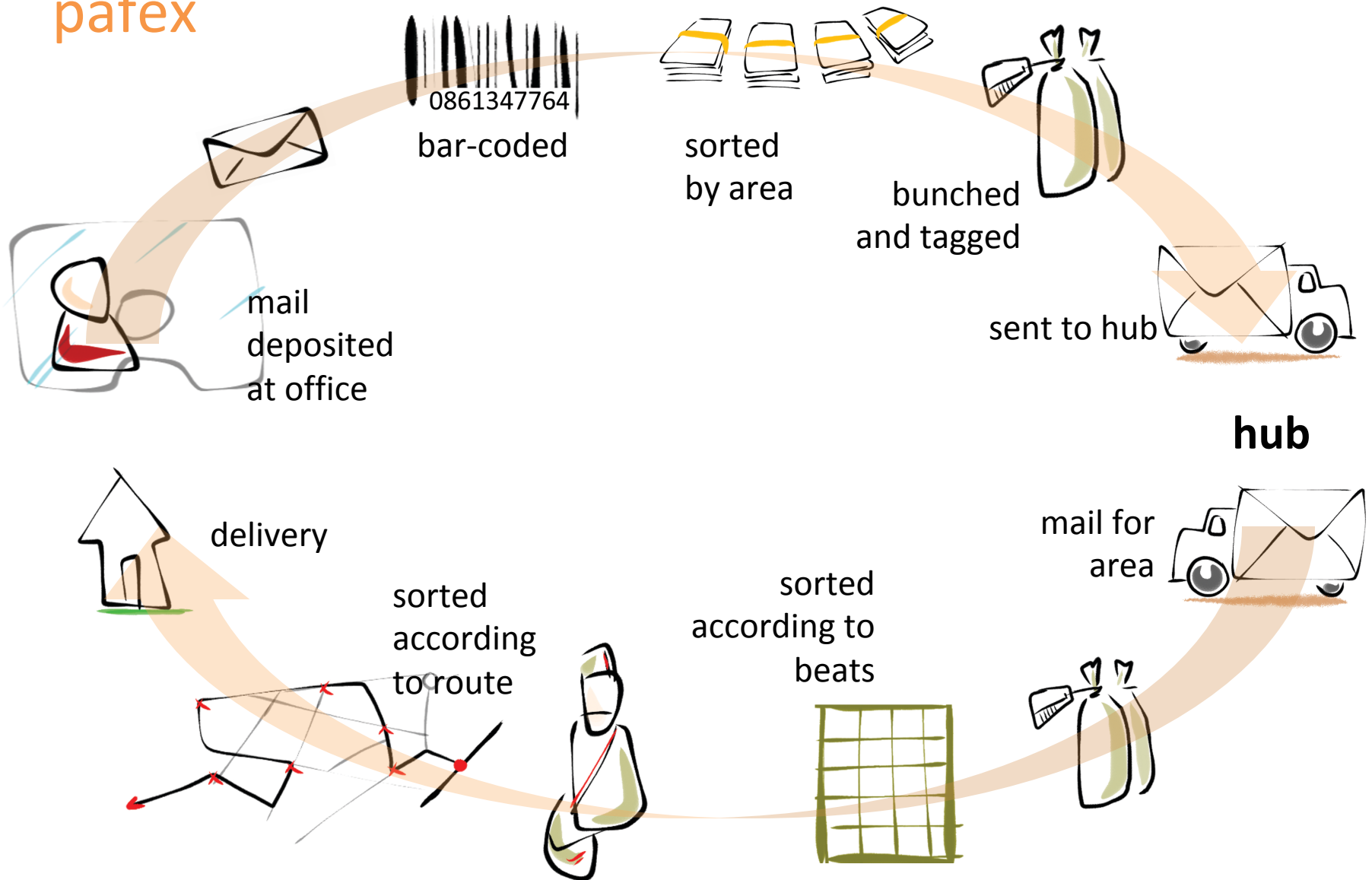
sorting



internal mail

external mail

india post/ pafex



dabba service

- **colour and number code** gives information of pick-up point to destination to be delivered

- **decoding**

VP: Vile Parle

9EX12: Code for Dabbawalas at destination

EX: Express towers (building name)

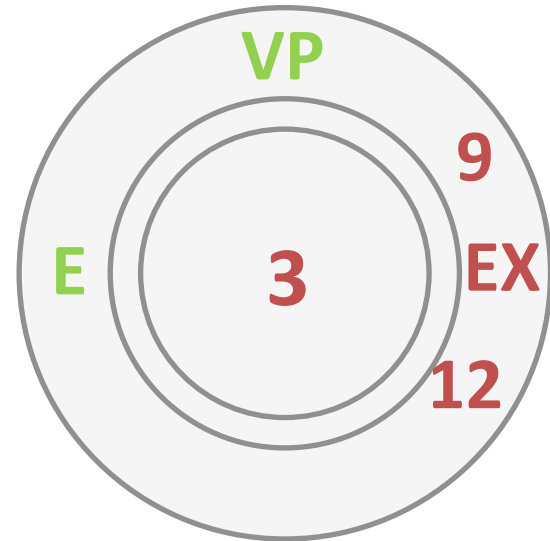
12: Floor number

E: Code for Dabbawala at residential station

3: Code for destination station (Nariman point)

- **colour coding** for stations

Grant road , Church Gate, Lower parel



analysis

data

diachronic analysis

- 20th century, by hand - **pigeon-hole message box** *Fig.A*
- April 10, 1957 , **semiautomatic sorting machine** by ups *Fig.B*
- 1965, high-speed **OCR** (optical character reader)
- 1980, UPS, **postnet** (postal numeric encoding technique)



fig.A

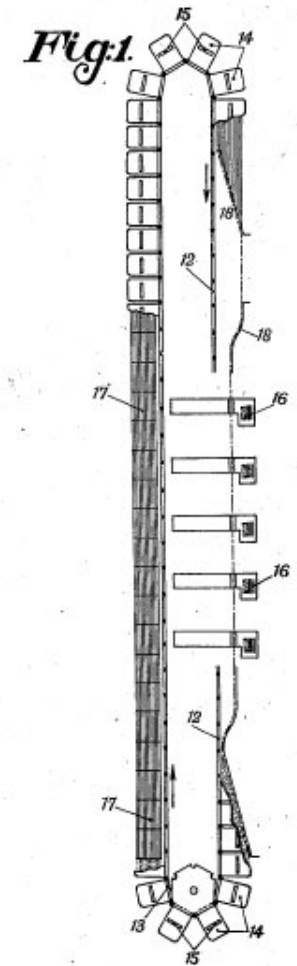


fig.B

synchronic analysis

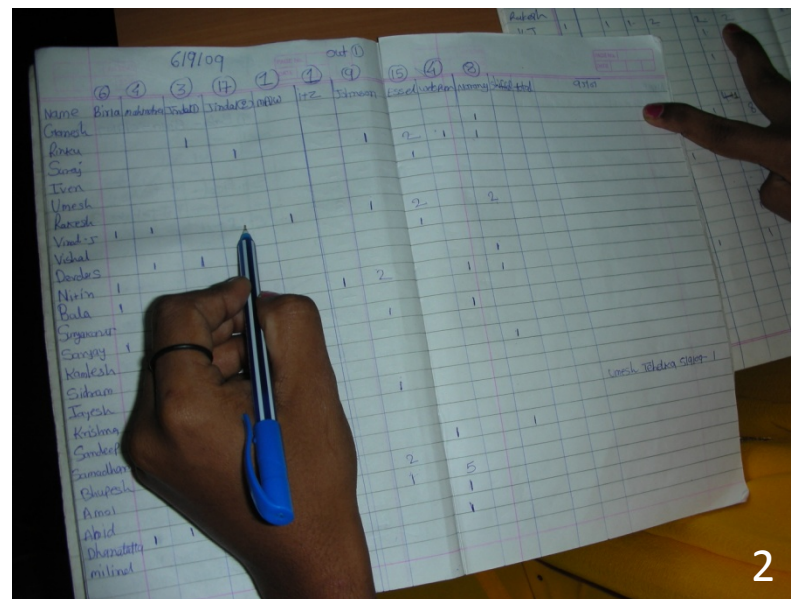
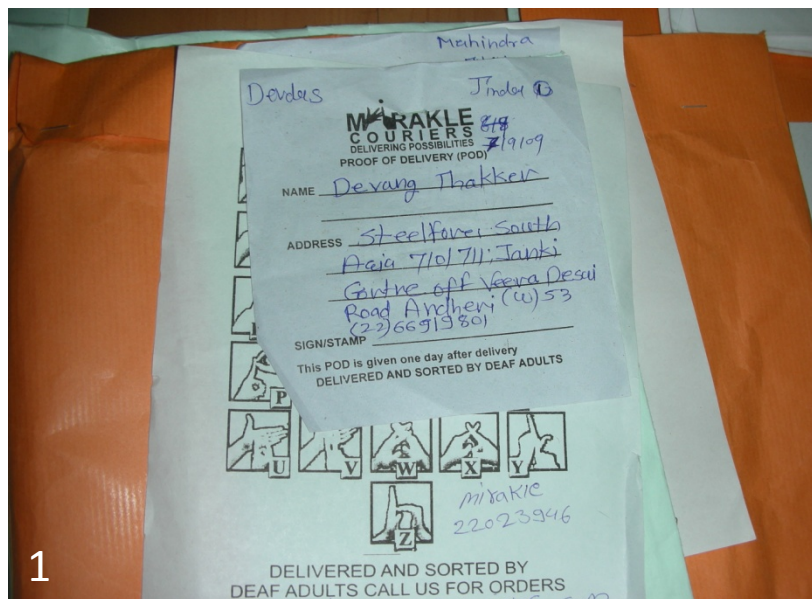


clockwise
1.pigeon-hole
2. bins for sorting
3. parcel sorting bag
4. Seimens sorting system at
Australa Post



present work cycle at Mirakle couriers





1. *POD Attached*
2. *Keeping account*
3. *Sorting of mail*



Sorting of mail



1



2



3

1. *POD handling*
2. *directions*
3. *directions*



1. *interaction*
2. *Fun!*
3. *Chaos*

general problems faced by current system

- sorting done on table
- **2 different sorting required**
- Girls are unknown of places
- **Wrong address**
- **POD not properly maintained**
- no proper accounting for mails
- space constrains
- Time required for sorting
- personal problems
- deaf
- improper time utilization of girls
- no flow in system – movement of mails and workers
- piling of mails
- handling accounting books
- **repeated accounting**
- verification of route

problems faced by deafness

- **Confidence**
- **Literacy**
- internal communication
- **Cursive handwritings**
- boys finding ways
- personal problems

"We are not disabled and Deafness is not a disability; it's the perception of many hearing (people) that we are disabled, and that is our disability."

activity analysis

- **Gathering the mail**
Pile of Mail on table
Counting the number of mails received from each company
Communicating with Writer (BOOK1 + BOARD)
Writing workload for the day on board(Date, company, number)
Piled up
- **Writing POD**
Writing addresses on POD (Name, Address, Date, Sign)
Difficulty in recognizing handwritings
(Clarification from Jyothi)
Stapling POD and Sign language sheet on mail
Handling POD and SL sheet
Piling up
- **Assigning Delivery boys (2 girls)**
Picking up pile (repeated action for each pile)
Transferring to respective table
Writing names of boys, according to the AREA, to deliver on each POD(known)
(Wrong PIN Code Corrected if known)
Accounting for no. of mails for each boy(BOOK2) – total count
Handling the book
- **Sorting**
Tables cleared for sorting
Mails clubbed together according to delivery boy
Mails arranged in an array (no order)
overlapping piles when less space
Check on previous days pending mail in book
Taking pending mails
Accounting for pending mails(BOOK2)
- **Delivery boys**
Delivery boys assigned their respective piles
Boys find place
Boys sit to sort their mails according to their route
Route decided by the boys
Clarification of route with the help of Eicher
Map kept on main table.
Impossible mails returned to the Girls to be reassigned
Arranged together by rubber band
Check on sufficient 'Sorry we missed you' sheets
Placed in bag

activity analysis

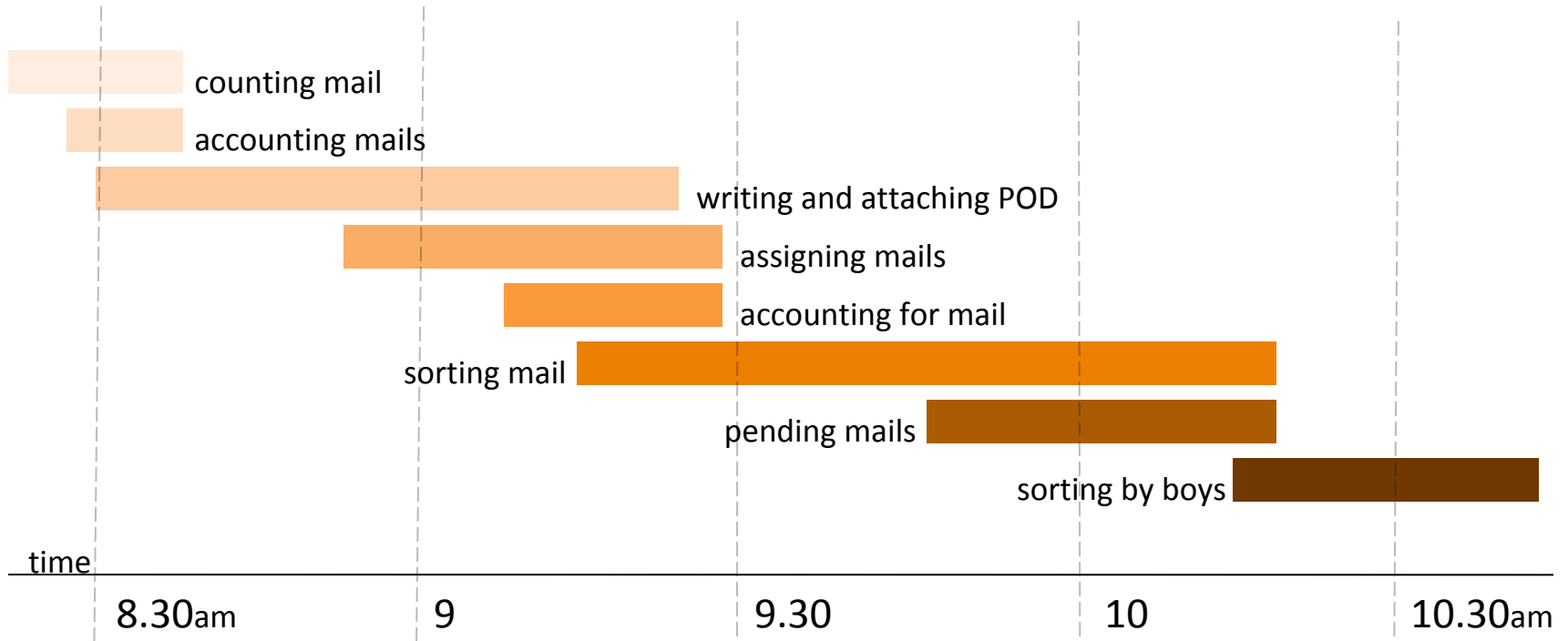
- **At Office**
Accounting for the day
Previous days POD Sorting company wise
Checking with data in BOOK2
Bundled and placed in Box(Tiffin)
Uploading data on Computer
Wait for boys to return
- **Boys Delivery**
Known areas
Travel by public transport Train/Bus
(Handicapped)
Delivery to destinations
Finding unknown destinations from strangers
If no one is home 'sorry we missed you' filled
and left on door
Missed mails kept in separate compartment

At Appointed Time delivery is left and run to
company for pickup
Entry to office/mail rooms
Asking for the mails
Collecting mails(and Address)
Counting number of mails and bound(rubber
- band)
Placing the mails (in the separate bag DEPT2)
Returning PODs (kept in DEPT3)

5.30 Delivery stopped
Returned to Mirakle
- **Back to Office**
Emptying the bags one by one (pagewise)
Undelivered mail returned(DEPT1)
Fresh mail (DEPT2)
Piling of Fresh mail
PODs returned(DEPT3)
Accounting of undelivered mail(BOOK2)
Conveying to Writer
Handling bag(picking up, No. of bags, Emptying
bag, Checking, Folding aside)

time analysis

internal activity during maximum work load hours



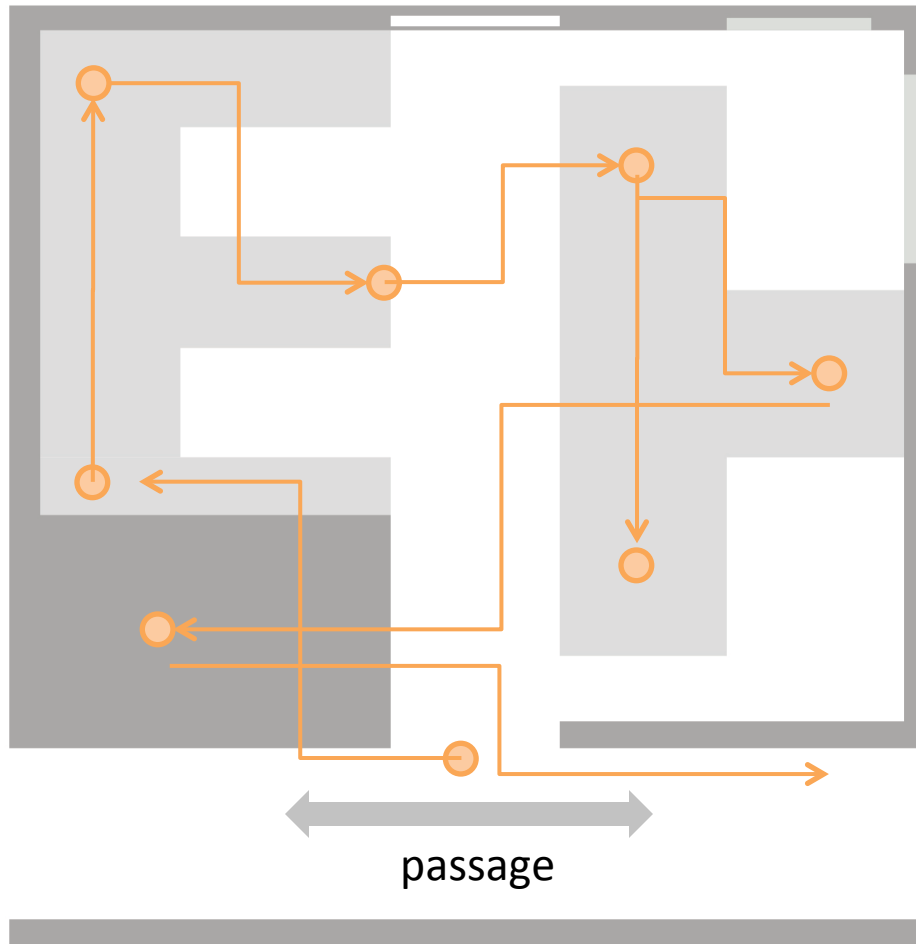
- **max time taking activity**

- writing POD
- sorting mails

- **interaction**

motion analysis

internal activity during maximum work load hours



→ movement
of mail

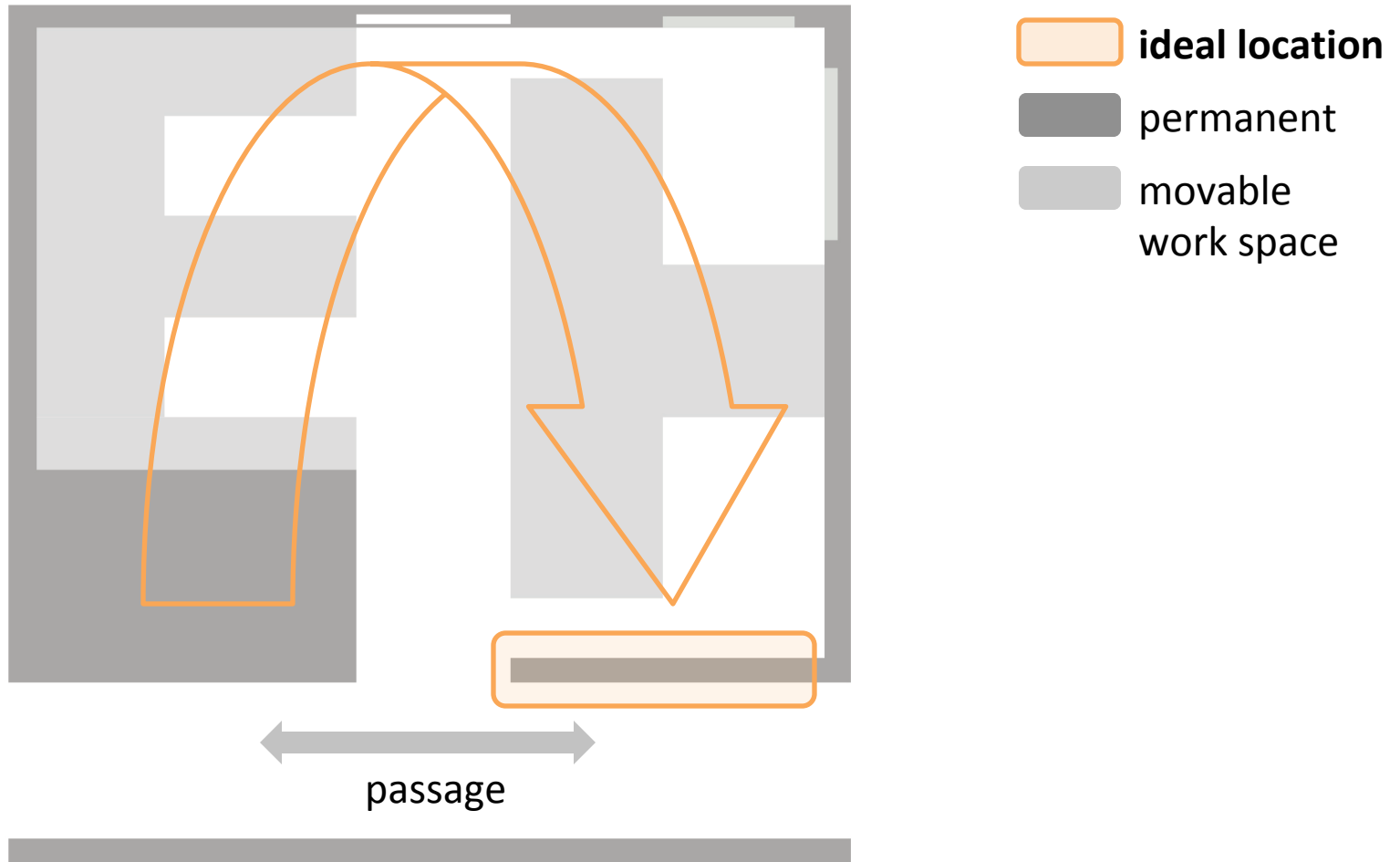
■ permanent

■ movable
work space

40 workers
12-13sqm workspace

motion analysis

internal activity during maximum work load hours



design brief

design brief

to design a sorting device for Mirakle Couriers

- it should be **compact** to accommodate minimum area space
- it should be **flexible** to accommodate the daily load of mail
- it should be **utilized/collapsed** when not in use
- it should be **simple** to understand and interact
- it should be equipped for **future expansion**

references

- <http://miraklecouriers.com/>
- <http://miraklecouriers.wordpress.com/>
- <http://www.scribd.com/doc/2574151/dabbawala>
- <http://www.rediff.com/money/2005/nov/11spec.htm>
- <http://www.wikipedia.org/>



thank you

