



Digital Transformation

Mobile Service
and
Remote Monitoring & Diagnostic Solution

Er. See Kok Leng





Content

Digital transformation is a journey, not a destination.

Overview

What is Digital Transformation?

Why is Digital Transformation Important?

Mobile Service

Digitalization of the routine maintenance process

Chevalier Connect

Remote Monitoring & Diagnostic System



What is Digital Transformation?



Integration of Digital Technologies into Business Processes



Transforms Operations, Customer Experiences, Decision-Making Process



Creating a Digital Culture



Focus on Innovation and Future-Readiness



Why is Digital Transformation Important?

- Improves Efficiency & Productivity
- Elevates Customer Experience
- Drives Innovation & Agility
- Enhances Visibility of Workflow & Data
- Scalable Operations
- Promotes a Culture of Continuous Improvement





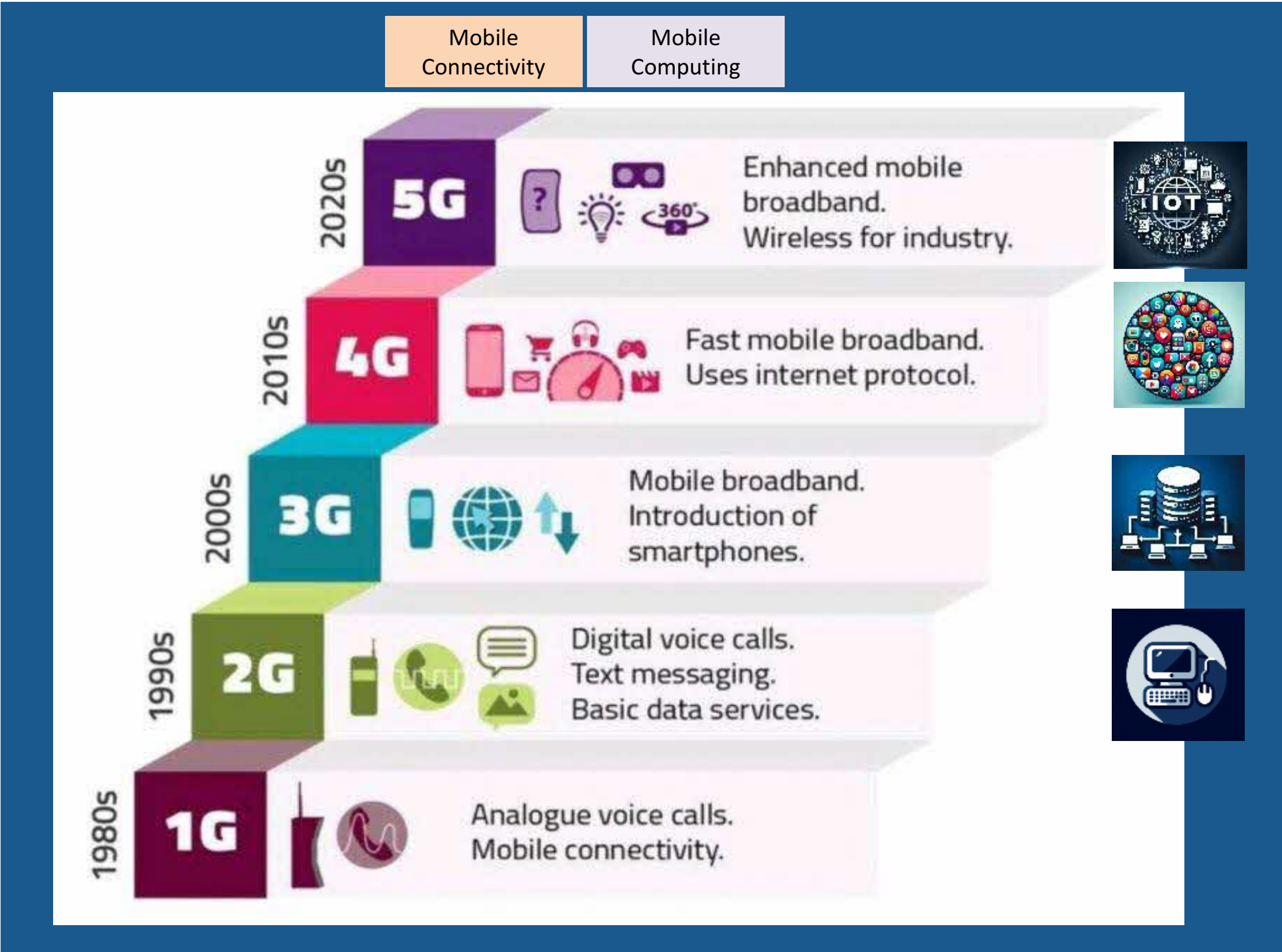
Mobile Service

Recognizing the fast-paced changes brought by digitalization, our company saw the need to **embrace a digital culture**.

With support from the **NTUC**, **e2i** and **AMEU**, we secured the CTC grant to **digitalize our routine maintenance process**, marking a continued step in this journey.



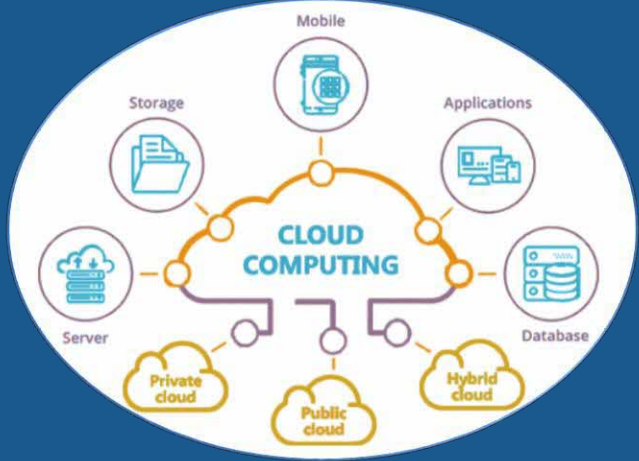
Evolution of Mobile Technologies



Mobile Connectivity

Mobile Computing

Cloud Computing



<https://www.linkedin.com/pulse/journey-through-cellular-network-generations-unveiling-all-shujaa>

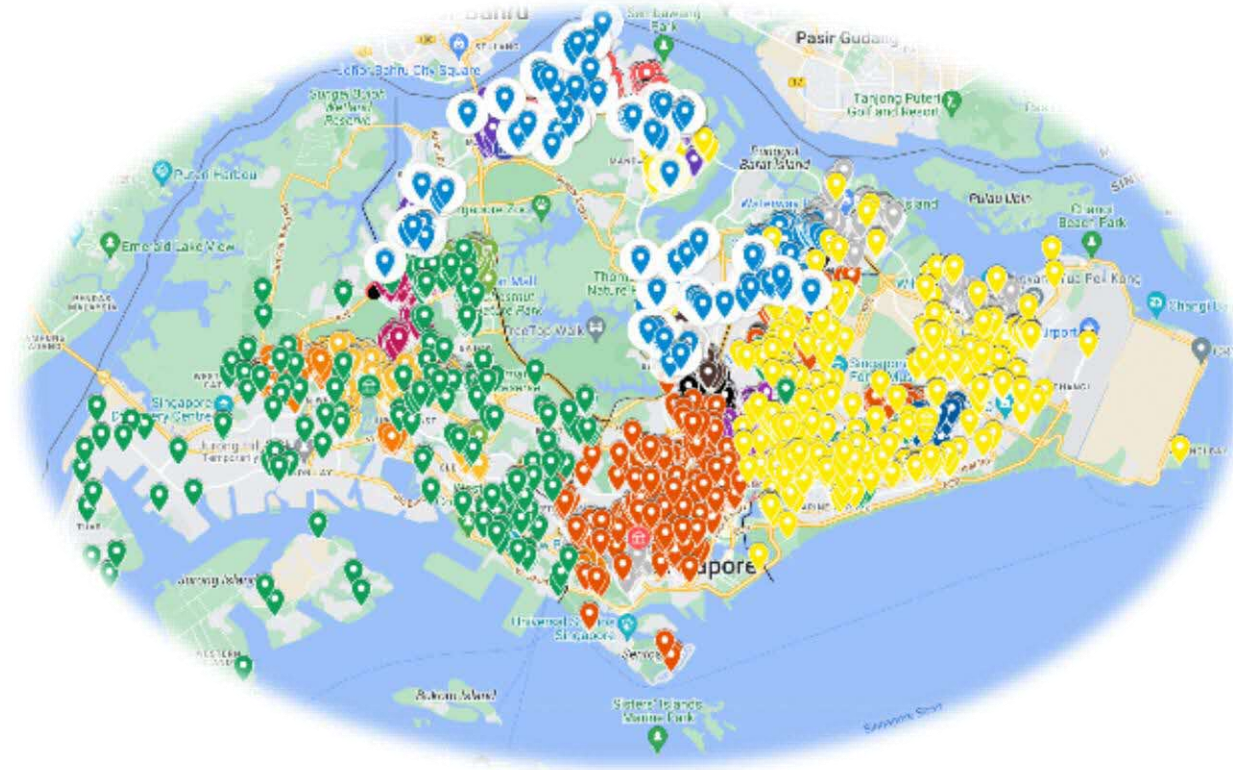
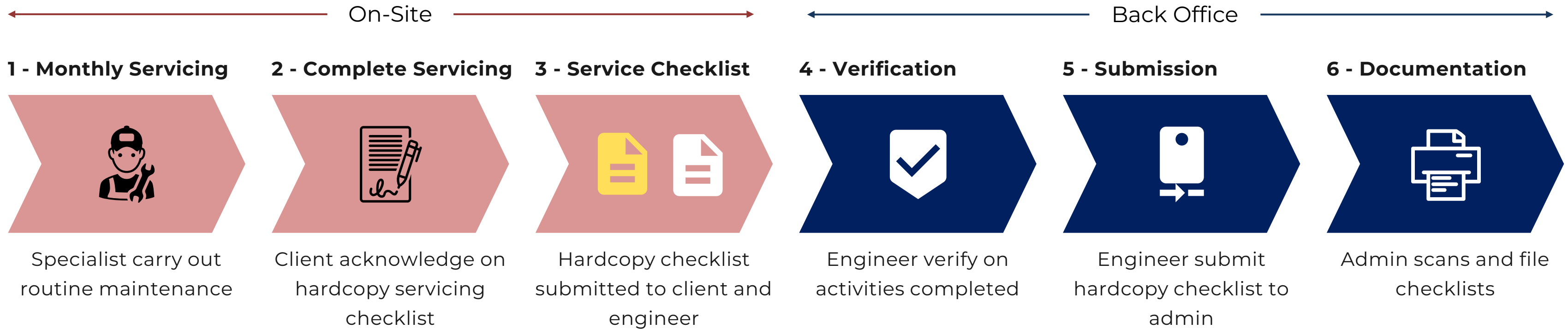


Mobile Service Journey





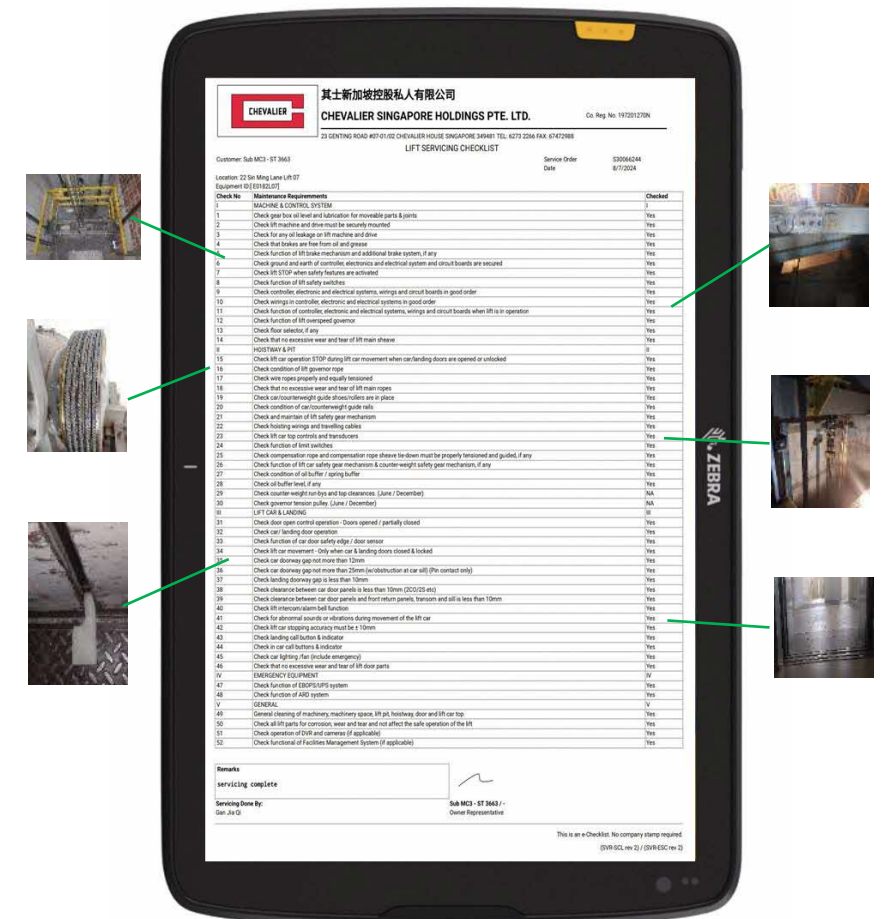
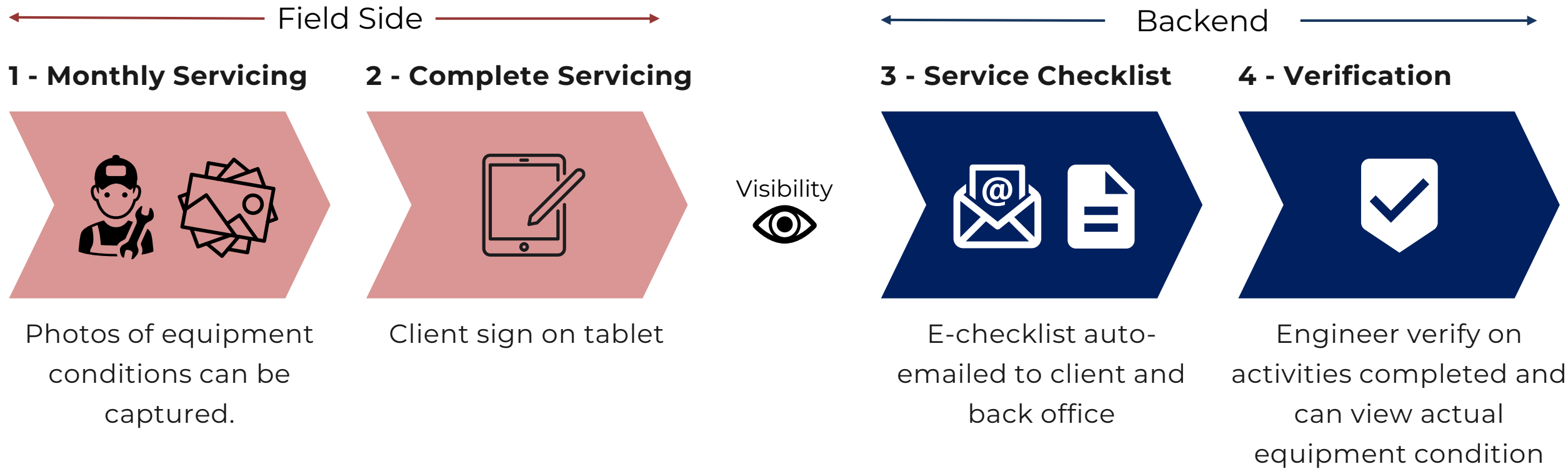
Conventional Routine Maintenance Process



- Inefficient in Updates and Revisions
- Environmentally Unfriendly
- Limited Accessibility with Huge Footprint
- Onerous Information Management
- Prone to Loss / Mishandling
- Lack of Real-Time Tracking of Processes



Digitalized Routine Maintenance Process



Specialist

- Send e-checklist to back office & lift owner upon completion of maintenance work.

Lift Owner

- Save digital copy of e-checklist for records purpose.

Back Office

- Real time progress monitoring on dashboard
- Facilitate allocation of manpower resource during contingency
- Enhance communication clarity between field and back office
- Reduce risk of errors and oversights
- Provide visibility to maintenance activities and site condition
- Digital records provides better accountability
- Eco-friendly

"From the obvious **elimination of paper usage**, it has benefitted our operation across various tasks and levels. It also supports our **on-going efforts for greener initiatives** and fight against climate change by reducing overall carbon footprint. The **CTC grant** has been the stimulus to help us bridge the gap and **motivates us embrace the technological advances** that are available. Ultimately, we can provide a **higher quality of services** and **satisfaction to our clients.**"

Mr Samuel Tay
Assistant General Manager, Chevalier Singapore Holdings

Published in
AMEU Anniversary Magazine
Celebrating 43 Years of Vibrancy



User Feedback



Reviews



Published in
AMEU Anniversary Magazine Celebrating 43 Years of Vibrancy

“It is very useful as it helps to **save time** for us as Lift Specialist. We can do the checklist right after servicing. Plus, we **don't have to do the manual checklist which is just tiring.**”

Mr Abdul Rizuan
Lift Specialist Grade 3

“The tablet enables us to collate updated data regarding the lift maintenance components. We, as Lift Specialist, are made aware of the items which needs to be serviced. **The tablet opens up for future potential uses.**”

Mr Muhammad Syabil
Lift Specialist Grade 3

“With the tablet, we are able to do daily upload of the checklists and site condition photos. We are **more productive** and do not need to waste paper. The E-checklist is also **neater** and **more organised.**”

Mr Muhammad Shafiee
Lift Specialist Grade 2



RM&D Solution

Building and Construction Authority



An MND Statutory Board

Our Ref: APPBMSMA-2022-03

Electrical and Mechanical Engineering Group

29 July 2022

See Distribution List

Dear Sir/Madam

REMOTE MONITORING AND DIAGNOSTICS SOLUTIONS FOR LIFTS - AMENDMENTS TO THE BUILDING MAINTENANCE AND STRATA MANAGEMENT (LIFT, ESCALATOR AND BUILDING MAINTENANCE) REGULATIONS

BCA issued a circular on 29th July 2022 to inform the industry to support the implementation of Remote Monitoring and Diagnostics Solutions in lifts.

Objective

This circular informs the industry of changes made to the Building Maintenance and Strata Management (Lift, Escalator and Building Maintenance) Regulations 2016 (the “LEBM Regs”) to support the implementation of Remote Monitoring and Diagnostics (“RM&D”) solutions in lifts.



RM&D Solution

Remote Monitoring & Diagnostics Solution



A system that enables real-time monitoring, fault detection and diagnostics to ensure efficient and proactive maintenance work.



Chevalier Connect



Monitor

Continuously track real-time data



Detect

Detect abnormalities and potential issues in real-time



Diagnose

Analyze data to identify potential cause



Recommend

Recommend solutions based on the diagnosis



Resolve

Physical actions to fix the issue



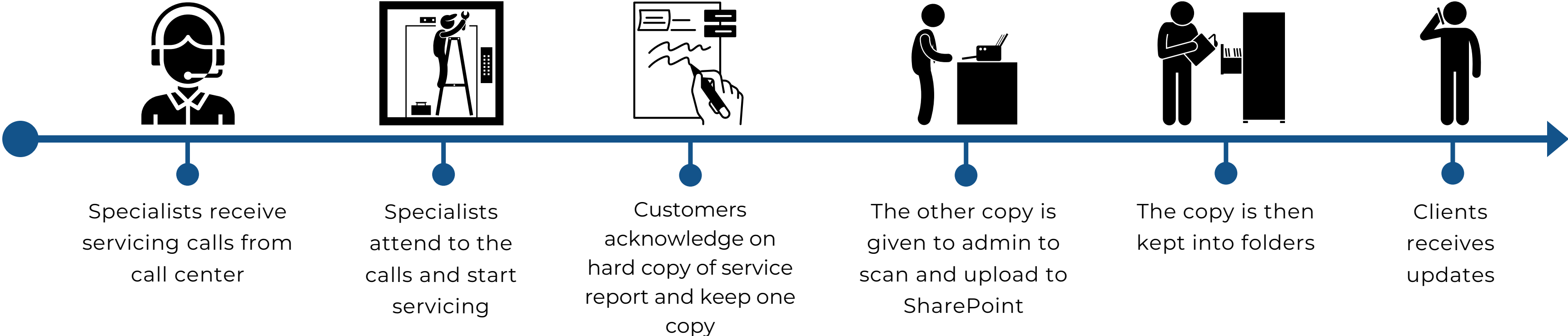
Feedback

Update system database to improve future algorithm

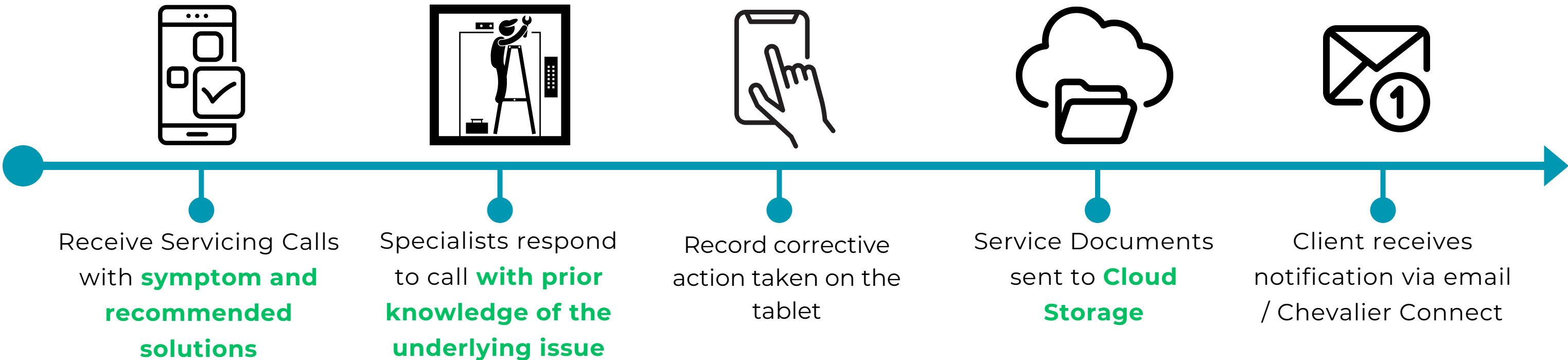


Service Call Process

Previous Workflow



Current Workflow with Chevalier Connect





Key Features

Chevalier Singapore Holdings Pte. Ltd.

Dashboard

Real Time Monitoring

Remote Diagnostic

Traffic Analysis

Predictive Maintenance

Event Log

Call ID	Call Date & Time	Lift Serial Number	Lift Description	Symptoms	Assigned Specialist
N2024121002	11/12/2024 00:44:38	S0783L67	JTC Woodlands North Coast Bk 2 Lift G1	Controller	Devindran A/L Perhanan (Dns)
N2024121001	11/12/2024 00:10:36	S0783L24	JTC Tim Maj Bk C Lift EL2	Landing Door, Car Door	Sarvin Manoharan
E2024121001	10/12/2024 15:40:37	E0269L05	Bedok Food City FL G	Car Door	Muhammad Aarif bin Saif

Mobile Application

Maintenance Monitoring

Lift Cycle Data

Category	Count
Car Call Registration	295294
Down Hall Call Registration	111660
Up Hall Call Registration	109847
Full Load Bypass	48
Load Call Status Include OL	0%
Number of Start	649639
Monitor Operating Time	574
Lift Run Signal	646743

Mantrap Detection

Landing Accuracy Monitoring

ARES/ARD Monitoring

Date & Time	Lift Serial Number	Alert Description
27/12/2024 14:35:48	S0783L53	Ard Battery Low
27/12/2024 14:24:16	S0783L43	Ard Battery Low
27/12/2024 13:46:58	S0783L45	Ard Battery High
27/12/2024 13:35:43	S0783L53	Ard Battery High

Vibration Analysis

Load Sensor Diagnostic

Smart Door Diagnostic

Category	Count
Door Open Button Signal	0
Door Open Command	0
Door Fully Open Signal	0
Door Abnormal Reverse Direction	0
Door Lock Switch Bypassing	0
Door Overhead Count	0



Potential Benefits to Stakeholders

Lift Owner

24/7 Online Monitoring

Continuous monitoring of lifts performance offering peace of mind.

Quarterly Maintenance

Reduces the frequency of service interruptions.

Improve Reliability

Real-time data from the lift enables immediate detection and resolution of issues

Improve Availability

Potential problems are identified early, allowing for more targeted preventive maintenance work.

Service Team

Knowledge on-the-go

Make informed decisions quickly, even while on the move

Lift Contractor Management

Data-Driven Insights

Valuable insights of lift performance to refine maintenance strategies

Sustainable Manpower

Alleviate the challenges of maintaining a large work force

Call Center

Automated call registration

Ensures that all calls are accurately recorded and tracked

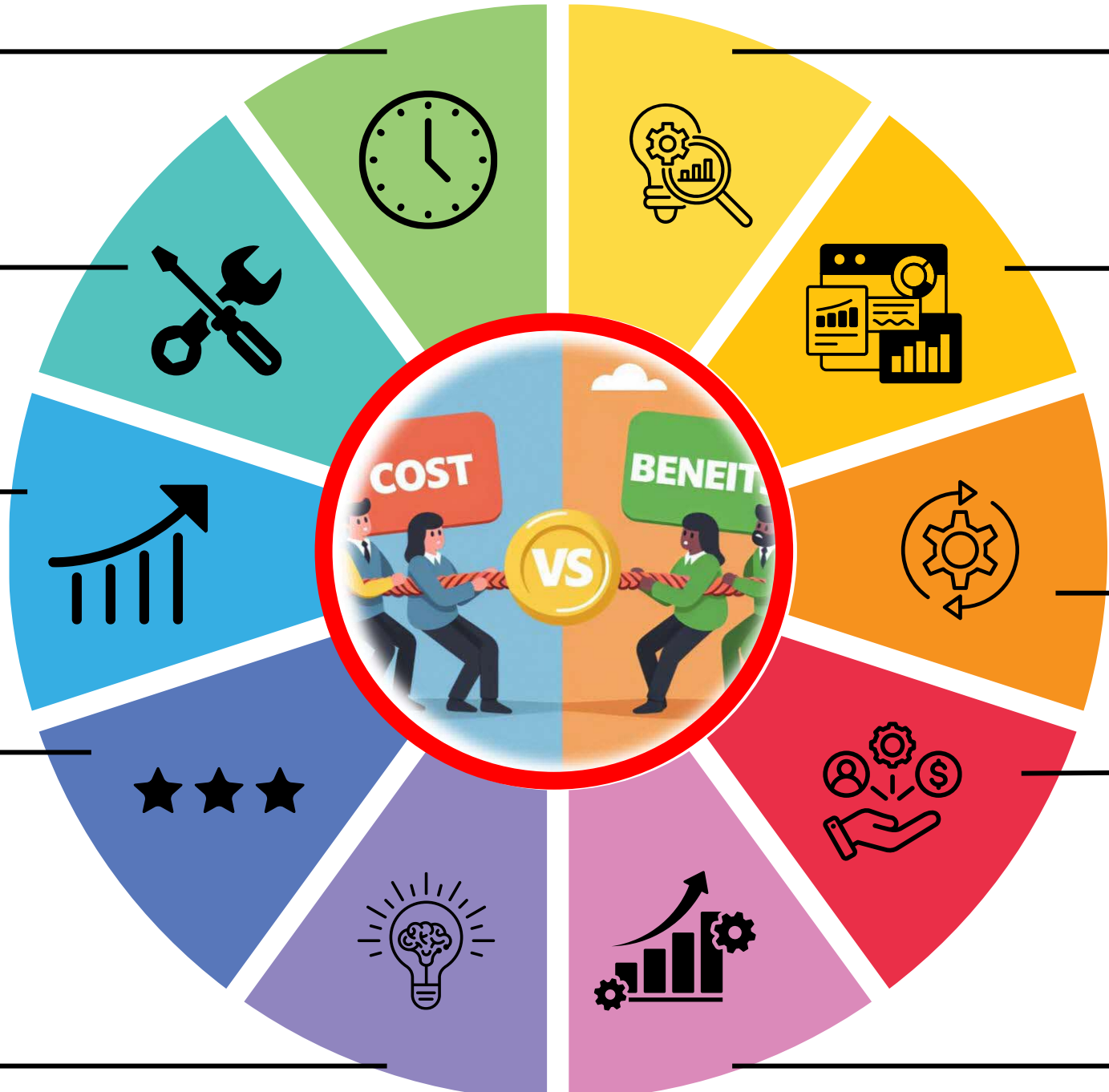
Better Resources Allocation

Specialist can be deployed where they are needed most, improving response times

Service Team

Improve Productivity

Streamlined approach allows service team to manage workload efficiently



Challenges Ahead



Slow Market Adoption Rate



High Cost of Maintaining the Systems



Data Security & Privacy

Looking Forward



Enhancing Efficiency and Productivity



Leaner and More Efficient Workforce



Progressive Adoption of AI,
Enhancing Predictive Capabilities and
Business Intelligence



Thank You



*Embracing digital transformation
today
paves the way for
resilience, growth, and success
tomorrow.*