



Efficiency Unleashed:

Enhancing Workplace Productivity through Intelligent
Document Processing and Workforce Optimization

Spencer Fung

11 July 2023

OptixSolutions

AI R&D Company



Founded in **2010**



**Hong Kong HQ
Development Center**



**Sales Office in
Australia**



Core Technology

- ▶ **AI Optimization**
- ▶ **Machine Learning**
- ▶ **NLP, etc.**



A team of 20

- ▶ **PhDs**
- ▶ **Computer Scientists**
- ▶ **Software Engineers**

Self-developed AI Platforms

JACC

intrinsity

Machine Intelligence + Human Intelligence

Awards & Media



APAC CIO Outlook TOP 10
COGNITIVE
TECHNOLOGY CONSULTING/SERVICES COMPANIES - 2019

APAC CIO Outlook 25 MOST RECOMMENDED
ARTIFICIAL INTELLIGENCE
COMPANIES - 2017

DIGITIMES

CIO IT

Bloomberg

hket 經濟日報

TVB

Our AI Solutions

Intelligent Document Processing

Provide a practical and cost-effective way to automate document handling process

- AI OCR
- Translation & Summarization
- Classification & Clustering
- Entity Extraction
- Cross-Checking
- Cross-Referencing

intrinsity

Private and Confidential

Workforce Optimization

Drive operational efficiency through better resource allocation

- AI Rostering
- Auto-scheduling
- Dynamic Task Assignment
- Preference Learning
- Optimization
- Predictive Analytics

JACC



AI-powered Intelligent Document Processing NLP Analytics Solution



NLP Analytics Solution Overview

Automate complex and time-consuming document workflows

intrinsity

Data Source



OCR



Handwriting



WWW



Email



Excel



Word



PDF

NLP Analytics



Doc Classification

Classify free-text document into **single** or **multiple** categories

Features:

- Pre-defined Categories
- Support Structured and Unstructured documents
- Support Multi-Lingual (Eng/Chi)



Entity Extraction

Extract **key entity** from documents that interests to your business

Features:

- Able to extract **words, phrase, or passage** from documents
- Support Structured and Unstructured documents

Decision Intelligence



AI Recommendation

Predict the users' decision, and provide relevant suggestions based on the **Precedent Cases**

Features:

- Recommend **Approve** or **Reject** outcome
- Outcome **Reasoning**
- Outcome **Cross-checking**
- **Cross-Referencing** from historical records



Knowledge-base / Database



Natural Language Search
on related Precedent Cases

NLP Analytics Solution

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Natural Language Search
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Relevant Use Cases




Enquiry/Complaint Triage
Automation



Legal Document
Analytics and Summarization




Report Pre-approval
and Cross-checking
Automation



News and Article
Summarization



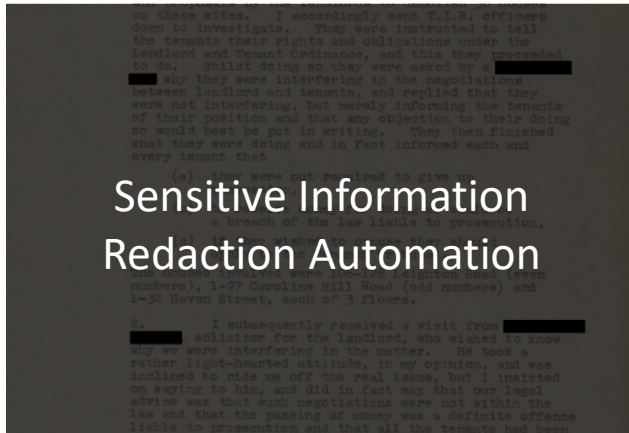
Agreement Scrutinization
and Comparison



Knowledge Management
with Natural Language Search



Reimbursement Analytic
and Process Automation



Sensitive Information
Redaction Automation

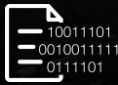
Hong Kong Property Developer

➤ Discover problems from a tremendous amount of document

Applications:



Text
Classification



Entity
Extraction



Issues and challenges

- To process **over 1,500 “Request for Inspection and Survey Checks (RISC) form”** per month for each construction site.
- Checking and verification only by **manual sampling**
- **Incorrect endorsement** happens from time to time resulting in high cost to rectify

Solution

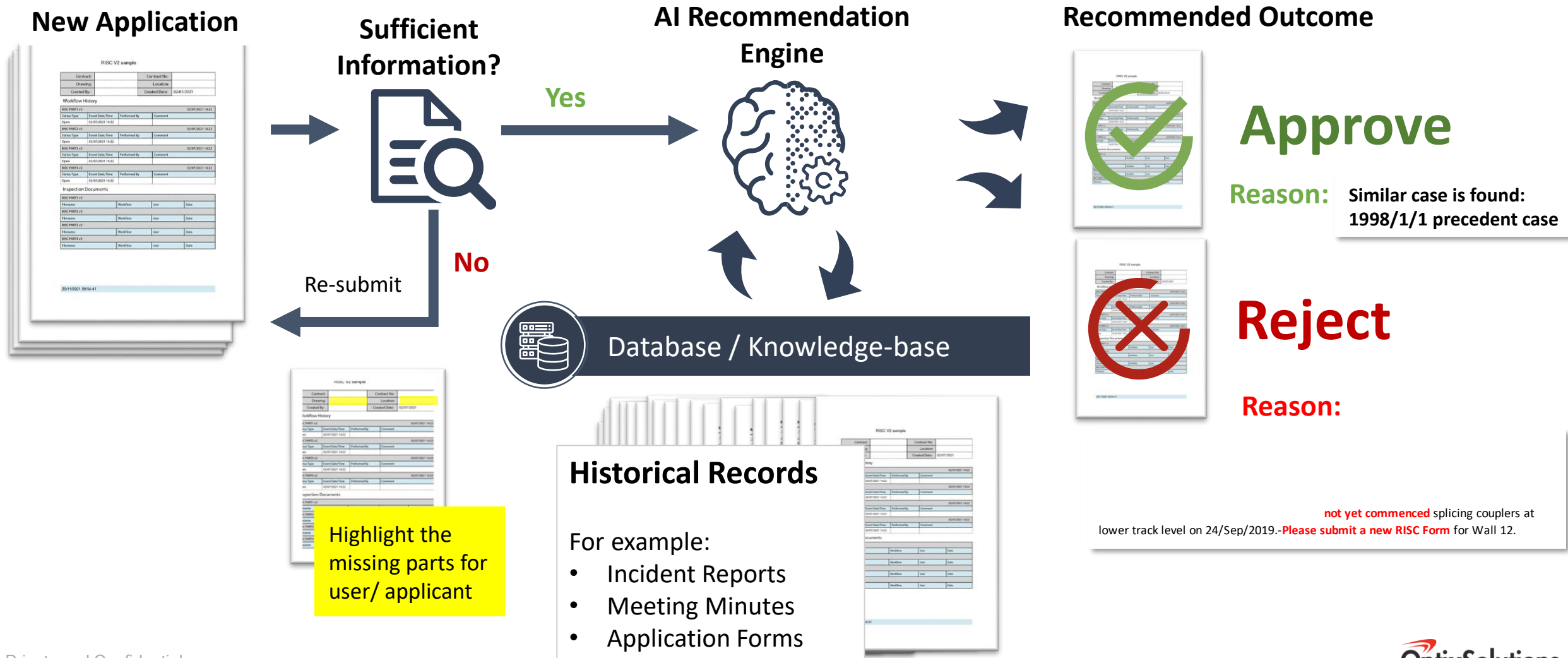
- Developed an **AI Pre-approval and cross-checking system** to automate the process
 - By employing **sentiment analysis** Identify quality issues captured in the RISC forms, and recommends outcome
 - Counter-check if a RISC form has been endorsed incorrectly and allow user to retain the model to increase the accuracy

Results and benefits

- Significantly improve the quality of processing RISC forms
- Identify potential problems form RISC forms
- Achieving **> 95% accuracy**

AI Recommendation - Auto Pre-Approval

The AI will recommend outcome based on past approval records



AI Recommendation - Cross-checker

The AI can be used to cross-check the outcome

Manual Processed Applications

RISC V2 sample

Contract#	Contract No.
Created By	Location
Created Date	02/01/2021

Workflow History

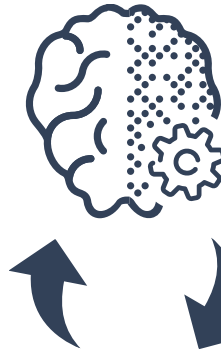
Doc#	Type	Event Date/Time	Performed By	Comment
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
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RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		

Inspection Documents

Doc#	Type	Event Date/Time	Performed By	Comment
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
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RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		
RISC#001-02	Open	02/01/2021 14:22		

20190801 08:54:41

AI Recommendation as a Cross-Checker



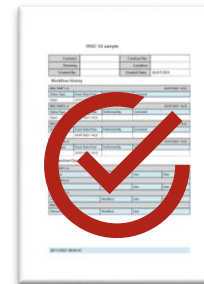
Database / Knowledge-base (KB)

Historical Records

For example:

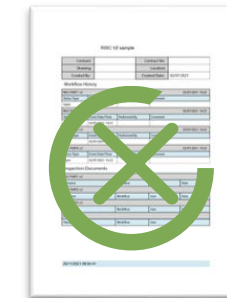
- Incident Reports
- Meeting Minutes
- Application Forms

Recommended Outcome



False Positive?

Cross-reference to past **Reject** cases in KB



False Negative?

Cross-reference to past **Approved** cases in KB



Key Takeaways

NLP Analytics Solution

Auto Document
**Classification
& Extraction**

Auto Approval
for applications

Cross-Checking
for manual works

Auto Learning
for self-improvement

Cross-Referencing
for Precedent Cases

Tailor-made Solution
> 95% Accuracy



AI Workforce Optimization Solution

JACC

AI Workforce Optimization Solution

AI for Planning, Scheduling and Optimization

Demand Planning and Forecasting

Decision Automation
and Optimization

Workforce Visibility and Realtime
Operation Management

- An **award-winning** self-developed **AI Optimization** and **Machine Learning** engine
- For tackling complex **Planning**, **Scheduling** and **Rostering** operations
- **Predict operation demands** and provide the optimal suggestion within time limit
- Retain operational knowhow for **centralized** and **consistent** decisions at scale

JACC



AI Workforce Optimization Solution

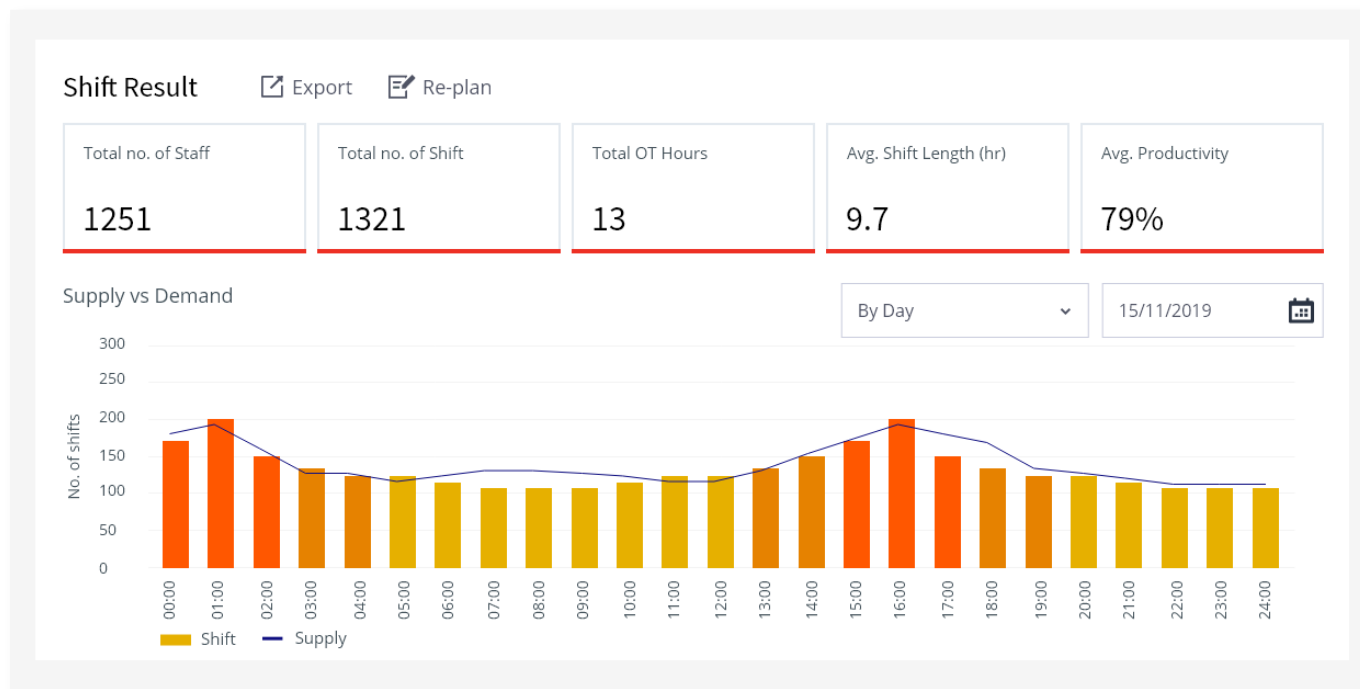
Demand Planning and Forecasting

Decision Automation
and Optimization

Workforce Visibility and Realtime
Operation Management

Demand Forecasting

- **Predict** the future labor demand based on unique staffing policies of each organization
- Identify period with labor demand in advance and **plan ahead** for smooth operation
- Allow user to perform **What-if** scenario planning which enables users to review different scenarios for the demand (impact of extra demand) and supply (changes in supply)



AI Workforce Optimization Solution

Demand Planning and Forecasting

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Staff Rostering

Auto-scheduling & Auto-assignment

Fill the shift demand automatically with the right staff

- Allow **pre-assignment** of leave and special tasks like **training**
- Auto-generate roster schedule which optimizes staff utilization based on **staff's skills, preference, and availability**
- Comply with **labor law** and **company policies**
- **Real-time sync** with employee self-service (ESS)

Schedule Changes & Changes Handling

Easily handle inevitable changes

- Able to handle different **types of changes** (e.g. leave request, swap request, temporary secondment to another shift, sudden changes in demand, etc.)
- **Re-schedule** the roster by AI or manually
- **Identify re-scheduling conflicts**, alert and help staff resolve the conflicts quickly

Staff	Feb 9	Mon, Feb 10	Tue, Feb 11	Wed, Feb 12	Thu, Feb 13	Fri, Feb 14
Staff A Staff A ID Admin	100_1.5a	1430-0100_1.5a A013	1430-0100_1.5a A013	DA	1430-0100_1.5a A013	DA
Staff B Staff B ID Worker		1430-0100_1.5a A013	1430-0100_1.5a A013	AL	1430-0100_1.5a A013	1430-0100_1.5a A013
Staff C Staff C ID Worker	100_1.5a	1430-0100_1.5a A010	1430-0100_1.5a A010		.5a	DA
Staff D Staff D ID Worker	100_1.5a	1430-0100_1.5a A010	1430-0100_1.5a A010		.5a	DA
Staff E Staff E ID Worker	100_1.5a	1430-0100_1.5a A013	1430-0100_1.5a A013		.5a	DA
Staff F Staff F ID Worker	100_1.5a	1430-0100_1.5a A012	1430-0100_1.5a A012		.5a	DA
Staff G Staff G ID Worker	100_1.5a	1430-0100_1.5a A013	1430-0100_1.5a A013		.5a	DA
Staff H Staff H ID Worker	100_1.5a	1430-0100_1.5a A013	1430-0100_1.5a A013		.5a	DA
Understaffing	.130	1130-2130	1130-2130			1130-2130

AI Workforce Optimization Solution

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Decision Automation
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Workforce Visibility and Realtime
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Task Assignment & Staff Performance Management

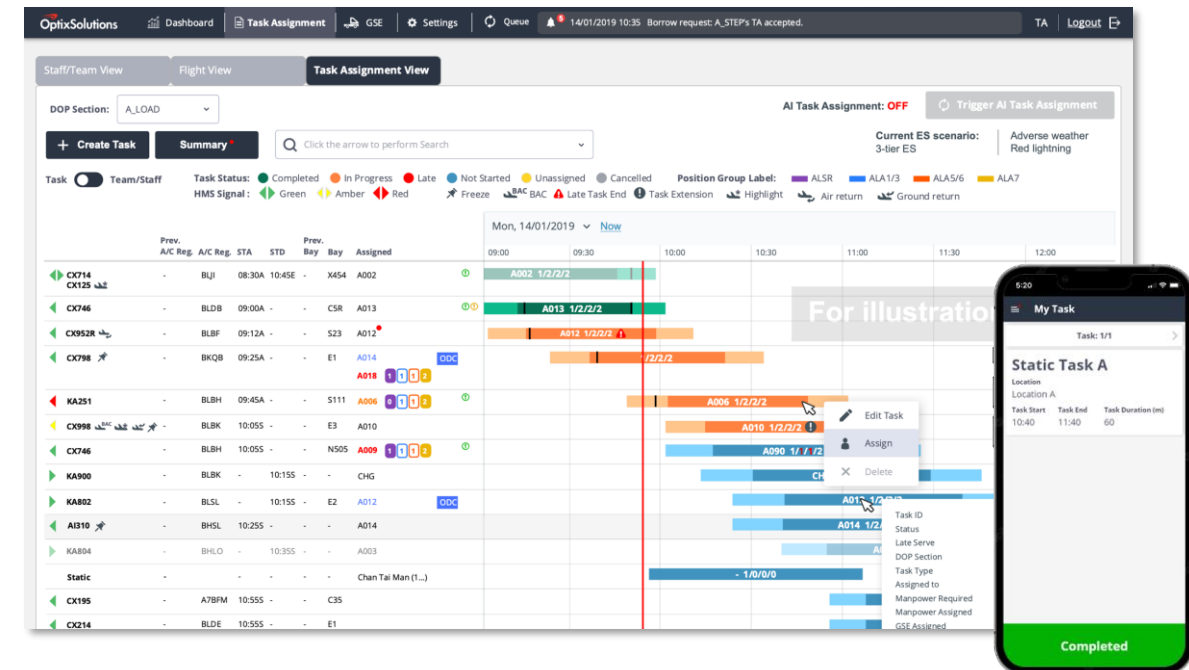
Auto-scheduling & Auto-assignment

Assign tasks to the right staff automatically on the day of operation

- Allow pre-assignment of tasks such as training, meeting, static task, etc.
- Auto-generate tasks based on client demand
- Auto-assign tasks to staff with the right staff skills, qualification, and availability to maximize resource utilization and efficiency
- Comply with the latest labor laws and company requirements such as fatigue and rest break rules
- Send task-related notifications to employees via mobile app
- Allow employees to request for task extension

Track and monitor employee performance

- Allow employees to **clock-in/out** using mobile
- Enable employers to **monitor** employees working hours and late arrival, early departure, and each task progress



AI Workforce Optimization Solution

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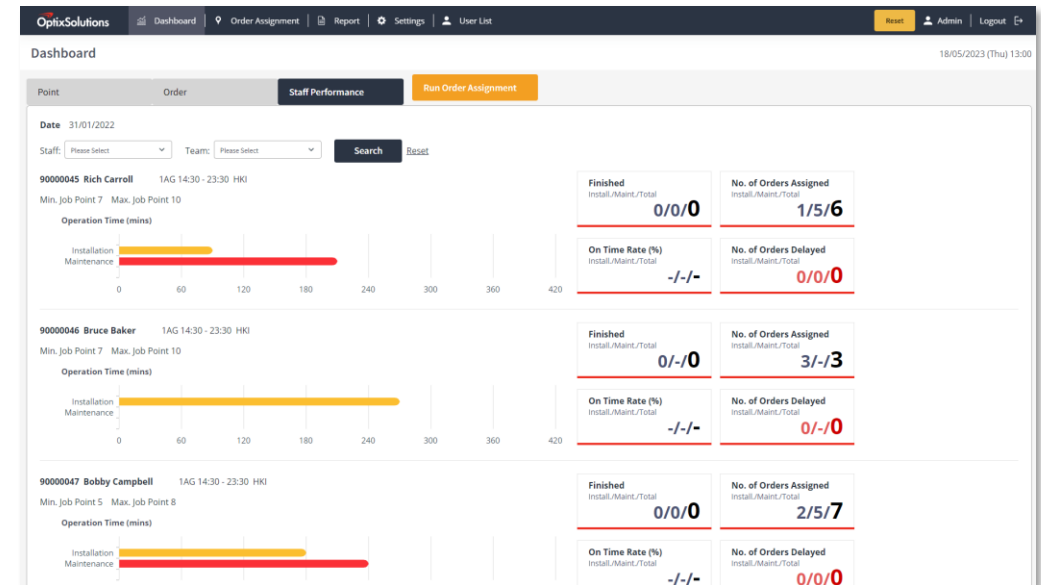
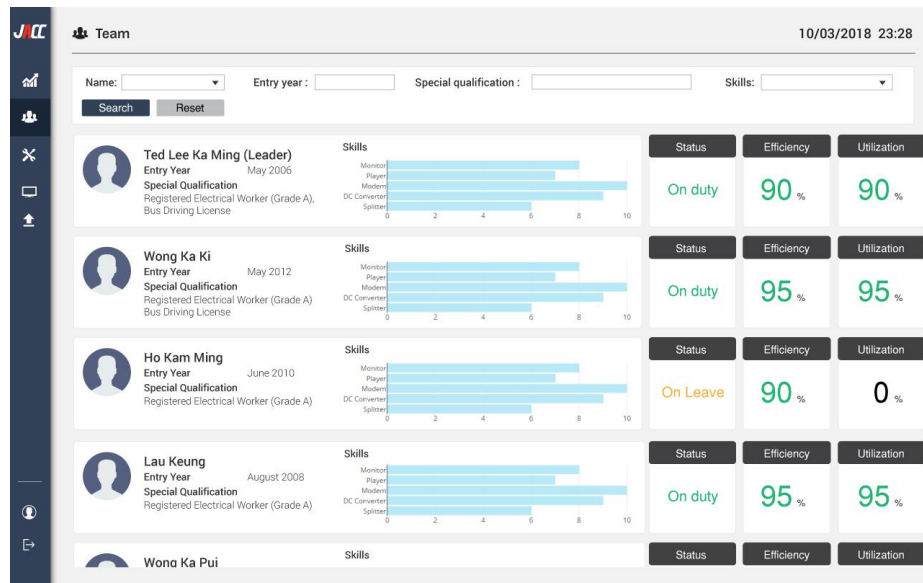
Workforce Visibility and Realtime
Operation Management

Task Assignment & Staff Performance Management

Real Time Track-and-Trace

Capture operation status in real-time

- Allow employees to record real-time data, which will be used in **real-time monitoring** as well as post-task analysis to improve transparency and efficiency
- Support task allocator to resolve disruption with real-time information
- Staff performance monitoring: **Skills** and **Punctuality**



Broadband Company

➤ Optimize the field service operations



Issues and challenges

- High level of OT and outsource cost
- Unable to match staff skill with the service order requirements
- Management is invisible to the job assignment

Solution

- AI system for daily job assignment to staff with suitable skill
- Suggestions to daily service order sequence

Results and benefits

- **Automated Job Scheduling**
- **Re-scheduling upon disruption**
- **Reduce OT by 15%**
- **Reduce outsource cost by 18%**
- Improve utilization of staff
- Increase visibility of job assignment

AI Workforce Optimization Solution

Key Features Highlight

Shift Planning

- **Customizable Shift Planning Rules and Labor Laws**
- Dynamic Resource Forecasting for Manpower and Equipment
- Task-based Resource Allocation
- **What-if Analysis**
- Comprehensive Shift Plan Visualization
- Daily, Weekly, and Monthly Demand Graphs
- Task and Shift Management with Table and Gantt Chart
- Manual Shift Plan Adjustment
- Partial Task and Shift Freezing and Regeneration
- Shift Plan Reporting with Customizable Templates

Rostering

- Comprehensive Staff Management
- **Customizable Roster Planning Rules**
- Manual Roster Adjustment
- Pre-Defined Roster Patterns
- Task Pre-assignment
- Demand-Based Roster Generation
- Consideration of Pre-Defined Roster Patterns
- **Staff Training and Leave Application Consideration**
- Manual Adjustment with User-Friendly Functions
- **Validation and Rule Violation Checking**
- Comprehensive Roster Visualization
- Roster Reporting and Analysis
- Staff Performance Management
- Leave Management

Employee Self-service

- Employee Self-Service Portal
- Calendar and List Views
- **Attendance Management**
- Leave Management
- Training Management
- Shift Swap Requests
- Real-Time Notifications
- Responsive Web App
- Multilingual Support
- Roster Export
- **WhatsApp Integration**



**WE OPTIMIZE
YOUR BUSINESS
WITH AI!**

Thank you

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