WorkEase

An Agentic Unified Intelligent Multi-Platform Communication System

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Introduction

Before

- Managing multiple apps (Gmail, Slack, terminal) separately.
- Frequent context switching reduces focus and productivity.
- Repetitive communication and task handling done manually.
- Notifications scattered and unmanageable.

After

- Unified intelligent workspace integrating all tools.
- Voice-enabled automation streamlines workflows.
- Smart agents summarize, reply, and prioritize automatically.
- Centralized, configurable notification hub with smart alerts.

Motivation

- Users waste time switching between multiple apps and notifications.
- Existing assistants lack context awareness and real workflow integration.
- Need for automation that responds to voice, events, and personal context.
- Growing demand for privacy-first, on-device intelligent assistants.
- Clear gap for a unified, user-centric automation system improving productivity.

Defence Jury Remarks

Project Short title	Proposal title	Dr. Nauman Azam Comments	Ms. Iqra Rehman Comments
AutoNOVA	Novel Agentic Work-flow Automation for Operating System	Workflow not clear, should not use batch files	No clarity on workflow

Investigation (Research Analysis Overview)

The following criteria were used to investigate the current apps. Each application was evaluated against these standards to assess market positioning and competitive advantages.

1. Impact Of The Application
2. Core Communication Features
3. AI & Automation Features
4. Voice & NLP Features
5. Business Model
6. Market Dynamics

Investigation (Research Analysis Overview)

1. → **Impact Of The Application**
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Investigation (Impact Of The Application)

Competitor	Target Market	Revenue	Founded	HQ Location	Employees
Ferdi/Ferdium	Developers, Freelancers	<$500K	2019	Open Source	5–10
Rambox	Teams, Freelancers	~$2M	2015	Buenos Aires, Argentina	11–50
Wavebox	Remote Teams, Professionals	~$10M	2016	UK	11–50
Beeper	General Users	~$25M	2021	Palo Alto, CA	11–50
Shift	Professionals	~$15M	2016	Vancouver, Canada	51–100
Respond.io	Teams, Enterprises	~$18M	2015	Hong Kong	101–250
Front/Hiver/Missive	Teams/Support	~$50M	2013	San Francisco, CA	101–250
Chatwoot	SMEs, Support Teams	~$5M	2017	India	11–50
Crisp Chat	Businesses	~$10M	2015	France	11–50
Superhuman	Professionals	~$35M	2014	San Francisco, CA	51–100
BrowserOS	Developers	N/A	2021	Open Source	1–10
Comet (Perplexity)	General	N/A	2023	San Francisco, CA	1–10
Opera Neon	General	N/A	2017	Oslo, Norway	Part of Opera
Fellou	Teams	N/A	2020	Unknown	1–10

Investigation (Research Analysis Overview)

1. Impact Of The Application
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Investigation (Core Communication Features)

Competitor	Gmail	Slack	Multi-App	Unified Inbox	Smart Draft	Auto Reply	Follow-up	Notifications	Quiet Hours	File Access
Ferdi/Ferdium	Yes	Yes	Yes	Yes	No	No	No	Yes	Partial	No
Rambox	Partial	Yes	Yes	Yes	Yes	No	No	No	Partial	No
Wavebox	Yes	Yes	Yes	Yes	Yes	Partial	No	No	Partial	Partial
Beeper	Yes	Partial	Partial	Yes	Yes	Yes	Partial	No	No	No
Shift	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Respond.io	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Partial
Front/Hiver/Missive	Yes	No	Yes	Yes	Yes	Yes	Yes	Partial	No	No
Chatwoot	Yes	No	Yes	Yes	Yes	Yes	Partial	Partial	No	Partial
Crisp Chat	No	Yes	No	Yes	No	No	No	No	No	Partial
Superhuman	Yes	Yes	No	No	Yes	Yes	No	No	No	No
BrowserOS	No	No	No	Yes	Yes	No	Partial	No	No	Yes
Comet (Perplexity)	No	No	No	No	No	Partial	No	No	No	No
Opera Neon	No	Yes	No	Yes	Yes	No	Partial	No	No	No
Fellou	No	No	No	No	No	No	No	Yes	No	Yes
WorkEase	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Core Communication Features Analysis

Most Common Features

- Multi-app integration (11/15 competitors)
- Unified inbox (13/15 competitors)
- Gmail support (10/15 competitors)
- Smart drafting capabilities (11/15 competitors)

Competitive Advantages

- Complete feature coverage (10/10)
- Only solution with all communication features
- Quiet hours functionality (rare feature)
- Comprehensive follow-up system

Most competitors excel in 3-5 features. WorkEase is the only platform offering complete coverage of all core communication capabilities.

Investigation (Research Analysis Overview)

1. Impact Of The Application
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Investigation (AI & Automation Features)

Competitor	Task Extract	Priority Rules	Sentiment Analysis	Local LLM	Workflow Automation	Meeting Prep
Ferdi/Ferdium	No	No	No	No	No	No
Rambox	No	No	No	No	No	No
Wavebox	Partial	No	No	No	Partial	No
Beeper	Partial	Partial	No	No	No	No
Shift	Partial	Partial	No	No	No	No
Respond.io	No	No	No	No	Yes	No
Front/Hiver/Missive	Yes	Partial	No	No	Partial	No
Chatwoot	No	Partial	Partial	No	Partial	No
Crisp Chat	No	No	Partial	No	Partial	No
Superhuman	No	No	No	Partial	No	No
BrowserOS	No	No	No	No	No	No
Comet (Perplexity)	Yes	Partial	No	No	No	No
Opera Neon	No	No	No	No	No	No
Fellou	No	No	No	No	No	No
WorkEase	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Investigation (Research Analysis Overview)

1. Impact Of The Application
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Investigation (Voice & NLP Features)

Competitor	Voice Commands	STT	TTS	Voice Reply	NLP Processing
Ferdi/Ferdium	No	No	No	No	No
Rambox	No	No	No	No	No
Wavebox	No	No	No	No	No
Beeper	No	No	No	No	Partial
Shift	No	No	No	No	No
Respond.io	Partial	No	No	No	Yes
Front/Hiver/Missive	No	No	No	No	Partial
Chatwoot	No	No	No	No	No
Crisp Chat	No	No	No	No	No
Superhuman	No	No	No	No	No
BrowserOS	No	No	No	No	No
Comet (Perplexity)	Partial	Partial	No	No	Yes
Opera Neon	No	No	No	No	No
Fellou	No	No	No	No	No
WorkEase	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Voice & NLP Features Analysis

Voice features represent a massive untapped opportunity. WorkEase is pioneering voice-first developer productivity tools.

Investigation (Research Analysis Overview)

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Investigation (Business Model)

Competitor	Pricing Model	Free Tier	Price Range	Team Plans	Enterprise	Open Source
Ferdi/Ferdium	Free/Donation	Yes	Free	No	No	Yes
Rambox	Freemium	Yes	$0–$12/mo	Yes	No	No
Wavebox	Freemium	Yes	$0–$20/mo	Yes	Yes	No
Beeper	Subscription	Limited	$10/mo	No	No	No
Shift	Freemium	Yes	$0–$149/yr	No	No	No
Respond.io	Freemium	Yes	$79–$499/mo	Yes	Yes	No
Front/Hiver/Missive	Subscription	Trial only	$19–$99/user/mo	Yes	Yes	No
Chatwoot	Freemium	Yes	$0–$99/agent/mo	Yes	Yes	Yes
Crisp Chat	Freemium	Yes	$0–$95/workspace/mo	Yes	Yes	No
Superhuman	Subscription	Trial only	$30/mo	Yes	Yes	No
BrowserOS	Free	Yes	Free	No	No	Yes
Comet (Perplexity)	Free Beta	Yes	Free (Beta)	No	No	No
Opera Neon	Free	Yes	Free	No	No	No
Fellou	Freemium	Yes	$0–$15/mo	Yes	No	No

Investigation (Research Analysis Overview)

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6. → **Market Dynamics**

Investigation (Market Dynamics)

Competitor	Growth Rate	Market Share	User Base	Funding	Partnerships	Market Trend
Ferdi/Ferdium	Slow	2%	50K+	None	Community	Stable
Rambox	Medium	5%	500K+	$2M	Few	Growing
Wavebox	High	8%	1M+	$15M	Several	Expanding
Beeper	High	6%	500K+	$30M	Many	Rapid growth
Shift	Low	7%	800K+	$20M	Some	Declining
Respond.io	High	4%	200K+	$25M	Many	Growing
Front/Hiver/Missive	Medium	10%	10K+ teams	$100M+	Enterprise	Mature
Chatwoot	Medium	3%	100K+	$8M	Growing	Growing
Crisp Chat	Low	2%	50K+	$5M	Few	Stable
Superhuman	Medium	1%	100K+	$110M	Few	Niche leader
BrowserOS	Unknown	<1%	<10K	None	None	Emerging
Comet (Perplexity)	Unknown	<1%	Beta users	Unknown	Few	Early stage
Opera Neon	Dead	0%	Discontinued	N/A	None	Defunct
Fellou	Unknown	<1%	Unknown	Unknown	None	Unknown

SWOT Analysis

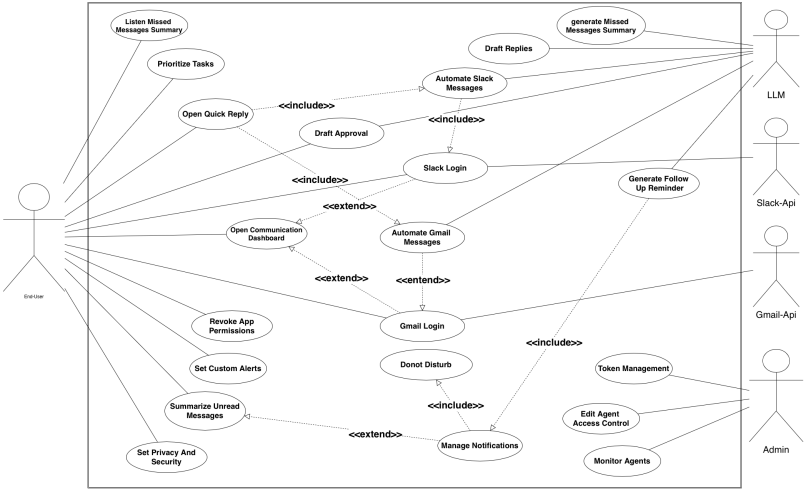
Strengths	Weaknesses
- Complete feature coverage across all categories - Unique OS-level integration capabilities - Local-first AI processing for privacy - Voice-first design with custom wake words - Developer-friendly with marketplace potential - Strong technical differentiation	- Pre-revenue with unproven business model - Small team vs. established competitors - No existing customer base - Requires technical expertise to implement - Limited marketing resources - Dependency on third-party APIs
Opportunities	**Threats**
- Growing remote work market ($500B+ by 2028) - AI automation becoming mainstream - Enterprise demand for unified tools - Partnership opportunities with SaaS providers - International expansion potential - M&A exit opportunities	- Big tech (Google, Microsoft) could replicate - Privacy regulations may limit functionality - Economic downturn affecting IT budgets - Open source alternatives emerging - Rapid technology changes - Cybersecurity risks

Problem Statement

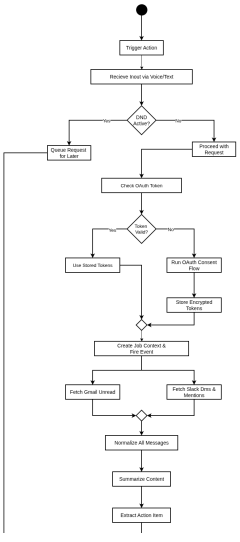
Refined Problem Statement

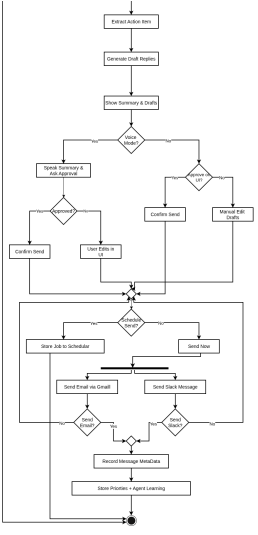
The absence of an integrated, voice-driven automation platform causes inefficiency and fragmented user experiences.

Use Case Diagram

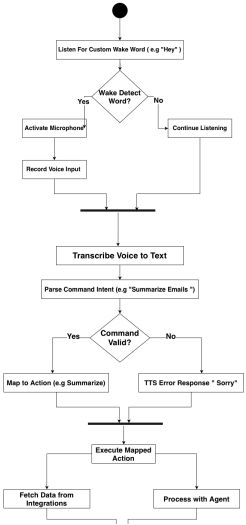


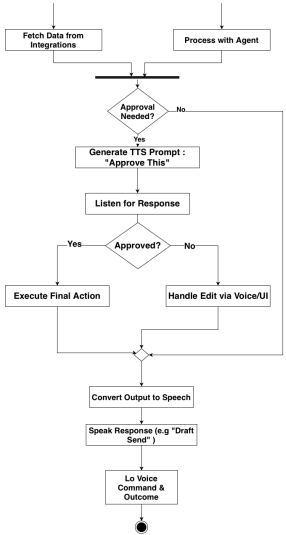
Activity Diagram 01 (Full system)



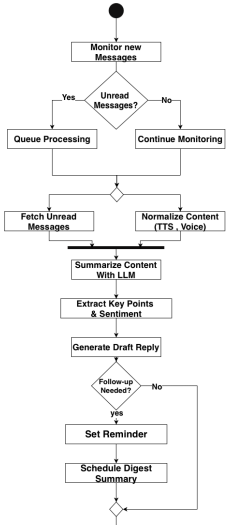


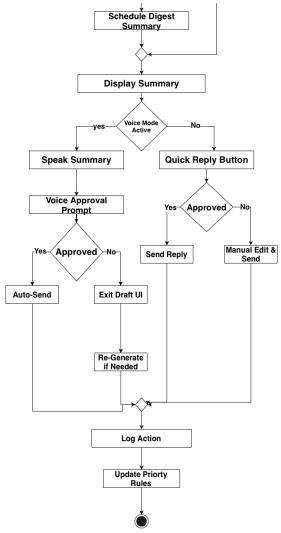
Activity Diagram 02 (Voice Based Interaction)



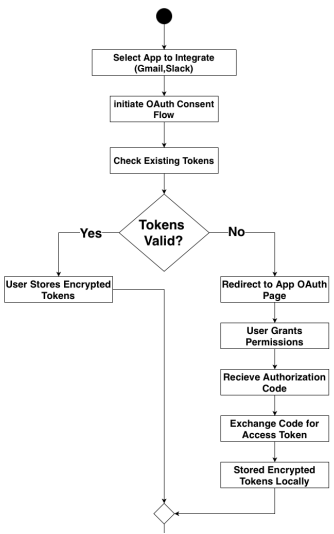


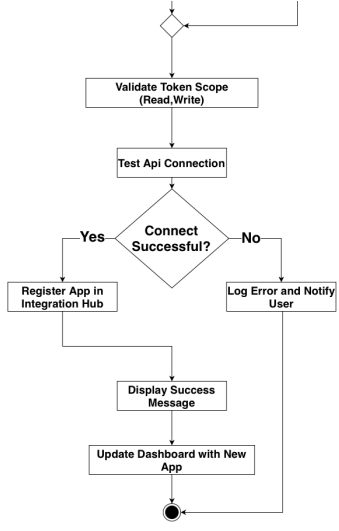
Activity Diagram 03 (Email/Message Automation)



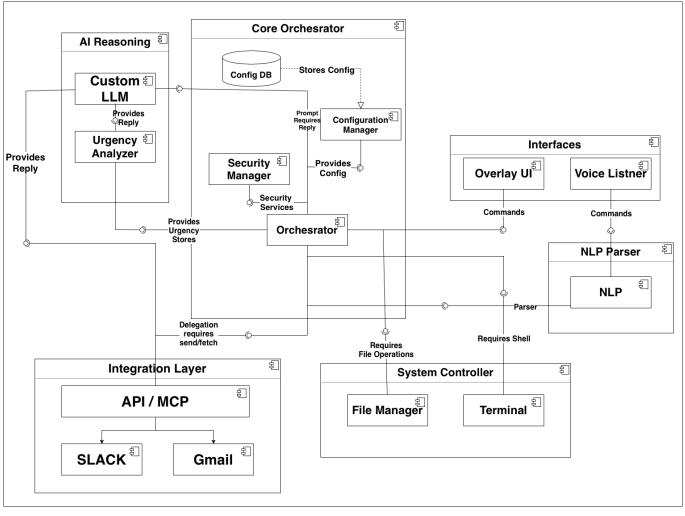


Activity Diagram 04 (Multi Application Integration)

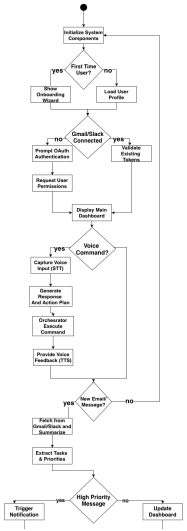


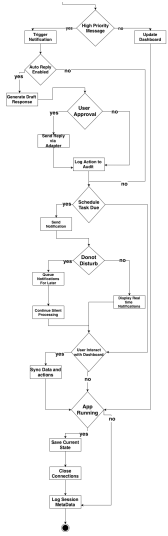


Component Diagram



Flow Diagram





Test Cases - Part 1

ID	Test Scenario	Objective	Pre-Conditions	Test Steps	Test Data	Expected Results
TC_INT_01	Verify multi-app integration (Slack + Gmail)	Ensure APIs connect and retrieve user data	Valid OAuth tokens	1. Launch system. 2. Connect Gmail and Slack. 3. Fetch inbox	Gmail + Slack credentials	Messages fetched and displayed in unified dashboard
TC_DASH_01	Test unified inbox dashboard	Validate aggregated notifications display	Both integrations active	1. Trigger new messages. 2. Open dashboard	Sample message events	Dashboard displays combined notifications accurately
TC_AUTO_01	Test auto email summarization	Verify NLP engine summarizes correctly	Gmail API connected	1. Run auto-summary agent. 2. Check accuracy	5 unread Gmail messages	Concise and contextually correct summaries
TC_TASK_01	Test task extraction	Ensure agent identifies and prioritizes tasks	Gmail + Slack active	1. Input sample messages. 2. Run extraction module	"Complete report by 5 PM"	Extracted task with correct deadline and priority
TC_NOTIF_01	Test configurable notifications	Validate user-defined alerts	Notification rules defined	1. Add rule. 2. Simulate trigger message	Subject: "Interview call invitation"	Pop-up or voice alert generated
TC_STATUS_01	Verify Slack status control via voice	Ensure status updates work through voice	Microphone and API access	1. Say "Mute Slack for 1 hour." 2. Observe status	Voice: "Mute Slack for 1 hour"	Slack status updated, mute begins
TC_AUTH_01	Test secure authentication	Ensure OAuth tokens safely stored	Internet connectivity active	1. Initiate authentication. 2. Verify encryption	User credentials	Tokens securely stored; expiry handled
TC_DRAFT_01	Test smart drafting and voice approval	Verify draft generation and approval	Gmail connected, NLP active	1. Generate draft. 2. Say "Send first draft"	Email: "Meeting at 3 PM?"	Draft generated, approved, and sent

Test Cases - Part 2

ID	Test Scenario	Objective	Pre-Conditions	Test Steps	Test Data	Expected Results
TC_REMIND_01	Test follow-up reminder system	Ensure reminders trigger correctly	Gmail + Slack active	1. Set reminder for 3 hours. 2. Wait or simulate delay	Reminder time = 3 hours	Reminder notification generated at correct time
TC_SENTI_01	Test sentiment and urgency analysis	Validate emotion and urgency detection	NLP model active	1. Analyze message with strong tone. 2. Observe classification	"URGENT! Project failed"	System marks as high urgency
TC_LOG_01	Verify audit trail and logs	Ensure all actions are logged	Admin access granted	1. Perform multiple tasks. 2. Open audit log	Log entries	Accurate logs for all actions displayed
TC_ACCESS_01	Test access revocation	Ensure user can revoke permissions	Active authenticated session	1. Revoke Gmail access. 2. Try Gmail task	Gmail integration	Agent loses access, shows "permission revoked"
TC_EVENT_01	Test quiet hours mode	Verify only urgent messages shown	Quiet hours set by user	1. Set quiet hours 10 PM–7 AM. 2. Trigger messages	Timestamps = 11 PM	Only urgent messages generate alerts
TC_SUM_01	Test automated daily digest	Ensure agent compiles low-priority messages	Gmail + Slack connected	1. Trigger digest summary. 2. Review result	10 new messages	Daily summary generated accurately
TC_RISK_01	Verify recovery from API failure	Ensure system handles disconnections	Internet connection unstable	1. Disconnect mid-operation. 2. Observe recovery	Slack API timeout	System retries or shows clear error

Project Timeline

Phase	Duration	Status	Semester
Phase 1: Research & Requirement Analysis	0-3 Weeks	Completed	Semester 1
Phase 2: System Design & Architecture	3-6 Week	Completed	Semester 1
Phase 3: API Research & Integration Testing	6-12 Weeks	In Progress	Semester 1
Phase 4: Backend & Core System Development	12-18 Weeks	Pending	Semester 1,2
Phase 5: Desktop App (Frontend)	18-22 Weeks	In Progress	Semester 1,2
Phase 6: Smart Automation & Features	22-26 Weeks	Pending	Semester 2
Phase 7: Testing, Evaluation & Finalization	26-28 Weeks	Pending	Semester 2

Thank you!

References

- Ferdium App - GitHub Repository
- Ferdi: A Free & Open-Source Alternative to Franz & Rambox (It's FOSS)
- Download Ferdium (Gizmodo)
- Rambox - Crunchbase
- Rambox - Tracxn
- Rambox - GetLatka Revenue Profile
- Wavebox - Crunchbase
- Wavebox - Tracxn
- Wavebox Official Website
- Wavebox Pricing Page
- Beeper - Tracxn
- Beeper (Software) - Wikipedia
- Beeper Acquisition - TechCrunch
- Beeper - CB Insights

References

- Shift - Crunchbase
- Shift - Capterra
- Superhuman - CB Insights
- Superhuman Business Breakdown - Contrary Research
- Superhuman - Sacra
- Superhuman - Tracxn
- Superhuman - Crunchbase
- Front Blog: Shared Inbox Tools
- Missive Official Website
- Front Alternatives - Help Scout
- Front Alternatives - Canary Mail
- Hiver Shared Inbox Tools
- Respond.io - Tracxn
- Respond.io - Wikipedia

References

- Respond.io Funding - TechNode Global
- Respond.io Series A - Medium
- Respond.io - CB Insights
- Chatwoot - Tracxn
- Chatwoot - VentureBeat
- Chatwoot Official Website
- Chatwoot - CB Insights
- Chatwoot - Y Combinator
- Chatwoot - Crunchbase
- Ferdi Alternatives - AlternativeTo
- PitchBook - Private Company Financials Database

Appendix

Research Review

No.	Author(s) & Year	Title / Source	Core Focus / Methodology	Relevance to FYP
1	Kumar, D. & Li, H. (2023)	*A pragmatic and semantic unified framework for agent communication*, ACM TiiS.	Develops multi-agent coordination across APIs.	Enables unified automation logic.
2	Cao, J. (2024)	*Deploying Large Language Models as Agents*, MIT CSAIL.	Connects LLMs to external APIs through autonomous agents.	Blueprint for local LLM agent layer.
3	Vijay Kumar, G., Jayanthi. (2024)	*Real Time Text and Speech Recognition System*	Proposes a real-time text and speech recognition framework using GTTS and Python for natural voice interaction.	Supports speech-based automation module (STT/TTS) for unified communication system.