

Quanton OS Agent Architecture Reference

Version: 3.0 | Developer Reference Document

Overview

Quanton OS deploys 8 coordinated AI agents that collectively cover the operational surface area of a \$1M–\$20M business. Seven agents handle specific functional domains. The eighth, the Governing Agent, orchestrates all others, manages exceptions, and provides unified visibility to leadership.

Every agent operates under a hybrid execution model: AI-assisted execution with human approval at decision points. No agent acts autonomously on decisions that affect customers, revenue, or compliance. The human remains accountable. The agent handles throughput, consistency, and pattern detection.

Agent Roster

#	Agent Name	Primary Domain	Underlying Architecture
1	Marketing and Content Agent	Content creation, campaigns, repurposing, competitive intelligence	Marketing Agent + Social Media Agent
2	Sales Agent	Lead response, proposals, follow-up, prospecting, pipeline	Sales Agent
3	Customer Experience Agent	Service, scheduling, reviews, retention, website engagement	Customer Service Agent + Customer Intelligence Agent + Chatbot Agent
4	People and Team Agent	Hiring, onboarding, performance, training, scheduling	People Operations Agent
5	Operations Agent	Task management, SOPs, vendors, meetings, knowledge, quality	Operations Agent + Knowledge Agent (partial)

6	Inventory and Supply Chain Agent	Stock tracking, reorders, supplier communication, cost analysis	Inventory Agent
7	Finance Agent	Invoicing, expenses, reporting, contracts, compliance	Accounting Agent + Compliance Agent
8	Governing Agent	Orchestration, exceptions, dashboards, internal communications	Governing Agent + Knowledge Agent (partial)

AGENT 1: MARKETING AND CONTENT AGENT

Purpose

Plans, creates, distributes, and repurposes content across all channels with brand voice governance, editorial calendar management, and competitive intelligence.

Core Functions

Function	Description	Frequency
Social media content creation	Generates platform-specific posts aligned with brand voice, content calendar, and campaign objectives. Drafts copy, suggests visual assets, and queues for approval.	Daily
Long-form content production	Drafts blog posts, articles, guides, white papers, and thought leadership content. Maintains topic clusters and SEO alignment.	Weekly
Email campaign management	Creates email sequences (nurture, promotional, newsletter, event). Manages segmentation logic, send scheduling, and performance tracking.	Weekly
Content repurposing	Transforms a single content asset (article, video, case study) into multiple format variants for distribution across social, email, website, and advertising channels.	Weekly
Editorial calendar management	Maintains the content calendar, tracks publication dates, coordinates with campaign timelines, and flags gaps in content coverage.	Ongoing

Brand voice governance	Enforces tone, terminology, and messaging consistency across all generated content. Flags deviations from brand standards before publish.	Ongoing
Competitive and market monitoring	Tracks competitor content output, pricing changes, positioning shifts, and market trends. Surfaces intelligence relevant to content strategy.	Weekly
Performance tracking	Monitors content engagement metrics (reach, clicks, conversions, shares) across platforms. Identifies top-performing formats and topics.	Weekly

Approval Gates

- All content queued for human review before publish
- Brand voice deviations flagged before output reaches approval queue
- Campaign launches require explicit human approval
- Competitive intelligence summaries marked advisory (no auto-action)

Integration Points

- CRM (audience segmentation, lead source attribution)
- Social media platforms (scheduling, posting, engagement metrics)
- Email marketing platform (sequence management, send execution)
- Website CMS (blog publishing, landing page updates)
- Analytics platforms (traffic, engagement, conversion tracking)
- Governing Agent (performance data feeds to dashboard, exception escalation)

AGENT 2: SALES AGENT

Purpose

Manages the revenue pipeline from lead response through close, generating proposals, running follow-up sequences, executing outbound prospecting, and tracking pipeline health with human approval at every decision point.

Core Functions

Function	Description	Frequency
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Inbound lead response	Acknowledges inbound inquiries across all channels within defined SLA. Routes to appropriate team member or initiates qualification sequence.	Real-time
Lead qualification	Evaluates inbound leads against defined criteria (revenue, industry, pain point, fit). Scores and prioritizes for human follow-up.	Real-time
Proposal and quote generation	Generates proposals, estimates, SOWs, or quotes from CRM data, pricing rules, and service templates. Queues for human review before send.	On demand
Follow-up sequence execution	Runs multi-touch follow-up sequences for prospects at defined pipeline stages. Adjusts timing and messaging based on engagement signals.	Daily
Outbound prospecting	Identifies prospects matching ideal customer profile. Generates personalized outreach sequences. Tracks response and engagement.	Weekly
Pipeline tracking	Maintains pipeline data (stage, value, probability, next action) across all active opportunities. Flags stalled deals and overdue actions.	Ongoing
Revenue forecasting	Synthesizes pipeline data into revenue forecasts by period. Surfaces variance between forecast and actual.	Weekly / Monthly
Win/loss documentation	Captures outcome data on closed opportunities. Documents win/loss reasons for pattern analysis.	Per opportunity

Approval Gates

- Proposals require human review and approval before send
- Outbound messaging requires initial template approval; subsequent sequences operate within approved parameters
- Pipeline stage changes above defined thresholds trigger human review
- Revenue forecasts marked advisory (human validates before reporting)

Integration Points

- CRM (contact data, deal pipeline, activity logging)
- Email platform (sequence execution, tracking)
- Calendar (meeting scheduling for qualified leads)
- Website (form submissions, chat-to-lead capture)
- Finance Agent (revenue data, invoice status on active accounts)

- Governing Agent (pipeline metrics feed to dashboard, stalled deal escalation)
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AGENT 3: CUSTOMER EXPERIENCE AGENT

Purpose

Manages all post-acquisition customer interactions including service delivery support, scheduling, complaint handling, review generation, retention monitoring, and website visitor engagement.

Core Functions

Function	Description	Frequency
Common question handling	Answers frequently asked questions across channels (website chat, email, phone, social DMs) using approved response libraries. Routes complex questions to humans.	Real-time
Appointment and booking management	Manages scheduling across providers, rooms, and resources. Handles confirmations, reminders, reschedules, cancellations, and waitlist management.	Real-time
Complaint and escalation routing	Receives complaints, categorizes by severity and type, routes to appropriate owner, tracks resolution timeline, and triggers escalation if SLA is breached.	Real-time
Post-service follow-up	Triggers satisfaction checks, review requests, and rebooking prompts at defined intervals after service delivery.	Per service event
Review monitoring and response	Monitors reviews across platforms (Google, Yelp, industry-specific). Drafts responses for human approval. Flags negative patterns that indicate operational issues.	Daily
Client onboarding	Executes onboarding sequences for new customers: welcome communication, intake documentation, access provisioning, and expectation-setting.	Per new client
Retention and churn prevention	Monitors engagement signals (visit frequency, purchase recency, communication responsiveness). Identifies at-risk customers and triggers re-engagement sequences.	Ongoing

Customer segmentation	Segments customers by value, frequency, service type, and engagement level. Surfaces segment-level insights for marketing and sales strategy.	Ongoing
Website visitor engagement	Engages website visitors through chat interface. Qualifies intent, answers questions, captures lead information, and routes to Sales Agent when appropriate.	Real-time

Approval Gates

- Review responses require human approval before posting
- Complaint escalation paths are predefined; agent routes, human resolves
- Retention offers or incentives require human approval
- Onboarding sequences operate within approved templates; exceptions flagged

Integration Points

- CRM (customer data, interaction history, segmentation)
- Booking/scheduling platform (calendar management, availability)
- Review platforms (Google Business, Yelp, industry platforms)
- Website (chat widget, form captures)
- Email/SMS platform (follow-up and retention sequences)
- Sales Agent (lead handoff from website engagement)
- Governing Agent (satisfaction metrics, complaint volume, churn indicators feed to dashboard)

AGENT 4: PEOPLE AND TEAM AGENT

Purpose

Manages the employee lifecycle from recruiting through development, including job posting, candidate screening, onboarding, performance preparation, certification tracking, and team scheduling.

Core Functions

Function	Description	Frequency
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Job description creation	Generates job postings from role requirements, team needs, and brand voice standards. Formats for multiple platforms.	On demand
Job distribution	Posts approved listings across relevant job boards, social platforms, and industry channels.	On demand
Candidate screening	Screens incoming applications against defined criteria (experience, certifications, skills). Ranks and shortlists for human review.	Per posting
Interview scheduling	Coordinates interview scheduling across hiring team calendars. Manages candidate communication throughout the process.	Per candidate
Onboarding document generation	Creates offer letters, welcome packets, policy acknowledgments, training schedules, and system access requests from approved templates.	Per new hire
Onboarding sequence execution	Runs structured onboarding workflows: document collection, training assignment, team introductions, and checkpoint scheduling.	Per new hire
Performance review preparation	Aggregates performance data (metrics, feedback, goal progress) into structured review documents for manager review and completion.	Quarterly / Annual
Certification and license tracking	Monitors expiration dates for professional licenses, trade certifications, safety credentials, and continuing education requirements. Triggers renewal alerts.	Ongoing
Training assignment and tracking	Assigns required training based on role, tracks completion, and flags overdue items.	Ongoing
Team scheduling	Creates and manages work schedules, tracks hours, monitors utilization, and flags coverage gaps.	Daily / Weekly

Approval Gates

- Job postings require human approval before distribution
- Candidate shortlists presented for human selection; agent does not make hiring decisions
- Offer letters require human approval before send
- Performance review drafts are preparation documents; manager completes and delivers

Integration Points

- HRIS / HR platform (employee records, payroll coordination)
 - Job boards and platforms (posting distribution)
 - Calendar (interview scheduling, onboarding meetings)
 - Project management platform (task assignment, workload tracking)
 - Compliance Agent function within Finance Agent (certification and licensing data)
 - Governing Agent (headcount metrics, certification compliance status feed to dashboard)
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AGENT 5: OPERATIONS AGENT

Purpose

Manages internal execution infrastructure including task assignment, procedure documentation, vendor coordination, meeting management, knowledge access, and quality assurance.

Core Functions

Function	Description	Frequency
Task assignment and tracking	Creates, assigns, and tracks tasks across team members. Monitors progress against deadlines. Flags overdue items and workload imbalances.	Daily
SOP creation and maintenance	Generates and updates standard operating procedure documentation. Maintains version control. Flags procedures due for review.	Ongoing
Vendor and supplier coordination	Manages vendor communication, tracks order status, monitors delivery timelines, and flags issues requiring human intervention.	Weekly
Meeting agenda preparation	Generates meeting agendas from open items, project status, and decision queues. Distributes to participants in advance.	Per meeting
Meeting notes and action items	Captures meeting discussions, extracts decisions and action items, assigns owners, and tracks follow-through.	Per meeting
Quality assurance monitoring	Audits process adherence against defined standards. Flags deviations. Tracks quality metrics over time.	Ongoing

Process compliance verification	Verifies that workflows are executed according to documented procedures. Identifies non-compliance patterns.	Ongoing
Internal knowledge base management	Maintains searchable repository of procedures, policies, templates, and institutional knowledge. Updates content as processes change.	Ongoing
Institutional knowledge capture	Extracts and structures expertise from experienced team members (via meeting transcripts, process observations, and documentation reviews) into searchable, governed content.	Ongoing
Workflow optimization identification	Analyzes task completion data, time tracking, and process flow to identify bottlenecks, redundancies, and improvement opportunities.	Monthly

Approval Gates

- SOP changes require human review and approval before publishing
- Vendor communications above defined thresholds require human approval
- Quality deviation reports flagged for human investigation
- Knowledge base content requires review before publication

Integration Points

- Project management platform (task creation, status tracking, workload data)
- Communication platforms (Slack, Teams, email for notifications and coordination)
- Document management (SOP storage, version control)
- Calendar (meeting scheduling, agenda distribution)
- Vendor platforms (order management, communication)
- All other agents (operations tasks generated by other agent activities)
- Governing Agent (operational metrics, compliance status, bottleneck identification feed to dashboard)

AGENT 6: INVENTORY AND SUPPLY CHAIN AGENT

Purpose

Manages physical inventory and supply chain operations including stock tracking, automated reordering, supplier communication, and cost analysis.

Core Functions

Function	Description	Frequency
Stock level monitoring	Tracks inventory levels across locations, categories, and storage points. Monitors consumption rates against current stock.	Real-time / Daily
Low-stock alerting	Flags items approaching or below reorder thresholds. Distinguishes between routine reorder and urgent shortage.	Real-time
Automated reorder triggering	Generates purchase orders when stock drops below defined thresholds. Applies reorder quantity rules based on historical consumption and lead times.	On trigger
Supplier communication	Manages routine supplier communications: order confirmations, delivery status inquiries, backorder tracking, and quality issue reporting.	As needed
Delivery tracking	Tracks inbound shipments against expected delivery dates. Flags delays and coordinates with Operations Agent for schedule adjustments.	Daily
Inventory cost analysis	Analyzes unit costs, identifies margin compression, compares supplier pricing, and flags cost trend changes.	Monthly
Waste and shrinkage tracking	Monitors inventory discrepancies between expected and actual stock. Identifies patterns in waste, damage, or shrinkage.	Ongoing
Seasonal demand preparation	Analyzes historical demand patterns to forecast seasonal inventory needs and trigger advance ordering.	Quarterly
Expiration and shelf-life monitoring	Tracks expiration dates for perishable or time-sensitive inventory. Flags items approaching expiration for prioritized use or markdown.	Daily / Weekly

Approval Gates

- Purchase orders above defined dollar thresholds require human approval
- New supplier additions require human approval
- Pricing changes flagged for human review before acceptance
- Inventory write-offs require human approval

Integration Points

- Inventory management / POS system (stock data, transaction history)
 - ERP (if applicable, for enterprise-level inventory coordination)
 - Supplier portals / email (order communication)
 - Finance Agent (cost data, purchase order reconciliation)
 - Operations Agent (job scheduling coordination for material availability)
 - Governing Agent (inventory health metrics, cost trends, shortage alerts feed to dashboard)
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AGENT 7: FINANCE AGENT

Purpose

Manages financial operations including invoicing, payment collection, expense tracking, financial reporting, contract management, and regulatory compliance documentation.

Core Functions

Function	Description	Frequency
Invoice generation	Creates invoices from completed work, time tracking, project milestones, or subscription events. Formats per client and payment terms.	Per event / Weekly
Payment reminders and collection	Sends automated payment reminders at defined intervals. Escalates overdue accounts through a graduated sequence. Tracks receivables aging.	Ongoing
Expense capture and categorization	Processes receipts, invoices, and transaction data. Categorizes expenses by account, department, and project. Flags anomalies.	Daily
Expense reconciliation	Matches expenses to purchase orders, supplier invoices, and bank transactions. Identifies discrepancies.	Weekly / Monthly
Financial report generation	Produces P&L statements, cash flow summaries, margin analyses, and budget variance reports. Formats for leadership review.	Monthly

Revenue analysis	Breaks down revenue by service line, client, channel, and period. Identifies trends, concentration risks, and growth patterns.	Monthly
Contract generation	Creates contracts, agreements, and engagement letters from approved templates with variable population. Tracks execution status.	On demand
Contract renewal tracking	Monitors contract expiration dates, triggers renewal sequences, and flags contracts approaching end-of-term.	Ongoing
Compliance documentation	Maintains licensing records, insurance certificates, regulatory filings, and audit-ready documentation. Triggers renewal alerts.	Ongoing
Tax preparation support	Organizes financial data, categorizes transactions, and assembles documentation for accountant or tax advisor review.	Quarterly / Annual
Commission and compensation tracking	Calculates commissions, tips, bonuses, and performance-based compensation from operational data and defined rules.	Per pay period

Approval Gates

- Invoices above defined thresholds require human review before send
- Financial reports marked as drafts until human validates
- Contracts require human review and approval before send
- Compliance filings require human verification
- Write-offs, adjustments, and credit memos require human approval

Integration Points

- Accounting platform (QuickBooks, Xero, or equivalent)
 - Banking / payment processing (transaction data, payment status)
 - CRM (client billing data, deal values)
 - Project management platform (time tracking, milestone completion)
 - HR / payroll platform (compensation data)
 - All other agents (financial data generated by agent activities)
 - Governing Agent (financial metrics, cash position, margin trends, compliance status feed to dashboard)
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AGENT 8: GOVERNING AGENT

Purpose

The Governing Agent is the orchestration layer that makes Quanton OS a system rather than a collection of tools. It coordinates all other agents, manages cross-functional exceptions, synthesizes performance data into unified dashboards, handles internal communications, and enforces operational governance. It is the reason Quanton OS is classified as an operating system.

Core Functions

Function	Description	Frequency
Cross-agent coordination	Manages dependencies and handoffs between agents. Ensures that actions taken by one agent trigger appropriate responses from others.	Real-time
Exception management	Detects exceptions that fall outside individual agent parameters. Routes to appropriate human decision-maker with context and recommended action.	Real-time
Conflict resolution	Identifies conflicting outputs or recommendations across agents (e.g., Sales Agent commits delivery date that Operations Agent cannot support). Flags for human arbitration.	Real-time
Real-time leadership dashboard	Synthesizes performance data from all agents into a single operational view. Displays KPIs, alerts, trends, and exception status. Configurable by role.	Real-time
Performance synthesis	Aggregates metrics across all functions into periodic reports (weekly, monthly, quarterly). Identifies cross-functional patterns and interdependencies.	Weekly / Monthly
Variance detection and alerting	Monitors KPIs against defined thresholds. Alerts leadership when metrics deviate beyond acceptable ranges. Provides context for the deviation.	Real-time
Internal communications drafting	Generates team updates, meeting summaries, status reports, and stakeholder communications synthesized from operational data across all agents.	Weekly
Cross-department coordination alerts	Notifies affected teams when one department's activity impacts another (e.g., marketing campaign launch affecting customer service volume).	As needed

Governance enforcement	Monitors agent compliance with defined operating procedures, approval gates, and quality standards. Flags governance breaches.	Ongoing
Drift detection	Identifies gradual degradation in agent performance, process compliance, or data quality that would not trigger immediate alerts but indicates systemic issues.	Ongoing
Escalation management	Manages the escalation framework across all agents. Ensures that escalated items reach the right decision-maker with appropriate context and urgency classification.	Real-time
Audit trail maintenance	Logs all agent actions, human approvals, exceptions, and decision outcomes for compliance, review, and optimization purposes.	Ongoing

Approval Gates

- The Governing Agent does not make business decisions. It surfaces information, routes exceptions, and enforces governance.
- Dashboard data is continuously available; periodic reports are marked draft until human validates
- Internal communications drafted by the Governing Agent require human review before distribution
- Escalation routing is automated; resolution is always human

Integration Points

- All 7 functional agents (data ingestion, exception routing, coordination)
- Project management platform (system-level operational view)
- Business intelligence / dashboard platform (visualization)
- Communication platforms (Slack, Teams, email for alerts and updates)
- CRM (unified customer and pipeline data)
- Accounting platform (financial data)

What Makes the Governing Agent the Differentiator

Without the Governing Agent, the other 7 agents are functionally equivalent to a collection of Zapier automations and ChatGPT prompts. They execute tasks in isolation. They do not know what the other agents are doing. They cannot detect cross-functional conflicts. They cannot synthesize performance into a unified view. They cannot enforce governance.

The Governing Agent converts 7 disconnected automations into an operating system. This is the core positioning distinction between Quanton OS and every other AI automation offering in the market:

- **Automation agencies** deploy workflows. Quanton OS deploys a governed system.
- **Fractional COOs** provide oversight. Quanton OS embeds oversight into the architecture.
- **AI tools** generate outputs. Quanton OS coordinates outputs into operational intelligence.

The Governing Agent is the reason a business owner can look at one dashboard and understand the health of every function in their operation. It is the layer that makes AI infrastructure rather than tooling.

Agent Interaction Model

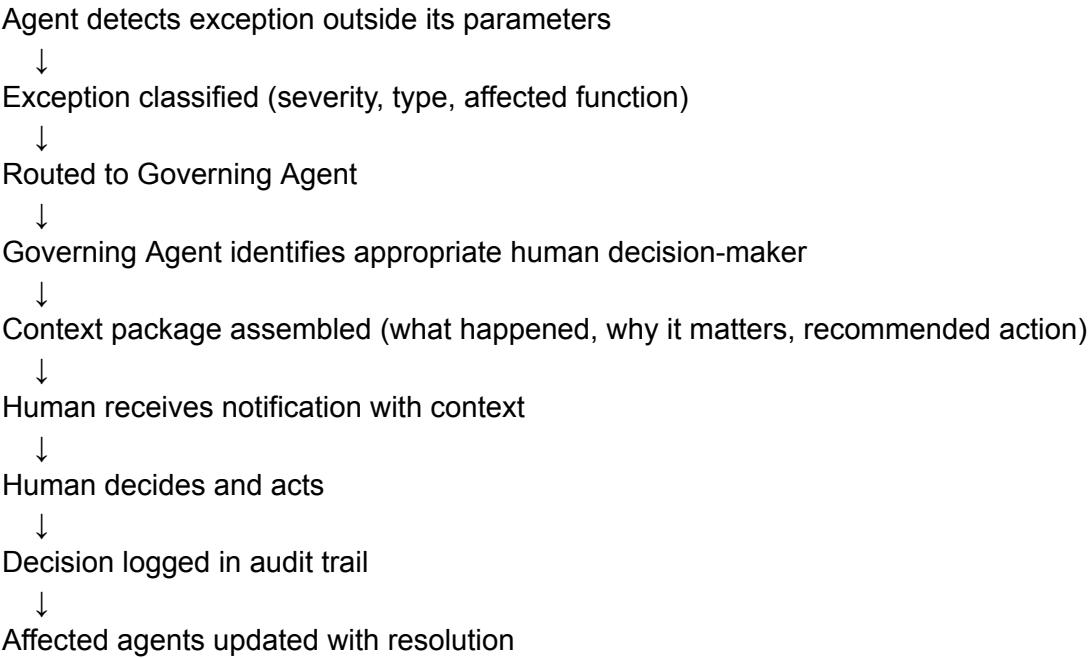
The agents do not operate independently. The following interaction patterns define how they coordinate:

Primary Handoffs

From Agent	To Agent	Trigger
Customer Experience	Sales	Website visitor qualifies as lead
Sales	Customer Experience	Deal closed, new client onboarding initiated
Sales	Finance	Deal closed, invoice generation triggered
Customer Experience	Operations	Complaint requires process investigation
Operations	People and Team	Task assignment reveals capacity gap
People and Team	Operations	New hire onboarded, task eligibility updated
Inventory	Operations	Stock shortage affects scheduled work
Inventory	Finance	Purchase order generated, expense recorded
Marketing	Sales	Campaign generates qualified leads

Marketing	Customer Experience	Campaign launch increases inbound volume
All Agents	Governing Agent	Exception detected, metric threshold breached, cross-agent conflict identified
Governing Agent	All Agents	Governance directive, coordination instruction, escalation routing

Exception Flow



Assessment-to-Agent Mapping

This table maps each assessment domain to its agent, showing the developer how the assessment structure connects to the agent architecture in the results display.

Assessment Domain	Agent	Assessment Tasks
Marketing and Content	Marketing and Content Agent	1.1, 1.2, 1.3, 1.4, 1.5
Sales	Sales Agent	2.1, 2.2, 2.3, 2.4, 2.5
Customer Experience	Customer Experience Agent	3.1, 3.2, 3.3, 3.4, 3.5, 3.6

People and Team	People and Team Agent	4.1, 4.2, 4.3, 4.4, 4.5
Operations	Operations Agent	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7
Delivery and Projects	Operations Agent (extended)	6.1, 6.2, 6.3
Inventory and Supply	Inventory and Supply Chain Agent	7.1, 7.2, 7.3, 7.4
Finance	Finance Agent	8.1, 8.2, 8.3, 8.4, 8.5
(Not assessed)	Governing Agent	Revealed in results only

Technical Context for Development

Execution Model

All agents operate under hybrid execution: AI handles throughput, pattern detection, and draft generation. Humans handle approval, judgment, and exception resolution. No agent bypasses human approval on decisions affecting customers, revenue, or compliance.

Agent Tier Alignment (from Quanton OS Framework)

Tier	Percentage of Workflows	Role
Launch	8%	Task-level automation (data routing, notifications, basic processing)
Elevate	42%	Analytical systems (diagnostics, content planning, dashboards, QA)
Command	50%	Multi-agent orchestrators (KPI management, performance reviews, cross-platform coordination)

The Governing Agent operates exclusively at the Command tier. Most functional agents span Elevate and Command tiers depending on the specific function.

Platform Architecture

Agent Server

- Runtime: Node.js
- Hosting: Proprietary Quanton Labs server infrastructure

- **Orchestration:** Fully custom-built orchestration layer (no third-party orchestration platforms)
- **Agent coordination:** Shared state architecture. All agents read from and write to a unified state layer, enabling real-time cross-agent awareness and coordination. The Governing Agent monitors this shared state to detect exceptions, conflicts, and escalation triggers.

Intelligence Layer

- **Multi-model architecture.** Agents use a combination of LLMs selected per function based on capability, cost, and performance requirements.
- **Model selection** is managed at the agent level, allowing different agents (or different functions within an agent) to use different models as appropriate.
- **Model routing and fallback logic** handled within the custom orchestration layer.

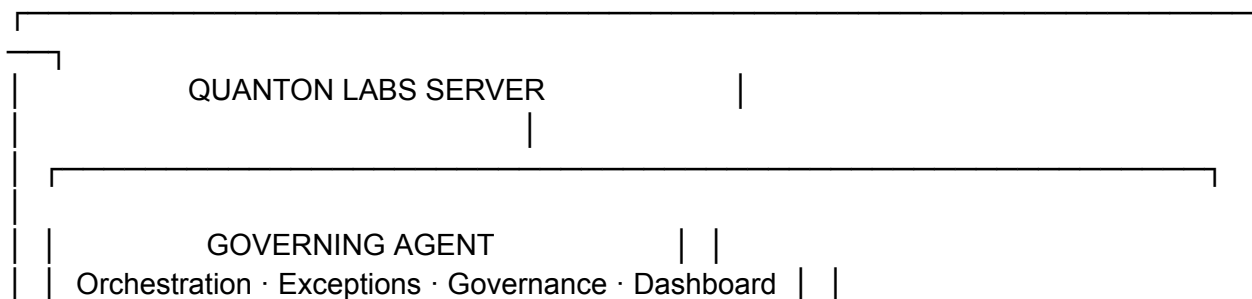
Client Platform Integration

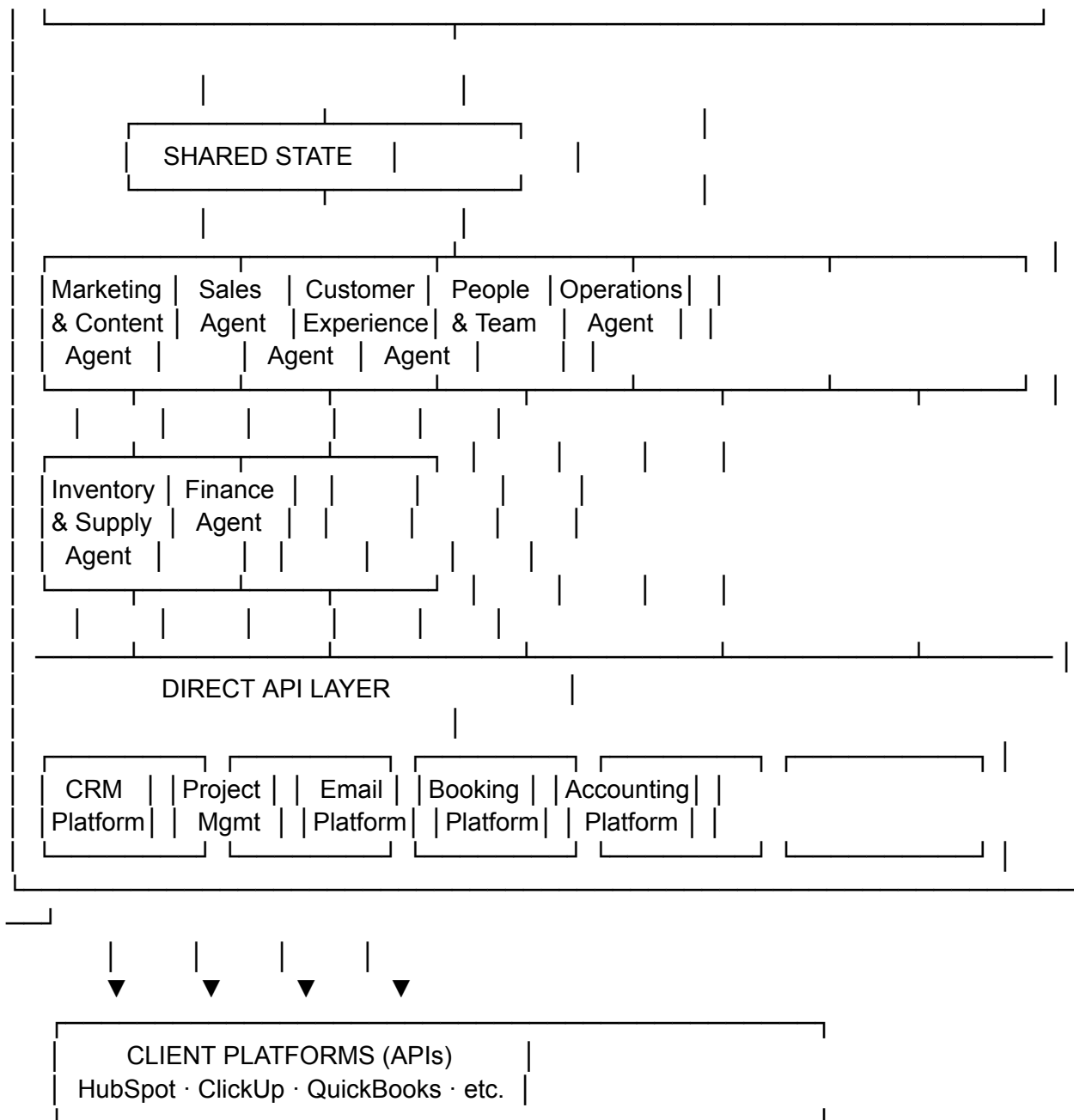
- **Direct API connections** to client platforms (CRM, project management, accounting, scheduling, etc.)
- **No middleware abstraction layer.** Each integration is a direct API call from the agent server to the client's platform.
- **Supported CRM platforms:** HubSpot, Salesforce, Pipedrive, Zoho, and others via their respective APIs.
- **Supported project management platforms:** ClickUp, Monday, Asana, Notion, and others via their respective APIs.
- **Additional platform integrations** (email, social, accounting, booking) connected via direct API as required per client configuration.

Dashboard

- **Custom-built dashboard application** hosted on Quanton Labs server infrastructure.
- The **Governing Agent** feeds synthesized data from all functional agents into the dashboard in real-time.
- Dashboard is the primary interface for business owner and management visibility into agent activity, operational metrics, exception status, and cross-functional performance.

Architecture Diagram (logical)





Key architectural principles:

- All agent logic runs on Quanton Labs infrastructure. No client-side agent execution.
- Shared state enables any agent to be aware of any other agent's activity without direct inter-agent API calls.
- The Governing Agent has read access to all shared state and write access to escalation, coordination, and governance directives.
- Functional agents have read/write access to their own domain state and read access to relevant cross-domain state as defined by the Governing Agent's coordination rules.

- Client platform credentials are managed securely on the Quanton Labs server. Agents authenticate to client platforms on behalf of the client.
 - The dashboard is a distinct application layer consuming Governing Agent output, not a direct view into agent internals.
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Source Reference

Agent architecture based on Quanton OS Framework Definition v3.0 and Quanton Labs Strategic Vision v2.0. Assessment mapping aligned with AI Agent Coverage Assessment v3.0.