McWendy KING

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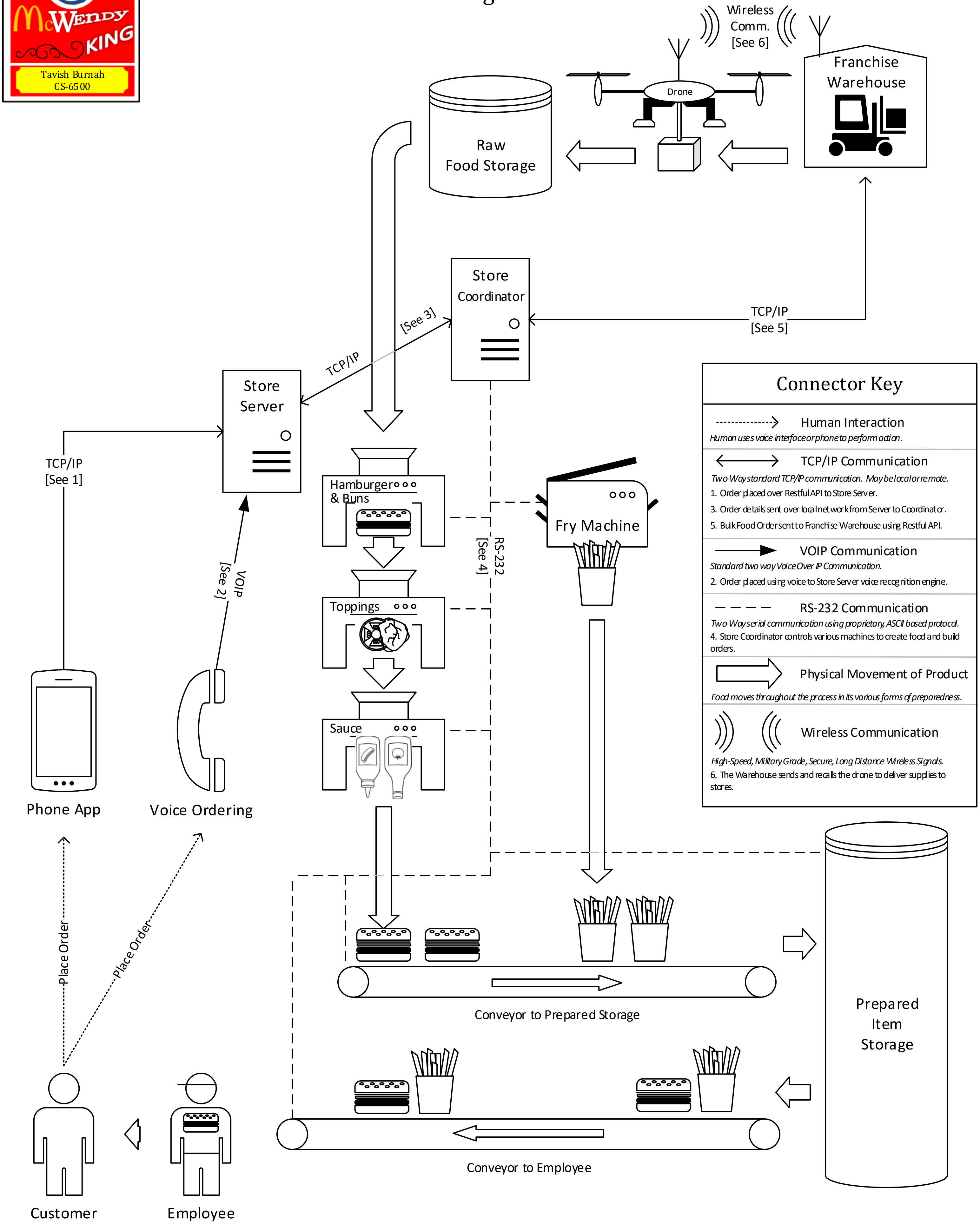
CS-6500

System Architecture Diagram



Connector Key

Human Interaction

Human uses voice interface or phone to perform action.

TCP/IP Communication

Two-Way standard TCP/IP communication. May be local or remote.

1. Order placed over Restful API to Store Server.

3. Order details sent over local network from Server to Coordinator.

5. Bulk Food Order sent to Franchise Warehouse using Restful API.

VOIP Communication

Standard two way Voice Over IP Communication.

2. Order placed using voice to Store Server voice recognition engine.

RS-232 Communication

Two-Way serial communication using proprietary, ASCII based protocol.

4. Store Coordinator controls various machines to create food and build orders.

Physical Movement of Product

Food moves throughout the process in its various forms of preparedness.

Wireless Communication

High-Speed, Military Grade, Secure, Long Distance Wireless Signals.

6. The Warehouse sends and recalls the drone to deliver supplies to stores.

System Architecture
Diagram Explanation

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McWendyKing (Jr) is designed to be a self managing burger and fries restaurant. The food is so fresh that when in the customers' hands it will be the first time the food has been touched by a human. The system is designed to be safe, reliable, fast and available and maintainable.

The basic concept of the system consists of two layers of food ordering process. The first layer lies on the Store Server and handles the customer interaction. It takes and stores customer orders, give status on the orders, and provides menu information. Order-taking supports both app-based and voice based ordering. All scripts used in the voice based system have been designed by a team consisting of child psychologists and dietary specialists to give the user friendly, healthy suggestions on what they may want. The voice itself was purchased from the Stephen Hawking foundation and gives the impression of intelligence.

The second layer of the system, the Store Coordinator handles the operation of the food storage and creation. It receives orders from the Store Server and takes all food handling responsibility from there. The Store Server uses advanced analytics and predictive algorithms to determine when food should be made so it will be fresh, hot and ready for the customers. Part of the Store Server contains a myriad of instructions it can send to the various mechanisms in the bowels of the store to create exquisite cuisine.

The Store Coordinator layer also contains a watchdog which monitors all of the advanced equipment. This is key to the high availability of each component in the store. If any piece of machinery is having issues, the watchdog is able to pause any processes and reset that machinery. If the system continues to have issues, the watchdog may submit a repair ticket to the franchise offices and update the Store Server on the unavailability of any effected menu items.

All communication between the Store Coordinator and the food machinery is performed through RS-232 communication. This ASCII based protocol is simple and straight-forward. The simplicity helps ensure the system won't lose food preparation messages, and that each order is received with speed.

The mechanics that allow the store to work are hermetically sealed and run in an airless environment. The burger machinery within the system works using a pipes and filter model. This allows a wide variety of burgers to be created and stored. The storage of both raw and prepared food is also monitored. The potato fry machine prints fries using state of the art 3d printing technology. Two conveyer systems exist: one to take the food from the machinery to climate controlled, medical grade, prepared storage areas; and one to take the food from these areas to a highly trained employee who will hand the food to the customer.

If ever raw material gets low, resupply drones are summoned from the franchise warehouses. The resupply process is fully automated to ensure food safety at all times. A military grade, ultra-secured, long range proprietary wireless technology is used to direct the drone to the correct store. In addition to the delivery drone, repair tickets are handled by repair drones to keep the food preparation area free of contaminates.

When completed, we anticipate this model of restaurant will be envied and emulated throughout the world. Phase 2 of the plan will further the atomicity of the system by replacing all human customers with automated, robotic ones. At that point we can ensure the customer ratings will be excellent.

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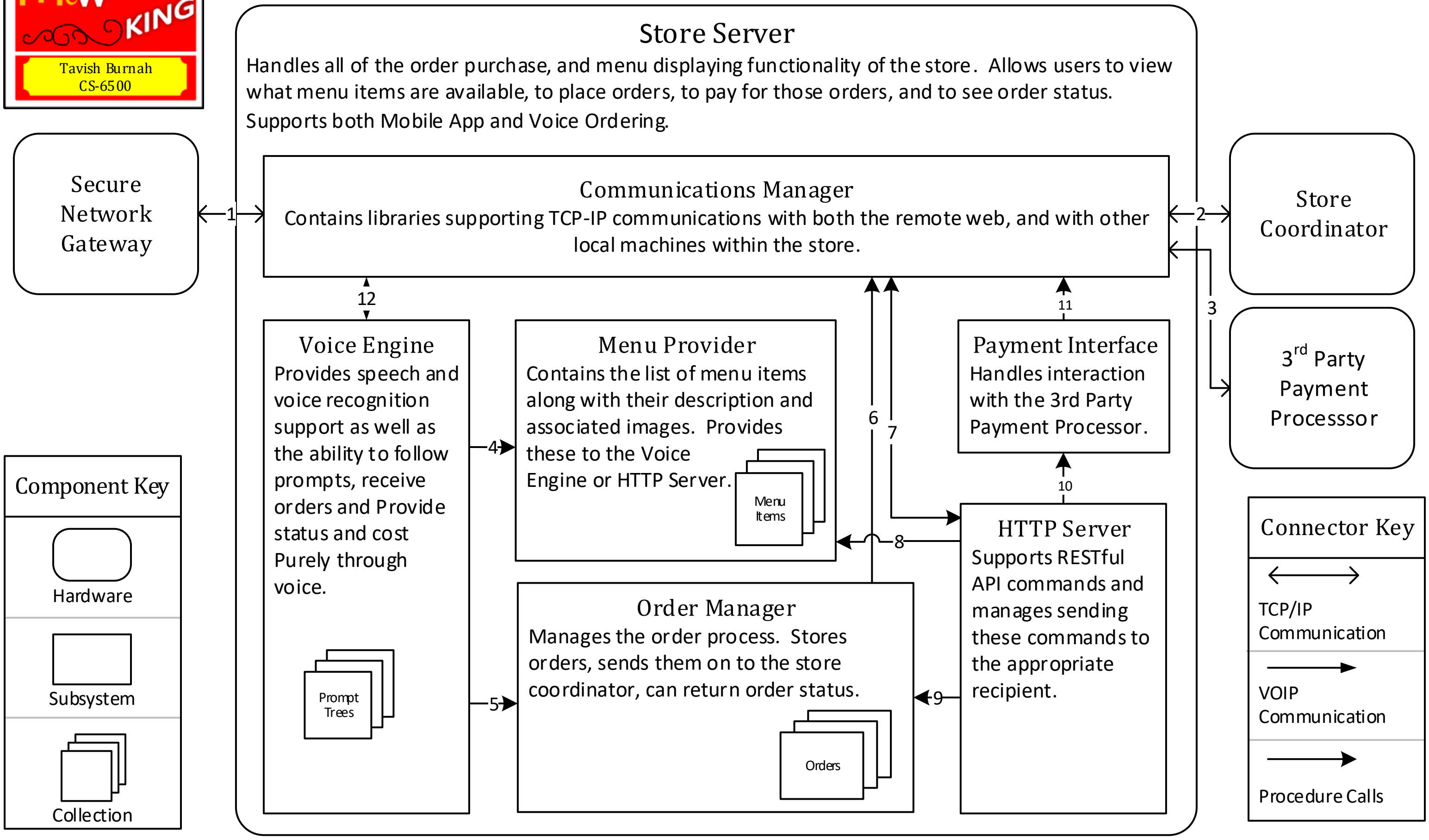
Store Server
Architecture Diagram



Store Server

Handles all of the order purchase, and menu displaying functionality of the store. Allows users to view what menu items are available, to place orders, to pay for those orders, and to see order status. Supports both Mobile App and Voice Ordering.

Communications Manager

Contains libraries supporting TCP-IP communications with both the remote web, and with other local machines within the store.

Voice Engine

Provides speech and voice recognition support as well as the ability to follow prompts, receive orders and Provide status and cost Purely through voice.

Menu Provider

Contains the list of menu items along with their description and associated images. Provides these to the Voice Engine or HTTP Server.

Payment Interface

Handles interaction with the 3rd Party Payment Processor.

HTTP Server

Supports RESTful API commands and manages sending these commands to the appropriate recipient.

Order Manager

Manages the order process. Stores orders, sends them on to the store coordinator, can return order status.

Connector Details

Name		Type	Description
1.	Remote TCP/IP	Stream	Remote 2 way network calls from App or VOIP Device from customer or corporate office.
2.	Local TCP/IP	Stream	Local 2 way network calls to the Store Coordinator. Asynchronous, one-to-one.
3.	3rd Party Comm.	Stream	Remote web based calls with the 3rd Party Payment Processor. Secure, transaction based.
4.	Menu Functions	Proc. Call	Explicit, synchronous, public calls to retrieve menu data.
5.	Order Functions	Proc. Call	Explicit, synchronous, public calls to place orders and query their status.
6.	Send Order	Proc. Call	Explicit, synchronous, public calls to send local network commands to place an order.
7.	HTTP Comm.	Proc Calls	Explicit, asynchronous, public calls using endpoint based restful APIs.
8.	Menu Functions	Proc. Call	Explicit, synchronous, public calls to retrieve menu data.
9.	Order Functions	Proc. Call	Explicit, synchronous, public calls to place orders and query their status.
10.	Payment Functions	Proc. Call	Secure, explicit, asynchronous, transactions based calls to request and verify payments.
11.	VOIP	Stream	2 Way VOIP protocol sending and receiving voice over the network.

Store Coordinator
Architecture Diagram

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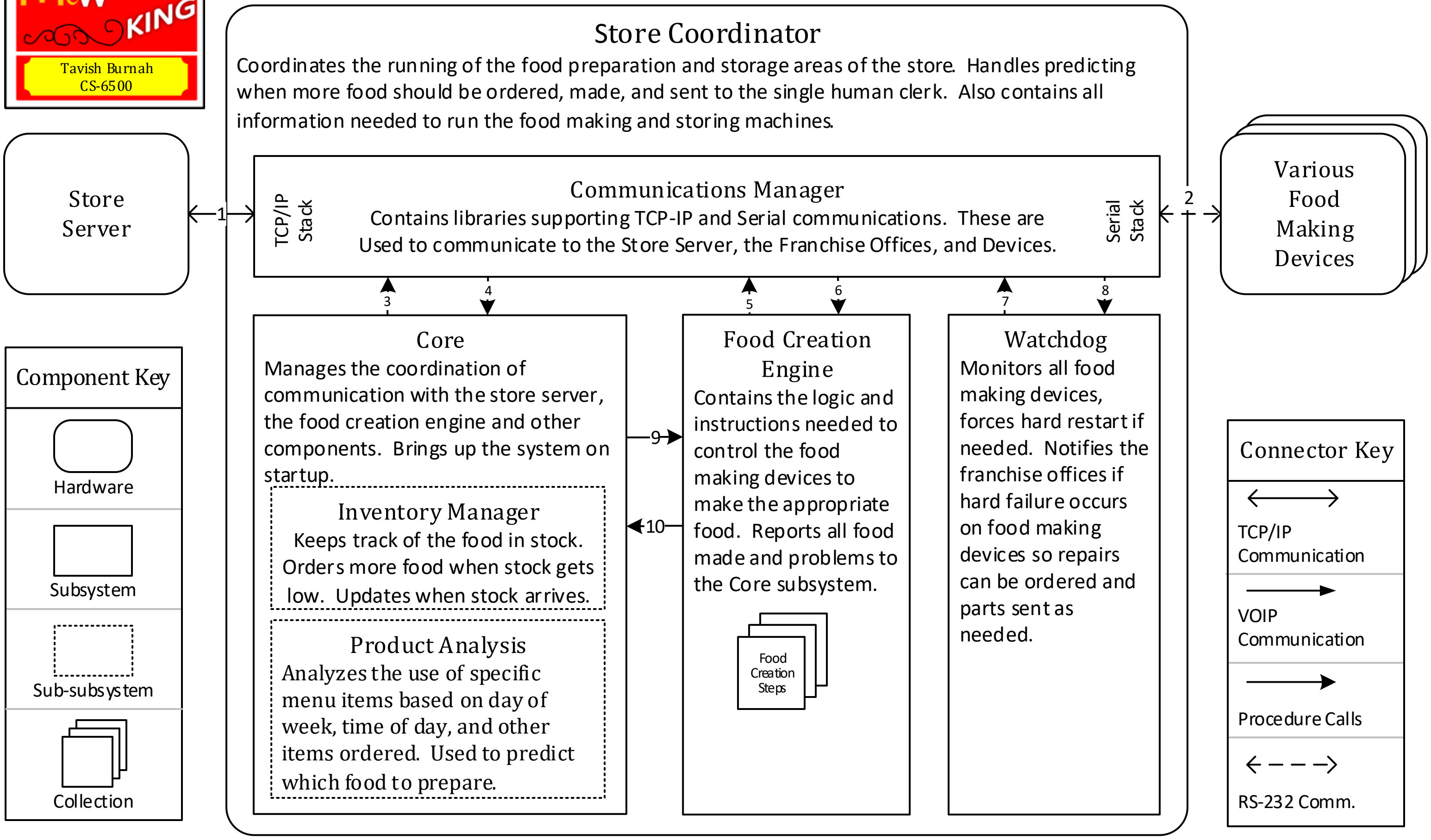

Store Coordinator

Coordinates the running of the food preparation and storage areas of the store. Handles predicting when more food should be ordered, made, and sent to the single human clerk. Also contains all information needed to run the food making and storing machines.

Communications Manager

Contains libraries supporting TCP-IP and Serial communications. These are Used to communicate to the Store Server, the Franchise Offices, and Devices.

Core

Manages the coordination of communication with the store server, the food creation engine and other components. Brings up the system on startup.

Inventory Manager

Keeps track of the food in stock. Orders more food when stock gets low. Updates when stock arrives.

Product Analysis

Analyzes the use of specific menu items based on day of week, time of day, and other items ordered. Used to predict which food to prepare.

Food Creation Engine

Contains the logic and instructions needed to control the food making devices to make the appropriate food. Reports all food made and problems to the Core subsystem.

Watchdog

Monitors all food making devices, forces hard restart if needed. Notifies the franchise offices if hard failure occurs on food making devices so repairs can be ordered and parts sent as needed.

Connector Details

Name	Type	Description
1. Remote TCP/IP	Stream	Remote 2 way network calls from App or VOIP Device from customer or corporate office.
2. RS-232	Serial	Local 2 way network calls to the Store Coordinator. Asynchronous, one-to-one.
3. Core Comm. Out	Proc. Call	Explicit, synchronous, public calls passing TCP/IP payloads to the core component.
4. Core Comm. In	Proc. Call	Explicit, synchronous, public calls sending TCP/IP payloads out of the system from core.
5. Serial Out	Proc. Call	Explicit, synchronous, public calls writing serial commands to the serial socket.
6. Serial In	Proc. Call	Explicit, synchronous, public calls reading serial commands from the serial socket.
7. Watchdog Out	Proc Calls	Explicit, asynchronous, public calls writing serial commands or sending TCP/IP requests. The former goes to devices in the system; the latter is routed to the TCP/IP stack meant for the franchise offices.
8. Watchdog In	Proc. Call	Explicit, asynchronous, public calls reading serial commands or receiving TCP/IP requests. The former comes from devices in the system; the latter is routed from the TCP/IP stack meant for the franchise offices.
9. Create Food Func.	Proc. Call	Explicit, synchronous, public calls to start food creation.
10. Flow Control Data	Proc. Call	Explicit, synchronous, public calls to give status on food creation.

Sequence View

Combo Order End to End

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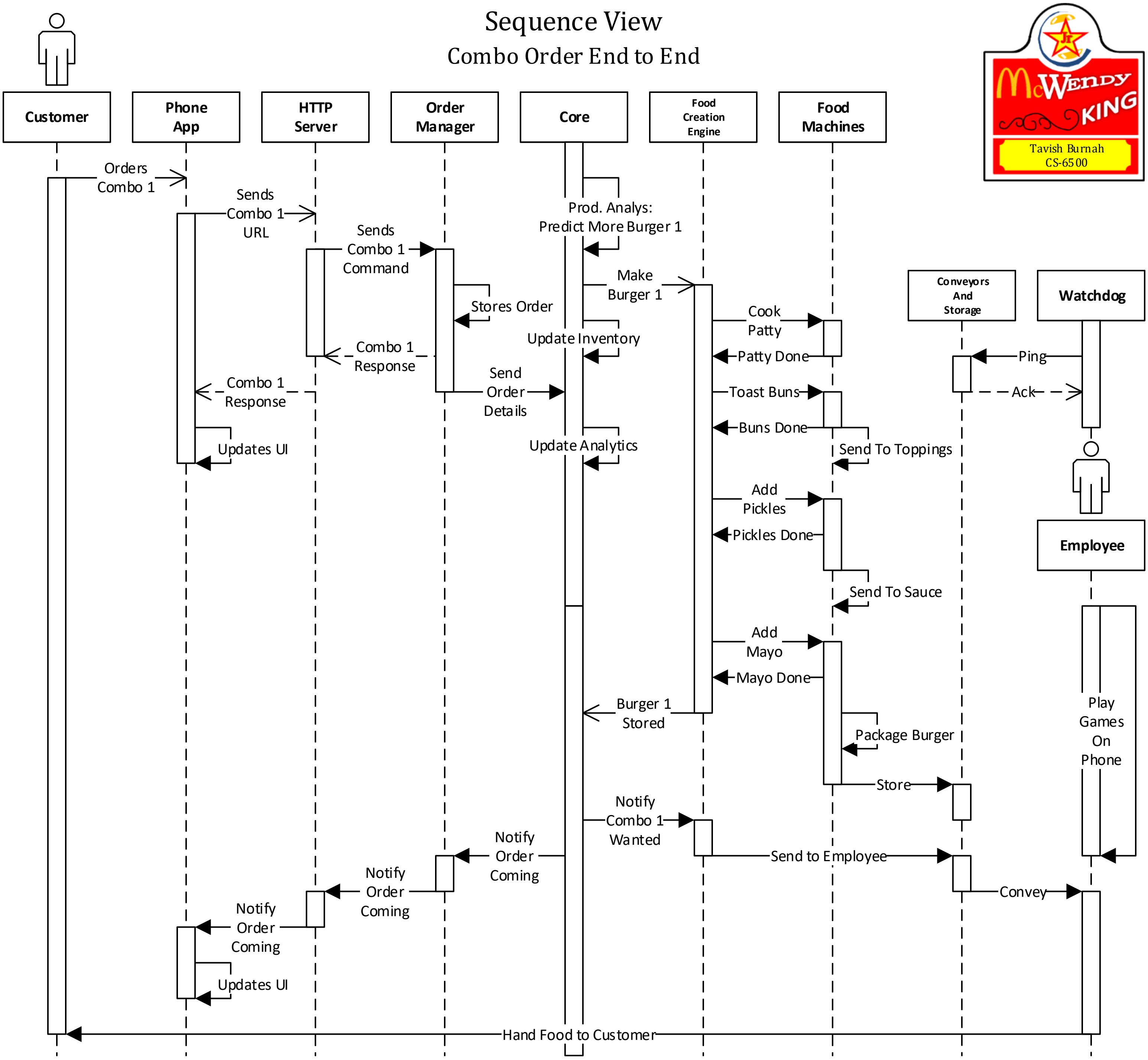
Customer
Phone App
HTTP Server
Order Manager
Core
Food Creation Engine
Food Machines
Conveyors And Storage
Watchdog
Employee
Orders Combo 1
Sends Combo 1 URL
Sends Combo 1 Command
Prod. Analys: Predict More Burger 1
Make Burger 1
Stores Order
Cook Patty
Update Inventory
Combo 1 Response
Patty Done
Ping
Send Order Details
Combo 1 Response
Toast Buns
Ack
Buns Done
Update Analytics
Updates UI
Send To Toppings
Add Pickles
Pickles Done
Send To Sauce
Add Mayo
Mayo Done
Burger 1 Stored
Play Games On Phone
Package Burger
Store
Notify Combo 1 Wanted
Notify Order Coming
Send to Employee
Notify Order Coming
Convey
Notify Order Coming
Updates UI
Hand Food to Customer