***Grill Fresh Online***

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# Introduction

This document offers a high-level overview and explains the proposed architecture for “Grill Fresh Online”, a pizza online ordering system for Grill Fresh Inc.

# Context

Grill Fresh Inc wants to grow its business across the country in a gradual manner, in terms of customer base, volume of business and number of stores. It wants to achieve this goal through the following accelerators of business:

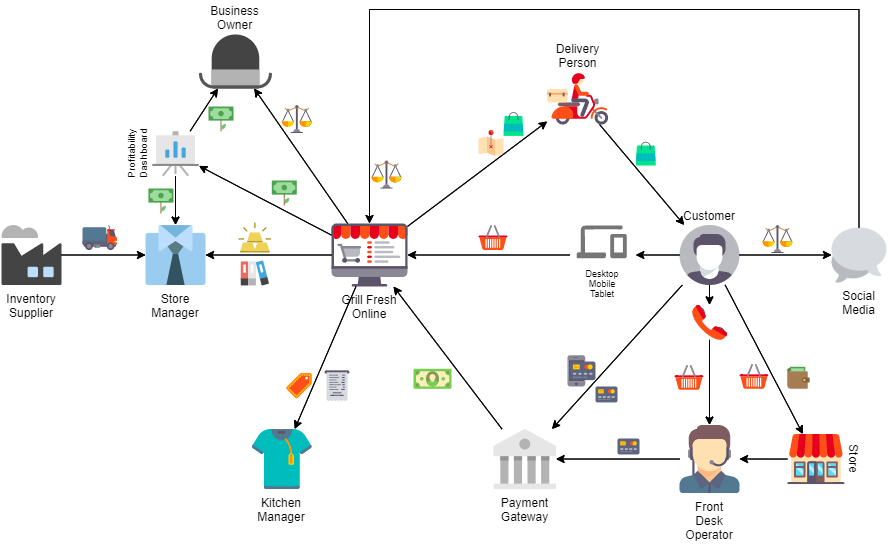
* A customer places orders for pizzas through online with any nearby store – instant and easy
* A customer receives delivery through additional modes like Take away and Home delivery, apart from dine-in option
* The business owner gathers a holistic view of profitability at business level or individual store level – to locate customer interests and expansion opportunities
* A store owner gathers a holistic view of profitability at store level – to understand business health and to act
* The business owner and store owners prefer to understand the sentiments of customers about business – to collate and correlate feedbacks (in near real-time, if possible)

Grill Fresh Inc is convinced that the potential enabler for this goal is to embrace the online platform opportunities.

## Grill Fresh Online (GFO)

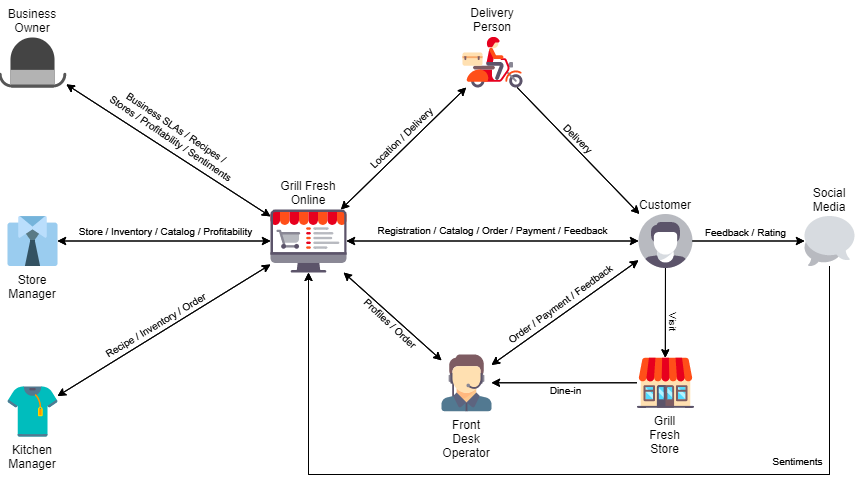
GFO system is a unified platform for all stakeholders of business – customers, business owner, store manager, front desk operator, kitchen manager and delivery person – catering to their varied interests. It is accessible through various devices – desktops, laptops, tablets, smart phones and Point-of-Sale.

At a high level, this system along with its neighborhood systems:



# Functional Overview

Different workflows fulfilled by the GFO system are as described below:



* Customer:
  + Register and manage profile – contact details and preferences
  + Browse through catalog of available items – pizzas, toppings, sides, desserts, beverages
  + Place orders for take away and home delivery
  + Pay for orders using varied secure payment options
  + Track status updates for orders placed
  + Provide sentiments about a store, item or overall business by direct feedback or over social media
* Store Front Desk Operator:
  + View profile and preferences of a customer
  + Browse through catalog of available items – pizzas, toppings, sides, desserts, beverages
  + Place orders for dine-in, take away and home delivery
  + Approve and move orders into queue for Kitchen Manager
  + Handle payments using varied secure payment options
  + Track status updates for orders placed in store
  + Capture feedback from a customer about order, store or business
* Kitchen Manager:
  + Browse through recipes and ingredients for preparing items
  + Check inventory of ingredients and notify purchase needs
  + View and receive notification about incoming orders in queue
  + Process and notify status updates for orders
* Delivery Person:
  + View order and delivery information for customer
  + Confirm after delivering orders
* Store Manager:
  + To manage store – address, serving radius, front desk operators, kitchen managers and delivery persons
  + To manage catalog of items serving in store
  + Manage out-for-delivery orders
  + Manage inventory and purchases for ingredients
  + Find profitability of store
  + Find sentiments from customers about store
* Business Owner:
  + Set business SLAs – order fulfillment time, max inventory levels, delivery charges, etc.
  + Manage stores – stores and store managers
  + Manage catalog of items serving in store and prices
  + Manage recipes and ingredients for preparing items
  + Find profitability of stores
  + Find sentiments from customers about business and stores

# Quality Attributes

GFO needs to fulfill following quality expectations of stakeholders to offer a flawless, convenient and delightful experience:

* Availability
  + System should be available 24x7 to fulfill important workflows:
    - Receive orders from customers
    - Fulfill business activities inside stores – recipe, inventory, order and payment management
  + A downtime of “less than 5 minutes per day” can be tolerated.
* Security
  + System should be available only to authorized users reaching through internet cloud.
  + System should support role-based authorization.
  + System should support different authentication mechanisms for easy and intuitive onboarding experience:
    - Internal identity provider based on stored credentials
    - External authentication providers: Google, Facebook and Twitter
* Scalability
  + System should initially support workflow traffic happening across 2 existing outlets.
  + The workflow traffic is expected to increase gradually with an estimated growth plan as described below:

|  |  |
| --- | --- |
| **Year** | **# of cities (3 outlets per city)** |
| 1st | 5 |
| 2nd | 10 |
| 3rd | 20 |
| 4th | 40 |
| 5th | 80 |

* + The number of customers is expected to grow to 80 lakhs in 5 years.
  + There should not be any impact in system response time due to such planned increase in workflow traffic.
* Reliability
  + System should 100% reliably capture shopping cart details even on client-session expirations.
  + System should 100% reliably capture orders once the cart is checked-out and payment is made.
  + System should 100% reliably track and notify order status.
  + System should 100% reliably alert on lower inventory levels to raise purchase orders on time.
* Accuracy
  + System should 100% accurately calculate prices, taxes and other charges for every order.
  + System should 100% accurately pass approved orders to kitchen queue in same sequence as received.
  + System should 100% accurately calculate inventory levels based on orders and wastages.
  + System should 100% accurately calculate profitability at store-level and at business-level.
* Latency
  + System should notify about order status updates within 2 seconds.
  + System should pass approved orders to kitchen queue with zero-time delay.
  + System should fetch customer profile, wish-list items and respective availability-in-store details within 1 second for front desk operator.
  + System should fetch catalog details and respective availability-in-store details within 2 seconds for customer.
* Supportability
  + System should provide continuous updates about and ability to monitor system health.
  + System should automatically restart on any failures.
  + System should provide system-wide activity logs.
* Usability
  + Learning curve of transition to cloud-based online platform for the users should be intuitive

Any other attributes can be evaluated periodically and decided based on more understanding of requirements.

# Constraints

* IT infrastructure – stakeholder wants to invest in IT infrastructure incrementally in concurrence to business expansion.
* Point of entry – customers shall be able to place orders from variety of devices – laptops, tablets and smart phones
* Point of service – front desk operators shall be able to place orders from point-of-sale devices and smart phones, kitchen managers shall be able to update orders from point-of-service devices and business owner and store managers shall be able to access system from laptops.
* Technology stack – modern trending development stack to be used for system to portray as technology innovator or pioneer in domain and to attract new tech savvy generation.

# Software Architecture

* Store Front Desk Operator:
  + To view serviceability to a customer location from this store for home delivery
  + To locate a store able to serve a customer at a given location for dine-in, take away or home delivery
  + To view recent “n” orders of a customer from this and any other store
  + To receive alerts about all orders or orders placed by self in the store – order-going-into-delay, order-delayed
  + To view rich details about all orders placed by self during the day, week, month or year
* Kitchen Manager:
  + To start processing an order – to notify the status of order as in-preparation
  + To fulfill processing an order – to notify the status of order as ready
  + To view list of items possible to serve in the store for the day and next “n” days
  + To view predicted maximum order quantities for individual items
  + To view recipes for preparing various items including ingredients
  + To check availability of inventory levels for ingredients in comparison to max inventory levels required to fulfill the predicted maximum order quantities
  + To trigger purchase orders for required ingredients for approval by Store Manager
* Delivery Person:
  + To view the order number, customer name, customer address
  + To continuously report current location
  + To pick-up orders in ready state and to confirm about orders that are delivered
* For Store Manager:
  + To set list of items possible to serve in the store for the day and next “n” days
  + To set predicted maximum order quantities for individual items (for next “n” days)
  + To set alert quantity levels for individual items
  + To check availability of inventory levels for ingredients in comparison to max inventory levels required to fulfill the predicted maximum order quantities
  + To approve and raise purchase orders for required ingredients
  + To assign an order that is ready to pick-up to a delivery person available
  + To manage store – update address, update serving radius, create/read/update/delete store front desk operators and kitchen managers
* For Business Owner:
  + To set order fulfillment SLA time
  + To set list of items possible to serve through the business and prices
  + To set the recipes for preparing various items including ingredients
  + To manage stores – create/read/delete store, create/read/update/delete store manager
* Order Placing Module
  + To not allow store front desk operator and direct customers to place order for “Sold Out” items in the store
* Order Fulfillment Module
  + To raise alerts about orders-going-into-delay, order-delayed based on order fulfillment SLA time
  + To raise alerts to order placing module about “Sold Out” items in a store
* Catalog Management Module

– order-placed, order-confirmed, in-preparation, ready, out-for-delivery, delivered