1.1 Range of Requirements

Function Requirements
1. The system should receive orders via an external source and must validate customer orders based on validation rules, including:
   a. Credit card number is valid, Expiry date is valid, CVV is valid.
   b. The numbers of pizzas on the order do not exceed limit.
   c. The restaurant is opened on the order date.
   d. All pizzas on the order are from the same restaurant.
   e. All pizzas on the order are on the restaurant's menu.
   f. All pizza prices are correct.
   g. The total price should be the sum of each pizza's cost + a 100 pence delivery fee.
   h. Pizza order is not empty.
2. The system must retrieve restaurant details, including: name, location, menus, opening days and operating hours from an external API. The system must also retrieve coordinates for no-fly zone areas and the central area from an external API.
3. For valid orders, the system must calculate the shortest most efficient path from the restaurant to Appleton Tower. Flight paths must be computed using straight-line segments of 0.00015 degrees, restricted to 16-point compass directions. The path must be valid and must avoid designated no-fly zones, and ensure that once it enters the central area, it must not exit. If the order is invalid, the system should not calculate a delivery path.
4. The system must be able convert the delivery path into a valid GeoJSON structure which can be pasted in https://geojson.io/#map=2/0/20 and see the visual results.
5. The system must expose endpoints for order validation, path calculation, and health checks. The API must be reachable at http://server:8080/'request_name', and must not have any global prefix.

Performance Requirements and Measurable Attributes
1. Each REST API request must return a response within 500ms under normal load
2. The pathfinding algorithm should compute a valid route in under 200ms
3. The system must be able to handle at least 10 concurrent delivery requests without degradation
4. The drone should reach the destination within 0.00015 degrees accuracy.

Security Requirements
1. The system must reject improperly formatted order requests (input validation).
2. The system must not store or log raw credit card details.
3. All endpoints should reject improperly formatted order requests.

Robustness Requirements
1. Robustness to API failure handling
2. The system must reject invalid GPS coordinates, such as extreme latitude or longitude values.
3. The system should be resilient to no-fly zone changes and be able to dynamically adapt if any changes to them occur.
4. An order should either be fully processed or rejected, preventing partial failures.