World Summit on Accessible Tourism
Destinations for All
Brussels 1-2 October 2018

Airport Automated Assistance for Reduced Mobility Passengers (3A-RMP)

Imad MOUGHARBEL, Research Associate, Auxiliary Professor

BRIC
مركز بيروت للأبحاث والابتكار
BEIRUT RESEARCH & INNOVATION CENTER

ÉTS
Le génie pour l'industrie

Don't stay alone waiting for help
3A-RPM Provides Autonomy

Guide Lines

- Existing Solutions
- Existing Regulations
- Suggested 3A-RMP System

Existing Solutions

1- Book a wheelchair with an assistant to guide him

Inconvenient matters:

- Wait for the service (Restricted Autonomy)
- Placed in waiting areas (Separated from companions)

2- Travel with his own wheelchair

Inconvenient matters:

- Complex process to store the wheelchair in the plane (if alone!!)
- Risk of wheelchair damage while transportation
- Unknown accessible pathways

Existing Regulations

International Civil Aviation Organization

- Adaptation of the airport Services and Facilities
- Coordination of assistance services between airport and aircraft operators
- Maintain dignity while Security screening (adapted screening, passes for non-traveling companions …)
- No Restrictions No fees (Rush on asking for these services)

Existing Regulations

Canadian Transportation Agency

- Remove Unjustified barriers
- Disseminate Information on available services
- Accept personal mean of aid (if in conformity with security and safety regulations, request 48h in advance)
- Provide care and carriage of mobility aids during the flight
- Periodic monitoring of the passenger needs.

3 A-RMP – Features

- Automation: Automated Configuration
- Security: linked to monitoring system
- Safety: Supporting Department is on-line
- Reliability: Linked to a Maintenance Department
- Scalability: Step by Step implementation

3 A-RMP – Automation

Booking Process – Reduced Mobility ID

Available Options

- Transportation Modules (wheelchair, scooter, luggage holder, seat, driving system …)
- Localization, Mapping, Flight Information
- Entertainment

3 A-RMP – Automation

Equipment Pick-up and Drop-off area

3 A-RMP – Automation

Examples of On-Demand Equipment

Wheelchair

Scooter

Luggage Carrier

Driving System

On Wheelchair Information/Entertainment

Terminal Localization System

3 A-RMP – Security

Security Screening

Recommended to sign-up for a Transportation Security Administration or Global Entry precheck for a quick examination

Avoid wheelchair queues because of a long inspection procedure

Security Monitoring

Embedded sensors and Intelligent Algorithms for detecting suspicious presence and behavior of the passenger

Detection of suspicious behavior

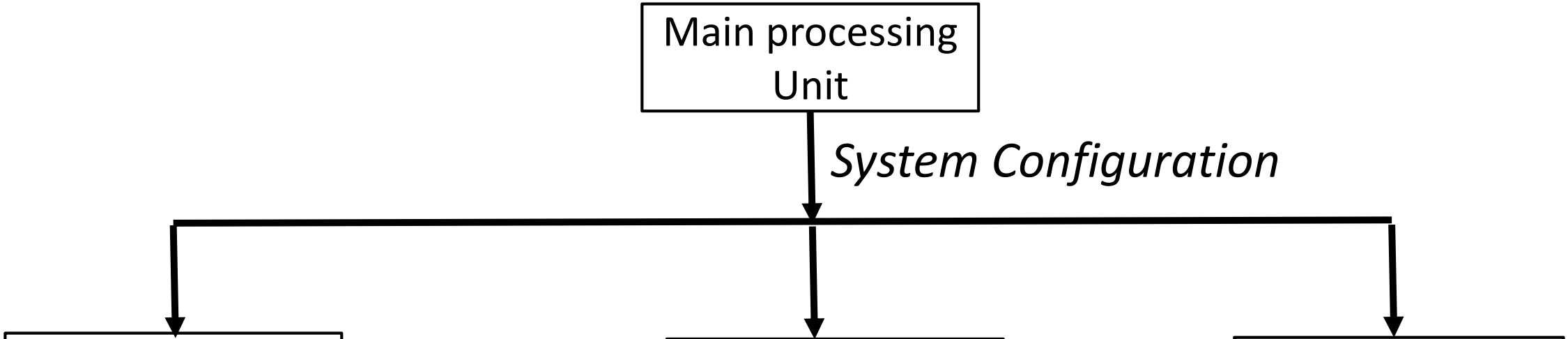
3 A-RMP – Safety and Reliability

- *Assistance Devices are offered according to the passenger physical capabilities expressed in the generated ID*

- *Possibility of doing Emergency Calls to the assistance staff (Health problem, unsafe situation, damaged device…)*

- *Notification system fixed on each device for announcing to the user information related his flight and any safety matter.*

3 A-RMP Assistive Device



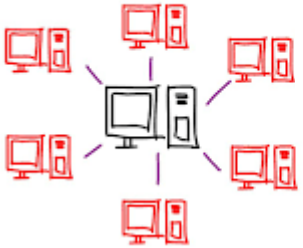
-GSM - Screen
-WiFi - Speaker
-Bleutooth - Micrphone
-RF - Keyboard

-Transportation means
-Driving controllers
-Driving support
-Communication Apps

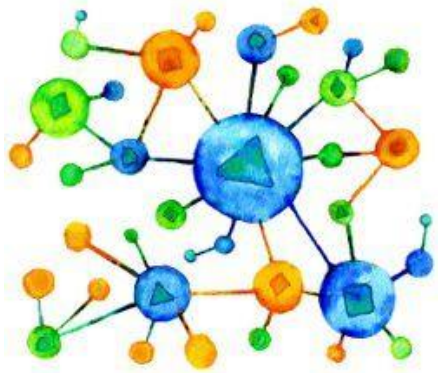
-Camera
-Ultra Sound
-Infra Red
-RF ID

3 A-RMP Architecture

Service Oriented Approach



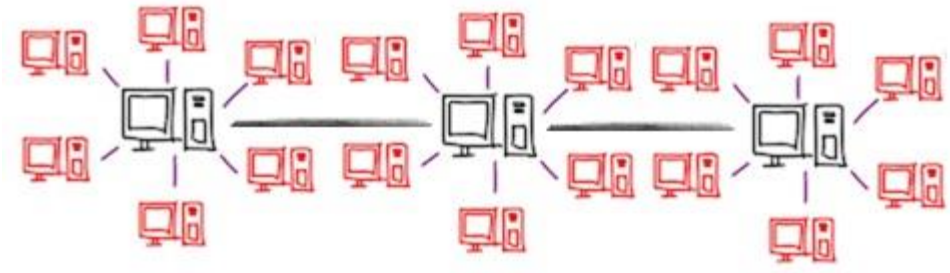
Distributed Applications



Heterogeneous Environment

Off-the-shelf software

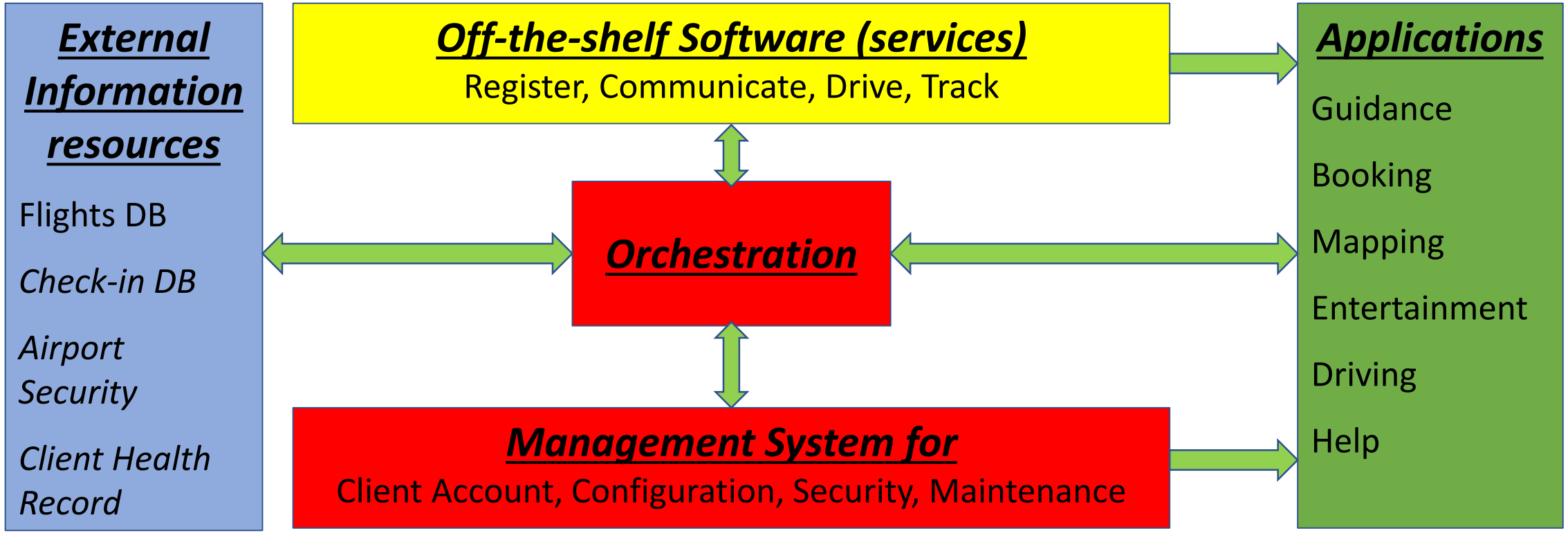
Scalable System



Compose/ Recompose

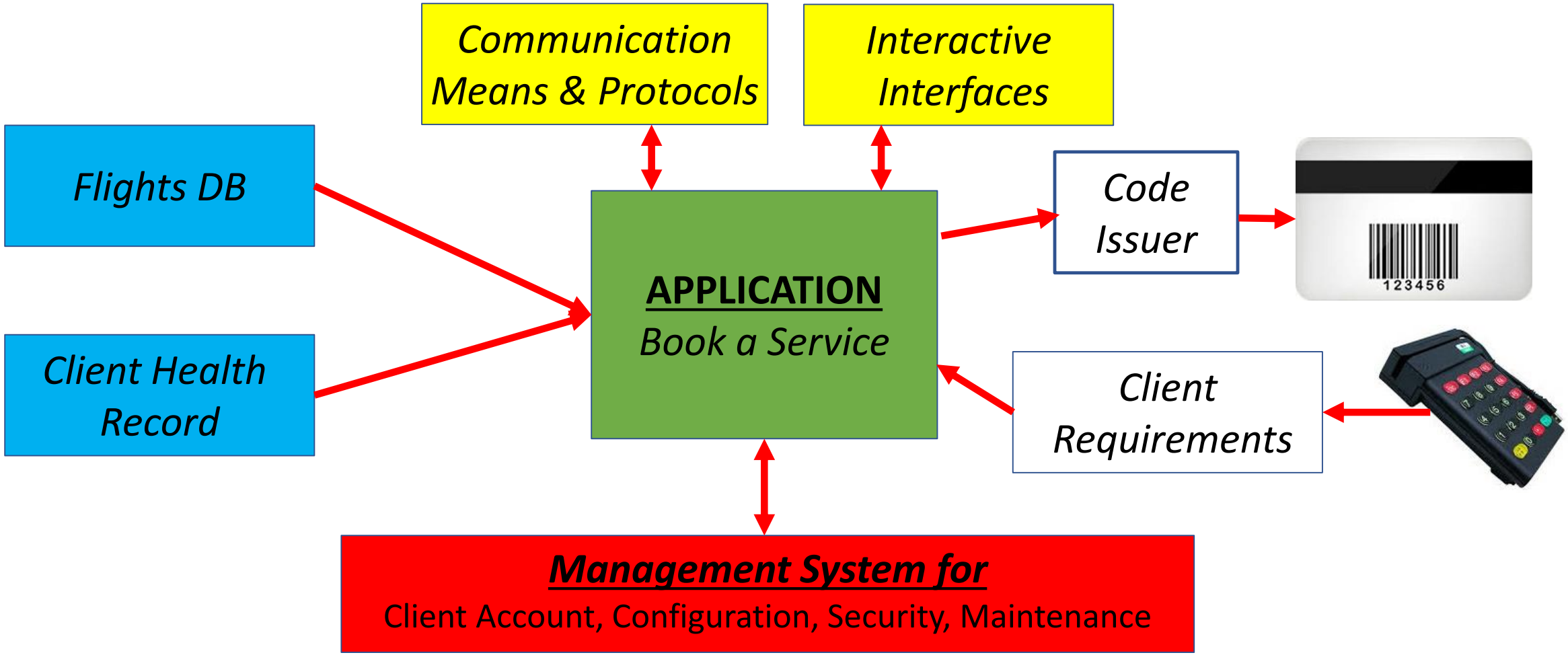
3 A-RMP Architecture

Service Oriented Architecture



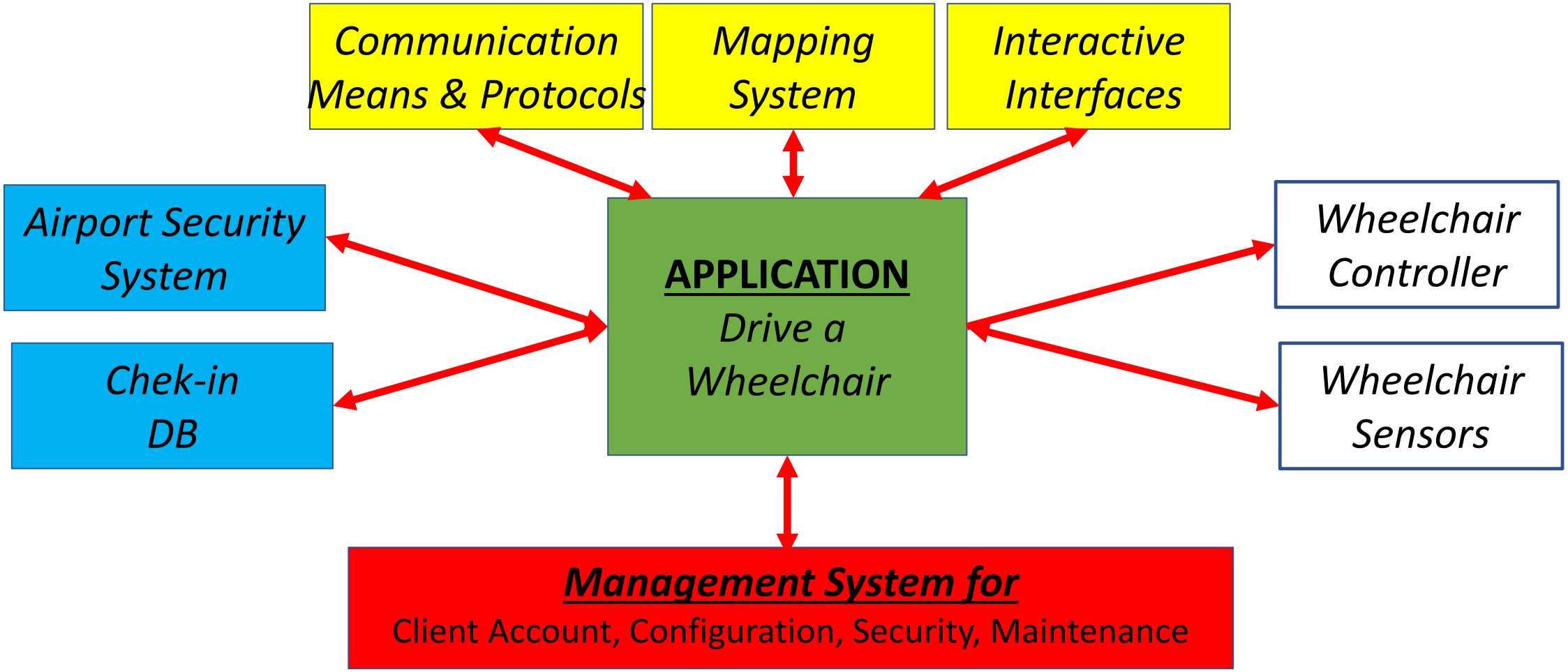
3 A-RMP Architecture

Implementation – Example 1



3 A-RMP Architecture

Implementation – Example 2



3 A-RMP – Conclusion

- Generic Design Approach
- Start with available Wheelchairs in The Airport.
- A code is generated on your cel. Phone
- Pickup/ Drop-off of the wheelchairs is performed in specified areas of the airport
- Download app. related to a proper navigation through accessible pathways in the airport.