From the Edge to the Cloud – A Single Data Platform

Robert Oberhofer, PhD – Head of Product Solutions
The wild years

WAP

1998

Nokia

1999

7110

2000-2006

iPhone

2007
3G + App Stores

2008

App Economy

Cloud

Digital Transformation

Google Cloud Platform

3G

mongoDB.
A Digital Transformation Experience
Jawwy

Choose the data and minutes you need... change when you want.

Track and monitor usage in real time. Get notifications when you have consumed 80% and 100% of your plan.

Share your plan between your devices. Specify exactly what you allocate to each device.

Pay only for what you use. Downgrade whenever you want; get back what you don't use.
Movistar On

- Failing Transactions
- Incomplete purchases
- Purchases not fulfilled
- Status reflected incorrectly in App
- Double Charges
A investigation
What we think working with REST looks like.

1. Request data /users
2. Receive data
3. Update UI
.... but Mobile is not that simple

- Mobile networks have variable latency
- You can lose connectivity at any time
- Apps can be shutdown and restarted at any time
What we think working with REST looks like.

1. Request data /users
2. Receive data
3. Update UI

What it actually looks like... for every endpoint.

- Online?
  - Yes
    - URL Request Successful?
      - Yes
        - Get JSON Successful?
          - Yes
            - Map JSON Successful?
              - Yes
                - Crash
              - No
                - Invalid JSON?
                  - Yes
                    - Crash
                  - No
                    - Malformed JSON?
                      - Yes
                        - Crash
                      - No
                        - Unexpected response
                          - Yes
                            - Crash
                          - No
                            - Server error?
                              - Yes
                                - Crash
                              - No
                                - Timeout?
                                  - Yes
                                    - Crash
                                  - No
                                    - Did the server receive the request?
                                      - Yes
                                        - Map JSON Successful?
                                          - Yes
                                            - Crash
                                          - No
                                            - Crash
                                      - No
                                        - Crash
A Different Way
Persistent Shared State

Server

Realtime data sync

Mobile
Realm Sync Characteristics

• A persistent connection between client and server
• Any change reflected immediately on both sides
• Any change informs the application
• Any past/cached events resolved when connectivity resumes (conflict resolution)
• Efficient data exchange: field-level diffs, compressed
A New Paradigm for Cloud to Mobile/Edge communication

Real-Time
- **Collaboration**: Messaging, Teams
- **Remote Control**: Digital Twin

Offline
- **Productivity**: Always-on for Firstline Workers
- **Resilient Connectivity**: IIoT Smart Spaces

Cached
- **Revenue and retention**: Responsive, satisfying UX
- **Local Processing**: AI / AR IoT Edge Computing
Digital Transformation Use Case

Flight Management / Reporting

Pilot & Crew focused:

- Crew management:
  - Scheduling
  - Check-in/out
- Flight tracking
  - Fuel, Speed
- Event Logging, Incident tracking

Result: Replacing lots of paperwork!
Digital Transformation Use Case

Major Cruise Vacation Company

- Food/Drink orders management:
  - Order capture, Bar workflow,
  - Fulfillment tracking (Billing)
- Excursion Pre-booking
- Each On-Island ‘Activity’ has their dedicated device with synced booking info
- Check-in, up-sells synced locally,
- Fulfillment tracking (for Billing)

Result: automated & simplified communication
Digital Transformation Use Case

Food Services Companies

• Real-time Inventory updates at meal purchase
• Reliable (offline) inventory reconciliation (think “walk-in” fridge)
• Synchronize supply catalog & meal planning
• Automated order submit

Result: Highly Automated Process Flow
Digital Transformation Use Case

Rapidfunnel

Realtime enabled Sales

• Empowers Sales with simplified prospecting and follow up with Gamification
• Sales content library available on-the-go & off-line
• Get real-time notifications when prospects interact with content
• Provide or Schedule follow-up interactions on mobile

Result: Fluid Responsive App
User Experience Use Cases

Hotel App

- 3M Users per month, Customer loyalty & Ease of Use:
  - Reservation app
  - User Profile
  - Favorite Rooms and Hotels

- Why:
  - User Experience must be good
  - Work Offline
  - Sync easily
  - Developer Experience is Great, Easy to make changes

Results: Just Works
Digital Transformation Use Case

National Police Force (Europe)

Realtime empowered Police Force

- Enable Chat & Messaging amongst force members
- Evidence and Note capture (shared)
- Task sharing, team assignment
- Everything realm-time & offline

Results: (under development)
The potential is endless
A New Paradigm for Cloud to Mobile communication

Delivering

• **Resiliency:**
  Guaranteed to work over mobile

• **Simplicity:**
  Offline, Real-time, Cached – same implementation

• **Flexibility:**
  Any device, anytime, anywhere

• **Range:**
  From Mobile App to IoT to AI/AR

Replacing

• Custom code
• REST offload
• Network-stack and distributed system development