



# Preliminary Assessment For Mobile Parking in Turkey

**Concept Proposal by Cellum Global Corp.**

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## 1 About Cellum Global

Cellum Global is a leading secure mobile payment and commerce company headquartered in Hungary, EU. Its innovations make transactions via smartphones easier and more secure. The company's bank-grade security solutions cover all areas of m-commerce, including mobile purchases and payment as well as NFC (contactless) technologies. Cellum is fully PCI-DSS compliant, being the first mobile payment service provider in the region to comply with the most important security standard of the top global card companies. Systems operated by Cellum currently manage nearly two million secure mobile transactions per month, and the company counts among its customers and partners MasterCard, Magyar Telekom, Telenor, Erste Bank, OTP Bank, DTAC Mobile (Telenor Thailand) and Evercross in Indonesia.

Cellum provides comprehensive mobile payment solutions to a broad range of customer groups, including banks, mobile network operators, merchants and governments. Our flagship product, Cellum Mobile Next, is an end-to-end remote payment system capable of conducting transactions from any type of payment instrument on any type of handset, covering a large and growing universe of use cases. Cellum's solutions are available for white-label use worldwide, and offer speedy implementation and seamless integration with existing applications and minimal IT expenditure. Meanwhile, the flexibility of our solutions is mirrored by a commitment to providing our partners with the highest level of individualized service, including the creation of bespoke business models. Thanks to this, Cellum's solution was introduced as MasterCard Mobile in Hungary in 2011 serving as the first live implementation on our platform, followed by several others. All our work is subject to a security standard that has produced a record of **zero fraud** or chargebacks after **more than a decade of implementations** across several industries in numerous markets.

Established in 2000, the company began a major international expansion in 2011, establishing subsidiaries in several European markets and opening representative offices in North America and Asia. Recently, Cellum has entered to a strategic partnership with the Singapore-based social payment solution provider Fastacash, to bring outstanding user experience to peer-to-peer payments through social networks and messaging applications.

## 2 Parking Payment Scenarios:

1. **Parking carrier billing**– plain SMS payment charged on an ad-hoc basis to mobile subscriber's airtime balance)
  - a. fix time parking (e.g. paying for 30 minutes parking in advance)
  - b. "start & stop" parking (paying for the exact amount of time of the parking)  
May work even on feature phones
2. **Parking with smart phone app, wallet payment**– iOS, Android (payment charged to credit /debit cards or prepaid stored value accounts registered preliminary in the app)
  - a. fix time parking
  - b. "start & stop" parkingIn case of wallet payment contracted acquirer bank is a prerequisite.

### 3 Requirements:

#### Infrastructural , legal environment (system is built on these characteristics)

- Legal environment established, parking enforcement available (local government or company)
- There is a central registry for vehicles – to be able to identify owners by license number plates
- Enforcement is supported by law – e.g. non-payers could be identified by number plates and fined if not paying for parking

### 4 Technical components (to be built or local partner to be integrated)

- Database for registering ongoing parkings within the city
- Access to this database established to check if someone paid for a valid parking for a given car at a given location at a given time (e.g. “car # JH001 has a valid parking paid until 16:30 at ZONE GREEN”)
- Mobile network operators contracted and connected for SMS parking system (for Scenario 1 – parking via SMS)
- In case of wallet based version, acquirer bank contracted and integrated.

### 5 Payments:

- Scenario 1 – via SMS (carrier billing)
  - fix time parking – charged against mobile airtime balance
  - start & stop parking – charged against mobile airtime balance
- Scenario 2 – by Smartphone app
  - fix time parking – charged against mobile airtime balance OR credit/debit cards
  - start & stop parking – charged against mobile airtime balance OR credit/debit cards

(In most implemented cases in Europe, clients pay a small surcharge (convenience fee) for using mobile parking services. This is dependent on the business model and local market traditions in a certain project)

### 6 Short overview of the technical aspects of the Parking project

- Description of the services included in the scope of the project:
- Development, implementation of SMS Parking system or app and wallet based system;
- Maintenance and support of the implemented system;
- Maintenance and support of the IT infrastructure of system and related peripheral systems (Parking Management, Vignette and other systems)

## 7 Functional Specification Brief

### 7.1 Description of sample model and method for providing service through a short text message

Let us assume that there are two Parking zones in a given city – BLUE and GREEN. (More zones could be defined, too). The parking can be paid via SMS, which contains only plate number. The system accepts any combination of 4 to 9 characters as plate number. The SMS may be written in local language or in English.

#### *Option 1:*

Sending 1 SMS means that the customer have paid 1 hour of Parking. There are two separate numbers for the 2 zones - SMS number for BLUE zone is 1302 and for the GREEN zone is 1303. The price of the Parking by SMS for 1 hour parking is determined by the municipality.

#### *Option 2:*

Sending 1 SMS means that the user started the parking. Sending a second SMS means that the user finished parking. The system sends confirmation messages to user both upon starting and stopping the parking. Stopping is also possible via USSD codes.

(In case a smartphone app is used for parking, it can be using data channel for communication instead of SMS, too – thus saving SMS costs to clients)

In order to pay parking fee, the customer sends SMS, containing plate number to a short number (1302 or 1303). The system should provide system messages to the client on the condition that a request has been received from that client. The information content of the request should by proceed through server of MNO. Information from the query should be forwarded for processing to the main server where the system processes the received information and performs validation of the request. If there are charging conditions for the selected plate number (maximum parking time has not reached, no penalty measures were taken and the registration number of the vehicle is properly send) the system sends a charging request to the MNO, containing the phone number of the customer and the amount of the fee. The MNO checks the credit limit, balance, etc. and in case of successful checks collects the money and send a confirmation to the customer (via SMS containing plate number, start time, end time and parking zone). In case of failing customer billing due to insufficient funds the system should reflect the action and return SMS to the client indicating the problem.

5 minutes before reaching the end of the prepaid period time, the system should send a message to the client with reminding information. (This option is only applicable if the client pays for a fix time parking)

The functionalities mentioned above should be supported along with the following:

- update the system software through software development, as aggregating the flow of information to and from all the parties (mobile operators and customers using the service);
- Agree with (ideally) all MNOs in the country about the conditions for provision of the service;

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- Be responsible for the realization of charging and processing of each transaction;
- Provide monthly reports and to distribute the revenue among the participants
- Ability to configure and manage system parameters  
The proposed system should support the ability to configure and manage the following parameters:
  - o Determine parking fees for each zone;
  - o Determine parking periods for each zone;
  - o Customization of messages sent to customers.
- User Interfaces  
Software development should include easy to use user interfaces
  - o To monitor the operation of the system in real time;
  - o For preparation of reports;
  - o Control of activities and operations;
  - o Definition of access rights.
- User Access  
The access to the system and the software application must be protected and regulated by user access rights. Each user should have a role of access through which to use the functionality of the system. Access roles should be defined according to the system's functionality.

## 8 Maintenance and Support Specification Brief

### **Administration and monitoring of operating systems, databases and SMS Parking system and related subsystems including:**

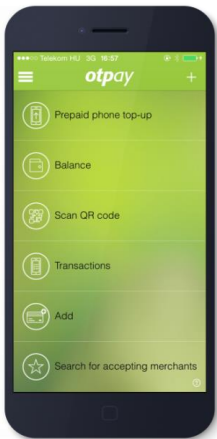
- Build and maintain recovery for the servers that will guarantee reliability for the work of the application. The reserved servers must be at least 3 kilometers away from the primary ones
- Reaction time for system failures must be less than 2 hours
- Create regular and automated incremental, OS and bare metal backups and make sure they can be fast and reliably used when needed
- Supervise user access distribution and implementation of user roles
- Take precautions and guarantee secure communications within the systems and outside the systems when communication with mobile service providers is needed.
- Minimize all security risks by using antivirus software, firewall rules, access control, maintenance checks, vulnerability scans etc.
- Monitor activities and take care of the critical for the system events including system logs, application logs etc.
- Monitor and control stability and performance meters to prevent the risk of overwhelming. Track hardware state – HDD, CPU, RAM etc.
- Check for and apply system software updates regularly

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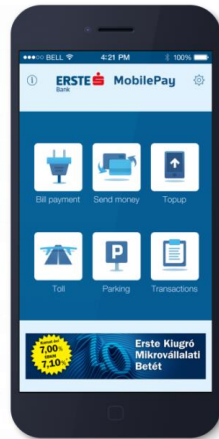
- Optimize disk space usage
  - Perform capacity checks regularly
  - Provide 2<sup>nd</sup> level support
  - Manage change management
  - Manage incidents and problems
  - Manage backups and archives
  - Provide monitoring
  - Provide support for the system and application
  - Manage user access control and roles
  - Apply policies and procedures that guarantee IT security built based on a working IT security model.
  - Supervise user access distribution and implementation of user roles
  - Implement intrusion detection mechanisms and notify the contractor in case of successful or unsuccessful attempts to breach the IT security including:
    - o Hacker attacks and virus intrusions
    - o Leak, copy or stealing of data, user accounts, passwords or any other sensitive information
    - o Write, delete or destroy data and/or information
- In case of such a breach, propose actions which must be undertaken to resolve the issues.

## 9 Cellum parking payment references

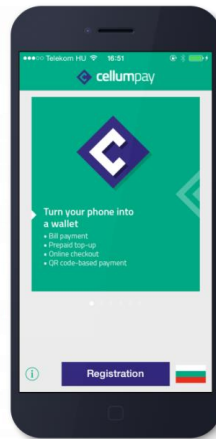
- SMS based solutions
  - T-Mobile (Hungary)
  - Vodafone (Hungary)
  - Telenor (Hungary)
  - Cellum Pay (Bulgaria)
- Bank/value card based solutions
  - OTPay (Hungary)
  - Erste Mobile Pay (Hungary)



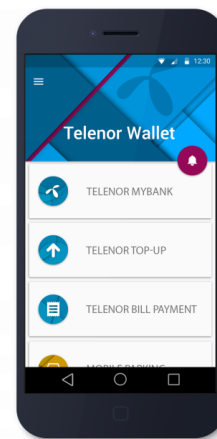
OTPay Wallet



Erste MobilePay



Cellum Pay (Bulgaria)



Telenor Wallet