Mobile Phone as a medium for Electronic Toll Collection
Toward developing a virtual e-wallet

Tehran Congestion Charging Experience

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Mobile Phone and Mobile Payment
A Trend Analysis

- **Global Trend (A 2012 Research in 26 countries)**
  - Number of mobile payment users worldwide is projected to be increasing and reaching to 400 million in 2016
  - In Q1, 2012, less than 30 percent of Smartphone and tablet owners in US were using devices for payment
  - Most of mobile payment transactions in Europe includes Invoices and micro-payments
  - In Japan more than 200 million monthly mobile contactless payments were being conducted in 2012
- **Mobile usage in Iran – the opportunities**
  - With about 73 million population, Iran has 55 million Mobile Phone subscribers
  - Mobile VAS are developing and Local banks gradually approach to Mobile Payment Services

Mobile Payment Service Providing Models

▸ *Operator-Centric Model*: The mobile operator acts independently to deploy mobile payment service.

▸ *Bank-Centric Model*: A bank deploys mobile payment applications or devices to customers and ensures merchants have the required point-of-sale (POS) acceptance capability

▸ *Collaboration Model*: This model involves collaboration among banks, mobile operators and a trusted third party.

▸ *Peer-to-Peer Model*: The mobile payment service provider acts independently from financial institutions and mobile network operators to provide mobile payment. For example the MHITS SMS payment service uses a peer-to-peer model.
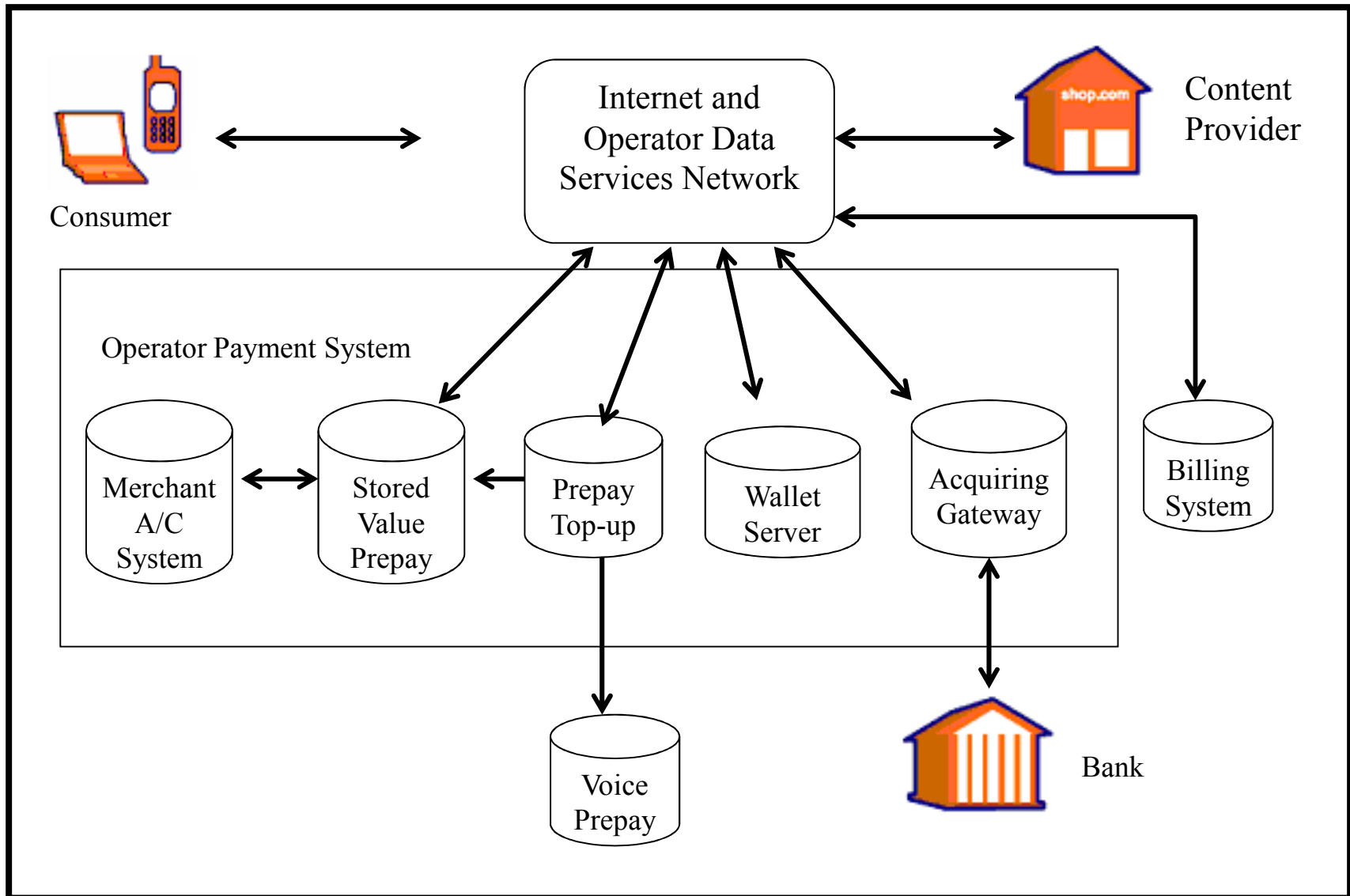
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Methods of Mobile Payments

- SMS /USSD transactional Payments

- Direct Mobile Billing

- Mobile Web Payments

- Contactless Mobile Payment (NFC, QR Code, Bluetooth, Audio Tag,….)

Operator/Bank Dependent Mobile Payment

Consumer

Internet and Operator Data Services Network

Content Provider

Operator Payment System

Merchant A/C System

Stored Value Prepay

Prepay Top-up

Wallet Server

Acquiring Gateway

Billing System

Voice Prepay

Bank

Some points on Operator Based Model

- In some countries, Mobile Service Providers have some difficulties with VAS management
- People are not willing to bind their bank account to mobile payment applications
- Online bank transaction through Mobile phone is time consuming in some hours
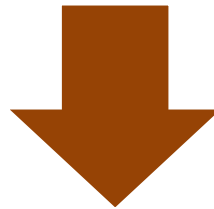
A Payment Solution somehow independent of

Bank and Mobile Service Provider

Tehran Congestion Charging

▸ More than 32 Sqr meters of Restricted Traffic Zone

▸ 105 entry gates

▸ 220,000 vehicles entry each day

  ▸ 90.000 vehicles hold annual permits (decreased to 85.00 by April 2013)

  ▸ 10.000 vehicles could get daily or weekly passes (increased to 15.000 by April 2013)

▸ Totally under Automatic Control System based on ANPR Technology

  ▸ 17.000 daily unauthorized entries are recognized and recorded for law enforcement

▸

Movie Clip of
Tehran Congestion
Charging

Tehran Congestion Charging
Some facts on Toll Collection

- ## 2009 to 2011

    - Annual permits were sold out

    - Daily and weekly passes sold through Tehran Municipality Portal by online bank payment

    - Average 120 to 150 passes were purchased each day from 10.000 existing passes

- ## 20011 to 2013

    - Plate registration via mobile phone added as a complementary method of using daily passes
    - Within 6 months daily pass uses reached to 6000 a day
    - In March 2013 in average, 2200 daily requests were rejected due to full capacity
    - In April 2013, 5000 passes were added to daily capacity and the same quantity decreased from annual permits
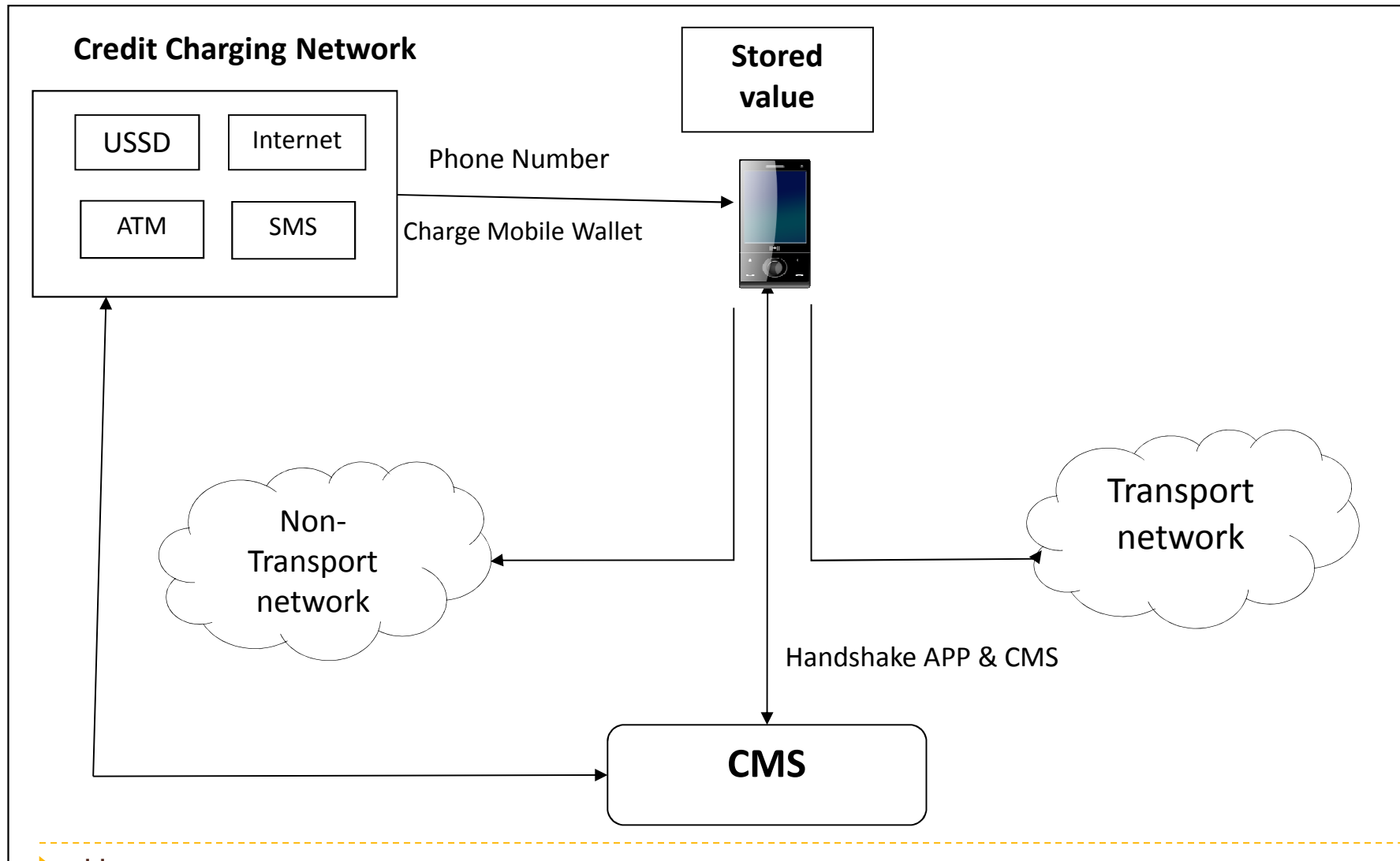
Introducing Congestion Charging Toll Payment Via Mobile Phone

▸ PIN codes are sold to the customers via Scratch cards

▸ The Customer sends the PIN Code to the system CMS via SMS or USSD service

▸ The Customer registers his vehicle Number Plate in the next steps

▸ After receiving the confirmation message, the car is allowed to enter the zone for the current day

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Operator/bank independent Mobile Payment

Credit Charging Network

USSD	Internet
ATM	SMS

Phone Number

Charge Mobile Wallet

Stored value

Non-Transport network

Transport network

Handshake APP & CMS

CMS

Relative Advantage of implemented Model of Mobile Payment

- Independent from Mobile Service Providers and Direct Banking System Involvement
- Credit is virtually assigned to Mobile Phone Number not to Mobile Phone Subscription
- Frequent application potential in urban transport (both fares and tolls)
- Needless to smart platforms
- Fast and simple expansion
- Interoperability with possible contactless payment application

Thank you

Tehran municipality

Tehran Traffic Control Company