

Network Toll Solution

Quest for Excellence

Parking Management System

PARKING IMAGE



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Introduction

NTS Parking Solution is one of the leading technological Toll solution company providing end – to – end solution in high end security solution and integrated Parking Management.

Backed upon a strong and dedicated technical expertise, we work on the innovative solutions for the intelligent transportation system in India.

Our intelligent Parking management system not only provides the powerful lane systems and sub – systems but also facilitate optimum revenue management free from all manipulations and fraud.

We will have better control on the entire system in term – Service Support Spare Maintenance

- We have in house IT and R & D team in Delhi & Noida*
- We have team structure for on line and on site warranty support.*

Integrated Department

Network Toll Solutions are providing Traffic management Solutions for Electronic Toll Collection System, Traffic Management System and Parking Management System.

Work Flow of Smart Parking System:-

1. NPCI (National Payment Corporation Of India)
2. IHMCL (Indian Highway Management Corporation Limited)
3. Issuer Bank
4. Acquirer Bank
5. System Integrator

Role & Features:-

1. NPCI developed and operates the **National Electronic Toll Collection (NETC)** program, which facilitates **automatic toll payments** using **FASTag** – a Radio Frequency Identification (RFID)-based tag.

Role & Features

NPCI developed and operates the **National Electronic Toll Collection (NETC)** programme – a Radio Frequency Identification (RFID)-based tag.

1. Central Clearing House (CCH): NPCI acts as the **Clearing House** for all FASTag transactions across toll plazas nationwide. This involves:

- **Settlement:** Calculating and facilitating the settlement of toll payments between banks.
- **Reconciliation:** Ensuring accurate matching of transactions between banks, plazas, and users.

2. Interoperability Management: NPCI ensures **interoperability**, meaning a FASTag issued by any authorized bank can be used at **any parking** across India. It maintains the common technology platform and standards used by: **A. Toll operators B. Acquiring banks C. Issuing banks**

3. FASTag Lifecycle Management: NPCI manages the **FASTag ecosystem**, which includes:

- Tag issuance protocols
- Tag activation and linking to vehicles/bank accounts
- Blacklisting of tags (e.g., for insufficient balance)
- Tag status updates and management APIs

5. **Security & Compliance** : NPCI enforces security protocols and **PCI-DSS** standards to ensure the safety of transactions. It also complies with:

- RBI regulations
- Data privacy norms
- System audit and monitoring

6. **Innovation and Integration** : NPCI supports innovation and expanding the NETC platform to:

- **Parking lots**
- **Fuel stations**
- **City toll systems**
- Other vehicle-related payment services



IHMCL Role

1. Implementation and Onboarding:

IHMCL is responsible for implementing the ETC program for parking facilities, including the onboarding process for parking lot operators.

2. Infrastructure Development:

They ensure the necessary IT infrastructure is installed and commissioned at parking locations, following standards specified by IHMCL.

3. Standardization:

IHMCL helps standardize the process of collecting parking fees using FASTag across different parking locations.

4. Interoperability:

IHMCL works towards creating a unified and interoperable ETC system for parking, enabling seamless payments across different facilities.

ROLE OF ISSUER Bank

1. FASTag Management:

- Issuance, activation, and linking of FASTag to the customer's vehicle and account/wallet.
- Maintaining tag status (active, blacklisted, etc.).

2. Customer Authorization:

- When a vehicle enters a FASTag-enabled parking facility, the issuer bank is responsible for **authorizing the transaction** (debit request).
- Verifies if the customer has **sufficient balance** in the wallet/account linked to the tag.

3. Transaction Processing:

- Deducts the appropriate parking fee from the tag holder's wallet or bank account.

Sends response (success/failure) to NPCI/NETC switch

ROLE OF ACQUIRER Bank

1. Parking System Integration:

- Installs and manages RFID readers, backend integration, and transaction processing systems at the parking site.
- Collects FASTag scans when a vehicle enters/exits the facility.

2. Transaction Initiation:

- Captures transaction request from the parking system and sends it to NPCI/NETC for routing to the appropriate issuer bank.

3. Merchant Settlement:

- Receives parking fee from the Issuer Bank (via NETC/NPCI clearing).
- Credits the amount to the parking operator's account after settlement.

4. Reporting & Reconciliation:

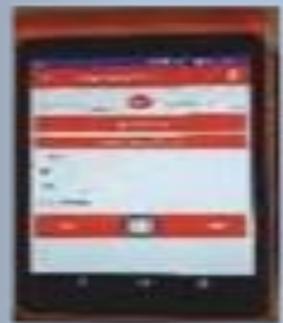
- Provides transaction reports to the parking operator.
- Works with NPCI and Issuer Bank for dispute resolution and settlements.

Workflow of a FASTag Parking Transaction

Step	Description	Handled By
1	Vehicle enters parking; tag is scanned	Acquirer Bank
2	Transaction request sent to NETC/NPCI	Acquirer Bank
3	NETC routes request to Issuer Bank	NPCI
4	Tag verification and amount deduction	Issuer Bank
5	Confirmation sent to parking system	Issuer Bank via NPCI
6	Vehicle allowed to enter/exit	Acquirer Bank (system control)
7	Fund settlement to parking operator	Acquirer Bank via Settlement Bank

PARKING EQUIPMENT

ENTRY



POS for
2 Wheeler &
Non Fastag
Vehicles



FASTAG
READERS



FASTAG
STICKERS

< 10 M

LED Display
OUTDOOR
LED DISPLAY



IP CAMERA

Smartpower
CONTROL
PANEL



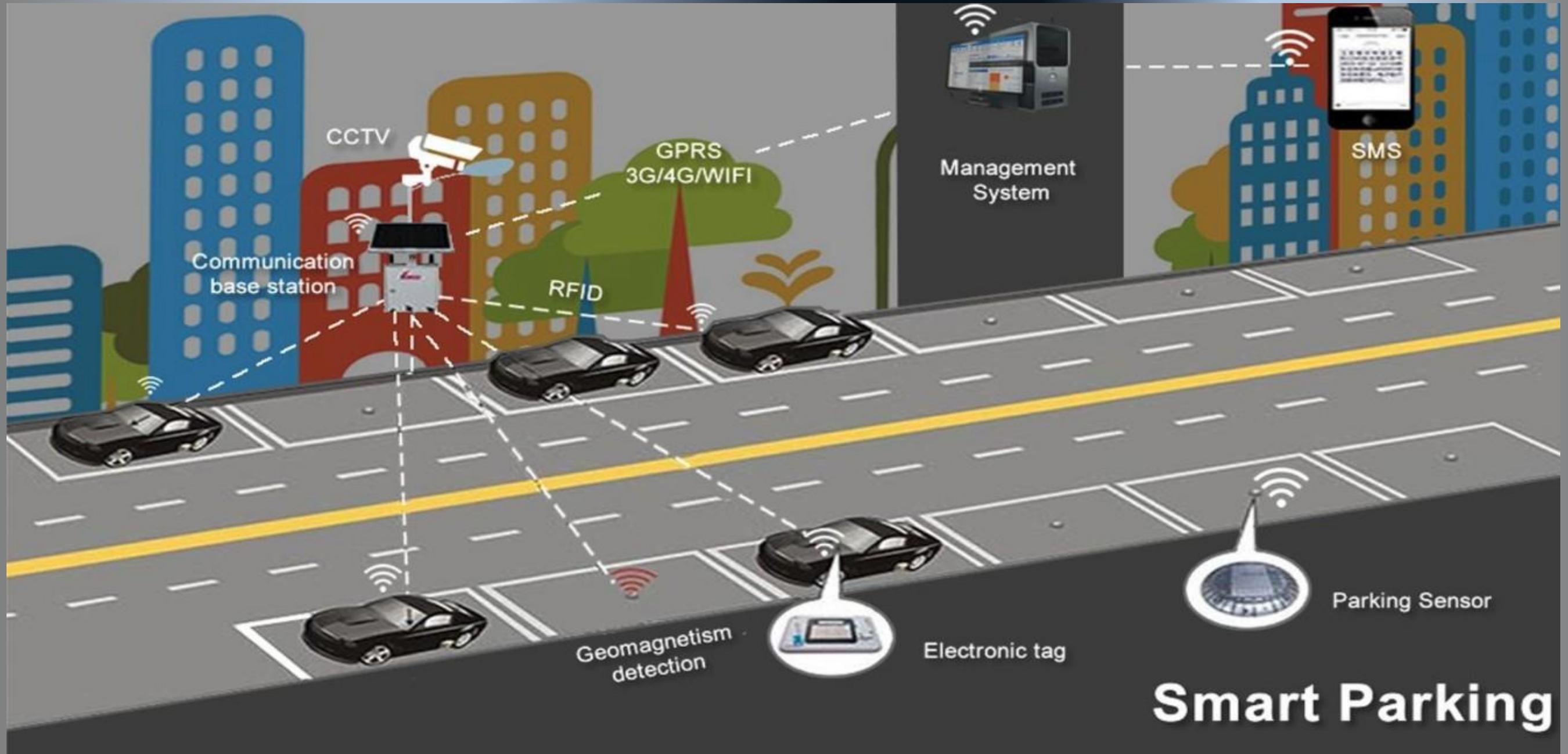
TCP/IP



Summary Table

Role	Issuer Bank	Acquirer Bank
Manages	FASTag & tag holder	Parking facility & systems
Handles	Tag balance, authorization	Hardware, POS, acquiring transactions
Deducts Amount	Yes	No
Initiates Transaction	No	Yes
Supports	Tag holder (end user)	Merchant (parking operator)
Receives Funds	No	Yes

PARKING OCCUPY SYSTEM



SYSTEM INTEGRATION

1. System Integration

- Integrates FASTag-based RFID readers and sensors with the parking management system.
- Connects parking infrastructure to the Acquirer Bank and NPCI's NETC platform.
- Ensures bi-directional data flow between entry/exit gates, bank APIs, and central servers.

2. Tag Read and Transaction Initiation

- Develops software to capture FASTag data (Tag ID) as vehicles enter or exit.
- Initiates payment requests by routing the tag ID to the Acquirer Bank.
- Communicates with NETC to process payment via Issuer Bank.

3. Transaction Lifecycle Management

- Manages full transaction flow: \ Tag read > Validation > Fee calculation > Payment request > Response handling.
- Ensures transaction status (success/failure) is recorded and displayed at gates.

4. Parking Fee Calculation Engine

- Implements dynamic and rule-based parking fee logic:
- Based on vehicle type, time duration, peak hours, or daily caps.
- Integrates fee engine with entry/exit timestamp data.

SYSTEM INTEGRATION-2

5. Reporting and Reconciliation

- Provides real-time and scheduled reports:
 - Entry/exit logs
 - Successful and failed transactions
 - Daily collection summaries
- Supports reconciliation with Acquirer Bank and Parking Operators.

6. Security and Compliance

- Encrypts transaction data and follows PCI-DSS and NETC security standards.
- Implements user authentication, system access control, and data audit logs.
- Supports NPCI-mandated API versions and encryption protocols.

7. Testing, Deployment & Support

- Performs end-to-end testing with Acquirer Banks and IHMCL.
- Deploys systems in live parking locations with minimal disruption.
- Provides post-launch support, monitoring, and regular software updates.

Summary Table: Responsibilities of Software Integrator

Area	Description
Hardware Integration	Connects RFID readers and sensors to the PMS
Software Development	Builds modules for tag read, transaction, and reporting
API Integration	Works with bank and NETC APIs for transaction routing
Fee Logic	Implements configurable parking fee rules
Reports & Logs	Enables real-time and historical data access
Compliance	Adheres to NETC and NPCI technical guidelines
Technical Support	Provides deployment and ongoing maintenance

S.No	Equipment Description	Unit
1	RFID ETC transceiver near Pay-axis - mounted on canopy	No
2	Electronics Enclosure	No
3	Lane Controller with Industrial PC	No
5	User Fare Display with mounting pole	Set
6	Automatic Barrier Gate	No
8	Traffic light with mounting pole	Set
9	Loops with detector	Set
10	Incident Capture Camera with mounting pole	Set
11	License Plate Image Capture Camera with mounting poles	Set
12	TFT Monitor	No
14	Thermal Receipt Printer	No
17	Cabling/Networking/Installation/Commissioning (Lump sum)	LS
18.	PMS Software	No
19.	POS Machine	Set

PMS Software Features ICD 2.5

1) Report Module (View Rights):-

- a) FASTag collection report generates
- b) Cash collection report generate
- c) Vehicle Registration wise report generate
- d) Date wise report generate
- e) Vehicle Classification wise report
- f) Daily / Weekly / monthly reconciliation reports
- g) Separate ETC report for Handheld reader
- h) Vehicle History movement report

2) Audit Module: -

- a) Audited/Unaudited vehicle status
- b) Auditor have a right to check every transaction with image evidence.
- c) Discrepancy transaction will editable by auditor only
- d) Report will be generated after audited.
- e) Forcefully/ manually exempted vehicle audit

PMS Software Features ICD 2.5 -2

3) Cash-up Module: -

- a) Shift wise Cash-up
- b) Cash/Digital receiving option in cash-up
- c) Collection report is connected with cash up history

4) Shift management/Roll Assignment: -

- a) Login feature for accessing the System
- b) Access the system based on roles definition
- c) Login Feature for Administrator/Auditor/Accountant/Booth Operator
- d) Ticket cancellation feature available for admin
- e) Forget User ID & Password Option Available.
- f) Ticket Cancel option available
- G) Total Audit Tnx , Unaudited Tnx & Row Count Available

PMS Software Features ICD 2.5 -3

- 5) Maintenance Report :-
 - a) Monthly Parking Wise Equipment Downtime Report (System Generated)
 - b) Monthly Lane Wise ETC and Non-FASTag traffic and Revenue report (System Generated)

- 6) **Client Application Features: -**
 - a) Vehicle Class image display at shortcut Key's
 - b) Cash/Digital payment Entry option available at dashboard.
 - c) Lane hardware status show at booth machine
 - d) Two Camera Image display option at booth application
 - e) Current & previous ETC Transaction & Cash Transaction status display
 - f) Fastag Transaction automatic detect & display the actual status (Blacklist/Authorized/Low balance)

- 7) **Manual Pass issue entry platform for exempted vehicle**
- 8) **Blacklist & transaction API status display at server.**
- 9) **Android Handheld Device Software Integration.**
- 10) **Database optimization**



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THANK YOU