# Data Strategy for Digital Transformation

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# Digital Transformation

- **Digital Transformation** (**DT** or **DX**) or Digitalization is the adoption of digital technology to transform services or businesses, through replacing non-digital or manual processes with digital processes or replacing older digital technology with newer digital technology.
- Digital solutions may enable – in addition to efficiency via automation – new types of innovation and creativity, rather than simply enhancing and supporting traditional methods.

# Digital Transformation

- One aspect of digital transformation (DT or DX) is the concept of ‘going paperless‘ or reaching a ‘digital business maturity’ affecting both individual businesses and whole segments of society, such as government, mass communications, art, health care and science.

# How to go for it

**1) Set Vision**

- Setting up a vision is the first step to any process and the same for digital transformation. With the prime focus on experience, the DX vision strategy should ideally include long-term goals and short-term objectives.
- Build your vision on the available resources rather than working out on innovations. Identify gaps and plan a realistic roadmap for implementations.

**2) Market Analysis**

- Remember! You are in the race for next-gen transformation. So, it's very important to understand the market dynamics and changing trends. This helps you create an up-to-date and relevant strategy that matches the industry competition.
- Nothing to worry! The right inspiration could be around you in your own industry. All you need is a keen observation to changing market trends.

**3) Feel the Experience**

- Considering the reality that DX is all about the end-user experience, you should first feel the experience that you wish to offer to your customer. That's where the success lies in DX.
- Even market surveys say that more than 90 percent of success in DX business depends on customers' as well as employees' digital experiences. Success in DX strategy lies in 'how appealing and easy you make your offering to your customers'.

# How to go for it

**4) Self-assessment**

- While the first three steps lay the path for your DX strategy, this step tells where you stand in the journey. In this step, you will have to identify gaps and take the necessary gaps to fill them.
- Understand your current infrastructure, software, apps and more, and check their feasibility to future changes you make through DX. Don't forget to identify key supporting, developmental areas and make necessary integrations as part of your DX strategy.

**5) Manage Infrastructure**

- Last, but crucial step! This step involves monitoring and preparing the existing infrastructure for the all-new transformation. For this, you will definitely need an expert team of CIO, CDO and other qualified DX specialists.
- If not in-house experts, its time you should think of hiring a reliable partner or a consultant who can help you in DX implementation. Besides, it's also important to keep your internal teams upgraded with the skill set that the new transformation demands, by way of training, certifications and more.

# Data Strategy – A Key Checklist for Digital Transformation

Modern industry calls ‘data’ an asset with high saleable value and an important commodity for day-to-day processes.

# Data Strategy

- A well-defined data strategy, aligned with the digitalization efforts, forms a strong basis for the successful Digital Transformation (DX/DT) process.
- It holds high significance as a key checklist for developing an effective roadmap for DX implementation that companies pursue part of their IT modernization.
- An effective data strategy defines the path for an organization to deal with its data as a structured and cross-domain asset that generates huge business value.
- It plays a very key role in setting a DX vision and also offers a guidance, along with well-defined key performance indicators that help in evaluating and rationalizing all related data initiatives.

# Four most common drivers that speak the need of a data strategy

Spread Vision

Technology investment planning

Business-IT Collaboration

Define key metrics and success path

# Key Points

**Business-IT Collaboration**

- Drive core business objectives and IT perspectives onto a single path, thus encouraging business-led and technology-enabled approach in and out.

**Spread Vision**

- Take ahead the vision across the enterprise bringing a perfect alignment and consistency among teams, reducing operational costs and optimizing performance.

**Define key metrics and success path**

- Consistency shows a positive impact on key metrics and lays down path to how initiatives are measured, evaluated and tracked across the process chain.

**Technology investment planning**

- Investing in legacy technologies might not fit in your new setup. At this point, a strategy considers the current state of your enterprise data environments and guides you accordingly on innovation and new technology investment.

# How to go for it?

# Step1: **Defining the scope**

- Assessment and review of the existing analytic capabilities
- Mapping data flow within the organization
- Reviewing capabilities of the existing data management program
- Documenting useful data requirements
- Identifying best data management and business intelligence tools and solutions
- Developing a roadmap by defining initiatives in coordination with key stakeholders

# Step 2 : **Planning and implementation**

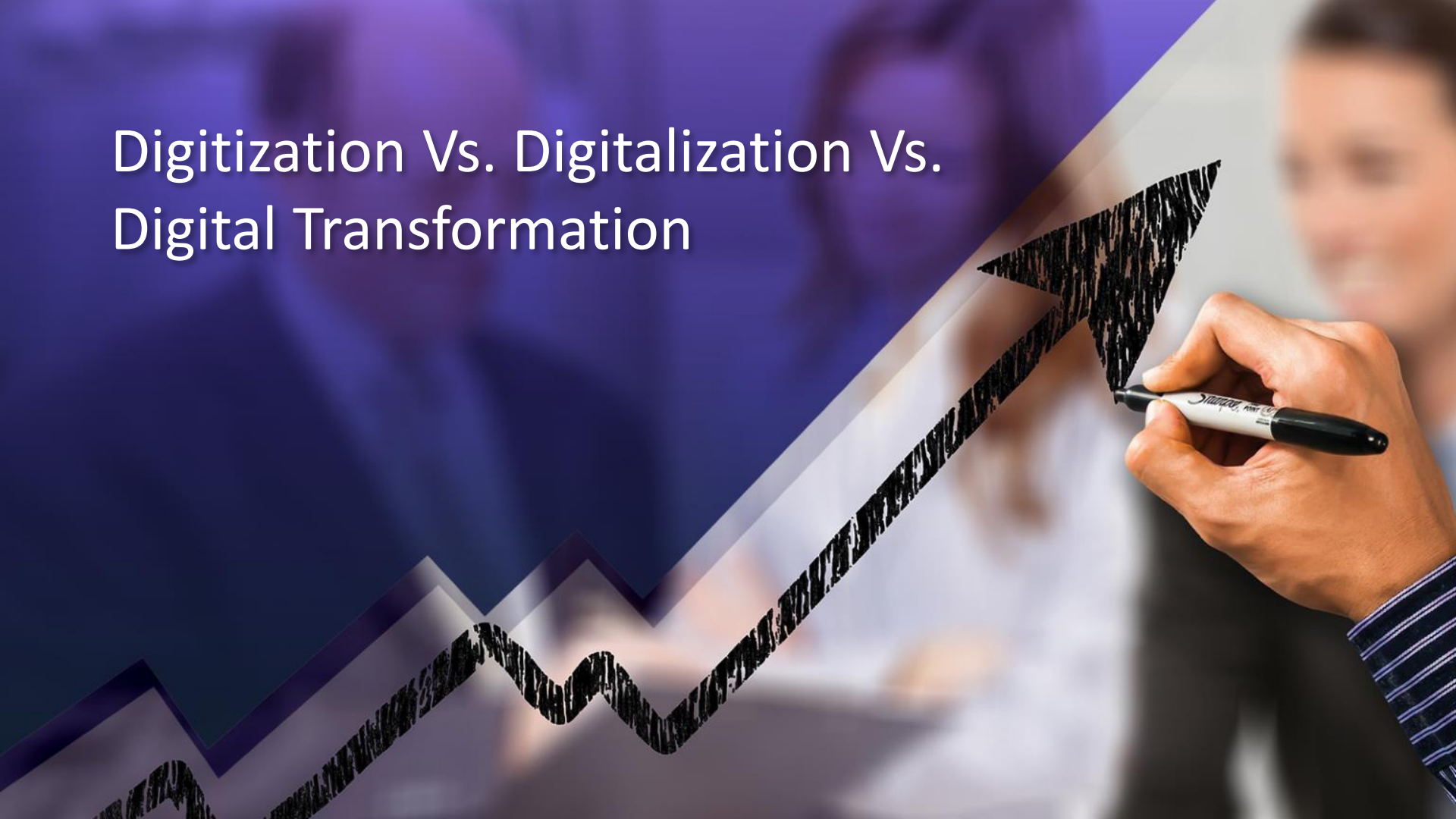
- Update the existing data management program through a well-planned approach
- Schedule a phase-wise implementation of the roadmap to meet the organizational needs to fit in the future program
- Bring in expertise to identify challenges to highlight and manage risk associated with the process
- Reach an agreement with the stakeholders on initiatives identified in the scope phase

# Step 3: Implementation

- Information access is key to planning an effective data strategy. Any lack of access to information leads to serious issues in achieving data integrity
- Data governance is another key factor, lack of which naturally lead to failure in agility in delivering projects on time and with accuracy
- Lack of archiving strategy is also another problem that can lead to challenges in data maintenance, causing data retainment and impacting performance
- Data storage is another critical aspect that obstructs organizational strengths to develop future capabilities

1. Effective IT
2. Personalization
3. Privacy and Trust
4. Partner Ecosystem
5. Data-Driven Business
6. Mutil-cloud Utilization
7. AI for Cutting Down OPEX
8. Connected User Experience
9. Enterprise Resource Planning

# Digitization Vs. Digitalization Vs. Digital Transformation



# Digitization

- Digitization is the move from analog to digital.
- Not so long ago, businesses kept records on paper. Whether handwritten in ledgers or typed into documents, business data was analog.
- Then computers went mainstream, and most businesses started converting all of those ink-on-paper records to digital computer files.

# Digitalization

- Digitalization is using digital data to simplify how you work.
- The process of using digitized information to make established ways of working simpler and more efficient is called digitalization.
- Note the word established in that definition: Digitalization isn’t about changing how you do business, or creating new types of businesses. It’s about instantly accessible data which is  not trapped in a file cabinet somewhere in a dusty archive.

# Digital transformation

- Digital transformation adds value to every customer interaction.
- Digital transformation is changing the way business gets done and, in some cases, creating entirely new classes of businesses.
- With digital transformation, companies are taking a step back and revisiting everything they do, from internal systems to customer interactions both online and in person.
- They’re asking big questions like “Can we change our processes in a way that will enable better decision-making, game-changing efficiencies, or a better customer experience by leveraging technology.

# Case Study: ONORC

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# How did we achieve?

Started from AP

- Digitization
- Digitalization
- Digital transformation

# ONE NATION,
# ONE RATION CARD


#AtmaNirbharBharatAbhiy

**A step towards self-reliant India**

**National Informatics Centre**
Ministry of Electronics & Information Technology
Government of India.

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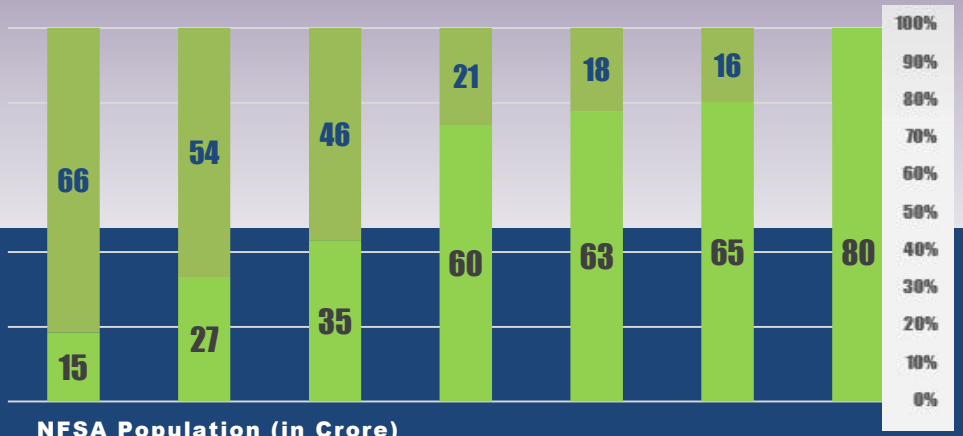
# One Nation One Ration Card - **ROLLOUT PROGRESS**

**IMPLEMENTED – 36**

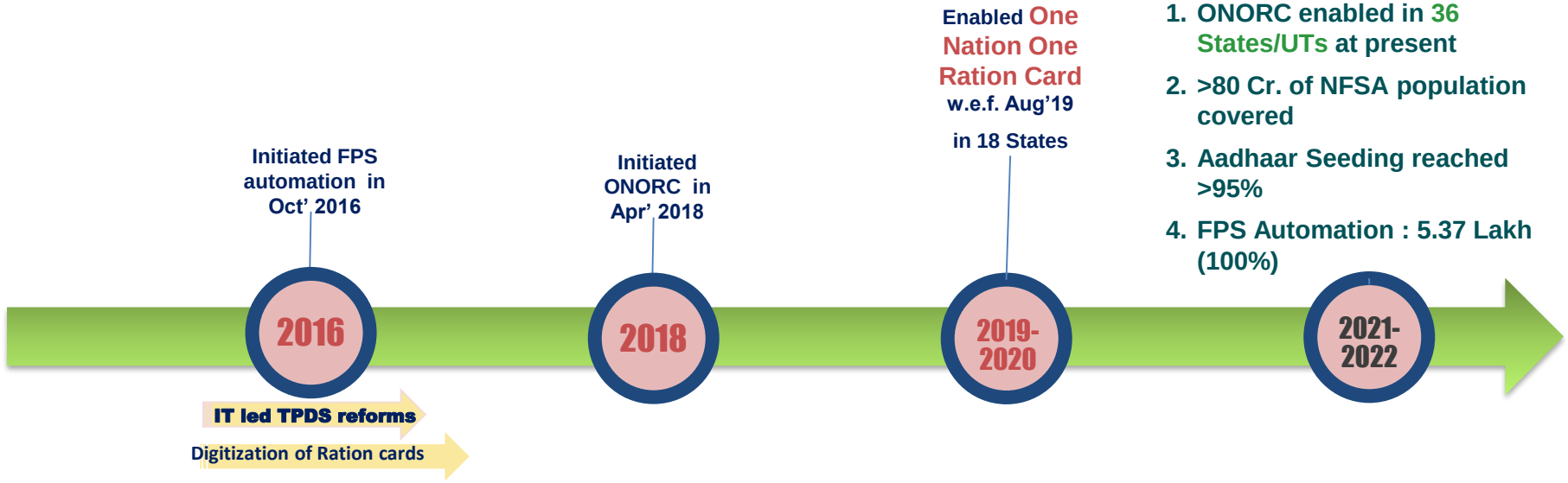



**NFSA Population (in Crore)**

**States/UTs under ONORC**

| 4 | 8 | 12 | 17 | 20 | 29 | 36 |
|---|---|---|---|---|---|---|
| **Aug' 2019** | **Oct' 2019** | **Jan' 2020** | **May' 2020** | **Jun' 2020** | **Aug' 2020** | **Apr' 20-Jun' 2022** |
| AP, TS GJ, MH | +4 HR, RJ KA, KL | +4 GA, JH, MP, TR | +5 UP, BH, HP, PB, DHN& DD | +3 MZ, OD, SK | +8 JK, MN, NG, UK, LD,AN, LK,PY | +6 TN,DL,AS, AR, CG WB & MG |

# ONORC for National Portability of ration cards -TECHNOLOGY LED REFORMS IN PDS




1. ONORC enabled in 36 States/UTs at present
2. >80 Cr. of NFSA population covered
3. Aadhaar Seeding reached >95%
4. FPS Automation : 5.37 Lakh (100%)

**Creation of unique beneficiary database across the country after intra and inter-State de-duplication of ration cards/beneficiaries under NFSA.**

**NFSA beneficiaries may lift their entitled foodgrains (partially/fully) from any Fair Price Shop of choice, in the country ( District/ State/ Country), by using same / existing ration card.**

# One Nation One Ration Card - **Technological Reforms to enable ONORC**

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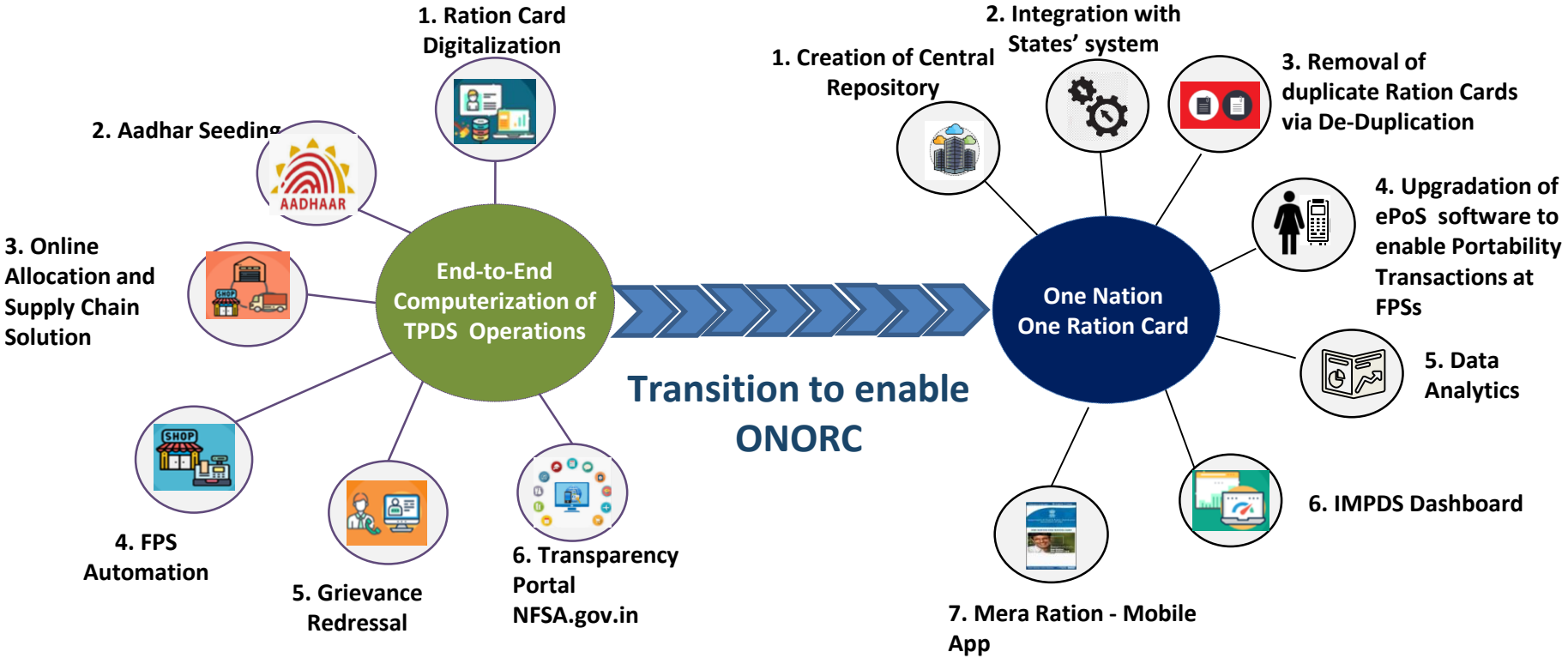
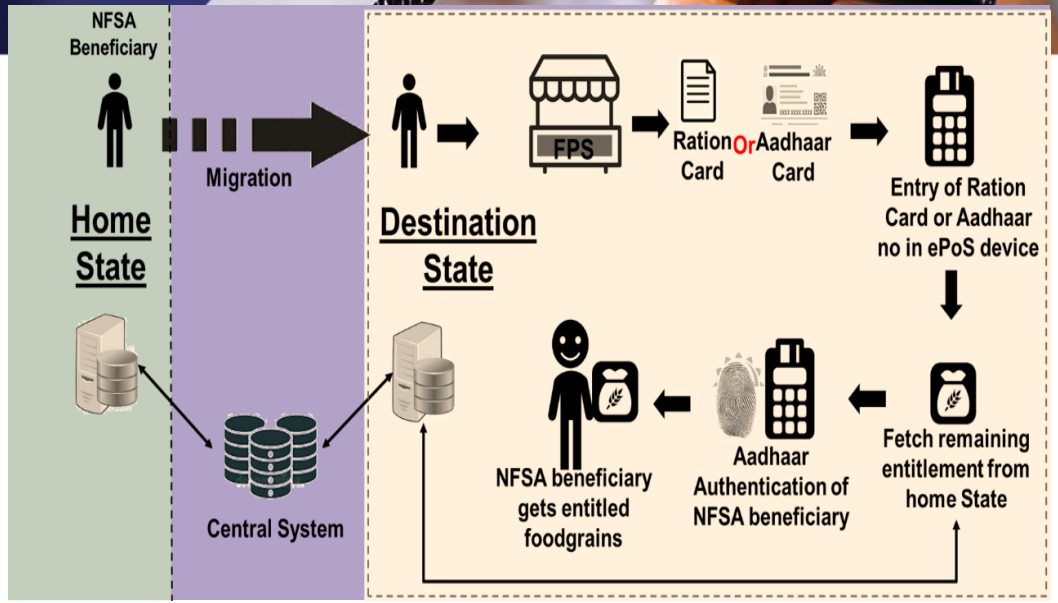


# ONORC – Use of technology to the fore - MECHANISM OF PORTABILITY TRANSACTION

| Key Performance Indicators | |
|---|---|
| Digitization of ration cards | 23.74 Cr Ration Cards<br>79.57 Cr. beneficiaries |
| Aadhaar Seeding | So far 98% ration cards and 85% beneficiaries' seeded with Aadhaar. |
| Elimination of Duplicate Units | Inter-State 51.5 L<br>Intra-State 52.9 L |
| FPS enabled with ePoS device | 4,88,832 |
| Supply Chain and movement of NFSA and PMGKAY monthly Allocation | Around 82 LMT |
| Monthly Aadhaar based transactions Transactions under ONORC | 23 Cr.<br>3 – 3 Cr ( around 12%) |
| Total ONORC (Intra and Inter state Portability) Transactions from Apr' 2020 till date | 68.31 Cr. |




**Technology Driven System - Enabling Migrants' Access to PDS anywhere in the Country.**

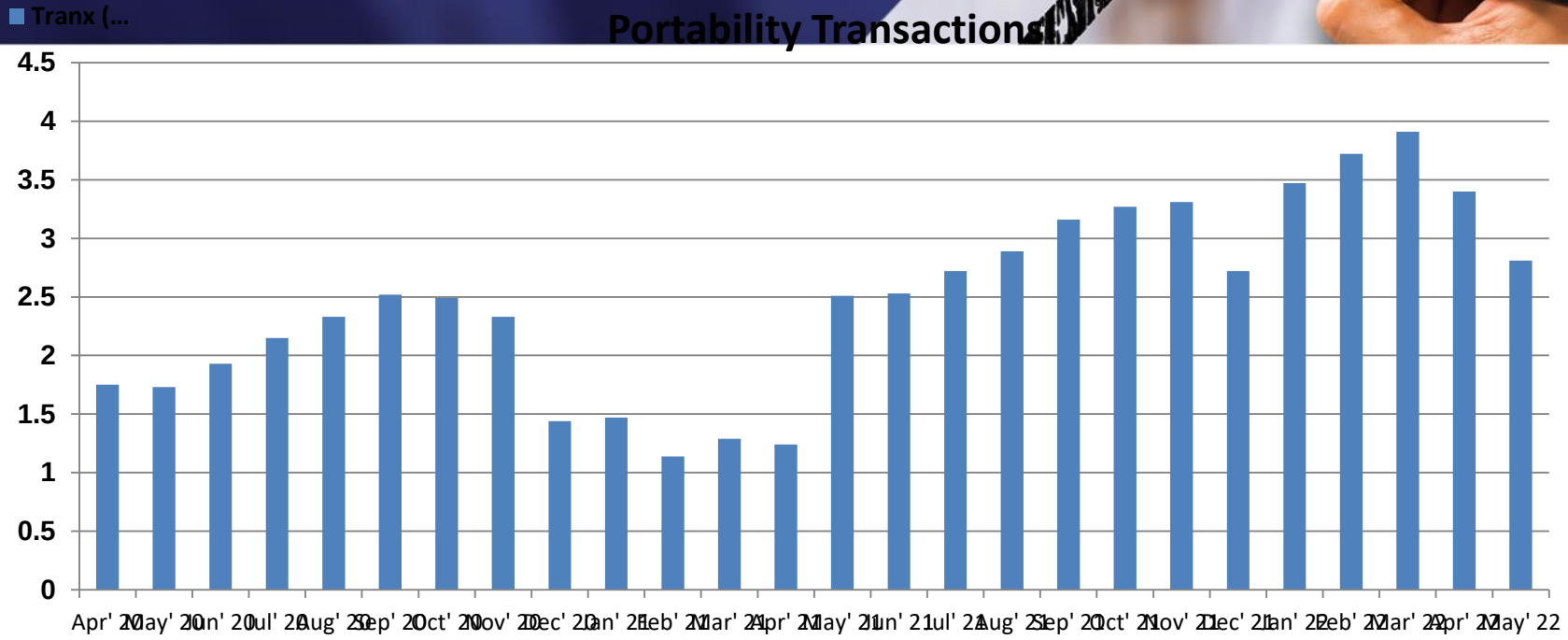
## Future Possibilities

- Become an enabler of rural e-commerce( e-Grameen)
- Cashless solution using JAM and UPI
- Data Analytics of ONORC may have several spin-offs

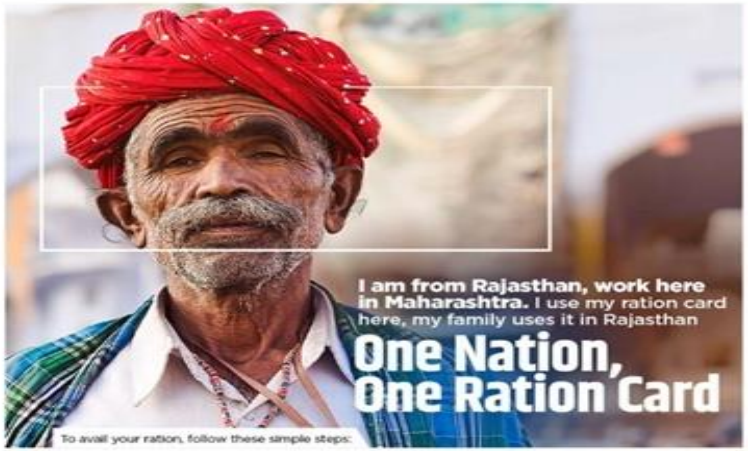
## Future Governance Enablers

- Predictive Models for people-centric governance strategies
- Ease of Living - Food, Health, Livelihood/Skill portability
- "Portability of Things" (PoT) for citizen conveniences.

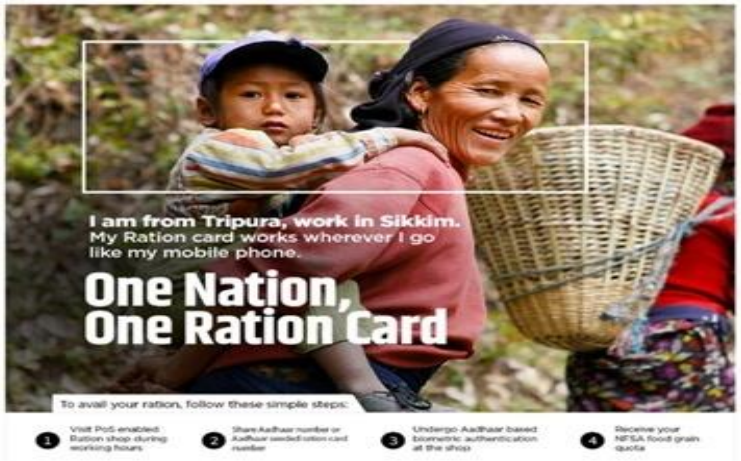
# ONORC - Inter and Intra State Portability Transactions




**Inter & Intra State Portability Transactions (of NFSA and PMGKAY) against 25 Cr NFSA transactions, every month**








[Video Link]

Thank You

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# Types of Data Analytics

- The Data Analytics Process is subjectively categorized into three types based on the purpose of analyzing data as:
- Descriptive Analytics
- Diagnostic Analytics
- Predictive Analytics
- Prescriptive Analytics

# Slide Title

- Make Effective Presentations
- Using Awesome Backgrounds
- Engage your Audience
- Capture Audience Attention

# Descriptive Analytics

- Descriptive analytics helps answer questions about what happened. These techniques summarize large datasets to describe outcomes to stakeholders. By developing key performance indicators (KPIs,) these strategies can help track successes or failures. Metrics such as return on investment (ROI) are used in many industries. Specialized metrics are developed to track performance in specific industries. This process requires the collection of relevant data, processing of the data, data analysis and data visualization. This process provides essential insight into past performance.

# Diagnostic Analytics

- Diagnostic analytics helps answer questions about why things happened. These techniques supplement more basic descriptive analytics. They take the findings from descriptive analytics and dig deeper to find the cause. The performance indicators are further investigated to discover why they got better or worse. This generally occurs in three steps:
  - Identify anomalies in the data. These may be unexpected changes in a metric or a particular market.
  - Data that is related to these anomalies is collected.
  - Statistical techniques are used to find relationships and trends that explain these anomalies.

# Predictive Analytics

- Predictive analytics helps answer questions about what will happen in the future. These techniques use historical data to identify trends and determine if they are likely to recur. Predictive analytical tools provide valuable insight into what may happen in the future and its techniques include a variety of statistical and machine learning techniques, such as: neural networks, decision trees, and regression.

# Prescriptive Analytics

- Prescriptive analytics helps answer questions about what should be done. By using insights from predictive analytics, data-driven decisions can be made. This allows businesses to make informed decisions in the face of uncertainty. Prescriptive analytics techniques rely on machine learning strategies that can find patterns in large datasets. By analyzing past decisions and events, the likelihood of different outcomes can be estimated.

# Process Flow in Data Analytics

- 1. Data Extraction
- 2. Data Cleaning and Transformation
- 3. KPI/Insight Derivation
- 4. Data Visualization

# 1. Data Extraction

- The data formats inputted to the data analytics flow can be broadly classified as:
- Structured data have a clear definition of data types along with associated field length or field delimiters. This type of data can be easily queried like the content stored in the Relational Database (RDBMS).
- Semi-structured data lack precise layout definition, but data elements can be identified, separated, and grouped based on a standard schema or other metadata rules. An XML file employs tagging to hold data, whereas the Javascript object Notation file (JSON) holds data in name-value pairs. NoSQL (Not only SQL) databases like MongoDB but couch base are also used to store semi-structured data.
- Unstructured data includes social media conversations, images, audio clips etc. Traditional data parsing methods fail to understand this data. Unstructured data is stored in data lakes.

# 2. Data Cleaning and Transformation

- The major cleansing operations in Data analytics are:
- Detection and elimination of outliers in the data volumes.
- Removing duplicates in the dataset.
- Handling missing entries in data records with the understanding of functionality or use-cases.
- Validations for permissible field values in data records like “31-February” cannot be a valid value in any of the date fields.

# 2. Data Cleaning and Transformation

- A filter of unwanted data records.
- Joining the data fetched from different sources.
- Aggregation or grouping of data.
- Data typecasting.

# 3. KPI/Insight Derivation

- Data Mining, Deep learning methods are used to evaluate Key Performance Indicators(KPI) or derive valuable insights from the cleaned and transformed data. Based on the objective of analytics, data analysis is performed using various pattern recognition techniques like k-means clustering, SVM classification, Bayesian classifiers, etc. and machine learning models like Markov models, Gaussian Mixture Models(GMM), etc.
- Probabilistic models in the training phase learn optimal model parameters, and in the validation phase, the model is tested using k-fold cross-validation testing to avoid over-fitting and under-fitting errors. The most commonly used programming language for data analysis is R and Python. Both have a rich set of libraries (SciPy, NumPy, Pandas) that are open-sourced to perform complex data analysis.

# 4. Data Visualization

- Data visualization is the process of clear and effective presentation of uncovered patterns, derived conclusions from the data using graphs, plots, dashboards, and graphics.
- Data reporting tools like QlikView, Tableau, etc., display KPI and other derived metrics at various levels of granularity.
- Reporting tools enable end-users to create customized reports with pivot, drill-down options using user-friendly drag and drop interfaces.
- Interactive data visualization libraries like D3.js (Data-driven documents), HTML5-Anycharts, etc.. are used to increase the ability to explore analyzed data.