



# **Empowering Self Help Groups for Effective Mid-Day Meal Scheme Management**



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**Solution Strategist**



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**Financial &  
Operational Architect**



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**Technology & AI  
Architect**



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**Data-Driven Policy  
& Strategy  
Consultant**



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**Data Analyst &  
Insights Specialist**



### 01. What is the Situation?

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- Manual fragmented processes resulting in inefficiencies
- Lack of data hinders automation
- Fund leakages
- Nutritional quality and pilferage issues
- Funding delays and low participation
- Inefficient feedback limits improvement
- Multiple departments cause weak oversight

### 02. What's our Solution?

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- Deploy Comprehensive Smart Digital Enabled Gen AI Powered Platform.
- Leverage IoT for real-time monitoring.
- Integrate with public digital infrastructure.
- Digitalize child health monitoring.
- Encourage CSR and sponsorships.
- Leverage AI for optimization.
- Enable analytics for real-time tracking.

### 03. What are the Benefit

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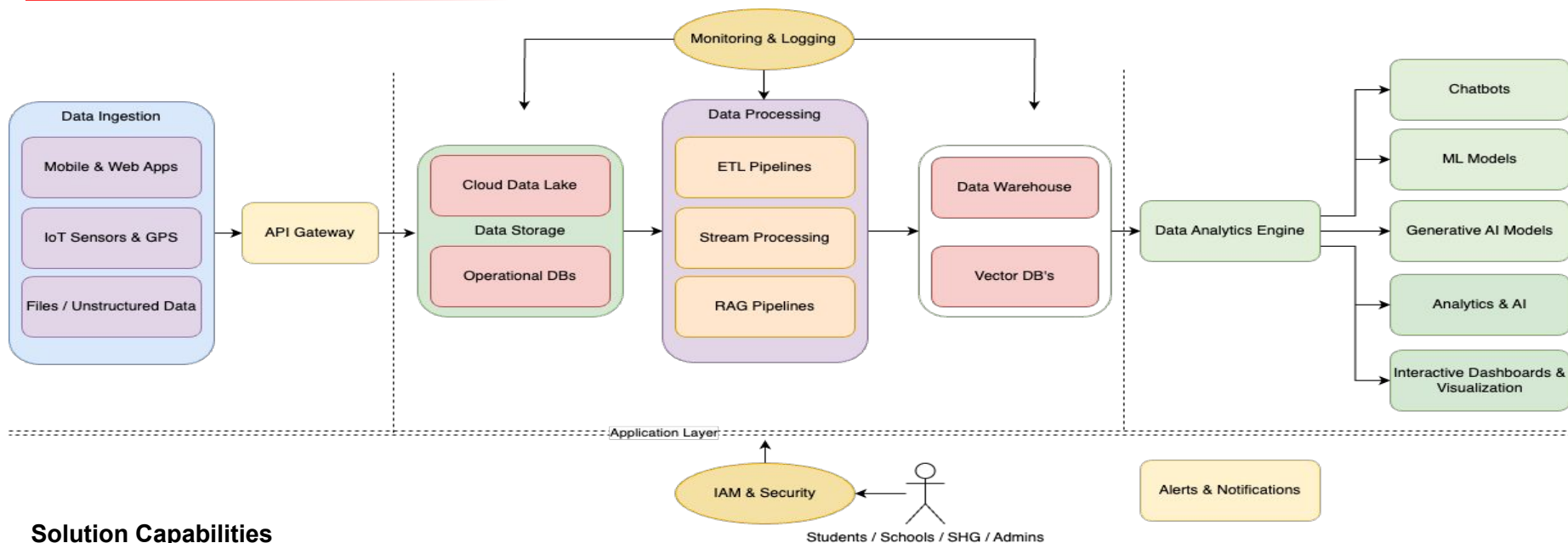
- Better child health and attendance.
- Enhanced transparency and monitoring.
- Optimized processes with granular data.
- Timely gap identification and evaluation.
- Increased funding via CSR support.
- AI-driven operational efficiency.
- Data-driven decision-making.

# Key Challenges in the Mid-Day Meal Scheme

<b>Inefficient &amp; ineffective process</b>	Reduction in Program coverage	Decentralized Management Variability	Variation in project implementation	Disruptions Due to External Factors, Supply Chain issues
<b>Lack of digitalization &amp; utilization of AI</b>	Non utilization of IoT, digital devices to collect data	Non-utilization of AI-ML for process improvement	Inefficient data management & storage	Delayed actionable data
<b>Non-integration with Public Digital Infra</b>	Lower Aadhar verification	Non maintenance of Children health data	Limited Integration with Health and Nutrition Programs	Absence of centralized beneficiary database
<b>Food Quality &amp; Nutritional quality</b>	Food Safety and Hygiene Issues, Poor Meal Quality and Food Contamination	Inconsistent testing of food sample & inadequate trainings	Leakage, Theft, and Adulteration of Food Grains	Ineffective Social Audit and feedback mechanism
<b>Fund Availability &amp; Utilization</b>	Lack of Charity through NGO, Corporate & Public	Non utilization of funds	Declining Government School Enrollment	Limited transparency in fund allocation

Source: Government published reports..

# How Can We Create a Secure, Intelligent, and Scalable Platform?



## Solution Capabilities

✓ **Multi-Source Data Integration:** IoT, web, unstructured files ingested via API Gateway, Digital Badge and wearable devices for students.

🚀 **Edge AI for IoT Devices:** Move processing closer to the edge to reduce cloud dependencies.

✓ **AI-Powered Processing Pipelines:** ETL, Stream Processing, and RAG Pipelines for data enrichment

✓ **Hybrid Storage & Retrieval:** Cloud Data Lake + Vector DBs supporting structured and unstructured data

✓ **Advanced Analytics & AI:** ML models, Generative AI, and Conversational AI Chatbots

✓ **Real-Time Alerts & Notifications:** Ensures immediate actionability on anomalies

✓ **Secure & Scalable IAM:** Role-based authentication for students, schools, SHGs, and admins



# Proposed Use Cases (1 of 2)

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## Problem

## Use Case

## Data

## Technology

## Output

Supply Chain Delays & Disruptions

AI-Based Supply Chain Optimization

Time-Series Forecasting, IoT & GPS data, Tracking logistics records

Delivery logs, sensor readings, GPS data logistics records

Predicts delays & optimizes routing to reduce disruptions

Poor Meal Quality & Contamination

AI-Powered Food Quality And Contamination Detection

Kitchen CCTV images/videos, IoT sensor data, quality test records

Computer Vision (YOLO, ResNet) Spectroscopy

Detects contamination risk & ensures food safety

Inefficient Financial Allocation

AI-Driven Cost Optimization & Block chain Fund Tracking

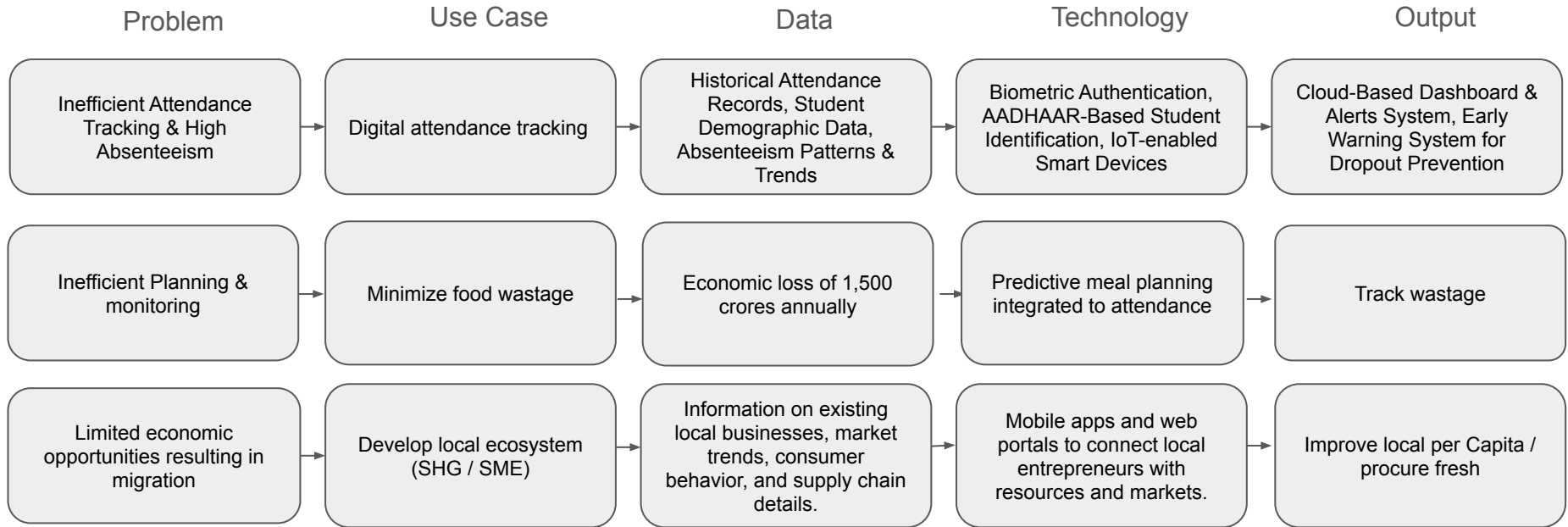
Budget allocations, expenditure reports, transaction logs, funding records

Predictive Analytics, Financial Modeling, Block chain

Forecasts budgets ,enhances transparency & fund utilization

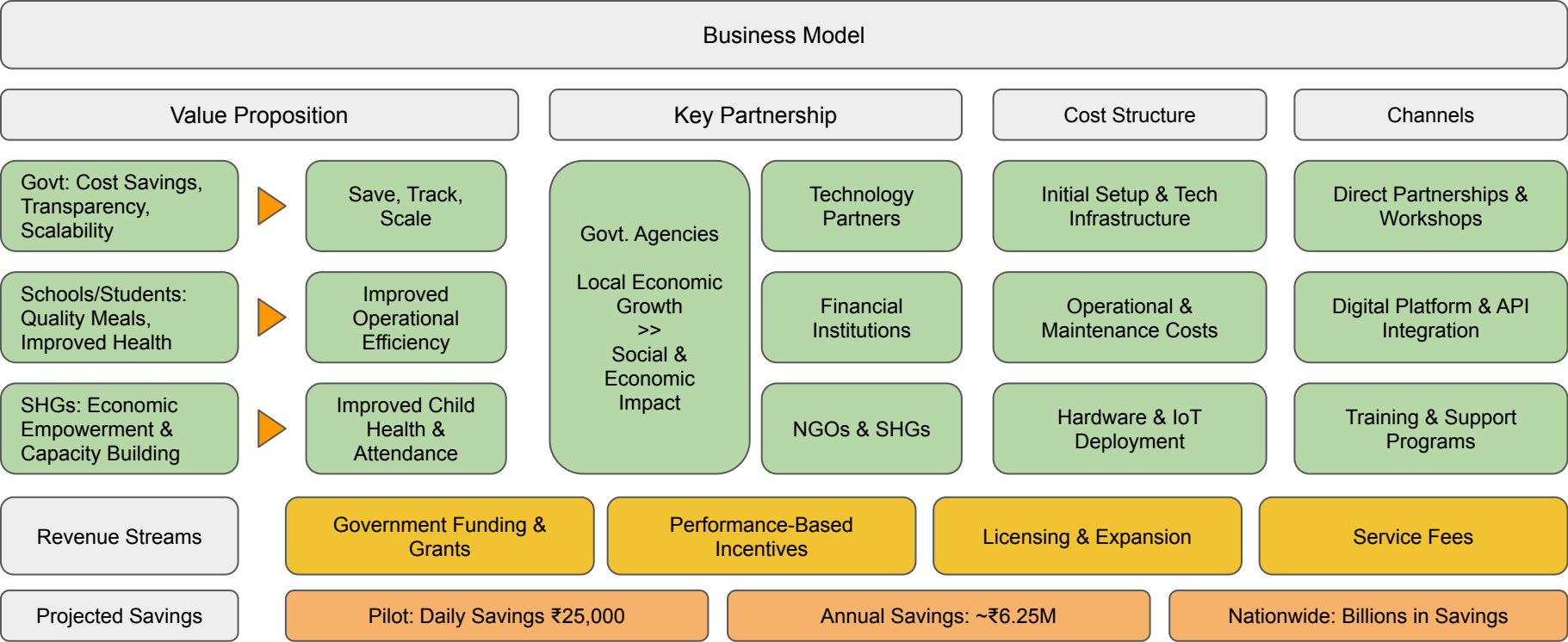
## Proposed Use Cases (2 of 2)

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The problems are interlinked & need to be addressed holistically

# Business Model - Pitch to Government



Granular data are available on all the **below underlined items**.

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Decrease in **Student Enrolment Numbers**

Reduction in **Coverage**.

**Variations between the districts within the states** are considerably higher.

Lower **Community Participation Tithi Bhojan** or similar practices are considerably low

**Average no of school working dates** are varying between states to states + year to year

**Funds allocated** are not fully used.

**Delay in project completion** resulting in additional expense , overall effectivity

While **daily & monthly MIS inputs are higher** the MIS inputs of Automated Monitoring Systems (**AMS**) **are extremely low**.

**Testing the meal sample** in NABL accredited labs are generally not as per the declared levels of 2%.

States finding difficulty in arranging the **Fortified edible Items** .

**Less usage of Pulses & non-inclusion of millets**.

Lesser **Health check up**

Lesser administration of prescribed **supplementary medicines** viz. Folic acid tablets & Deworming tablets.

Non maintenance of **Children health card**. Lower **aadhar verification**

Non uniformity in **supplementary nutrition items** (apart from Supplementary medicines).

Identification & Utilizations of very Few (OR) no **Centralised Kitchens**

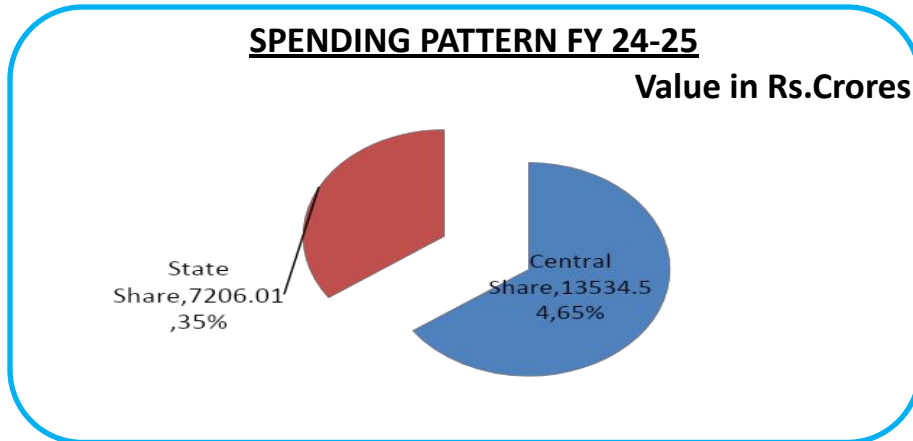
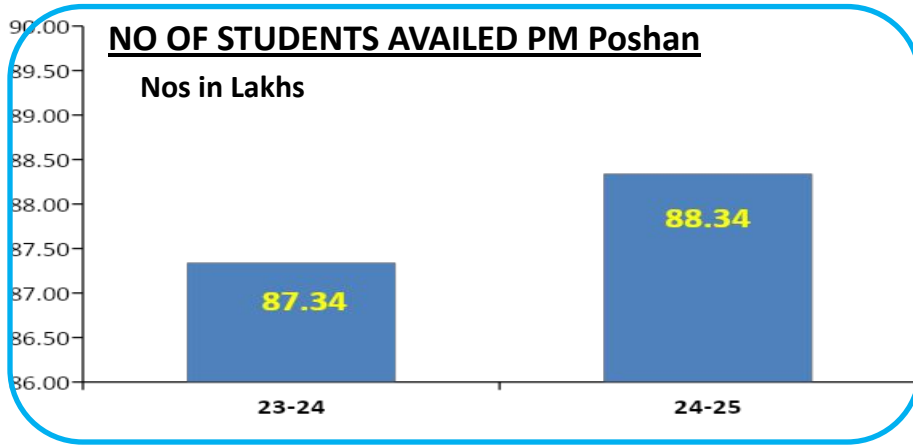
Lesser of **School Nutrition Gardens** developed.

Lesser or no **Social audits**

While the **usage of LPG** is mostly available few rural areas still use fire wood. **Almost none of the states has Solar cooking**.

**Trainings provided to Cook cum Helpers (CCH's)** is most cases are considerably less





## DATAS CAPTURED

Global data on School meal Programme across Countries (2021-22)

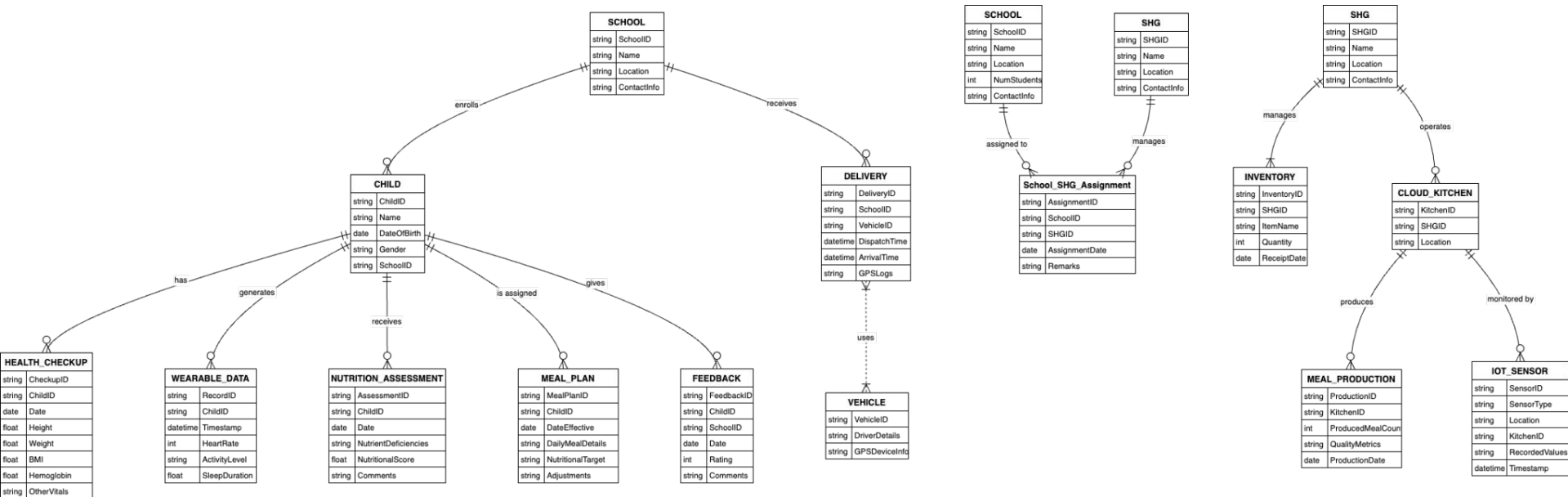
23-24 & 24-25 data's of PM POSHAN State level datas (28 States+8 UTs) on

- Students enrolled in Bal vatikas/Primary & Upper primary
  - Projected/budgeted Student enrollment
  - No of School Working days
  - Details of CCHs employed & their honararium by state & central
  - MME Expense
  - Kitchen cum Stores details + Kitchen devices
  - School Nutrition gardens
  - Community contribution –Tithi Bhojan or similar
  - Supply of nutrition items
  - Testing of meals
  - Trainings provided for CCHs
  - MIS/Data entry on PM Poshan
  - Status of implementation of Automated Monitoring System (AMS)
  - Centralized Kitchens
  - Social audits
  - Student Aadhar enrollment
  - Menu
  - Health checkups , Administration of IFA and Deworming medicines
  - Performance score cards of states.
  - Recurring Expense / Non Recurring Expense/ Flexi Fund Expense
  - Other related datas viz articles , journals , news etc.



Average Spending on Per Child/ Year ₹ 2452.78 ~ 5 to 7 Rs/day

*Thank you*



## Annexure - Propose Conceptual Data Model

## Potential Benefits

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<< Pictorial Representation on Future State>>

50% Cost Saving to Govt. - X Labour -> Y Labour + Technology cost

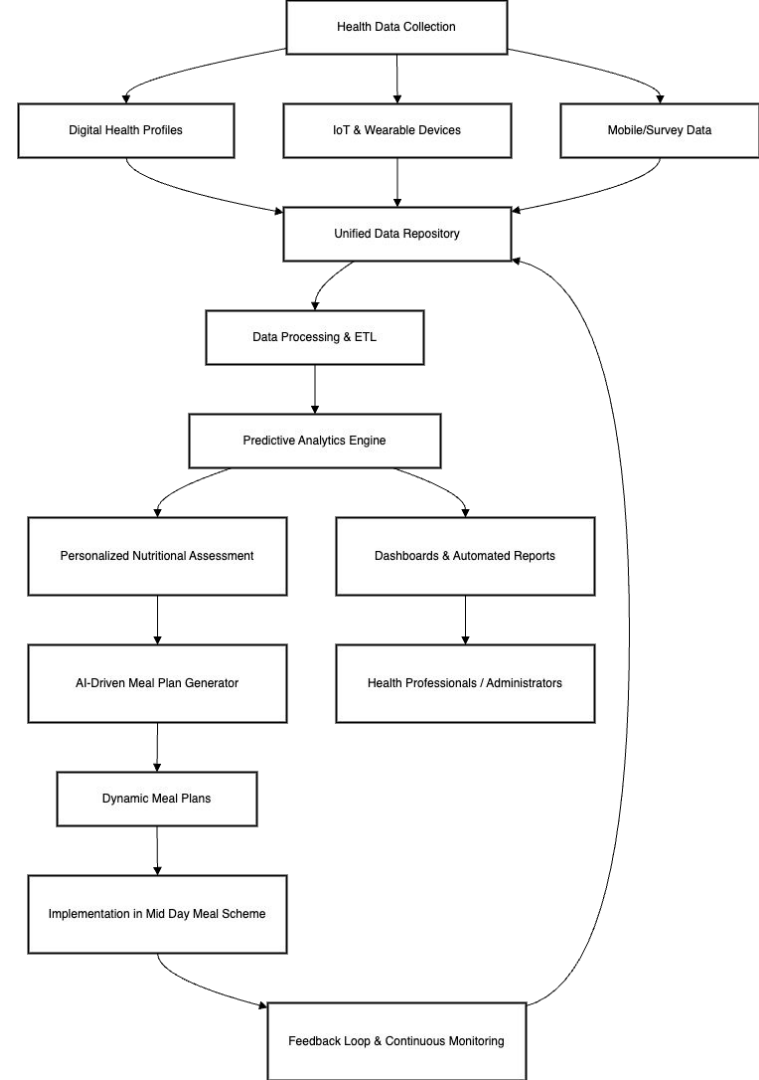
60% of Manual Process Automated.

40% Quality

90% reduction in Risk of health issues for student

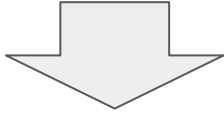
Manual process? - Digital Solutions -> these benefits

Parameter	Estimate/Range	Comments/Assumptions
Coverage (States)	28 States	Scheme is implemented in all Indian states.
Coverage (Union Territories)	8 UTs	The scheme covers all Union Territories as well.
Districts	Approximately 730–740 districts	Figures can vary with recent administrative changes (new districts may be formed).
Schools	Approximately 125,000–127,000 schools	Latest estimates indicate this range of participating schools.
Students Benefited (Daily)	Approximately 1.27 crore (12.7 million)	Represents the total daily beneficiaries across the scheme.
Avg. Cost per Student (Daily)	~₹25 (range: ₹20–₹35)	Varies by state-specific guidelines and local conditions.
Avg. Cost per Student (Annually)	Approximately ₹4,000–₹7,000	Estimated on the basis of around 200 school days per academic year.



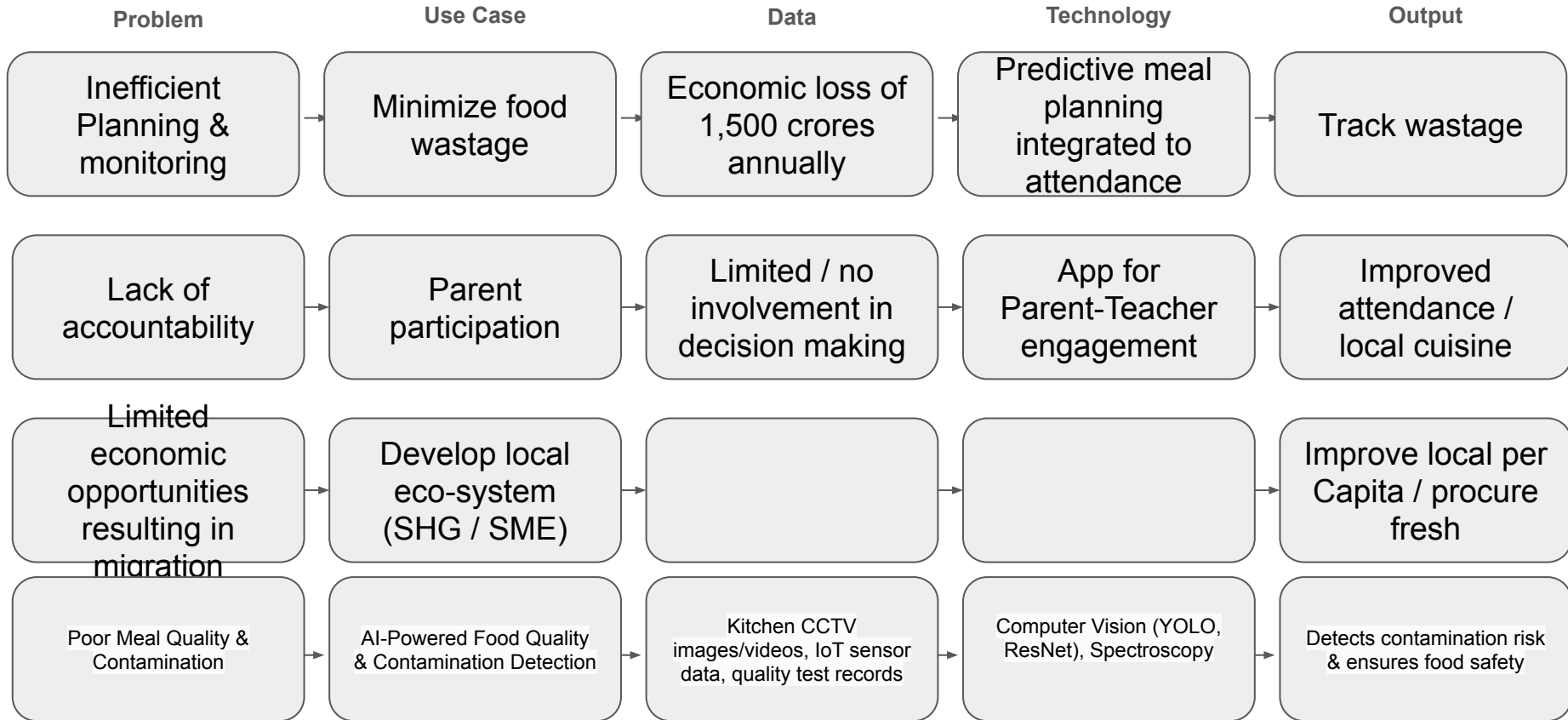


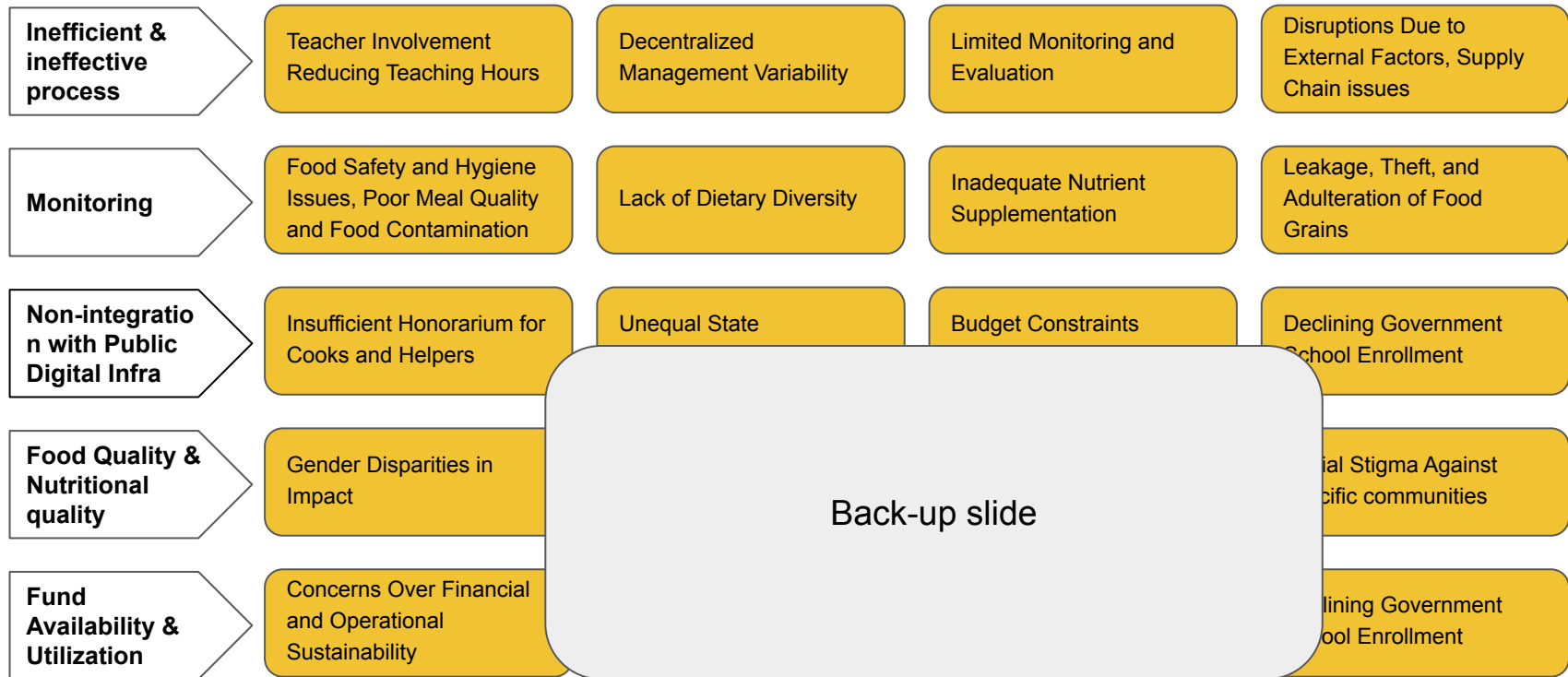
APPENDIX <Keep Adding your content below this slide>



## Proposed Use Cases (2 of 2)

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## Key Challenges in the Mid-Day Meal Scheme: Issues and Limitations

# Current Situation

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## <<News & Burning Problems >>

- The quality of food is frequently contested, with many media reports mentioning children's health decreasing due to the food served at midday meals [1, 3, 4, 10]
- The disadvantage of linking Aadhaar to the noon meal scheme is that it limits children's access to the MDMS because many do not have Aadhaar cards [2]
- Discrimination also occurs when children from different castes are served different foods or segregated
- Due to the participation of the teachers in the scheme, students' study time, and educational quality are affected

## <<Why we would need to Digitise it?

### 1. Transparency & Accountability

- Digital tracking of meal distribution can reduce corruption and ensure meals reach the intended beneficiaries.
- Biometric or QR code-based attendance systems can prevent fake beneficiaries and ensure accurate meal counts.

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