Ministry of Finance of Georgia

State Treasury

AI-DRIVEN TRANSFORMATION IN TREASURY OPERATIONS:

GEORGIA'S EXPERIENCE

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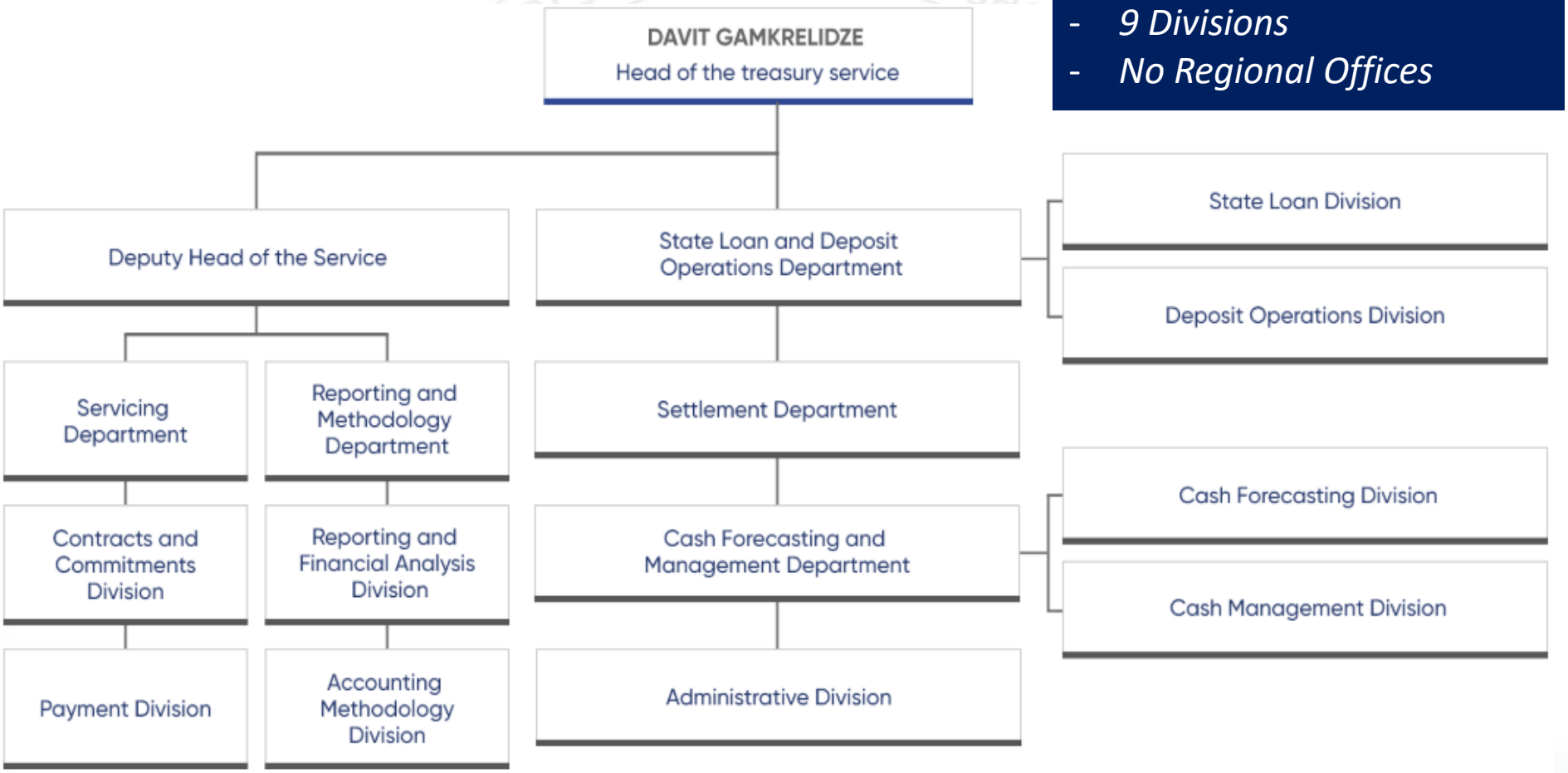
May, 2025

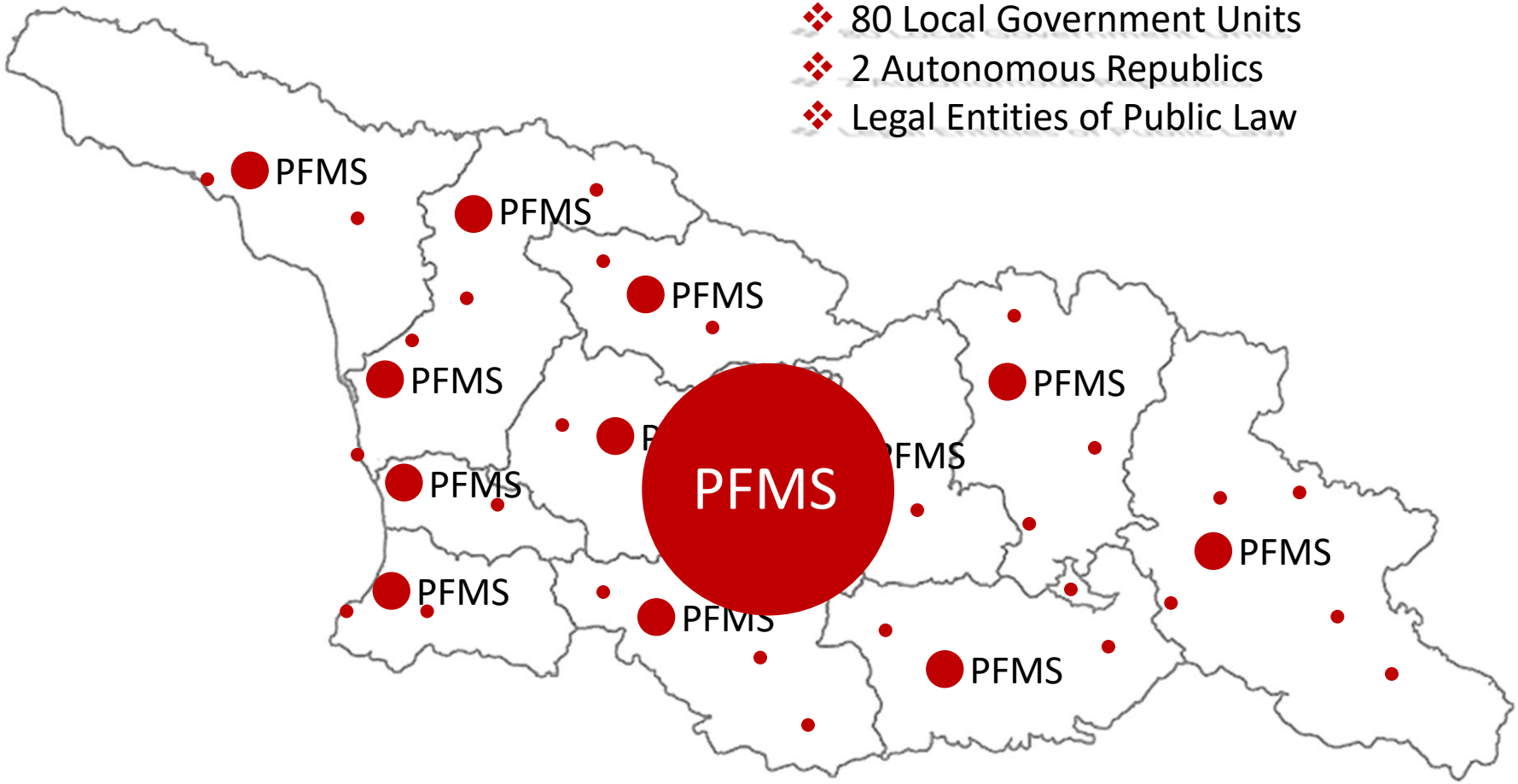
TREASURY
ORGANIZATIONAL STRUCTURE

- *75 Staff Members*
- *5 Departments*
- *9 Divisions*
- *No Regional Offices*

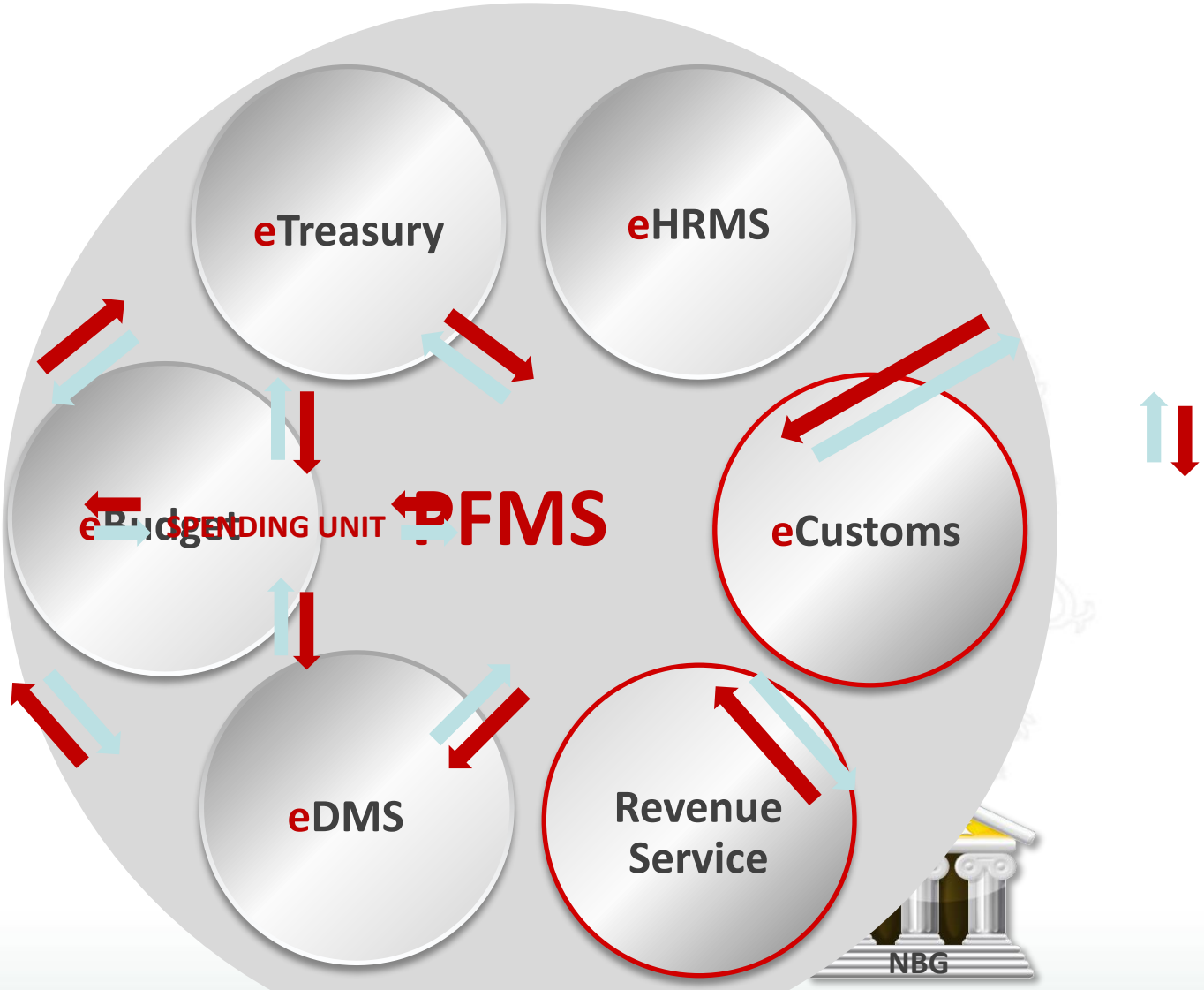


PFMS COVERAGE
GENERAL GOVERNMENT

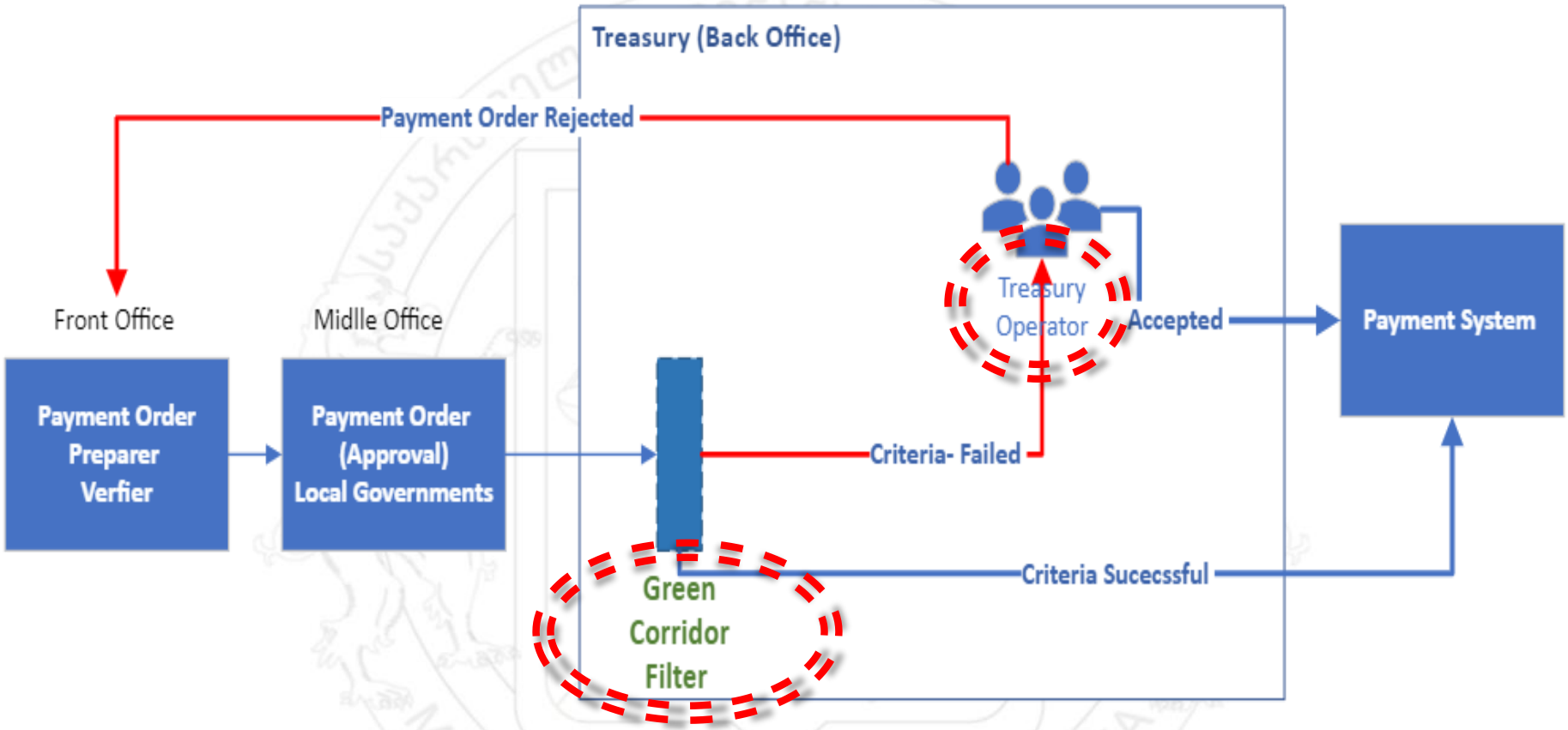
- Central Government
- 80 Local Government Units
- 2 Autonomous Republics
- Legal Entities of Public Law



PFMS
MAIN FUNCTIONS



PAYMENT PROCESS IN GEORGIA
BEFORE AI



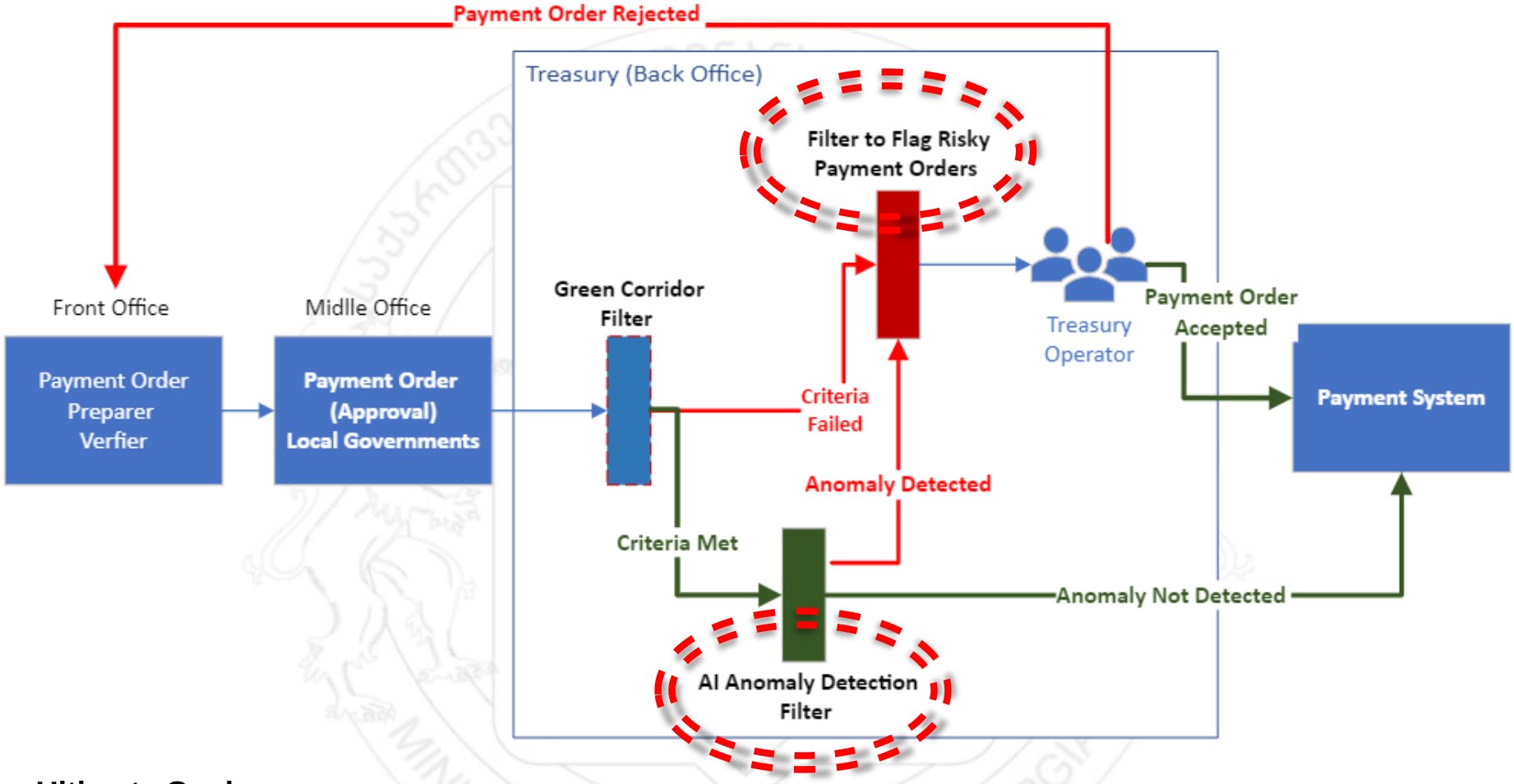
TREASURY SINGLE ACCOUNT
ENHANCEMENT CONSEQUENCES

Starting from 2023: The Largest Wave of Expansion

- Number of organizations will triple, as will the number of transactions.
- Hiring more people is not a viable solution to keep up with this growth.
- The risk of errors, fraud and compromised data quality increases.
- Standard programming languages operate only on predetermined rules.
- This leads to the logical need for adopting cutting-edge AI with generative capabilities.

AIRPORT PRINCIPLE: AN INSPIRATION FOR AI IN IFMIS ARCHITECTURE

PAYMENT PROCESS IN GEORGIA
AFTER AI

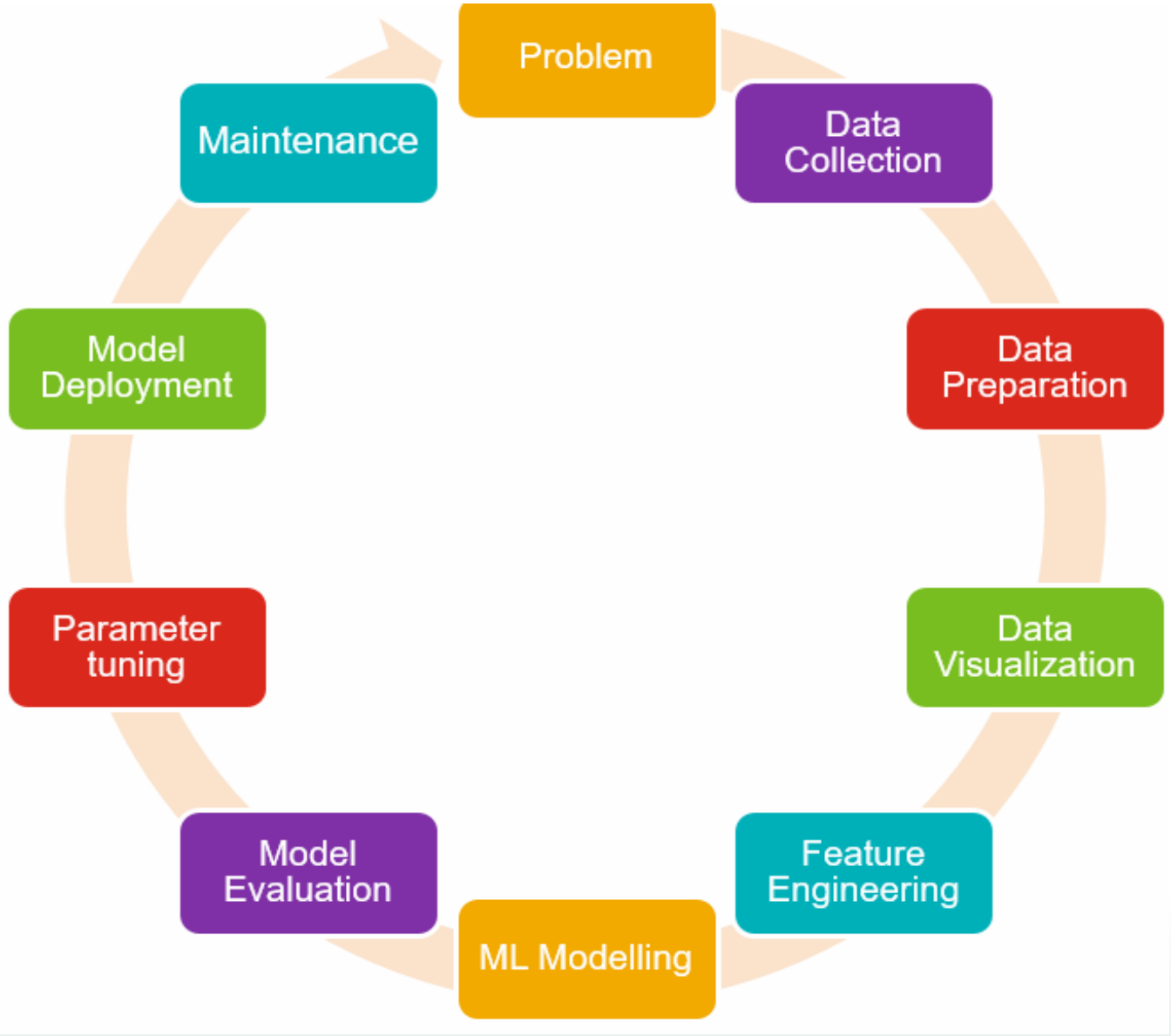


Ultimate Goal:

- ✓ Gradually increase the percentage of transactions processed through the Green Channel, ultimately exceeding 90%.
- ✓ Reserve the Red Channel only for high-risk transactions or those flagged by the Green Channel for further inspection.

EASIER SAID THAN DONE

STEPS TO DEPLOY ML



SPECIFIC
IMPLEMENTATION CHALLENGES

- Performance limitations during model execution
- Undefined results for certain transaction types
- Inability to run multiple rows simultaneously in Jupyter notebooks
- Malfunctions in hyperparameter tuning and saving model/preprocessor
- Need for a dedicated Model Ensemble Module for Red Channel optimization
- Lack of explainability for why certain orders are flagged as suspicious
- Failure to generate predictions for some orders
- Lack of an automated pipeline for continuous model retraining

DECISION COMPARISON

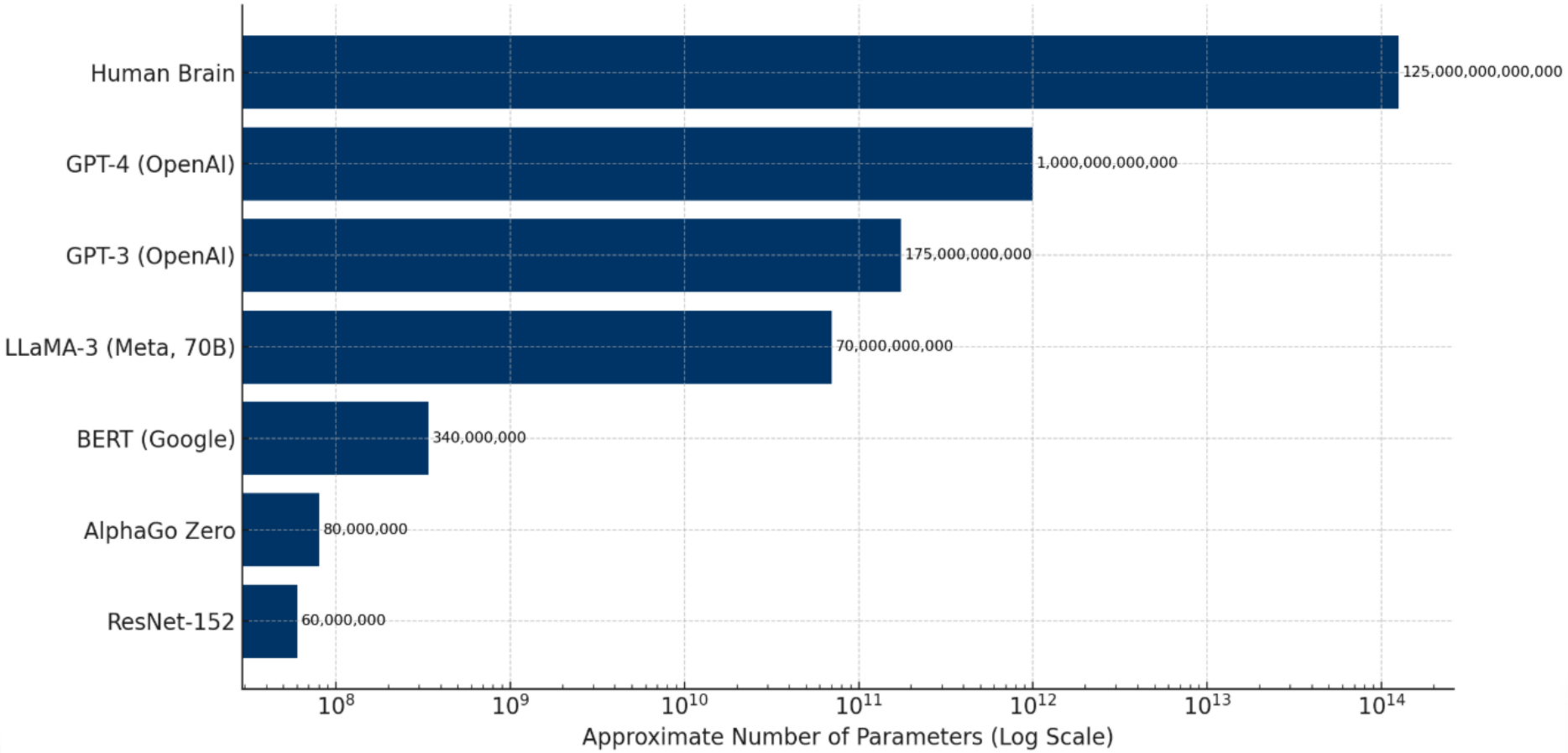
Comparison of AI and Treasury staff decisions in Red Channel transactions, March 15 – May 15, 2025

March-May, 2025	**AI said "YES"**	**AI said "NO"**
Treasury said "YES"	95.2%	3.9%
Treasury said "NO"	0.8%	0.1%

The ultimate goal is to eliminate gaps.

AI VS. HUMAN INTELLIGENCE

Neural Model Size by parameter Count



AI VS. HUMAN INTELLIGENCE (2)

Dimension	AI Capabilities	Human Capabilities
Speed & Volume	Processes millions of transactions instantly	Handles limited volume; slower data processing
Pattern Recognition	Detects anomalies, trends and correlations across vast datasets	Identifies patterns in complex but smaller-scale or contextual scenarios
Learning Ability	Learns from historical data (ML), but only within its training scope	Learns from experience, adapts to new contexts and exceptions
Judgment & Context	Limited to what it's been trained on	Applies intuition, ethical reasoning, and contextual judgment
Creativity & Innovation	Can generate outputs (e.g., text, forecasts) based on patterns	Generates new ideas, reform paths, and interprets policy implications
Transparency	May operate as a "black box" (especially deep learning models)	Transparent reasoning, explainable decision-making

AI excels in speed and scalability; humans bring context, ethics and strategic judgment. The future lies in their **collaboration**, not substitution.

USE OF AI
ONGOING ACTIVITIES AND FUTURE PLANS

Ongoing Projects:

- Finalize Enhancement of TSA (Treasury Single Account)
  - Continuing improvements and optimizations of the TSA system.
- Implement Machine Learning in Transaction Processing
  - Transitioning to full-scale deployment of ML algorithms to maximize efficiency and accuracy.

Planned Initiatives:

- Apply Machine Learning in Cash Forecasting
  - Leveraging ML techniques to enhance forecasting accuracy
- Use Natural Language Processing (NLP) in Accounting Data Processing
  - Automating and improving data processing with NLP
- Enhance Customer Service Quality through Large Language Models (LLMs)
  - Implementing AI-driven models to improve customer interactions.

THANK YOU FOR YOUR ATTENTION!

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