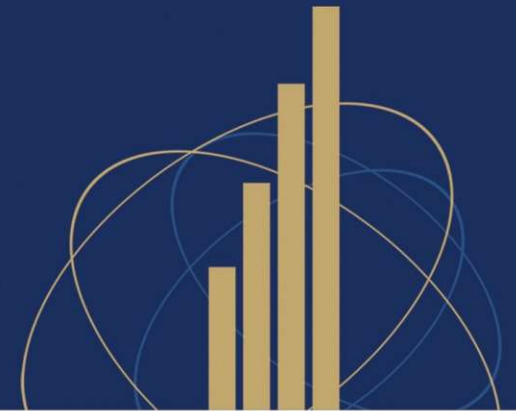




Technology & Data Integrity: *The Role of AI and Automation in Reducing Billing Errors*



CIGFARO
Chartered Institute of
Government Finance, Audit & Risk Officers

www.cigfaro.co.za

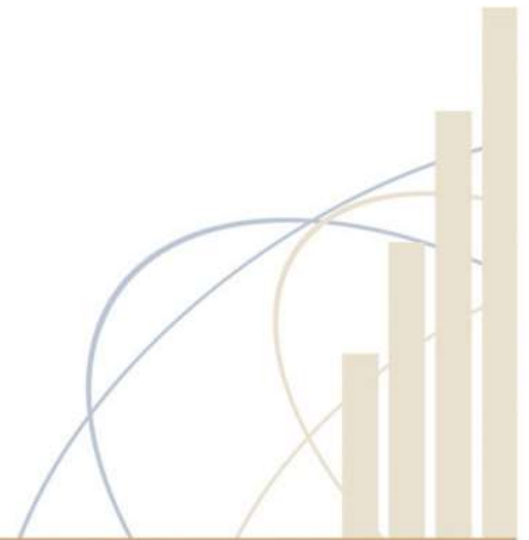
SAQA Recognised Professional Body

Contents

- Introduction
- Revenue Lines
- Cost of Billing Errors
- The Foundation – Data Integrity
- Automation – The first layer of Efficiency
- Enter the Revolution – Artificial Intelligence
- Examples – Automation & AI in Practice
- Challenges
- Conclusion – A vision for Smart Billing
- Demonstration – Simple Automation Script for Picking Abnormal Billing

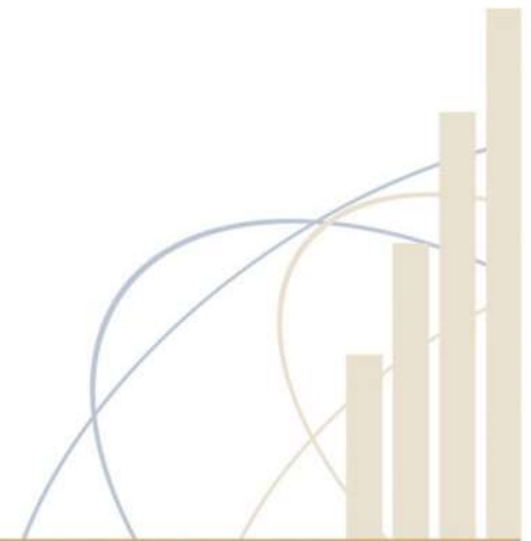
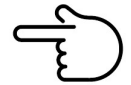
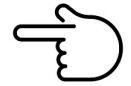
Introduction

- The growing challenge of accurate billing in municipalities
- Link between billing accuracy, revenue, and service delivery
- Role of technology, data integrity, automation, and AI



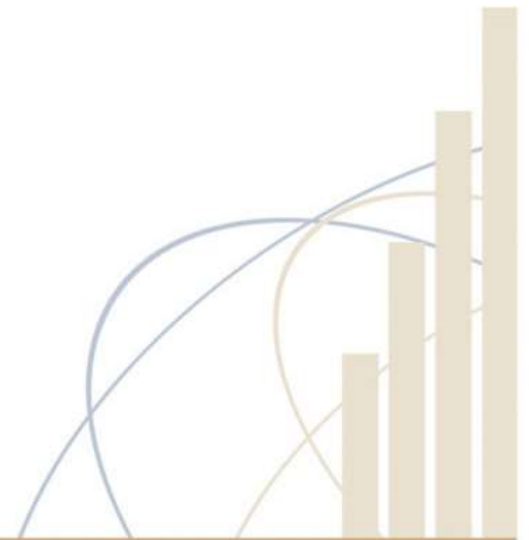
Revenue Lines for Municipal Authorities

- Property rates (developed, undeveloped properties)
- Service charges (water, electricity, waste collection, etc.)
- Resale of utilities (water, electricity, etc.)
- Traffic, parking and other transgressions fines
- Application fees (building, inspections, etc.)
- Other



Cost of Billing Errors

- **Causes**: manual errors, outdated data, meter tampering, poor integration
- **Impacts**:
 - Lost revenue
 - Disputes with customers
 - Delayed audits and reports
 - Erosion of public trust
- Other



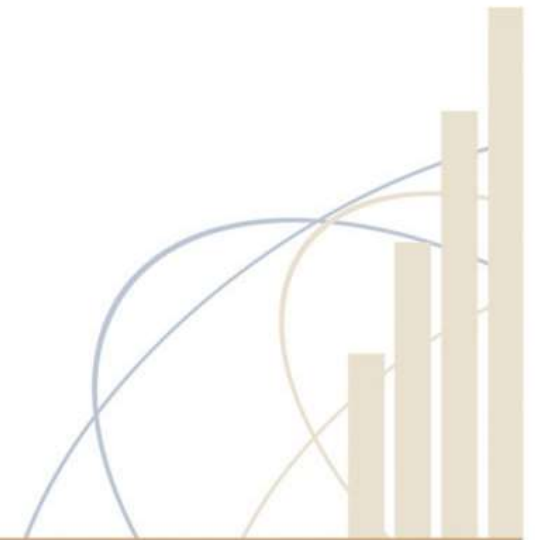
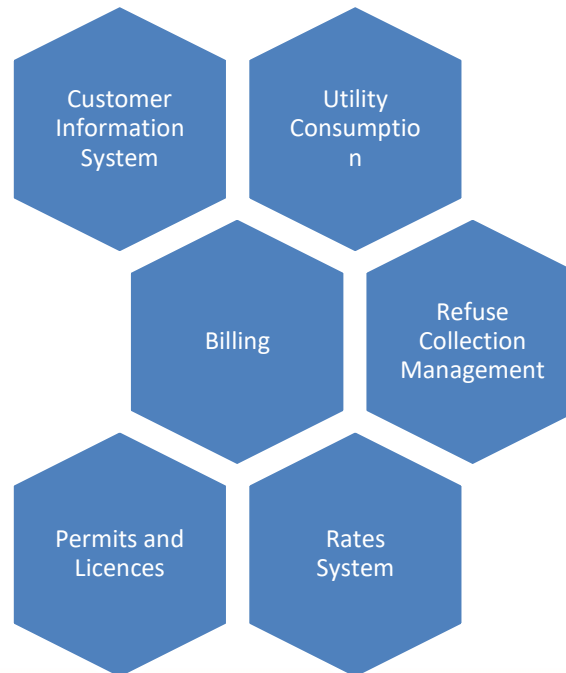
The Foundation – Data Integrity

- Importance of accurate, complete, and timely data
- Updated customer information
- Linked systems (billing, metering, CRM)
- Consistent data validation routines

.....the accuracy, completeness, consistency, and validity of data throughout its lifecycle.

Automation – The First Layer of Efficiency

- **Smart metering (AMI/AMR)**: automatic meter readings
(applicable to municipalities that do utilities billing)
- **System integration**: fewer human inputs = fewer errors
- **Automated billing cycles** and alerts for irregular consumption



What AI Brings to the Table

- **Anomaly Detection**: flags irregular billing patterns
- **Predictive Billing & Forecasting**: consumption & revenue → allows for better accurate revenues, as well as ability to identify billing errors.
- **Natural Language Programming**: chatbots to handle customer queries → 24/7 handling of the most common billing issues.
- **Data Cleansing**: removes duplicates and errors → a major data integrity KRI.



Examples of Cities Leveraging AI

- [eThekweni Municipality](#)
 - AI in leak/loss detection
 - Customised ChatGPT for enhanced governance... Model trained on internal data with reference to external source

Improved Efficiency

Enhanced Decision
Making

Increased Citizen
Engagement

- [City of Johannesburg](#)

- Smart metering with AI validation

Increased Revenue
Collection

Reduced Electricity
Theft

Reduced Operational
Costs

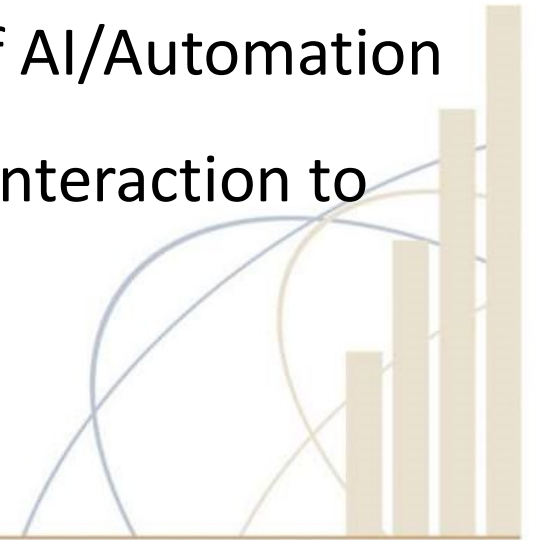
How to Bring it Alive....

- Discover your data, sources and owners... What is its importance?
- Develop data standards... Work towards data clean-up and integration.
- Automation of repetitive tasks – could smart metering (where applicable)
- Automate billing workflows... Also ensure billing simplification (billing-in-a-page)
- Pilot AI tools... Incremental



Challenges to Consider...

- Discover your data, sources, importance and owners.
- Systems Infrastructure and implementation costs... If possible, consider leveraging on the Cloud.
- Data privacy and security issues... What legal requirements exist? Regulatory? Data sensitivities? Availability of controls?
- Resistance to change – negative perception of AI/Automation on job security; customers preferring human interaction to machines.
- Digital readiness and staff capacity



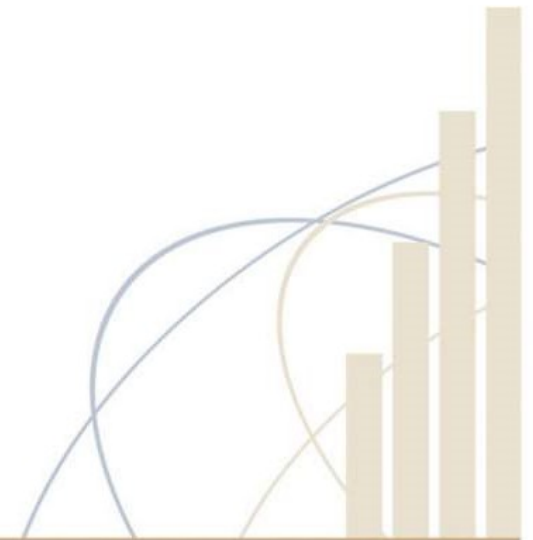
Challenges to Consider...

- Infrastructure-light and scalable
- Enables real-time integration of metering, billing, and customer platforms
- Supports AI tools and analytics with minimal setup
- Empowers customers via mobile portals and real-time data access
- Enhances data security and resilience



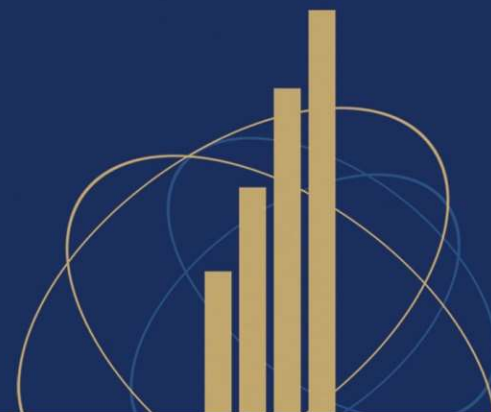
Conclusion – A vision for Smart Billing

- Technology is a key enabler, not a silver bullet
- AI & automation can protect revenue, boost service
- Start small, build strong data foundations, collaborate





Thank You!



CIGFARO
Chartered Institute of
Government Finance, Audit & Risk Officers

www.cigfaro.co.za

SAQA Recognised Professional Body