

# **Integrated Prepaid Vending Solution Scope**

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## 1 ABBREVIATIONS

Abbreviation	Description
Dx IPVS	Distribution Integrated Prepaid Vending Solution
PLCM	Project life cycle management
BRS	Business Requirement Specification
KPI	Key performance indicators
OVS	Online Vending System
Group IT	Group Information Technology
SaaS	Software as a Service
IaaS	Infrastructure as a Service
DaaS	Data as a Service

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## 2 GLOSSARY OF TERMS / DEFINITIONS

Term	Definition
Analytics	Refers to the business intelligence capability.
Business Continuity	Business continuity encompasses planning and preparation to ensure that an organization can continue to operate in case of serious incidents or disasters and is able to recover to an operational state within a reasonably short period.
Business Intelligence	The term Business Intelligence (BI) refers to technologies, applications and practices for the collection, integration, analysis, and presentation of business information. The purpose of Business Intelligence is to support better business decision making. It can also be described as a broad set of data analysis applications, including ad hoc analysis and querying, enterprise reporting, online analytical processing (OLAP), mobile BI, real-time BI, operational BI, cloud and software as a service BI, open source BI, collaborative BI and location intelligence.
Business Requirements Specification	Business requirements specification is the eliciting, analysing and documenting of business requirements early in the development cycle to guide the design of the solution.
Business Rule	A business rule is a rule that defines or constrains some aspect of business and always resolves to either true or false. Business rules are intended to assert business structure or to control or influence the behaviour of the business. Business rules describe the operations, definitions and constraints that apply to an organization. Business rules can apply to people, processes, corporate behaviour and computing systems in an organization, and are put in place to help the organization achieve its goals.
Change Request	A change request is when an enhancement is made to an existing system that meets specific criteria.
Disaster Recovery / Disaster Recovery Plan	A disaster recovery plan (DRP) is a documented process or set of procedures to recover and protect a business IT infrastructure in the event of a disaster. Such a plan, ordinarily documented in written form, specifies procedures an organization is to follow in the event of a disaster. It is "a comprehensive statement of consistent actions to be taken before, during and after a disaster".
External Agents	Sends information to and receive information from analysis area of study/focus area.
Innovation	Innovation generally refers to changing processes or creating more effective processes, products and ideas. For businesses, this could mean implementing new ideas, creating dynamic products or improving your existing services. Predominantly focuses on digitisation type projects.
Process	Set of activities that describe how an activity is executed.
Project	A project consists of a concrete and organized effort motivated by a perceived opportunity when facing a problem, a need, a desire or a source of. It seeks the realization of a unique and innovative deliverable, such as a product, a service, a process, or in some cases, a scientific research. Each project has a beginning and an end, and as such is considered a closed dynamic system. It is developed along the 4 Ps of project management: Plan, Processes, People, and Power. It is bound by the triple constraints that are calendar, costs and norms of quality, each of which can be determined and measured objectively along the project lifecycle. Each project produces some level of formal documentation, the deliverable(s), of course, and some impacts, which can be positive and/or negative.
Software License Purchase	A software license is a legal instrument (usually by way of contract law, with or without printed material) governing the use or redistribution of software. All software is copyright protected, in source code as also object code form. The only exception is software in the public domain. A typical software license grants the licensee, typically an end-user, permission to use one or more copies of software in ways where such a use would otherwise potentially constitute copyright infringement of the software owner's exclusive rights under copyright law.
System	An organized, purposeful structure that consists of interrelated and interdependent elements (components, entities, factors, members, parts etc.). These elements continually influence one another (directly or indirectly) to maintain their activity and the existence of the system, in order to achieve the goal of the system

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Account Balance	<p>Account Balance is a running total of the money in the account. (Usually for the Vending Agent). The Account Balance is the accounting total and may be positive or negative, depending on the Credit Limit and Emergency Credit Limit.</p> <p>The Account balance is often not the same as the Available Credit for the same reasons.</p> <p>Account Balance = Total deposits (i.e. additions) to date – Total sales (i.e. deductions) to date</p>
Algorithm Type (AT)	A two-digit code defined by STS. There are codes for the algorithm to make an STS token as well as for the various algorithms to make tokens for proprietary meters. The combination of Token Technology and Algorithm Type, define the Meter Type
Blind Vend	<p>Blind Vend is where the Vend transaction is performed for a meter that does not exist on the Meter Database. In such a scenario, the Meter information is provided from a Meter Card or alternatively via manual entry by the Operator at the Client, (often from an old token).</p> <p>It is recommended that if the Meter information does not exist on the Meter Database, the Server shall capture this information only as an exception record to allow maintenance personnel to correct the data. However, the Meter information is never updated/captured on the actual Meter Database since the Vending Server must never become a master source of the Meter Data. The Vending Server will always only be updated from the Customer Information System, i.e. CC&amp;B</p>
CDU ID	A unique number given by CC&B which identifies the Vending Client but the Online Vending Server uses the EAN Number to identify the Vending Client uniquely.
ClientID	<p>This identifier is defined in the XMLVend specification and used to uniquely identify a Vending Agent in an Online Vending System. Note that more than one ClientID may be assigned to a Vending Agent.</p> <p>If the Online vending system uses the TLS protocol, then the Vending Agent certificate or client certificate contains the ClientID. The ClientID must then only be read from the certificate and populated in the XMLVend request messages.</p> <p>It is recommended that identifier be of an EAN type as this ensures uniqueness across all online vending systems worldwide.</p> <p>The ClientID may also be mapped to a CDUID by the Online Vending Server to ensure legacy compatibility.</p>
Credit (available)	<p>Available Credit is the amount of credit that the Vending Agent has available to him. The Available Credit may be higher or lower than the actual Account Balance in his account, depending on the Credit Limit and Emergency Credit Limit. Available Credit may be positive, or negative but vending processes shall only be allowed when Available Credit is positive.</p> <p>Available Credit = Account Balance – Credit Limit – Emergency Credit Limit (if exists)</p> <p>Because Emergency Credit is temporary and automatically disappears after a pre-determined time, the Available Credit may suddenly change to a further negative value when the Emergency Credit duration expires.</p>
Credit (emergency limit)	<p>Emergency Credit is actually only a limit (not any real credit) and should strictly be called Emergency Credit Limit. It is the temporary additional (lower) limit that may be applied for a specific Vending Agent to allow him to continue vending in an emergency situation. (The Emergency Credit Limit is always a debit amount)</p> <p>Only one Emergency Credit Limit can exist for a Vending Agent at any time. Emergency Credit Limits are not cumulative if applied multiple times which means the latest applied Emergency Credit Limit always overwrites any possible previous Emergency Credit Limit. However, the validity period is reset to its full available duration every time a change it made to this limit.</p> <p>Note that the Emergency Credit Limit does not replace the normal Credit Limit or add any temporary credit, but instead exists in addition to the normal credit limit for the valid duration.</p>
Credit (limit)	The Credit Limit is the bottom limit down to where a Vending Agent account can be decremented when no Emergency Credit Limit exists for the Vending Agent. The Credit Limit is usually only configured once when the Vending Agent is registered and this limit may be positive, zero or negative.

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	A negative Credit Limit may be used for a trustworthy Vending Agent like a Bank that will always operate in credit mode. A positive Credit Limit may be used for a high-risk Vending Agent where additional financial security is required.
Credit (Token) or Energy Token / Vend / Transaction	Typically, Tokens or Transactions for Energy as defined in STS. This includes Normal Sale, FBE, Meter Credit Transfer Token and Free Issue (if allowed). It specifically excludes Key Change and any Engineering Tokens (like Clear Credit)
Engineering Key Change	<p>The Engineering Key Change function will allow the operator to specify both the “From” and the “To” information for a Key Change request. Only selected Vending Agent Roles will be configured on the Server to perform this function since there is some risk attached to this operation. However, the operation will only be allowed if the meter information is not found on the Server, otherwise the Database information will in any case be used as the “To” information. These rules ensure that meters do not deviate from configuration information as specified on the Database.</p> <p>A typical example where this function will be required is in a meter laboratory environment where a technician may change new meters from the Default codes to the correct field codes, before they are installed and loaded on the Meter Database.</p>
Engineering Token / Transaction	Typically, Tokens or Transactions for the specific Engineering Functions as defined in STS. This includes “Set Power Limit”, “Clear Tamper”, “Clear Credit” etc.
FBE (Token/ Vend / Transaction)	<p>Mostly known as Free Basic Electricity or FBE</p> <p>A specific kind of Credit Token as defined by STS. A meter will only accept one FBE Token per month so there is no risk in Vending Agents producing multiple FBE Tokens for a meter. Typically, an FBE Token does not have a Credit (monetary) value (i.e. it is free) but it does have an Energy value, which is used for energy balancing purposes.</p>
Gateway Vending Agent	<p>Gateway Vending Agent is one of the defined Vending Agent Types and describes how the Vending Agent equipment looks</p> <p>The Gateway Vending Agent must set up his own Gateway to communicate to the Eskom Server via a permanent communication line. The Gateway Vending Agent will have only one Vending Agent Account, and all Vend requests will be handled via this Gateway and account.</p> <p>Behind the Gateway, the Vending Agent may have many proprietary Vending Terminals of different capabilities but all of that is transparent to Eskom since the Terminals never communicate directly with the Eskom Server.</p> <p>This configuration is typically the way that the Banks would operate but note that it is also possible for a Regional Vending Agent or even an Area Vending Agent to be configured on the Server as a Gateway Vending Agent.</p> <p>Note that the terms National Vending Agent, Regional Vending Agent and Small Vending Agent is now only a description of the size and footprint of the Vending Agent operation.</p>
GL Owner	GL Owner is the owner of a Supply Group. In Eskom such an owner is typically an Eskom Region. A GL Owner may have many Supply Groups, but every Supply Group can have only one GL Owner. This owner of the Supply Group determines who owns the transaction and supplies the electricity for this customer.
Key Change Token	Two Tokens make up the generation of a Key Change Token. They are created to change the meter configuration namely the Tariff Index, Supply Group Code and Key Revision Number
Key Management Centre (KMC)	The KMC is a secure trust centre that has been setup with Eskom to secure the STS master keys. The KMC also securely codes and distributes STS encoding modules.
Key Revision Number (KRN)	<p>The Key Revision Number is a single-digit number and if forms an integral component that points to the secure Vending Key for a specific Supply Group Code.</p> <p>Currently most Supply Group Codes still only exist for Key Revision 1 but if a key is compromised, a new Vending Key will be created and while the Supply Group Code will remain</p>

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	the same, the Key Revision would change. This change will also require Key Changes for all the meters in that Supply Group.
Mag Card (Magnetic Card/	Not the same as Meter Card. Magnetic Card is a specific type of a Token This is usually a paper (disposable) Card that carries the credit or other data to the meter. There currently exist STS as well as Proprietary Magnetic Cards
Meter Card	<p>A plastic card with magnetic strip according to ISO 7812 series specification. Meter Card is not the same as Token or Magnetic Card. Every new meter is supplied with a Meter Card. The data on the Meter Card defines all the information that is required to make a valid token for the meter. The following information is encoded on track two of the Meter Card:</p> <ul style="list-style-type: none"> <li>• Meter Serial Number</li> <li>• Algorithm Type</li> <li>• Token Technology</li> <li>• Supply Group Code</li> <li>• Key Revision Number</li> <li>• Tariff Index</li> </ul> <p>It is very important to ensure that the Information on the Meter Card remains always in sync with the information configured in the meter. The Meter Card must therefore always be re-coded whenever Key Change Tokens are created for a meter.</p>
Meter Credit Transfer Token / Vend / Transaction	<p>Originally defined in the NRS transaction types as Replacement Transaction. However, the term “replacement” caused many misunderstandings and conflicting interpretations. It has therefore been renamed to “Meter Credit Transfer Token” or “Credit Transfer Token” for short.</p> <p>This transaction still creates a standard credit token to use in the meter. The only differences are that it is specifically reserved for when a faulty meter has been changed out and the customer provides the Operator with a voucher for change-out. Also the Credit Transfer Token is typically for a kWh amount instead of for a monetary value.</p>
Meter Type	The Meter Type is a combination of Token Technology and Algorithm Type. The Meter Type uniquely defines how a token should be created to work in the meter.
Multi Vending Agent / Multi-Client Vending Agent	<p>Multi Vending Agent is one of the defined Vending Agency Types and describes how the Vending Agent equipment is configured.</p> <p>It used to be known as a Super Vending Agent, but that term is not encouraged due to the confusion it causes.</p> <p>A Multi Vending Agent is a special case of a Client Vending Agent. If a Vending Agent owns multiple Clients, it is possible to link them all to a single Vending Agent Account on the Server. All bank deposits and vend requests will then be handled via this single account and the Multi Vending Agent will have only one contract with Eskom.</p> <p>The result is that every individual Client still communicates directly to the Vending Server, but the Vending, Credit and Commission are linked to the same Vending Agent Account.</p> <p>A typical example of a Client Vending Agent might be an owner with several small shops or prepaid cell phone kiosks.</p>
National Vending Agent / National Agent	<p>National Vending Agent is a term to describe the footprint or size that the Vending Agent covers. It does not describe any vending technology or configuration.</p> <p>A National Vending Agent is an agent that provides vending for several or all Eskom Regions; typically, like the banks do today. This means there must be a dedicated Eskom party to contract and manage a National Vending Agent on behalf of multiple Eskom Regions.</p> <p>A National Vending Agent will have only one entry on the Server and all Vend Requests will be handled via that single Vending Agent account</p>
Operator	A generic term for any person that operates a Vending Client or a Vending Server.

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Regional Vending Agent	<p>Regional Vending Agent is a term to describe the footprint or size that the Vending Agent covers. It does not describe any vending technology or configuration.</p> <p>A Regional Vending Agent is an agent that provides Vending for one Eskom Region or only a part of a Region. The Regional Vending Agent will be managed by the Region that contracted him.</p> <p>A Regional Vending Agent will have only one entry on the Server and all Vend Requests will be handled via that single Vending Agent account.</p> <p>It is possible for a Regional Vending Agent to establish independent contracts with different Regions but then they would be managed as separate Regional Vending Agents.</p>
Small Vending Agent (Area Vending Agent)	<p>Small Vending Agent is a term to describe the footprint or size that the Vending Agent covers. It does not describe any vending technology or configuration.</p> <p>A Small Vending Agent is someone that provides Vending for only a small area ranging typically from only one Client up to the size of a few towns</p>
STS (Meters / Vending)	<p>STS defines how (what format) the Client communicates with the Meter. An STS Client can create tokens that will work in STS meters from any manufacturer.</p>
Supply Group Code (SGC)	<p>A geographical group of meters. The Supply Group Code also defines the owner of the meters in a specific geographical area. (Typically, the supplier of the electricity). Often a Vending Agent is only configured to vend to a specific selection of Supply Groups. The Supply Group Code is a six-digit code and together with the Key Revision Number, points to the secure Vending Key that is used to create the Meter Key.</p>
Tariff Index (TI)	<p>A two-digit code that defines what tariff the meter is on. The Tariff Index typically points to the specific tariff price(s) as stored in the Vending Server for Online mode, or in the CDU for Offline Vending mode.</p>
Token	<p>Various kinds of data packages that are created by the Vending system and subsequently inserted into the meter to transfer information to the meter. Most tokens are encrypted for security, but some risk-free tokens are not encrypted.</p> <p>The STS algorithm currently defines numeric Tokens and Magnetic Tokens. In addition to STS, there are a number of proprietary tokens, but the majority are also numeric or magnetic cards, albeit incompatible with each other and with STS.</p> <p>Currently all tokens are stored on physical media, (i.e. numeric printed string, or disposable magnetic card). In this respect, the reference to "Token" often refers to the physical media that carries the Token data, which is actually incorrect. The Correct term for the physical device is actually "Token Carrier".</p> <p>Virtual tokens are under consideration as well but have not been implemented in meters yet.</p>
Token Carrier	<p>A Token is only the data package that is created by the Vending system and subsequently inserted into the meter to transfer information to the meter. It does not necessarily define the physical media of the token. The physical media of the Token is defined by the Token Carrier.</p> <p>This is specifically relevant for STS since the Vending Server may create the same STS token for any STS meter and send it to the Client. The Client may then be locally configurable to support some or all Token Carriers without having to communicate this with the Vending Server.</p> <p>Currently all tokens are stored on physical media, (i.e. numeric printed string, or disposable magnetic card). These are therefore defined as the Token Carrier.</p> <p>Virtual Tokens are under consideration as well but have not been implemented in meters yet. Virtual Tokens will not have a physical Token Carrier as they may be transferred via radio, power line communication or other means.</p>

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Term	Definition																																																																	
Token Technology/Type (T)	A two-digit code defined by STS. There are codes for the various tokens used by STS as well as for the tokens used by proprietary meters. The combination of Token Technology and Algorithm Type, define the Meter Type																																																																	
Transaction	<p>The term Transaction usually refers to actions where credit for the meter is affected, like a Vend, FBE, Cancel or Replacement (i.e. Credit Transfer) Transaction. (i.e. this usually does not include things like Power Limit Tokens or Key Changes) The Transactions are defined in detail in NRS 009-3.</p> <p>Below is list of the most common Transaction Types as defined by NRS009-3</p> <table><tr><th>Definition</th><th>Typical use</th><th>kWh effect</th><th>Amount effect</th><th>Credit limit</th></tr><tr><td>Prepayment sale</td><td>Token vend</td><td>Credit</td><td>Credit</td><td>Deduct</td></tr><tr><td>Prepayment refund</td><td>Refund cash to customer</td><td>Debit</td><td>Debit</td><td>Deduct</td></tr><tr><td>Reprint</td><td>Reprinted token/account payment receipt</td><td>No Action</td><td>No Action</td><td>No Action</td></tr><tr><td>Replacement token (renamed to Credit Transfer token)</td><td>Refund of credit left in faulty meter</td><td>No Action</td><td>No Action</td><td>Deduct</td></tr><tr><td>Fixed charge</td><td>Repayment collection</td><td>No Action</td><td>Credit</td><td>Deduct</td></tr><tr><td>Free Issue token</td><td>Marketing</td><td>Credit</td><td>No Action</td><td>Deduct</td></tr><tr><td>Cancel token</td><td>Operator made mistake with amount</td><td>Debit</td><td>Debit</td><td>None</td></tr><tr><td>Account payment</td><td>Account sale</td><td>Credit</td><td>Credit</td><td>None</td></tr><tr><td>Account cancellation</td><td>Account cancellation</td><td>Debit</td><td>Debit</td><td>None</td></tr><tr><td>Transaction pending (Pending flag in the Tx record marks the Tx type as pending)</td><td>Error</td><td>No Action</td><td>No Action</td><td>Deduct</td></tr><tr><td>FBE token</td><td>FBE token vend (support token)</td><td>Credit</td><td>No Action</td><td>No Action</td></tr><tr><td>Recovery charge</td><td>Monthly right of use</td><td>No Action</td><td>Credit</td><td>Deduct</td></tr></table>	Definition	Typical use	kWh effect	Amount effect	Credit limit	Prepayment sale	Token vend	Credit	Credit	Deduct	Prepayment refund	Refund cash to customer	Debit	Debit	Deduct	Reprint	Reprinted token/account payment receipt	No Action	No Action	No Action	Replacement token (renamed to Credit Transfer token)	Refund of credit left in faulty meter	No Action	No Action	Deduct	Fixed charge	Repayment collection	No Action	Credit	Deduct	Free Issue token	Marketing	Credit	No Action	Deduct	Cancel token	Operator made mistake with amount	Debit	Debit	None	Account payment	Account sale	Credit	Credit	None	Account cancellation	Account cancellation	Debit	Debit	None	Transaction pending (Pending flag in the Tx record marks the Tx type as pending)	Error	No Action	No Action	Deduct	FBE token	FBE token vend (support token)	Credit	No Action	No Action	Recovery charge	Monthly right of use	No Action	Credit	Deduct
Definition	Typical use	kWh effect	Amount effect	Credit limit																																																														
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Fixed charge	Repayment collection	No Action	Credit	Deduct																																																														
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Recovery charge	Monthly right of use	No Action	Credit	Deduct																																																														
Update Meter Key	<p>Update Meter Key is a new and simplified Key Change process. The Update Meter Key action is initiated by the Operator e.g. by selecting the appropriate button on the Client. The operator must then provide the “From” information from the Meter Card or sometimes via manual entry from an old token.</p> <p>This will create the normal Key Change tokens and encode the Meter Card. The only difference being that the meter information is always changed to become the same as the data in the Meter Database. This function therefore does not introduce any data risk and may be enabled for any operators. The operator may also retry this function multiple times with different “From” information until successful and the end result will always be the same as the data on the Meter Database.</p>																																																																	
Vend (Vending Operation/Transaction)	A Vending operation or Vending transaction may be any one where a credit token is generated for a meter. This includes a normal sale, FBE token issue, Free token (if supported), and Credit Transfer token. This specifically excludes Engineering tokens and Key Change tokens.																																																																	
Vending Client	The Online Vending Machine that issues the Token to the Operator. The Vending Client does not have the capability to create a prepaid Token; it must request tokens from the Vending Server via XMLVend protocol.																																																																	
Vending Gateway	<p>The Vending Gateway is an intermediary device for a Gateway Vending Agent. For such a Vending Agent all the Vend requests will be passed to the Server via this Gateway and similarly the Server will return all the responses to the Gateway.</p> <p>Behind the Gateway, the Vending Agent may have many proprietary Vending Terminals of different capabilities but all of that is transparent to Eskom since the Terminals never communicate directly with the Eskom Server.</p>																																																																	

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Term	Definition
Vending Server	<p>The Vending Server is the Eskom Server in a protected environment that talks to all the Clients and create all the tokens. It contains the security hardware to create the prepaid Tokens, record Transactions and manage Vending Agent Accounts. The Meter Database and several other components are often also incorporated into the Vending Server.</p> <p>Communication with all Vending Clients and Vending Gateways is via the XMLVend protocol.</p>
Vending Terminal	<p>A Vending Terminal is vending device that usually has a proprietary design and communication. It operates similar to a Vending Client but may also have other dedicated functions that would be transparent to Eskom.</p> <p>A Vending Terminal does not communicate directly to the Server, but all communication is instead routed via the Vending Gateway.</p>
Vending Agent	The term Vending Agent may also refer to the vending entity in general, the owner of a Spaza shop, and may all be referred to as Vending Agents.
Vending Agent Account	Every Vending Agent will get an Account on the Utility financial system and the same Account number will be registered on the Vending Server. The Vending Agent must deposit credit into this Vending Agent Account with Utility. The Vending Agent Certificate will also be linked to this Account number to identify the Vending Agent and the credit will be deducted for the Vending Agent with every Vending operation.
Vending Agent Certificate (Client Certificate)	<p>This certificate is generated on the Online Vending CA for every Vending Agent once the contract has been agreed between the Vending Agent and the Utility. The certificate identifies the specific Vending Agent by the Utility issued EAN number (ClientID) and ensures that all communication with the Vending Server is secured via TLS and this certificate.</p> <p>The Certificate does not directly identify the Vending Client although the Vending Agent (that will get the Vending Commission) is registered against all his Vending Clients on the Vending Server.</p> <p>Since the Vending Agent Certificate is stored on separate hardware, the Vending Agent may remove it and carry it with him. It is theoretically possible that the Vending Agent can insert the Certificate into another Vending Client and Vend from that Client. In that case, the Vending Server will still identify the Vending Agent correctly and deduct the credit from the correct Vending Agent Account. Similarly, the commission will also be calculated for this same Vending Agent Account.</p>
Vending Agent Credit	<p>Every Vending Agent has its own Vending Agent Account. All money deposited into this account will be added to his Credit level. The monetary value of all vending transactions is then deducted from the available Vending Agent Credit at the time of the transaction.</p> <p>The minimum credit limit for every Vending Agent is configurable on the Vending Server.</p>
Vending Agent Footprint	<p>Vending Agent Footprint has nothing to do with the vending technology or configuration. It only describes the geographical size that the Vending Agent covers. However, this size and Regional overlap does have implications of how Vending Agents are contracted and managed.</p> <p>The following Vending Agent Footprints have been defined.</p> <ul style="list-style-type: none"> <li>• National Vending Agent</li> <li>• Regional Vending Agent</li> <li>• Small Vending Agent (or Area Vending Agent)</li> </ul>
Vending Agency Types	<p>Vending Agent Type caused a lot of confusion. Please also review the definitions of the following items to understand this better.</p> <p>Vending Agency Type defines the Vending configuration used and how the Vending Agent is configured to the Vending Server.</p> <p>The following are the defined Vending Agency Types:</p> <ul style="list-style-type: none"> <li>• Client Vending (also called Normal Vending for a generic name). The Client Vending will usually have only one Vending Client.</li> </ul>

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	<ul style="list-style-type: none"> <li>Multi Vending (or Multi Client Vending) is a special case of Client Vending. The only difference being that many Clients are linked to a single Vending Agent account for a Multi Vending. This is related to the Super Vending Agent scenario.</li> <li>Gateway Vending has an intermediary Gateway that sends and receives all communication between the Server and the Vending Terminals of the Vending Agent. A Gateway Vending is typical for a Vending that has many Vending outlets.</li> </ul>
Virtual Token	A virtual token is any token that is transferred electronically from the POS to the meter. This applies to all tokens (Credit token, Engineering token etc)
X509	Standard for definition of electronic certificates. These are used by SSL authentication and encryption
XMLVend	The SANS 1524-6-10:2010 specification specifies an XML communication mechanism named XMLVend. The Vending Server will communicate to all Vending Clients and Vending Gateways through XMLVend. This specification is obtainable from, <a href="http://www.prepayment.eskom.co.za/xmlvend.asp">http://www.prepayment.eskom.co.za/xmlvend.asp</a>
Eskom Specialised XMLVend	The <b>240-72275656</b> specifies Eskom Online Vending XMLVend extensions and restrictions. It also specifies the interpretation of optional fields that may be required for Eskom implementations. This specification is obtainable from, <a href="http://www.prepayment.eskom.co.za/xmlvend.asp">http://www.prepayment.eskom.co.za/xmlvend.asp</a>

### 3 SOLUTION BACKGROUND AND CONTEXT

- The current Eskom Vending System is a revenue collection platform for prepaid electricity customers. It is a revenue and mission critical system that significantly contributes to Eskom's revenue stream and compliance with NERSA requirements to serve our Prepaid customer base, specifically indigent customers on the Free Basic Electricity Tariff.
- The current online vending system was initiated back in 2006 and since then the system has been enhanced several times and now there is a need for a more integrated system with enhanced controls and functionality aligned to the Smart Grid Technology strategy which needs to cater for :
  - An integrated, modernized solution with better controls and revenue loss management capability
  - Currency vending and enable transfer of virtual prepaid electricity tokens automatically to the designated Eskom system (smart meters), in addition to the normal printing of numeric token receipts.
  - Other Eskom approved tariffs like, Businessrate and Landrate tariffs and
  - The provision to accept non-electricity utility payments such as water, gas, rates and taxes.
- There is requirement to procure a new integrated prepaid electricity vending system based on smart grid technology principles, to ensure that prepaid revenue can continue to be collected with better controls and loss management.
- The following diagrams present an overview of the logical architecture

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## 4 PROJECT REQUIREMENTS

The following high-level requirements must be met by the solution:

A. An Integrated Prepaid Electricity Vending System with the following requirements

- A.1 Implement the required Integrated Prepaid Electricity Vending System (the Vending system) requirements to support vending to customers
- A.2 Comply with the relevant requirements of STS edition 2
- A.3 Implement the required security modules as prescribed by Eskom for STS
- A.4 Interface with other Eskom systems, using Eskom approved middleware
- A.5 Key Management (loading the supply groups and keys into the Vending system security modules)
- A.6 Implement separate Reporting Server without impacting the Vending system performance
- A.7 Cater for Currency Vending or Tokens
- A.8 Do key changes remotely as and when required
- A.9 Issue Virtual Tokens - Eliminate paper tokens for all capable meters
- A.10 Support deployment of thin meters (i.e. prepayment account and processes of meter reside in MDMS or stand-alone prepayment application).
- A.11 Integrate to Meter Data Management System and Headend System in order to remotely send virtual tokens directly to meters and thus, do away with meter keypad or human intervention

B. Provide a Customer Support Portal for Eskom Support Staff

The functionalities included in this module is related to resolving any issues.

This includes: Visibility of what tokens are bought, handle token problems, fix any issues, provide GPS coordinates, calibrate meters, reports, replacement of tokens etc. The features will focus on activities after a token is purchased. Primary user is the customer (Eskom Finance, Customer Services and Engineering will be the primary users)

- B.1 Implement the required security modules as prescribed by Eskom
- B.2 Implement the required Engineering Support requirements to provide customer support
- B.3 Support all the required Use Cases
- B.4 Implement the required reports
- B.5 Report for tracing user activity
- B.6 Access to Customer support portal

C. Provide a Bulk Key Change Token solution that will automate the process of entering the bulk meter number required to produce tokens, following this, the solution shall produce bulk key change tokens for the valid registered meters

D. Provision of a Production and DR environment

E. Provide a data archiving solution - web application or other suitable solution

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- F. Provision of a complete audit trail
- G. Provision of an App and Portal
  - (Customer and Customer Support Portal)

## **5 PROJECT SCOPE EXCLUSIONS**

Scope and requirements not explicitly listed in this document are excluded.

## **6 PROJECT GOVERNANCE**

This project will follow the project governance as defined in the Group IT PLCM.

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