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# 1 Overview of Proposed COTS

# 1.1 Introduction to Simplicity® Business Software

Simplicity<sup>®</sup> Business Software is a series of state of the art business software applications for your organization.

It is the most comprehensive, sophisticated and powerful solution to manage the operations of your commercial real estate portfolio. Simplicity<sup>®</sup> provides workflow driven end-to-end automation and advanced big data analytics for your rental, finance and property management operations. Scalable to thousands of properties covering office, retail, industrial, logistics, self-storage and residential assets, Simplicity<sup>®</sup> is incredibly simple to implement and easy to use.

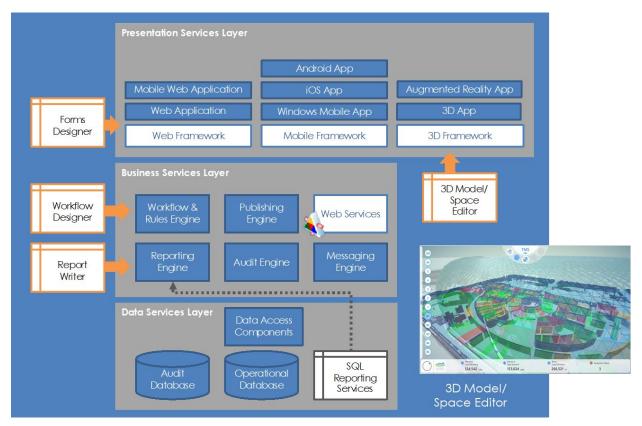
#### Key technological features include

- Fully web-based, n-tiered and RESTful architecture based on Microsoft<sup>®</sup>.NET 4.7.2;
- Massively scalable containerized design;
- Specially designed user interface emphasizing self-intuitiveness and user-friendliness;
- Windows Workflow Foundation-compatible workflow engine that supports configurable business processes and rules for different processes in various operational contexts;
- Configurable data fields for business objects;
- Powerful publishing engine for generation of documents designed in Microsoft Office formats;
- Comprehensive Web Services, GIS and IoT interfaces for integration with other systems;
- Compatibility with all major relational database management systems;
- Powerful reporting tools and rapid development platform (Simplicity<sup>®</sup> LCDP);
- Android and iOS-native mobile apps and Progressive Web App technology for tablet and smart phone deployments;
- Only enterprise level property management software to support multi-tenancy architecture;
- Out-of-the-box deployment process to GCCs; the past 3 major versions have regularly been audited to the latest GovTech cybersecurity standards.

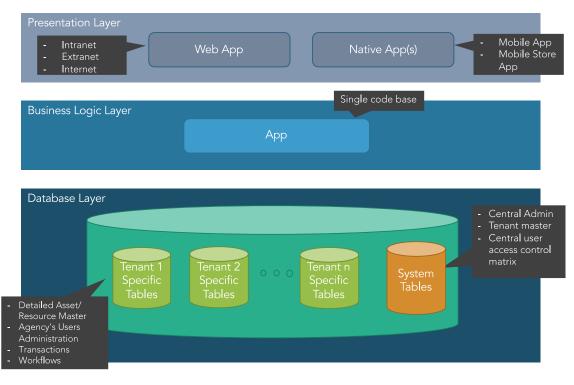
Simplicity<sup>®</sup> is the product of choice for leaders in the commercial real estate industry in Singapore and is also widely deployed within the Singapore public sector, managing portfolios as diverse as hawker centers, offices, shopping complexes and rental properties.

# 1.2 Simplicity<sup>®</sup> Software Architecture

The following schematic illustrates the standard 3-tier architecture of Simplicity® Business Software:



In a multi-tenancy environment, the architecture expands to:



The following table illustrates the extent and limits of sandboxing capabilities for each tenant within a multi-tenanted Simplicity<sup>®</sup> application:

#### Limitations

- Login screen + splash
- Wireframe structure of web forms, mobile app forms and digital signage forms
- System date-time and date-time formats

#### **Not Limitations**

- Dedicated CSS (post login)
- Additional tenant-specific data fields
- Tenant specific workflow diagrams and business rules
- Tenant specific notification mechanisms and message templates
- Tenant specific reports
- Defining resources that can be share with other tenants

#### The main components of the Simplicity® architecture are:

- Data Services Framework
- Business Services Framework
  - Workflow & Rules Engine and Designer
  - Publishing Engine
  - Messaging Engine
  - Audit Engine
  - Reporting Engine and Writer
- Presentation Services Framework
  - Web Framework and Forms Designer
  - Mobile Framework
  - Digital Twin 3D Framework (Gemini™) and 3D Model Editor
- Standard Application Programming Interfaces
  - Web Services Toolbox
  - GIS Interface
  - Operational Technology ("OT") Client

#### 1.2.1 Data Services Layer

The Data Services Layer consists of the Data Abstraction Services as well as the database instances that manages the master and transactional data for the application. The whole universe list of tenants and user access control matrix for (and across) all tenants are stored in a system specific Table. Detailed master data related to assets/ resources, workflow & business rules as well as transactional data specialized to each tenant are stored in dedicated Tenant Tables (for the particular tenant). Finally, there is a shared System table that manages the creation, editing (insert, edit, remove tables & columns) and removal of Tenant tables.

#### 1.2.2 Business Services Layer

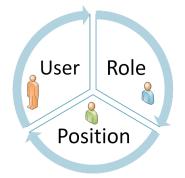
The Business Services Layer consists of application server software components such as the Workflow and Business Rules Engine. These components are compiled into a single <u>shared</u> software application instance that resides in the Application Servers.

#### 1.2.3 Presentation Services Layer

The Presentation Services Layer consists of a collection of front-end software directly interacting with users. It consists of <u>shared</u> End-User Web Portal, <u>shared</u> Administrator Web Portal and <u>shared</u> Mobile App. Presentation Services Layer components interact with the Business Services Layer via Web Services.

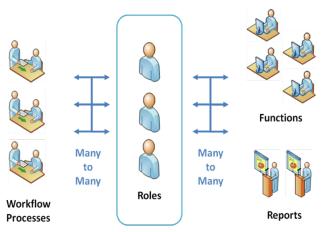
### 1.3 User Access Control

Functional and data access control within the Simplicity<sup>®</sup> application is defined by 3 key concepts: Role, Position and User. With this design, the system can handle all permutations of access control required by a multi-tenancy environment.



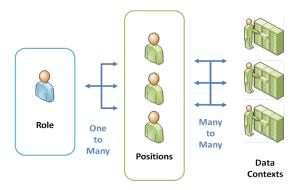
#### Roles perform 3 key functions:

- Which functions (including administrative functions) can be accessed by who, and at what level of rights
- Who can act at which stages of workflow processes
- Who can view which reports



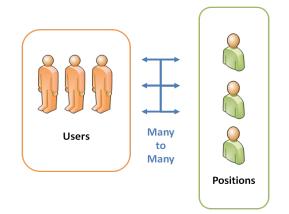
Roles are not directly mapped to Users. They are mapped via Positions. A Position represents a Role mapped to sets of data constraints called Data Contexts. In the AMS, the Data Contexts are <Business Entity>, <Department> and <Assets>.

A Position can be mapped to multiple Data Contexts, but only to one Role.



Once a Position is defined, Users can be assigned to the Position. A User will inherit all access and workflow actions from the Role associated with the Position. Data access will be constrained by the Data Contexts associated with the Position.

Multiple Users can be assigned to multiple Positions, and vice versa. A user assigned to multiple Positions will inherit all the rights of all the Positions, and all workflow tasks routed to the included Positions will be routed to the User.



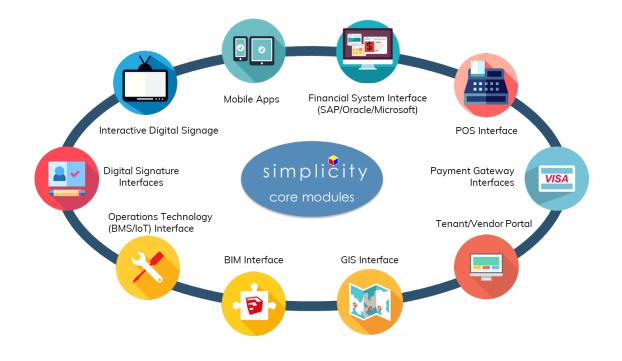
All Positions can be defined with a lifespan (effective start date and/or effective end date); Positions can be also assigned ("delegated") on a temporary basis to a User, e.g. as a covering office.

# 1.4 Simplicity<sup>®</sup> Modules

Simplicity<sup>®</sup> Solution comes with a series of software suites specialized to help you manage your commercial real estate portfolio. The suites and their key modules are listed below:



In addition, Simplicity<sup>®</sup> CorpREM Solution is augmented by advanced extension modules that enhance the core capabilities of the solution with state of the art mobile and digital capabilities:

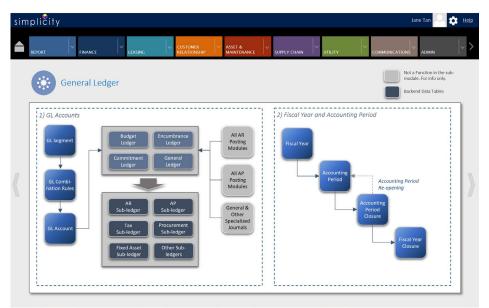


# 1.5 Financial Management Suite

The Simplicity<sup>®</sup> Financial Management Suite is a full-fledged solution for the management of all financial-related activities for your organization, ranging from setting up of your books, producing financial and management reports, tracking of accounts payable and receivable, tracking of your fixed assets, to real-time monitoring of your budgets. It consists of 6 modules – General Ledger, Receivables Management, Payables Management, Budget Management, Fixed Asset Management, and Financial Consolidation, supplemented with a comprehensive list of reports.

#### 1.5.1 General Ledger

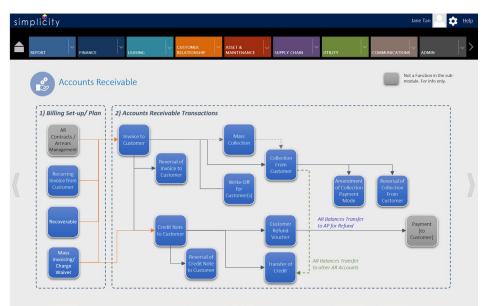
The General Ledger is the foundation module of Simplicity<sup>®</sup> Financial Management Suite. It provides flexible and powerful tools for the setting up and management of charts of accounts, general journals, summary accounts as well as financial periods.



- Concurrent support for the accounting needs of multiple business entities within 1 single system;
- Supports flexible accounting periods and fiscal years, e.g. 14 month year;
- Configure business-entity dependent approval processes for accounting period and fiscal year openings and closures;
- Provides unlimited levels and multiple segment structures for account codes, e.g. business entity, natural account codes, responsibility centers, project activities;
- Generate complex reports on the fly with summary accounts;
- Supports real-time or manual posting of journals;
- Allows for temporary unbalanced journals with suspense account feature;
- Handles various tax facilities such as Sales Tax and Value Added Tax;
- Support for multi-currency transactions;
- Comprehensive list of financial reports including income and balance sheet statements.

#### 1.5.2 Receivables Management

The Receivables Management Module allows you to optimize your cash flow position by managing your accounts receivable processes and tracking customer payment activities. It also provides tools for the computation of late payment interest and management of arrears.

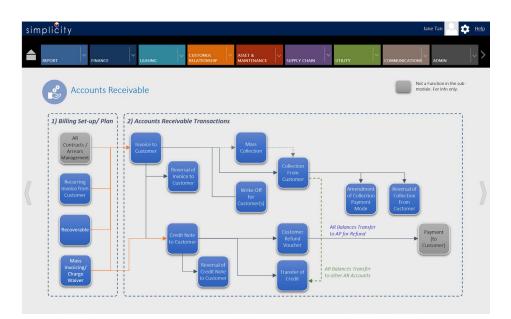


#### **Key Features:**

- Manage customer accounts and profiles;
- Manage customer registration and credit checking process;
- Generate invoices, credit notes and debit notes to customers;
- Setup cyclical billing;
- Track pre-payments and deposits;
- Handle billing of recoverable items;
- Manage collections for different payment modes, including GIRO deduction;
- Prioritize payment order with knock-off sequence for different charge items, e.g. pay off interest before principal;
- Track arrears with reminder options and different methods of computing interest;
- Supports management of cash advance accounts and refund processes for customers who overpay;
- Supports approval processes for reversal of transactional documents.

#### 1.5.3 Payables Management

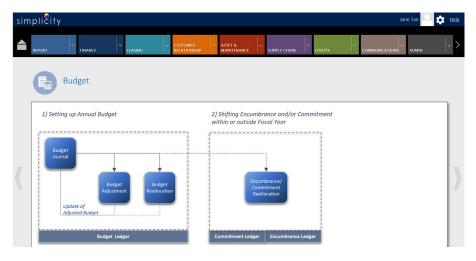
The Payables Management Module provides end-to-end cash management services with flexible and integrated accounts payable functionalities.



- Manage vendor accounts and profiles;
- Manage vendor pre-qualification process;
- Input invoices, credit notes and debit notes from vendors;
- Automate recurring payments;
- Track pre-payments;
- Manage payment voucher approval processes;
- Handle check printing;
- Supports approval processes for reversal of transactional documents;
- Interface to banks' payment gateway credit payment to vendor.

#### 1.5.4 Budget Management

The Receivables Management Module allows you to optimize your cash flow position by managing your accounts receivable processes and tracking customer payment activities. It also provides tools for the computation of late payment interest and management of arrears.



- Allows for budget adjustments, variations and re-allocations;
- Setup recurring commitment of budget for long term income or expense contracts such as leases and facility maintenance contracts;
- Perform variance and actual-vs-budget analysis;
- Support budget management operations with configurable approval hierarchies;
- Upload new budget versions using Microsoft Excel spreadsheets.

#### 1.5.5 Fixed Asset Management

# The Fixed Asset Module allows you to track the value of your portfolio of capital assets, such as properties, plants and equipment.

#### Key Features:

- Automatically computes net book value of fixed assets;
- Allows for multiple depreciation types, including straight line, declining balance, sum of digits and units of use;
- Track tax deductions submitted and granted for asset depreciation.

#### 1.5.6 Financial Consolidation

The Financial Consolidation Module allows you to speed up the financial close with real-time financial consolidation and intercompany eliminations based on pre-set ownership and currency translation rules.

#### **Key Features:**

- Allows multiple level of consolidation set up;
- Handles multiple reporting currencies;
- Auto inter-co transaction elimination.

# 1.6 Customer Relationship Management Suite

The Simplicity<sup>®</sup> Customer Relationship Management Suite is a full-fledged solution that assists you in all aspects of customer relationship management, including customer database management, prospecting management, helpdesk case management and service quality management. It consists of 4 modules – **Customer 360 Database**, **Prospecting Management**, **Helpdesk Case Management** and **Service Quality Management**, supplemented with a comprehensive list of reports. Although it is fully integrated to the other Simplicity<sup>®</sup> software suites, the Customer Relationship Management Suite can also be deployed as a standalone customer relationship management application.

#### 1.6.1 Customer 360 Database

The Customer 360 Database provides a centralized register of prospect, customer and caller information. It keeps track of key customer information as well as all pertinent data (such as organization, caller profile), and is the central source for 360-degree view of customer relationship.

You can also organize corporate customers into hierarchical structures, and tie necessary contacts to the correct positions and relative importance (e.g. C-level executive, decision maker, decision support).

- Identify prospects, customers and callers uniquely;
- Monitor status of customer (e.g. "Prospect", "Active", "Blacklisted", "Ex", "Inactive");
- Organize corporate customers in hierarchical structures for better tracking and understanding of internal and external relationships within customers;
- Access to caller history and case resolution patterns;
- Access all customer related documents (e.g. sales orders, call histories, contact reports, etc) from a single central source;
- Support mass download and upload of customer contacts;
- Monitor prospect conversion rate and analyze customer relationship patterns.

#### 1.6.2 Prospecting Management

The Prospecting Management Module manages the entire prospecting life cycle, beginning with direct marketing or tender, prospect registration, vacancy search, negotiation, management approval, formal offer/ quotation, and ends with final customer acceptance which creates a lease record in the Lease Management Module.

#### **Key Features:**

- Supports both direct marketing and tender (where leases are offered competitively to multiple prospects) methods for tenant acquisition;
- Easily locate suitable units for prospective tenants with powerful vacancy search functionalities; units with special conditions like reservation and first-right-of-refusal from existing leases will be blocked;
- Automate generation of Letter of Offer;
- Track history of offer terms and conditions during negotiation stage;
- Configurable approval hierarchy;
- Automate acceptance with an Acceptance Items Checklist that tracks the submission of documents and payment of deposits by prospective tenant.

#### 1.6.3 Helpdesk Case Management

The Helpdesk Case Management Module allows your Customer Service Officers (CSOs) to log and track complaints, feedback and/or service requests. The logged cases are grouped into various categories. The CSOs can then dispatch the cases to the relevant service personnel for follow-up, and continue to monitor the resolution progress. The Module supports various dispatch modes, including two-way wireless text messaging (SMS) and email.

The Helpdesk Case Management Module can be interfaced to call center telephony (CTI) systems using established protocols such as TAPI. The Module also comes with an integrated Caller Web Portal that allows cases to be filed to the system through a browser application, thereby encouraging client self-help and reducing workload of the CSOs.

- Supports configurable case management and dispatch processes;
- Generate unique case numbers based on user-definable formats;
- Track case statuses in real time;

- Support for centralized or decentralized call centers;
- Access central repository of caller and problem histories;
- "Screen pop" integration to CTI systems;
- Customer Care Portal option for clients to log and track service requests raised by them.

#### 1.6.4 Service Quality Management

The Service Quality Management Module allows you to manage and benchmark services rendered during the organization's operational activities.

The Module also helps ensure the delivery of reliable, efficient and measurable service levels to its clients by providing tools for the management of Service Level Agreements (SLAs). Each SLA consists of an escalating set of timings that is established for pre-defined milestones in the service lifecycle. If the timings are breached, the next level in the escalation hierarchy can be notified of the service breach by multiple means (SMS, email, etc) so that immediate remedial action can be taken. The SLA set-up can also be extended to benchmark contractor performance and identify non-performing vendors.

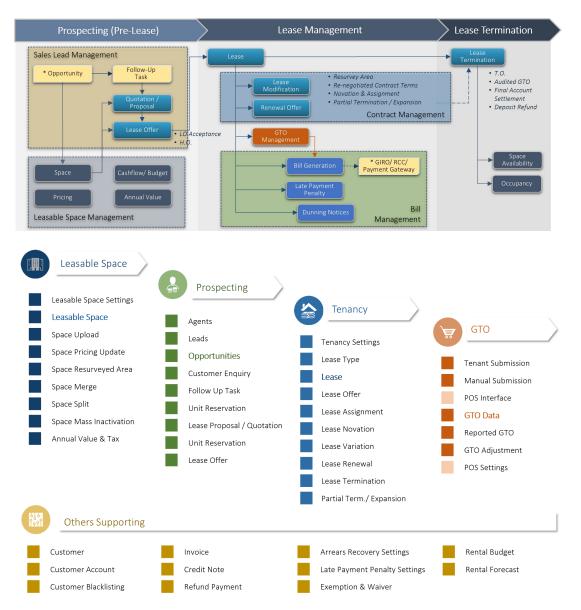
In addition, you can design client surveys, and schedule and dispatch them online. Customers can take the surveys over a web portal, and you can analyze the survey results using reports provided by the system.

#### **Key Features:**

- Create SLAs for each department/ responsibility center and types of service;
- Configure variable timings for escalation milestones;
- Create rules for up to 5 levels of service escalation;
- Track time-stamps for milestones reached by staff and vendors;
- Design, schedule and analyze client surveys.

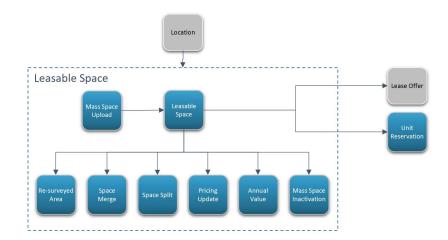
# 1.7 Tenancy Management Suite

The Simplicity<sup>®</sup> Tenancy Management Suite is a specialized solution for the management of leases and other real estate revenue streams for commercial landlords, including the management of rentable space, leases and licenses, retail sales, arrears, as well as legal contractual clauses. It consists of 5 modules – **Space Management**, **Lease/ License Management**, **Gross Turn-Over ("GTO") Management**, **Arrears Management**, and **Clause Management**, supplemented with a comprehensive list of reports.



#### 1.7.1 Space Management

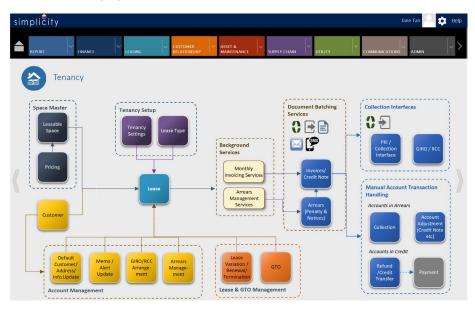
The Space Management Module manages the spatial information of your commercial properties. It supports a configurable property structure and stores a comprehensive range of property details. The Space Management Module also allows you to define leasable products and their commercial characteristics (such as Net Leasable Area and rental rate limits). These property data form the foundation for tenancy management and management reporting for the Tenancy Management Suite.



- Support for configurable property structure (e.g. Country, Site, Building, Land, Storey, Unit, Common Area) with unique characteristics at each level;
- Manage property details such as type and categorization, floor area, ownership, purchase and acquisition costs, building specifications, land related information, policies, development information;
- Visualize your space inventory with interactive 3D floor plans and 2D stack plans;
- Manage unit merging, splitting and area re-survey processes;
- Perform annual valuation of properties and units.

#### 1.7.2 Lease/License Management

The Lease/License Management Module provides you with powerful and comprehensive functionalities for the management of leases and short term license contracts from their commencement to their expiry and the eventual takeover of the leased units.

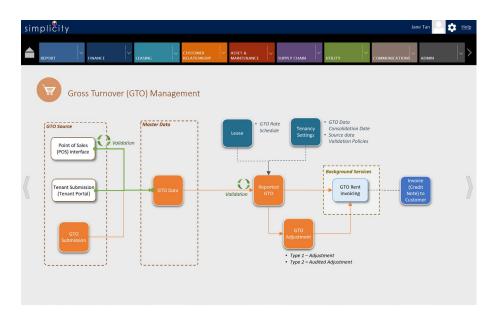


- Capture comprehensive details of a lease, such as term, rental and service rates, rent-free structure, rent review periods and limits, property tax information, renewal conditions, as well as relevant legal documents;
- Track deposits and manage deposit refund processes;

- Perform and manage lease variation (change in lease conditions), novation or assignment (change in tenant entity), renewal, premature termination, termination;
- Automated generation of Letter of Offer, Tenancy Agreements, Short-Term License Agreements;
- Generate tenancy schedules as well as expiry profiles;
- Configure reminders for special events during the lease term, e.g. rent review;
- Flag units with expiring leases that are ready to be marketed to the Prospecting Module;
- Track sub-leasing of leased units;
- Track and review your leases and property performance with a comprehensive list of reports on leases, rental trends and property occupancies (including Asset Control Group report).

#### 1.7.3 Gross Turn-Over ("GTO") Management

The GTO functions are key components of Simplicity<sup>®</sup> Tenancy Management Suite that assist retail malls to effectively manage and automate the routine and tedious process of GTO submission and Additional Rent computation. The collected GTO sales numbers also provides the organization with the data to do projection and importantly track and analyse tenant sales performance with trend analysis and benchmarking.



- Flexible and comprehensive pre-defined GTO formulas for easy setup of GTO terms in leases;
- Automated computation of Additional Rent based on GTO lease terms reported GTO;
- Automated adjustment of Additional Rent based on Adjusted or Audited GTO;
- Allows GTO submission by tenants via Tenant Portal or manual submission by internal staff;
- Interface to Point-of-Sales (POS) Systems;
- Allows prioritization and setting of rules to calculate Additional Rent using Tenant Submission, POS Submission, Manual Submission or Projected;
- Comprehensive analysis and reporting of GTO numbers, for example: trend analysis, benchmarking and forecasting.

#### 1.7.4 Arrears Management

The Arrears Management Module provides comprehensive functionality for the management of your billing arrears, including support for complex Late Payment Interest ("LPI") computation and automated generation and sending of Dunning Letters.

#### Key Features:

- Allows for configurable arrears status and user-definable Dunning Letter formats;
- Supports comprehensive policies LPI computation, including rounding policy, accrual or cash, LPI generation dates, grace periods, minimum owing amount, minimum LPI amount;
- LPI formulas include flat amount, tiered rates or interest rates;
- Supports LPI waiver process and allows for exclusion of certain records for arrears process.

#### 1.7.5 Clause Management

Leases and licenses often come with complex tenancy and license agreements that capture the commercial terms and conditions engaged with each tenant. The Clause Management Module assists you to manage your standard agreement clauses, variations of each clause in individual agreements, as well as the clause versions.

#### **Key Features:**

- Set up standard agreement templates and classify clauses according to their legal categories;
- Define pre-approved clause variations and approval processes for other clause variations;
- Track clause version histories;
- Automate generation of tenancy and license agreements.

#### 1.8 Utilities Management Suite

The Utilities Management Suite is a full-fledged solution for the management of pricing, utilities contracts as well as utilities billing. It consists of 3 modules – **Meter Data Management**, **Pricing Management** as well as **Utility Contract Management**, supplemented with a comprehensive list of reports.

#### 1.8.1 Meter Data Management

The Meter Data Management Module provides comprehensive capabilities for the management of utilities meters as well as processing of meter data. Beyond just processing raw meter data, the Module supports sophisticated analytics by generating 8-day profiles of the customer consumption and allows creation of complex validation rules to trigger alerts whenever the rules are breached.

- Supports configurable meter reading intervals (e.g. 15 minutes, 30 minutes, monthly);
- Accept data from MSSL (via EBT Client), automated meter reading systems (via DLMS Client) or Excel upload;
- Define rules to validate meter readings and consumption data, e.g. abnormal range vs history or benchmark, negative consumption;
- Perform automated interpolation and extrapolation of consumption;

Generate industry-specific benchmarks (e.g. typical 5-room apartment consumption rate).

#### 1.8.2 Pricing Management

The Pricing Management Module allows you to define tariff structures for utilities, discount and promotional plans, as well as vouchers.

#### Key Features:

- Supports multiple tariff structures (standard, discount vs standard, tiered/ slab, Time-of-Use or combination of the above);
- Design complex discount plans with varying terms and early termination penalties;
- Manage system created or externally imported (e.g. U-Save) vouchers that can be applied as credit to utilities bills.

#### 1.8.3 Utilities Contract Management

The Utilities Contract Management Module provides comprehensive tools for the management of the life-cycle of utilities contracts, from creation, maintenance, renewal and termination. It also allows for creation of validation rules similar to the Meter Data Management Module, but focused instead on spending patterns.

#### **Key Features:**

- Supports configurable contract life cycle management processes;
- Perform new contract application, contract variation, contract termination transactions;
- Generate unique contract numbers based on user-definable formats;
- Apply different discount plans and tariff structures across staggered periods;
- Automatically compute required deposit and early termination penalties;
- Capture contract details such as contract terms, period, expiry, agreed service levels and associated legal documents;
- Schedule reminders when contracts are due for expiry or renewal;
- Automatically trigger generation of invoices and manage utility adjustments for past periods automatically;
- Define rules to validate consumption and billing data, e.g. abnormal range vs history or benchmark, negative consumption;
- Perform automated interpolation and extrapolation of consumption and billing patterns.

# 1.9 Asset & Maintenance Management Suite

The Simplicity<sup>®</sup> Asset & Maintenance Management Suite is a full-fledged solution that assists you in all aspects of asset and maintenance management, including asset register setup and asset tracking, as well as management of corrective and preventive maintenance regimes. It consists of 4 modules

- Asset Management, Maintenance & Field Service Management, Safety Management and Failure Analysis, supplemented with a comprehensive list of reports. Although it is fully integrated to the other Simplicity<sup>®</sup> software suites, the Asset & Maintenance Management Suite can also be deployed as a standalone asset & maintenance management application.

#### 1.9.1 Asset Management

The Asset Management Module forms the foundation of the Suite. It maintains a comprehensive asset register, tracking all relevant asset data including equipment-specific parameters, maintenance plans, safety checklists as well as location-specific details.

The Asset Management Module supports a configurable asset hierarchy that allows for a logical grouping of locations and equipment so that real world asset taxonomies can be accurately captured. The Module provides users with the flexibility to browse and access asset data either from a functional system-based perspective or a physical location-based perspective.

#### Key Features:

- Supports user definable asset data fields such as static attributes and dynamic parameters;
- Classify an asset as equipment, instrument or facility location;
- Supports both networked or hierarchical assets;
- Generate unique asset ID based on user-definable formats with barcode, RFID and NFC support;
- Create fixed/ linear/ movable assets with configurable asset hierarchy;
- Locate an asset via functional position or physical location;
- Define sub-assemblies within equipment;
- Track utility consumption of assets;
- Attach associated maintenance and occupational health checklists as well as spare parts lists to assets;
- Manage asset loan/ return and transfer processes;
- Track equipment warranty and generate exception reports upon expiry of warranty;
- Perform asset sighting and tracking;
- Integration with Maintenance Management Module allows automated logging and tracking of equipment defects;
- Annual stock-take of assets enable user to maintain accurate assets data;
- All asset management functions can be accessed in the field using the Mobile App extension.

#### 1.9.2 Maintenance & Field Service Management

The Maintenance & Field Service Management Module is where all maintenance, inspection and engineering work activities, both ad-hoc and scheduled, are managed and tracked. It provides support for the creation and management of the entire work order process, including ensuring conformance to specific job plans for fault resolution. The configurable work order processes seamlessly integrate with disparate data sources containing information about facilities, equipment, materials, labor rates, budgets, etc. to provide state of the art maintenance and field service management functionality.

- Supports configurable ad-hoc and scheduled work order processes;
- Generate unique work order numbers based on user-definable formats;
- Raise work orders against all types of assets (locations/ equipment);
- Effectively plan work based on projected labor and material requirements;

- Use sophisticated scheduler for planning of preventive maintenance and inspection activities, taking into account of material availability and holidays;
- Automated generation of maintenance circulars to inform stakeholders of equipment shutdown and servicing;
- Assign work to internal technicians or external contractors;
- Associate work orders with safety plans and inspection checklists;
- Generate Handing Over & Taking Over checklists ("HO/TO") and manage HO/TO processes;
- Create and track related work orders based on an existing work order;
- Receive cases from the Helpdesk Case Management Module raised by Customer Service Operators ("CSO");
   CSOs can similarly track problem resolution within the system;
- Perform condition-based maintenance with condition triggers on asset parameters;
- Automatically generate work orders from alarms received from external OT systems;
- Manage work permit generation and approval process associated with work orders.

#### 1.9.3 Safety Management

The Safety Management Module provides you comprehensive functionalities to manage your organizations safety programs. It provides support for the management of complex Permit-to-Work processes and enforces isolation and renormalization sequences. The Safety Management Module also allows you to monitor hazards as well as file and manage safety incident reports.

#### **Key Features:**

- Maintain database of safety plans;
- Manage isolation points and design isolation and renormalization sequences;
- Tag hazards such as presence of hazardous materials or local danger to locations or equipment;
- Record safety incidents and track resolution steps.

#### 1.9.4 Failure Analysis

The Failure Analysis Module provides functionalities to support you in your RCM and RCFA initiatives. You can use the Failure Analysis Module to make the database of failure modes and causes of failures, manage Failure Mode, Effects and Criticality Analysis (FMECA) reports, and to develop Weibull Failure Models to forecast lifespan of assets.

#### Key Features:

- Create failure modes and causes of failures;
- Create and manage FMECA reports and visualize with Ishikawa Diagrams;
- Automatically interface failure modes and causes of failures with the Maintenance & Field Service Management Module;
- Build database of Weibull Failure Models for each asset type to forecast reliability, availability as well as remaining lifespan of equipment.

# 1.10 Supply Chain Management Suite

The Simplicity<sup>®</sup> Supply Chain Management Suite is a full-fledged solution for the management of all supply chain-related activities for your organization, including the management of vendors, logistics, procurement as well as term contracts. It consists of 4 modules – **Vendor 360 Database**, **Inventory** 

**Management**, **Procurement Management**, as well as **Expense Contract Management** supplemented with a comprehensive list of reports. Although it is fully integrated to the other Simplicity<sup>®</sup> software suites, the Supply Chain Management Suite can also be deployed as a standalone accounting application.

#### 1.10.1 Vendor 360 Database

The Vendor 360 Database provides a centralized register of your current and prospective suppliers and contractors. It keeps track of key vendor information as well as all pertinent data (such as vendor classification, contact information, registration/ pre-qualification/ blacklisting statuses), and is the central source for 360-degree view of vendor relationship. The Vendor 360 Database also links your vendor record to all related transactions and agreements.

#### **Key Features:**

- Manage vendor database and track vendor details;
- Manage vendor registration, pre-qualification and blacklisting processes with configurable policies;
- Access all vendor related documents (e.g. quotations, purchase orders, invoices) from a single central source;
- Perform regularly scheduled vendor performance evaluation.

#### 1.10.2 Inventory Management

The Inventory Management Module provides comprehensive capabilities for the management of raw material stock, MRO spares and consumables across multiple stores. For extended flexibility, the Module supports both a global inventory catalogs as well as individual store-specific catalogs. Store managers can perform stock issue/ receipt, loan/ return as well as inter-store transfers. They can also configure inventory parameters such as re-order quantities and conduct analysis to identify the most important stock-keeping units (SKUs), rate of usage and the cost of inventory by individual cost center.

#### Key Features:

- Supports configurable inventory requisition, issue/ receipt, loan/ return and transfer processes;
- Generate unique inventory transaction numbers based on user-definable formats ;
- Create global materials catalog and store-specific materials catalogs;
- Track inventory costing with multiple methodologies (FIFO, Standard, Moving Average, Monthly Average);
- Independently perform stock issue and receipt to and from stores;
- Manage loan and return processes with individual entitlements;
- Automate inventory requisition based on work order requirements;
- Trigger automatic low-inventory reordering (purchase requisition at the Procurement Module) and compute optimal re-order quantities (Economic Order Quantities);
- Transfer inventory across stores;
- Perform randomized stock audits.

#### 1.10.3 Procurement Management

The Procurement Management Module allows the organization to manage the entire procurement process, from the purchase requisition (PR) stage, requests-for-quotation (RFQ), purchase orders (PO), to final goods receipt and invoice matching. The Module manages multiple types of purchasing

with full multi-currency support, including ad-hoc purchases, blanket purchasing agreements, as well as term contracts (in conjunction with the Contracts Module). Fixed or variable pricing agreements (schedule of rates) can be defined and attached to the purchases.

When used together with the Budget Module from the Financial Management Suite, the Procurement Management Module allows you to perform fund availability checks before raising of PRs, place encumbrance on budget account, and consume budget balances when POs are approved and issued.

#### Key Features:

- Supports configurable procurement and quotation processes;
- Manage the entire procurement lifecycle, from purchase requisition, quotation, purchase order, to final goods receipt and invoice matching;
- Generate unique PR, RFQ, PO numbers based on user-definable formats;
- Manage multiple types of purchase orders, including ad-hoc PO, blanket PO, term contracts;
- Manage the entire quotation lifecycle, from request-for-quotation (RFQ) to evaluation and final awarding of quotes;
- Manage pricing agreements and schedule of rates;
- Provides full multi-currency support for international purchasing;
- Linking of purchases to budget line items set up in the system;
- Automate purchase requisition based on preset inventory levels.

#### 1.10.4 Expense Contract Management

Organizations often engage external service contracts to obtain specialist expertise and to keep expenses within budget. With the increasing trend of involving external service contracts within regular operational activities, systematic and efficient management of contract creation, execution and organization is critical for smooth operations. Simplicity®'s Expense Contract Management Module provides comprehensive tools for the management of the life-cycle of service contracts, from creation, maintenance, renewal and termination.

#### **Key Features:**

- Supports configurable contract life cycle management processes;
- Generate unique contract numbers based on user-definable formats;
- Create and manage service/ maintenance and capital expenditure contracts;
- Capture contract details such as contract terms, period, expiry, agreed service levels and associated legal documents;
- Define different pricing agreements for each contract;
- Schedule reminders when contracts are due for expiry or renewal.

# 1.11 Simplicity<sup>®</sup> Mobile Apps

Simplicity<sup>®</sup> Mobile Apps project the capabilities of the Simplicity<sup>®</sup> Booking, Asset, Maintenance and Inventory Management Modules into the field. Key functionalities are available on Android, iOS and Windows Mobile platforms.

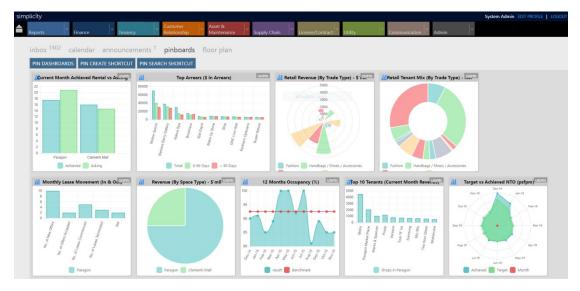
- Available for resource booking, asset tracking (with barcode/RFID/NFC scanner), work order transactions, inspections & audits, inventory transactions as well as stock audits;
- Supports offline mode;
- Seamless integration with native tablet or phone capabilities such as camera, barcode/ QR code scanning, NFC, RFID, GPS.

# 1.12 Common Utilities - Decision Support Modules

#### 1.12.1 Pinboard

The Pinboard allows users to pin their most commonly accessed interactive charts that display realtime statistics from the Simplicity<sup>®</sup> database, as well as records and functions. Pinboard charts have built-in access control and can be made unique for individual organizational roles.

The Pinboard fosters a culture of pro-active operational management by providing an intuitive and graphical birds'-eye view of the organization's performance against established Key Performance Indicators in real-time.



Display real-time KPIs in individualized Dashboards with multiple charting options

#### 1.12.2 Reports

The Reports Module allows users to generate standard and customized reports according to their access rights. The reports are generated in either the dynamic *Spreadsheet Report*<sup>™</sup> format, or static formats such as Reports Definition Language (RDL) and Crystal Reports. In addition, reports can be generated on demand or batched for automatic dissemination via email or a shared folder (such as a folder in the Documents Manager add-on).

The dynamic *Spreadsheet Report*<sup>™</sup> allows drag-and-drop, slice-and-dice analysis of data along multiple dimensions, as well as exporting of data to Microsoft Excel® or Adobe PDF® formats. Another useful feature of dynamic *Spreadsheet Report*<sup>™</sup> is dynamic generation of charts in various chart types, side-by-side with the spreadsheet. Many different 2D/ 3D chart types and variations are supported, including line, bar, pie, bubble, XY scatter, radar, gauge, etc.

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Users can modify or add new reports either by using the Report Writer add-on (for Spreadsheet Reports<sup>™</sup>), or by uploading RDL or Crystal Reports<sup>®</sup> RPT templates. RDL templates are XML files that can be developed using any IDEs such as Microsoft Visual Studio<sup>®</sup>, while RPT templates are designed using any Crystal Reports<sup>®</sup> designer.

# 1.13 Common Utilities – Application Configuration Tools

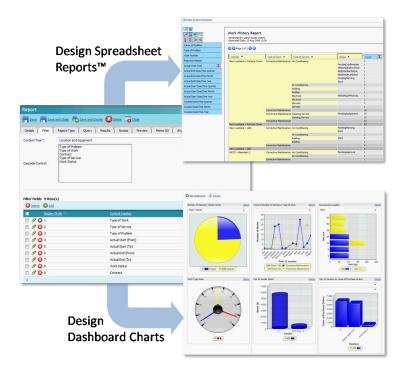
Simplicity<sup>®</sup> provides application consultants, system administrators and end-users with a host of easy-to-use configuration tools that enables modification and extension of the application.

#### 1.13.1 Report Writer

The Report Writer allows organizations to easily develop and customize Spreadsheet Reports<sup>™</sup> and Dashboard charts for their Simplicity<sup>®</sup> installation. Although data is primarily drawn from the Simplicity<sup>®</sup> database, the Report Writer can also access all other ODBC compliant relational databases.

Users have a choice of producing reports in the *Spreadsheet Report*<sup>™</sup> format, or in any of the hundreds of graphical chart formats (for presentation in the dashboard). The Spreadsheet Report<sup>™</sup> allows drag-and-drop, slice-and-dice analysis of data along multiple dimensions, as well as exporting of data to Microsoft Excel<sup>®</sup> or Adobe PDF<sup>®</sup> formats.

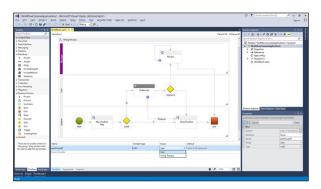
- Build/ modify your own on-line Spreadsheet Reports<sup>™</sup> and dashboards with comprehensive report building tools;
- Integrate with business intelligence/ OLAP analysis software via in-built star schema view of data;
- Schedule automated delivery of reports in Excel or PDF format via email.



#### 1.13.2 Workflow Designer

In today's competitive and demanding economic landscape, business processes need to be constantly enhanced and adapted to meet the organization's dynamic requirements. The Workflow Designer allows organizations to configure and modify the business processes within Simplicity<sup>®</sup>. With the Workflow Designer' graphical interface, users can easily design, visualize and deploy new business process templates. They can also edit existing templates or remove unnecessary templates. The Workflow Designer also helps implementation consultants build domain specific and/or best practice business processes for Simplicity<sup>®</sup>.

The Workflow Designer is developed with the Microsoft Windows Workflow Foundation, an integral element of Microsoft .NET 4.7 Framework.



#### Visualize your business processes with the Workflow Designer

- Compatible with Microsoft Windows Workflow Foundation;
- Design code-independent business processes in a graphical user interface;
- Supports sequential and state machine workflows.

#### 1.13.3 Forms Designer

The Forms Designer allows you to design new and modify existing web forms based on existing Simplicity<sup>®</sup> objects. You can select from a list of ready Simplicity<sup>®</sup> Presentation Layer controls, attached workflows and business rules to the web form, and decide the access control matrix related to your new form.

#### 1.13.4 Language Pack Editor

The Language Pack Editor allows customizations of label texts and other alert messages in your preferred language within Simplicity<sup>®</sup>. Users can use the Language Pack Editor to translate text and .NET string resources like error messages and label text to the corresponding language of their choice.

#### **Key Features:**

- Provides a desktop interface for side-by-side label and text translation;
- Built-in automatic checks for missing translations.

#### 1.13.5 Data Migration Toolbox

The Data Migration Toolbox provides easy-to-use functionalities to facilitate data import into Simplicity<sup>®</sup>. Data is first entered into a Microsoft Excel<sup>®</sup> template provided by Anacle Consultants. The Data Migration Toolbox will then perform validation checks on the Excel<sup>®</sup> spreadsheet and if successful, migrate the data directly into the application database. This is especially useful in situations where you need to move large volumes of data into the Simplicity<sup>®</sup> database, e.g. during the setup of the system for a new plant.

#### **Key Features:**

- Simple input-and-upload function for data;
- Import, update and delete data;
- Provide direct mapping of source fields to target fields;
- Validate migrated data for format errors.

#### 1.14 Application Programming Interfaces

Simplicity<sup>®</sup> provides comprehensive and open Application Programming Interfaces (APIs) to support smooth two-way transfer of information with third party systems.

#### 1.14.1 Web Services Toolbox

The Web Services Toolbox exposes the business logic and data manipulation functions of Simplicity<sup>®</sup> as Web Services. This is to facilitate smooth information exchange with external management information systems, such as plant information systems and financial/ human resource software packages, in an open standard.

#### Key Features:

Published Web Services interface to support real-time and batch data exchanges.

#### 1.14.2 Operations Technology ("OT") Client

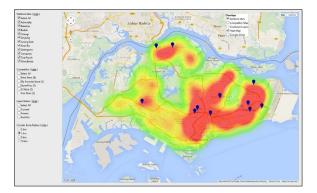
Simplicity<sup>®</sup> provides a range of OT data and events subscription clients that allow integration with OT systems such as SCADA, BMS, DCS and DCIM. This allows the software to monitor asset parameters and receive fault alarms in real-time. Maintenance routines and condition assessments can be instantly activated by breaches of pre-configured parameter triggers, thus improving response times and minimizing asset downtime.

#### Key Features:

- Published OPC, BacNet and MQTT compliant interfaces;
- Retrieve run-times, process parameters, meter readings, asset conditions, alarms and trends in real-time from SCADA systems;
- Write set points to automatically turn on/ off air-conditioning, access control and lighting from room bookings to maximize energy savings and location security;
- Automatically trigger condition-based maintenance (ad-hoc, preventive).

#### 1.14.3 Geographical Information System (GIS) Interface

Simplicity<sup>®</sup> provides an interface that integrates with QGIS, Google Maps and ESRI ArcGIS<sup>®</sup> to provide geospatial capabilities to the various application suites. This interface is extremely useful for the management of geographically distributed assets.



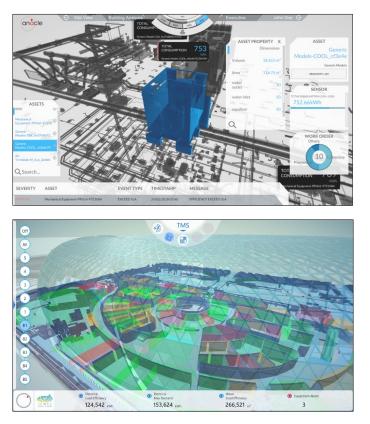
#### Manage widely distributed assets using integrated geospatial information

#### **Key Features:**

- Link distributed assets to geospatial data sets for easier asset locating, decision support and maintenance planning;
- Directly create service requests and work orders from the GIS client;
- Generate heat maps to measure correlation between different data sets.

# 1.15 Gemini<sup>™</sup> Digital Twin Platform

The Gemini<sup>™</sup> Digital Twin Platform allows you to create a virtual 3 dimensional representation of a building and its assets. The Platform also boasts capabilities that allow Digital Twin information to be mapped onto the physical world and viewed through mobile devices and smart glasses, and enhance diagnostics capabilities with "X-Ray Vision".



Gemini<sup>™</sup> is developed based on the Unity<sup>®</sup> game engine and fully compatible with all Simplicity<sup>®</sup> applications.

- Powerful, fast rendering interactive 3D visualization platform;
- Highly scalable and easily configurable for addition of charts, software functions & data from any database or Web Services;
- Capable of providing portfolio overview of performance & sustainability of building systems;
- Capable of drilling into buildings, levels, rooms, individual equipment for more granular analysis;
- Capable of the creation of Digital Twin models by importing BIM files and preserve structural, equipment and cabling/ piping attributes;
- Capable of performing transactions such as work orders and fault reports directly from the Digital Twin model;
- Capable of obtaining insights via advanced analytics by plotting overlays such as heat maps directly over the Digital Twin model;
- Capable of defining rules to alert user when there are any alarms, breaches or conditions and identify offending equipment or location directly on the Digital Twin model;
- Native Augmented Reality extension.