

## KRANIUM HIMS SOLUTION FEATURE & BACKEND MICROSOFT ERP



## 1 KRANIUM HIMMS SOLUTION DESCRIPTION

Kranium is a real-time, on-line, integrated information management system for hospitals, addressing all critical areas of health care activity. It helps improve clinical excellence, reduce variance in care, achieve resulting efficiencies and maximize operational performance.

Kranium is modular and flexible. The various modules are fully integrated (but can also standalone) to automate functions ranging from patient administration to clinical services. Kranium provides immediate access to clinical and administrative data, streamlines the scheduling and management of clinics visits and admissions, improves the dispensing of medications, facilitates management of laboratory functions with interfaces to laboratory equipment and much more.

Starting with the initial module, the system can be progressively installed, with the user selecting the combination of modules that meet the information needs. When used for various aspects of hospital management, it forms a single robust and integrated environment offering powerful, immediate data access across the database. For example, the laboratory investigation results can be called up from a Ward terminal, the pharmacy department can obtain patient allergy reactions, and the inpatient's department can access dietary details.

Kranium offers tremendous flexibility in terms of module-level parameters and user-definable codes.

The system also offers powerful, flexible and easy to use ad-hoc query facilities to the user. Security of data and confidentiality of information is important in any real-time on-line system, more so in a hospital environment. The record logging option of Kranium includes the facility to record modifications with user identification and date & time. User access to data is controlled at various levels.

### 1.1 KRANIUM FUNCTIONALITY

The patient is the focal point of the system. The system identifies the patient by a unique Patient Number, against which the patient's demographic data is stored and vital medical data is referenced. The format and structure of the Patient Identification Number are user-definable.

A patient's encounter with the hospital is either as an inpatient or an outpatient (an outpatient can be classified as a normal outpatient, accident and emergency patient or a referred patient). Each encounter is identified by a unique Episode Number and the healthcare establishment where it occurred. The services provided to the patient whether clinical care (like laboratory tests, X-ray investigations, pharmacy

prescriptions etc.) or supportive (like the type of bed, type of meal etc.) are all identified against the Episode Number (same as Admission Number in case of inpatient encounter) or even at a lower level like Visit Number in the case of an outpatient or bed number in the case of inpatients.

This stored information is available on inquiry either at a consolidated level through the Patient Number or for each encounter through the Episode Number. At the same time, it allows departmental services like Laboratory, Radiology, Operation Theatres etc. to be implemented to meet their respective operational requirements.

The functionality of Kranium (Fig 1 through 4) can be broadly categorized under the following types of services:

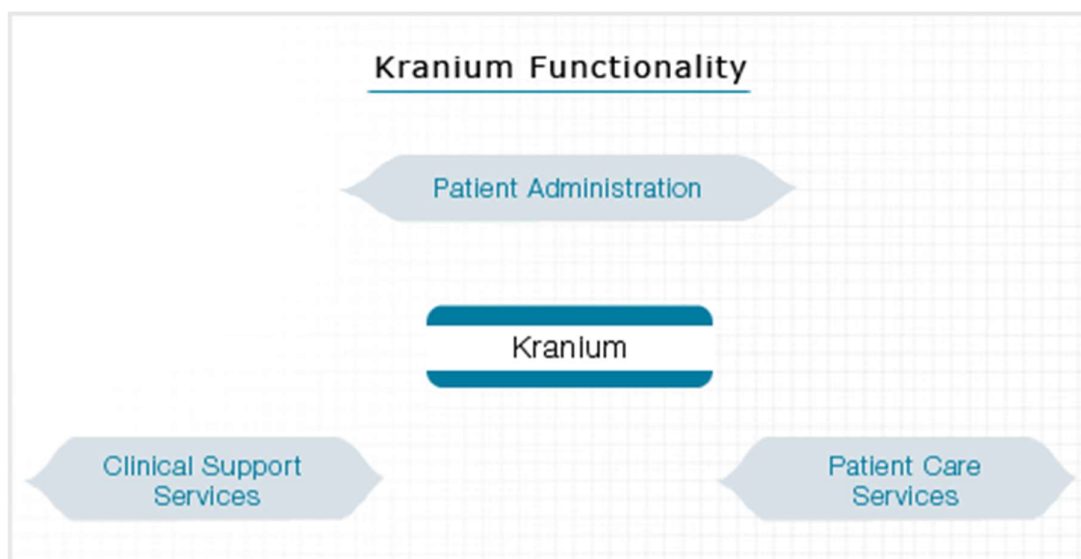


Fig 1 Kranium Functionality: Overview

## PATIENT ADMINISTRATION SERVICES

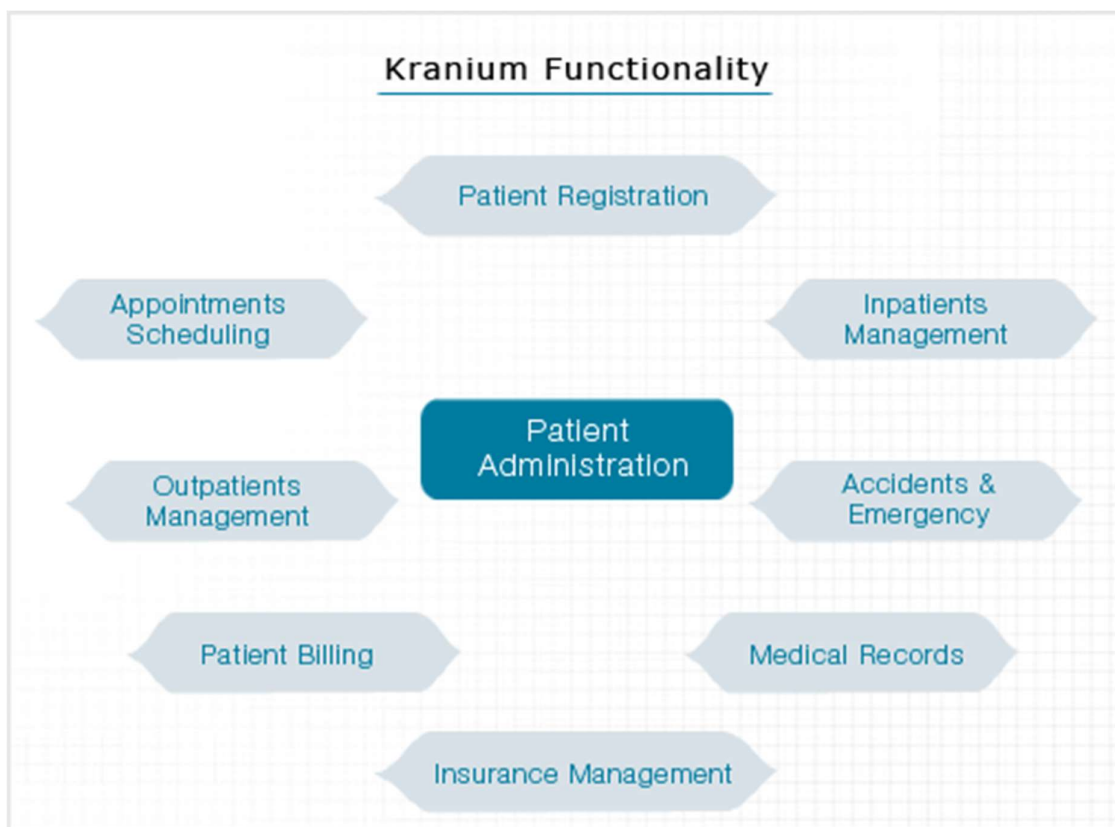


Fig 2 Patient Administration Services

This suite of modules handles the administration of patients concerning their registration, visits to outpatient clinics and appointments, admittance to Wards and associated transfers and discharges, management of wards/ beds, ordering for services to various departments and maintenance of medical records.

**PATIENT REGISTRATION** is an online interactive system providing a record of all patients registered, through a unique patient identification number. It holds demographic, medical and financial details, which are of long-term significance. It generates patient identification cards, adhesive labels and patient folder front sheets.

**APPOINTMENTS SCHEDULING** allows booking/rescheduling of appointments based on the variable timetable and appointment structures.

**OUTPATIENT MANAGEMENT** registers patient visits to various clinics, manages patient queue and records consultation details.

**INPATIENT MANAGEMENT** handles patient admissions, transfers and discharges. It provides for Ward/Bed assignment through on-line bed availability status and produces adhesive label wristband inserts and admissions forms to facilitate proper identification of patients. Waiting lists provide for control of admissions based on priority and medical service groups.

**ACCIDENT AND EMERGENCY** are designed for rapid registration of patients arriving at the accident and emergency department. This module generates casualty cards and tracks treatment details. A wide variety of trauma, RTA etc. related statistics could be generated.

**MEDICAL RECORDS** assist the records department in maintaining a comprehensive medical record for each patient. It caters to inpatient and outpatient morbidity coding, provides various reports on resource utilization and disease incidence. The chart tracking sub-module tracks the movement of patient notes within and outside the hospital.

**PATIENT BILLING** provides a flexible and comprehensive means of tracking and consolidating patient charges from the time of patient registration to the time the patient leaves the hospital. It handles both inpatients and outpatients and automates the billing process leading to improved cash flow within the hospitals. All patient-related modules of Kranium interface with the Billing modules to pass on the charge information for patient services rendered. A set of user-defined billing rules guide the billing run to generate invoices and bills. The billing runs can be executed at pre-defined intervals for each episode, for each set of service rendered or in any combination of the above. The module allows full or partial billing of patients or insurance companies or other relevant authorities.

**INSURANCE MANAGEMENT:** The Insurance Management module aids in tracking the insurance processing details for patients having appropriate insurance policies. It provides for validating on several factors as part of the billing and settlement processes including identification of services that are excluded from coverage, services which require prior approval from insurance companies, co-payments & insurance deductibles, etc. The module is integrated with Patient Billing.

## CLINICAL SUPPORT SERVICES

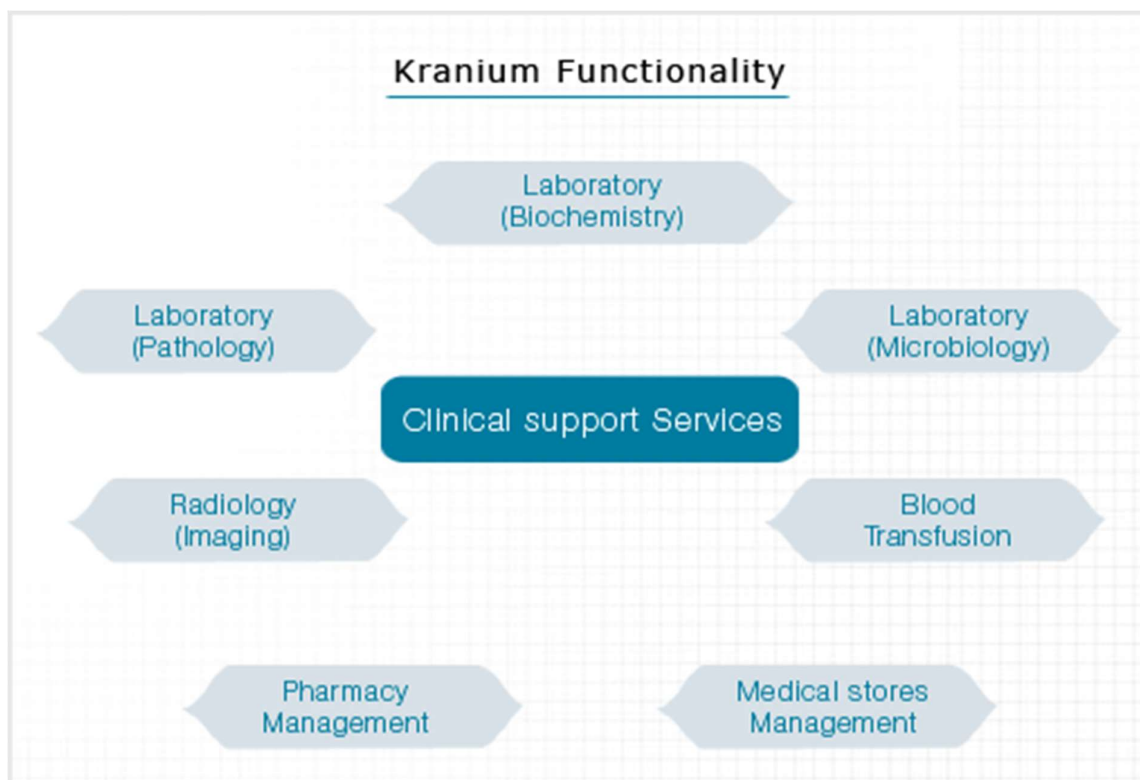


Fig 3 Clinical Support Services

The modules under Patient Care Services provide departmental services required for providing primary patient care such as Pharmacy, Radiology, Laboratory, Pathology, Blood Transfusion and Operation Theatres.

**PHARMACY / MEDICAL STORE MANAGEMENT** caters for drug information, dispensing and stock control functions of the pharmacy department. It could maintain a complete drug formulary with contraindications, interactions, dosage details, etc. and supports various drug classifications and indexes if connected to an external drug database. Medication issues are reviewed by authorized pharmacists where necessary. Medication orders are linked to inpatient episodes, while prescriptions are linked to outpatient visits. The facility also exists for online interface with external standard drug databases through third-party tools. Drug inventory is maintained through comprehensive stock management functions. Medical Stores addresses the maintenance of the inventory exclusively for pharmacy items of a hospital. It caters to a single and multi-store facility, expiry of drugs through individual batches, manufacturing items, reorder, minimum & maximum quantities for different types of items. It caters to different kinds of transactions associated with unique transaction numbers.

**RADIOLOGY** provides for appointment scheduling, request registration with examination details, reporting, post-examination registration, and billing. Patient statistics and utilization reports are available for departmental control and planning. Resource Scheduling reduces patient waiting time and improves the utilization of critical resources. Text processing facilities are available for reporting including coded comments in the form of text blocks. For each examination carried out the number of films used and the quantity of drugs consumed is recorded.

**LABORATORY - CHEMISTRY AND HAEMATOLOGY** offers in addition to standard features of patient registration, specimen login, worklists and reporting, facilitate linkage to a range of automated analyzers. The Hematology sub-module allows recording of blood film analysis and specialized keyboard option for cell counting. Results are checked for delta and percentage differences and validated against age and sex-related references.

**LABORATORY - MICROBIOLOGY** caters to the requirement of Bacteriology, Mycology, Parasitology, Micrology and Serology. On result entry, the module checks for antibiotic sensitivities and offers entry of free text or coded comments. The report facilities cover antibiotic resistance trends, infection control reports and organism-isolated criteria including microbiology procedures.

**LABORATORY - ANATOMICAL PATHOLOGY** provides for on-line text handling and coded comment features to cater to the specific needs of Histology, Cytology and post-mortem departments.

#### **LABORATORY ANALYZERS INTERFACED**

1 ABL 80	18 CellDyn 1800
2 ABL800	19 CHEM - 7
3 Access2 Immunoassay System	20 Cobas B 121
4 ADVIA 2120	21 Cobas C 111
5 Architect	22 Cobas C 311
6 AxSYM	23 Cobas E 411
7 Beckman Cell Counter 5 Part	24 Cobas U 411
8 BACT ALERT	25 CobasIntegra 400
9 Beckman AT 5 diff - old	26 Dimension AR Clinical Chemistry
10 Beckman AU480	27 EasyLyte Plus
11 Bio-Rad D10	28 ElecSys2010
12 Biosystems A15	29 Electrolyte ACL 9180
13 Biosystems A25	30 EM200
14 CA 1500	31 EM360
15 CA 50	32 EVOLIS ELISA READER
16 CA 600	33 GEM Premier 3000
17 CellDyn 3700	34 Hitachi 902



35 Hitachi 912	69 Uro-Dipcheck 300
36 Horiba DF120	70 Uro-Dipcheck 400
37 Huma Star 300	71 Vesmatic 20
38 HUMALYTE	72 Vesmatic 30
39 Humalyzer 3000	73 VITEK 2
40 Humastar 300	74 VITROS 250
41 Humastar 600	75 VITROS ECI
42 Immulite 1000	76 Vitros FusionFS5
43 Konelab Prime 60i	77 Wipro Cell Counter 3Part
44 LeNa ESR	78 Wipro Cell Counter 5Part
45 LH-750	
46 Medica Easy RA	
47 Micros 60	
48 Mindray BC 2300	
49 Mindray BC 3600	
50 Mindray BS 300	
51 Mindray BS 200	
52 Mindray BC5300	
53 Mini ViDAS	
54 Olympus AU 400	
55 Pentra XL 80	
56 Response 920	
57 Spot Chem EZ SP-4430	
58 STA COMPACT	
59 Stat Fax 3300	
60 Stat Fax 3600	
61 Synchron CX 5	
62 SysMex KX - 21	
63 SysMex XP - 100	
64 SysMex XS800i	
65 SysMex XT1800i	
66 SysMex XT2000i	
67 Sysmex N1000	
68 Urisys 1100	

## PATIENT CARE SERVICES

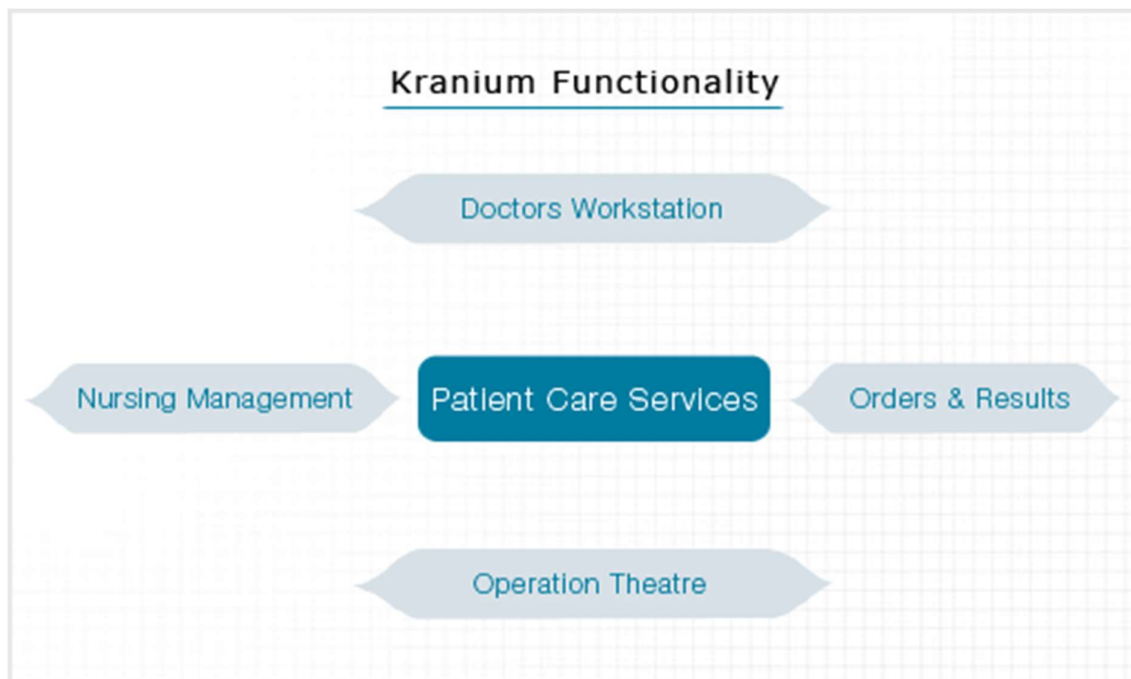


Fig 4 Patient Care Services

The modules under the Patient Care Services provide departmental services required such as Doctor's Workstation, Nursing Management, Orders & Results Reporting and Operation Theatre.

**Doctors Workstation** provides the clinicians with single-point access to the electronic medical record consisting of the patient demographic details, past medical history and vitals maintained in the system. The history of the patient is viewed chronologically listed as per the encounters with hyperlinks to the clinical details for each encounter. It is also possible for the clinicians to view the list of inpatients under his / her care and the patients waiting for consultation in the OPD. The doctors and/or nurses can update/view the pre-consultation observations such as height, weight, BP, Temperature, etc.

The module helps the clinicians in recording the different kinds of documentation as part of the patient care including progress notes, discharge summary, referral letters, etc. The documentation can be recorded based on pre-defined templates. Different roles of documentation are definable to control the documentation quality e.g. transcribers, reviewer/authorizer, viewer. Also, documentation entry is initially recorded as a draft, which needs to be finalized by authorized Doctor.

The module allows defining of templates corresponding to different specialities so that the details are recorded and viewed according to the doctors' speciality. The doctors will be able to update the diagnosis and procedure codes as per the pre-defined coding structure such as ICD10 or CPT through a dynamic multi-layered code selection/search utility including the facility to define doctor specific diagnosis.

**Nursing Management module** consists of a set of functions and sub-modules that can be run at each nursing station. This aids in the flow of patient information throughout the hospital. Orders can be placed from nursing stations for individual patients. Nurses can view the status results of their orders. Patient information can be enquired upon and transfers & discharges recorded. This module facilitates the recording of progress notes and review of diagnostic and clinical orders.

**Orders and Results Reporting** allows entry and tracking of orders made from wards, clinics and departments for various services including investigations for laboratory, radiology and prescriptions for drugs. The order requests can be routed to print at the pre-defined locations or can be viewed by the service department staff for processing the request orders. The module provides defining priorities for the orders with a facility to make an on-line inquiry into the status of the orders. It is possible to define review/authorization rules before the release of orders to the service departments. Also, it is possible to define a panel of tests (battery/order set) for expediting the ordering process. It is integrated with Laboratory Suite, Radiology and Pharmacy Management modules for enabling online order and result processing in the respective areas. For instance, some of the results in the laboratory department can be captured through an interface with the various laboratory analyzers.

**Operating Theatre** module maintains theatre reservation details through pre-defined schedules and provides for extensive post-operation record keeping including time/duration of surgical procedure, procedure details, surgeons, anaesthetists and paramedical staff involved, specimen details, if any, and corresponding reports with surgeon's comments in text form. It generates utilization statistics and performance reports.

## 1.2 KRANIUM FEATURES

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### 1.2.1 GENERAL FEATURES

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#### **COMPREHENSIVE**

Kranium provides a comprehensive set of functions that offer a wide range of clinical, administrative, financial and decision support sub-system facilities. The various facilities are logically grouped under patient administration, patient care, and clinical support services.

#### **MODULAR**

Kranium application is modular in design, with each module addressing specific functional requirements. These modules can be implemented in a standalone mode and later integrated to the other relevant modules as the implementation progresses. The priorities of module implementation can be decided by the healthcare establishment.

#### **INTEGRATED**

Kranium application design provides for seamless native integration across the modules within a suite or across the suites as relevant. The modules implemented in a gradual modular fashion ultimately integrate into a cohesive system providing for a single central data repository.

#### **FLEXIBLE DESIGN**

Kranium has a flexible design allowing it to be easily tuned to hospitals mode of operations.

The Parameter screens in each module are used to control various Kranium functions. The personality of Kranium changes depending on the entries made in this screen. The Parameter Screens control entry/display of default values, interfacing options, data entry validations, etc.

Kranium supports the definition of various templates that can be used for entering data such as in the case of clinicians' progress notes, discharge summary, radiology and lab results, etc. Kranium also supports the "electronic tick sheets" concept that allows defining of commonly used investigations such that the clinicians can select the required investigations to be ordered by marking with a "tick mark".

#### **INFORMATION POOL DESIGN**

The design uses an information pool approach organized around a central database that minimizes duplication of data and allows restricted views of the information pool.

#### **PHASED IMPLEMENTATION**

Kranium allows phased implementation based on the hospital priorities; it is possible to implement individual modules on a stand-alone basis; integrating with other modules as and when they are implemented.

#### **MIS REPORTING CAPABILITIES**

Kranium has capabilities to generate a range of management information and statistical summary reports for each module through built-in report writer. Any additional/ad-hoc MIS queries and reports can be obtained using standard third-party tools.

#### **MAINTAINABILITY**

All system modules are designed, developed and documented as per accepted standards, allowing for easy maintenance of the system.

#### **CENTRALIZED CLINICAL EMR REPOSITORY**

Kranium is of an integrated nature thus enabling all the Patient-related medical and clinical details to be stored and retrieved from a centralized clinical Electronic Medical Record data repository. The Patient's demographic details are captured during the initial registration process and are reflected across all the modules. This One-time Data Entry reduces the data entry, duplication and/or transcription errors, along with the added advantage of consistent patient details flowing throughout the various service segments of the hospital. It also generates necessary barcodes for easy identification by using appropriate scanners.

#### **AUTOMATED PROCESSES AND INTELLIGENT WORKFLOW**

Kranium has in-built capabilities to support automated processes and is based on an intelligent workflow, thus helping the hospital staff to improve the quality of patient care. For example, when a Patient Order for Laboratory/Radiology exams are entered, Kranium automatically routes it to the concerned departments/sections and on completion of the Laboratory Test / Radiology Exam, the results are automatically sent back to the desk from where the order was placed. Kranium has a user-friendly and simple menu, which helps the user to go through the daily operations without any difficulty.

#### **ONLINE ACCESS TO EMR INFORMATION**

In Kranium, the patient's Electronic Medical Record can be created, retrieved and updated online by any authorized hospital personnel, thus providing consistent patient data flow across the various operations of the Hospital. Kranium's Central Database facility enables the doctors/consultants/hospital staff to access the patient's vital details online from any of the attached hospitals/clinics.

#### **DATA SECURITY**

Using Kranium, the patient EMR can be accessed only by authorized Hospital personnel, thus ensuring appropriate data security and confidentiality of the patient details. This also helps in maintaining the privacy of the patient's details.

#### **ADHERENCE TO INTERNATIONAL HEALTHCARE IT STANDARDS**

Kranium is developed in close conformity to International IT and HealthCare Informatics Standards like ICD10, CPT4, DICOM, TCP / IP, HL7, etc.

#### **USER-FRIENDLY INTERFACE**

Kranium provides a very user-friendly and intuitive web-enabled interface supplemented with icons and buttons, which work through the point-and-click mechanism.

#### **MULTIMEDIA ENABLED PATIENT DATA**

Kranium assists the users with access to multimedia-enabled patient data starting with the facility to store the patient's photograph at the time of registration. The multimedia facility is further extended to store the patient data in data, text, voice and image (still & moving) formats.

### **1.2.2 OPERATIONAL FEATURES**

#### **BROWSER INTERFACE**

Kranium supports a web-enabled user interface (WUI) with the application working on any browser. This usher in the much-needed ease-of-use and simplicity in the usage of the system. Also, users being familiar with Internet usage - the ubiquitous e-mail concepts, Office Automation tools, access to e-reference sites, can get quickly adapted to the Kranium functionality. The system also supports state-of-the-art window-oriented, point and pick interface. Extensive use is made of graphical icons, pull-down menus, buttons and scrolling techniques to reduce typing work wherever possible. Use of checkboxes, radio-buttons, and list boxes is also implemented.

#### **AD-HOC QUERIES**

Any hospital is a very dynamic environment and the information needs of Clinicians vary considerably. Hence users need extensive facilities to manipulate data easily and quickly. By using SQL and related Query tools, facilities are available to interrogate the database using user-definable queries.

#### **USER-DEFINABLE CODES**

Each module contains user-controlled tables [code and description] that define the various types of basic data. The size and structure of these codes are user-definable. Change or deletion of these codes is controlled to prevent inconsistent data.

#### **ON-LINE SEARCH CAPABILITIES FOR ENTRY CODES**

Pop-up windows are used to provide valid options for the population of data fields, particularly where Codes are referenced. This avoids the unnecessary references which the user otherwise has to make to fill in various data entry screens.

#### **USER PROFILE DRIVEN FUNCTION MENUS**

The system provides clear and consistent menu options. Application menus are designed to permit access to the various options depending upon the role of the users. Hence fewer menus need to be maintained for all users and access can be controlled by assigning roles to the users.

#### **EASE-OF-USE**

The following facilities are available to the user to aid in data input:

- 1) There is a 'Help' line on the top right of the screen, which displays information about each field in the screen when the user navigates to that field.
- 2) Dialogue-based response to the User, conveying successful execution of functions sought by the user or in case of faults, a description of the error, with necessary actions to be taken.
- 3) The Reports can run in the background and this allows the user to continue with other tasks on the screen.

#### **CUSTOMIZABLE MESSAGES**

The errors and warning messages are stored in tables with a facility for editing the messages if required. Messages can also be maintained in the local language for users who want to display their messages in the local language.

#### **SYSTEM-WIDE STANDARD USER INTERFACE**

The method of operations is uniform across the system, resulting in simplified usage.

The user interface is consistent throughout the system so that a user will have the same look and feel. All functions of Kranium follow the same standard for defaults of various types, help functions and display and correction of errors. The exit functions also follow similar interface depending on the nature of exit.

- The date and user name will be displayed along with the Organization name at the same location on all screens.
- All standard displays (for example basic patient information) appear uniformly in all screens, since, during Kranium design, standard display blocks have been identified and standardized.
- Kranium functions use the same function keys for similar functions across the system. Wherever special function keys are required, they are displayed for easy reference.
- Any keying errors are immediately pointed out through alert boxes prompting the user to correct the data. The error field is displayed in a different colour. In a multi-record condition, the current record is highlighted in a different colour.
- Keying of data is minimized by the use of checkboxes, radio buttons and display of a valid list of values from which a selection can be made.
- Wherever possible, user actions including screen navigation are controlled either by function keys or by use of icons.
- Extensive validation checks are implemented. Certain validation checks are parameter controlled.

#### **HARD COPY OUTPUTS**

Outputs are generated from the system in one of the following ways:

a) On-line outputs

These outputs are generated immediately on entering the transactions, such as Patient Labels, Patient Front Sheet, Visit Sheet, Prescriptions Dispensing Label etc.

b) Off-line outputs

These outputs are the various reports, summaries etc., which are generated as and when required, such as Daily Appointment List, Monthly statistics on Visits by Clinic/Doctor, Stock Ledger etc.

#### **FREE-FORMAT TEXT ENTRY**

Facility to enter free-format text using word-processing like features



### 1.3 DETAILED MODULES AND FUNCTIONALITIES

SL	DESCRIPTION	HOSPITAL / CLINIC
1	<b>Masters Management</b>	Hospital / Clinic
2	<b>Patient Registration Module</b> <ul style="list-style-type: none"> <li>- Patients Registration</li> <li>- Demographic Details</li> <li>- Next-of-kin Details</li> <li>- Enquiry</li> </ul>	Hospital / Clinic
3	<b>Appointment</b> <ul style="list-style-type: none"> <li>- Out-patient Management</li> <li>- Clinician Appointments</li> </ul>	Hospital / Clinic
4	<b>Patient Billing</b> <ul style="list-style-type: none"> <li>- Inpatient Billing – Self Pay</li> <li>- Outpatient Billing</li> <li>- Package Billing</li> <li>- Corporate Billing</li> <li>- Insurance Billing</li> <li>- Corporate / Insurance Specific Billing Formats</li> <li>- Package Extra Billing</li> <li>- Discounts</li> <li>- Advances</li> <li>- Refunds</li> <li>- Cancellations</li> </ul>	Hospital / Clinic for Clinic, there will no Inpatient related functionality
5	<b>Doctor's Workstation</b> <ul style="list-style-type: none"> <li>- Clinical Documentation</li> <li>- Diagnosis Coding</li> <li>- E-Prescriptions</li> <li>- CPOE</li> <li>- Immunization Chart</li> <li>- Document Manager</li> </ul>	Hospital / Clinic for Clinic, there will no Inpatient related functionality
6	<b>Computerized Physician Order Entry</b> <ul style="list-style-type: none"> <li>- Radiology Investigation Requests</li> <li>- Laboratory Investigation Requests</li> <li>- ADT Requests</li> <li>- Procedure Requests</li> <li>- OT Requests</li> <li>- Pharmacy Requests</li> <li>- Nursing Requests</li> <li>- Diet Requests</li> </ul>	Hospital / Clinic for Clinic, there will no Inpatient related functionality
7	<b>Wards &amp; In-patient Management</b> <ul style="list-style-type: none"> <li>- Admission</li> <li>- Transfer</li> <li>- Discharge</li> </ul>	Hospital
8	<b>Nursing Management</b> <ul style="list-style-type: none"> <li>- Triage / Observation Charts</li> <li>- Intake / Output Chart</li> <li>- Nursing Care Plans</li> <li>- Matron Reports</li> <li>- Nursing Shift Handover</li> <li>- Drug Administration</li> </ul>	Hospital / Clinic for Clinics, there will be only Triage

9	<b>EMR (Electronic Medical Record)</b> <ul style="list-style-type: none"> <li>- Patient's Demographic</li> <li>- Medication History</li> <li>- Previous Episodes History</li> <li>- Past Surgical History</li> <li>- Family History</li> <li>- Social History</li> <li>- Allergies</li> <li>- Past and Current Medication</li> <li>- Provisional &amp; Final Diagnosis</li> <li>- Treatment Plan</li> <li>- Consultant Notes</li> <li>- Duty Doctor Notes</li> <li>- Nursing Notes</li> <li>- Laboratory Test Requests</li> <li>- Laboratory Reports</li> <li>- Radiology Test Requests</li> <li>- Images Link to Clear Canvas</li> <li>- Disease Coding (ICD 10)</li> <li>- Document Manager</li> <li>- Encounter / Discharge Summary</li> </ul>	Hospital / Clinic for Clinic, there will no Inpatient related functionality
10	<b>Pharmacy Management &amp; Stores</b> <ul style="list-style-type: none"> <li>- Patient dispensing</li> <li>- Purchase Order Management</li> <li>- Inventory Control</li> <li>- Ward Indenting</li> <li>- IP Pharmacy</li> <li>- OT Pharmacy</li> </ul>	Hospital / Clinic for Clinics, there will be only Dispensing / PO / Inventory / Stores
11	<b>Laboratory Information System</b> <ul style="list-style-type: none"> <li>- Bio-chemistry</li> <li>- Haematology</li> <li>- Clinical Pathology</li> <li>- Microbiology</li> </ul>	Hospital / Clinic
12	<b>Radiology Reporting</b> <ul style="list-style-type: none"> <li>- X-Ray</li> <li>- Ultrasound</li> <li>- CT</li> </ul>	Hospital / Clinic
13	<b>Operation Theatre Management</b> <ul style="list-style-type: none"> <li>- Pre-Operative Procedures</li> <li>- Operation Performed Details</li> <li>- Post-Operative Notes</li> <li>- Special Instructions</li> <li>- Department Specific Operation Notes Templates</li> </ul>	Hospital
14	<b>Management Information System</b> <ul style="list-style-type: none"> <li>- User reports for various departments and Management</li> </ul>	Hospital / Clinic
15	<b>DashBoard</b> <ul style="list-style-type: none"> <li>- Hospital Performance for Management</li> </ul>	Hospital / Clinic

## 1.4 NEW UI

No	Kranium New UI
<b>1</b>	<b>Masters Management</b>
1.1.	Users Creation
1.2.	User Rights Management
1.3.	Roles / Responsibility Assignment
1.4	Disable / Locking Users
1.5	Password Policy
1.6	Investigations / Services Creation / Updates)
1.7	Billing Rules Creation / Updates
1.8	Doctors Management
1.9	Clinical Forms Builder
1.10	Intuitive New UI (HMTL5, CSS, Bootstrap)
<b>2</b>	<b>Patient Registration Module</b>
2.1.	Patients Registration
2.2.	Demographic Details
2.3.	Next-to-Kin Details
2.4.	Enquiry
2.5.	Registration Location
2.6	Incognito
2.7	Photo Capture
2.8	Donor - Receptient Tagging
2.9	Patient ID Card with Barcode
2.10	Overseas Patients Registration
<b>3</b>	<b>Emergency &amp; Casualty Management</b>
3.1.	Emergency Registration
3.2.	Triage Capture
3.3.	Medico Legal Case Tagging
3.4	Emergency Ward / Bed Allocation
3.5	Trauma Care Forms
3.6	Transfer of Patients from Emergency to Wards / ICU / OT
<b>4</b>	<b>Appointments &amp; Outpatients Management</b>
4.1.	Outpatients Management
4.2.	Clinicians Appointments
4.3.	Radiology Scheduling
4.4.	OT Scheduling
4.5.	Procedure Scheduling
4.6.	Patient Queue Management
4.7.	Assessment Capture
4.8.	Healthcheckups Management
<b>5</b>	<b>Patient Billing</b>
5.1.	Inpatient Billing - Self pay
5.2.	Outpatient Billing
5.3	OP / IP Package Billing
5.4	Corporate Billing
5.5	Insurance Billing

5.6	Corporate / Insurance Specific Billing Formates
5.5.	NHIF Bed Rebates
5.6	Credit Card, mPesa, Cheque, EFT modes of payments
5.7	Invoice to multiple Insurance Companies
5.8	Discounts/Tariff based on insurance
5.9	Credit Note
5.10	Debit Note
5.11	Pre-Admission Deposits
5.12	Package Extra Billing
5.13	Discounts
5.14	Advances
5.15	Refunds
5.16	Cancellations
5.17	Supplimentary Billing for items not covered by Insurance / Corporates
<b>6</b>	<b>Revenue Cycle Management (Insurance / Corporates)</b>
6.1.	Pre-auth approvals
6.2.	Final approvals & TAT
6.3.	Current status of Insurance cases
6.4	Status of Insurance cases for the period
6.5	Insurance bill preparation and online submission
6.6	Bill dispatch – proof of dispatch details and TAT
6.7	Pending dispatch Reports
6.8	Posting of claim receipts
6.9	Patient wise disallowances
6.10	Patient wise TDS deductions
6.11	Occupancy Reports for Insurance patients
6.12	Ageing Reports
<b>7</b>	<b>Doctors Workstation</b>
7.1	Clinical Documentation
7.2	Diagnosis Coding
7.3	e-Prescriptions
7.4	CPOE
7.5	Immunization Chart
7.6	Document Manager
7.7	Standard Treatment Guidelines
7.8	JCI Tools
7.9	Specialty Templates / Assessments
7.10	Sketchpad for drawings
7.11	Cross Referrals
7.12	Patients PACS image view while consultation
7.13	Cross Platform Compatibility UI for Desktops / Tablets
<b>8</b>	<b>Computerized Physician Order Entry (CPOE)</b>
8.1.	Radiology Investigation Requests
8.2.	Laboratory Investigation Requests
8.3.	ADT Requests
8.4.	Procedure Requests
8.5.	OT Requests
8.6	Pharmacy Requests

8.7	Nursing Requests
8.8	Diet Requests
8.9	Emergency and Priority Signs
<b>9</b>	<b>Wards &amp; In-patient Management</b>
9.1.	Admissions
9.2.	Transfers
9.3.	Discharges
9.4.	Holding Bed / Release / Transfers from Room – Room / Ward – Ward/ Room – OT / Room - ICU
9.5.	Discharge Intimation
9.6.	Automated Discharge Summary for IP
9.7.	House Keeping (Bed Blocking for Housekeeping and Release for Admission)
<b>10</b>	<b>Nursing Management</b>
10.1	Triage / Observation Charts
10.2	Intake / Output Chart
10.3	Nursing Care Plans
10.4	Matron Reports
10.5	Nursing Shift Handover
10.6	Drug Administration
10.7	ICU Charts
10.8	WHO Checklists
10.9	JCI Nursing Tools
10.10	Quality Control Charts
10.11	Nursing Assessments
10.12	GRBS Chart
10.13	ISBAR Handover
10.14	ICU Charts
10.15	Intravenous / Blood Transfusion
<b>11</b>	<b>Electronic Medical Record (EMR)</b>
11.1.	Patient's Demographic
11.2	Medication History
11.3	Previous Episodes History
11.4	Past Surgical History
11.5	Family History
11.6	Social History
11.7	Allergies
11.8	Past and Current Medication
11.9	Provisional & Final Diagnosis
11.10	Treatment Plan
11.11	Consultant Notes
11.12	Duty Doctor Notes
11.13	Nursing Notes
11.14	Laboratory Test Requests
11.15	Laboratory Reports
11.16	Radiology Test Requests
11.17	Radiology Reports
11.18	Integration to 3rd Party RIS to send radiology Requests and to receive radiology Reports
11.19	Images Link to 3rd Party PACS

11.20	Disease Coding (ICD 10)
11.21	Document Manager
11.22	Encounter / Discharge Summary
<b>12</b>	<b>Pharmacy Management &amp; Stores</b>
12.1	Patient dispensing
12.2	Purchase Order Management
12.3	Inventory Control
12.4	Ward Indenting
12.5	IP Pharmacy
12.6	OT Pharmacy
12.7	Reorder levels
12.8	Consignment Stores
12.9	Expiry Management
<b>13</b>	<b>General, Reagent &amp; Capex Stores</b>
13.1	Purchase Order Management
13.2	Inventory Control
13.3	Reorder levels
13.4	Sub Stores Indents
13.5	Reagents Managements ( Laboratory investigations tagging with reagents for auto consumption )
13.6	Capex Purchases
13.7	Linen Management
<b>14</b>	<b>Laboratory Information System</b>
14.1	Bio-chemistry
14.2	Hematology
14.3	Clinical Pathology
14.4	Microbiology
14.5	Serology
14.6	Molecular
14.7	Coagulation
14.8	Immunology
14.9	Histology
14.10	Cytology
<b>15</b>	<b>Blood Bank Management</b>
15.1	Donor Registration / Camps
15.2	Donor Screening
15.3	Cross Matching
15.4	Blood Bag Tagging
15.5	Blood Component Splitting
15.6	Blood Component Issues
15.7	Inventory Management
15.8	Expiry Management
<b>16</b>	<b>Radiology Reporting</b>
16.1	X-Ray
16.2	Ultrasound
16.3	CT
16.4	MRI
16.5	Nuclear Medicine
<b>17</b>	<b>Operation Theatre Management</b>

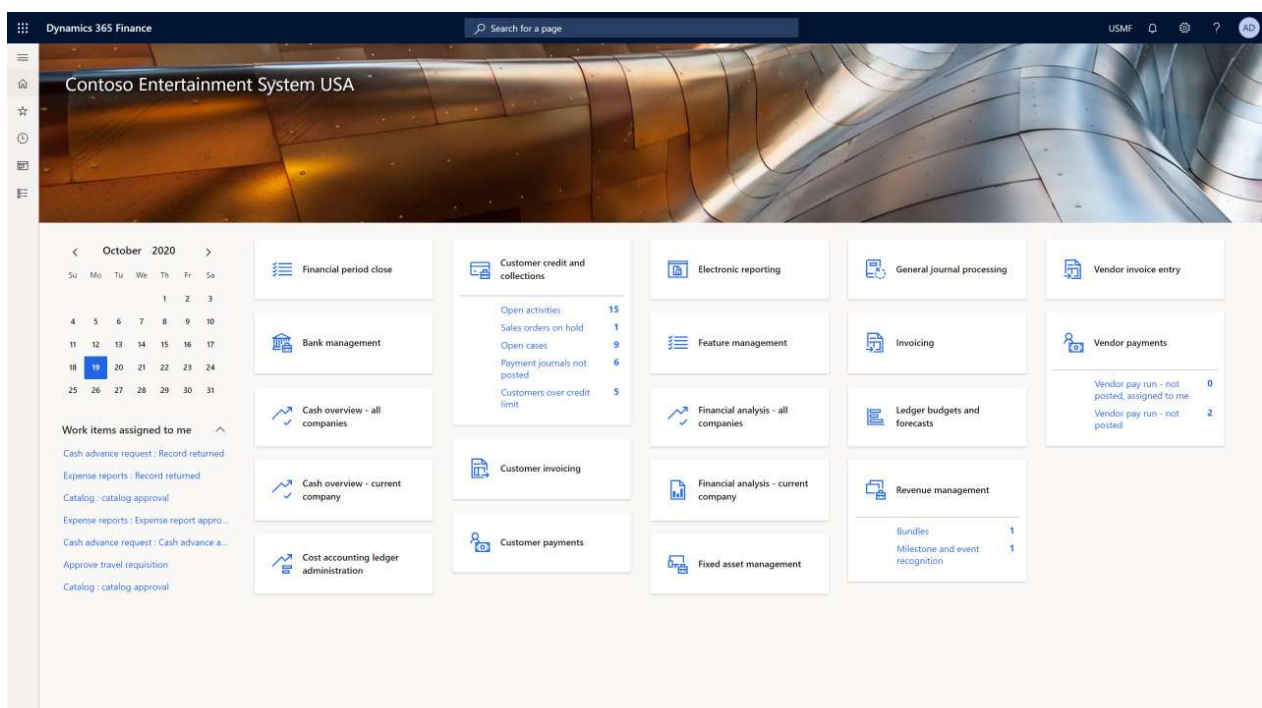
17.1	Pre-Operative Procedures
17.2	Work flow to Recive Patient from Ward to theater with turnaround time
17.3	Work flow to receive the Patient from theater to Ward
17.4	Theater Scheduling
17.5	Operation Performed details
17.6	Post-Operative Notes
17.7	Special Instructions
17.8	Department Specific Operation Notes Templates
17.9	WHO Preoperative/Post Operative Check Ilist
<b>18</b>	<b>Ancillary Modules</b>
18.1	CSSD
18.2	Linen Management
18.3	Bio-Medical Maintenance (Laboratory Analyzers / Equipment)
18.4	Document Management System
18.5	Maternity Forms
18.6	IQCARE Forms
18.7	Hospice Care
18.8	Truma Care
18.9	Mortuary Management
18.10	Token Management
18.11	Catering Module
18.12	Notice Board
18.13	Dental Module
18.14	Endoscopy
18.15	Physiotherapy
18.16	Certificates Issue
18.17	Patient Feedback
<b>19</b>	<b>Management Information System</b>
19.1	User Reports for various departments and management
<b>20</b>	<b>Dash Board</b>
20.1	Hospital Performace for Management
<b>21</b>	<b>Integrations</b>
21.1	Smart Card
21.2	Navision ERP
21.3	Tally ERP
21.4	Sage Financials
21.5	Analyzers
21.6	3rd Party PACS
21.7	AMHEALTH
21.8	SMS Gateway
21.9	mSurvey
21.10	MOH DIS Integration
21.11	Soja - Identigate to verify Patient KYC
21.12	Slade 360 ( Savannah Informatics) EDI
21.13	Healthx EDI
21.14	IPERA EDI
21.15	LCT (LIASION) EDI

21.16	MTIBA
21.17	MPESA
21.18	Pin Pad
21.19	CDM cash deposit machine
21.20	Phillips Intelliview ICU Central Monitor
21.21	Integration to Fiorano ESB
21.22	Integration to Aria (oncology System)
<b>22</b>	<b>Kranium QuBr (Mobile Smart OP Management)</b>
22.1	Patient Registration
22.2	Scheduling
22.3	Visit Management
22.4	Orders
22.5	Billing
22.6	Wallet Integration (Credit / Debit Card, Mpesa etc)
22.7	Kranium Enterprise Integration
22.8	Team Messaging

## 1.5 BACKEND ERP

The Tranzact Cloud Service is tightly integrated with Microsoft Dynamics NAV also known as Dynamics Navision. We have proven integration with most of our existing healthcare facilities.

Microsoft Dynamics NAV 2016, formerly Microsoft Dynamics Navision, provides growing small and midsize manufacturing businesses a robust, comprehensive, and cost-effective ERP software solution to support manufacturing processes.





Microsoft Dynamics NAV 2016 ERP system gives manufacturing businesses greater control over supply chains, production lines, corporate financials, and overall operations. With a simple and fast implementation process, MS Dynamics NAV can be up and running in a very short time.

Manufacturers can now better drive success and achieve goals with Microsoft Dynamics NAV ERP software suite, an integrated, adaptable business management solution that streamlines and automates business processes. Microsoft Dynamics NAV also delivers business intelligence and robust reporting by connecting customers, employees, and partners across a worldwide global marketplace. Flexible, with an easy-to-use intuitive design, Microsoft Dynamics NAV provides the tools necessary to fuel business productivity and enable confident decision-making with the ability to respond quickly to new marketplace opportunities.

### **Advantages**

Microsoft Dynamics NAV Manufacturing ERP Software helps organizations accomplish more every day with Role Centers that provide access to relevant information, tasks, and business processes.

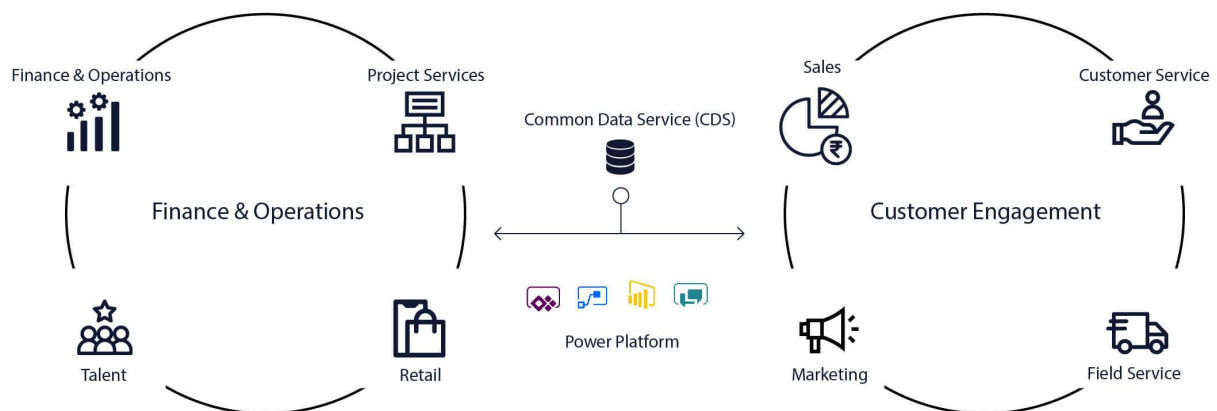
- Role Centers provide a single, integrated view of the information and activities most relevant to user's roles, helping to organize and prioritize work, and to manage tasks quickly and effectively.
- Collaborate and communicate effectively with access to Microsoft Office Outlook, Microsoft Office Excel, and Microsoft Office Word from your Role Center, making it easy to find, use, and share information.
- Access improved context-based Help that provides descriptions and explanations in a clear "how-to" format.
- Individualized user experience, via personalized menus and shortcuts, grants access to common tasks more directly and efficiently. Get up to speed right from the start with a familiar, intuitive, and user-friendly experience.
- Minimize training costs and accelerate productivity from the start with software that looks and feels like other Microsoft products and technologies.
- Work more efficiently with quick access to information and processes through action panes, easy-to-locate commands, improved access to lists, look-up windows, drill-back and inquiry tools, and custom links to applications and Web sites. Enable users to make fast, informed decisions based on real-time business intelligence.
- RoleTailored access to information provides visibility into relevant business activities such as work activities and tasks, worksheets, notifications, lists, KPIs, and reports.

- Microsoft Dynamics NAV 2016 delivers self-service reporting and business intelligence capabilities that reduce ad-hoc requests to the IT department for reports and information, which enables fast, informed decision-making.
- Automatically generate custom reports by using Microsoft SQL Server Report Builder, an ad-hoc query tool and a component of SQL Server Reporting Services built into Microsoft Dynamics NAV 2016. Flexible options make reports more usable and easier to distribute as PDF files.
- Tight integration with Microsoft Excel makes it easier to run contextualized reports from high-level KPIs for management to reports that help manage day-to-day business. For example, easily export KPIs, such as financial information to Excel with a single click, and quickly create detailed reports to help monitor performance, spot trends, and evaluate results.
- View data through a variety of different viewers including Excel, Business Analytics in Microsoft Dynamics NAV, and Microsoft Office PerformancePoint Server.

## Technology

Microsoft Dynamics NAV ERP Software is largely developed on a .NET architecture and runs on Windows OS with MS SQL Server as its database. Microsoft Dynamics NAV is offered as either an on-premise installation or software as a service (SaaS) cloud delivery.

Microsoft Dynamics NAV enterprise resource planning software setup and configuration are user-friendly by the use of wizards and sequential routines. Use wizards for creating setup configurations for security permissions, maintenance, auditing with role-based security features, and to remember user and company settings.



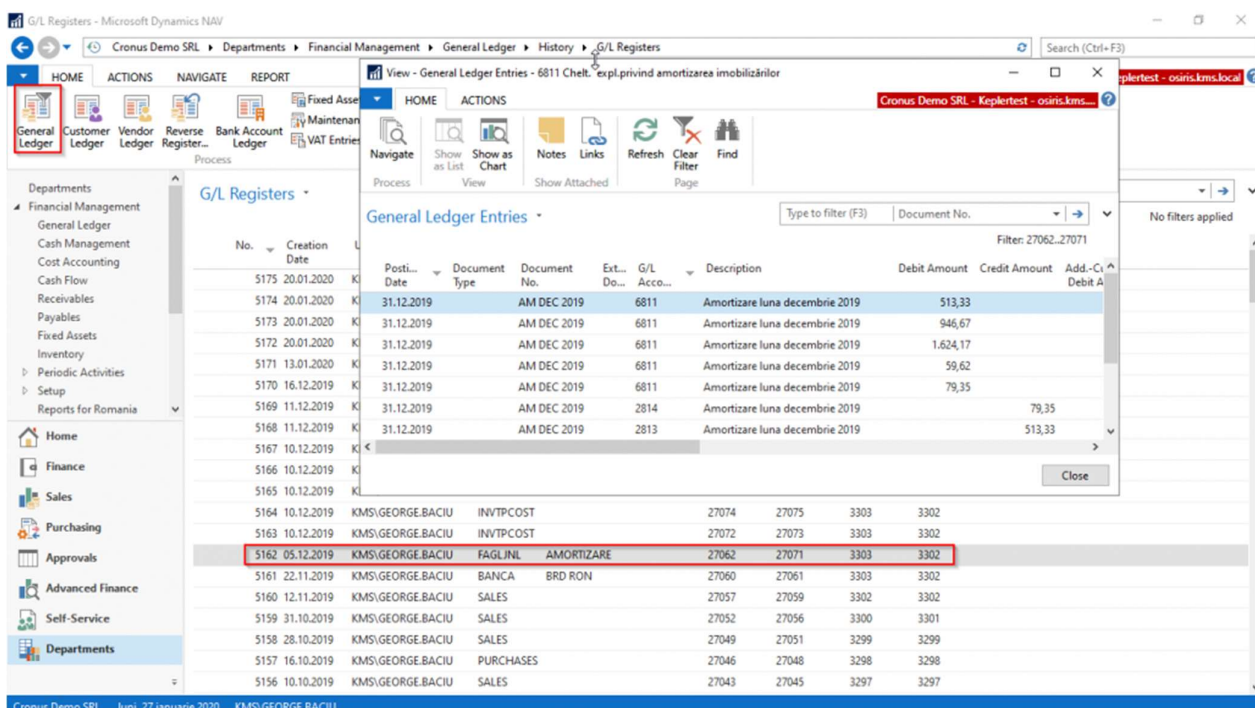
- RoleTailored Client (RTC) can be configured specifically for each user to show all the features, tasks, reminders, and documents needed to efficiently and productively streamline the day's work.

- C/Front enables easy sharing of information from Microsoft Dynamics NAV into familiar programs such as Microsoft Word and Microsoft Excel.
- Application Programming Interfaces (APIs) allow two-way communication between Microsoft NAV and other third party software via an ODBC connection.
- Microsoft Dynamics NAV XMLport objects allow system administrators to import data into NAV in an XML format for a streamlined way of exchanging information.
- Extensible web services allow for real-time data sharing and the integration of business processes across disparate business applications: The Web Services Layer connects with the Business Services Layer to provide security, policy validations, defaulting, and exception management. These two layers then interact with the Business Logic and Persistence Layer within eConnect providing reliable and secure integration solutions.
- Extensible business reporting language (XBRL), an XML-based protocol, uses customary financial reporting criteria to export across many financial software products and technologies.
- Transact-SQL stored procedures, the database language that manages the ERP software application and database, is built to allow financial reporting to be consumed in multiple languages and formats. Financial information is imported automatically without the need for manual entry.
- The software customization capabilities of Microsoft Dynamics NAV allows users to make simple or complex modifications without extensive IT involvement due to its technology architecture and secure integration with the Microsoft technology stack (including SQL Server, .NET, Windows Workflow Foundation, etc.).
- Some of the software development tools that allow for customization to the Dynamics NAV ERP software are an application builder, which allows for additional functionality to be built, but does not allow access to the write-protected tables; a page and form designer, which allows the creation of up to 100 forms and objects and gives customization options of new menu items; a dataport designer that permits access to write-protected tables, the creation of business rules and new calculations, and the ability to customize reports; a solution developer, which permits complete development control and the merging of menus and new data types that can be integrated into the base ERP application; a table designer that allows users to customize multiple styles of reports or tables for organizational or individual user needs; and an XML port designer that allows for the customization of XMLport objects

## MODULES

### Financial Management

Microsoft Dynamics NAV ERP system offers a complete general ledger solution that provides finance and accounting solutions for tracking and analyzing all your company's financial information.



The screenshot displays the 'G/L Registers' window in Microsoft Dynamics NAV. The window title is 'G/L Registers - Microsoft Dynamics NAV'. The breadcrumb navigation shows 'Cronus Demo SRL' > 'Departments' > 'Financial Management' > 'General Ledger' > 'History' > 'G/L Registers'. The left sidebar contains a navigation pane with 'General Ledger' highlighted. The main area shows a list of general ledger entries. The columns are: No., Creation Date, Posti... Date, Document Type, Document No., Ext... Do..., G/L Acco..., Description, Debit Amount, Credit Amount, and Add-C... Debit A. The entries are filtered by 'Filter: 27062..27071'. The entry with No. 5162 is highlighted in red.

No.	Creation Date	Posti... Date	Document Type	Document No.	Ext... Do...	G/L Acco...	Description	Debit Amount	Credit Amount	Add-C... Debit A
5175	20.01.2020									
5174	20.01.2020									
5173	20.01.2020									
5172	20.01.2020									
5171	13.01.2020									
5170	16.12.2019									
5169	11.12.2019									
5168	11.12.2019									
5167	10.12.2019									
5166	10.12.2019									
5165	10.12.2019									
5164	10.12.2019									
5163	10.12.2019									
5162	05.12.2019									
5161	22.11.2019									
5160	12.11.2019									
5159	31.10.2019									
5158	28.10.2019									
5157	16.10.2019									
5156	10.10.2019									

With end-to-end integration, administration of all financial tasks such as creating and maintaining a general ledger; managing analytical accounting, inventory, cash flow, manufacturing costs, bank accounts, and fixed assets; as well as posting transactions; preparing financial statements; and reconciling accounts and collections across multiple companies, locations, and currencies is easily managed. Microsoft Dynamics NAV makes it easy to accomplish a spectrum of financial management tasks, such as:

- Setting up accounts in the chart of accounts. For each account established, there is a balance/budget window that shows budget figures and/or actual figures for the entire chart of accounts, or for individual accounts.
- Viewing continually updated balances and net changes.
- Checking how journal entries will affect the liquid accounts before they are posted. Easily track posted general ledger entries and reverse entries that were posted with incorrect information.
- Entering figures in the general journal in any currency.
- Defining the fiscal year as beginning on any date and dividing it into accounting periods.
- Creating budgets in a matrix window, for a day, week, month, quarter, year, or any accounting period.
- Developing budgets based on department, project, or business unit.

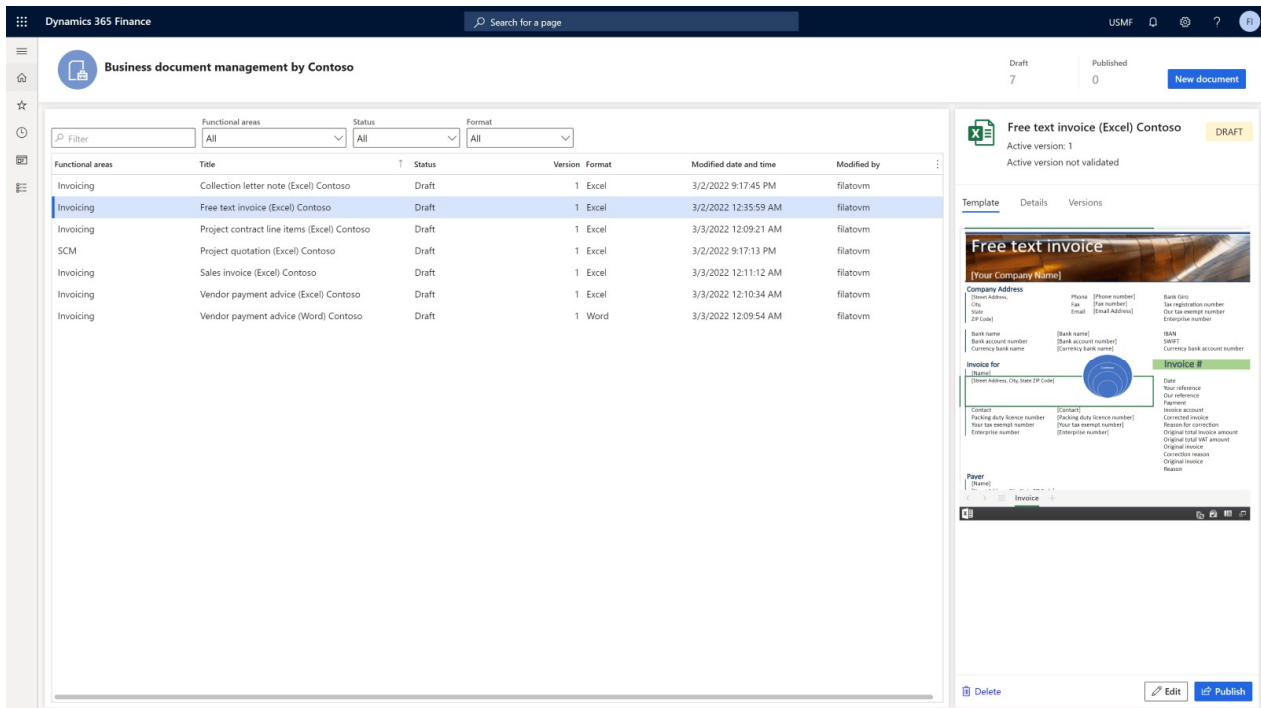
Microsoft Dynamics 365 Finance interface showing a 12 Month Trend Income Statement for Contoso Entertainment System USA. The report is displayed in US Dollars (USD) for the period ending 12/31/2016. The table lists various income and expense categories across the months of January through December, along with Year-to-Date (YTD) totals.

	January	February	March	April	May	June	July	August	September	October	November	December	YTD
<b>Sales</b>	4,283,678.52	4,357,309.52	4,357,309.52	4,329,229.94	4,283,179.77	4,357,300.11	4,329,237.28	4,357,334.82	4,544,640.20	4,749,322.44	4,908,875.56	7,250,070.04	56,107,487.72
<b>Sales Returns and Discounts</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Other Income</b>	184.76	184.76	450.69	447.68	442.89	327.59	167.99	433.92	433.92	187.99	368.62	3,934.21	7,565.02
<b>Total Revenues</b>	<b>283,863.28</b>	<b>4,357,494.28</b>	<b>4,357,760.21</b>	<b>4,329,677.62</b>	<b>4,283,622.66</b>	<b>4,357,627.70</b>	<b>4,329,405.27</b>	<b>4,357,768.74</b>	<b>4,545,074.12</b>	<b>4,749,510.43</b>	<b>4,909,244.18</b>	<b>7,254,004.25</b>	<b>56,115,052.74</b>
<b>Cost of Goods Sold</b>	314.83	314.83	314.83	315.03	315.73	328.48	341.67	463.76	369.58	384.54	2,537,437.66	1,497,920.73	4,038,821.67
<b>Gross Profit</b>	<b>283,548.45</b>	<b>4,357,179.45</b>	<b>4,357,445.38</b>	<b>4,329,362.59</b>	<b>4,283,306.93</b>	<b>4,357,299.22</b>	<b>4,329,063.60</b>	<b>4,357,304.98</b>	<b>4,544,704.54</b>	<b>4,749,125.89</b>	<b>2,371,806.52</b>	<b>5,756,083.52</b>	<b>52,076,231.07</b>
<b>Manufacturing Expenses</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(45,805.36)	0.00	1,200.00	(77,750.57)	258,672.42	136,316.49
<b>Selling and Advertising Expenses</b>	95,197.85	96,800.52	96,800.52	95,983.16	95,173.70	96,776.16	95,929.04	96,767.99	100,036.14	103,435.01	106,086.13	63,636,052.97	64,715,039.19
<b>Salary Expenses</b>	506,814.37	504,480.75	505,765.98	496,034.76	496,017.50	448,113.53	425,859.83	480,335.10	402,778.98	401,449.85	425,956.54	374,994.41	5,550,561.60
<b>Other Employee Expenses</b>	86,476.08	98,566.22	121,441.33	98,566.22	95,917.40	92,143.96	77,036.33	109,924.73	87,049.62	65,664.37	99,838.85	73,555.83	1,106,180.94
<b>Vehicle, Building and Maintenance and Administration Expenses</b>	129,791.22	128,287.72	129,756.54	128,975.03	129,725.75	128,955.33	129,665.69	129,657.18	129,039.09	129,865.35	129,124.28	130,030.80	1,552,873.98
<b>Depreciation Expenses</b>	83,982.25	83,982.25	83,982.25	83,972.25	83,972.25	83,972.25	83,972.25	83,972.25	83,952.26	83,952.25	83,952.26	85,305.58	1,008,970.37
<b>Tax Expenses</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Travel and Entertainment Expenses</b>	6,708.67	6,708.67	6,708.67	6,708.67	6,708.67	6,708.06	6,707.45	6,706.83	6,706.16	6,705.49	6,704.80	6,704.07	80,486.21
<b>Other Expenses</b>	76,515.15	91,215.19	87,443.51	75,913.76	91,036.59	89,655.19	74,057.65	114,691.35	87,860.19	61,650.40	103,161.28	260,692.32	1,213,872.58
<b>Total Operating Expenses</b>	<b>985,485.59</b>	<b>1,010,041.32</b>	<b>1,111,898.80</b>	<b>988,153.85</b>	<b>998,551.87</b>	<b>946,324.48</b>	<b>893,228.25</b>	<b>976,250.07</b>	<b>897,422.44</b>	<b>853,902.72</b>	<b>877,073.57</b>	<b>64,825,968.40</b>	<b>75,364,301.36</b>
<b>Interest Income</b>	184.76	184.76	450.69	447.68	442.89	327.59	167.99	433.92	433.92	187.99	368.62	3,934.21	7,565.02
<b>Gains and Losses</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Net Operating Income</b>	<b>3,298,247.62</b>	<b>3,347,322.89</b>	<b>3,245,997.27</b>	<b>3,341,656.42</b>	<b>3,285,197.95</b>	<b>3,411,302.33</b>	<b>3,436,003.34</b>	<b>3,381,488.83</b>	<b>3,647,716.02</b>	<b>3,895,411.16</b>	<b>1,495,101.57</b>	<b>(59,065,950.67)</b>	<b>(23,280,505.27)</b>
<b>Income Taxes, Interest, and Extraordinary Items</b>	48,080.10	49,041.70	49,041.70	48,551.25	48,065.75	49,027.10	48,536.85	49,022.20	50,983.10	53,022.40	54,613.10	57,343.75	605,329.00
<b>Net Income</b>	<b>3,250,167.52</b>	<b>3,298,281.19</b>	<b>3,196,955.57</b>	<b>3,293,105.17</b>	<b>3,237,132.20</b>	<b>3,362,275.23</b>	<b>3,387,466.49</b>	<b>3,332,466.63</b>	<b>3,596,732.92</b>	<b>3,842,388.76</b>	<b>1,440,488.47</b>	<b>(59,123,294.42)</b>	<b>(23,885,834.27)</b>

Other financial management features of Microsoft Dynamics NAV designed to enhance manufacturing capabilities include

- FlowFields, which updates and recalculates continually to ensure that users receive up-to-the-moment financial data;
- Cash Manager, a bank account management system that allows users to create and modify bank accounts, transfer funds between bank accounts, and also automates the complete check-writing process;
- Lookup Buttons that can be used to get direct access to information in a table format eliminating the need for any data re-entry;
- Payables and Receivables, which allows users to define payment terms, payment methods, discount periods, and finance charge terms;
- Security features that allow management to specify who can view what information using record-level security;
- Traceability, which ensures that all transactions have an unmitigated audit trail, creating complete transparency; and
- VAT, Sales Tax, and Other Use Taxes—Uses posting groups to automatically calculate VAT, sales tax, excise tax, or other use taxes for customers and vendors. Specify whether unit prices on sales and purchase lines should include or exclude the tax. For VAT, check that VAT registration numbers fit country standards and are not incorrectly duplicated for another customer or vendor in the database.

- Fixed Assets that defines particulars for an asset or group assets from acquisition to disposal and also reports the required depreciation conditions.
- Prepayments—The new Prepayments feature enables users to create prepayment invoices based on a sales order, percentages, or amounts. The system keeps track of created prepayment invoices until the order is fully invoiced. This helps to avoid the errors that can occur when handling prepayments manually.



The screenshot shows the Dynamics 365 Finance interface for business document management. The left pane displays a list of documents under the 'Business document management by Contoso' section. The table lists documents with columns for Functional areas, Title, Status, Version, Format, Modified date and time, and Modified by. The 'Free text invoice (Excel) Contoso' document is highlighted.

Functional areas	Title	Status	Version	Format	Modified date and time	Modified by
Invoicing	Collection letter note (Excel) Contoso	Draft	1	Excel	3/2/2022 9:17:45 PM	flatovm
Invoicing	Free text invoice (Excel) Contoso	Draft	1	Excel	3/2/2022 12:35:59 AM	flatovm
Invoicing	Project contract line items (Excel) Contoso	Draft	1	Excel	3/3/2022 12:09:21 AM	flatovm
SCM	Project quotation (Excel) Contoso	Draft	1	Excel	3/2/2022 9:17:13 PM	flatovm
Invoicing	Sales invoice (Excel) Contoso	Draft	1	Excel	3/3/2022 12:11:12 AM	flatovm
Invoicing	Vendor payment advice (Excel) Contoso	Draft	1	Excel	3/3/2022 12:10:34 AM	flatovm
Invoicing	Vendor payment advice (Word) Contoso	Draft	1	Word	3/3/2022 12:09:54 AM	flatovm

The right pane shows the 'Free text invoice (Excel) Contoso' document details. It includes a 'Draft' status, 'Active version: 1', and a 'New document' button. Below this, there are tabs for 'Template', 'Details', and 'Versions'. The 'Details' tab is active, showing a preview of the 'Free text invoice' template. The preview includes fields for Company Address, Invoice for, Invoice #, and various tax and company information.

- Account Schedule Improvements—The new Percent of Total feature makes it easier to assign a percentage of revenue for product groups. The feature includes more advanced options for selecting what to display in row/column combinations, such as showing debit amounts only, or only showing a number when there is a debit balance. New features also make it easier to create cash flow statements as well as statutory reports where a specific format is required.
- Inventory Costing—Enhancements to inventory costing include real-time cost updates on sales and customer statistics, an Inventory Closing feature, and new reporting tools for general ledger inventory and item value dynamics which can help improve the trustworthiness of costing data and provide better traceability. With an improved cost reversal (returns) process, the ability to undo item entry application, more resilient costing-related batch jobs, and simplified costing setup on the item card, Microsoft Dynamics NAV continues to streamline financial processes and enhance usability.
- Intercompany Purchase Invoice Distributions—Intercompany Postings makes it easier to distribute purchase invoice costs to partner companies to reduce manual rekeying of information for all companies and transactions and reduces the potential for error.



- **Record Links**—A typical organization creates a lot of unstructured data and documents in the work process. This information can be relevant for the users of Microsoft Dynamics NAV and be more valuable when it is combined with the information available in the structured world of an enterprise resource planning (ERP) system. Users can now add links to documents for any record in Microsoft Dynamics NAV. The documents can be stored in Microsoft Windows® SharePoint Services or on a file server.
- **Microsoft Office Open XML Formats**—The new Export Using Office XML functionality makes it easier for users to move data from Microsoft Dynamics NAV to other programs such as Word or Excel. Supporting Office XML Formats also opens new opportunities for partners to create links to data in other programs.
- **Sales and Purchasing Document Approval**—This new feature provides approval processes for sales and purchasing documents including:
  - The ability to approve and reject with comments.
  - The ability to delegate approval to another.
  - SMTP mail notification to Approvers and Overdue Approvals notifications.
  - Links to purchase and sales source documents in Windows SharePoint Services.
- **Extended Address Length**—The extension now enables names and addresses to be 50 characters instead of 30. This helps free users from naming customers, vendors, contacts, and other entities with abbreviations.
- **Online Map Integration**—Integration with Microsoft MapPoint® and other online map services enables the user to get extended address features offered with Microsoft Dynamics NAV. MapPoint functionality shows a location on a map and enables the user to get directions from one location to another.
- **Enhanced User Experience**—The graphical user interface has been enhanced to make it easier to perform common tasks. The redesign has also reduced the number of steps required to complete many functions. Users will work more efficiently because they can have an individual, tailored program that fits their tasks in the most optimal way.

## Human Resource Management

The Human Resource Management (HR) functionality in Microsoft Dynamics NAV ERP software efficiently organizes and processes detailed employee records: Maintain all employee records such as employment contracts, absences, qualifications, confidential information, experience, skills, training, education, and union memberships.

Microsoft Dynamics NAV HR software helps to manage all areas of human resources easily and accurately by eliminating the time-consuming, manual process of redundant data entry and decreasing the margin of error. RoleTailored access and tight security features ensure that sensitive information gets delivered to only the right people.

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Other features of Microsoft Dynamics NAV Human Resource Management include the ability to:

- store personal information;
- track job openings within your organization;
- extract a list of candidates for newly-opened positions;
- Keep track of employee benefits and company items such as keys, credit cards, cars, and computers;
- record all types of absences in customizable units of measurement;
- attach comments, alternative addresses, and relatives' names to employees' records;
- keep payroll in-house instead of outsourcing it;
- meet complex regulatory and compliance requirements;
- generate reports; and
- remember employees' birthdays and important dates.



## 1.6 FINANCIAL MANAGEMENT SYSTEM AND HUMAN RESOURCES MANAGEMENT SYSTEM

#	FUNCTIONS	KEY PROCESSES
FINANCIAL MANAGEMENT AND SUPPORT FUNCTIONS		
1	FINANCE	<ul style="list-style-type: none"> <li>General Ledger</li> </ul>
1.1		<ul style="list-style-type: none"> <li>Planning and Budgeting</li> </ul>
1.2		<ul style="list-style-type: none"> <li>Revenue Management</li> </ul>
1.3		<ul style="list-style-type: none"> <li>Expenditure Management</li> </ul>
1.4		<ul style="list-style-type: none"> <li>Accounts Payable</li> </ul>
1.5		<ul style="list-style-type: none"> <li>Accounts Receivable</li> </ul>
1.6		<ul style="list-style-type: none"> <li>Cash Management</li> </ul>
1.7		<ul style="list-style-type: none"> <li>Financial Reporting</li> </ul>
1.8		<ul style="list-style-type: none"> <li>Auditing</li> </ul>
2	PROCUREMENT	<ul style="list-style-type: none"> <li>Procurement Planning</li> </ul>
2.1		<ul style="list-style-type: none"> <li>Procurement Requisition</li> </ul>
2.2		<ul style="list-style-type: none"> <li>Suppliers Management</li> </ul>
2.3		<ul style="list-style-type: none"> <li>Approvals and Workflows</li> </ul>
2.4		<ul style="list-style-type: none"> <li>Contract Management</li> </ul>
2.5		<ul style="list-style-type: none"> <li>Procurement Reporting</li> </ul>
3	INVENTORY MANAGEMENT	<ul style="list-style-type: none"> <li>Inventory Receiving</li> </ul>
3.1		<ul style="list-style-type: none"> <li>Inventory Management</li> </ul>
3.2		<ul style="list-style-type: none"> <li>Inventory Requisition</li> </ul>
3.3		<ul style="list-style-type: none"> <li>Inventory Reporting</li> </ul>
4	HUMAN RESOURCES	<ul style="list-style-type: none"> <li>Human Resource Management</li> </ul>
4.1		<ul style="list-style-type: none"> <li>- structure and control,</li> </ul>
4.2		<ul style="list-style-type: none"> <li>- Recruitment,</li> </ul>
4.3		<ul style="list-style-type: none"> <li>- Staff bio data,</li> </ul>
4.4		<ul style="list-style-type: none"> <li>- employee self-service,</li> </ul>
4.5		<ul style="list-style-type: none"> <li>- leave management,</li> </ul>
4.6		<ul style="list-style-type: none"> <li>- attendance and time,</li> </ul>
4.7		<ul style="list-style-type: none"> <li>- Staff Advances,</li> </ul>
4.8		<ul style="list-style-type: none"> <li>- Training &amp; capacity building</li> </ul>
4.9		<ul style="list-style-type: none"> <li>- Benefits</li> </ul>
4.10		<ul style="list-style-type: none"> <li>- Overtime</li> </ul>
4.11		<ul style="list-style-type: none"> <li>Human Resources Reporting</li> </ul>
5	PAYROLL	<ul style="list-style-type: none"> <li>Payroll preparation</li> </ul>
5.1		<ul style="list-style-type: none"> <li>Payroll Management</li> </ul>
5.2		<ul style="list-style-type: none"> <li>Payroll Reporting</li> </ul>
6	FIXED ASSETS	<ul style="list-style-type: none"> <li>Fixed Assets Recording</li> </ul>
6.1		<ul style="list-style-type: none"> <li>Fixed Assets Management</li> </ul>
6.2		<ul style="list-style-type: none"> <li>Fixed Assets Accounting and</li> </ul>
6.3		<ul style="list-style-type: none"> <li>Fixed Assets Reporting</li> </ul>
7	RECORDS AND DOCUMENT MGT	<ul style="list-style-type: none"> <li>Office Operations documents,</li> </ul>
7.1		<ul style="list-style-type: none"> <li>Hospital (unique) documents and images (scans).</li> </ul>

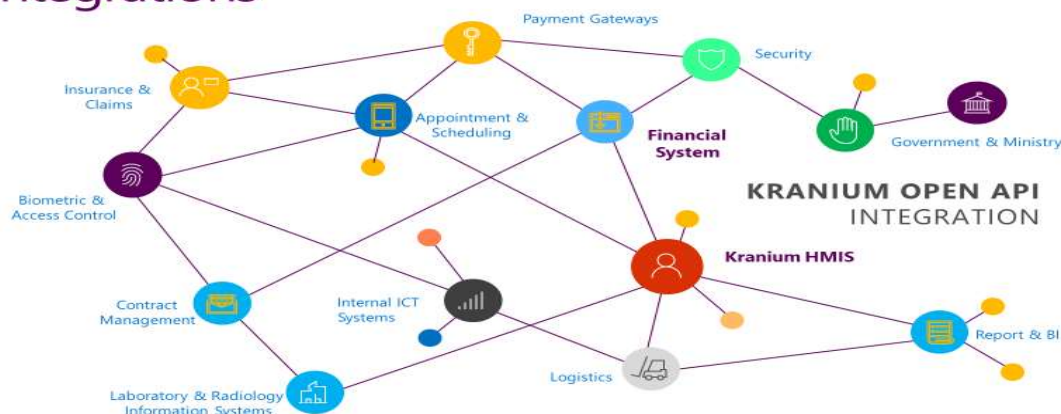
7.2		▪ Scanning/digitization,
7.3		▪ Coding and Indexing,
7.4		▪ Uploading of records,
7.5		▪ Workflow management,
7.6		▪ Archiving and retrieval,
7.7		▪ Records versioning,

## 1.7 THE INTEGRATION STORY

The common phrase, “United we stand, divided we fall,” applies to more than just war movies and superhero TV shows. It’s also a great example of why ERP integration is key to running a successful business. By putting together multiple “best of breed” applications to build or fortify a near-custom ERP solution, your business can automate processes and increase revenue.

Integration is a way of connecting Kranium HMIS to other systems to ensure that consistent information is shared while also automating workflows. It is useful because it affects relationships between Kranium and other hospital systems so that businesses can customize and select the specific tools they want to have in their solutions. The most extreme form of this is called Enterprise Service Bus. This method is a new way of developing a personalized Integration Engine for a company that uses solutions from various vendors to essentially build a completely unique Healthcare Provider.

### Integrations



#### 1.7.1 BENEFITS OF INTEGRATION

Now that we have a basic understanding of ERP integration and what exactly it does, we can go into more detail. Let’s examine some of the key benefits associated with ERP system integration and how they could positively influence your company’s bottom line.

**Centralized data** - Having all of your data in one accessible location can significantly improve internal workflows. For example, your accounting team wouldn’t have to reach out to the sales team every month for

an updated record of revenue made. Ultimately, having data available in a centralized location helps to facilitate business processes and reduces the amount of time that employees spend waiting on people in different departments to provide them with information necessary to complete important tasks.

**Automated processes** - The more automation, the better. ERP integrations can streamline processes across various departments and workflows. This reduces the amount of manual input required and the time that it takes for tasks to be completed.

**Workflow visualization** - Higher visualization of the tasks and workflows of your business goes hand-in-hand with data centralization. Additionally, integration with a tool such as project management software can allow employees to see what their peers are working on. This can be beneficial when requesting feedback from a fellow employee or assigning a priority level to tasks. For example, if you need a standard report from a manager, but see that they are working on a direct request from the CEO, you might downgrade the severity level of your inquiry accordingly.

**Reduction in human error** - Because ERP system integration can increase the amount of automation that occurs along business workflows, there is an opportunity to reduce human error. Typos and emails sent to the wrong client can negatively impact your business, so automation is a huge benefit. The amount of human error that occurs every day is incredible, so a reduction in this rate could give your company a competitive edge.

**More time for labor-intensive projects** - When you reduce the amount of time spent on tasks such as data entry, you free up employee time for other duties. Because of the wide range of processes that can be automated, your employees will now have more time for essential tasks that require human input, therefore improving productivity.

Following are the 3<sup>rd</sup> Party System we have already integrated seamlessly:

1	Microsoft Dynamics Navision	Backend ERP for Finance and HR	One of the most successful integration is between Kranium and NAV. Seamless integration allows realtime flow of financial data that allows generation of financial report instantly. Used by 87% of our customers. We provide MS Dyancmis NAV as a module to our customers.
2	Sage AccPac	Backend ERP for Fiancne	Kranium is vendor agnostics and the open integration API allows integration to various other vendors. One of the next popular accounting tool is Sage and our integration is tested, tried and stable at multiple sites.
3	SMART Link	Medical Scheme Management	Covering all active sites, Kranium is tightly integrated with the most popular biometric medical scheme management system in East Africa.
4	Carepay	Health Payment Platform	Started as MTIBA, this is a private & public health payment platform which revolutionised the payer-provider interaction at sites powered by Kranium
5	Mpesa	Payment Platform	The basic need for payment in Kenya is mpesa and Kranium is tightly integrated to the latest mpesa platform. Enjoy this default integration which is bundled with the Kranium billing module.
6	Liaison	Medical Sceme Management	
7	Savannah or Slade 360	Medical Sceme Management	
8	Bank Pin Pads	Payment	We have integrated with almost all PoS and Pin Pads from the transaction acquiring banks. This allows seamless billing via banking channels.
9	Laboratory Analyzers		2 way communiation between lab alanyszers and lab order form in Kranium allows automated poplulation of lab results in the system this eliminating humar error reduses Turn Around Time (TAT). Explaiend in Chapter 3.1