Hospital Management System

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from

Skysoft Consultancy Services Private Limited

BUSINESS LINES

- **Custom Application Development**

- **Application Product**

- **Product Integration**

- **Web development / Portal**

- **Database Consulting**

An Overview of SKY-HMS

- **SKY-HMS is a comprehensive and integrated Hospital Management System designed and developed in state-of-the-start web based technology.**

- **SKY-HMS is fully geared up to meet the demands of executing an end-to-end solution for a multi-specialty Hospital or a Clinic.**

- **SKY-HMS has been conceived by a team of seasoned professionals with rich and relevant experience in the healthcare & IT industry.**

- **The system incorporates the best healthcare practices and is designed to deliver key tangible benefits to clients.**

Technology Stack

State of art – 3 tier Web based Technology

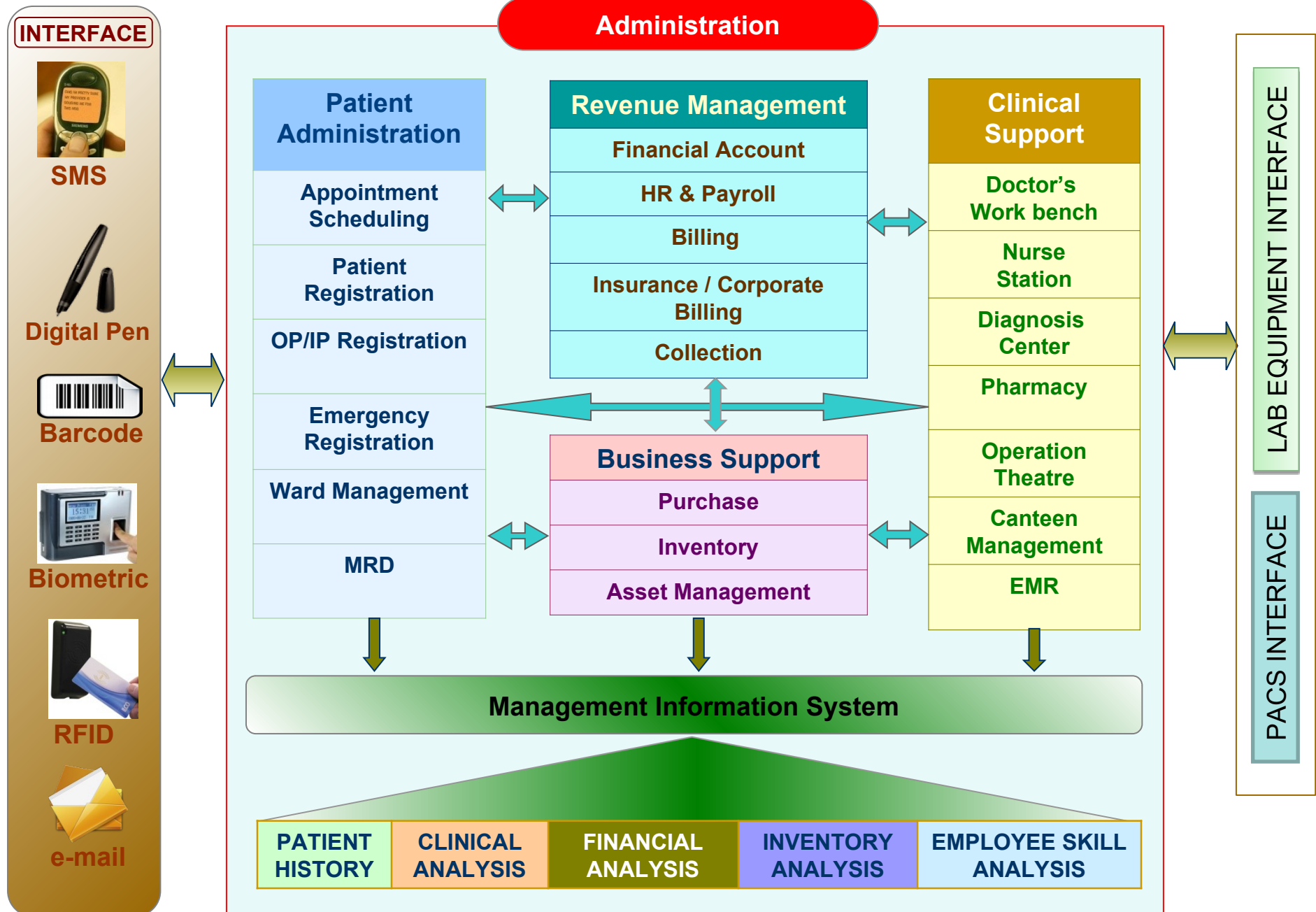|	
User Interface	Web browser (Internet Explorer, Firefox, Chrome)
Web Server	Internet Information Server ver 8.0
Application Layer	Dot Net Frame Work ver 4.5
Data Layer	ORACLE DATABASE ver 11G or above

SCHEMATIC REPRESENTATION OF HOSPITAL INFORMATION MANAGEMENT SYSTEM

INTERFACE

SMS

Digital Pen

Barcode

Biometric

RFID

e-mail

Administration

Patient Administration

Appointment Scheduling

Patient Registration

OP/IP Registration

Emergency Registration

Ward Management

MRD

Revenue Management

Financial Account

HR & Payroll

Billing

Insurance / Corporate Billing

Collection

Business Support

Purchase

Inventory

Asset Management

Clinical Support

Doctor's Work bench

Nurse Station

Diagnosis Center

Pharmacy

Operation Theatre

Canteen Management

EMR

LAB EQUIPMENT INTERFACE

PACS INTERFACE

Management Information System

| PATIENT HISTORY | CLINICAL ANALYSIS | FINANCIAL ANALYSIS | INVENTORY ANALYSIS | EMPLOYEE SKILL ANALYSIS |

Modules

#	Module	#	Module
1	Front Office	13	Medical Record Document
2	Ward Management	14	Case Sheet
3	Doctors Station	15	Financial Accounts
4	Nurse Station	16	Asset Management
5	Diagnosis Centre	17	HR and Payroll
6	Billing	18	Emergency Registration
7	Operation Theatre	19	Administration
8	Purchase	20	Infra. Maintenance Management
9	Inventory	21	Optical Inventory
10	Pharmacy	22	Diet & Kitchen
11	Consumable Inventory for LAB	23	House Keeping
12	Insurance		

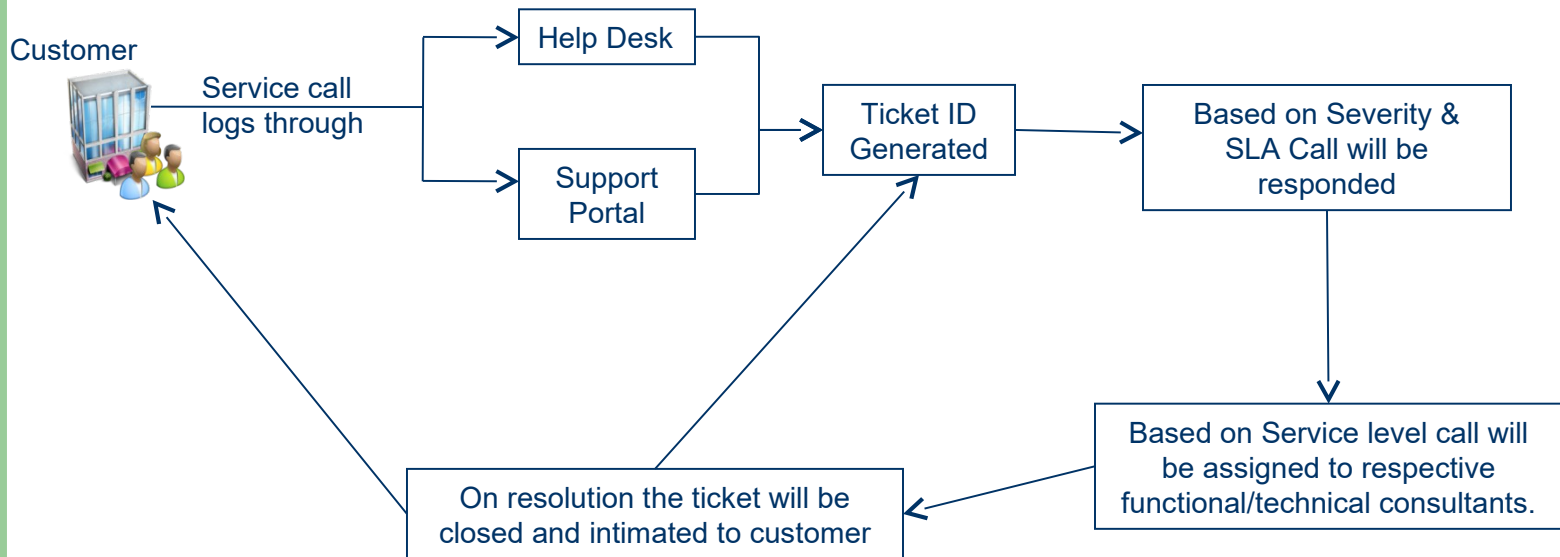# Software Requirements

Layer	Application	O/S
User Interface	Internet Explorer, Firefox, Chrome	Windows
Web Services	Internet Information Server	Windows
Application Layer	Dot Net Frame Work	Windows
Data layer	Oracle 10G or 11G	Windows/ Linux

Hardware Architecture

Internet

Clients
(Windows/Linux)

Database Server

Application Server
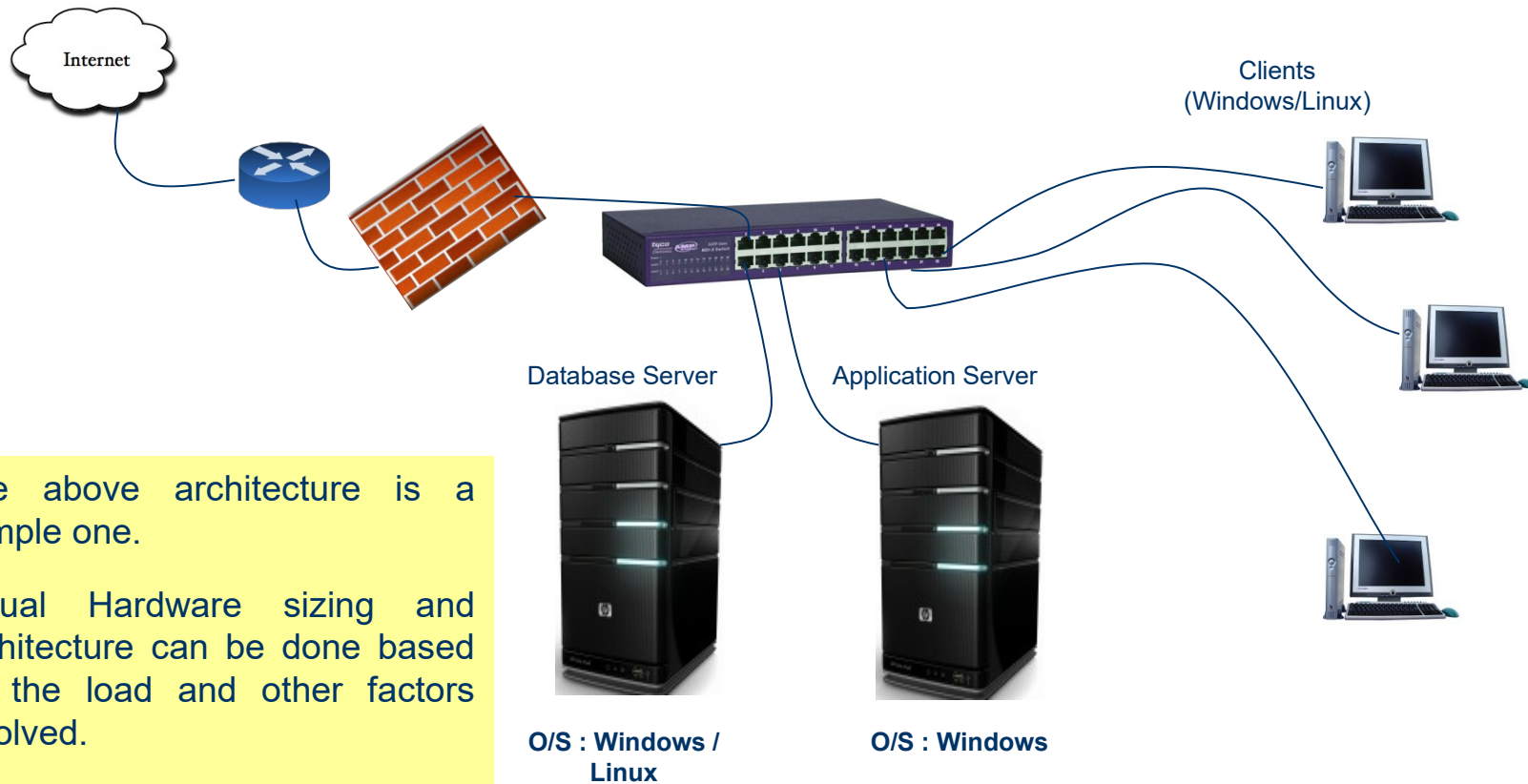
- The above architecture is a sample one.

- Actual Hardware sizing and architecture can be done based on the load and other factors involved.

- Hence the sizing & infra can be scaled up or down based on the actual deployment requirements

O/S : Windows / Linux

O/S : Windows

Service Call Registration & Delivery Model

Customer

Service call logs through

Help Desk

Support Portal

Ticket ID Generated

Based on Severity & SLA Call will be responded

Based on Service level call will be assigned to respective functional/technical consultants.

On resolution the ticket will be closed and intimated to customer

Support portal Screenshot

Level Wise Service Delivery

Level 1	Level 2	Level 3	Level 4
• Help Desk Calls	• Application Management	• Performance Tuning	• New Developments
• Production Outages	• Database Monitoring	• Bug Fixing	• Approved projects
• User Login Problems are handled	• Application Monitoring	• Field Test & User Acceptance	• Set of change requests or business processes
• Call handling and management (end-to-end administration)	• Corrective Maintenance	• Release Management	
• Automated password reset	• Application administration	• Implementation Management	
• Self-help interface	• Production Environment Compliance	• Approved Enhancements	
• Dispatch	• Integration support		
• Common problem resolution			
• Escalation			
• Closure			
• Reporting			

Proposed Service Levels for Incident Management

(Sample)

Severity Level	Response Time	Resolution Time	Severity Level Definition	Expected Service Level	Support Availability
1 **Critical**	2 hours	4 business hours	Severe impact on the business. i.e., a problem which affects large number of users / Critical users in their immediate working	95%	According to the Agreed Support Window
2 **High**	4 hours	8 business hours	Substantial impact to the business. i.e., a problem that affects an individual user or few users which does not have direct impact to the business, but workarounds exists to ensure the department is operational.	90%	-do-
3 **Medium**	4 hours	12 business hours (1.5 days)	Error or bug in the system functionality that does not interrupt business processes Client unable to properly execute non-critical business activity and no workaround is available	90%	-do-
4 **Low**	8 hours	24 business hours (3 days)	Non-critical error or a cosmetic change that disrupts neither the functional nor operational flow Client unable to execute non-critical business activities and a workaround is available	85%	-do-

Module wise Process Flow

Front Office – Process Flow

Patient

- **Through Appointment**
- **W/o Appointment**

Is new Patient
- Yes → **Patient Registration**
- No → **OP Registration**

OP Registration → **Doctor Consultation** → **Admission Needed**
- No → **Other OP Process**
- Yes → **IP Registration & Ward/Room Assignment**

Emergency Registration → **ER to IP Conversion** → **IP Registration & Ward/Room Assignment** → **Other IP Process**
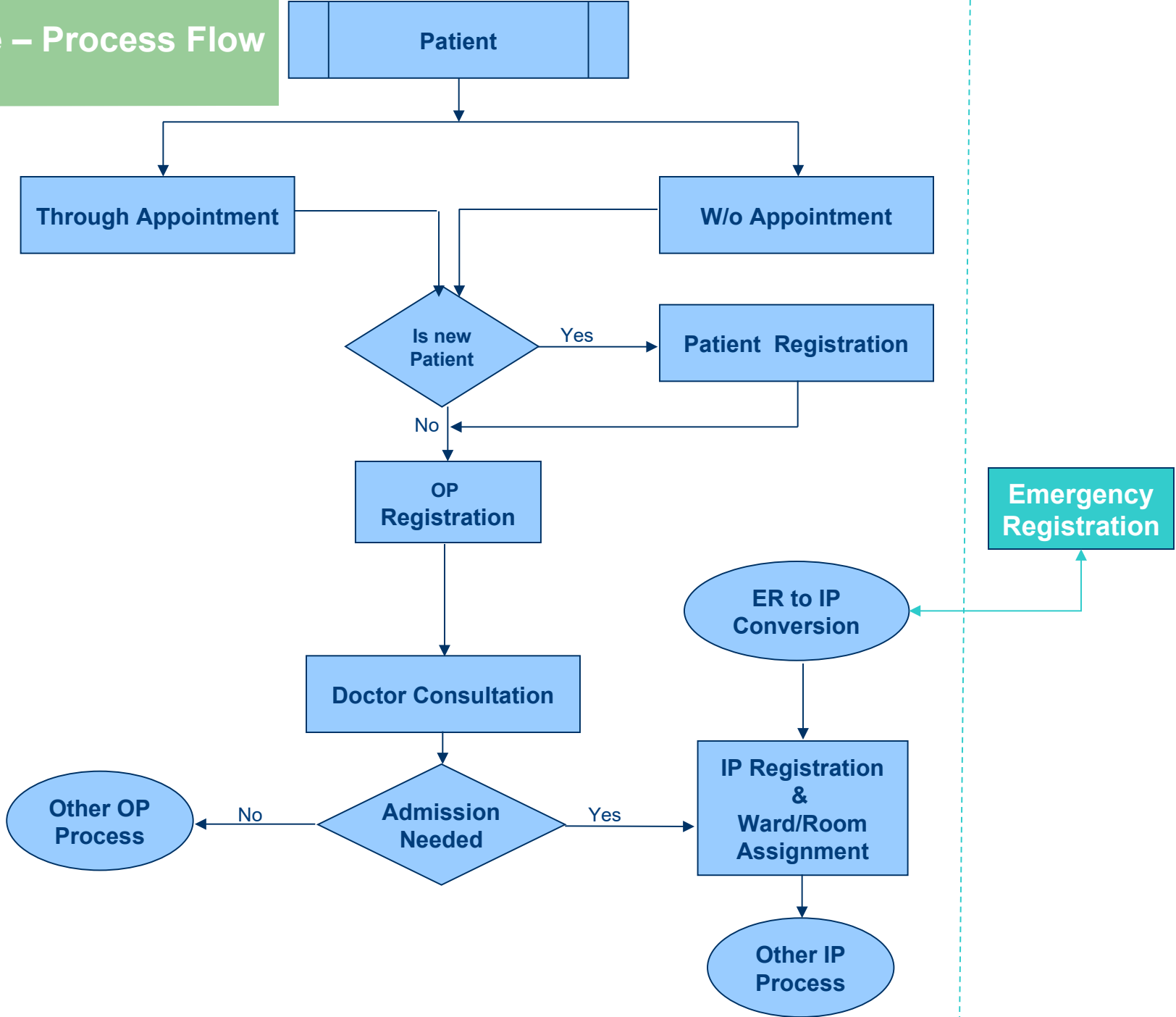
Front Office Module

- Appointment Schedule

- Patient Registration

- IP/OP Registration

- Ward Management

- Time based or Token No. based Scheduling is possible on consultant's wise

- Accommodate any permutation of Consultant's Visit

- Provision to book rooms in Advance

- Options to book Rooms for attenders

- Ability to Maintain Complete demography details

ER – Process Flow

```
                                    ┌──────────────┐
                                    │   Patient    │
                                    └──────┬───────┘
                                           │
                                           ▼
                                      ╱ Is new ╲        Yes      ┌──────────────────────┐
                                     ◁  Patient  ▷ ───────────▶ │ Patient Registration │
                                      ╲         ╱                └──────────┬───────────┘
                                           │ No                            │
  ┌──────────────┐                         │   ◀───────────────────────────┘
  │  Process for │                         ▼
  │    legal     │ ◀──────┐          ┌──────────────┐
  │ formalities  │        │          │     ER       │
  └──────┬───────┘        │          │ Registration │
         │            Yes │          └──────┬───────┘
         │                │                 │
         │          ╱  Is   ╲               │
         │         ◁ Medical ▷ ◀────────────┘
         │          ╲ Legal  ╱
         │           ╲ Case ╱
         │              │ No
         │              └────────────▶
         └───────────────────────────▶
```

Doctor Examination Notes	Nurse Examination Notes	Investigation Request	Medicine Request	Service Activities update	ER Material Indent

Diagnostic Center	Pharmacy

Billing
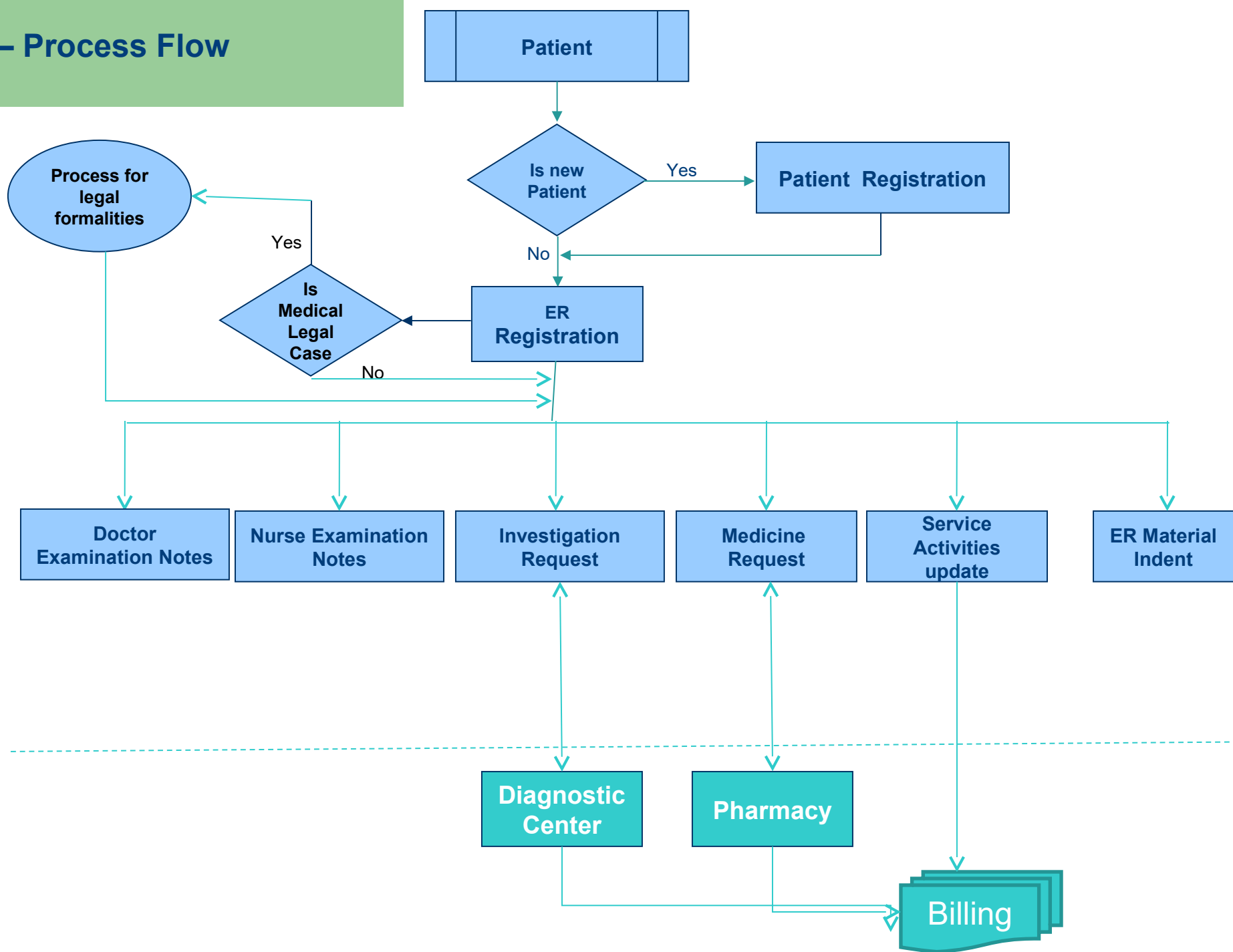
Clinical Support

- **Doctor's Station**

- **Nurse Station**

- **Diagnosis Center**

- **Operation Theatre Maintenance**

Doctor's Station

```
                              Doctor
                                 |
          +----------------------+----------------------+
          |                      |                      |
       OP List               Reports                 IP List
          |                      |                      |
   +------+                      |              +-------+
   |                             |              |
LAB Request                      |         IP Case Sheet
   |                             |              |
LAB Report View                  |         Discharge Summary
   |                             |
Prescription                     |
   |                             |
Case Sheet                       |
                                 |
                          Patient Analysis Reports
                          Clinical Analysis Reports
                          E H R
```
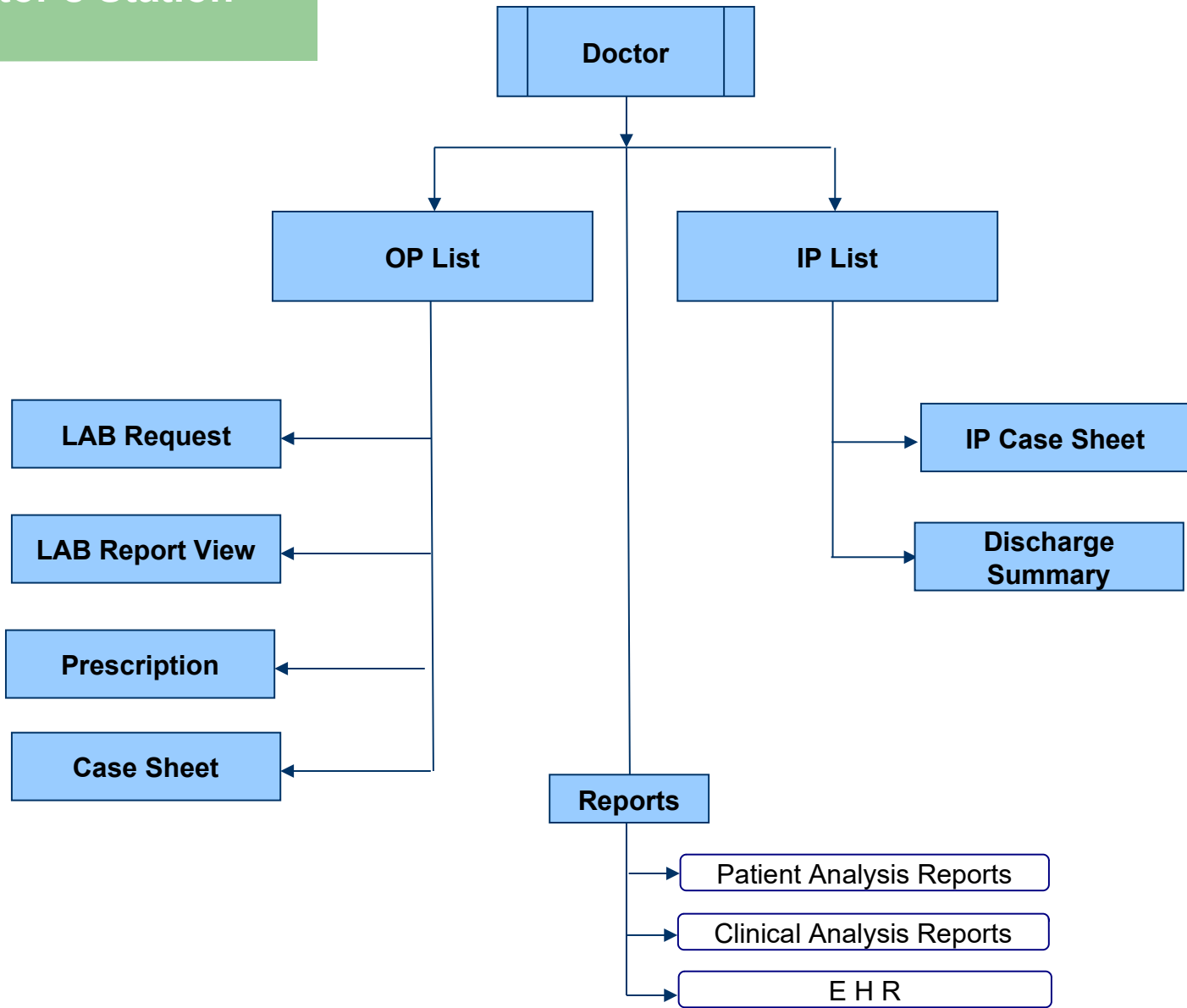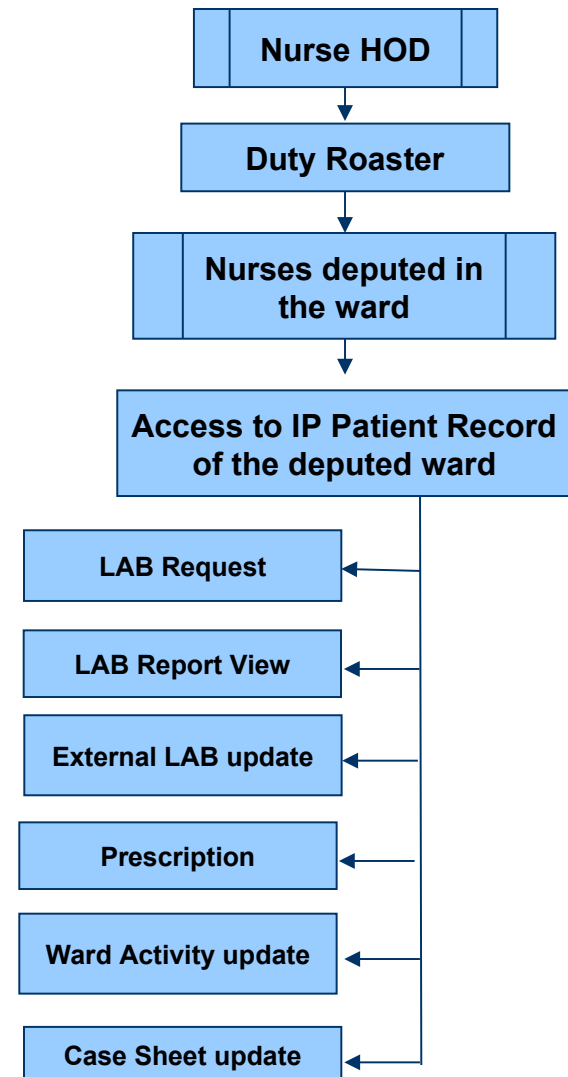
Clinical Support - Doctor's Station

- Ability to view their Appointment schedule
- Provision to view the IP/OP list
- Enable to Create IP/OP case sheets based on their specialty
- Ability to document patient details in Analytical and Descriptive manner
- Provision to update Lab result details in to the Case Sheet.
- Ability to prepare prescription & maintain. Patient Allergy details will be popped-up instantaneously.
- Options to view the Lab results of the patients
- Enable to view Electronic Medical Record of the patients.
- Ability to analyze patient clinical data
- Clinical Analysis Reports
- Doctor/Consultant Billing details.
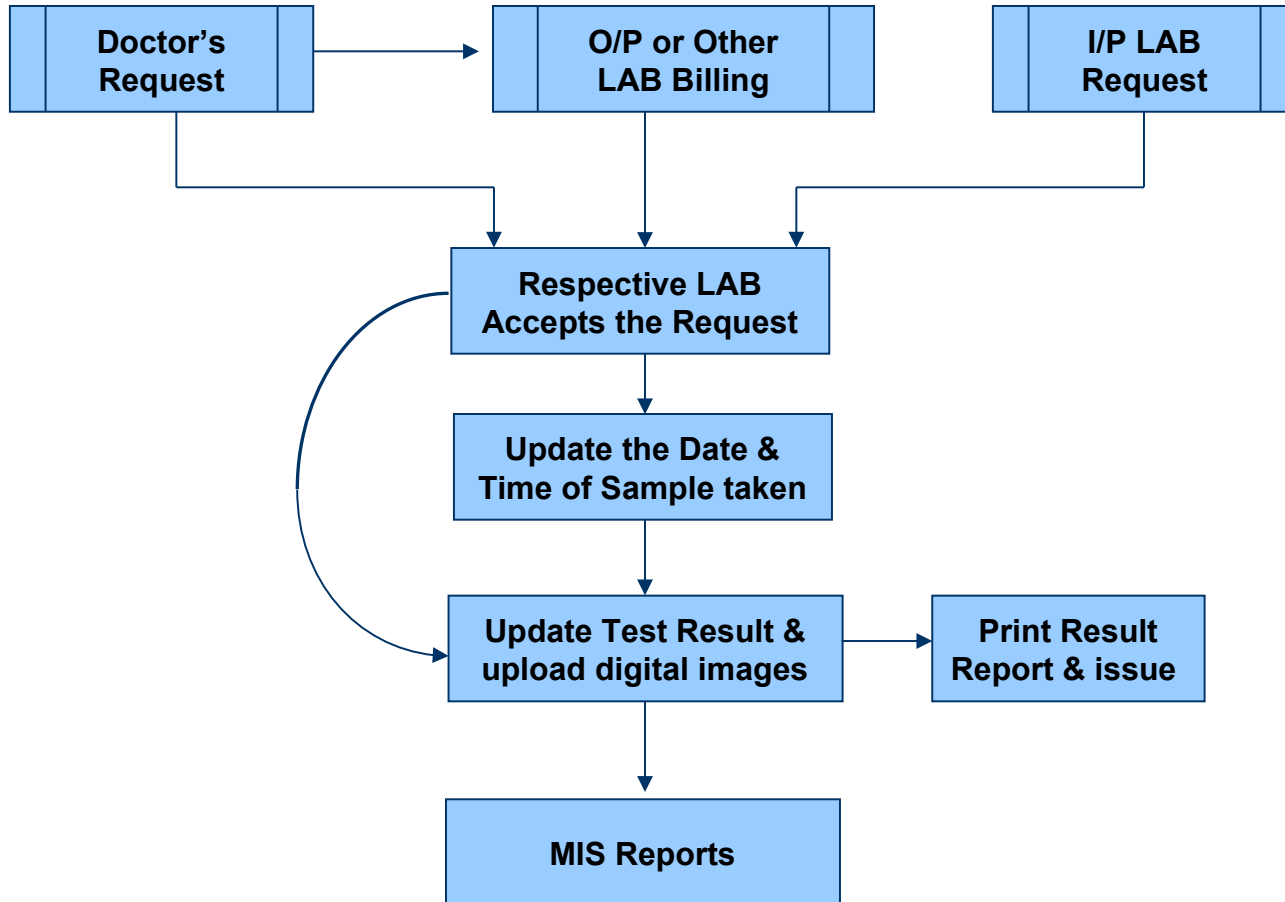- Provision to maintain Doctor's Notes.

Clinical Support - Nurse Station

- ➢ Provision to generate request for In-patients such as:
  - • Lab Request
  - • Medicine Request
  - • OT Request

- ➢ Ability to view the status of the Lab Request & view the Lab results.

- ➢ Option to update Lab reports done in the external labs.

- ➢ Provision to maintain Nurse's Notes.

```
Nurse HOD
    │
    ▼
Duty Roaster
    │
    ▼
Nurses deputed in the ward
    │
    ▼
Access to IP Patient Record of the deputed ward
    │
LAB Request         ◄──┤
LAB Report View     ◄──┤
External LAB update ◄──┤
Prescription        ◄──┤
Ward Activity update◄──┤
Case Sheet update   ◄──┘
```

Diagnosis Center

```
┌──────────────────┐        ┌──────────────────┐        ┌──────────────────┐
│  Doctor's        │───────▶│  O/P or Other    │        │  I/P LAB         │
│  Request         │        │  LAB Billing     │        │  Request         │
└──────────────────┘        └──────────────────┘        └──────────────────┘
          │                          │                          │
          └──────────────┬───────────┴──────────────────────────┘
                         ▼
              ┌──────────────────────┐
              │  Respective LAB      │
              │  Accepts the Request │
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │  Update the Date &   │
              │  Time of Sample taken│
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐       ┌──────────────────┐
              │  Update Test Result &│──────▶│  Print Result    │
              │  upload digital      │       │  Report & issue  │
              │  images              │       └──────────────────┘
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │  MIS Reports         │
              └──────────────────────┘
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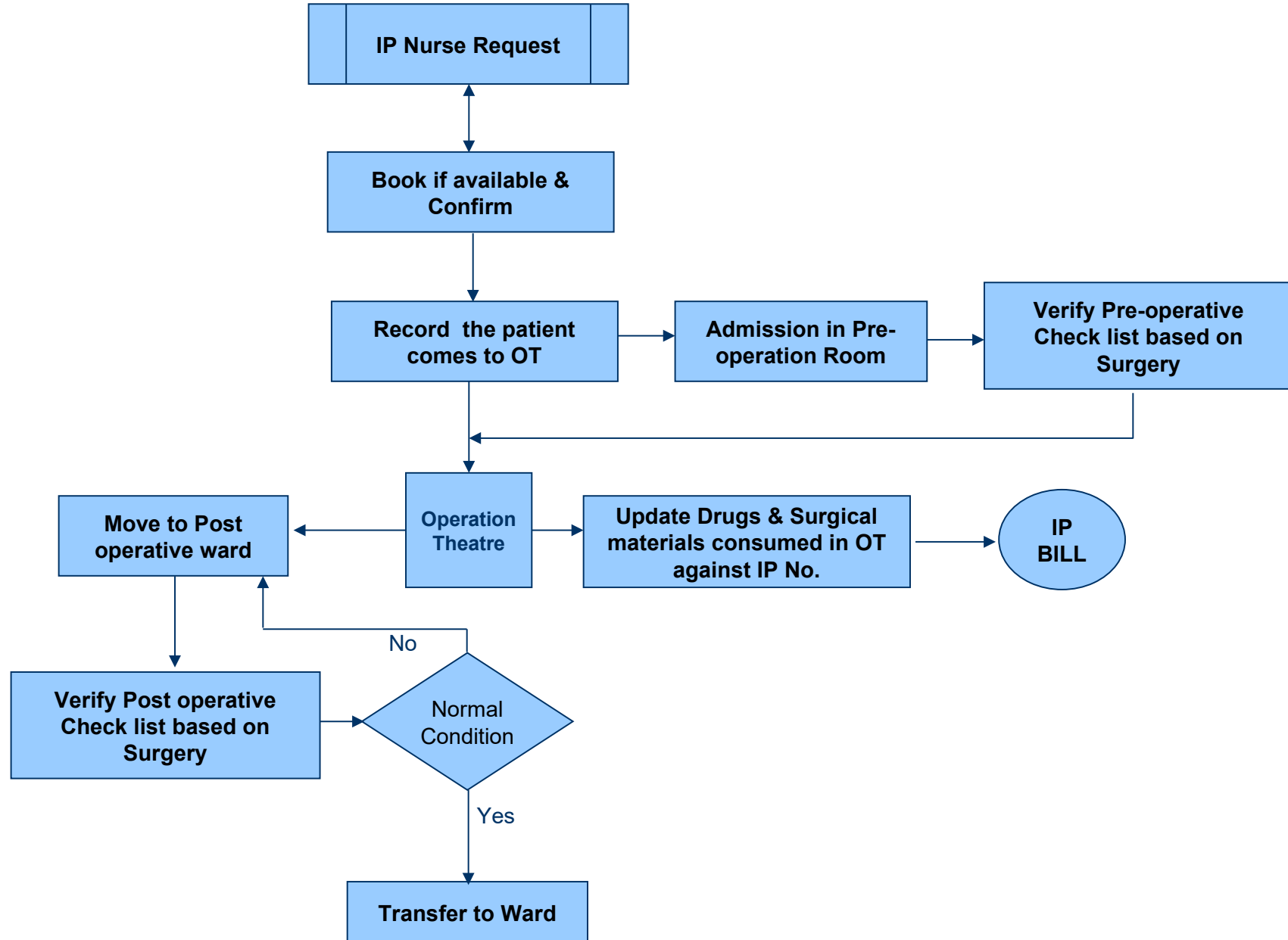
Clinical Support – Diagnosis Center

- ➢ SKY-HMS enables to define any number of Diagnosis Center
- ➢ Option to receive OP Lab request either through OP bills or through special request.
- ➢ Option to receive IP Lab request.
- ➢ Option to update Sample taken date and time
- ➢ Provision to update Lab result and can be enabled with approval process.
- ➢ Provision to upload the Lab results in the case sheets by the system
- ➢ Provision to create Profile, where by mapped /grouped with various tests
- ➢ Readily available Test masters list with Normal Reference values
- ➢ ANTIBIOTICS – Ability to maintain Antibiotic Masters for the Culture Antibiotic Sensitivity Tests. Specially designed form to update Culture Test results.
- ➢ Option for the Results can be printed with identification on abnormal values
- ➢ Provision given, while print the LAB results, order can be rearranged also option for print selective results.
- ➢ Provision to upload and maintain digital images
- ➢ Descriptive format of reports can be printed for other than Bio-chemistry Tests, based on the standard format defined in the master
- ➢ Lab Inventory can be maintained, if integrated with the inventory module.
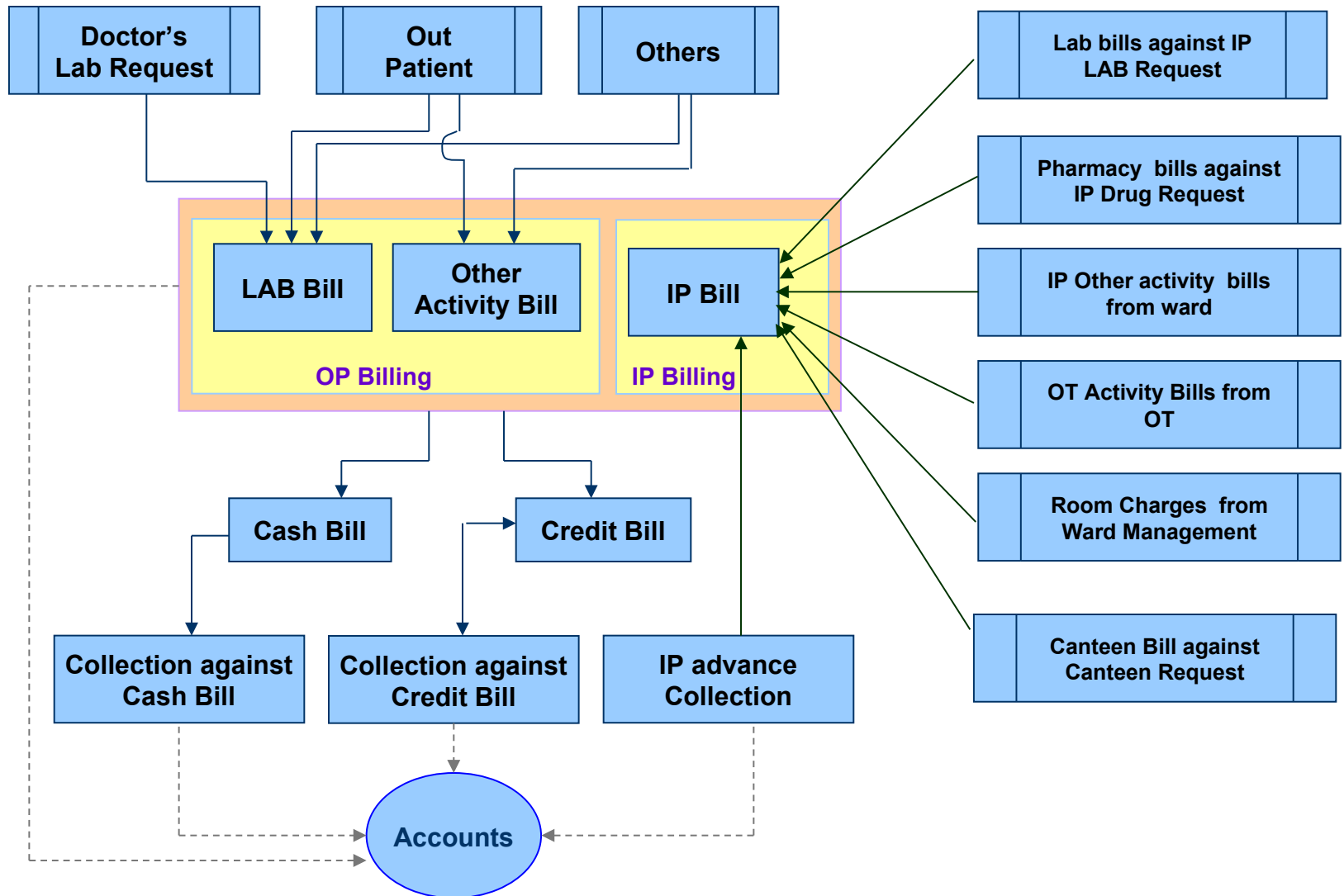
Operation Theatre

IP Nurse Request

↓

Book if available & Confirm

↓

Record the patient comes to OT → **Admission in Pre-operation Room** → **Verify Pre-operative Check list based on Surgery**

Move to Post operative ward ← **Operation Theatre** → **Update Drugs & Surgical materials consumed in OT against IP No.** → **IP BILL**

↓

Verify Post operative Check list based on Surgery → **Normal Condition**

No

Yes

↓

Transfer to Ward

Clinical Support - Operation Theatre Maintenance

- ➢ Ability to define Multiple Theatre

- ➢ Schedule theatre availability

- ➢ Provision to define & maintain Pre-operative & Post-operative check list based on the surgery wise.

- ➢ Ability to maintain Surgery records & would able generate various reports

- ➢ Theatre inventory can be maintained.

Billing & Collection

Doctor's Lab Request
Out Patient
Others

LAB Bill
Other Activity Bill

OP Billing

IP Bill

IP Billing

Lab bills against IP LAB Request
Pharmacy bills against IP Drug Request
IP Other activity bills from ward
OT Activity Bills from OT
Room Charges from Ward Management
Canteen Bill against Canteen Request

Cash Bill
Credit Bill

Collection against Cash Bill
Collection against Credit Bill
IP advance Collection

Accounts

Billing & Collection

Billing

➢ Price list – Can be defined for various services and multiple price option based on Patient type.

➢ User defined Tax structure to accommodate any change in the taxes.

➢ OP Lab bills- In a single bill multiple Lab test can be billed and the system correspondingly sends the request to the respective labs.

➢ IP bill generation includes:- Medicine, Room Charges, Ward Activities, Consulting & Other services

➢ Provision to generate Temporary bill generation before discharge

➢ IP Part bill generation

➢ Provision for Corporate/Insurance bill

➢ Credit Bill for IP/OP

Collection

IP Advance Receipts

Receipt against Credit Bills

Reports

➢ IP Advances vs Cost incurred

➢ Collection Statement

➢ Bill Register (OP/IP/LAB)

➢ Counter wise End of Day statement

➢ Bill outstanding Statement

➢ Doctor wise/transaction wise statement

Pharmacy

Definitions

- Provision to have multiple pharmacy.
- Provision to categorize the product list.
- User defined Tax structure to accommodate any change in the taxes.
- Would able to define default tax structure at product level.
- Options to maintain & search products by Manufacturers Name, Generic name of the product, Strength, Type, Schedule, Batch No.
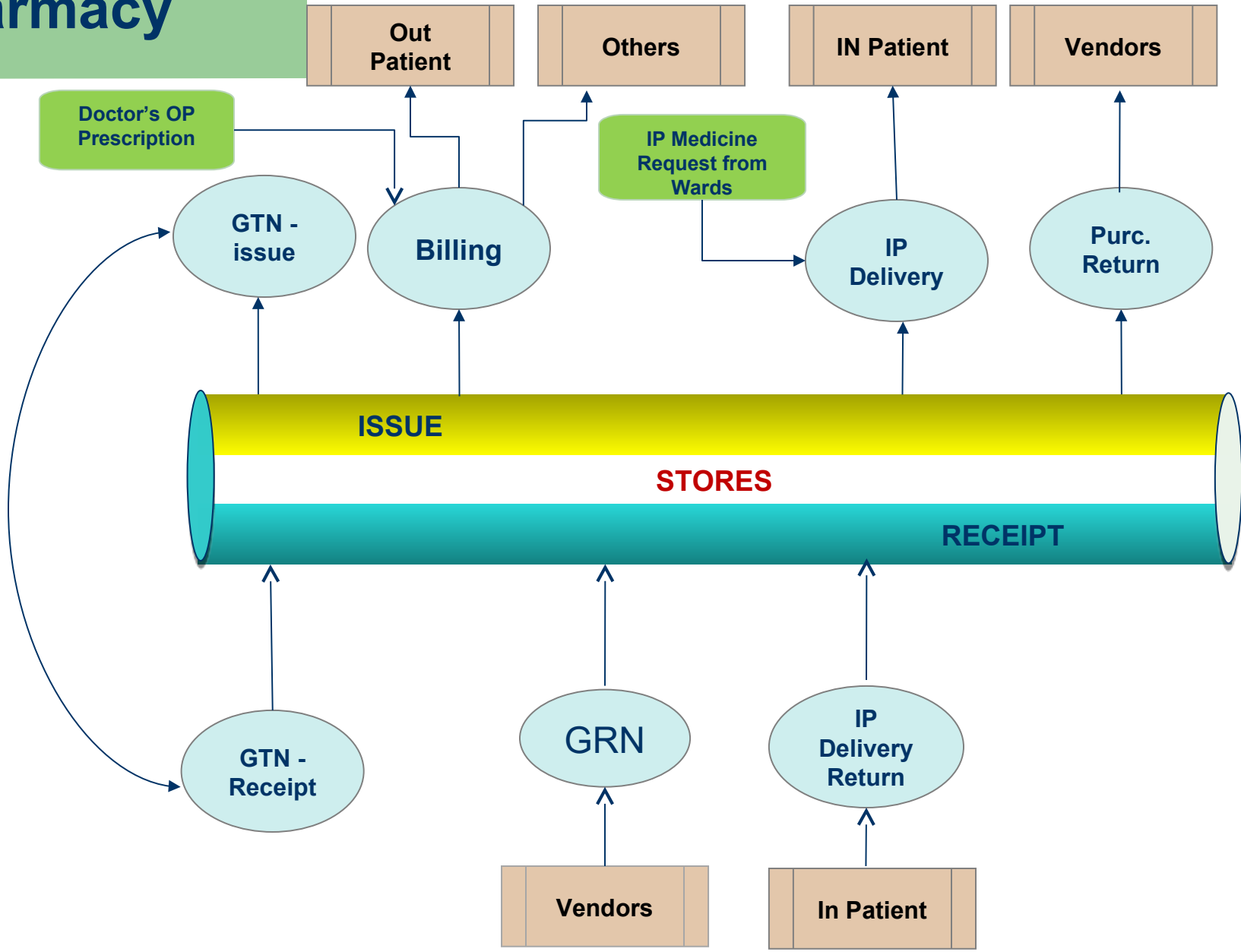- Provision to maintain shelf location details

Transaction

- Cash Billing (OP/others).
- Credit OP Bills option.
- Sales Return for OP/others & IP sales return
- Receipt against Credit Bills
- Delivery against IP request & IP billing
- Would able to keep a bill in hold and generate more than one bills
- Ability to raise indent to main stores.
- Provision to block expired item get billed.
- Stock Maintenance

Reports

- Bill Register – IP/ OP/ Others
- Sales Return Register
- Collection Register
- Stock expiry details
- Stock below ROL with ROQ

- Outstanding Bills
- Stock Statement
- Stock Register
- End of Day Statement
- MIS Reports

Pharmacy

Out Patient

Others

IN Patient

Vendors

Doctor's OP Prescription

IP Medicine Request from Wards

GTN - issue

Billing

IP Delivery

Purc. Return

ISSUE

STORES

RECEIPT

GTN - Receipt

GRN

IP Delivery Return

Vendors

In Patient

Purchase

➢ Provision to raise indents from various departments with approval process to Stores

➢ Ability to raise Purchase Orders

➢ Option to account Purchase Bill against P.O and also without P.Os

➢ Raise Debit Note if there is any discrepancy in the purchase amount

➢ Ability to create Purchase return for any return of goods accounted

➢ All necessary Reports

Purchase

Indent from other Departments   **PURCHASE**   **STORES**

Approved Purchase Indents → Material Requirement

Material Requirement → If P.O reqd.

If P.O reqd. — Yes → P.O Raised

If P.O reqd. — No → Purchase Bill *(against P.O. / Direct Purchase)*

P.O Raised → Good Rpt. Note against P.O.

Good Rpt. Note against P.O. → Purchase Bill

Good Rpt. Note Direct Purchase → Purchase Bill

Purchase Bill → Purchase Return

Good Issue Note → Purchase Return

Inventory

- Ability to create any number of stores & Sub stores

- Main store able to serve the indent from the sub stores by either materials in the stock or create back-to-back P.O.

- Also main store would able to move the stock based on the ROL to the sub stores.

- Main store would able to receive materials against Purchase orders raised on various vendors and move the materials to the concerned department.

- Ability to set ROL to raise P.O. against ROQ.

- Ability to reconcile stock against Physical stock

- Would able maintain stock on FIFO/LIFO/Weighted Average method also maintain stock on batch no wise.

- Emergency purchase can be accounted without Purchase order as local purchase

- Ability to maintain **Non Returnable** Goods Receipt Note, Goods Issue Notes.

- Ability to maintain **Returnable** Goods Receipt Note, Goods Issue Notes and the transaction is being tracked till the goods is returned.

Reports such as :-

Price List

Receipt Register (Returnable / Non-Rtn.)

Issue Register (Returnable / Non-Rtn.)

Stock Register

Stock Statement (with & w/o value)

Stock Summary Report

Product Expiry Statement

HR & Payroll

A full fledged HR & Payroll application which caters to all the needs of the hospitals such as:

- ➢ Maintaining Employee details for any number of years.

- ➢ Ability to define Duty roaster

- ➢ Provision to interface with T&AM machine

- ➢ Ability to define any number of Allowances & Deduction.

- ➢ User defined Leave Type & Leave Rules

- ➢ Loan Management

- ➢ Would able to manage PF, ESI, Professional Tax, Income Tax etc

- ➢ Ability to generate all Standard, Statutory & MIS Reports.

Finance
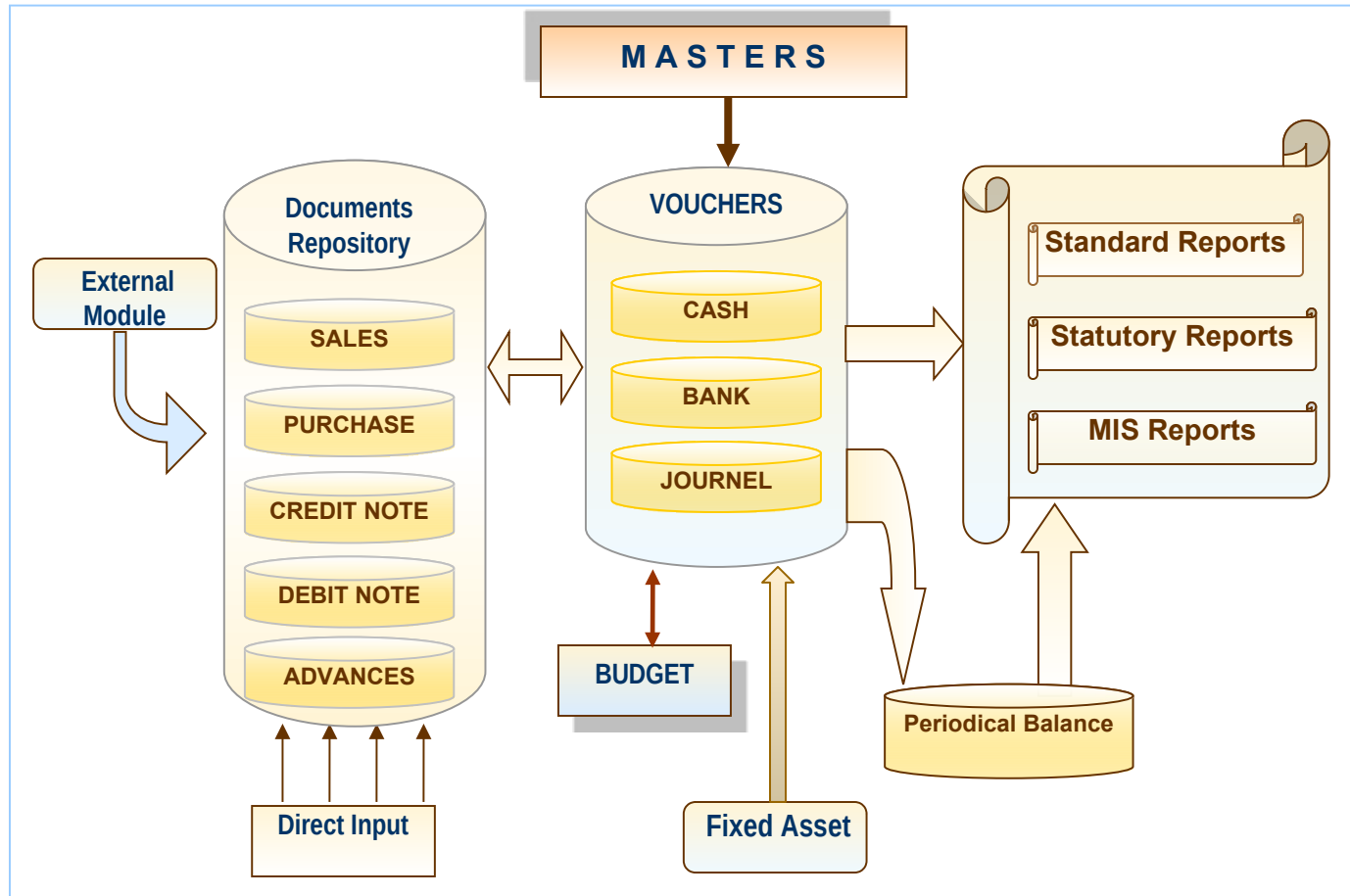
Finance

A comprehensive Finance module where data can be maintained for Multiple Branch & for Multiple year.

➢ Able to maintain transactions against account wise, Sub-account wise, Cost Center wise, Project wise.

➢ Many more features and control options

➢ Seamless integration with Billing & Collection, Purchase, Payroll, Inventory & Fixed asset Module

➢ Ability to generate all Standard, Statutory & MIS Reports.

Asset Maintenance

- Ability to Set Fixed Asset basic parameters and accounting procedures.
- Enable to define various Fixed Asset Types and map it the corresponding GL. Account to integrate with Finance module
- Asset Depreciation (Company Law / Income Tax)
- User defined Depreciation Percentage as per the Company Law and Income Tax
- Provision to upload/define existing Asset details
- Ability to raise Asset P.O.
- Account Asset Purchases with generation of Asset No. for each Items.
- Ability to maintain Insurance, Hire Purchase details etc.
- Provision to generate maintenance P.O. for the equipments.
- Ability to maintain Asset issue and track the location of presence.
- Sale or Disposal of Asset
- Inter Branch Asset Transfer
- Generate various useful Reports

THANK YOU VERY MUCH

We look forward to working with you…….

by

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