Enhancing
Patient Safety
through
Healthcare Supply Chain
Excellence

By Mr. Narongrid Galaputh

Experience Sharing

- "Crisis to Opportunity" The Journey of BDMS

- Healthcare Supply Chain, our version.

- More safety More Patients

BDMS Overview

- **Established on February 26, 1972**

- **Largest private hospital operator in Thailand in terms of revenues from patient services and market capitalization**

- **Owns and manages 41 hospitals (with total beds* of 7,394) under 6 hospital brands:**

Brand	No. of Hospitals	No. of Beds*
Bangkok Hospital	19	2,936
Phyathai Hospital	5	1,340
Samitivej Hospital	5	1,195
Paolo Memorial Hospital	3	648
BNH Hospital	1	144
Royal International Hospital	2	130
Local Hospital	6	1,001

* Maximum number of beds according to structure of the hospitals

Your Trusted Healthcare Network

Medical cooperation and awards for excellence

Medical Cooperation

THE UNIVERSITY OF TEXAS
MD Anderson ~~Cancer~~ Center
Making Cancer History®

- Partnership with MD Anderson on cancer and stem-cells related cancer treatment

- Partnership with Stanford University for knowledge sharing on orthopedics

OHSU

- Partnership with Oregon Health and Science University on occupational health and informatics

MAHIDOL UNIVERSITY

- Partnership between BDMS hospitals and local hospitals

Accreditations and Awards for Medical Excellence

JCI Accreditation
- 13 hospitals and 1 clinic under the Group have been accredited

Hospital Accreditation of Thailand
- 26 hospitals have been accredited

Asian Hospital Management Award
- A number of hospitals under the group have been awarded

Reader's Digest Trusted Brand Award
- Bangkok Hospital Brand was awarded the "Trusted Brand, Gold" for 3 consecutive years from 2010 – 2012

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BDMS Non-Hospital Business

National Healthcare Systems Co., Ltd

Bio-molecular Laboratories Co., Ltd.

N Health Pathology Co., Ltd

A.N.B. Laboratory Co., Ltd.

Medicpharma Co., Ltd.

Bangkok Helicopter Services Co., Ltd.

Bangkok Premier Life Insurance Co., Ltd.

Greenline Synergy Co., Ltd.

Sodexo

Save Drug Center

Hub-and-Spoke Model

Effective hub and spoke model within each hospital group or region
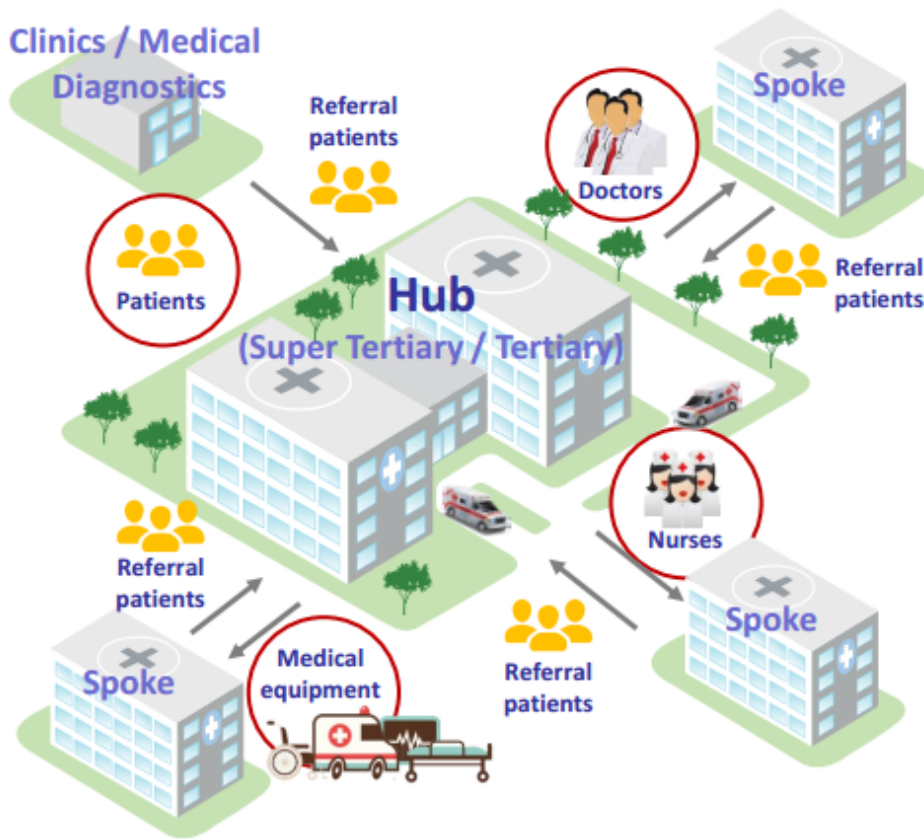
1	Strong patient referral system within and across each hub and spoke
2	Enhances synergies and benefits of scale among hospitals within the group
3	Shared supporting services among multiple hubs which enhance efficiency and competitiveness of BDMS
4	Established system provides a platform for future expansion

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Crisis to Opportunities

TOM YUM KUNG CRISIS in1997
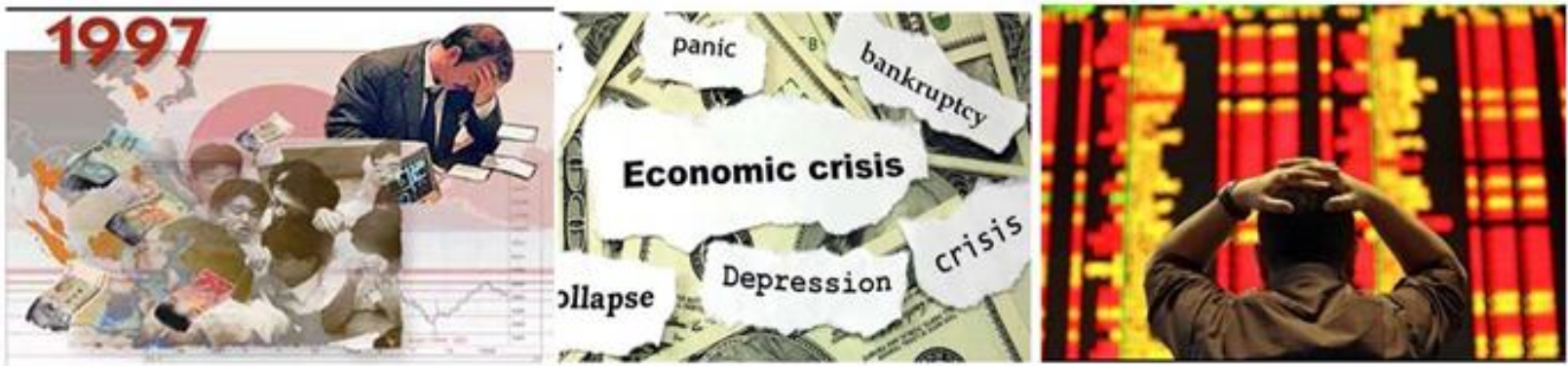
Exchange Rate 1 USD = 25 Bht. → 55 Bht.

Crisis to Opportunities

USA

Crisis to Opportunities

9/11

11 September 2001

Crisis to Opportunities

The Key Providers of Medical Tourism

ประเทศผู้เดินทางไปใช้บริการ และประเทศผู้ให้บริการ

Americas | **Europe / Middle East/ Africa (EMEA)** | **South / South East Asia**

Canada
US
Antigua
Mexico
Costa Rica
Barbados
Brazil

UK
Czech Rep.
Hungary
U.A.E
India
Thailand
Malaysia
Singapore
S. Africa

Japan
Philippines
Australia

Source of medical tourists
Providers of treatment

ที่มา : **BCG** The Boston Consulting Group
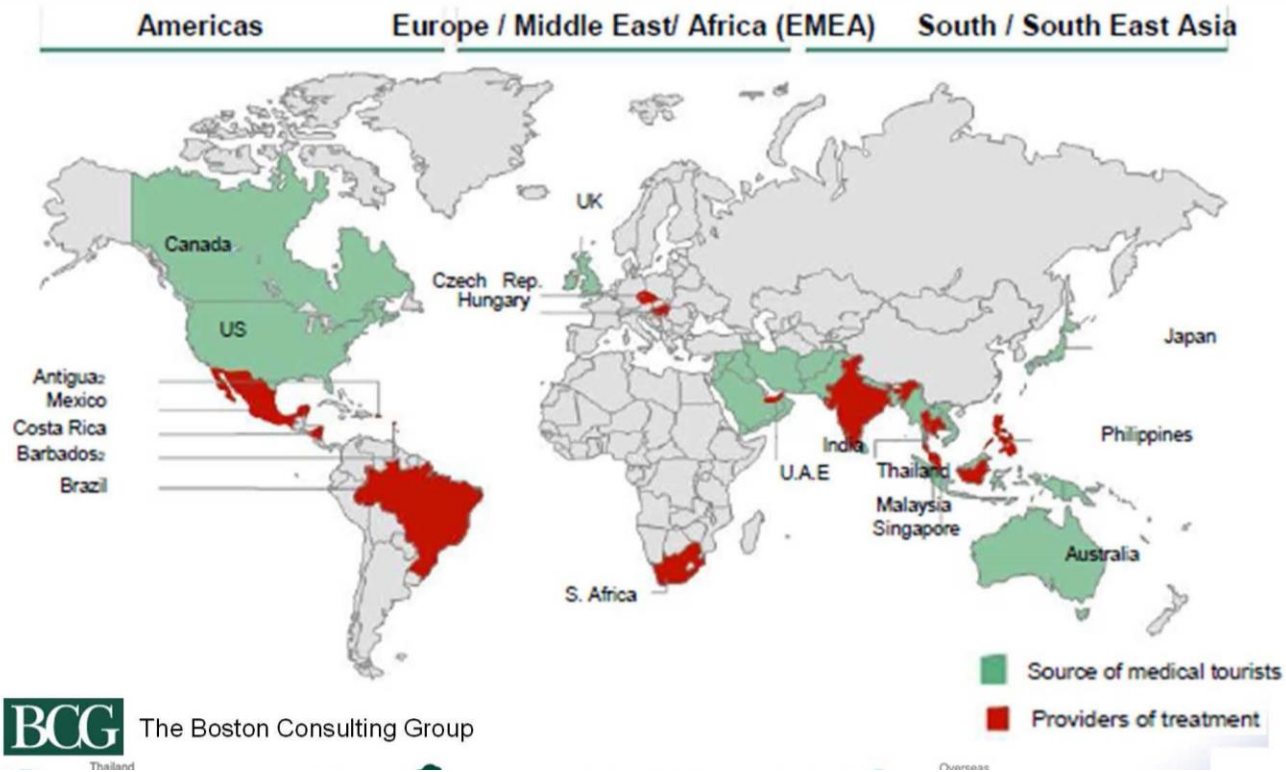
Crisis to Opportunities

Medical Travelers by point of Origin

North America **45%** Asia

Europe **39%** Asia

Middle East **32%** Asia

Oceania **99%** Asia
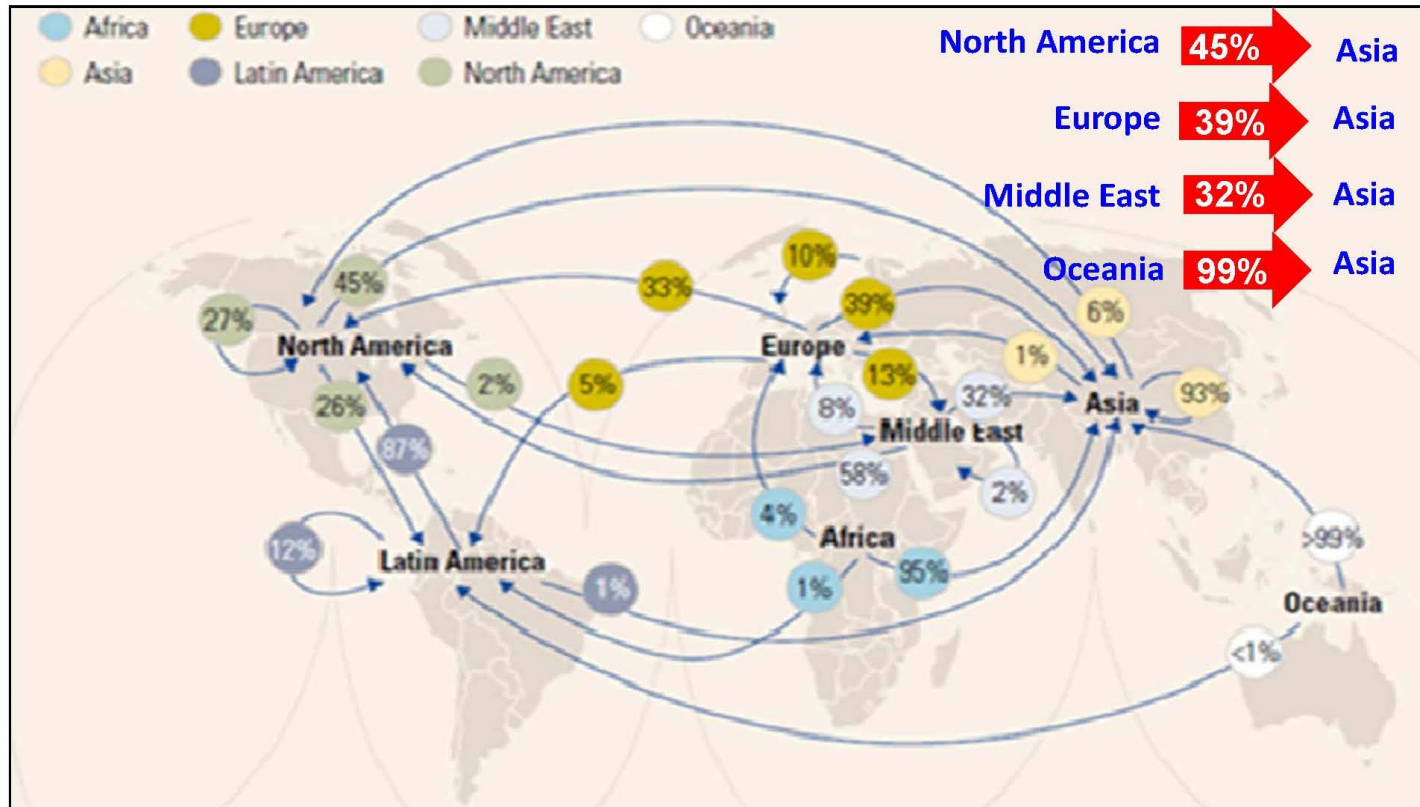
ที่มา : **Deloitte.** , Medical Tourism in Australia 2011

Expansion Through M&A and Greenfield Projects

Strong Share Price Performance Backed by a Successful Expansion Track Record

Share Price (THB)

2004
- Bangkok Heart
- Bangkok Samui
- Bangkok Phuket
- Samitivej Sukhumvit and Samitivej Srinakarin

2005
- BNH
- Wattanosoth

2006
- Increase in stake of Bangkok Pattaya, Bangkok Chanthaburi and Samitivej Sriracha (became subsidiaries)
- Bangkok Ratchasima

2007
- Royal Angkor International (Cambodia)
- Royal Rattanak (Cambodia) *

2011
- Bangkok Hua Hin
- Bangkok Pakchong
- Health Network (8 Phyathai & Paolo Memorial hospitals)

2012
- Bangkok Udon

2013
- Samitivej Thonburi
- Bangkok Phitsanulok

2014
- Bangkok Chiangmai
- Royal Phnom Penh (Cambodia)
- Bangkok Chinatown
- Bangkok Khon Kaen
- Sanamchan and Thepakorn
- Phuket International

2015
- Muang Petch
- Sri-Rayong
- Dibuk
- Samitivej Chonburi

Green font indicates Greenfield projects   **Brown font indicates acquisitions**   **#** Number of hospitals in the network post-acquisition

* Transfer of business to our new facility, Royal Phnom Penh

Solid Revenue Growth Over the Past Decade (2004-2014 CAGR of 23.4%) with Resilient EBITDA margin

Total Revenue (THB mm) and EBITDA margin (%)

Year	Revenue	EBITDA margin
2004	5,635	18.4%
2005	10,724	20.6%
2006	15,981	23.1%
2007	18,885	23.4%
2008	21,652	23.1%
2009	21,974	22.9%
2010	24,051	23.1%
2011	37,371	23.2%
2012	47,862	23.3%
2013	51,407	21.3%
2014	56,975	22.4%
1Q15	15,766	24.6%

Source: Derived from BDMS' financial statements

BDMS has developed 12 new hospitals and acquired a total of 28 hospitals to date

BDMS

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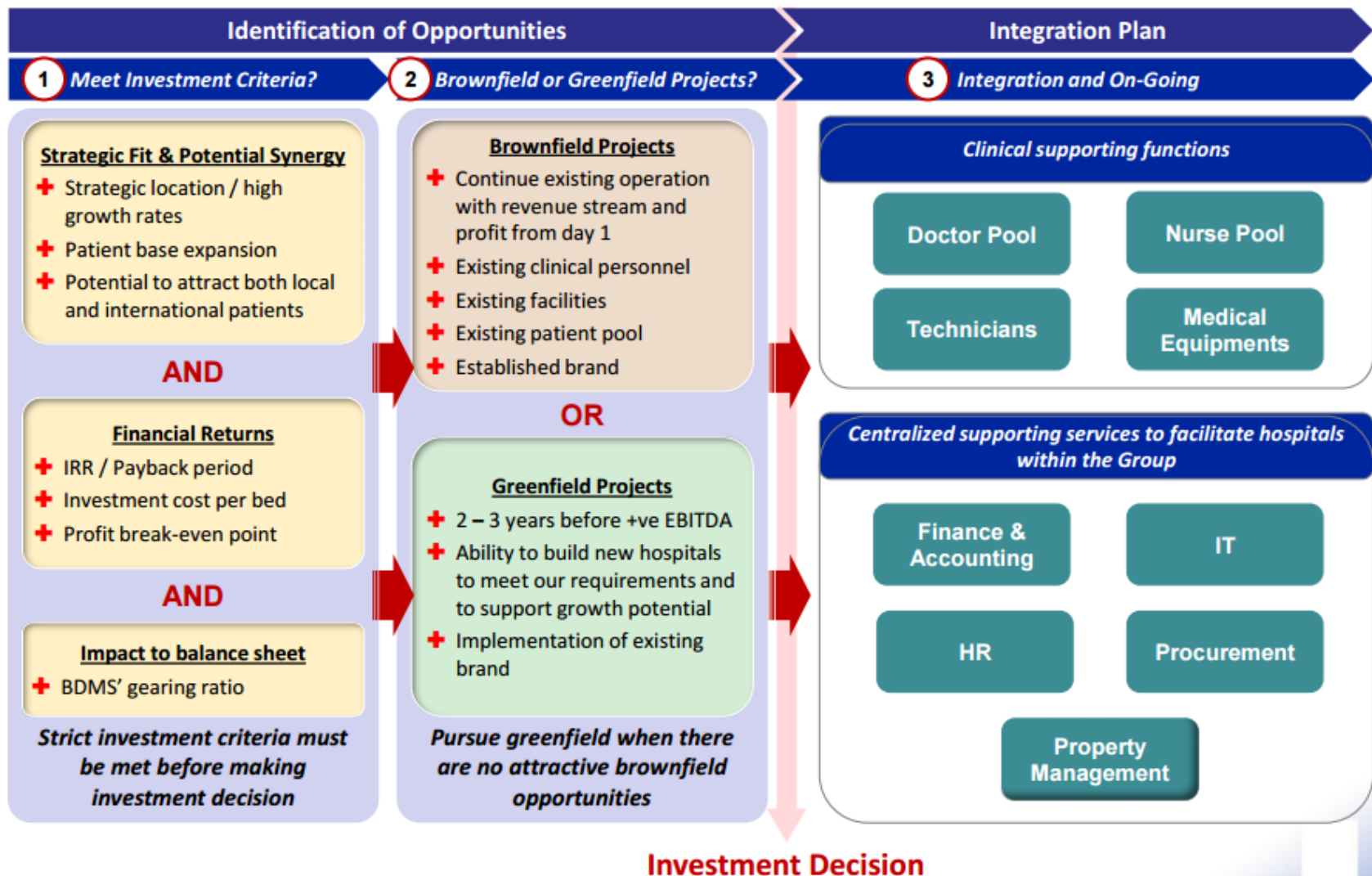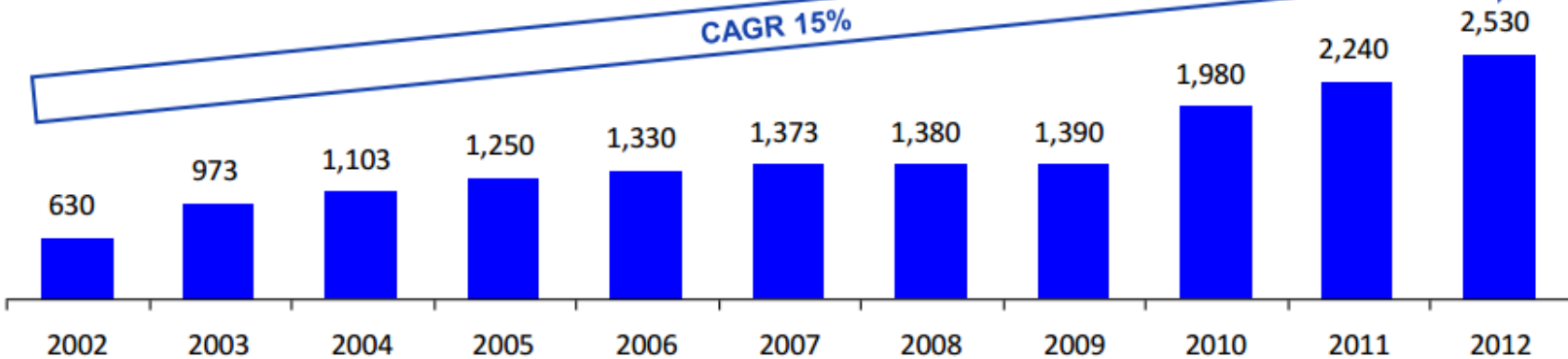
Growth Strategy Through Network Expansion

Identification of Opportunities		Integration Plan
1 *Meet Investment Criteria?*	**2** *Brownfield or Greenfield Projects?*	**3** *Integration and On-Going*

1 — Meet Investment Criteria?

Strategic Fit & Potential Synergy
+ Strategic location / high growth rates
+ Patient base expansion
+ Potential to attract both local and international patients

AND

Financial Returns
+ IRR / Payback period
+ Investment cost per bed
+ Profit break-even point

AND

Impact to balance sheet
+ BDMS' gearing ratio

Strict investment criteria must be met before making investment decision

2 — Brownfield or Greenfield Projects?

Brownfield Projects
+ Continue existing operation with revenue stream and profit from day 1
+ Existing clinical personnel
+ Existing facilities
+ Existing patient pool
+ Established brand

OR

Greenfield Projects
+ 2 – 3 years before +ve EBITDA
+ Ability to build new hospitals to meet our requirements and to support growth potential
+ Implementation of existing brand

Pursue greenfield when there are no attractive brownfield opportunities

3 — Integration and On-Going

Clinical supporting functions

- Doctor Pool
- Nurse Pool
- Technicians
- Medical Equipments

Centralized supporting services to facilitate hospitals within the Group

- Finance & Accounting
- IT
- HR
- Procurement
- Property Management

Investment Decision

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Thailand International Hub

Increasing trend of international patient visits

Thousand

CAGR 15%

Year	Value
2002	630
2003	973
2004	1,103
2005	1,250
2006	1,330
2007	1,373
2008	1,380
2009	1,390
2010	1,980
2011	2,240
2012	2,530

Source: Department of Export Promotion, Ministry of Commerce.

Medical Tourism as a Rising Phenomenon

Procedures (In USD)	USA	Singapore	Thailand	Malaysia	India
Coronary Artery Bypass Graft	88,000	54,500	23,000	20,800	14,400
Valve Replacement with Bypass	85,000	49,000	22,000	18,500	11,900
Hip Replacement	33,000	21,400	16,500	12,500	8,000
Knee Replacement	34,000	19,200	11,500	12,500	7,500
Spinal Fusion	41,000	27,800	16,000	17,900	9,500
Gastric Bypass	18,000	13,500	12,000	8,200	6,800

Source: "Patient Beyond Border" 3rd edition by Josef Woodman (2015)

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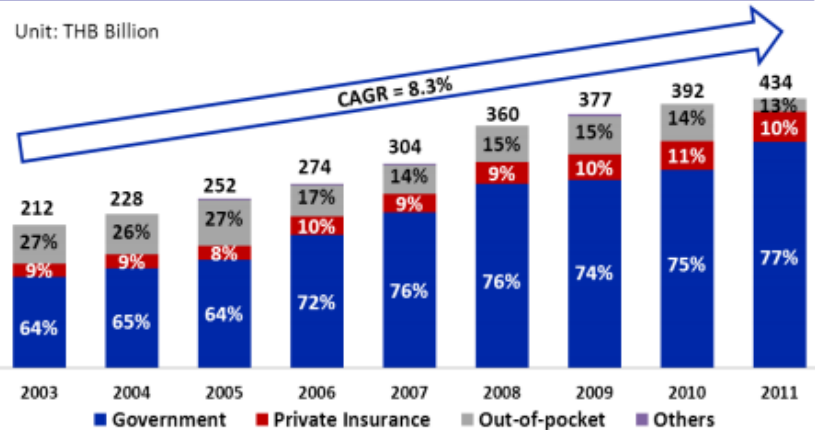
Thailand International Hub

Increasing Healthcare Demand

Thai Population / Bed
Population growth higher than supply

	2008	2009	2010
Bangkok	312	379	266
Central	402	414	409
Northeast	779	724	714
North	500	679	460
South	492	500	498
Total	502	540	477
Global Average (Y2006-2012)	←	385	→

Source: Ministry of Public Health and World Health Organization

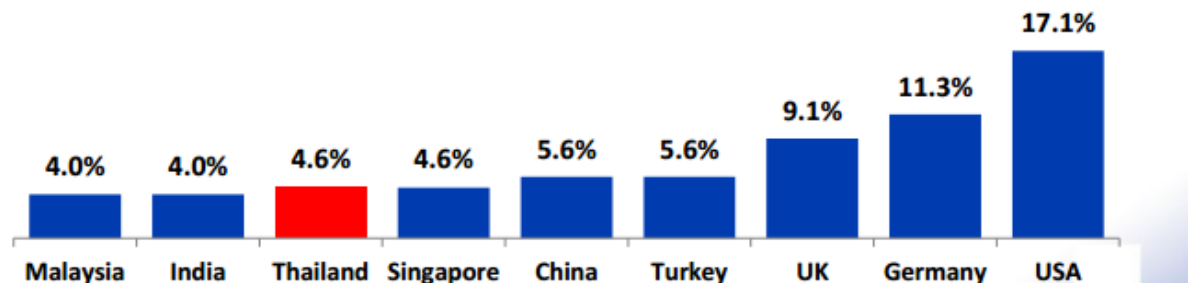### Increasing Healthcare Expenditures in Thailand (2003 – 2011)

Unit: THB Billion

CAGR = 8.3%

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total	212	228	252	274	304	360	377	392	434
Out-of-pocket	27%	26%	27%	17%	14%	15%	15%	14%	13%
Private Insurance	9%	9%	8%	10%	9%	9%	10%	11%	10%
Government	64%	65%	64%	72%	76%	76%	74%	75%	77%

■ Government ■ Private Insurance ■ Out-of-pocket ■ Others

Source: National Health Account of Thailand and Health Systems Research Institute

Low Healthcare Penetration

■ Healthcare expenditure as % of GDP in Thailand is still low compared to other developing and developed countries

Malaysia	India	Thailand	Singapore	China	Turkey	UK	Germany	USA
4.0%	4.0%	4.6%	4.6%	5.6%	5.6%	9.1%	11.3%	17.1%

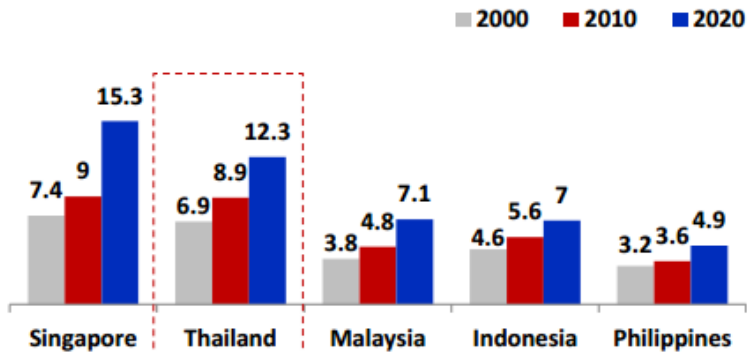Source: World Health Organization for 2013

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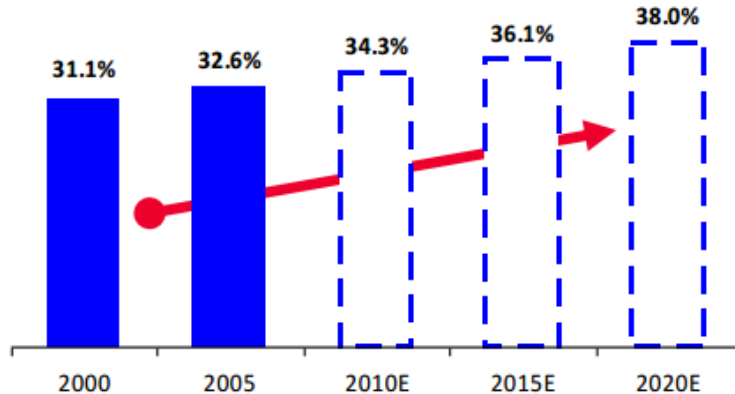# Thailand International Hub

Increasing Healthcare Demand

Population Growth and Aging Profile

Percentage of population above 65 years (%)

Legend: 2000 | 2010 | 2020

Country	2000	2010	2020
Singapore	7.4	9	15.3
Thailand	6.9	8.9	12.3
Malaysia	3.8	4.8	7.1
Indonesia	4.6	5.6	7
Philippines	3.2	3.6	4.9

Source: UN Population Database

Commentary

- Aging population will have great implications on both healthcare costs as well as its capacity to serve demand. In addition, aging population also means a strain on healthcare capacity if it fails to catch up well with increasing demand

- Increasing degree of urbanization is expected over time from 31.1% in 2008 to 38.0% in 2020

- The trend has also been the same for overall South East Asia countries where rapid urbanization is expected from 36.7% in 2000 to 50.6% in 2025

Urbanization

Year	Value
2000	31.1%
2005	32.6%
2010E	34.3%
2015E	36.1%
2020E	38.0%

Sources: NESDB, Health & Welfare Surveys, National Statistics Office (Data related to Thailand)

Rising Income per Capita

THB

Legend: 2010 | 2011 | 2012

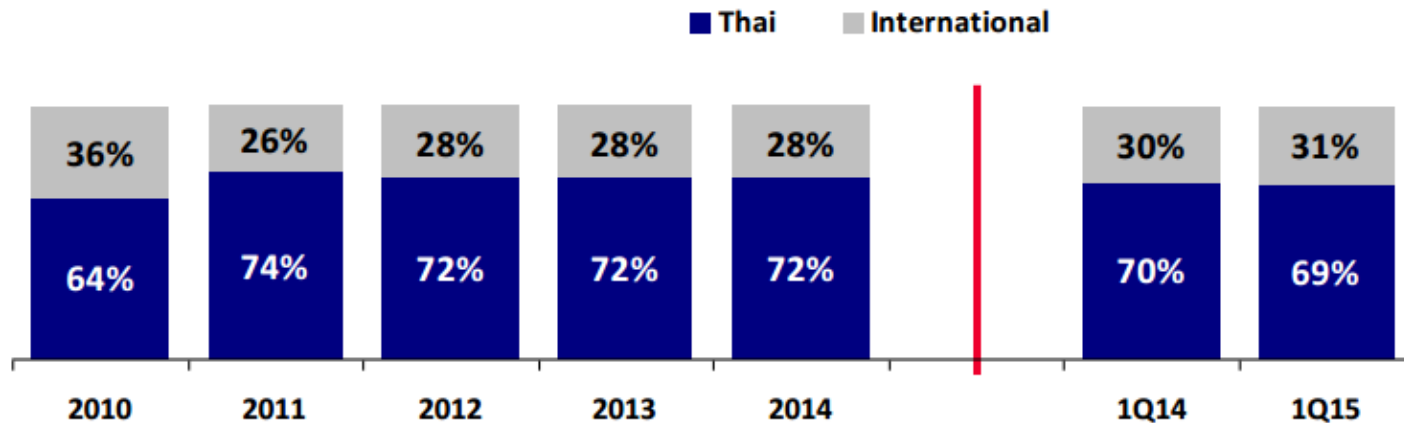| Region	Growth
Bangkok	4.4%
Central	2.4%
North	6.3%
Northeast	8.8%
South	8.5%

Sources: NESDB

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Your Trusted Healthcare Network
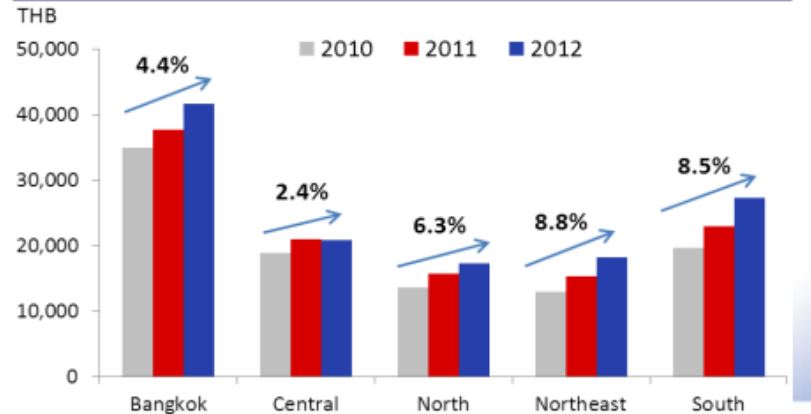
Thailand International Hub

Expanding Both Thai and International Patients

Revenue Contribution by Nationality

■ Thai   ■ International

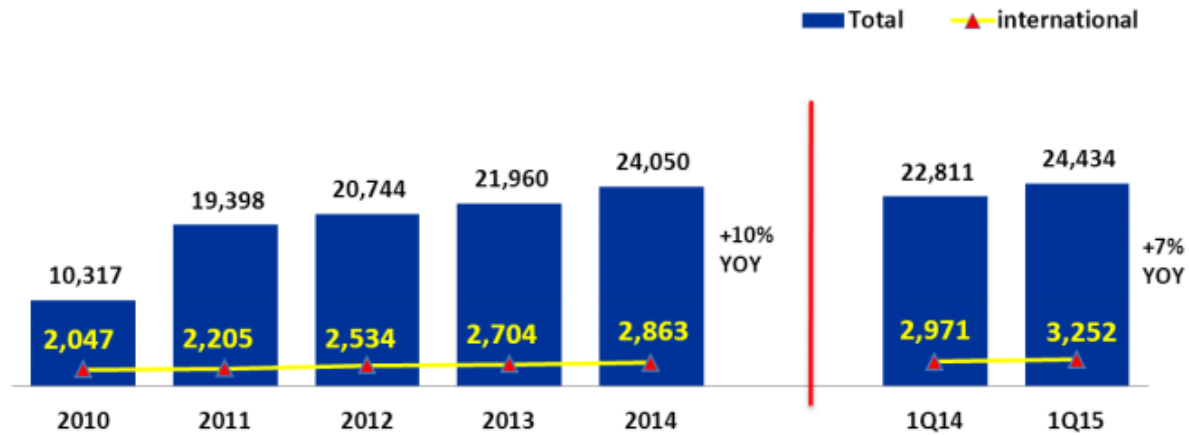|	2010	2011	2012	2013	2014	1Q14	1Q15
International	36%	26%	28%	28%	28%	30%	31%
Thai	64%	74%	72%	72%	72%	70%	69%

Commentary

- **1Q15 revenue from Thai patients grew 5% while international patients grew 16% yoy**

    - Top 5 international patient revenues are from Japan, UAE, UK, Myanmar and Germany which contribute 2.4%, 2.3%, 1.9%, 1.8% and 1.7% of total patient revenues respectively

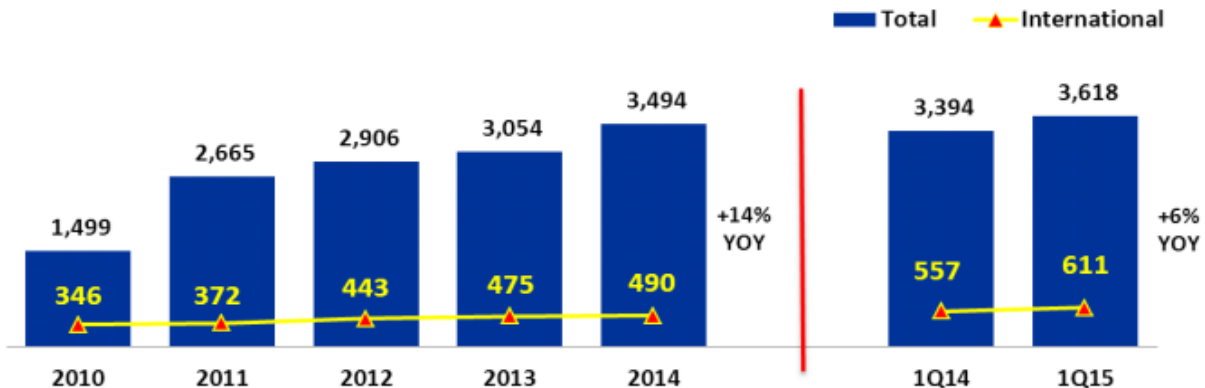   - International patient revenues grew significantly for UAE (+100%), Oman (+91%) and China (+39%)

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Thailand International Hub

Patient Base Expansion From Both Organic Growth & Acquisitions

Number of OPD Visits per Day

Legend: Total — international

Year	Total	International
2010	10,317	2,047
2011	19,398	2,205
2012	20,744	2,534
2013	21,960	2,704
2014	24,050	2,863
1Q14	22,811	2,971
1Q15	24,434	3,252

+10% YOY (2014), +7% YOY (1Q15)

Average Daily Census (ADC)

Legend: Total — International

Year	Total	International
2010	1,499	346
2011	2,665	372
2012	2,906	443
2013	3,054	475
2014	3,494	490
1Q14	3,394	557
1Q15	3,618	611

+14% YOY (2014), +6% YOY (1Q15)

Remarks:- Including social security

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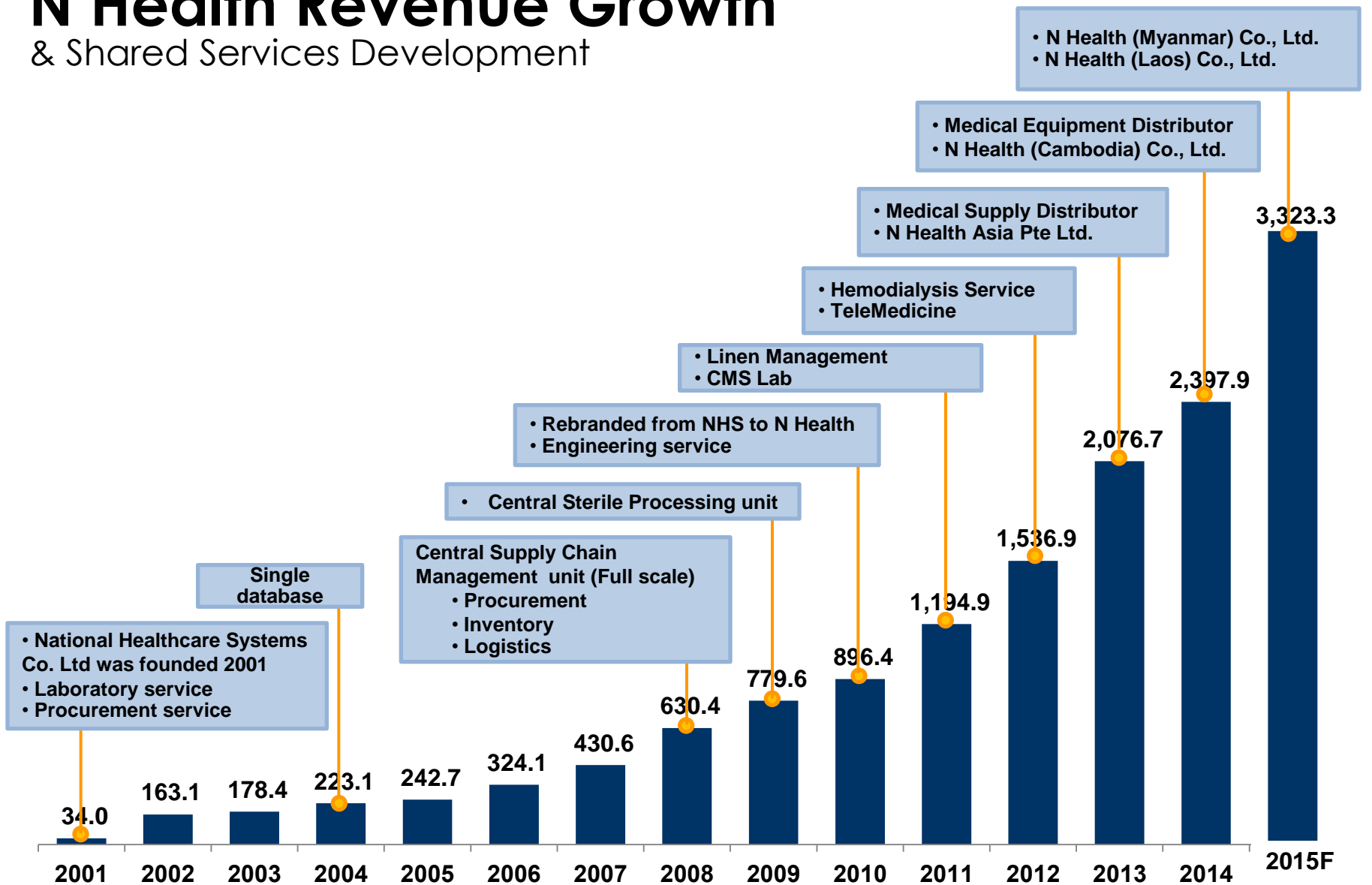
Crisis to Opportunities

How could we grab that opportunity so well?

About N Health

- Founded in 2001 by BDMS

- Prominent as healthcare service solutions provider in Thailand and international

- 59 branches all over Thailand

- 1,509 Skilled & experienced professionals: physicians, pharmacists, nurses, medical technologists, engineers, accountants, logistics specialists and experienced top management team

- Largest pool of 38 pathologists, 300 medical technologists, and 150 biomedical engineers

- Quality guarantee by international standards: ISO 9001:2008 ISO15189:2007 ISO17025:2005

N Health Revenue Growth
& Shared Services Development

- N Health (Myanmar) Co., Ltd.
- N Health (Laos) Co., Ltd.

- Medical Equipment Distributor
- N Health (Cambodia) Co., Ltd.

- Medical Supply Distributor
- N Health Asia Pte Ltd.

- Hemodialysis Service
- TeleMedicine

- Linen Management
- CMS Lab

- Rebranded from NHS to N Health
- Engineering service

- Central Sterile Processing unit

Central Supply Chain Management unit (Full scale)
- Procurement
- Inventory
- Logistics

Single database

- National Healthcare Systems Co. Ltd was founded 2001
- Laboratory service
- Procurement service

Year	Revenue
2001	34.0
2002	163.1
2003	178.4
2004	223.1
2005	242.7
2006	324.1
2007	430.6
2008	630.4
2009	779.6
2010	896.4
2011	1,194.9
2012	1,536.9
2013	2,076.7
2014	2,397.9
2015F	3,323.3

Million THB

Health

Healthcare Supply Chain Management Goal

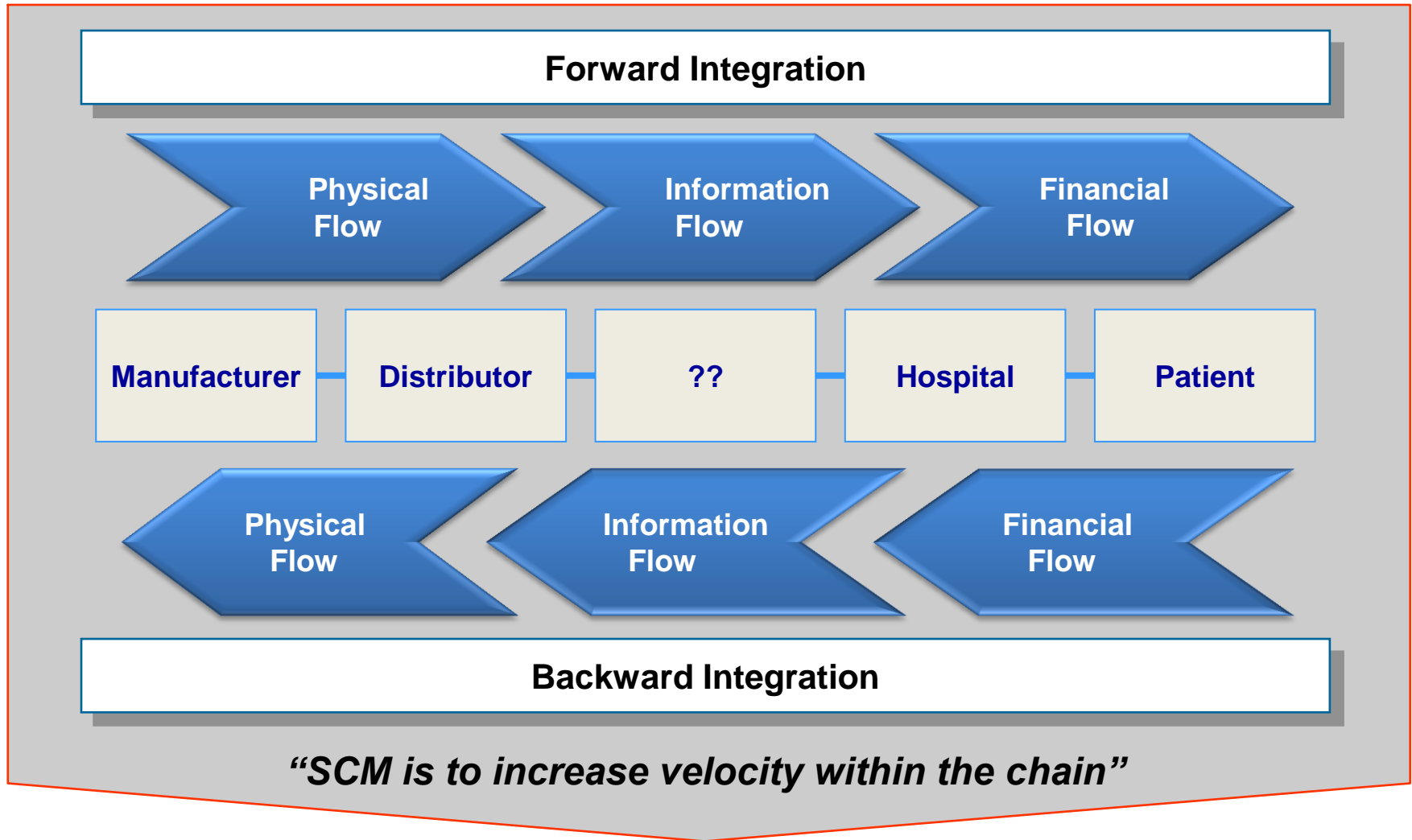**Maximize Patient Care**

Product Availability

Minimize Inventory Value

Reduce Non-clinical Activity for all Medical Staff
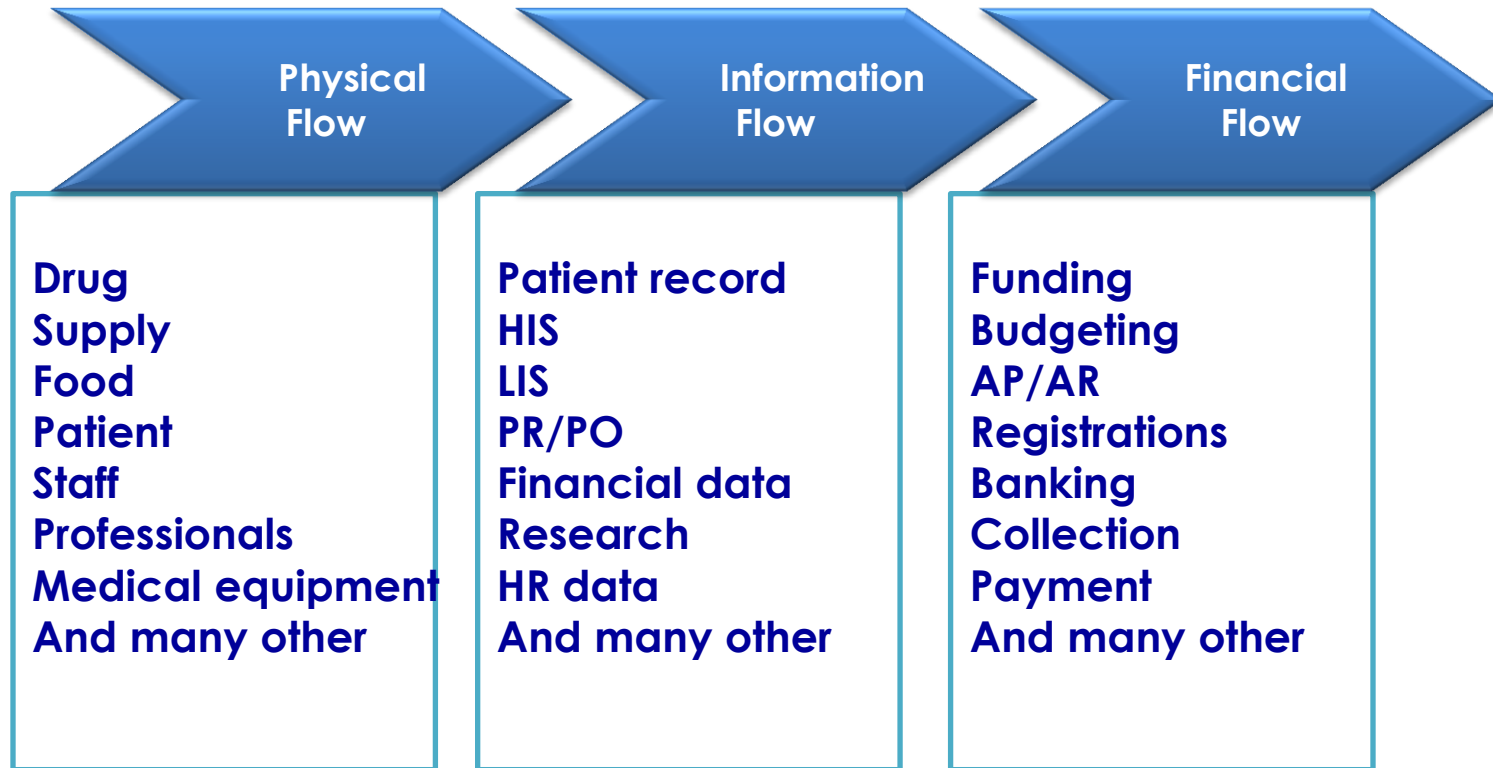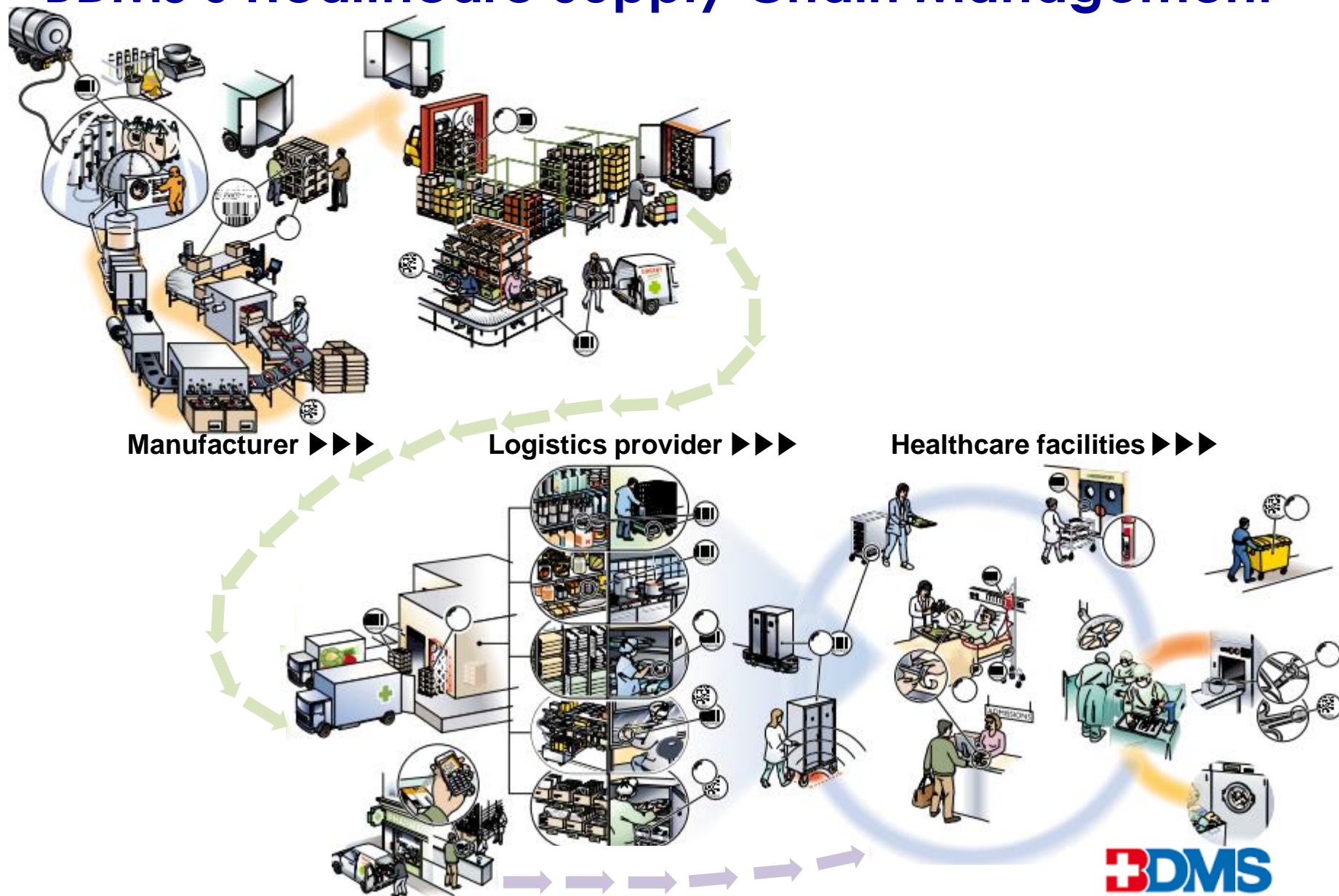
Minimize total cost of ownership

Healthcare Supply Chain Management

Forward Integration		
Physical Flow	Information Flow	Financial Flow

Manufacturer	Distributor	??	Hospital	Patient

Physical Flow	Information Flow	Financial Flow

Backward Integration		

"SCM is to increase velocity within the chain"

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Healthcare Supply Chain Management

Physical Flow	Information Flow	Financial Flow
Drug **Supply** **Food** **Patient** **Staff** **Professionals** **Medical equipment** **And many other**	**Patient record** **HIS** **LIS** **PR/PO** **Financial data** **Research** **HR data** **And many other**	**Funding** **Budgeting** **AP/AR** **Registrations** **Banking** **Collection** **Payment** **And many other**

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BDMS's Healthcare Supply Chain Management

Manufacturer ▶▶▶ **Logistics provider ▶▶▶** **Healthcare facilities ▶▶▶**

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What is SAP

- **S**ystems, **A**pplications and **P**roducts in Data Processing

- **SAP ERP** is enterprise resource planning software. SAP ERP incorporates the key business functions of an organization. Business Processes included in SAP ERP include Operations (Sales & Distribution, Materials Management, Production Planning, Logistics Execution, and Quality Management) Financials (Financial Accounting, Management Accounting, Financial Supply Chain Management) and Human Capital Management (Payroll, e-Recruiting)

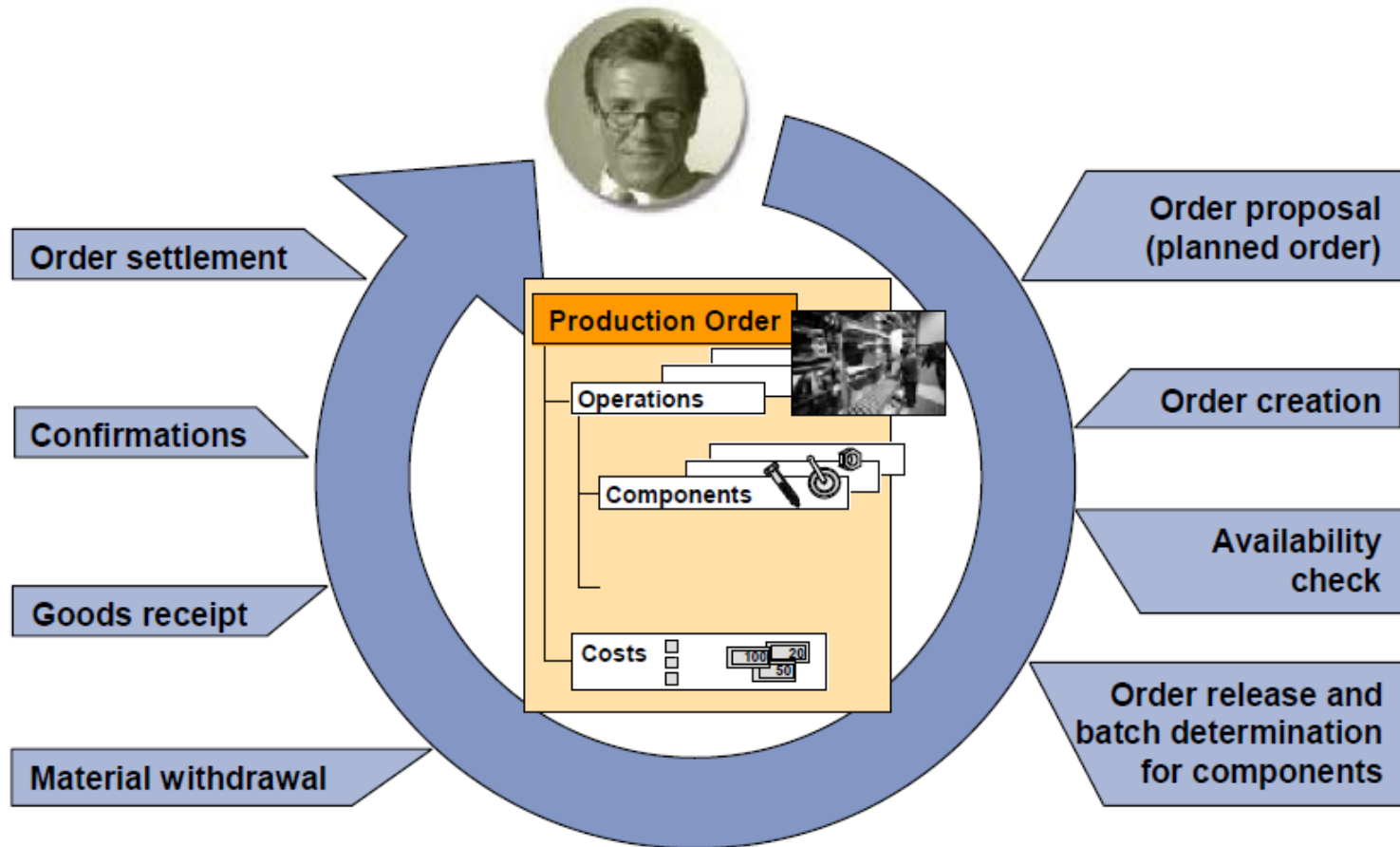# Procure to pay (purchase to pay or P2P)

Payment processing — 8

Invoice verification — 7

Goods receipt — 6

Order monitoring — 5

Procurement

Demand determination — 1

Source determination — 2

Supplier selection — 3

Purchase order processing — 4
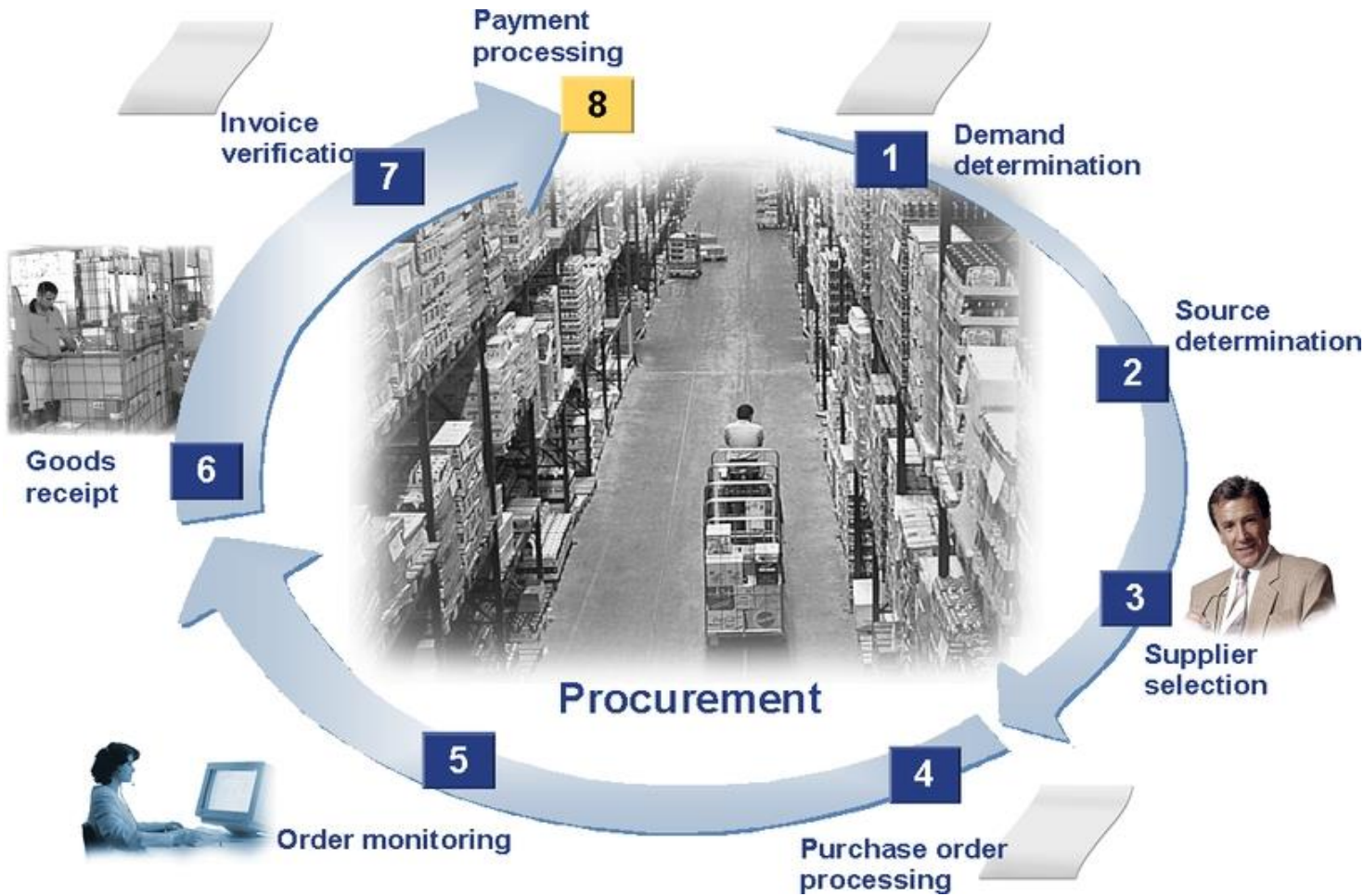
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Order-to-Collection

Payment processing **8**

Billing **7**

Sales order **1**

Availbility check **2**

Goods issu **6**

5 Picking

Order processing

4 Transportation

3 Outbound delivery
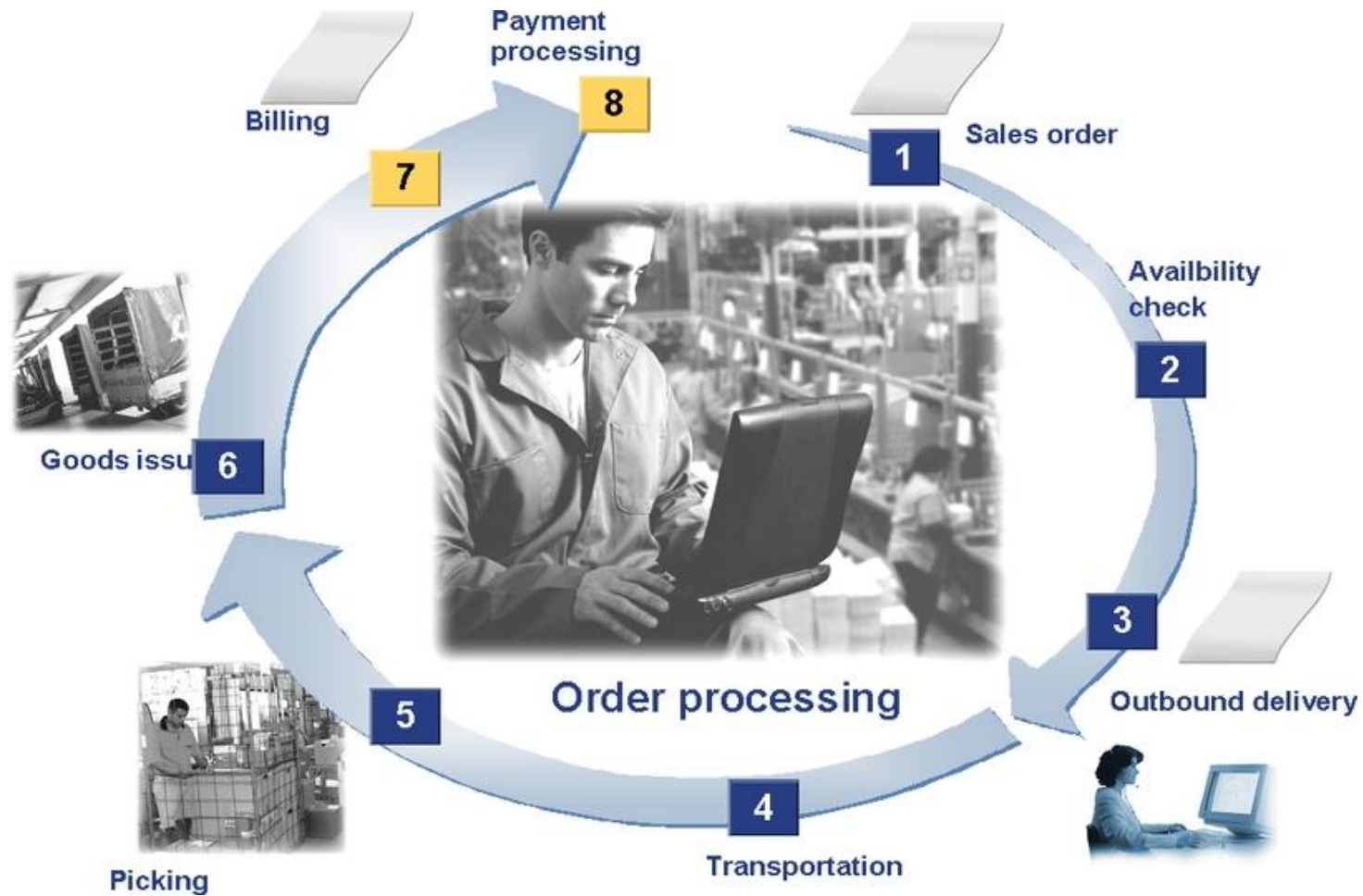
Plan-to-Produce

Warehouse & Distribution Processes

Day 0 (Cut off 03:00 PM)

Customer Order → **Order to N-Health Operation Warehouse** → **Prepare Picking list** → **Pick product**

Day 1

Send receipt to F & A ← **Delivery to customer** ← **Transport** ← **Sorting Process**

Internal Distribution: Logistics Service

Mobile Transporter Service

New design of delivery system for hospital logistics that increase transport efficiency with track and trace feature. The new system which is web-based and leverage the hospital Wi-Fi network to quickly send jobs to the transporters equipped with an hand-held PDA.
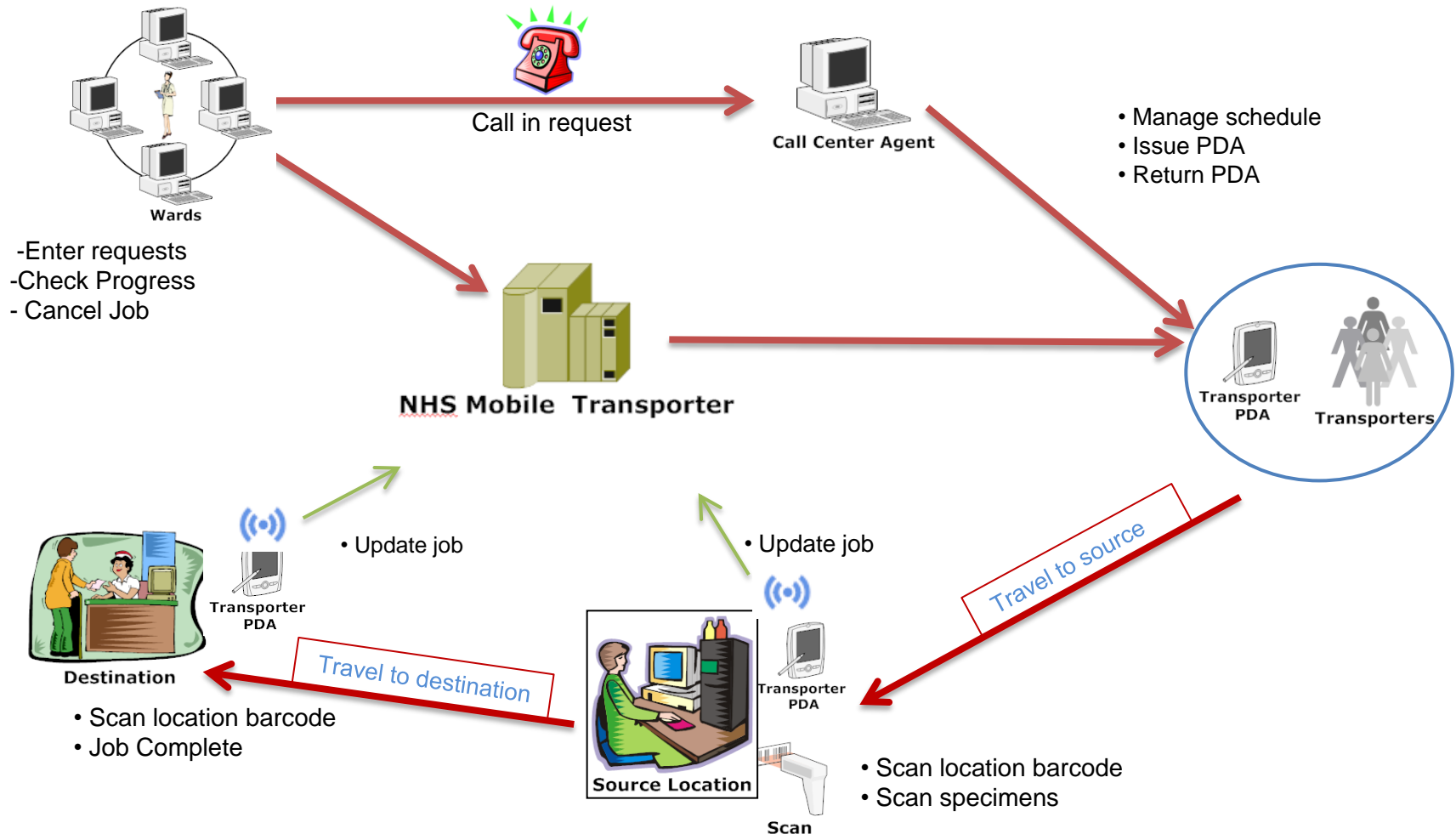
Traceable delivery of specimens, blood products, document, pharmacy, medical supplies, medical equipment within the hospital
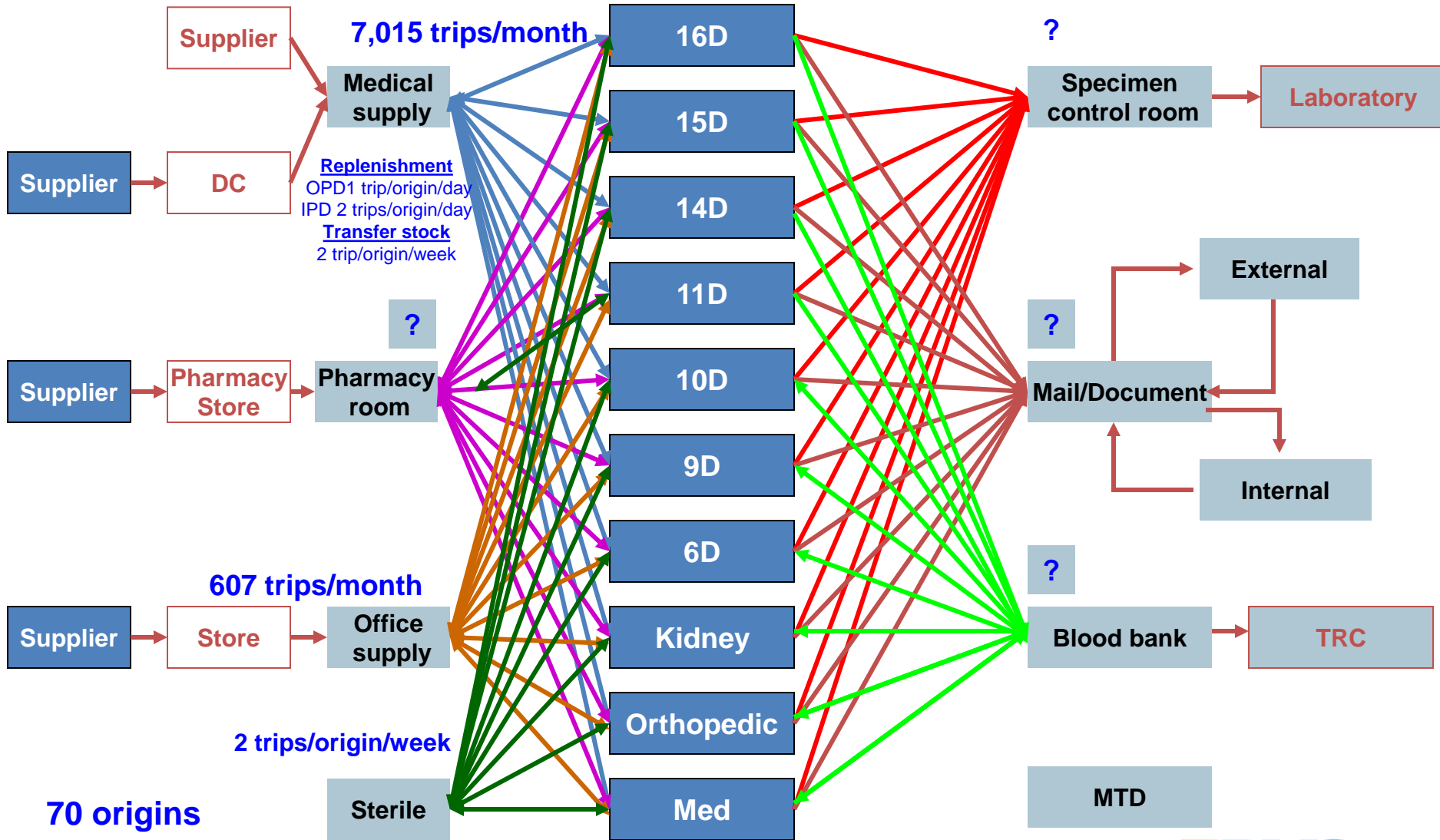
Mobile Transporters

- Serving 4 large scale hospitals: BMC, SVH, SNH and SiPH
- Over 300 departments,
- 24 x 7 (150,000 jobs per month)
- 100% traceability
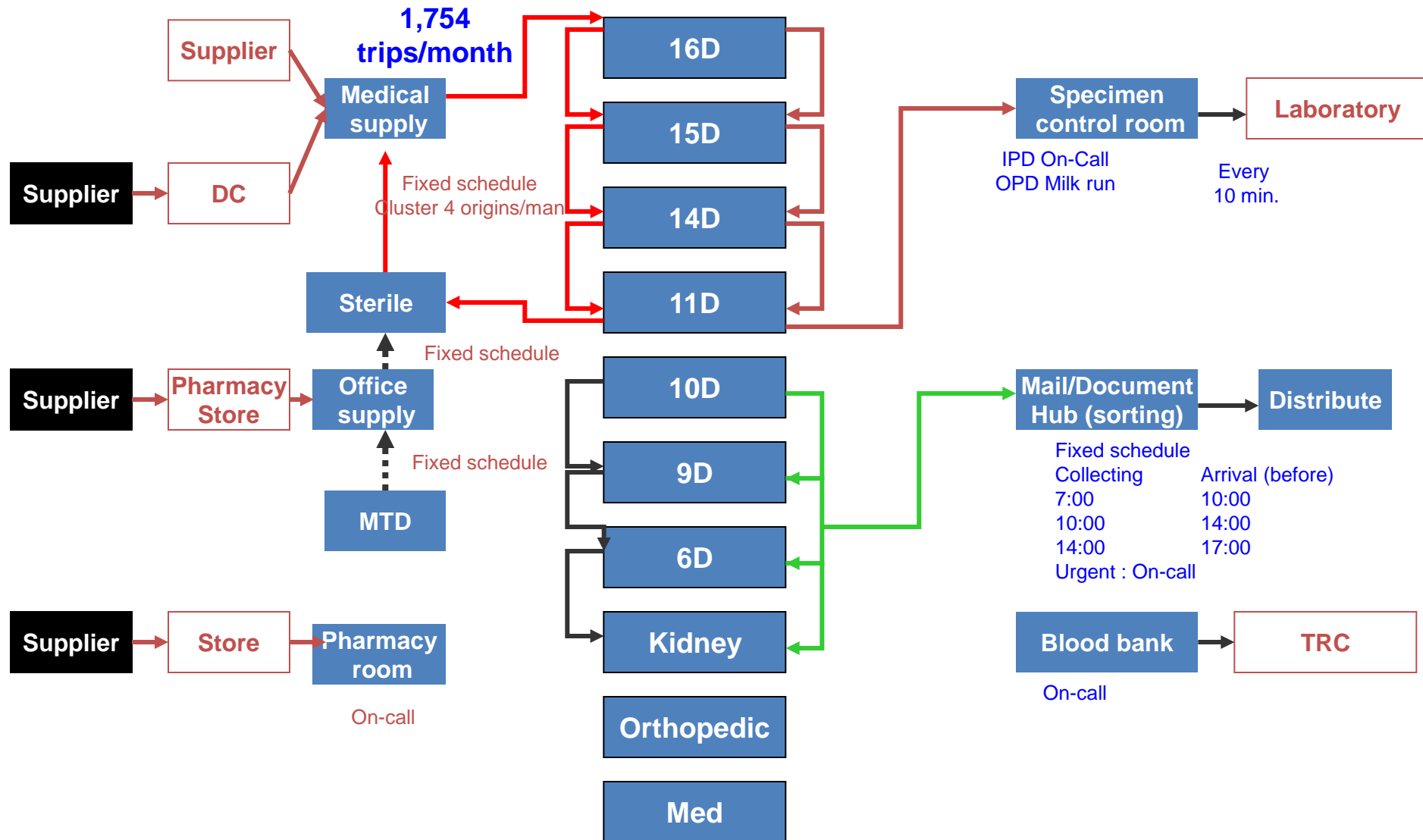- 90% on-time services
- OPD Stat Pharmacy delivery

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Workflow Diagram

Health **Mobile Transporter**®

Call in request

Call Center Agent

• Manage schedule
• Issue PDA
• Return PDA

Wards

-Enter requests
-Check Progress
- Cancel Job

NHS Mobile Transporter

Transporter PDA Transporters

• Update job

Transporter PDA

Destination

• Scan location barcode
• Job Complete

Travel to destination

• Update job

Travel to source

Source Location

Transporter PDA

Scan

• Scan location barcode
• Scan specimens

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Internal Hospital Logistics

1,754 trips/month

Supplier → Medical supply
DC ← Supplier
Supplier → DC

Medical supply → 16D, 15D, 14D, 11D

Fixed schedule
Cluster 4 origins/man

Sterile → Medical supply (Fixed schedule)

Supplier → Pharmacy Store → Office supply

MTD → Office supply (Fixed schedule)
MTD → Sterile (Fixed schedule)

Supplier → Store → Pharmacy room

On-call

16D, 15D, 14D, 11D → Sterile

11D → Specimen control room

Specimen control room → Laboratory

IPD On-Call
OPD Milk run

Every 10 min.

10D, 9D, 6D, Kidney → Mail/Document Hub (sorting) → Distribute

Fixed schedule
Collecting   Arrival (before)
7:00   10:00
10:00   14:00
14:00   17:00
Urgent : On-call

Orthopedic

Med

Blood bank → TRC

On-call

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N Health Mobile Transporter System

Ward

Ward enters Request

Transporter Logs On

Ward inquires on job status

Transporter Receives Job from system

Ward calls Call Center

Transporter travels to and scans source location barcode

Call center

Call Center creates request

Transporter travels to and scans Destination

Next Job or Back to Hub

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N Health Telemedicine Solution

Anywhere Anytime

SureAPPS
- SureNOTES™
- StrokeRESPOND®
- SurePACS™
- MultiPRESENCE™

ControlStations
- DeskTop CS
- LapTop CS
- Kits

SureSUPPORT
- 24/7/365 Service
- Account Support
- Product Support

SureCONNECT

SURECONNECT.

FDA-cleared family of Endpoints

End-to-End Connection Support

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Total Solution of Sterile Services
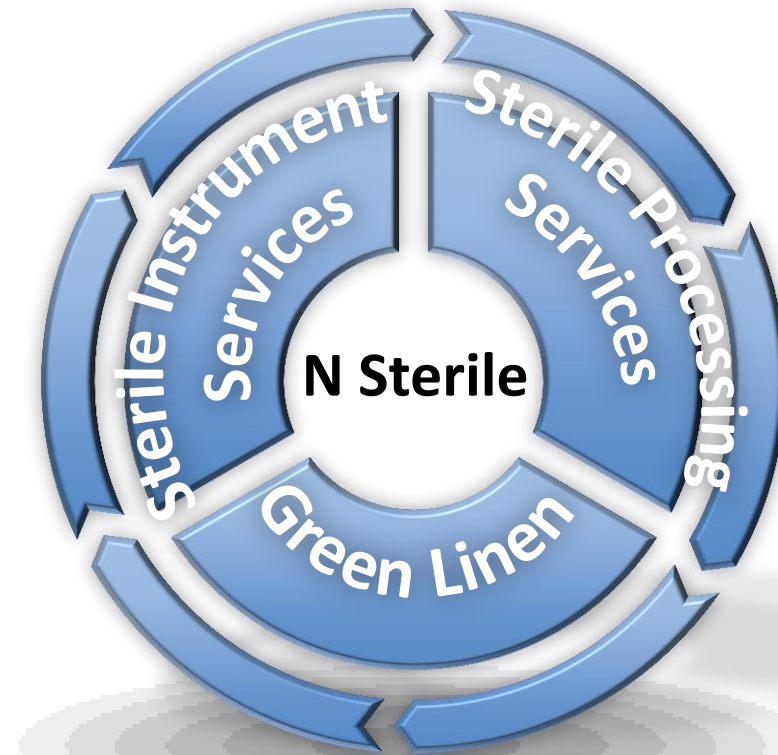
Total Solution of Sterile Services

Sterile Processing Services

Services :

- Sterile Processing Total Solution Services

Values to Customer

- Decontaminate /packing/ sterilize
- Turnkey services
- Instrument Specialized
- Logistic and Supply chain management

Pricing

Pay per use by "Size".

Sterile Instrument Services

Services :

- Wide range of sterilize medical instrument for rental.
- Special Instrument Set (Heart/Neurology set)

Values to Customer

- No capital investment in medical instrument
- No maintenance & inventory cost

Pricing

Pay per use by "Set".

Green Linen

Services :

- Green linen is OR and CSSD "sterile linen" included Linen management.

Values to Customer

- Faster : 24 hrs. of TAT
- Better : Quality control meet HA/JCI
- Lower cost : Pay Per Use (PPU) , reduce total cost

Pricing

Pay per use by "Kg."

Objective: To provide Sterile Processing (CSSD) services

Key scope of services:

- Turn key services all instrument and department
- Pick up dirty and delivery clean instrument
- Entire process of decontamination, packing, sterilizing and distribution of the various medical instruments and devices and Linen
- Every cycle through Physical, Chemical and Biological monitoring.
- N Sterile Web base and Barcode

Key Delivers:

Quality and Standardization

- **People :** Supervised operation and infection control by direct experienced nurses and professional team
- **Process :** Sterile processing services meet JCI, HA and ISO quality standards and High quality all of CSSD.
- **Technology :** Barcode, web base

Total Solution

- Turn key services (Pickup-Sterile-packing-delivery-report)

Lowest Total Cost

- Reduce total cost = 9% from staff cost, investment , maintenance and med supply.
- Know about actual costs and apply them to the decision.

Healthcare Linen Management

Linen Management
Costs & Operations

Visible
15%

Linen Supply

Logistic & Handing

Laundry

Quality Control

Linen Loss

Stock

Sourcing (Time order/design/spec)

Infection / Environment

Customer needs

Laundry Processing / Vendor

Staff

Invisible
85%

"Linen Supply"

Total Solution:
- Pay per Use included linen, laundry, internal management
- Monitor demand & usage
- Design (comfort, safety)
- Buying & replacement linen
- Optimization PAR of linen

"Linen Internal Management"

Value Added Services :

- Linen Processing
- Stock control and utilization
- Collection of soiled linen and delivery of clean linen
- Maintenance and Quality control

"Linen Processing"

Ensure quality by Healthcare *Laundry processing* to cleanliness, delivery on time and not damaged/loss.
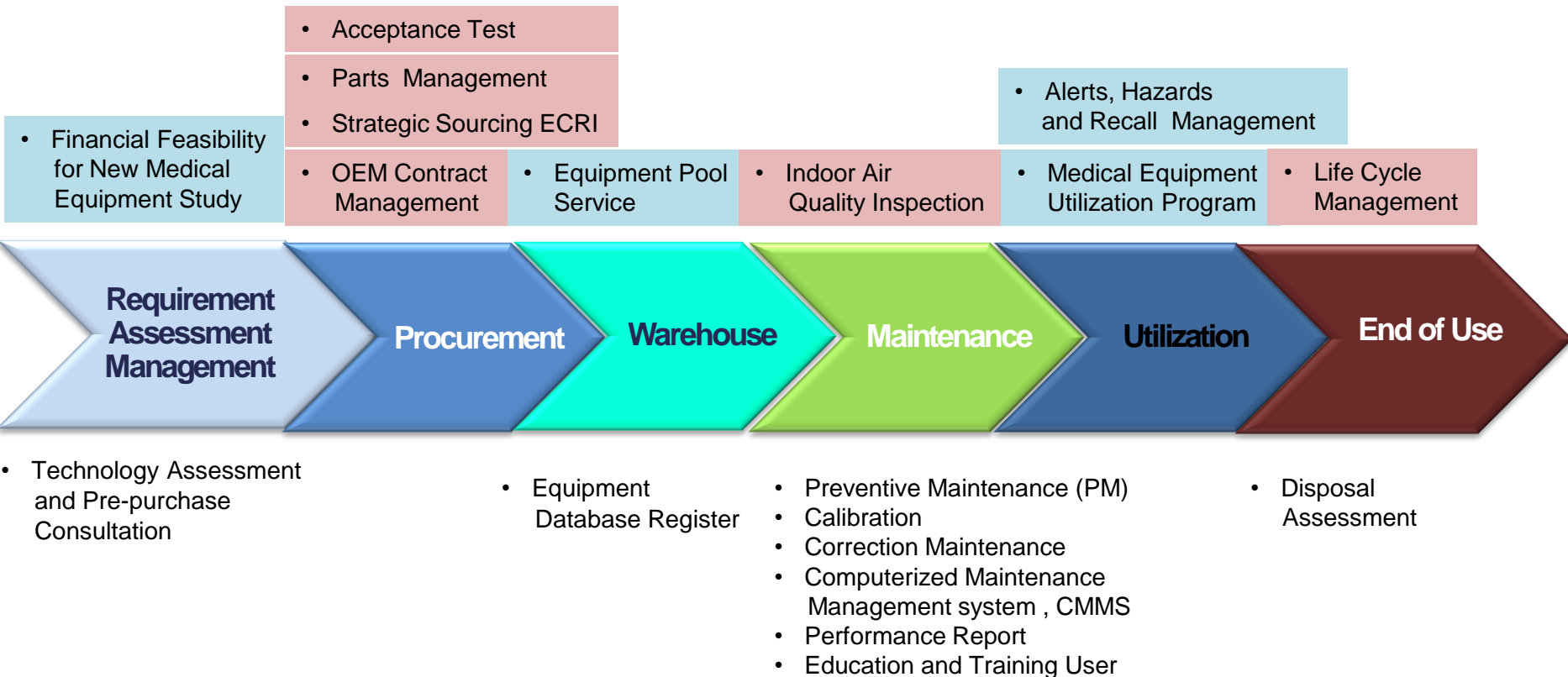
Laundry services as:
- Normal linen
- Bio linen (Infection)
- Special: gown, curtain, sofa

Pay Per Use by Kg.

Biomedical Equipment Services Value Chain

Quality Assurance with Consultant HA / JCI

- Acceptance Test
- Parts Management
- Strategic Sourcing ECRI

- Alerts, Hazards and Recall Management

- Financial Feasibility for New Medical Equipment Study

- OEM Contract Management
- Equipment Pool Service
- Indoor Air Quality Inspection
- Medical Equipment Utilization Program
- Life Cycle Management

Requirement Assessment Management	Procurement	Warehouse	Maintenance	Utilization	End of Use

- Technology Assessment and Pre-purchase Consultation

- Equipment Database Register

- Preventive Maintenance (PM)
- Calibration
- Correction Maintenance
- Computerized Maintenance Management system , CMMS
- Performance Report
- Education and Training User

- Disposal Assessment

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Preventive Maintenance and Calibration Service

- Skilled and experienced Biomedical Engineer
- 89 testers certified by *TPA and *KMUTT
- Preventive Maintenance and Calibration Procedure compliance with *ECRI
- Professional report compliance with ISO9001
- Reference site for both private and government hospital

Example of testers :

ECRI Institute
The Discipline of Science. The Integrity of Independence.

Remark :
*ECRI = Emergency Care Research Institute
*TPA = Technology Promotion Association
*KMUTT = King Mongkut's University of Technology Thonburi

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Equipment Pool Service

Feature:
- On line request or call services
- Verify Medical Equipment to be prompt services by engineer before using each time
- Labeling : indicate pass checking and expiry date 7 days after verifying
- Monthly regular report and monitoring
- Alert, Hazard, Recall

Benefits:
- Track and trace
- Patient Safety
- Reduce Nurses admin task and able to focus on patient activities
- Cost savings : prolong use life and reduce repair cost
- Better allocation of resources
- BDMS Pool to prevent shortage

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Equipment Pool Inventory

Item	Description
1	SYRINGE PUMP
2	FEEDDING PUMP (KANGAROO)
3	SUCTION REGURATOR
4	AIR MATTRESS PUMP (ALPHA-BED)
5	CHEST WALL SUCTION
6	PNEUMATIC PUMP (SCD / Venaflow)
7	BP DIGITAL
8	HEAT NEMBULIZER
9	CRYO CUFF
10	FLOW METER
11	OXIGEN REGULATOR
12	BIPAP
13	SUCTION MOBILE
14	TRACTION BAR
15	BOLLOW BAR
16	MONKEYBAR
17	OXIGEN TENT
18	UTRASONIC NEMBULIZER
19	HYPER-HYPOTHERMIA
20	OXIGEN BOX
21	ELECTRIC BAG
22	BED EXIT ALARM
23	INFUSION PUMP
24	VENTILATOR

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Indoor Air Quality Inspection

Test Parameter

No.	Test Type		Standard
1	Airborne Particle Count Class Limits* 10,000 (Count / ft^3)	0.5 m	10,000
		5.0 m	70
2	Room Temperature (C)*		17 - 27
3	Relative Humidity (%RH)*		30 - 60
4	Room Pressurization (Pa)		+ 2.5 or -2.5
5	Minimum Total Air Changes		20 Per Hour
6	HEPA Filter Leak Test		< 0.01 % penetration

Reference Standard :: FEDERAL STANDARD 209E and ASHRAE

Benefits

- Ensure Patient Safety in OR, ICU, Cleanroom – Infectious Control etc.
- Regular Inspection 1-2 times per year
- Professional Report

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Medical Gas and Vacuum System Services (MGVSs)

Our services
1. Liquid Oxygen Tank
2. Oxygen Reserve
3. N2O Manifold
4. Vacuum Pump System
5. Medical Air Compressor System
6. Liquid Oxygen Alarm System
7. Master Alarm
8. Zone Alarm
9. Zone Valve
10. Medical Gas Outlet
11. Distribution Piping System

Feature:

- Daily Check List and report
- Preventive maintenance and Calibration
- Medical Gas Safety and Alarm inspector
- Spare part Management

Benefits:

- Patient Safety
- Risk Management
- Compliance with
- JCI Standard

Area Alarm

Master Alarm

Combination Alarm

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Asset Utilization

Sample Report
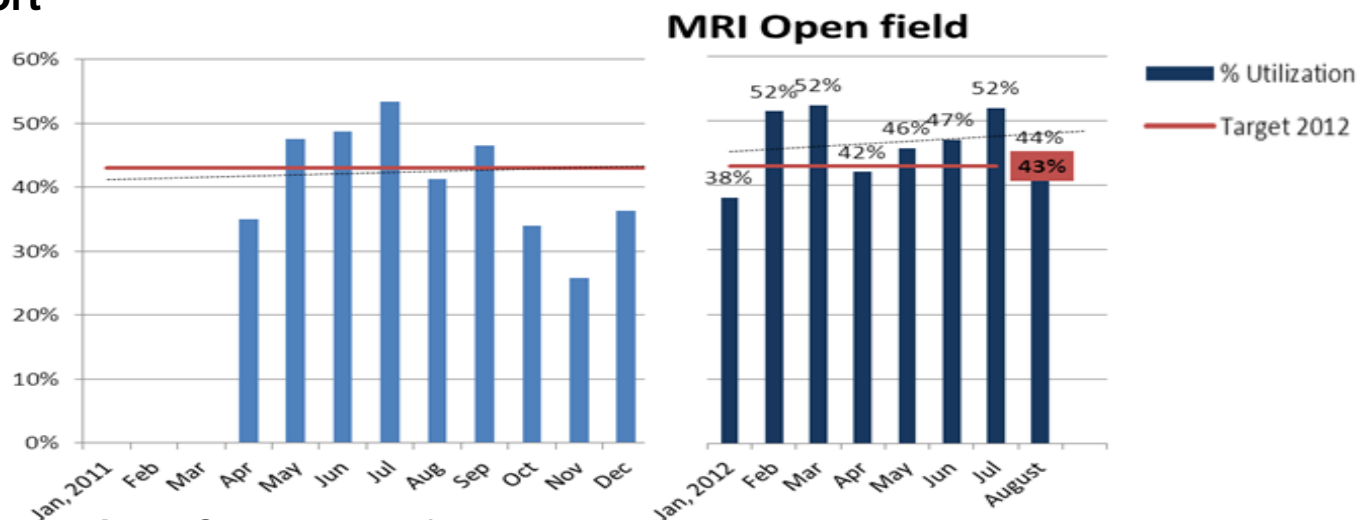
Fig 1: *Comparison of MRI utilization vs target*

	MTD (August, 2012)	Target 2012 (5% increased)	Diff Target	YTD
PET / CT				
Cyclotron				
Novalis		Measure,		
SPECT		Compare,		
Brachy Therapy System		and Improve		
LINAC				
Digital Mammogram				
Ultrasound				
WSH				

Fig 2: *Percentage Utilization of this month vs Target*

Customer Value Proposition "Patient Safety"

FASTER

- Timely repair service

- Uptime Guarantee more than 95%

- Emergency 24/7 Services

BETTER

- Web-based CMMS

- Largest pool of experienced Bio-med engineers in Thailand

- Benchmarked with International standard - ECRI

LOWER COST

- Asset Utilization

- Technology Assessment
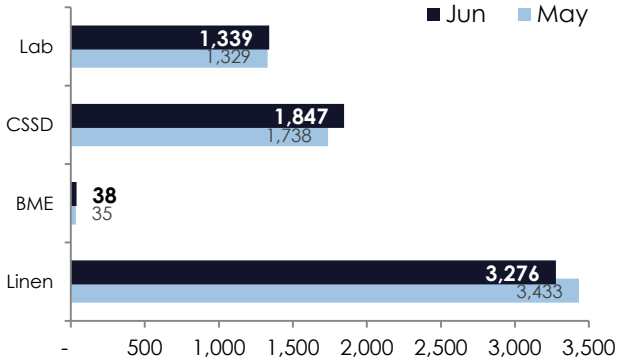
- Contract Management

- Economy of Scale

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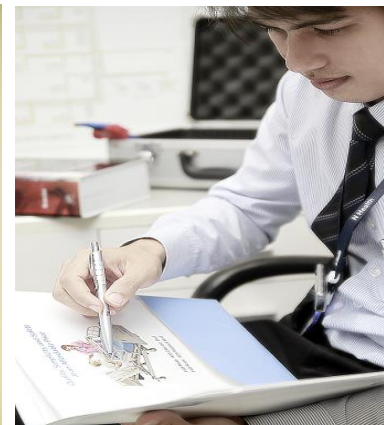
Business Efficiency Goal (KPI)

Productivity

FTE workload per month

1 FTE

Legend: ■ Jun ■ May

Category	Jun	May
Lab	1,339	1,329
CSSD	1,847	1,738
BME	38	35
Linen	3,276	3,433

(x-axis: - 500 1,000 1,500 2,000 2,500 3,000 3,500)

Note: work load per FTE

Work load definition
- Lab: No. of Lab Test
- CSSD: No. of CSSD Set
- BME: No. of Equipment
- Linen: No. of Kg.

Efficiency

Inventory Days: target 25 days

32.7 days

Key Equipment Availability (% Uptime): target 95%
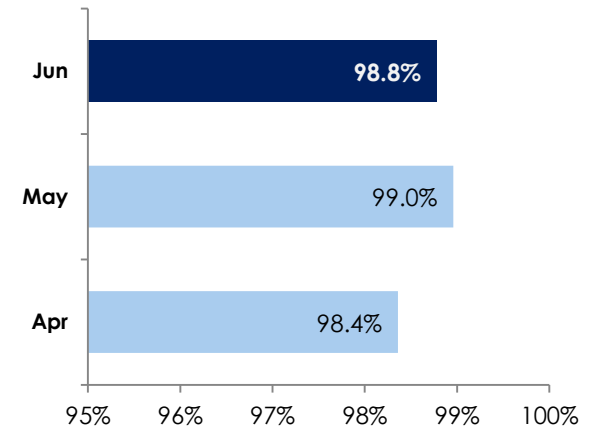
98.9%

Total Staff Expenses to Core Revenues:
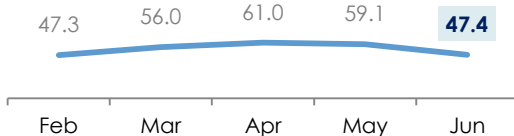
24.6%

Variance from budget -0.7%

Staff Engagement

Retention rate (Target 90%)

Month	Rate
Jun	98.8%
May	99.0%
Apr	98.4%

(x-axis: 95% 96% 97% 98% 99% 100%)

Financial

Receivable Turnover Days: target 58 days

Feb	Mar	Apr	May	Jun
47.3	56.0	61.0	59.1	47.4

Bad & Doubtful Debts to Core Revenues: target 0.2%

-0.12%

Quality

Total **97** No. of occurrence

Level	Count
Level 0	16
Level 1	31
Level 2	15
Level 3	25
Level 4	8
Level 5	2

(x-axis: 0 10 20 30 40)
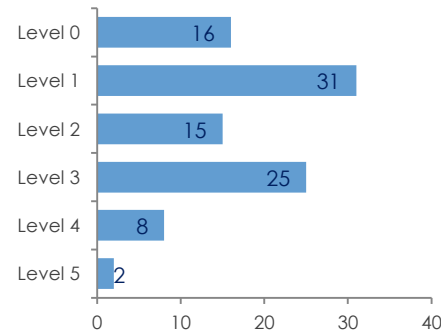
86.0% **Average SLA (Core Service) achievement** target 90%

Note (Core Services: Lab, BME, Sterile, Hemo)
Corporate Services and linen need to verify data – To be reported next month

Healthcare Supply Chain Management Goal

Maximize Patient Care

Product Availability

Minimize Inventory Value

Reduce Non-clinical Activity for all Medical Staff

Minimize total cost of ownership

BDMS

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THANK YOU