



The Global Language of Business

# Panel I – Big Data, Master Data, Data Quality, Regulation and GDSN

GS1 Healthcare Conference  
Bangkok, Thailand

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31 October 2018

# Thank you to our exhibitors



# Thank you to our sponsors

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# Moderator and Panelists



Catherine  
Koetz Industry  
Manager,  
Healthcare  
GS1 Australia



Sarah Lankshear  
Operations  
Manager Master  
Data & Analysis,  
Stryker South  
Pacific, Australia



Dr. Eric Hans Eddes,  
GastroIntestinal and  
Oncological Surgeon,  
Deventer Ziekenhuis,  
Director Dutch Institute  
for Clinical Auditing,  
The Netherlands



Dr. Duangpun Kritchanchai,  
Associate Professor,  
Mahidol University,  
Thailand

# Using the suite of GS1 Standards

*for medical device identification, barcoding and data sharing*

*Sarah Lankshear*

*Operations Manager Master Data and Analysis*

*We help caregivers perform their jobs more efficiently and enhance patient care*

## **Our Company**

---

Stryker is one of the world's leading medical technology companies and, together with our customers, is driven to make healthcare better. We offer innovative products and services in Orthopaedics, Medical and Surgical, and Neurotechnology and Spine that help improve patient and hospital outcomes.

# Depth and Specialisation

*75+ years of innovation have led to a portfolio of more than 75,000 products.*

## Orthopaedics



Hips



Knees



Robotic-Arm Assisted technology



Trauma & Extremities



Foot & Ankle



Sports Medicine

## Medical and surgical equipment



Power Tools & Surgical Equipment



Computer Assisted Surgery



Minimally Invasive Surgical Solutions



Infrastructure & Integration

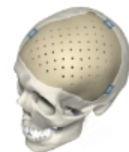


Patient Care, Patient Handling & EMS Equipment



Reprocessing & Remanufacturing

## Neurotechnology and spine



Craniomaxillofacial



Interventional Spine



Neurosurgical, Spine & ENT



Neurovascular



Spinal Implants and Biologics

# Our Mission

Together with our customers,  
we are driven to make  
healthcare better.

## Our Values





# Global Recognition



## World's Best Workplaces 2017

First time on the list, ranked #10 out of 25 companies



## Glassdoor Highest Rated CEOs

Employees' Choice Award

Recipient for the third year in a row



## 2018 Best Workplaces Women

Recipient for the first time, ranked #30 out of 100 companies



## FORTUNE World's Most Admired Companies

World's Most Admired Companies in Medical Products & Equipment  
Recipient for the 17th consecutive year, #5 in Medical Products and Equipment Industry in 2018



## FORTUNE 100 Best 100 Best Companies to Work For in U.S.

Recipient for the eighth consecutive year, ranked #16 in 2018



## LinkedIn Top Companies 2017

Ranked #23 in 2017



## FORTUNE 500 Largest U.S.-Based Companies

Joined the list in 2003 as #493, moved to #252 in 2017



## PEOPLE Companies that Care

First-of-its-kind list, ranked #45 in 2017



Best Workplaces™ for Giving Back

2018

## 2018 Best Workplaces Giving Back

Second time on the list, ranked #22 out of 50 companies

# Local Recognition

stryker

Proud to be one of  
**Australia's Best  
Places to Work**  
again in 2018



- *Certified to CSIA standards*
- *Finalist in 4 categories for the 2017 Australian Service Excellent Awards*

★ 2014 ★ 2015 ★ 2016 ★ 2017 ★

Connectivity in Hospitals  
requires accurate, meaningful data



MAKE THE CHANGE

- *Tenders are the impetus for change*
- *Using data personally key to success*
- *Data needs rules*
- *Data Dictionary has these rules*
- *Exceptions cause pain*
  - *Operationally*
  - *Financially*
  - *Ability to report & analyse*

## Success Factors

- *Set up efficient data loading to focus on value add*
- *Ensure data can easily be pulled out again*
  - *Integrity checking*
  - *Reporting*
- *Data Teams know where all the information is*  
*- don't waste that IP*
- *KPIs difficult for a Master Data Team, find where else they add value and measure that!*



## Master Data Rewards

- *EDI*
- *NPTC Data Quality Scores*
- *ERP Implementation*
- *Healthcare Providers benefit*



## Standards as the base for improved Quality of Care

**Eric H Eddes, MD PhD**

Director DICA

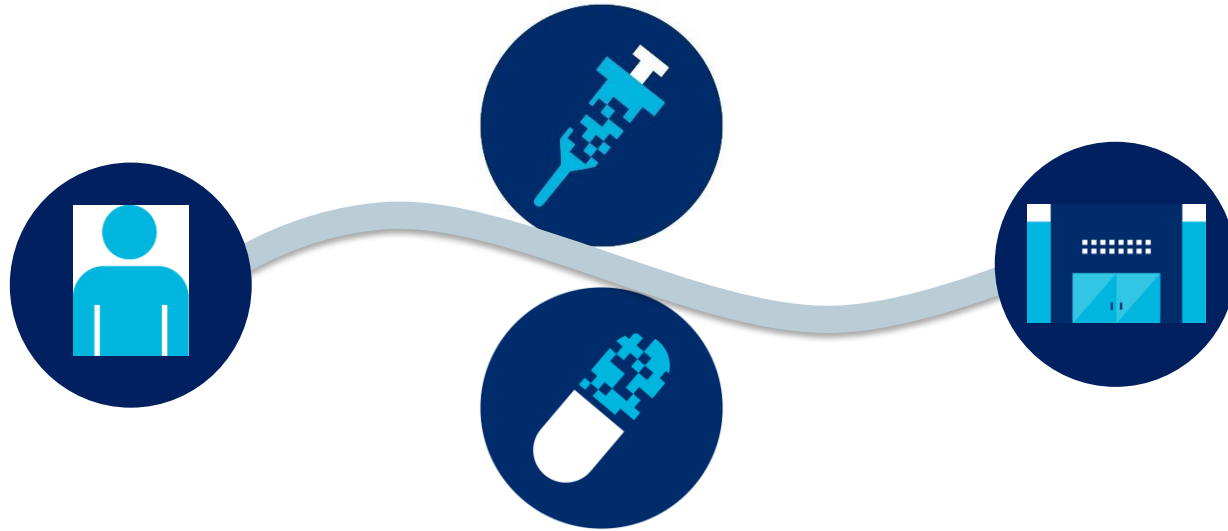
GastroIntestinal Surgeon Deventer Ziekenhuis

GS1 Clinical Advisory Committee



# GS1

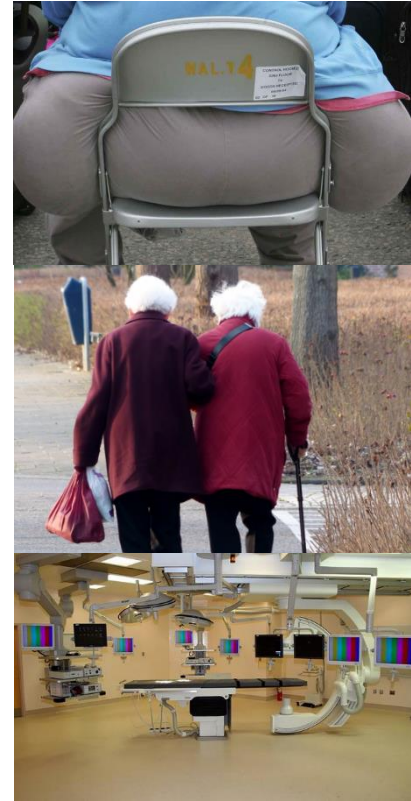
Safer, more efficient care starts with a simple scan



# Challenges in Healthcare

Dutch Institute for Clinical Auditing

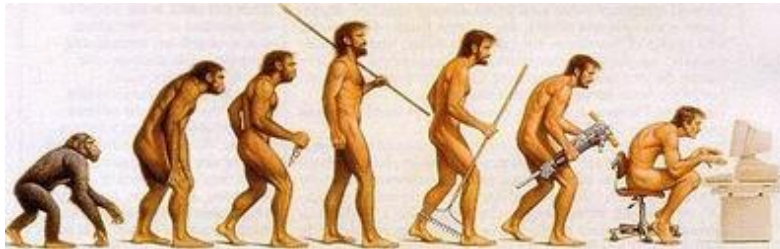
- Aging population
- Multi (co-)morbidity
- New technologies
  
- Accessible
- Affordable
- Sustainable



# Challenges in Healthcare

Dutch Institute for Clinical Auditing

- Valid Information
- Management Information
  - Quality
  - Safety
  - Finance
  - Patient (customer) satisfaction



# Setting Standards

Dutch Institute for Clinical Auditing

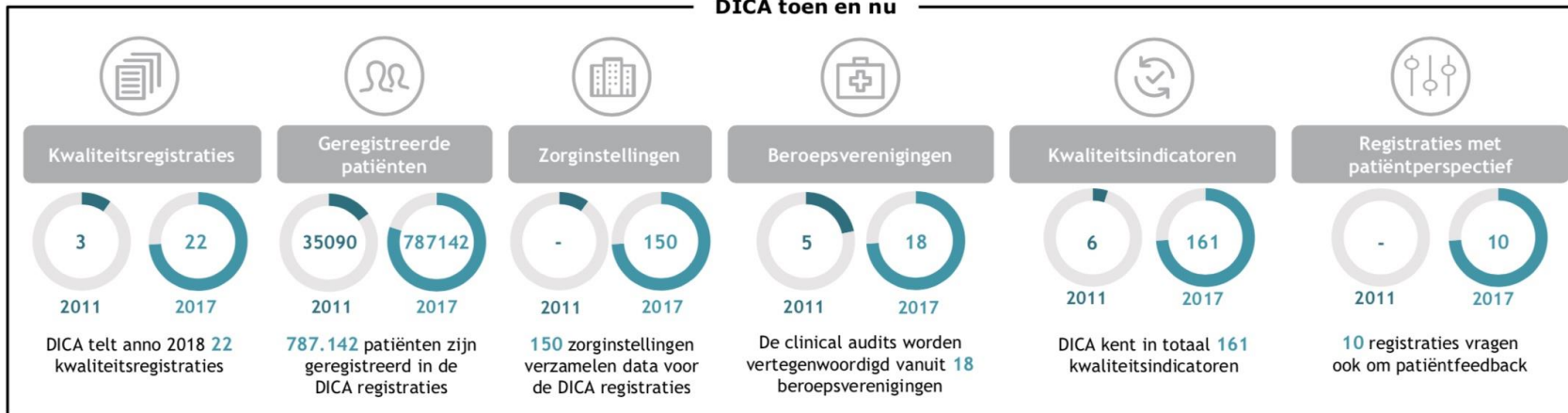
- Robust methodology
  - Correction
  - Site checks
- Nationwide ICT platform
  - Agreements
  - Exchange, eg EMR
  - Quality data, PROM's, financial data
- Professional Boards
- Nationwide coverage



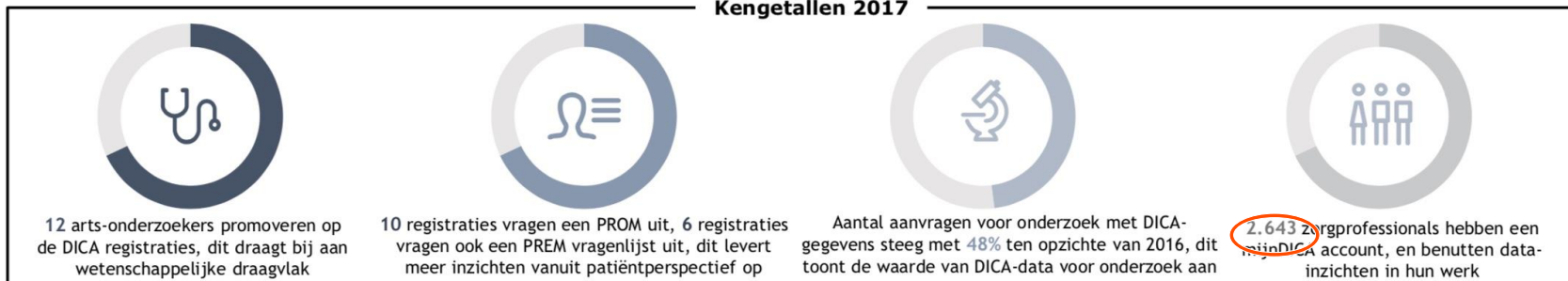
# Dutch Institute for Clinical Auditing

## development

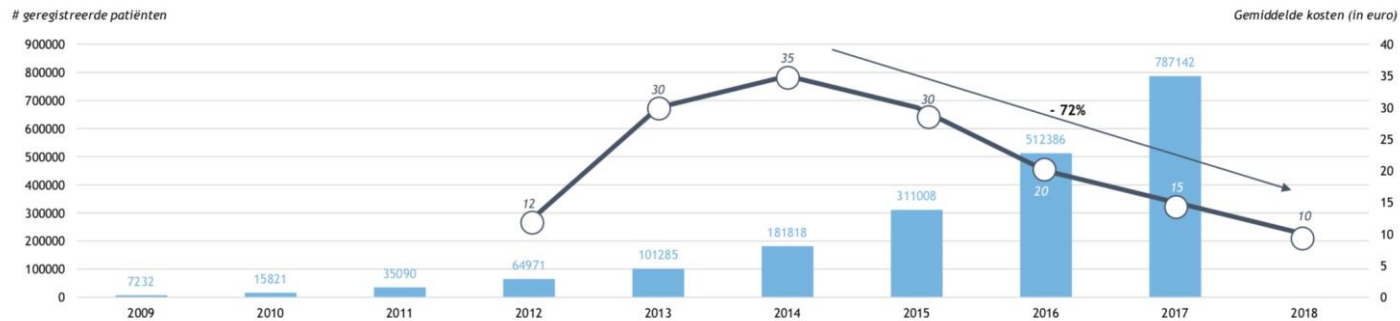
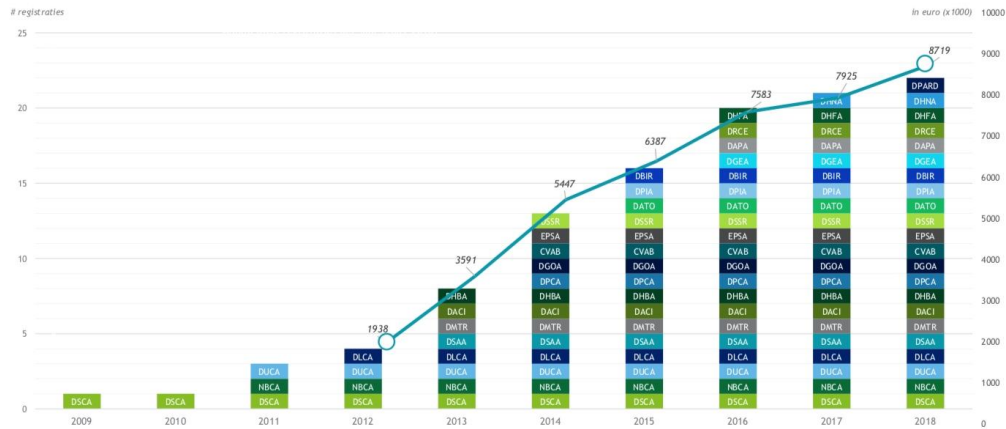
### DICA toen en nu

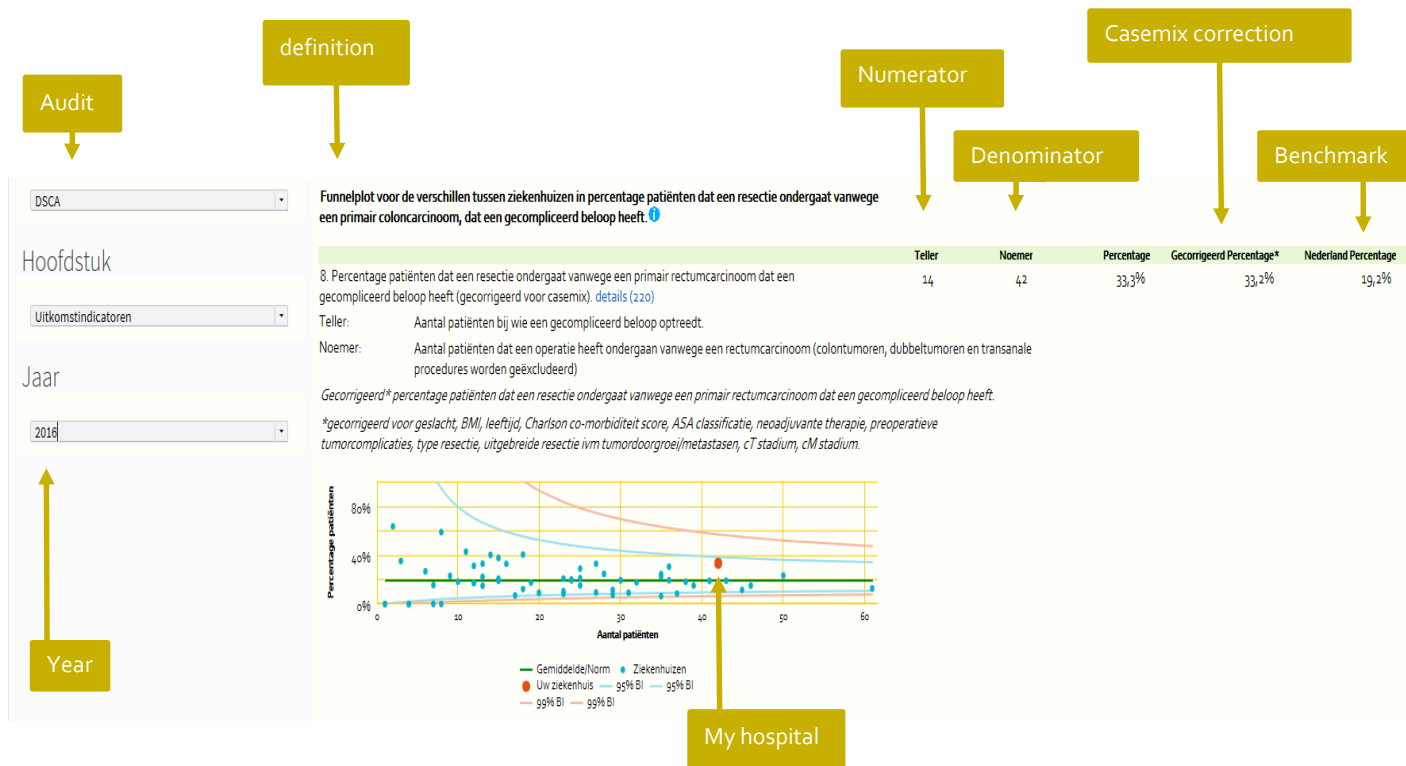


### Kengetallen 2017



# Dutch Institute for Clinical Auditing costs

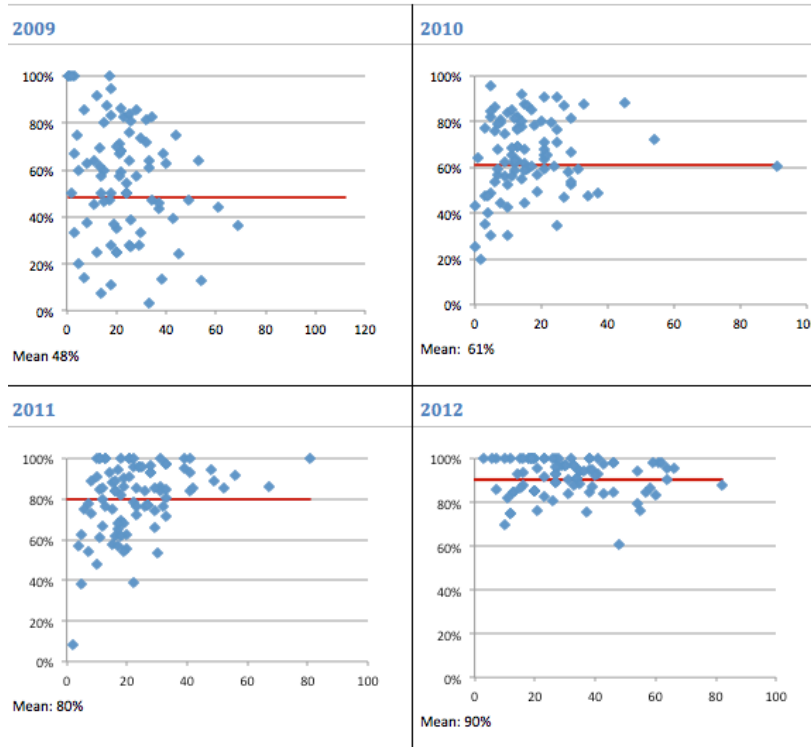




# Improved Outcome

## Colorectal Cancer Surgery

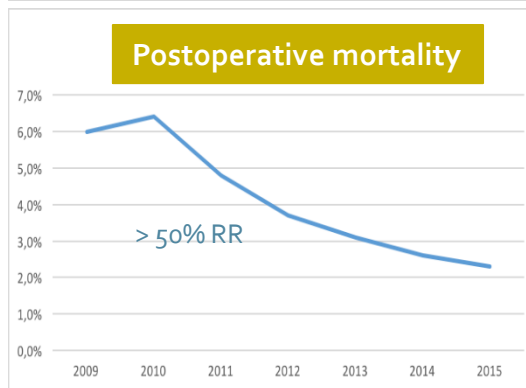
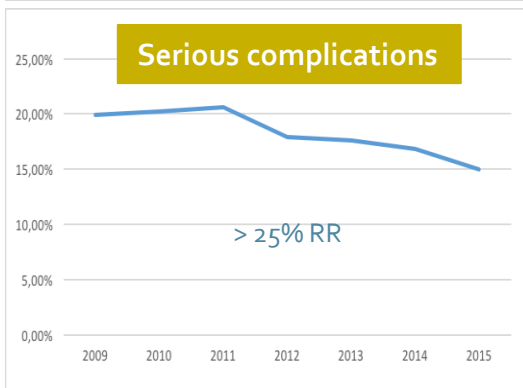
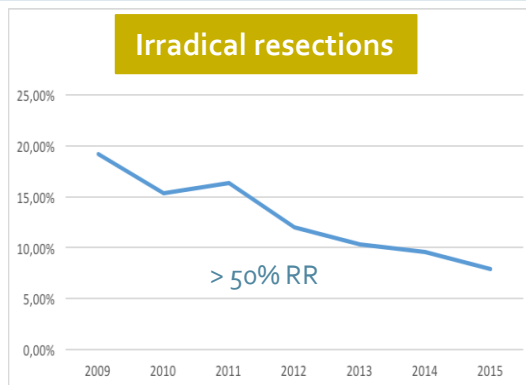
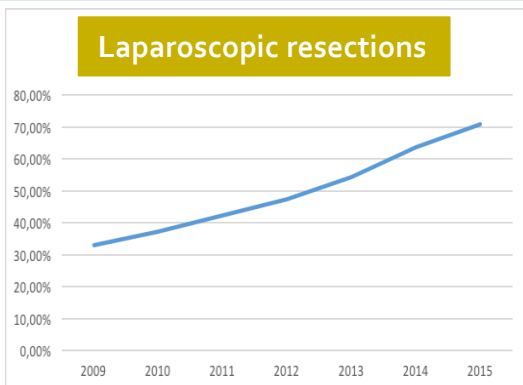
Percentage bekende CRM rectumcarcinoom gedurende jaren





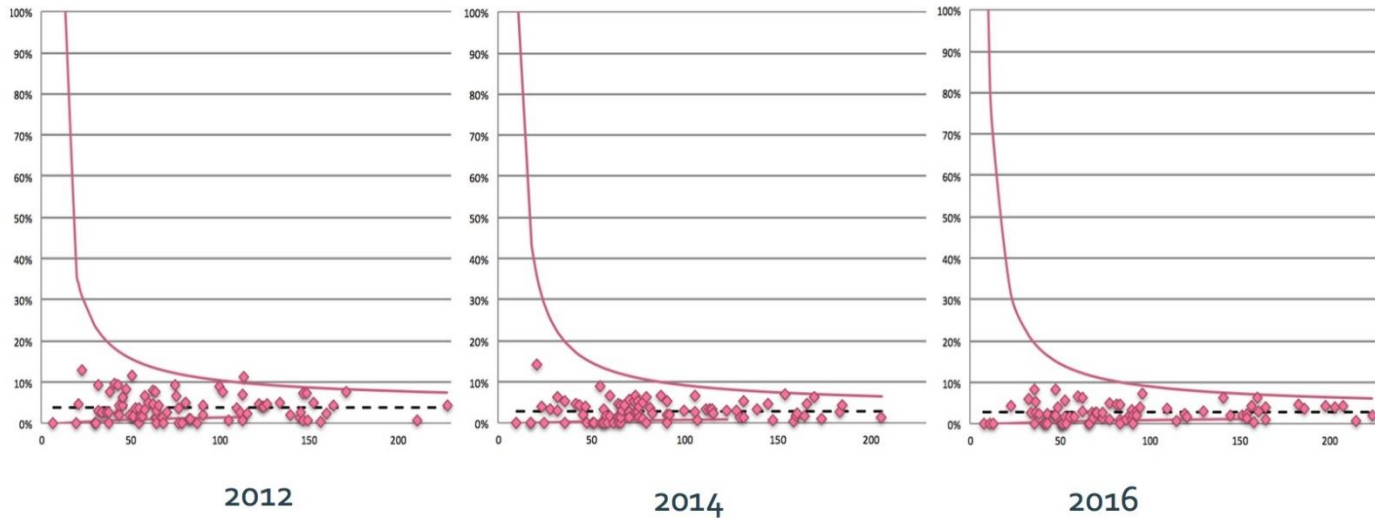
# Improved Outcome

significant improvements



# NBCA

## National Breast Cancer Audity

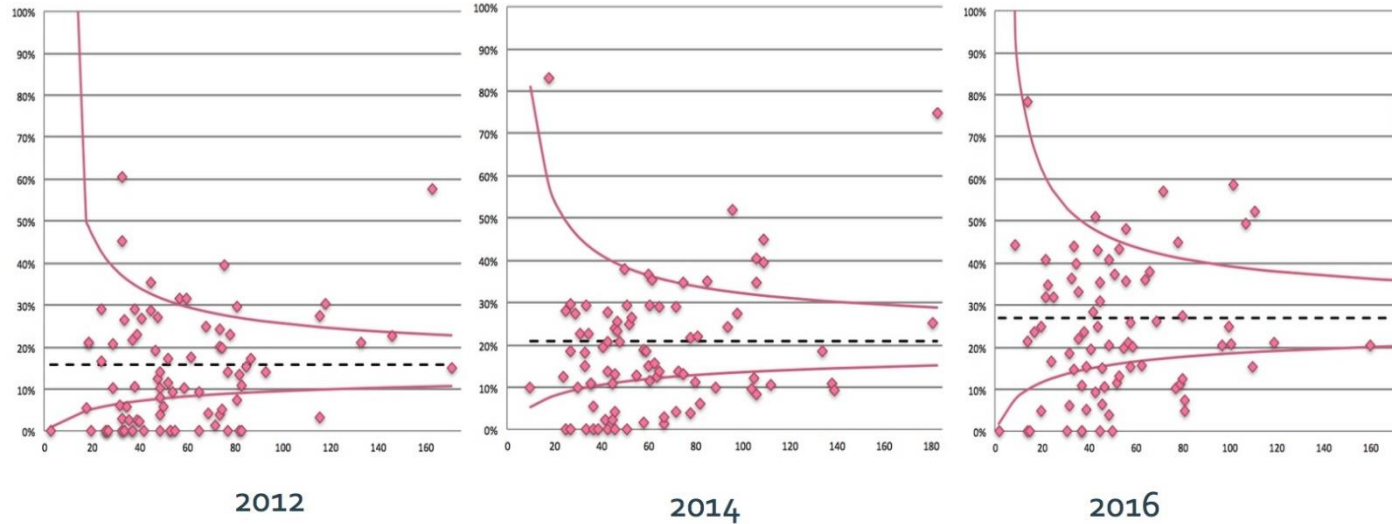


Irradical resections

2012	2013	2014	2015	2016
5,5%	5,0%	4,6%	4,4%	2,9%

# NBCA

## National Breast Cancer Audit

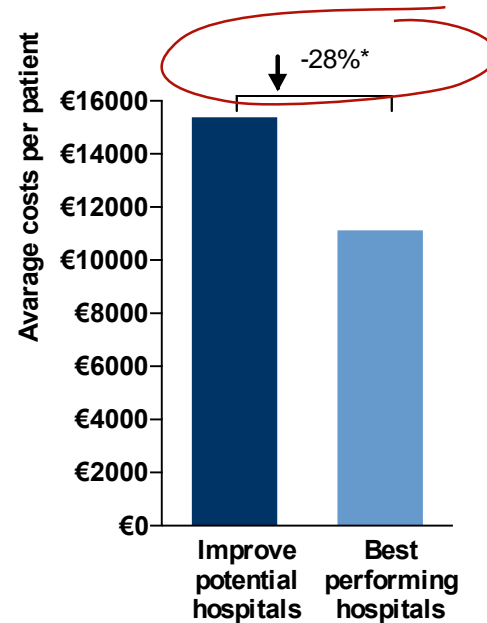
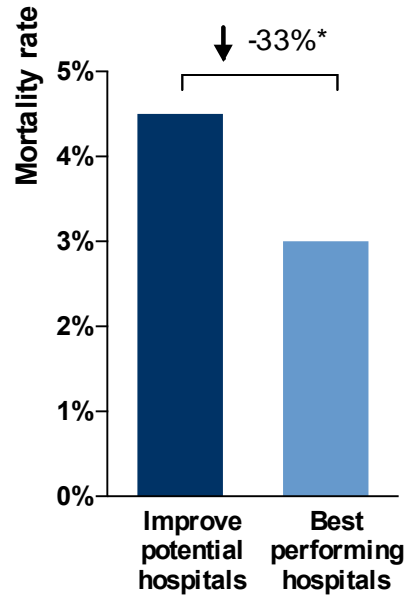
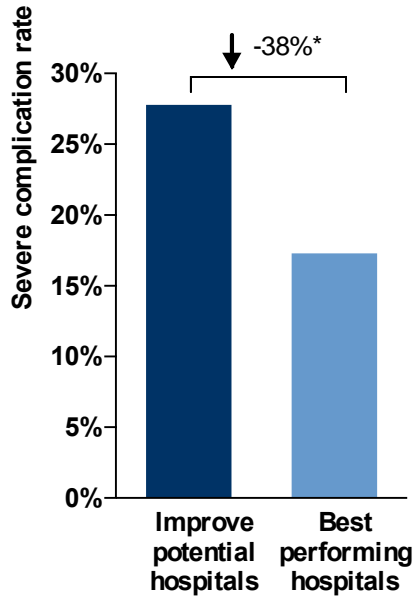


\* NB. Sinds 2016 berekend voor alle tumorexcisies  
Immediate reconstructive surgery

2012	2013	2014	2015	2016
13%	16%	18%	23%	27%

# Dutch Value Based Healthcare Study

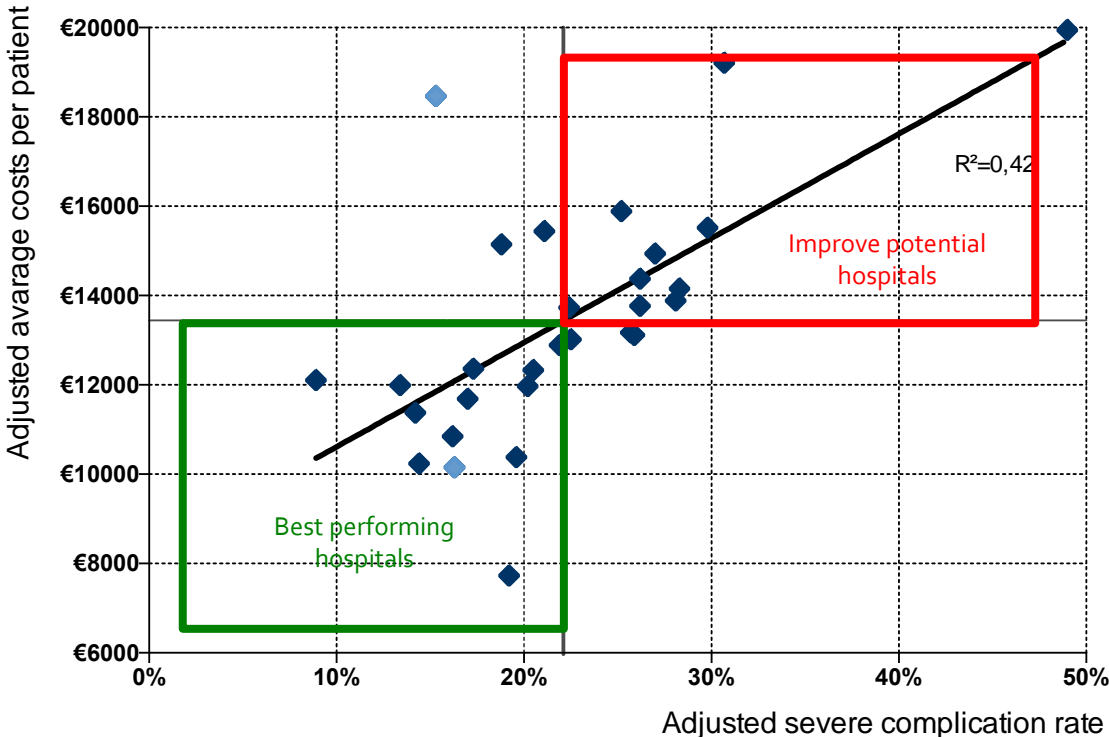
dutch colorectal audit, 29 hospitals



± 4000 €  
per patient

# Dutch Colorectal Audit

improving potential



# Dutch Institute for Clinical Auditing

(inter)national cost savings

- 20 million euro colorectal cancer
- Equivalent potential in other patient groups
- National potential in savings 10 – 20 %



# Dutch Institute for Clinical Auditing

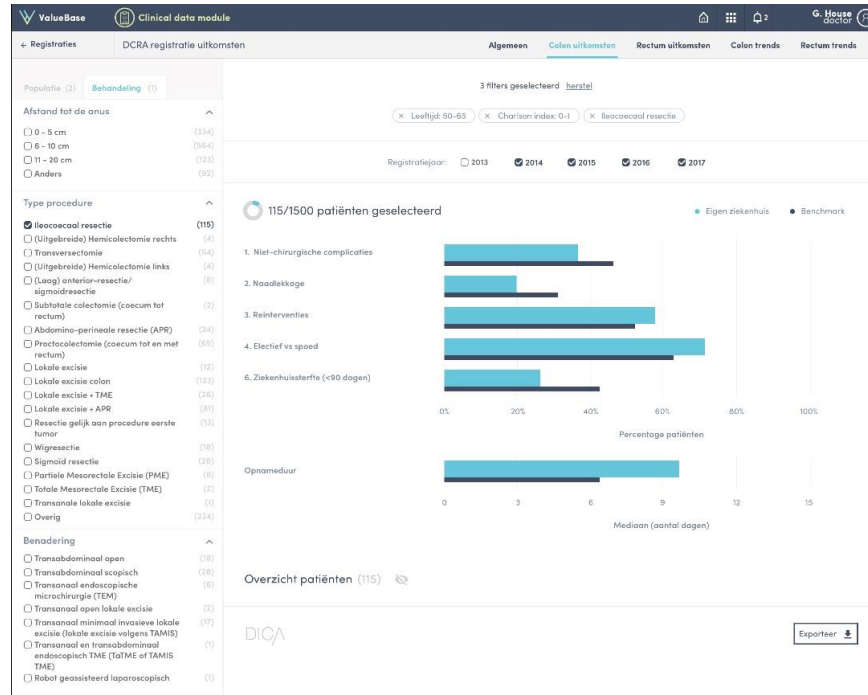
“next step”

- Shared decision making
- Decision Support
- Real Life Data
- Targeted therapy
- International comparisons
- Reducing registration load



# Dutch Institute for Clinical Auditing

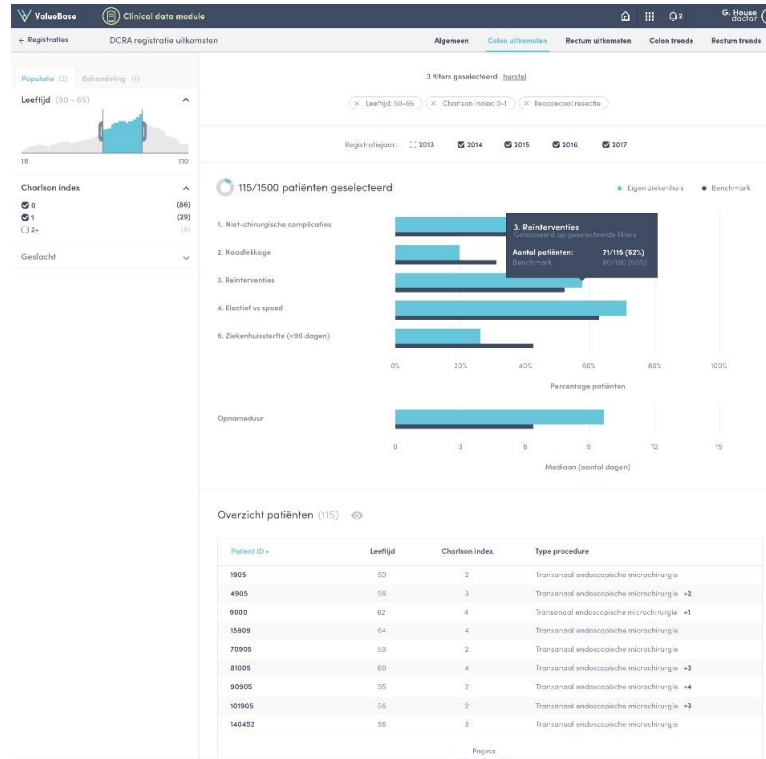
shared decision making





# Dutch Institute for Clinical Auditing

sharing experience to improve



# Dutch Breast Implant Registry

clinical audit & traceability



Vrijdag 02 oktober 2015 | Het laatste nieuws het eerst op NU.nl



Voorpagina

Net binnen

NUweekend

Algemeen

Binnenland

Buitenland

Politiek

Economie

Geld

Ondernemen

Beurs

VW-schandaal

Sport

Voetbal

Impions League

Formule 1

Wielrennen

MijnTeam

Tech

[NU.nl](#) > [Lifestyle](#) > [Gezondheid](#)



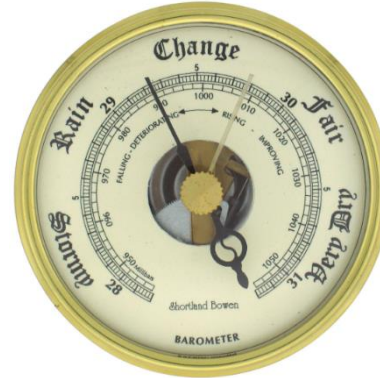
## Borstimplantaat Silimed direct van de markt

Gepubliceerd: 24 september 2015 09:28

Laatste update: 24 september 2015 09:27



Implantaten van de Braziliaanse fabrikant Silimed mogen per direct niet meer gebruikt worden in Europa. Bij een fabriekscontrole bleek dat er onder meer glasvezeldeeltjes op de borstimplantaten zaten die daar niet thuis horen.



# Dutch Melanoma Treatment Registry

clinical audit & new drugs

- Introduction new drugs
- Accelerated availability
- Professionals- Pharma – Health Authorities
- Expansion

**DMTR**  
DUTCH MELANOMA  
TREATMENT REGISTRY

**DICIA**  
DUTCH  
INSTITUTE  
FOR CLINICAL  
AUDITING

Ziekenhuis:  
Periode: 2014  
Rapport datum: 11-5-2015  
Registratie: DMTR

Prospectieve Patiënt-Episode 1

**Uitgebreide registratie - Patiëntgegevens**

	Uw ziekenhuis		Nederland	
Geslacht	N	%	N	%
Man	4	66.7%	54.7%	
Vrouw	2	33.3%	43.2%	
Niet ingevuld	0	0.0%	2.2%	

	Uw ziekenhuis		Nederland	
Leeftijd	N	%	N	%
Gemiddelde leeftijd*			57	62

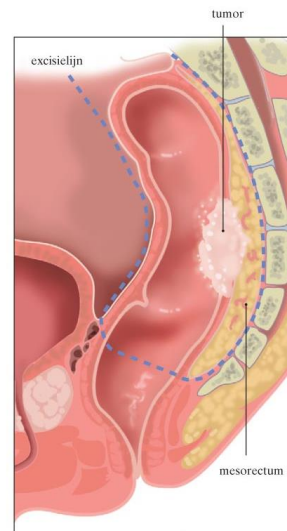
	Uw ziekenhuis		Nederland	
Leeftijd	N	%	N	%
Niet ingevuld / foutieve waarde	0	0.0%	0.0%	

	Uw ziekenhuis		Nederland	
WHO performance score	N	%	N	%
0	2	33.3%	51.1%	
1	3	50.0%	30.9%	
2	0	0.0%	5.0%	
3	0	0.0%	4.3%	

# Dutch Institute for Clinical Auditing

International comparisons; radiotherapy in rectal carcinoma



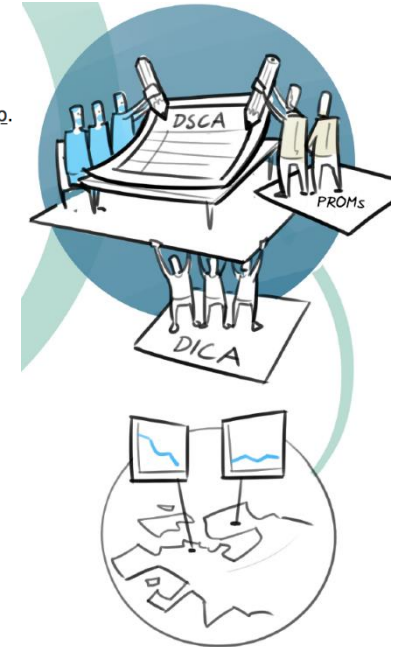
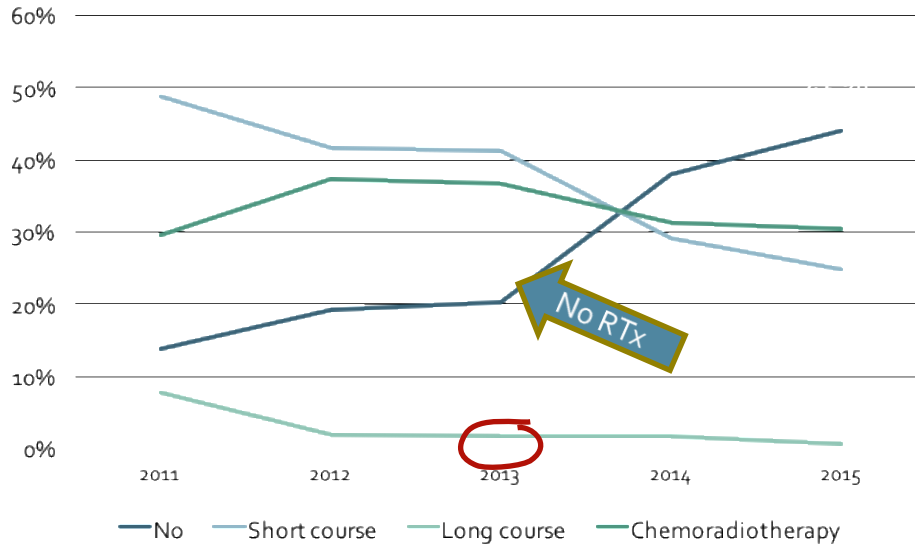
# Dutch Institute for Clinical Auditing

## International comparisons radiotherapy

Eur J Surg Oncol. 2013 Sep;39(9):1000-6. doi: 10.1016/j.ejso.2013.06.010. Epub 2013 Jun 28.

### Evaluating national practice of preoperative radiotherapy for rectal cancer based on clinical auditing.

van Leersum NJ<sup>1</sup>, Snijders HS, Wouters MW, Henneman D, Marijnen CA, Rutten HR, Tollenaar RA, Tanis PJ; Dutch Surgical Colorectal Cancer Audit Group.



# Dutch Institute for Clinical Auditing

reduction of registration load



- Data interoperability
- Connection EMR
- Alignment datasets
- Interchangeable
- Systems, procedures; scalable

# Dutch Institute for Clinical Auditing

reduction of registration load



- Data interoperability
- Connection EMR
- Alignment datasets
- Interchangeable
- Systems, procedures;  
scalable

**STANDARDS**

# Dutch Institute for Clinical Auditing

World Economic Forum

**MHWS & ZIN  
need to  
actively  
orchestrate a  
people-  
centered  
informatics  
system**



Simplify capture of outcomes data



Continue development of personal health environments



Implement distributed data access models where possible



Support development of informatics capabilities across all healthcare stakeholders



Influence policy to access multiple data sets and identify unique patients



# GS1

Standardisation, necessary base for improved quality and safety




# Developing Thailand Healthcare Supply Chain: The Big Data Project

Assoc.Prof.Dr.Duangpun Kritchanchai  
Centre of Logistics Management and  
Healthcare Supply Chain (LogHealth)  
Mahidol University



# LOGHEALTH, MAHIDOL UNIVERSITY

-  **Healthcare Supply Chain & Logistics**
-  **Research**
-  **Consultancy**
-  **Training**

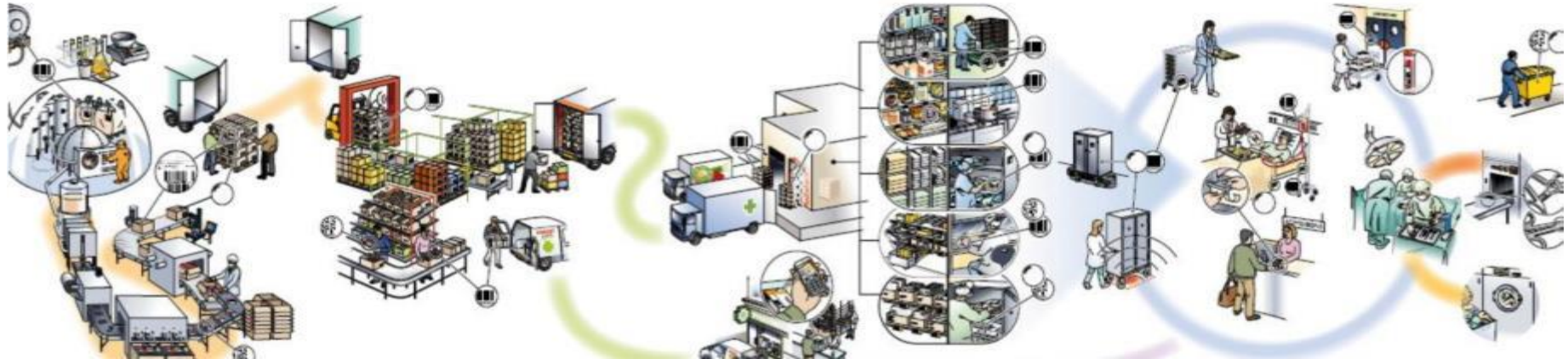
# Our Inspiration: Material & Information Flows

Manufacturer

Logistics  
Distributor

Healthcare Provider  
(Hospital, Clinic, etc.)

Consumer  
(Patient)



Material Flows

Information Flows

# Traceability

(Tracking)

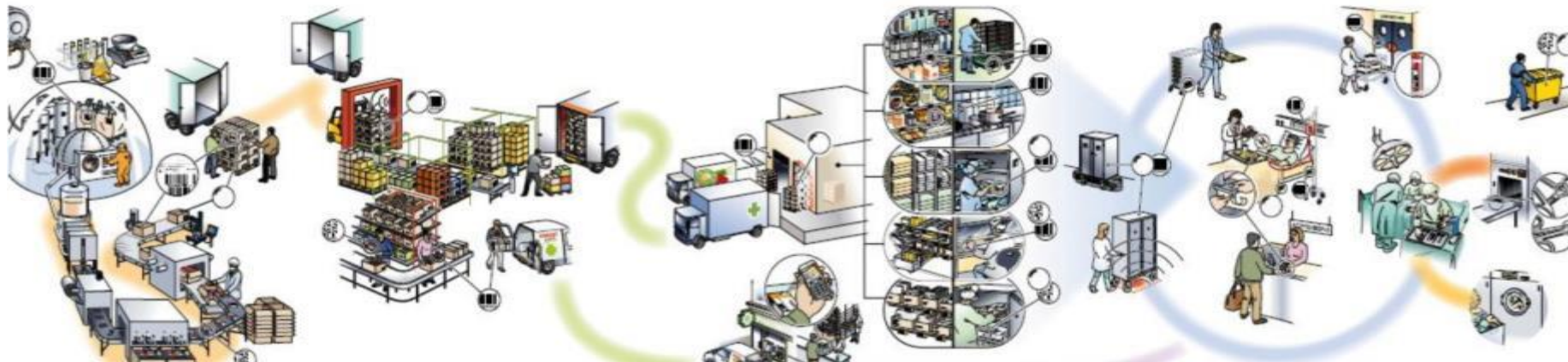
(Tracing)

Manufacturer

Logistics  
Distributor

Healthcare Provider  
(Hospital, Clinic, etc.)

Consumer  
(Patient)

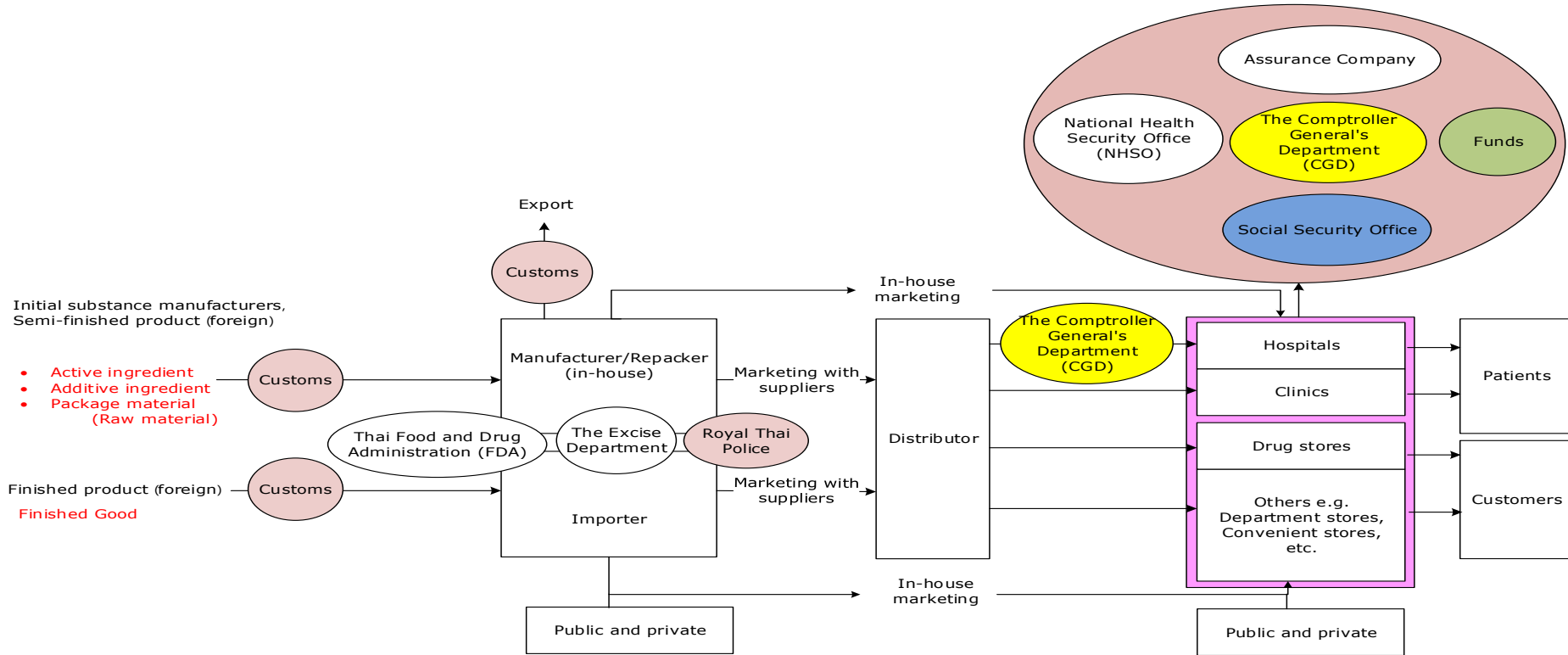


# Instead of waiting for the policy ...



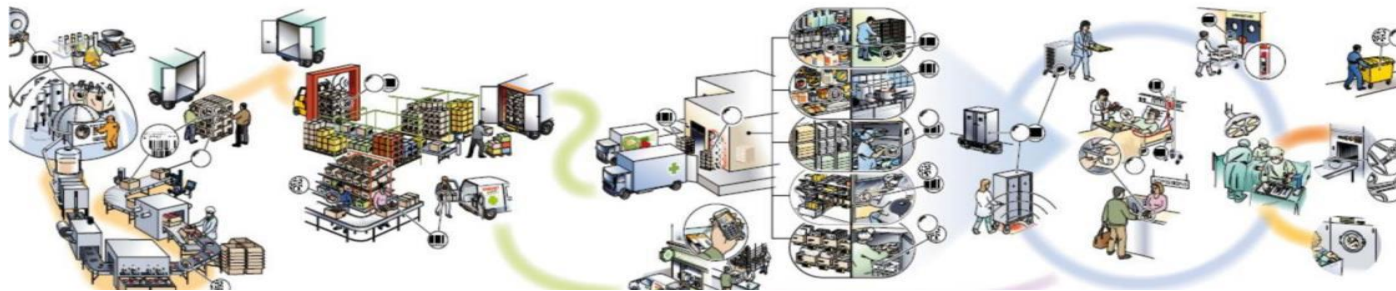
## We start the journey by RESEARCH (FOR CHANGE)

# Healthcare Supply Chain Stakeholder



# From Our Research , To Achieve Supply Chain ...

1. identify the uniqueness of drugs and medical materials to communicate through the supply chain



**Manufacturer  
(Drug & medical Device)**

**Logistics Distributor**

**Healthcare Provider  
(Hospital, Clinic, etc.)**



**Consumer  
(Patient)**

2. Develop a product catalogue to provide standard data which is useable to all players in the supply chain

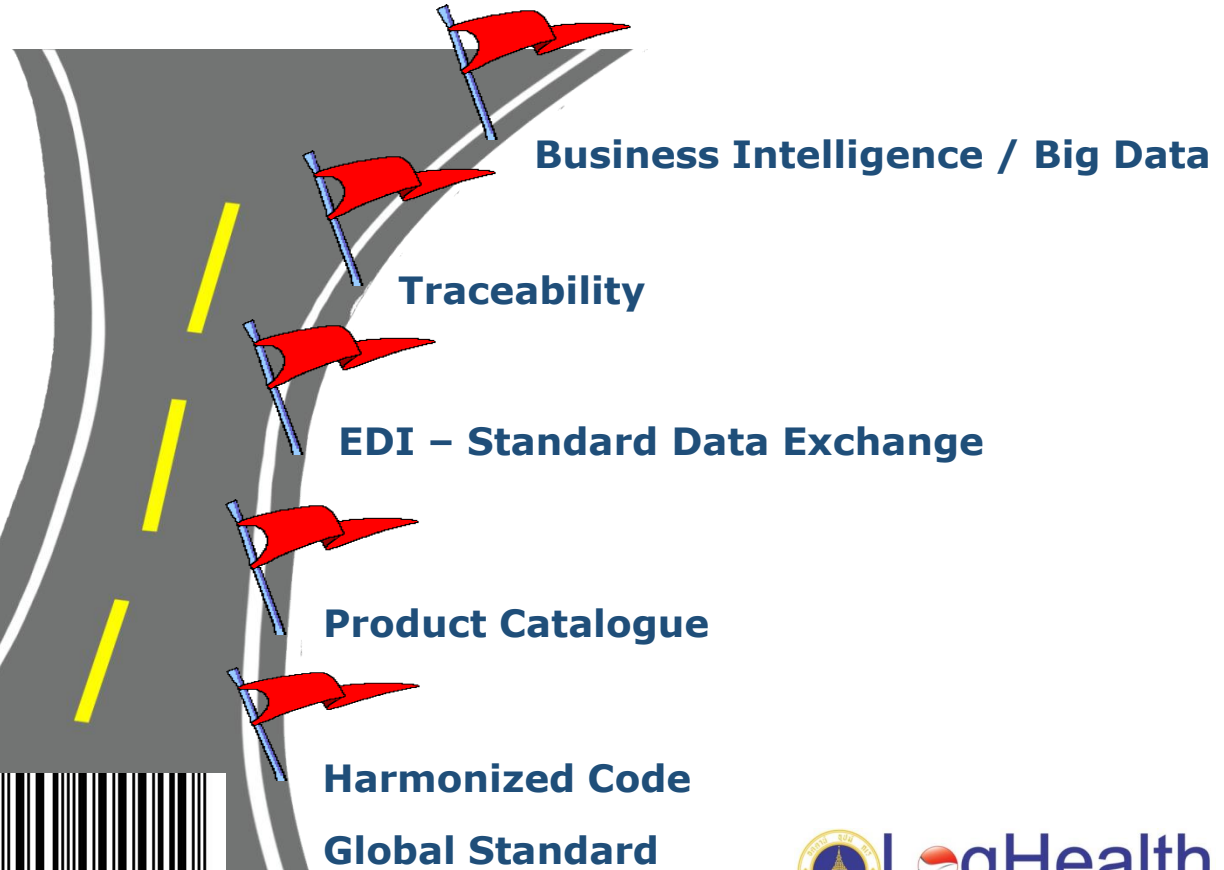




# Current Situation

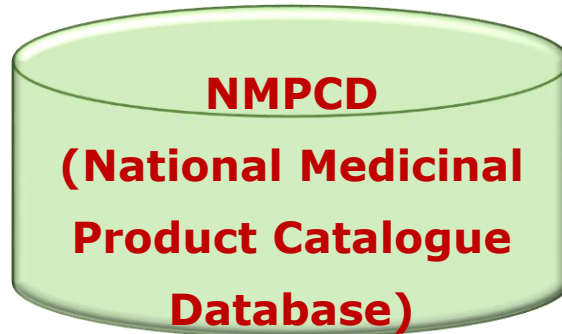
Topic	AS-IS	Problem	Impact
<p><b>Standardized Code</b></p>	<ul style="list-style-type: none"> <li>• Too many Standard Code</li> </ul> 	<ul style="list-style-type: none"> <li>• No mean to communicate</li> </ul>	<ul style="list-style-type: none"> <li>• Unable to refer to the same entity</li> <li>• No traceability</li> </ul>
<p><b>Standardized Data Exchange</b></p>	<ul style="list-style-type: none"> <li>• Fragmented Database</li> </ul>  <ul style="list-style-type: none"> <li>• Communicate</li> </ul>	<ul style="list-style-type: none"> <li>• No synchronized integrated data</li> <li>• High Operating Cost</li> </ul>	<ul style="list-style-type: none"> <li>• No quick response</li> <li>• No traceability</li> </ul>

# WE NEED A ROADMAP



# What we are working on ...

## 1) Product Catalogue

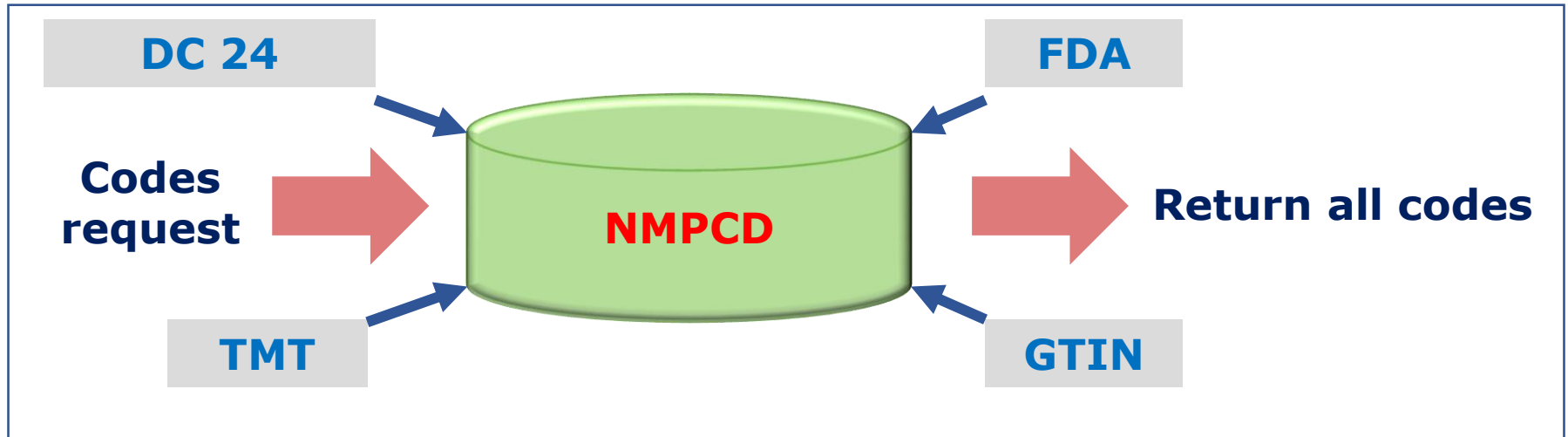


- **Drug 25,000 items**
- **Codes mapping**

**No one wants to give up their own codes.**

<b>FDA code</b>	<b>GTIN</b>
<b>DC 24 (MOPH)</b>	<b>TMT</b>

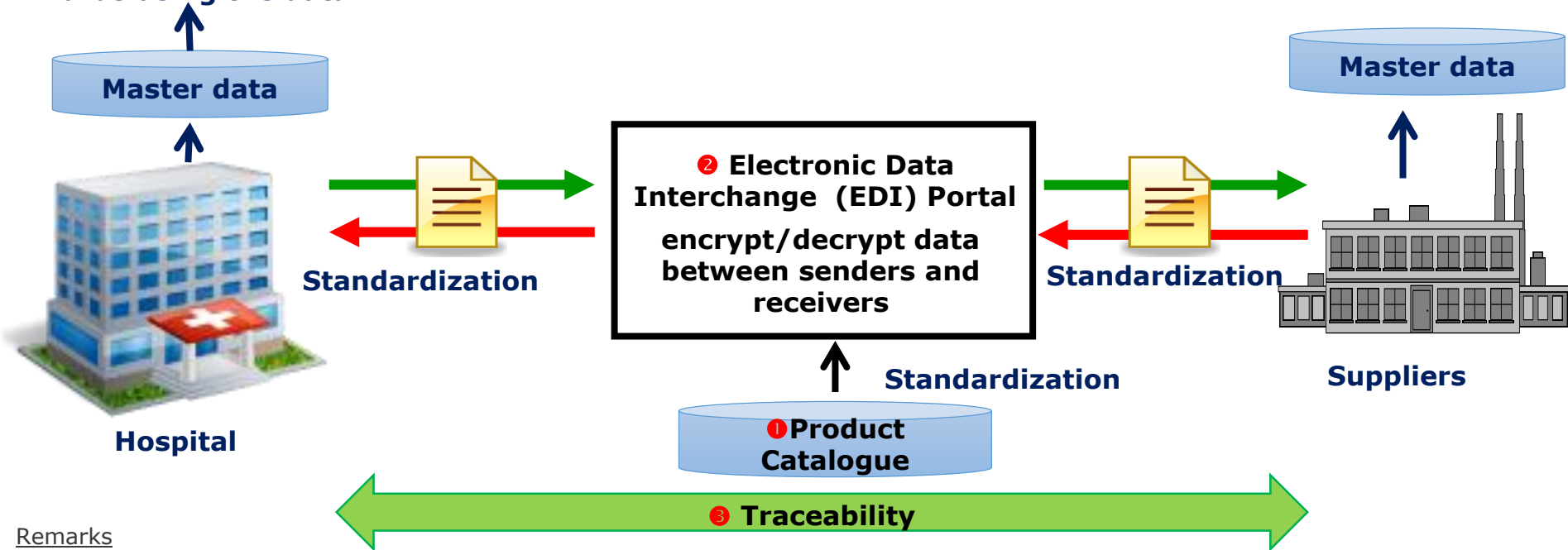
# NMPCD (National Medicinal Product Catalogue Database)



## 2) - MMIS (Material Management Information System)

### - EDI

Wards using the data

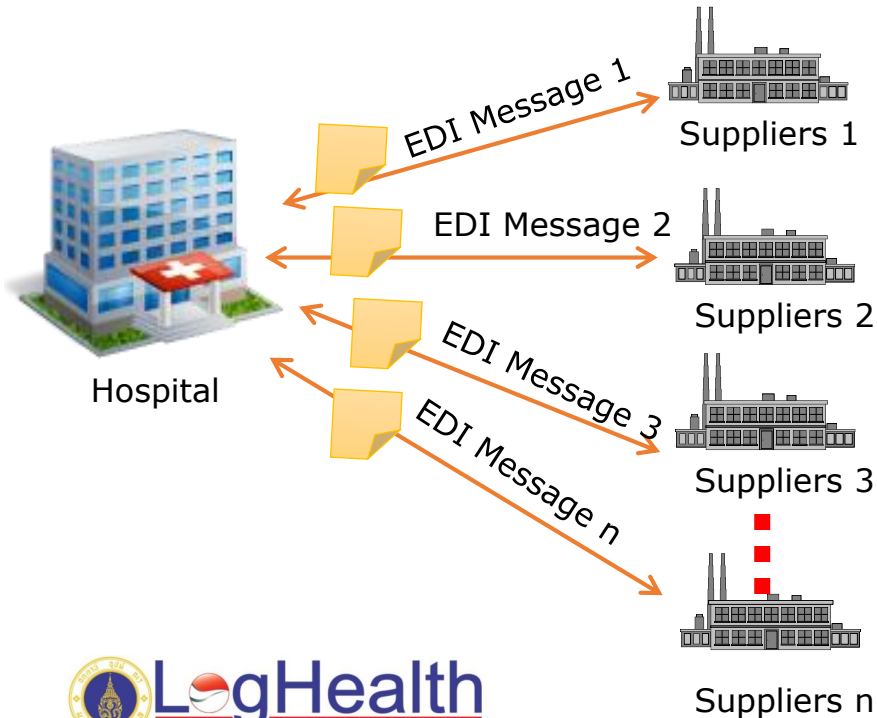


#### Remarks

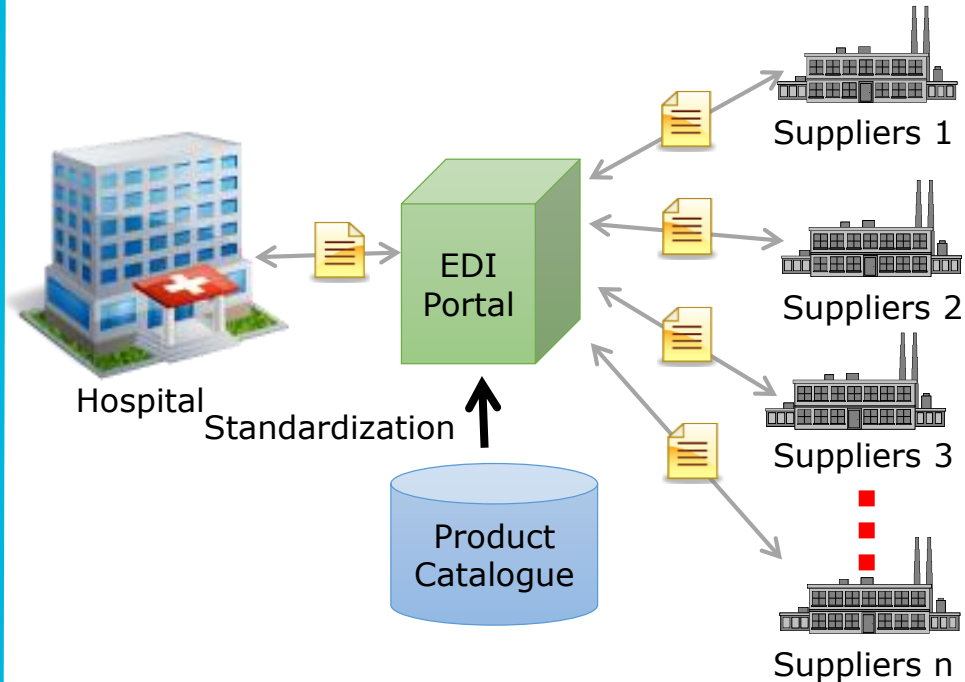
- ① Developing National Database, healthcare information system and increasing patient safety in drug consumption (TRF-NRCT., 2011-2014)
- ② Implementation of Electronic Data Interchange In Healthcare Supply Chain (TRF, 2013)
- ③ A Drug Traceability for Enhancing Healthcare Logistics and Supply Chain Management in Thailand (TRF-NRCT., 2013)

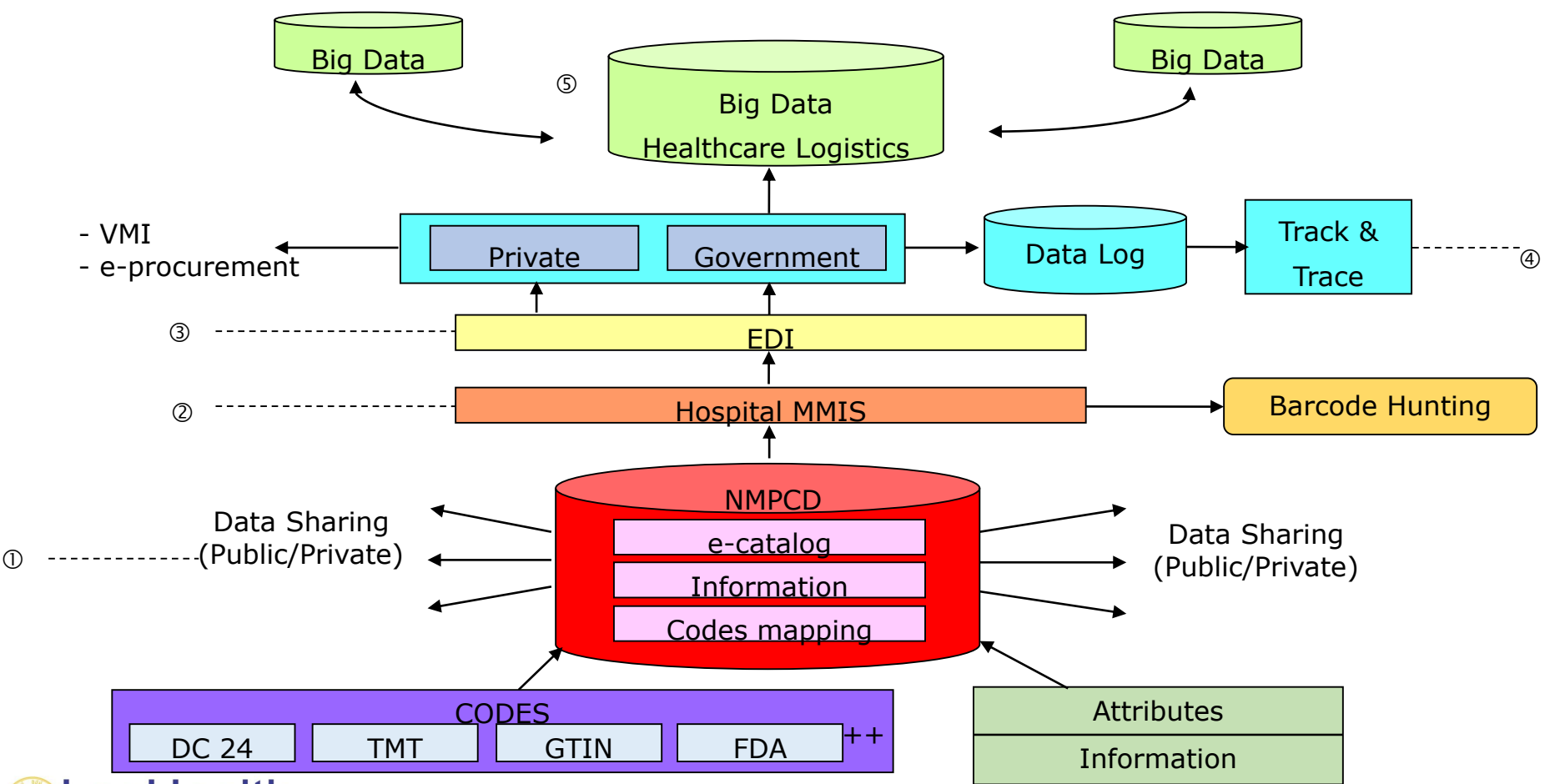
# EDI Solution Using Product Catalogue

## Current Practice



## Solution





# GET PEOPLE INVOLVED

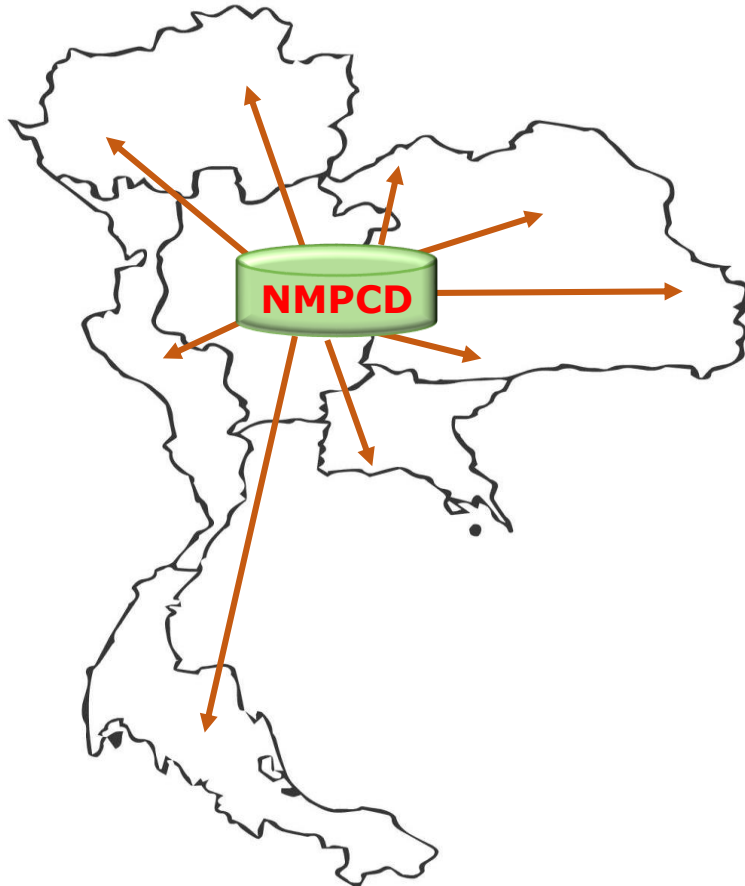
## MOU (MOPH, Mahidol University, FDA, Pilot hospitals, NRCT)



28 November 2016



# Action Plan 2018 - 2019



**EDI**

**Track and Traceability**

**Big Data**

**Digital Healthcare Logistics**

# VDO: Supply Chain and Logistics management



# Lesson Learned

- **8 years effort**
- **Think Big ... Start Small.**
- **Proof of concept**
- **Top down policy**
- **Be Patient and Brave**



# Thank you

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# Discussion



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GS1 Australia



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Manager Master  
Data & Analysis,  
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