



Principles of Choosing a Software

-Communication Standards | Legal Requirements



- Complex → Simple
- Each Slide → generate a Principle
- 11 slides
- Summary

Decide who shall choose



- Selection Team
 - Domain experts
 - Tech savvy lab technologist
 - Medical professionals
 - Stores in charge
 - IT/ EDP in-charge
- Sole decision maker-
 - Proprietor/ Founder/ Managing partner

Responsibility of choice
Rights of rejection



Identify Requirements

Mission Critical Requirements



Capabilities for delivering services to patients

- Patient information process
- Phlebotomy process
- **Reports standards (pleasing)**
- Report dispatch
- **eReport (Patient Portal)**
- Unique patient identifier for a longitudinal health record

Capabilities for performing lab functions

- LIS
 - **Barcode (sample collection)**
 - Acknowledgment
 - Equipment integration
- Hemat | Biochem | Immunoassay | Little things
- Middleware
- Worklists

Critical results
QC & Ana. Status
TAT reports
Automation

Top flows
Sample Handling/ Storage/ Archival

Billing capabilities

- Tariffs
- Profiles/ Packages
- Diagnostic Departments
- Credit billing
- Cash Handling
- Expense handling

Inventory Management Capabilities

- Rarely sales of goods
- Always managing costly fractional use material

Greenfield → Rigid on mission critical requirement

Don't Sweat the little things





- De novo project COTS system
 - Feature and pricing match
- COTS component on top of existing system
 - Technical inputs from developers must
- Custom component on top of existing system
 - In house team | Expensive | Never on time
- ~~Fully custom~~

~~All Labs have the same process~~

COTS is on-time, Custom config or customization to be planned for and expected





- Peer review
- Case studies
- White papers
- Feedback on support

Talk to the vendor side decision maker





- Open source | Closed source
- Database engine behind the scenes
 - Microsoft SQL server
 - MySQL
 - Postgres

“KISS- Keep it simple stupid”- Kelly Johnson

“Make everything as simple as possible, but not simpler”- Einstein



- **MoHFW-eHealth section**
 - Notified of Dec 30, 2016
 - **EHR standard for India-2016** (A revision of the previous 2013 standard)
 - Placed for adoption by Healthcare institutions/providers across the country
- **Other Standards**
 - ICD-10 for Diagnosis (Morbidity/ Mortality)
 - SNOMED-CT Terminology
 - LOINC codes for diagnostics
 - DICOM for imaging
 - HL7 for information exchange

Key Points of the India EHR standard



- Where possible Identify patient correctly with Aadhar,
 - at a minimum Local identifier (UHID)
 - and
 - a Govt. issued Photo ID card.
 - (Passport no in case of foreign nationals)
- LOINC codes for Diagnostics
- DICOM for imaging, preferably secondary DICOM for 'other' sources of images- photo-micrographs, scanned prescriptions at a minimum resolution of 1024 x 768 px (300dpi)
- Data Exchange by HL7 (2.8), ASTM



Browser tabs: choosing an enter... | Information Techn... | loinc codes - Goog... | LOINC - Wikipedia | LOINC — The freel... | Search LOINC | About LOINC — L...

Address bar: <https://search.loinc.org/search.zul?query=fasting> | Search: loinc codes

Options | Help | loinc.org | Go Premium! | Set Language

LOINC From Regenstrief

Search:

LOINC	LongName	Component	Property	Timing	System	Scale	Method	exUCUMunits
	fasting							
59578-5	Glucagon [Mass/volume] in Serum or Plasma --6th specimen fasting	Glucagon^6th specimen post CFst	MCnc	Pt	Ser/Plas	Qn		pg/mL
59577-7	Glucagon [Mass/volume] in Serum or Plasma --7th specimen fasting	Glucagon^7th specimen post CFst	MCnc	Pt	Ser/Plas	Qn		pg/mL
1493-6	Glucose [Mass/volume] in Serum or Plasma --1.5 hours post 0.05-0.15 U insulin/kg IV 12 hours fasting	Glucose^1.5H post 0.05-0.15 U insulin/kg IV post 12H CFst	MCnc	Pt	Ser/Plas	Qn		mg/dL
10450-5	Glucose [Mass/volume] in Serum or Plasma --10 hours fasting	Glucose^post 10H CFst	MCnc	Pt	Ser/Plas	Qn		mg/dL
1554-5	Glucose [Mass/volume] in Serum or Plasma --12 hours fasting	Glucose^post 12H CFst	MCnc	Pt	Ser/Plas	Qn		mg/dL
1555-2	Glucose [Mass/volume] in Urine --12 hours fasting	Glucose^post 12H CFst	MCnc	Pt	Urine	Qn		mg/dL
17865-7	Glucose [Mass/volume] in Serum or Plasma --8 hours fasting	Glucose^post 8H CFst	MCnc	Pt	Ser/Plas	Qn		mg/dL
1556-0	Fasting glucose [Mass/volume] in Capillary blood	Glucose^post CFst	MCnc	Pt	BldC	Qn		mg/dL
41604-0	Fasting glucose [Mass/volume] in Capillary blood by Glucometer	Glucose^post CFst	MCnc	Pt	BldC	Qn	Glucometer	mg/dL
1557-8	Fasting glucose [Mass/volume] in Venous blood	Glucose^post CFst	MCnc	Pt	BldV	Qn		mg/dL
1558-6	Fasting glucose [Mass/volume] in Serum or Plasma	Glucose^post CFst	MCnc	Pt	Ser/Plas	Qn		mg/dL

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It's a standard- but is it for us yet?

Key Points of the India EHR standard *contd.*



- Data once entered in the electronic record must become **immutable**.
 - No updates
 - Only revisions
 - with audit trail
 - and only 1 final active record
 - Allowing retrieval of the 'as-is' source

No one will hold you to a standard- but you can audit yourself



Legal Requirements



- Information technology Act 2000
 - Ministry of Information Technology
 - Date of Commencement 17 October 2000
 - Amended 2008
- Clinical Establishment Act 2012
 - Ministry of Health and Family welfare
 - Gazette notification 23rd May, 2012
 - Both Therapeutic and Diagnostic establishments

This is the law.



- Signing authority – Electronic means identifies the correct person signing a records
- Personal information
 - Sensitive Personal information
 - Anonymizing records when submitting reports
- Privacy esp. during transport
 - Including electronic transport (eReports)
 - Extended to public domain data communication
- Minimum period of holding health data
 - 3 years
 - Life time if uniquely identified patient record of EHR



- Choice is a responsibility- if a selection team is required, they have to serve the greater good
- Mission critical requirements first- Provision for little things as well
- Commercial-off-the-shelf saves time. Customization is to be expected
- Vendor credentials matter → Find trust, the relation is going to be a long one
- Keep it simple....Make things as simple as possible but not simpler
- Adhere strictly to legalities and also gently hold on to standards



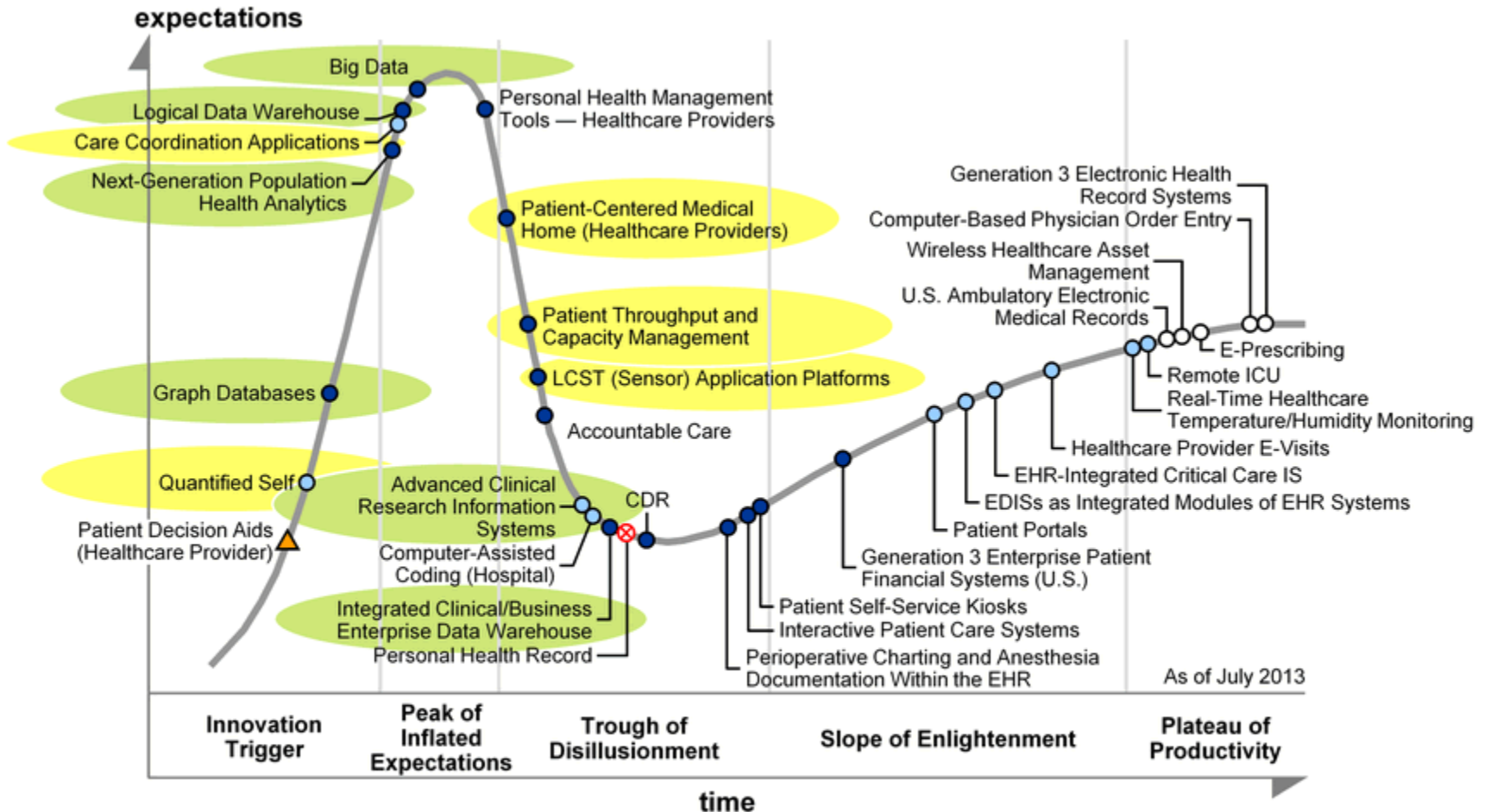
THANK YOU



Some Stuff



Gartner Health IT hype curve



Plateau will be reached in:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau



Spend to save



HOW LONG CAN YOU WORK ON MAKING A ROUTINE TASK MORE EFFICIENT BEFORE YOU'RE SPENDING MORE TIME THAN YOU SAVE?
(ACROSS FIVE YEARS)

		HOW OFTEN YOU DO THE TASK					
		50/DAY	5/DAY	DAILY	WEEKLY	MONTHLY	YEARLY
HOW MUCH TIME YOU SHAVE OFF	1 SECOND	1 DAY	2 HOURS	30 MINUTES	4 MINUTES	1 MINUTE	5 SECONDS
	5 SECONDS	5 DAYS	12 HOURS	2 HOURS	21 MINUTES	5 MINUTES	25 SECONDS
	30 SECONDS	4 WEEKS	3 DAYS	12 HOURS	2 HOURS	30 MINUTES	2 MINUTES
	1 MINUTE	8 WEEKS	6 DAYS	1 DAY	4 HOURS	1 HOUR	5 MINUTES
	5 MINUTES	9 MONTHS	4 WEEKS	6 DAYS	21 HOURS	5 HOURS	25 MINUTES
	30 MINUTES		6 MONTHS	5 WEEKS	5 DAYS	1 DAY	2 HOURS
	1 HOUR		10 MONTHS	2 MONTHS	10 DAYS	2 DAYS	5 HOURS
	6 HOURS				2 MONTHS	2 WEEKS	1 DAY
	1 DAY					8 WEEKS	5 DAYS



**Registering/
ordering
tests**

**Preserving
sample ID
from
sampling to
analyzers
(pre-analytical
phase)**

**Sample ID
and test
selection on
analyzers**

**Results
from
analyzer to
report db**

**Creating
Reports**

Speed
Required

Scaled to all
collection
centres

Registering/
ordering tests

Preserving
sample ID
from
sampling
to
analyzers
(pre-analytical
phase)

Sample ID
and test
selection
on
analyzers

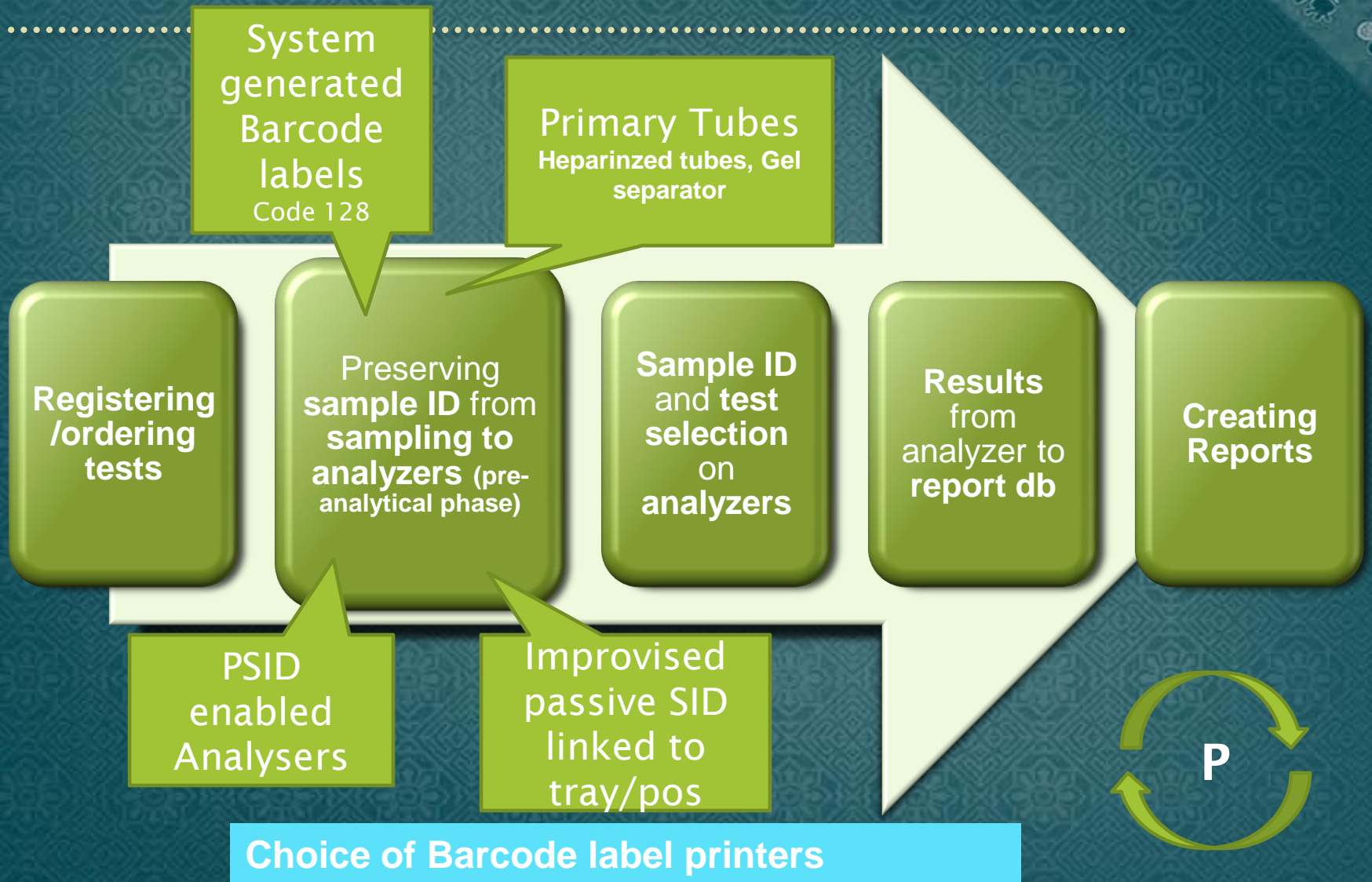
Results
from
analyzer to
report db

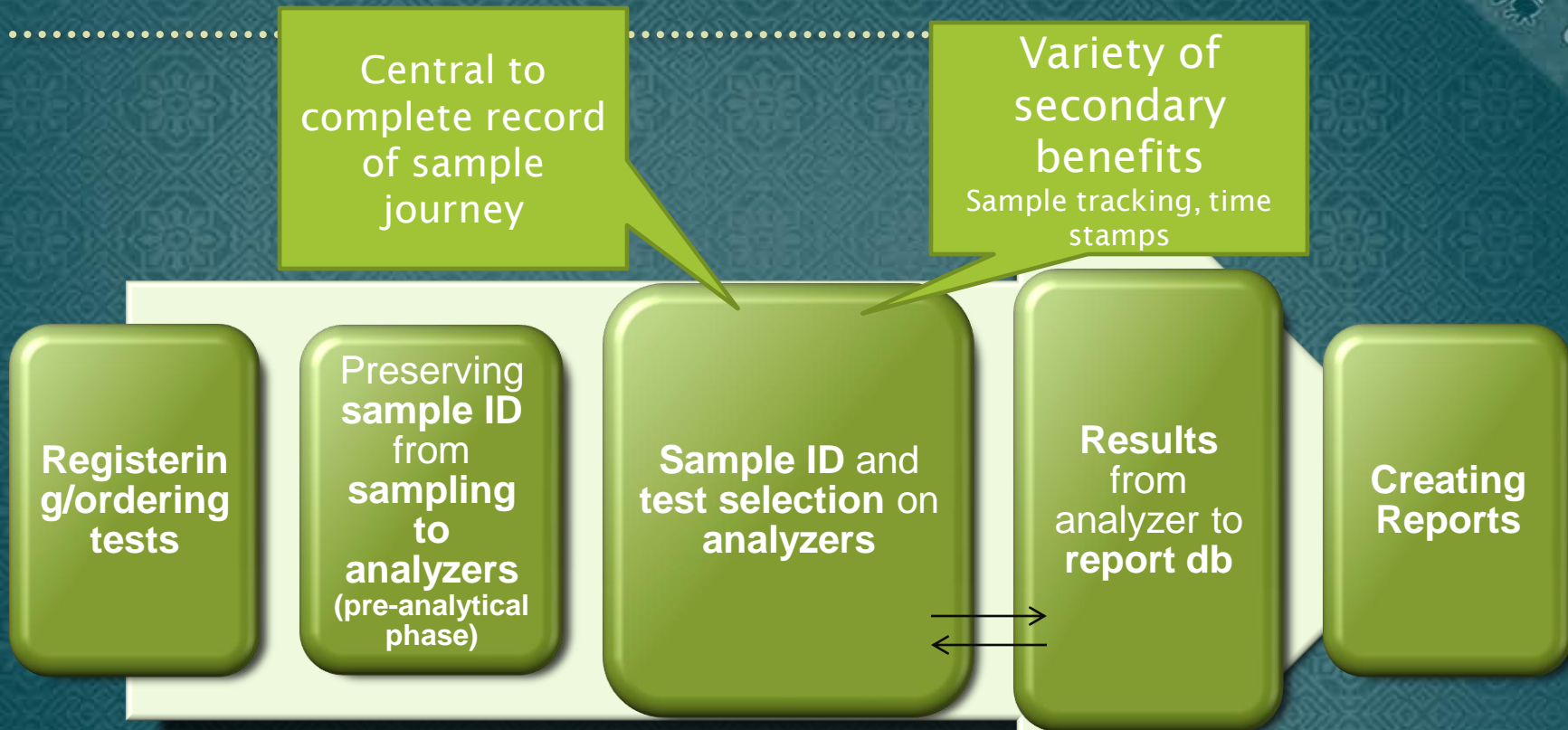
Creating
Reports

Correctness
assumed

A prescription scanning system is
required.
Important to link it to patient record







Interfacing- Bidirectional/ Active Unidirectional



Registering/ordering tests

Preserving sample ID from sampling to analyzers (pre-analytical phase)

Sample ID and test selection on analyzers

Results from analyzer to report db

Creating Reports

Word processing

Auto text

Templates

Reference range management

Standard comments

Additional comments

Signatures

Microbiology

Graphs for GTT & trends

Images

Phase II Items

