



# Intelligent Automation: Helping Labs Work Smarter

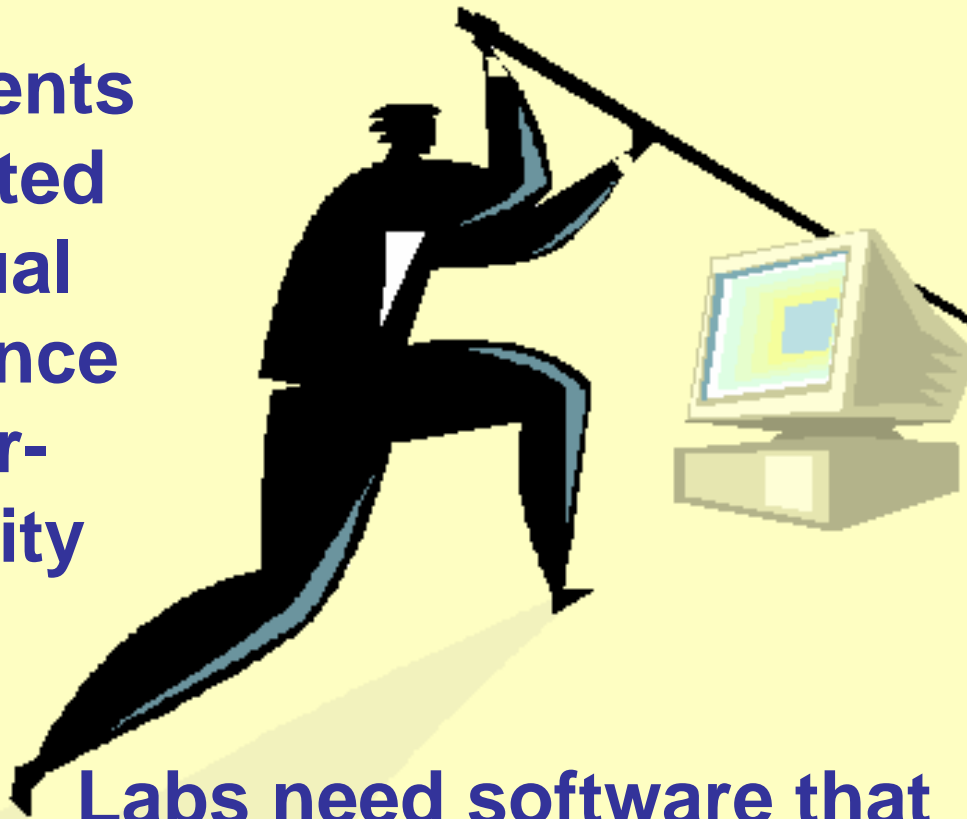
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# The Changing Face of the Laboratory

Demand for automation is driving the need for software management tools that are:

- **Dynamic**
- **Distributed**
- **Instrumentation controlled**

**Not all instruments are created with equal intelligence and interoperability**



**Middleware interacts with instruments and modules to support complex, distributed processes**

**Labs need software that *leverages* instruments and other disparate data to manage samples and results**



# Putting intelligent automation together

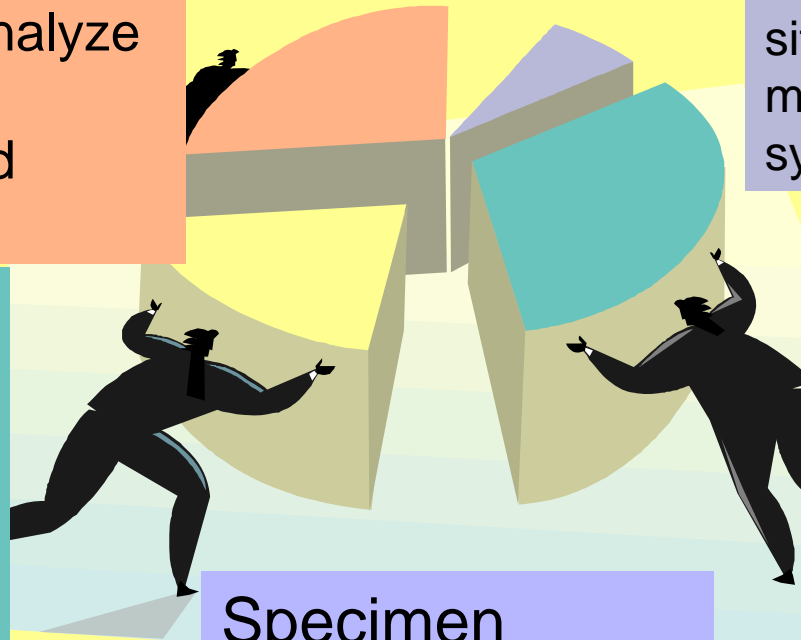
**Reduce Processing Steps**  
Hematologists helping hematologists analyze the workflow to optimize and find efficiency gains

**Multi-Site Capability**  
All laboratory testing sites under one data management system

**Increase Capacity**  
Continuous sample processing enhances throughput – speed and consistency

**Specimen Management**  
Ultimate 'hands-free' specimen processing for highest quality testing

**Intelligent Rules**  
“Right” decision algorithms are defined in a rule set that takes objective action in place of human efforts



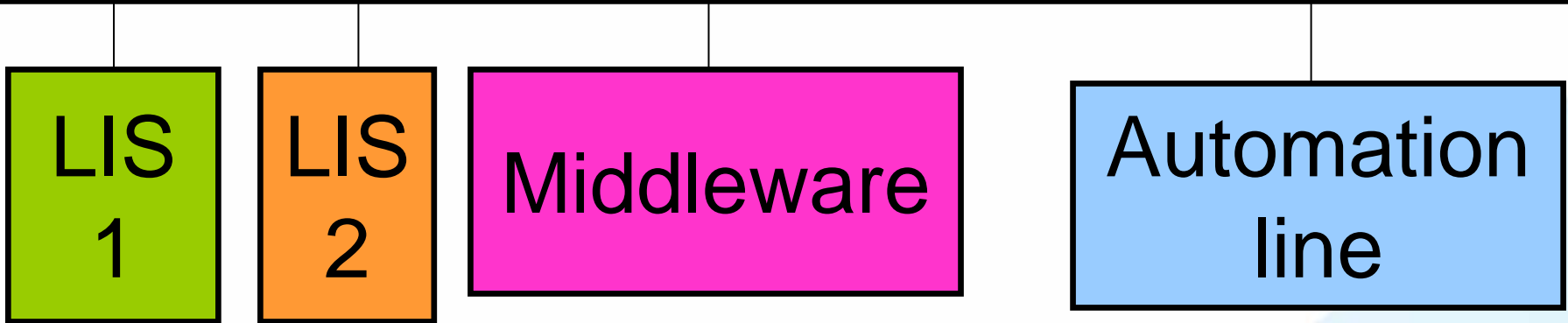
# “Does your middleware...”



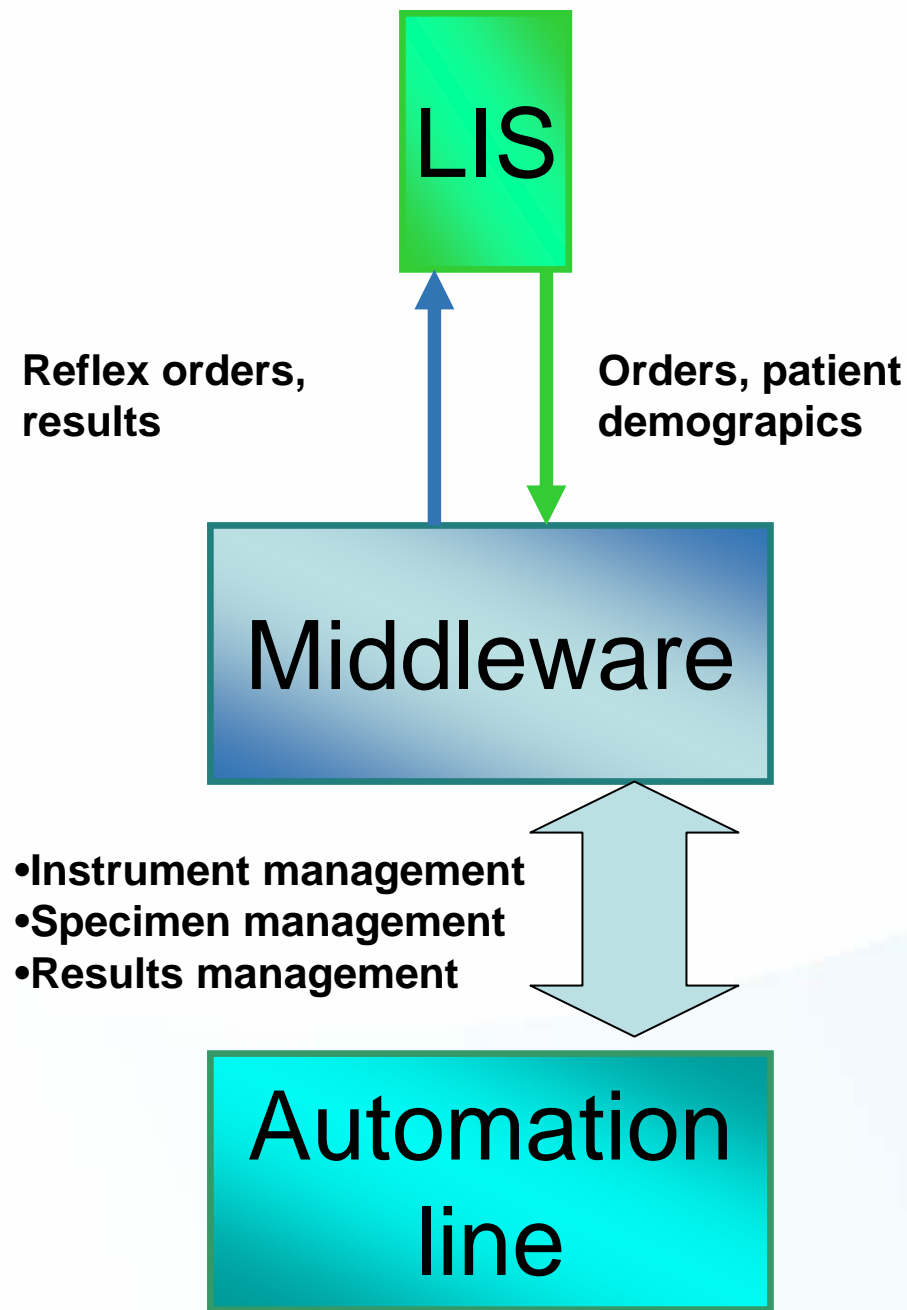
- Enhance your LIS by streamlining result handling at the instrument?
- Create interface ‘compatibility’?
- Adaptable to your environment?
- Vendor understand your LIS as well as you do?

# 'No Walls' Laboratory

Enterprise Network



- 'No-wall/no boundary' laboratory for reviewing & validation of results as they are immediately released from each instrument
- Ability to combine one or more disparate LIS's into one database – create instant compatibility!
- Standardization of rules across the IDN/sites for all instrumentation – achieve enterprise consistency!



**Intelligent Automation integrates instrumentation with informatics to optimize laboratory operations:**

- Allows you to re-engineer workflow
- Hands-off specimen processing
- Collates information into a single data access
- Decision support

# Strategy for making the right choice

- Vendor must understand the complexity and interoperability of the instrumentation, automation & middleware
- Software must scale up or down
- Ability to add modules as you grow/change
- Defined upgrade path for both hardware and software





# Implementation: Focus on Planning

- Determine your automation goals
- Know what problems you want to solve
- Conduct a detailed workflow analysis – determine your lab's best practices
- Expect workflow changes from batch to random access processing
- Include LIS and IT members on your implementation team



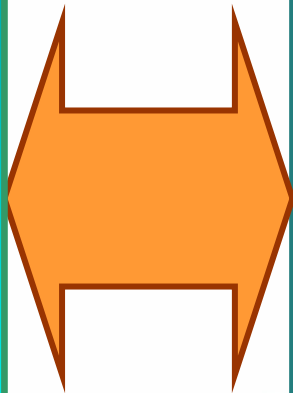
# Implementation Pointers

- Evaluate current procedures
  - gather your procedures
  - is this what we are doing?
  - flow chart it out and agree
- Flowchart the new processes with the software
- Use the new flowchart as your guide for:
  - middleware rules
  - training
  - the ultimate roadmap for intelligent automation

# Freedom to Go paperless!

## Instrument Automation

- Multiple instruments
- Specialty equipment



## Middleware

- Centralized database
- Instrument concentrator
  - User defined rules
- Full/partial auto-validation
- Automated repeat & reflex ordering
- Automate STAT sample results
- Paperless review

# Put IT to work for you!

Hematology Processing	Pre-	Post-
CBC/Diff analysis	17	7
Repeat analysis	12	1
Data management	11	0
Smear management	15	2
Sample release	8	0
ESR analysis	9	0
SED Rate analysis	11	0
Total Discrete steps	87	10

**Extended  
Capacity  
AND  
Improved  
Performance**

# Keys to Success!

- Adequate LIS resources
  - LIS connectivity, database changes
- IT policies:
  - Backup, UPS, security
- Staff acceptance/trust of system
- Dedicated lab testing resources
- Ability to train all users at install & new hires
- Period of adjustment
- Allow the software to work for you instead of you working for the software!



# Intelligent Automation



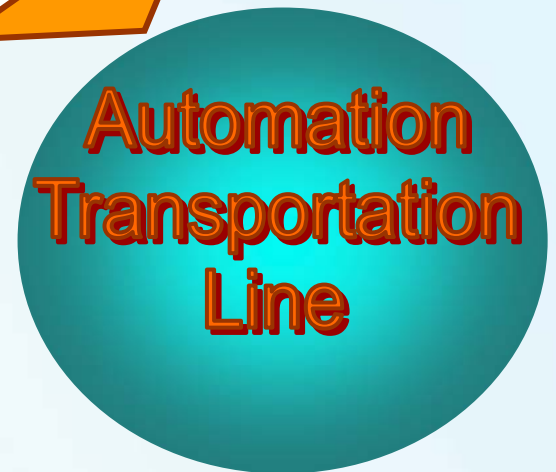
Rules engine with standardized rules sets



Centralized Access



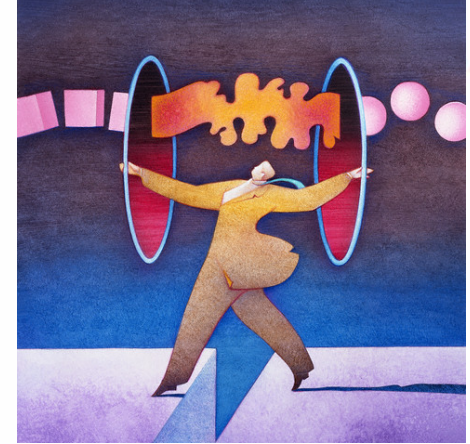
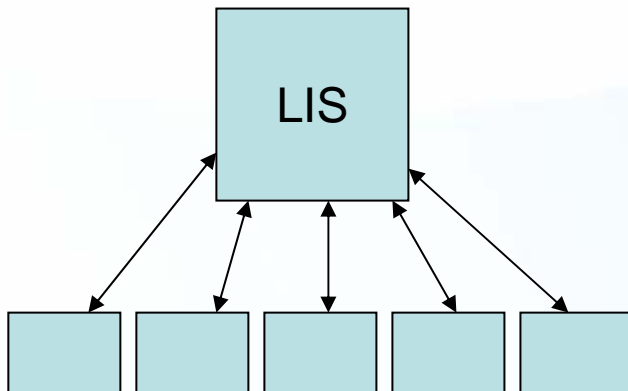
Sample Management





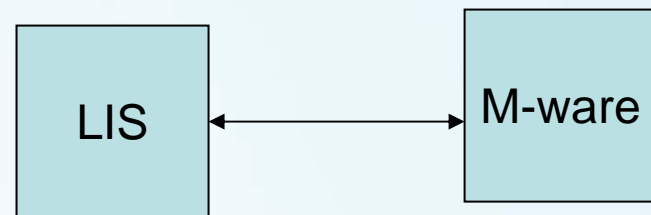
## Old style- making friends with every specimen:

- Excessive specimen handling
- Sticky notes, paper reports, paper lists
- Sneaker net
- Task-by-task decision-making
- Despite the frequent 'touches' quality and speed still suffer



## New style – orchestrate your instruments

- 80% of work becomes hands-free
- Focus on exceptions and abnormal only
- Standardized and automated decisions
- Controlled quality and standardization



# Rules Engine – How it works

- Instrument & Patient demographic data are used to formulate a rule based on:
  - Analytical results,
  - Instrument flags & warnings
  - Patient Demographic data
  - Comparison with previous data
  - Customer driven operator alerts
- Unique rules are created for each parameter and condition





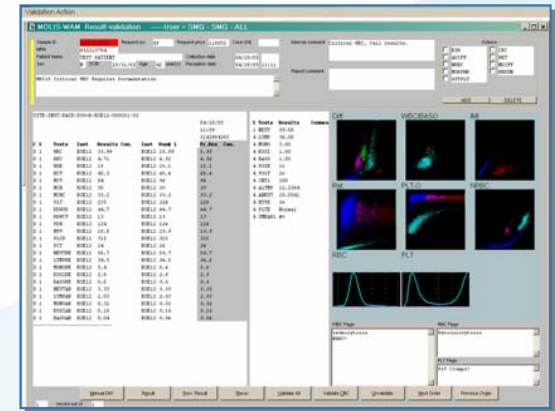
## Decision Rule Variables

Age and sex related result ranges	Adding test orders
	Removal of test orders
Requestor	Ordering location
Analyzer flags	Patient types
Reflex orders	Sample priority
Delta violations (%/absolute) for test values	

- ✓ Flexible rules that eliminate the need to review all results
- ✓ Rules based on customer driven data
- ✓ Triggered by single/multiple decision variables

# Single Screen Consolidated View

- Graphic and numerical data from instruments
- Historical patient presentation
- Current and previous results
- Initial and repeat sample analysis
- Rules are applied real-time for initial and repeat values
- Rules allow operator to choose reportable results, cancel & add tests in same screen!
- Operator alerts notify user of important sample processing instructions



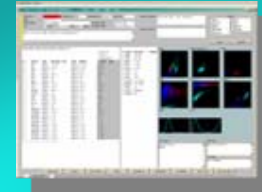
# Every lab deserves the best data

Market drivers

Good

Better

Best



Consistency & Standardization

Systemex



# Thank You