



S4DX

Digitizing Pre-Analytics

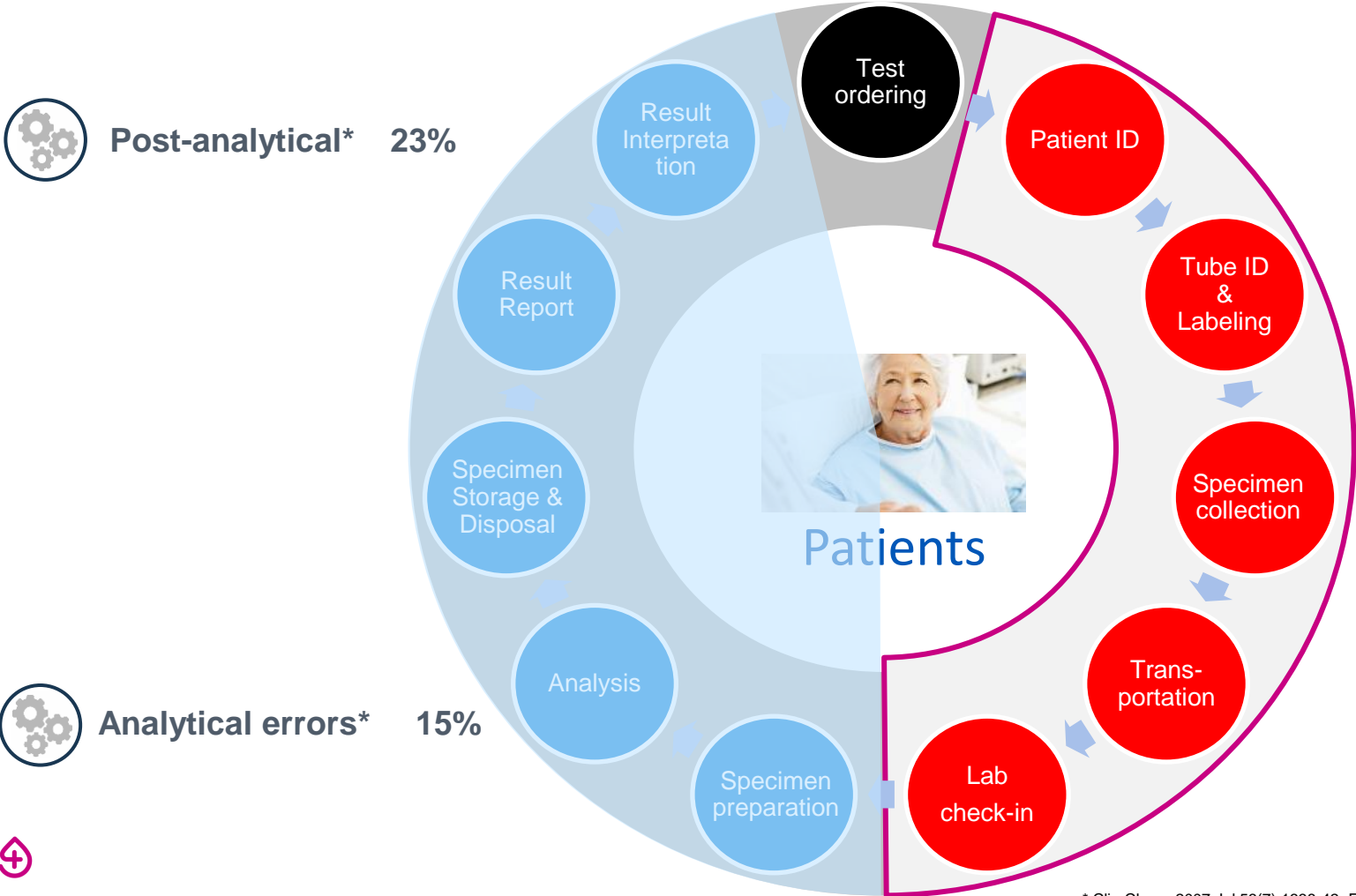
Smart. Safe. Samples.



Smart4Diagnostics GmbH

The Processes of Specimen Analysis

Biggest issues are outside of analytics



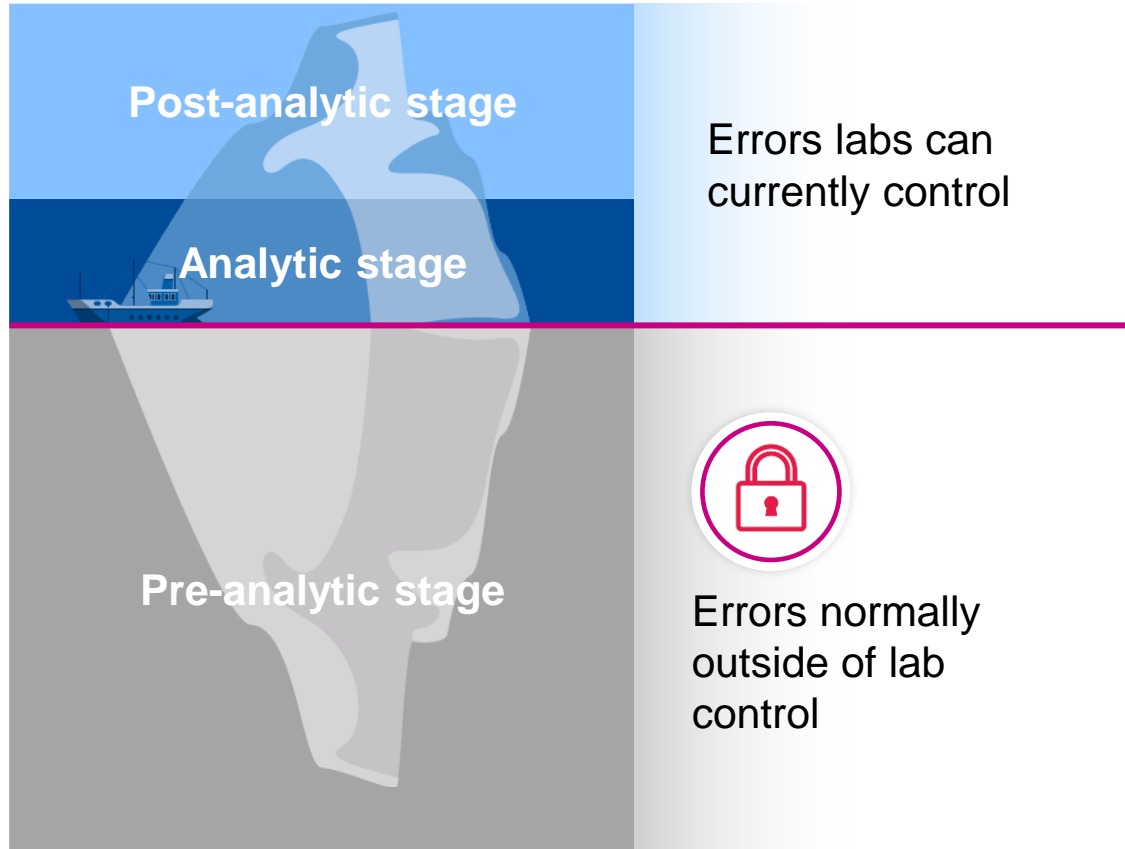
Pre-analytics

- Most of overall issues coming from here
- Many stakeholders & partners
- Growing awareness of problem

Heterogeneous and fragmented network of stakeholders

The black box of pre-analytics

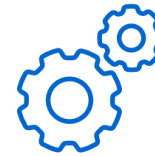
what labs really want



What if you could:



Increase
visibility



Increase
control



Drive down
errors

digital pre-analytics...

...starts at sample collection.

We ensure the quality of all human samples in pre-analytics and reduce preanalytical errors at the same time - completely digital, easily scalable and fully adaptable.



S4DX System

Sample registration



Satellite App



Browser Scan

Transports registration



Courier App

Sample transport monitoring

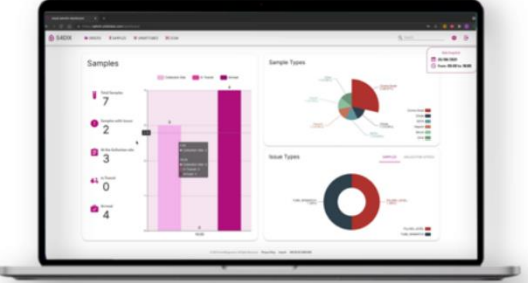


SmartTube



Gateway

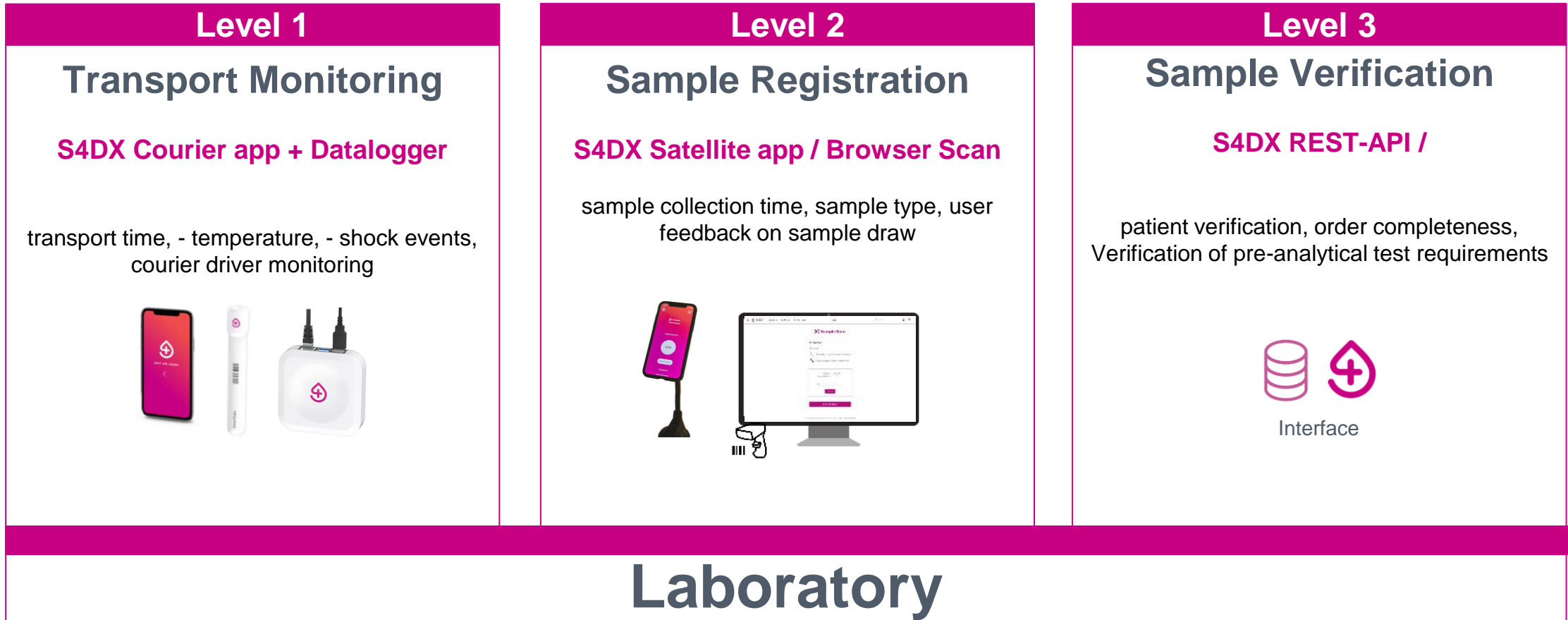
Sample and Transport data display



S4DX Webservices - Dashboard

S4DX – the all-in-one solution

What labs really want is pre-analytical data: The S4DX solution adapts to all needs



Smart4Diagnostics Workflow

1. Pre-Sample Collection

- ⊕ Pre-collection guidance
- ⊕ Display order details
- ⊕ Record pre-collection patient condition
- ⊕ Connect to S4DX Datalogger



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- ⊕ Record of collection times
- ⊕ Guidance for sample handling
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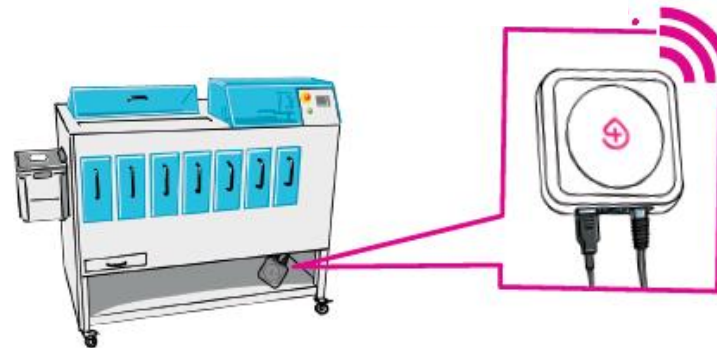
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3. Transport

- ⊕ One S4DX Datalogger per transport batch
- ⊕ All transport methods: use any box, bag or tray



4. Lab Arrival

- ⊕ Automatic record of:
 - arrival time
 - transport duration
 - temperature and shock data
- ⊕ Automatic and wireless readout
- ⊕ Bulk sorter compatible

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S4DX Web Services

- ⊕ Integrates with existing laboratory information systems in real-time
- ⊕ Complete pre-analytical data profile for every sample, ISO 15189 auditable



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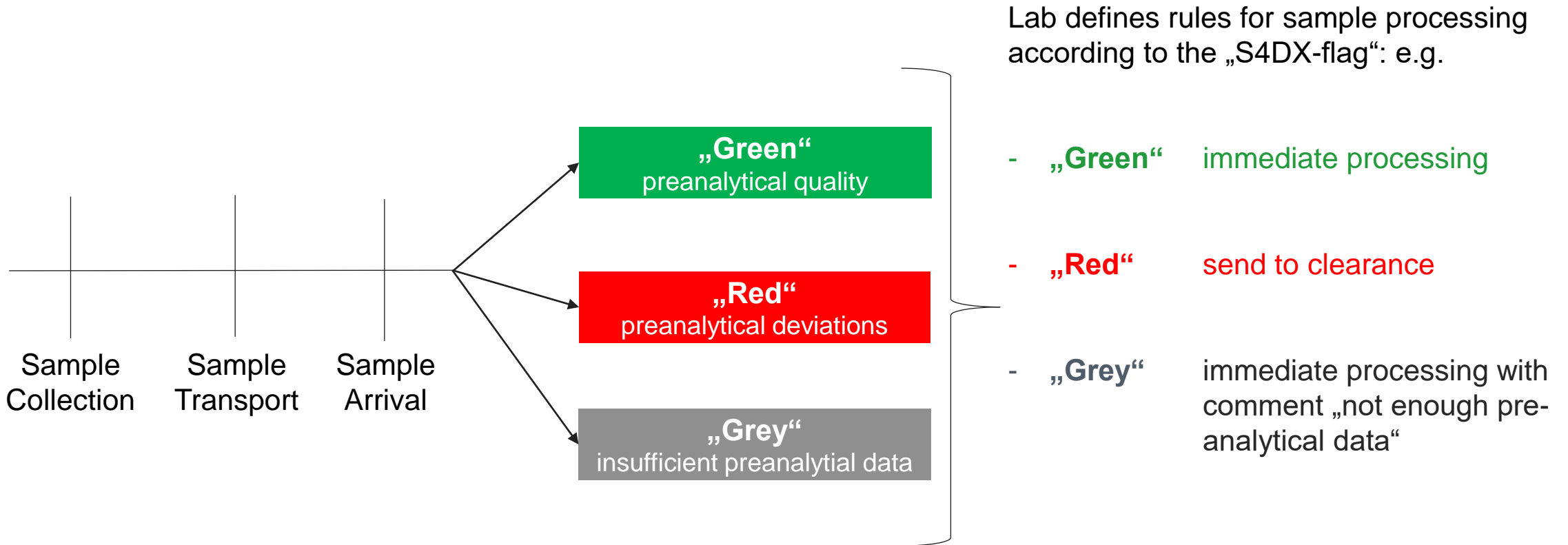
5. S4DX Datalogger

Free-floating between lab and collection sites



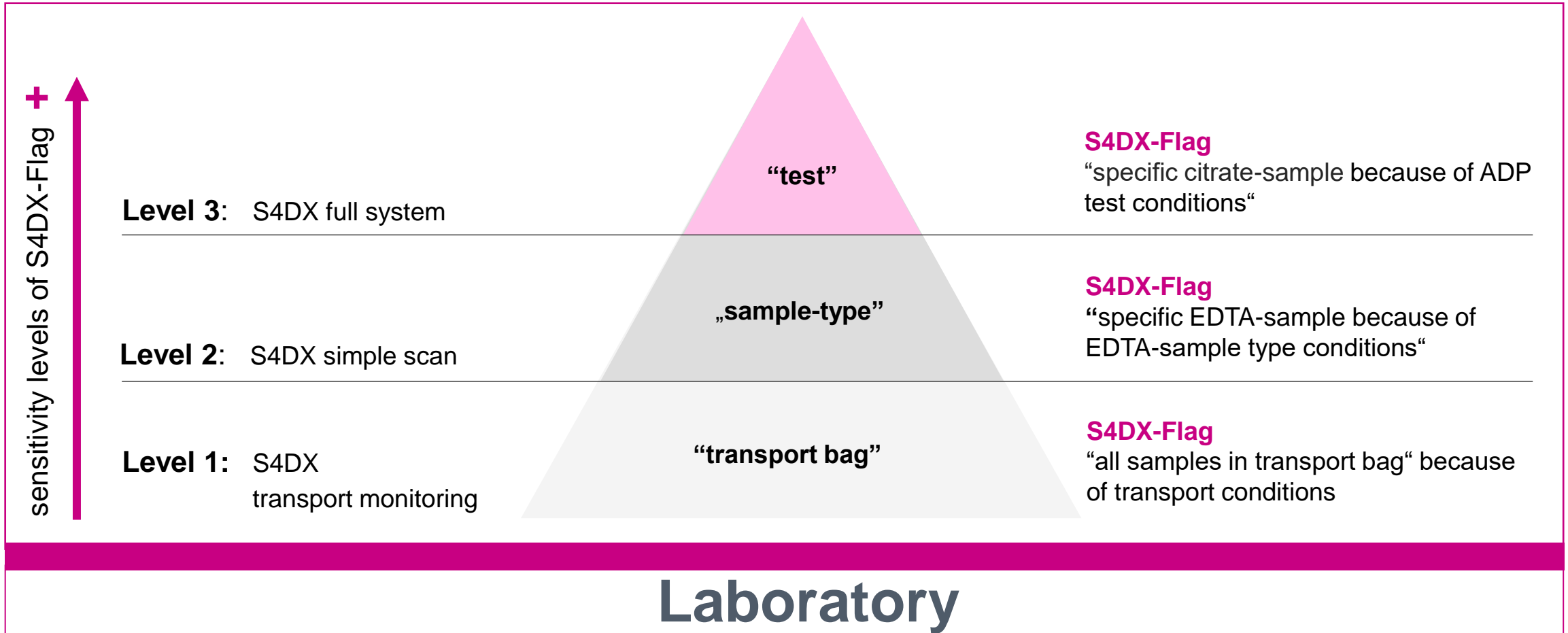
S4DX – the “S4DX-Flag”

Every sample processed by S4DX receives a digital preanalytical “S4DX-Flag” upon lab arrival. This flag can either be re-integrated into the customer LIS via an S4DX-interface or be seen on S4DX WebServices. The “S4DX Flag” has three different types:



S4DX – sensitivity of the “S4DX-Flag”

The sensitivity of the S4DX pre-analytical flag increases with full usage of the S4DX-System:



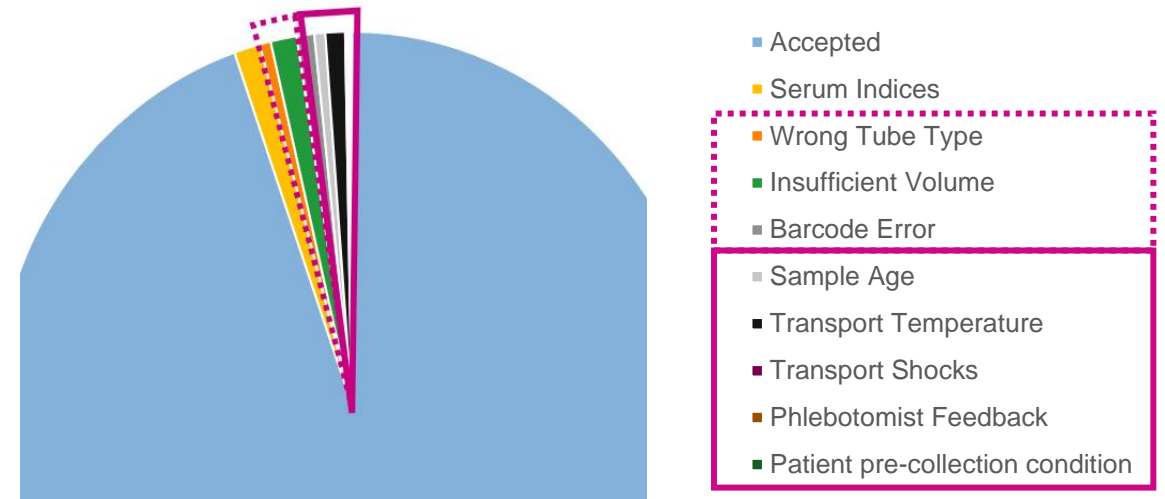
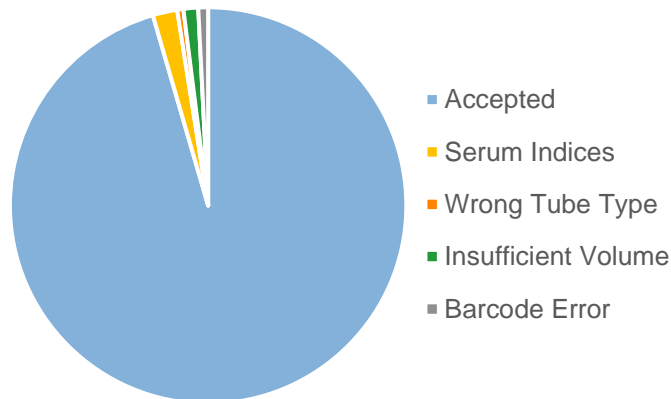
S4DX – “S4DX-Flag” & Automation



After samples are accepted in the laboratory, automation of the identification of pre-analytical error results in very precise sorting of defective samples. The S4DX flag helps to sort more precise, based on additional preanalytical data:

- Sorting based on: incorrect material, insufficient volume and barcode errors, sample age, transport temperature, transport shock events, patient status and submitted phlebotomist feedback

Automated Identification of Pre-Analytical Errors Status Quo



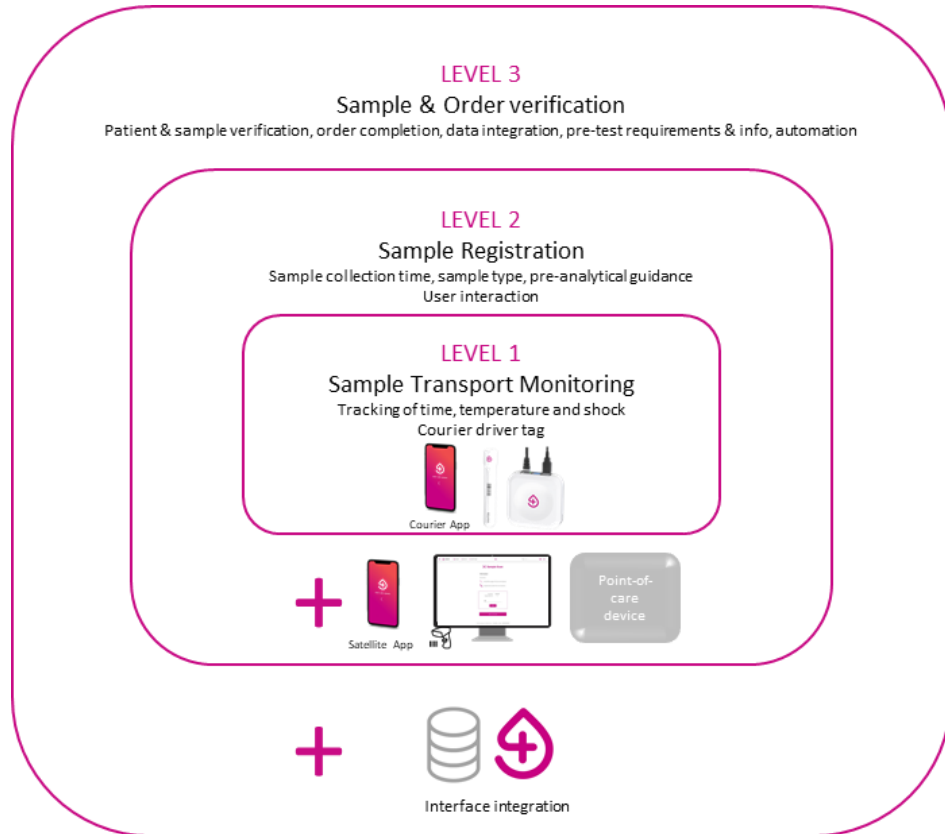
S4DX – Sample Transport Arrival

11:55



Name of Tour	Name Driver	Collection sites visited	Bags collected	Number of samples	Types of samples	Comment	Predicted Arrival Time
Hamburg 1	Herbert	6	12	182	Blood	-	12:15
Hamburg 2	Pauline	14	28	485	Blood	5x underfilled	12:20
Hannover	Peter	25	52	792	Blood, Swaps	2x urgent	12:50
Köln	Max	3	10	81	EDTA, Serum,	-	12:50
Kiel	Gerhard	10	10	140	Tissue	5x urgent; 4x underfilled	13:30
Urin	Franz	11	11	33	Urin		13:30

S4DX – Value Case



Patient Level

- No more “wrong blood in tube”; all patients verified.
- Patient condition for sensitive tests checked.
- Order overview and sequence of collection provided.
- Collection personnel verified.

Sample Level

- Timepoint of sample collection registered.
- Filling level + difficult blood draw verification (~1 % of all tubes).
- Sample to order matching and order completeness verification.

Transport Level

- Courier Driver verified, routes and pick-ups monitored.
- Timepoints of sample pick-up, handover and lab arrival registered.
- Automatic temperature and shock monitoring.
- Predictive sample arrival time.

S4DX Flag

- All data is combined into S4DX flag for automatic lab processing.

Full ISO 15189 chain of preanalytical sample quality

- Document the timepoint of sample drawing, potential drawing incidents, patient condition and transport time. Individual sample tracking profile

S4DX – Commercial journey

○ PRE-PILOT

Pilot/Data contract

- Timeline & size
- KPI's
- Steering



2 Weeks

Setup & Config

- Software
- Hardware



1 Month

Onboarding

- SOP's
- Training



○ 1 MONTH

● PILOT

Workflow running

- Transport monitoring
- Courier App
- Sample Registration
- Satellite App/Browser Scanner



● 3 MONTHS

pilots turn into
customers

1. Pre-pilot : S4DX system set up and onboarding of users

- Remote IT set up, online onboarding and integration of users

2. Pilot: Showcase value of S4DX solution and adapt to customer

- Up to three months pilot time for the full S4DX system with interface



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