



**PharmaLedger**  
A S S O C I A T I O N

# A Digital Trust Ecosystem for Healthcare

**Pharma Packaging & Labeling Forum / Global Pharma Supply Chain & Logistics**

Lars Brammer, Head Global Supply Chain Innovation, Bayer

# VISION

Enable the **Digital Trust Ecosystem in Healthcare 4.0 (DTE-H)** to solve problems that can't be solved by silos or single organizations.

# MISSION

To provide a global governance, compliance and operating model that enables innovation and inspires collaboration among healthcare stakeholders.

# KEY FACTS

- Result of a 3-year, 30-member project completed in 2022
- Not-for-profit Swiss Association
- Pre-competition umbrella organization
- Patient focused, ecosystem-led, inclusive
- Technology agnostic, open-source solutions
- Innovation lab for new use cases
- Funded through membership fees and grants
- More at <https://pharmaledger.org/>



# OUR MEMBERS

Members list | January – September 2023

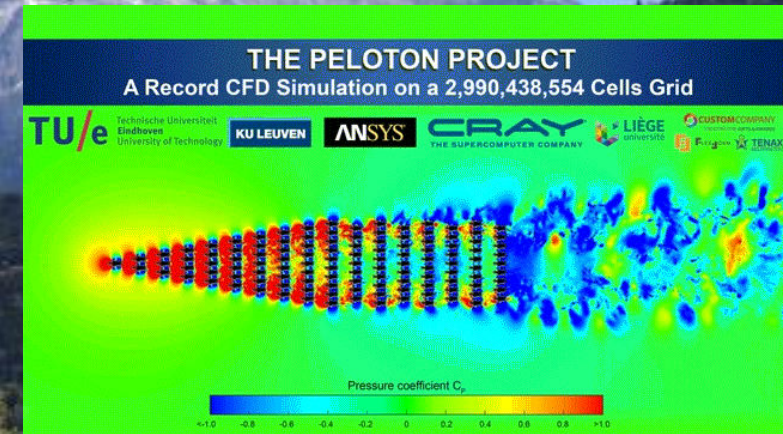


abbvie





# Blockchain is a Team Sport Peloton





# THE PROBLEM

Lack of data provenance, visibility and transparency

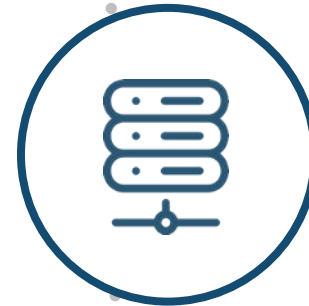


Systems are not patient centric: identities and data are monetized

Intermediaries add cost, time and complexity



Inefficiencies and waste amplified across the value chain



Data silos limit secure and trusted data exchange and require reconciliation

Increasing risk of cyber attacks and concerns with data privacy

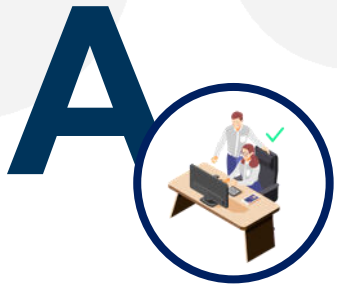


Counterfeit (falsified) medicines impact health and economies

## WHY PHARMALEDGER

# BLOCKCHAIN – THE FIVE A’S

## Asset



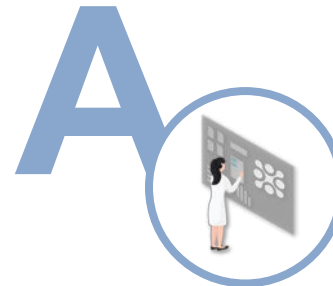
manage assets like  
cryptocurrency  
(solves the double  
spend problem),  
products, and data

## Audit



immutability, no  
changes possible  
without consensus

## Automate



leverage smart  
contracts

## Anonymize



protect privacy

## All for one, one for all



consortium  
approach, no  
single/central  
authority

# WHAT PHARMALEDGER PROJECTS TRANSFERRED TO PLA



Anonymized  
matching of  
patients to clinical  
trial inclusion and  
exclusion criteria

[CTR Webinar](#)  
[CTR explainer video](#)



Auditable,  
version-  
controlled,  
real-time and  
immutable  
Informed  
Consent Form

[eConsent Webinar](#)  
[eConsent explainer  
video](#)



Trusted Tracking  
of investigational  
medicine  
distribution to the  
patient

[Clinical Supply  
Webinar](#)



Visibility of  
commercial  
product inventory  
for replenishment  
and recall  
notifications

[Finished Goods  
Traceability](#)



Latest approved  
product  
information for all  
manufacturers in  
one app

[ePI explainer video](#)  
[ePI Webinar #1](#)  
[ePI Webinar #2](#)  
[ePI Demo](#)



Multi-factor  
Packaging  
Authentication and  
data analytics

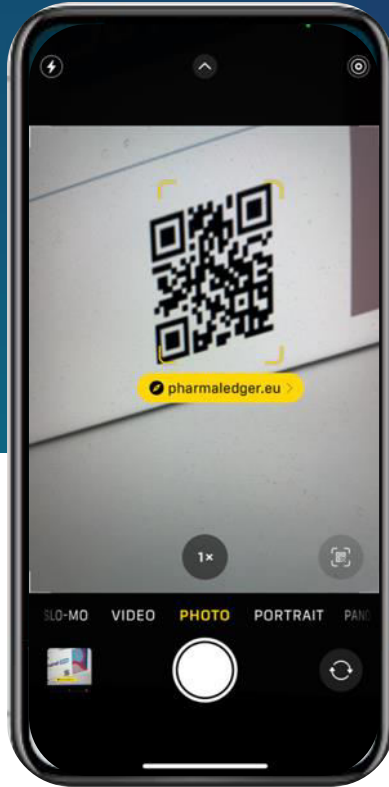
[Detecting Falsified  
Medicines Webinar](#)  
[Detecting Falsified  
Medicines Explainer  
Video](#)



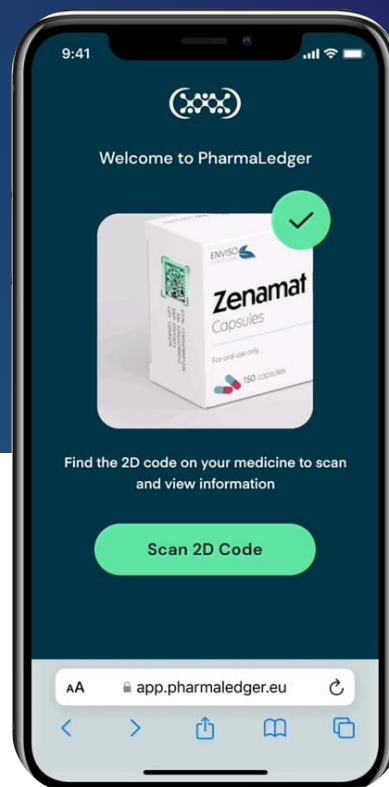
Dynamic  
acquisition &  
real-time data  
processing for  
patients

[IoT Medical  
Device Webinar](#)  
[Personalized  
Medicine  
Webinar](#)

# APP ePI & DETECTING FALSIFIED MEDICINES



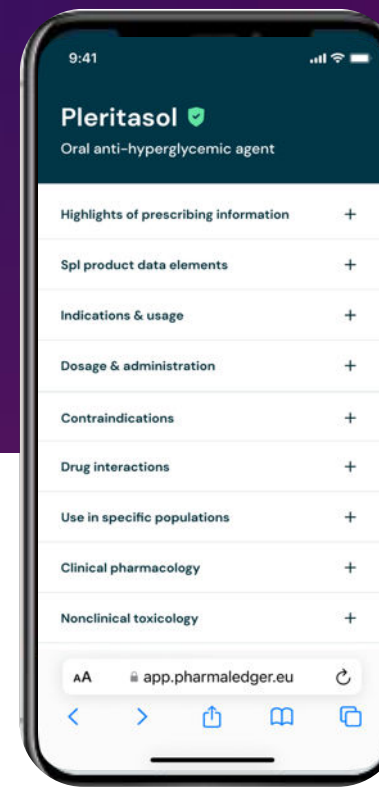
1.  
Scan QR Code



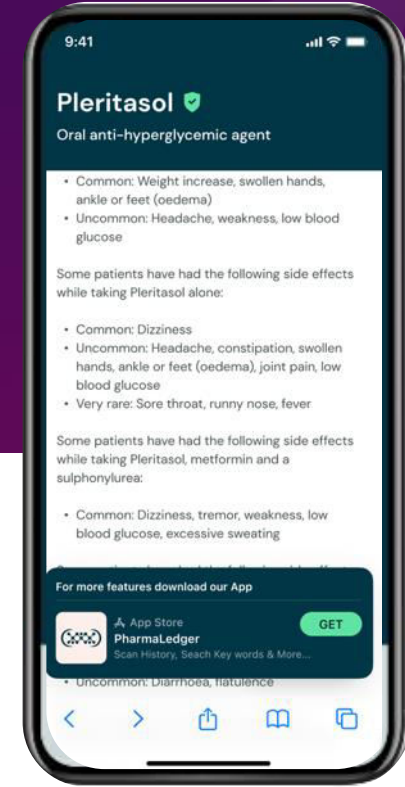
2.  
Visual Instruction  
to scan the 2D code



3.  
Scan 2D Code



4.  
Get eleaflets.  
secure, latest and  
direct



5.  
Pop-up,  
optional  
download of  
App



<https://creativecommons.org/licenses/by-sa/4.0/>

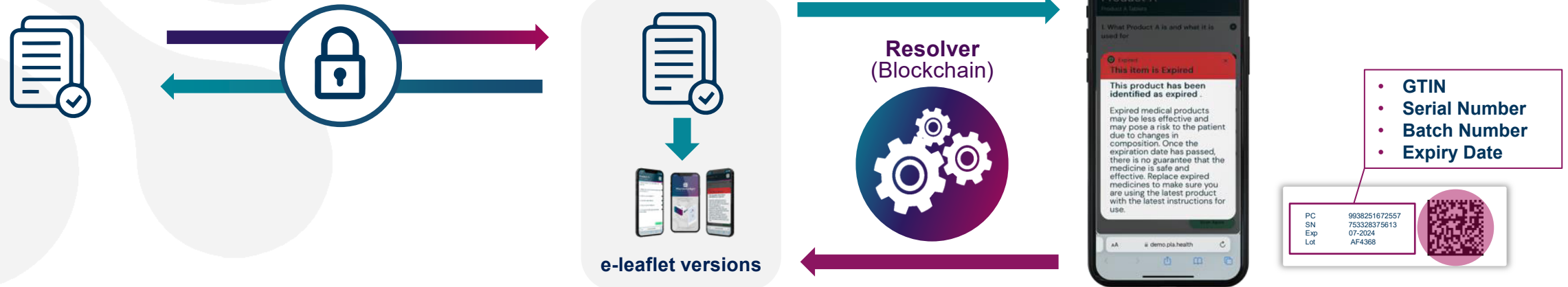


PharmaLedger  
ASSOCIATION

RESTRICTED



# BLOCKCHAIN? FOR ePI!

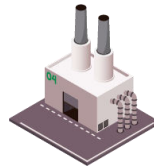


## Review and Approval



**HEALTH  
AUTHORITIES**  
**20+**

- ✓ Global lookup Resolver for ePI
- ✓ No central server, enhanced security
- ✓ No single point of failure (high availability)



**MANUFACTURER**  
**100+**

- ✓ Ensures patient data privacy
- ✓ Product Information data integrity
- ✓ Scalable and enhanceable: approvals, recalls, updates, adherence reminders, drug interactions, disposal...and many more



**HCP & PATIENTS**  
**1.000.000+**

# DEMO

## Demonstration of User Experience

2.



# TRY IT

Use these

1.

Open the camera of your device and scan the QR Code to open the WebApp.



2.

With the WebApp open, scan the 2D Matrix code to access the ePI



Demonstrates getting an ePI through the serialization code.



Demonstrates multilanguage capability

Solution will be expanded to do batch recall (by batch number), patient adherence reminders (by GTIN), anti-counterfeiting (serial number check) and many other capabilities.

# DETECTING FALSIFIED MEDICINES

## Trust

Increased confidence in a medicine's authenticity and collaborative industry action against crime

## Privacy & Security

No personal data captured without consent

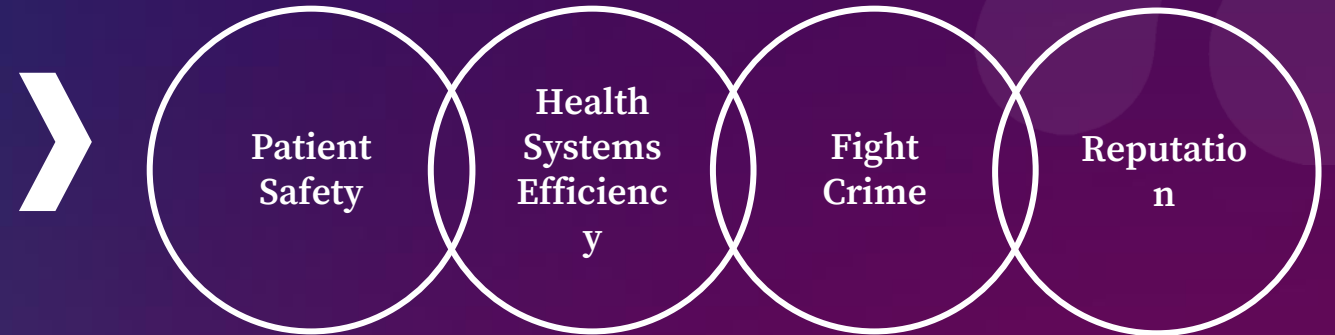
## All for one, one for all

Open-source software can be adopted by all manufacturers in one app without proprietary lock-in

## Scalability

Builds on eLeaflet / ePI as a complementary solution and authentication feature technology agnostic

## Blockchain and DFM



## Multi-Factor Packaging Authentication (MFPA)

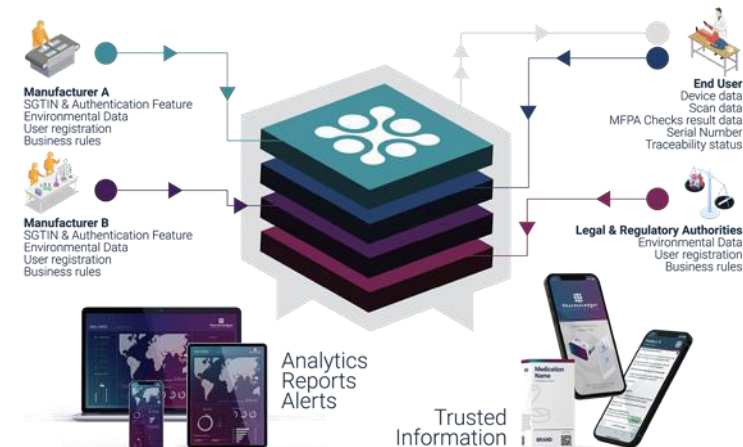
Empower patients and Health Care Providers to perform 7 different checks with a publicly available smartphone app.



1. registered on blockchain?
2. product match?
3. valid batch expiry date?
4. valid serial number?
5. valid product status?
6. not flagged as suspect?
7. valid feature (camera check)?

## Anti-Counterfeiting Data Collaboration (ACDC)

Repository of scanned events enable real-time alerts and advanced analytics.

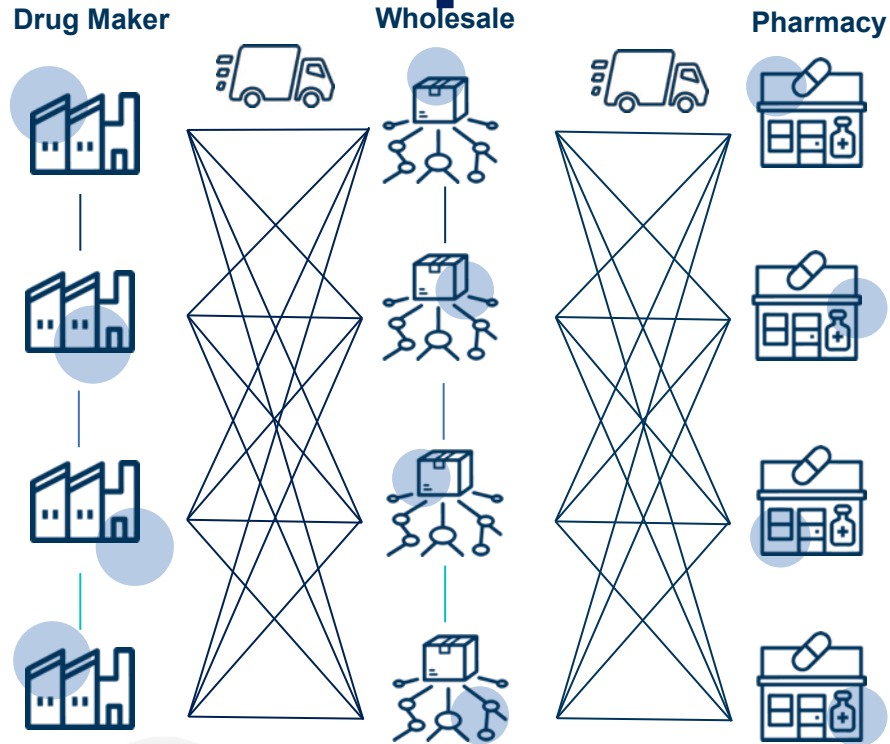




# TODA

The Pharma Supply Chain ...

Y



Lack of interoperability

Inconsistent availability of downstream ecosystem data

Siloed information & high number of IT interfaces

Inconsistent demand management and inaccurate forecasting

# THE FUTURE

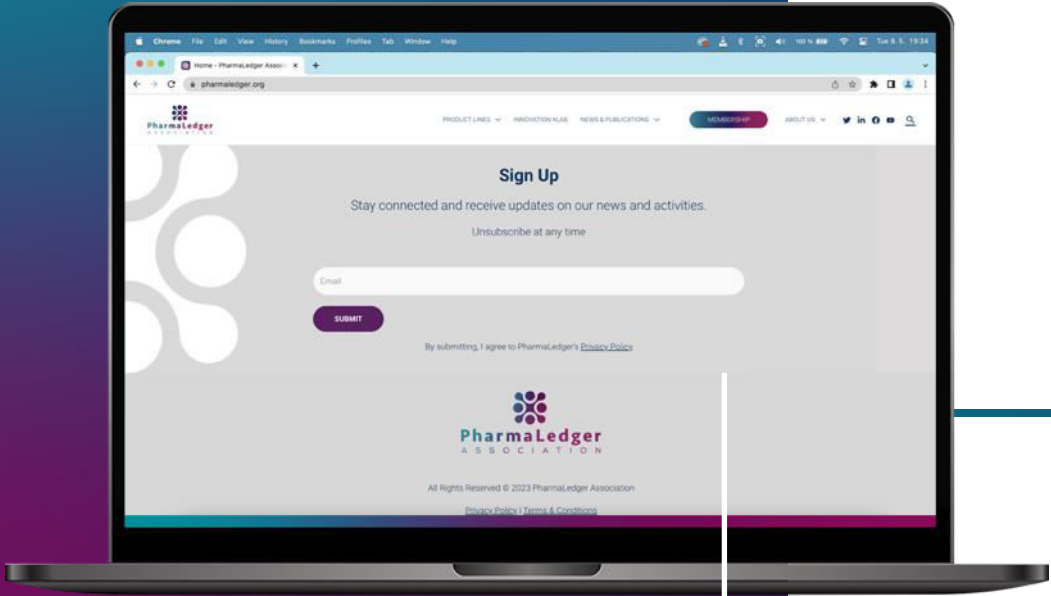
Finished Goods Traceability

...enabled by Blockchain



PharmaLedger puts patient safety at the heart of everything we do through enabling improved collaboration among ecosystem partners to support secured, trusted data sharing and by delivering end-to-end visibility of downstream data to optimize supply chain operations

This presentation does not  
end here and today!



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TWITTER



YOUTUBE

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# DISCLAIMER

PharmaLedger Association (PLA) is committed to complying with all applicable antitrust and competition laws.

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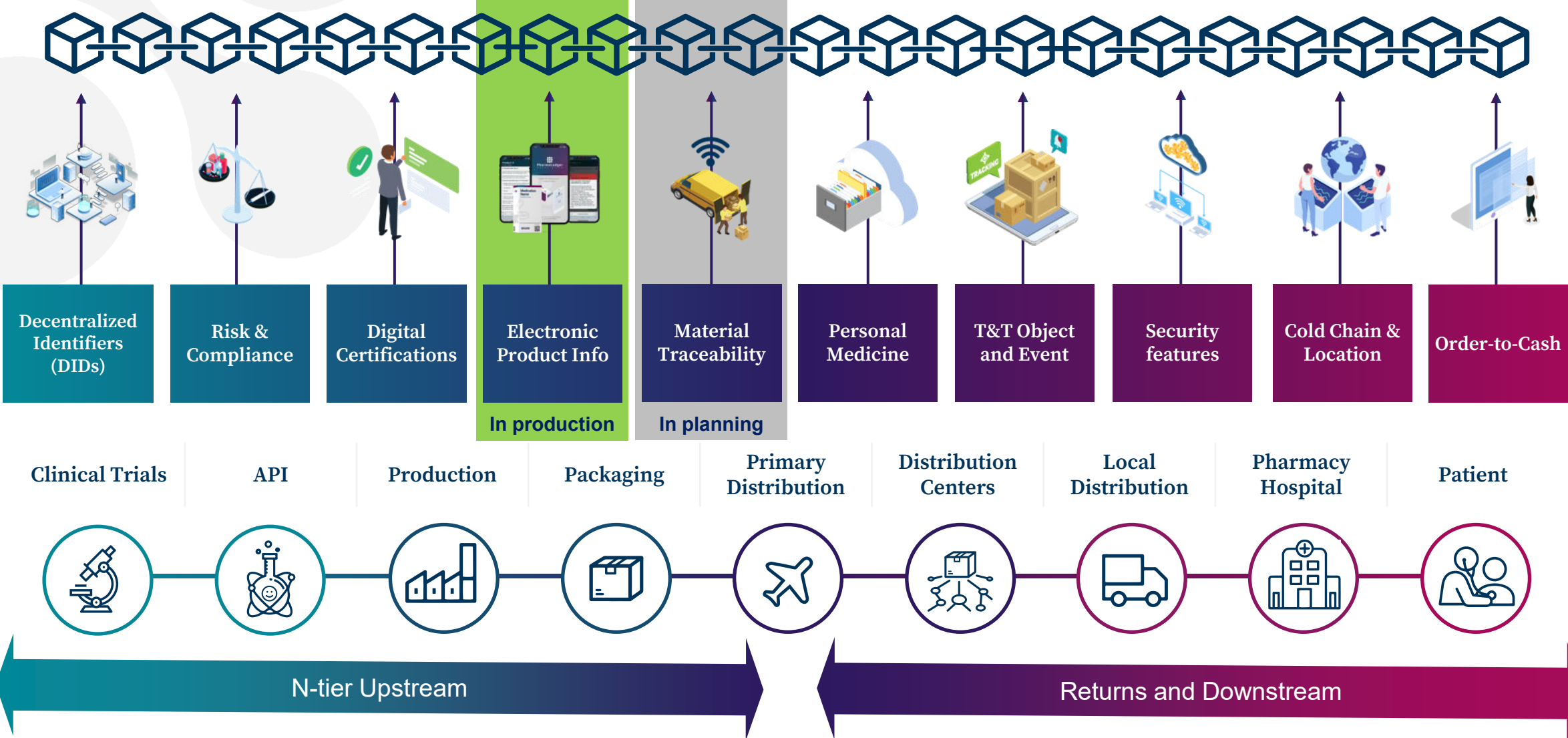
PLA Governance





# End-to-end Supply Chain Traceability Vision

## Blockchain Trust Fabric | PharmaLedger



# Digital Transformation Model Evolution

## Traditional model for incremental innovation



- Not patient focused
- Minimal collaboration
- Proprietary solution increases fragmentation, cost, complexity
- Results in vendor and/or technology lock-in
- Solution roadmap and governance defined by a 3<sup>rd</sup> party
- Only incremental change, limited to early adopters
- Competitors quickly appear and split the market

When the value is proven, more stakeholders adopt



They agree on an approach to realize, test, learn, pilot and prove the value



An ecosystem of interdependent stakeholders, including customers and patients



Has a chronic problem that can't be solved individually

## Collaborative model for digital transformation



Some engaged stakeholders collaborate on an innovative solution by pooling resources and risk



They leverage existing standards if available or achieve consensus on a de-facto standard

# ROADMAP

## PRODUCTS



2023

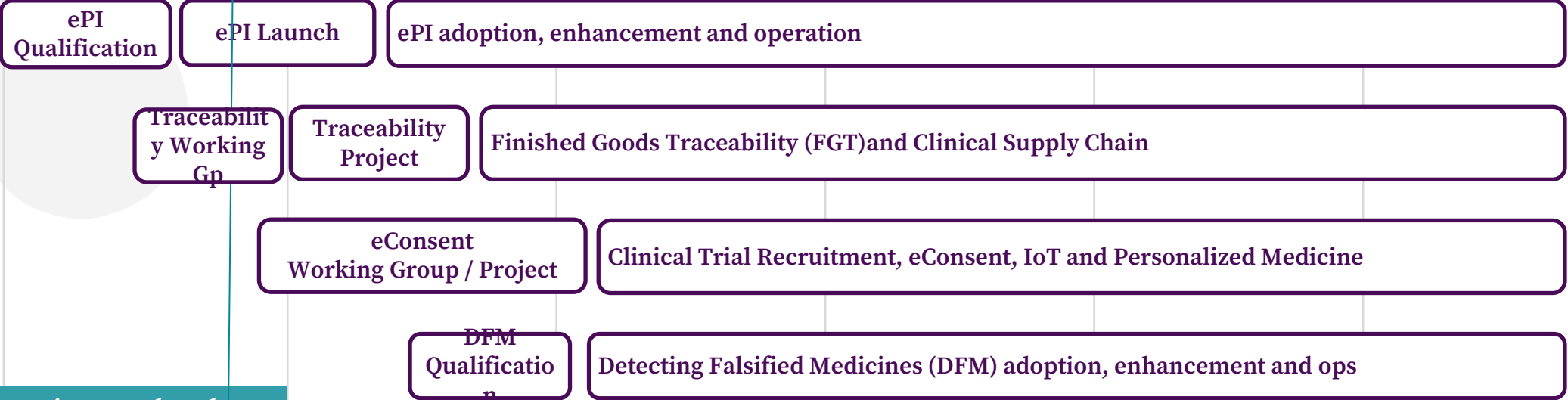
2024

2025

2026

2027

20287



Product planning is representative, actual products and launch dates to be confirmed.

## PLATFORM

