Angiah Santhanaswamy

Director - Business Development, Public Sector,

Oracle India Pvt Ltd.

Angiah is an IT veteran having more than 2 decades of Leadership roles and experience. Having previously worked at Compaq India, Adobe in India and currently at Oracle India Pvt Ltd and catering to Solutions Sales to Government and Corporate enterprises alike. Over the last decade, he has positively impacted several National Mission Mode projects like Ministry of Corporate Affairs, Pass Port Seva, Ebiz, Income Tax Project, besides several State and Integrated Mission Projects in India. In the last three years at Oracle India, he has embarked upon seeding new and emerging technologies like AI, ML, Blockchain Autonomous Database and IoT along with Oracle's Industry Leading Cloud Solutions in IAAS, PAAS and SAAS in India. Angiah as the Director at Oracle India Pvt Ltd has extensive & varied experience for Government to Business and Government to Citizen projects and manages key Central Government Ministries in India. He represents Oracle for several National E-Governance initiatives and policies with Ministry of Information and Communication Technology, National Informatics Centre, NASSCOM, NITI Aayog and others

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GS1®

Drug Track & Trace - Blockchain & IoT Solution

Angiah Santhanaswamy
2019

Drug Track & Trace - Agenda

- Current Pharma SCM Flow and adopted for the Pilot
- Drug Track & Trace – The Direction
- Drug SCM flow – Applications involved
- Success Criteria
- Touch points

BLOCKCHAIN in PHARMA

hindustantimes

Thursday, Aug 08, 2019 | Ne

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NITI Aayog, Oracle to fight fake drugs in India through blockchain

NITI Aayog is using blockchain technology to bring more transparency in the pharmaceutical industry and make it easier for users to verify the genuineness of medicines.
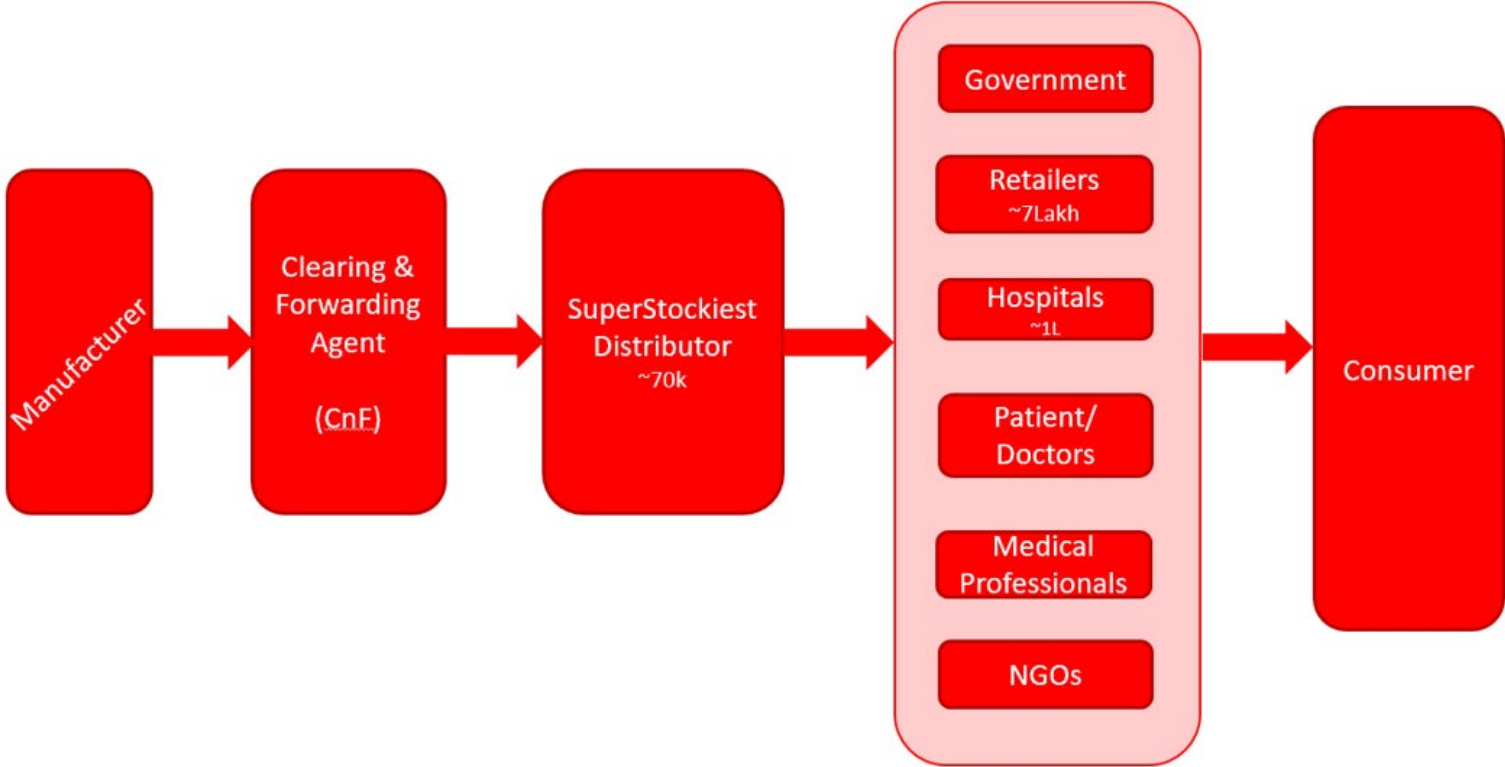
TECH Updated: Sep 28, 2018 15:59 IST

Kul Bhushan
Hindustan Times

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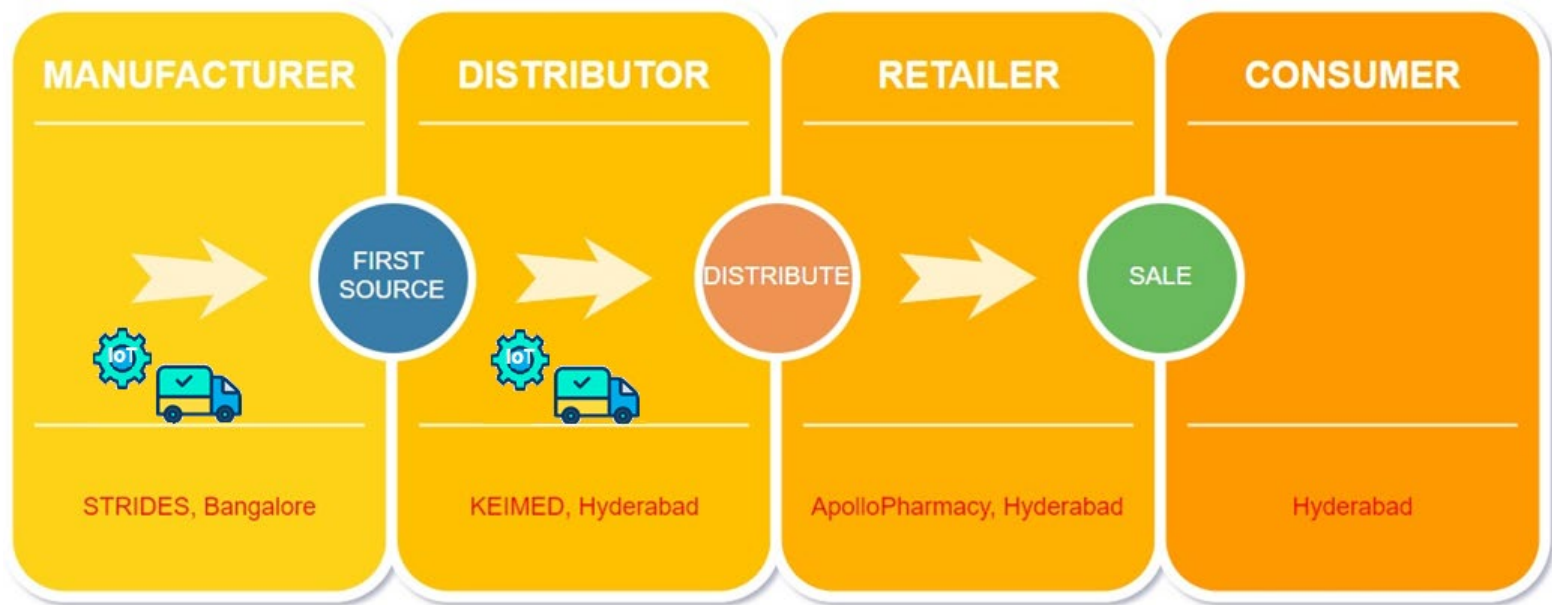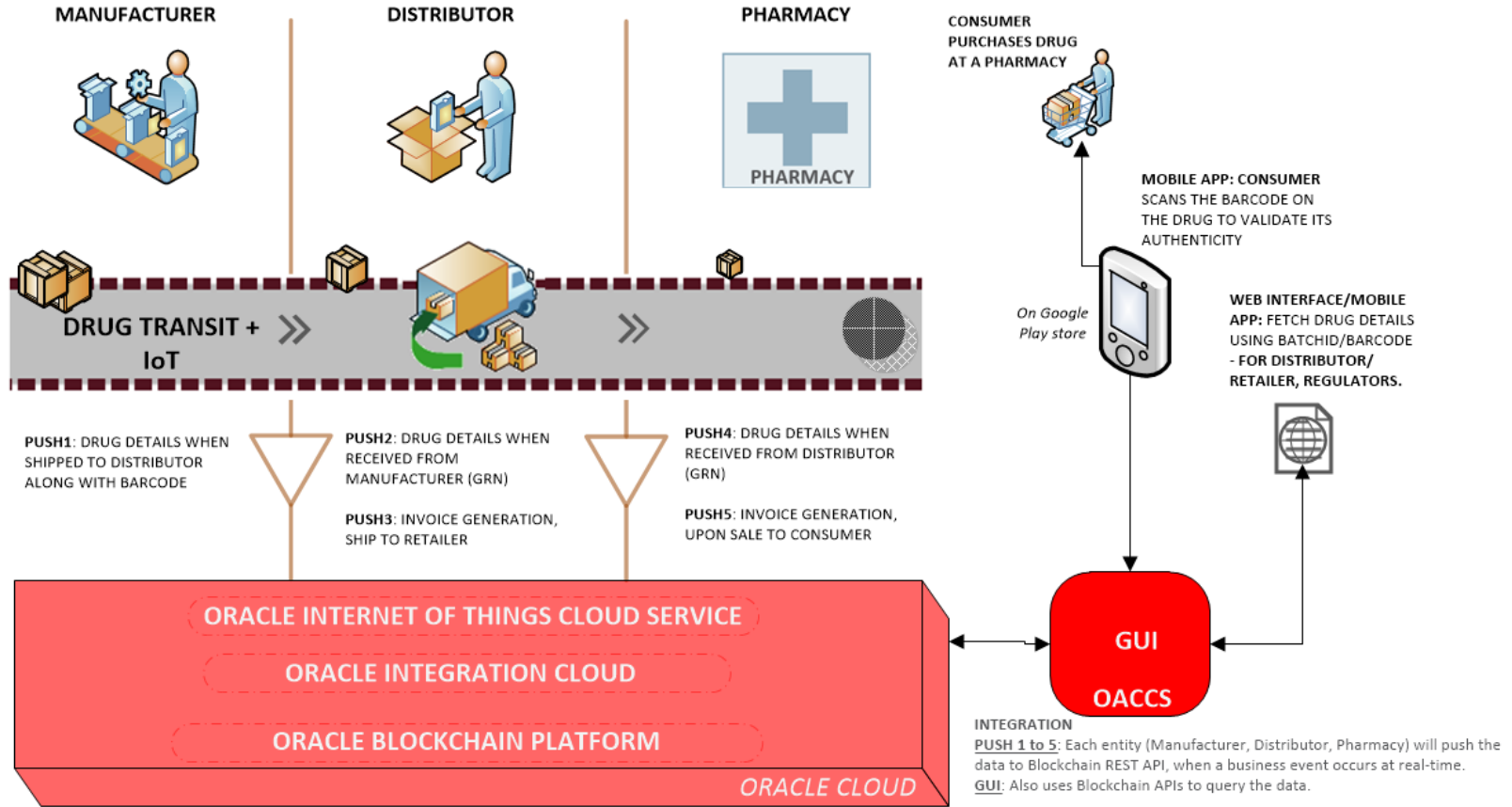# Current Indian Pharma SCM Flow

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Path Adopted for Pharma SCM

Drug Track & Trace – The Direction

MANUFACTURER

DISTRIBUTOR

PHARMACY

PHARMACY

CONSUMER PURCHASES DRUG AT A PHARMACY

MOBILE APP: CONSUMER SCANS THE BARCODE ON THE DRUG TO VALIDATE ITS AUTHENTICITY

On Google Play store

WEB INTERFACE/MOBILE APP: FETCH DRUG DETAILS USING BATCHID/BARCODE - FOR DISTRIBUTOR/ RETAILER, REGULATORS.

DRUG TRANSIT + IoT

PUSH1: DRUG DETAILS WHEN SHIPPED TO DISTRIBUTOR ALONG WITH BARCODE

PUSH2: DRUG DETAILS WHEN RECEIVED FROM MANUFACTURER (GRN)

PUSH3: INVOICE GENERATION, SHIP TO RETAILER

PUSH4: DRUG DETAILS WHEN RECEIVED FROM DISTRIBUTOR (GRN)

PUSH5: INVOICE GENERATION, UPON SALE TO CONSUMER

ORACLE INTERNET OF THINGS CLOUD SERVICE

ORACLE INTEGRATION CLOUD

ORACLE BLOCKCHAIN PLATFORM

ORACLE CLOUD

GUI

OACCS

INTEGRATION
PUSH 1 to 5: Each entity (Manufacturer, Distributor, Pharmacy) will push the data to Blockchain REST API, when a business event occurs at real-time.
GUI: Also uses Blockchain APIs to query the data.

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Drug Track & Trace – Enabling IoT

MANUFACTURER

Dispatched to Distributor

DISTRIBUTOR

PHARMA SUPPLY CHAIN

Dispatched to Retailer

Received and Accepted

PHARMACY

Purchase from Pharmacy directly

CONSUMER

Accept

Authenticate the drug using mobile app against Oracle Blockchain to accept.
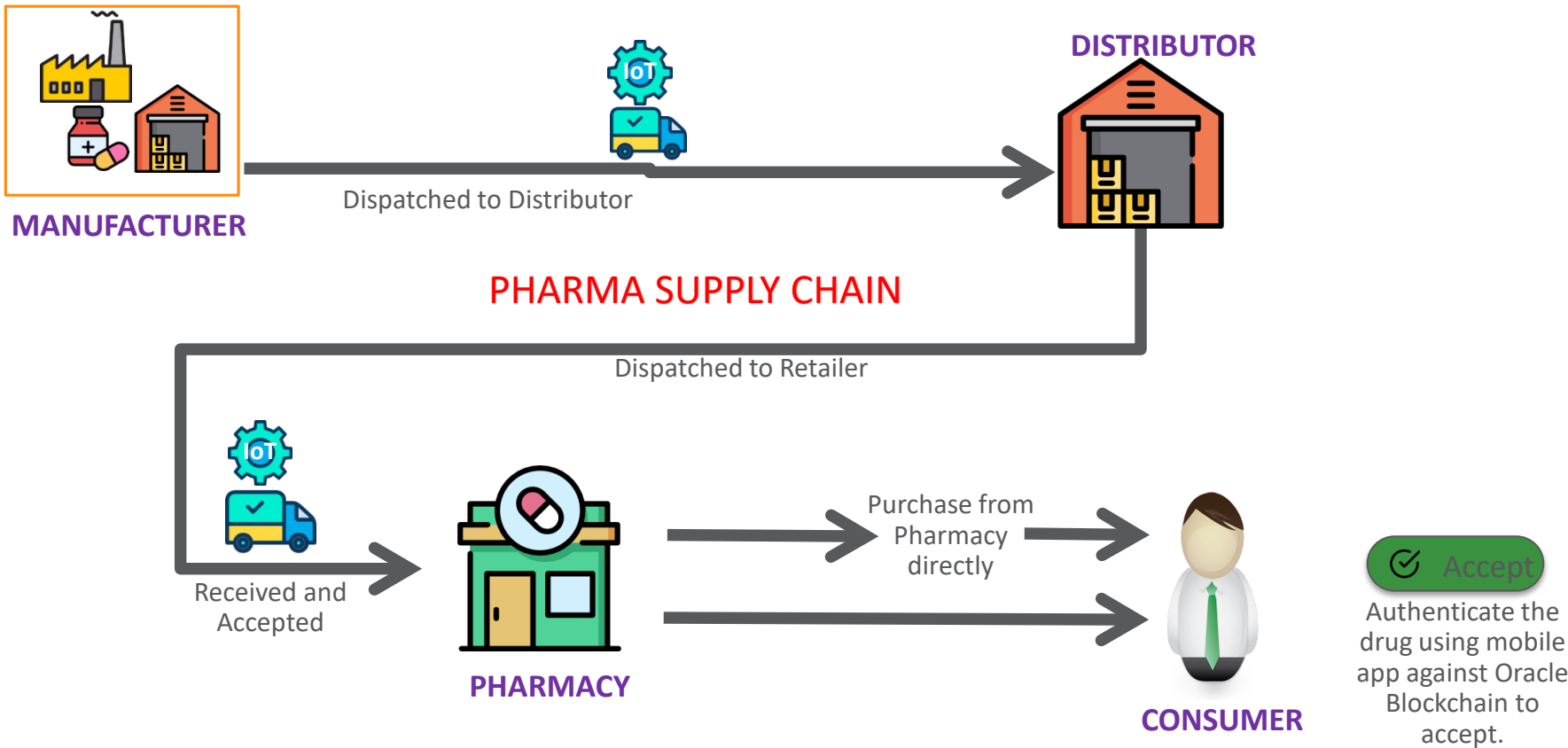
Touch points – Business Events

| Entity | Blockchain Transaction/touchpoints | | Type | Format |
	In	Out		
Manufacturer/CF	None	Delivery Note generation		
SuperStockiest/ Distributor	GRN generation	Invoice generation	REST-API (POST)	JSON
SubStockiest/ Retailer	GRN generation	Invoice generation		

Pilot Details

GS1 2d barcode associated with the drug "StarFlu 75mg CAP", manufactured by Strides and used in the Pilot.

IoT enabled container from Efftronics team for drug transit.

Pilot Details
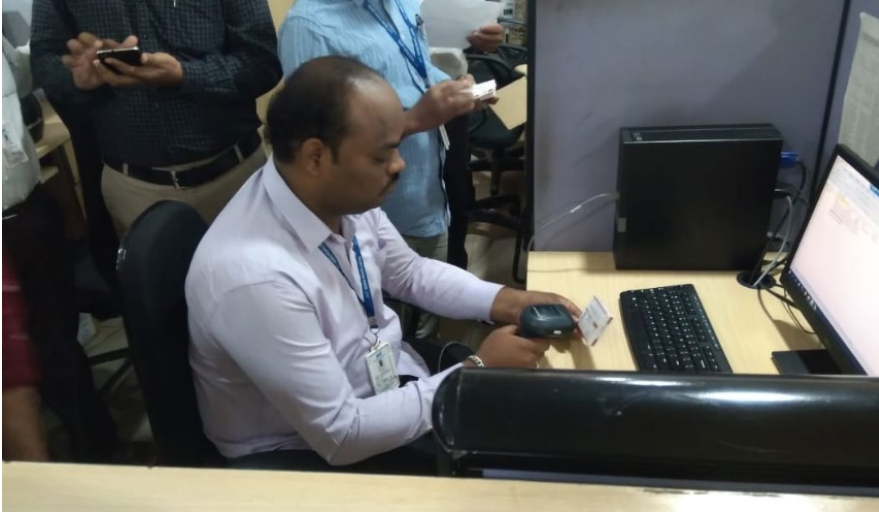
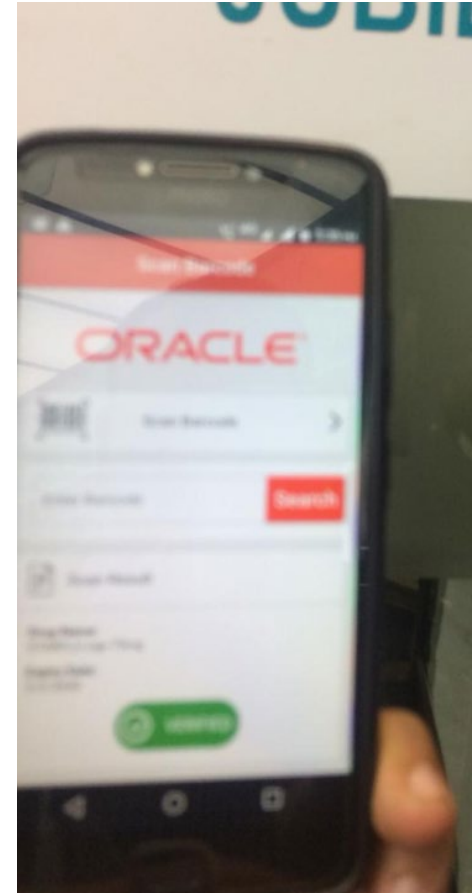KEIMED Team performing GRN using GS1 barcode scanner

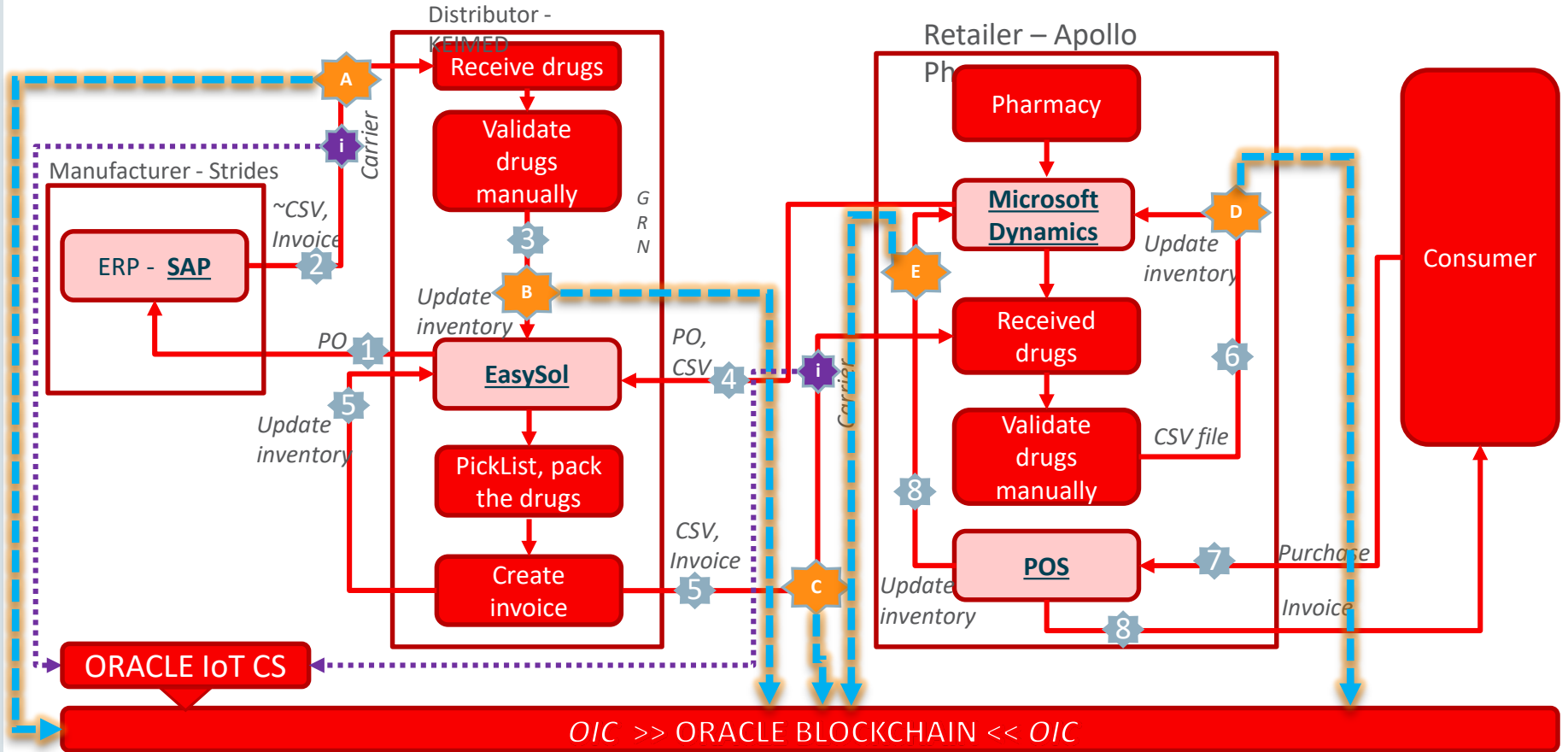Apollo Pharmacy Team performing GRN using GS1 barcode scanner

Pilot Details
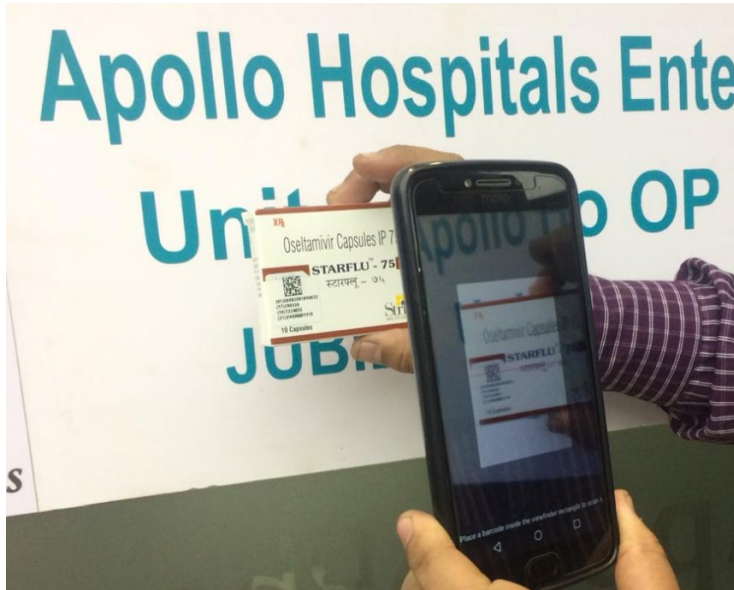
Recent purchase of StarFlu at ApolloPharmacy where 2d barcode being scanned by a Consumer.

Drug successfully scanned against the Blockchain by a Consumer.

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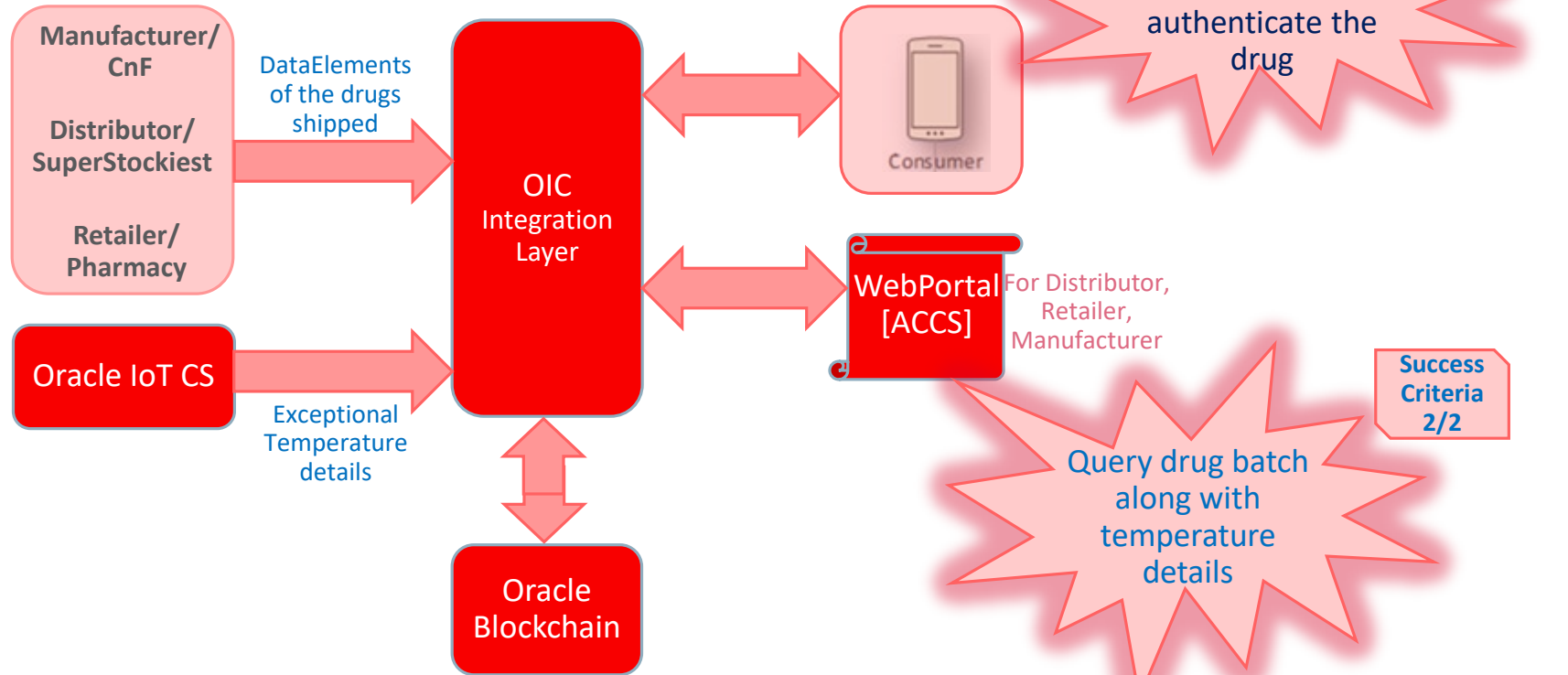
Data flow: Applications involved + Blockchain + IoT

Data flow: Applications involved + Oracle Blockchain/Oracle IoT

	Organization	Blockchain entry	In	Blockchain entry	Out	Application	Type
Manufacturer/CF	Strides	n/a	None	A	Delivery Note generation	SAP	API
SuperStockiest/ Distributor	KEIMED	B	GRN generation	C	Invoice generation	EasySol	API
SubStockiest/ Retailer	Apollo Pharmacy	D	GRN generation	E	Invoice generation	Microsoft Dynamics	API
IoT	Efftronics/ Oracle	i	Exceptional temperature details when drugs are in transit	None	None	Oracle IoTCS/Blockchain	API

Oracle Cloud Services used:
- **Oracle Blockchain Platform**
- **Oracle Integration Cloud**
- **Oracle Application Container Cloud Service**
- **Oracle IoT Cloud Service**

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Flow + Success Criteria 1.0

Manufacturer/ CnF

Distributor/ SuperStockiest

Retailer/ Pharmacy

DataElements of the drugs shipped

Oracle IoT CS

Exceptional Temperature details

OIC Integration Layer

Oracle Blockchain

Consumer

WebPortal [ACCS]

For Distributor, Retailer, Manufacturer

Success Criteria 1/2

Query against blockchain to authenticate the drug

Success Criteria 2/2

Query drug batch along with temperature details

How the Government will Benefit ?

- Improve compliance of Track and Trace regulations.
- Improve Patient Safety and drug supply security.
- Enable easier reconciliations of exceptions.
- Provide a platform for further business transformation for processes associated with the transfer of ownership of prescription medicines.
- Extensible platform for Business Transformations.
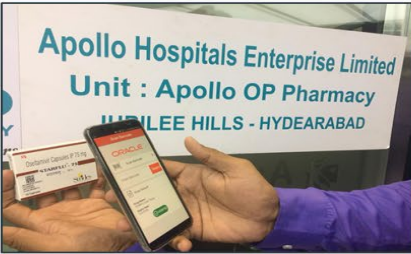- Open Specifications based on Industry leading Oracle Block Chain, IoT and Cloud Technologies.

Strides (Manufacturer)

Kelmed (Distributor)

Apollo Pharmacy & Consumer

Pharma Vision 2020: Important Points

- Making India a global leader in end-to-end drug manufacture. Approval time for new facilities has been reduced to boost investments.
- Drug Price Control Order and the National Pharmaceutical Pricing Authority to deal with the issue of affordability and availability of medicines.
- Setting up of chemical hubs across the country, early environment clearances in existing clusters, adequate infrastructure, and establishment of a Central Institute of Chemical Engineering and Technology.
- The Indian pharmaceutical market size is expected to grow to US$ 100 billion by 2025
- The pharmaceutical industry in India ranks 3rd in the world terms of volume and 14th in terms of value.
- India has the 2nd largest number of USFDA-approved manufacturing plants outside the US
- India has 2,633 FDA-approved drug products. India has over 546 USFDA-approved company sites, the highest number outside the US

Online resources about the project

https://www.oracle.com/in/corporate/pressrelease/niti-aayog-oracle-pilot-real-drug-supply-chain-with-blockchain-iot-2018-09-28.html

https://www.hindustantimes.com/tech/niti-aayog-oracle-to-fight-fake-drugs-in-india-through-blockchain/story-JBaKxIYgmXSoDYt0bmlSVP.html

https://www.thehindu.com/news/national/niti-aayog-oracle-to-fight-fake-drugs-through-blockchain/article25074955.ece