

IOT + BLOCKCHAIN IMPROVING WATER HAULING IN US O&G



LONDON

13 JUNE 2017

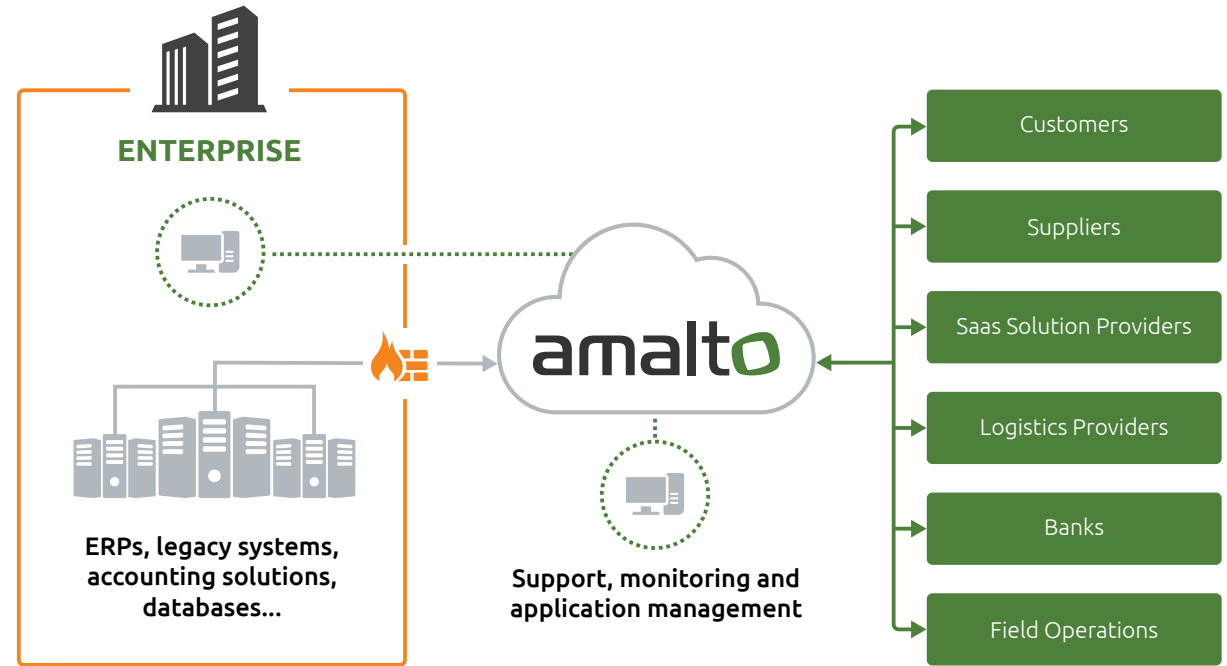


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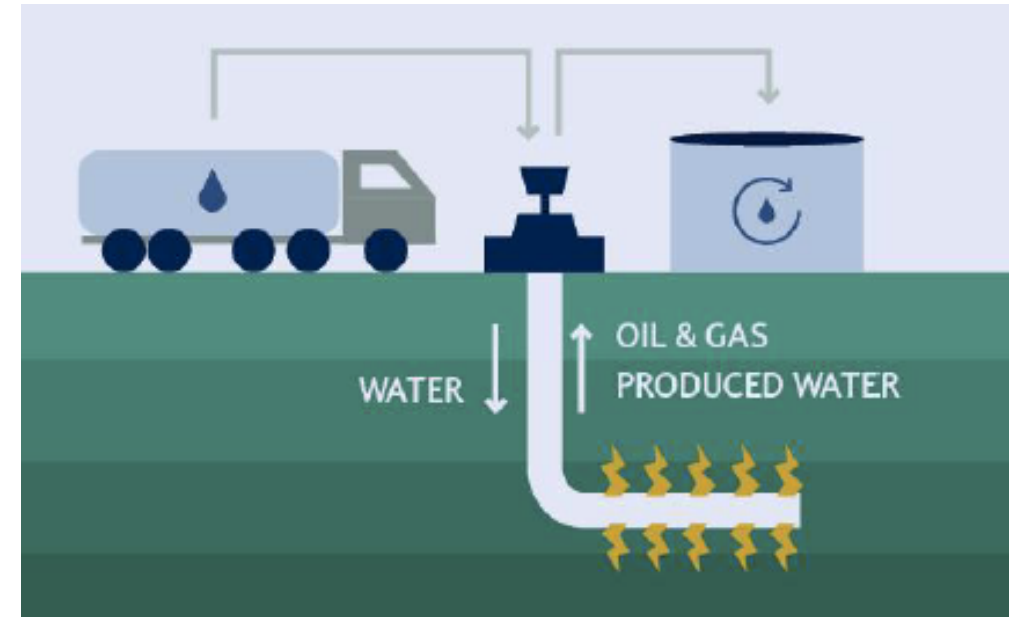
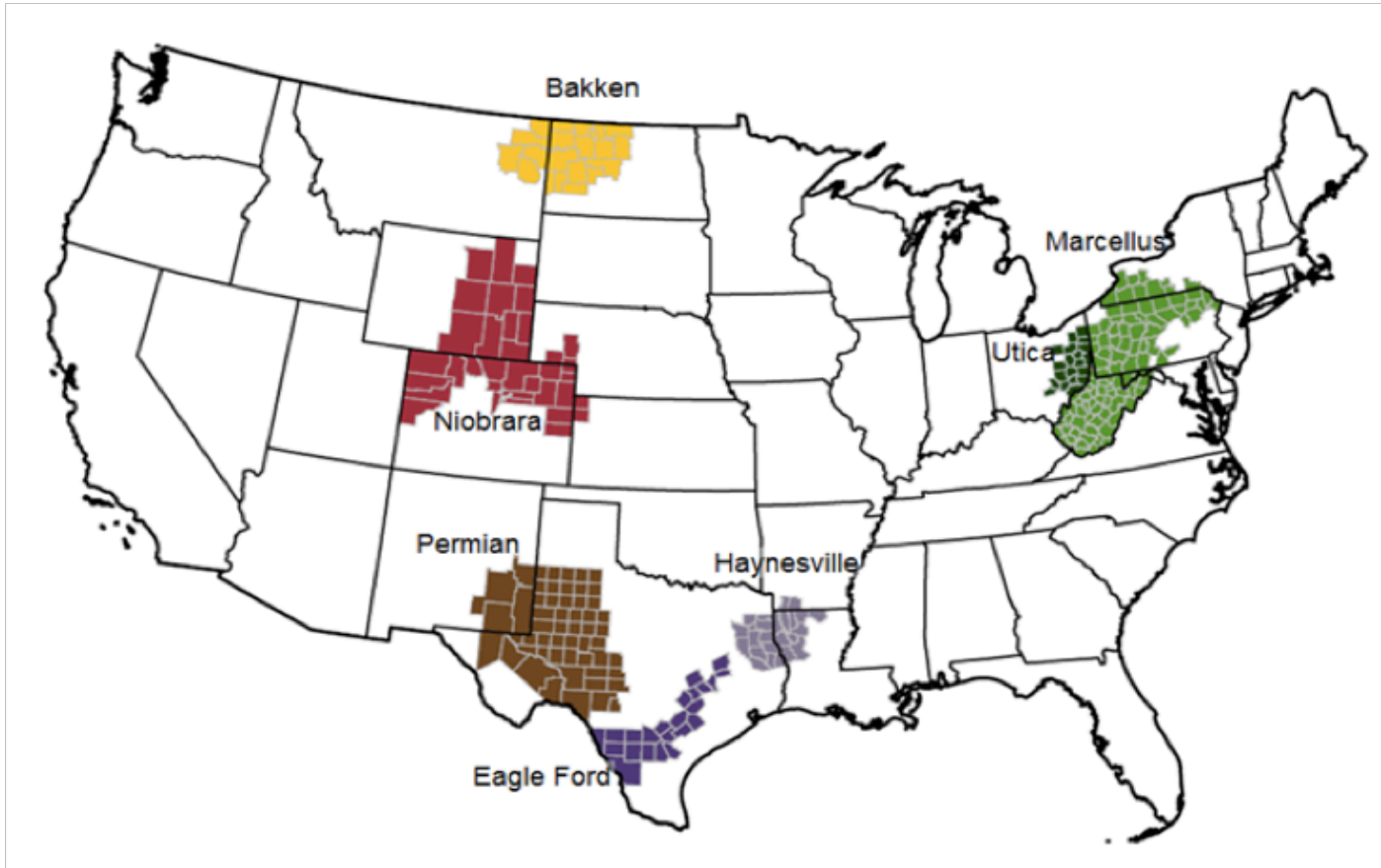


AMALTO TECHNOLOGIES THE O2C COMPANY

- LEADER IN B2B INTEGRATION
- OPERATING FULLY MANAGED PRIVATE CLOUD PLATFORMS
- 50 N.A. CUSTOMERS IN O&G
- HOUSTON, CALGARY AND PARIS



US SHALE PLAYS MAP



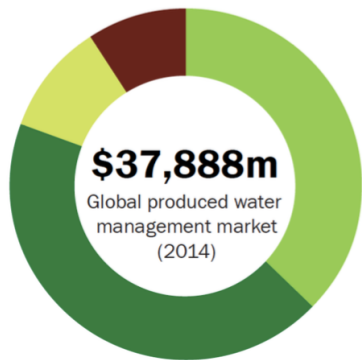
20 BILLION BARRELS OF WATER FROM 1.6 MILLION WELLS

- ✓ Figures not including hydraulic fracking
- ✓ **10 times** more “produced water” than oil
- ✓ Thousands of operators and hundreds of water haulers
- ✓ Specific challenges related to **unmanned locations**

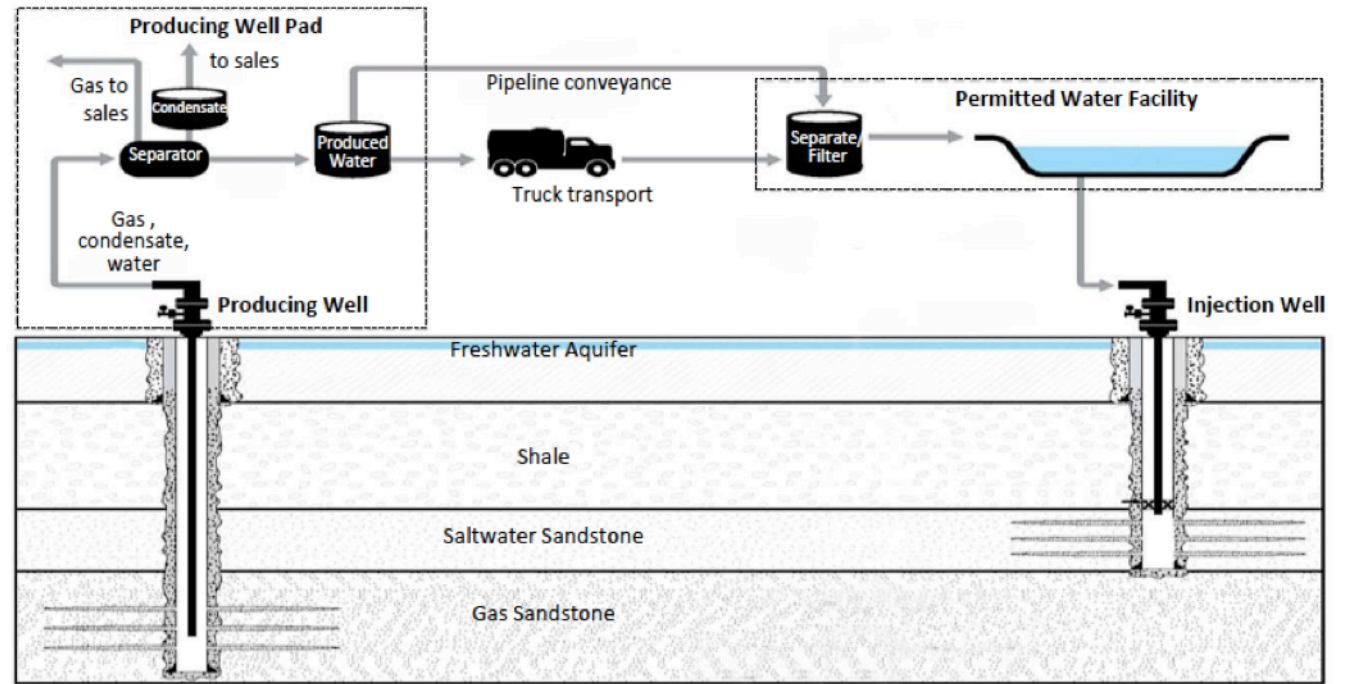


A VERY ACTIVE BUT LOW TECH INDUSTRY

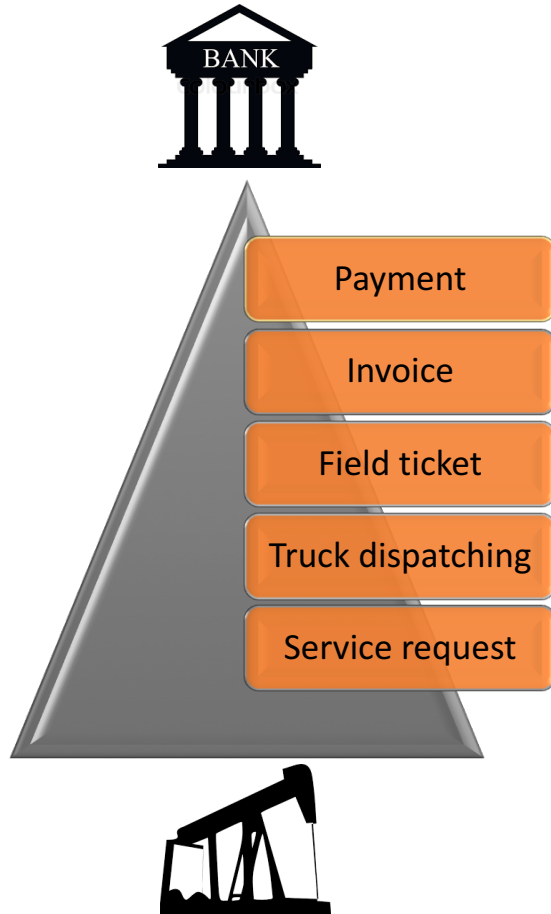
- ✓ 50 to 100 million truck rotations per year between the wells and the recycling sites to dispose of the produced water



- Water hauling services
- Water disposal services
- Produced water treatment services
- Produced water treatment equipment



A POORLY OPTIMIZED PROCESS

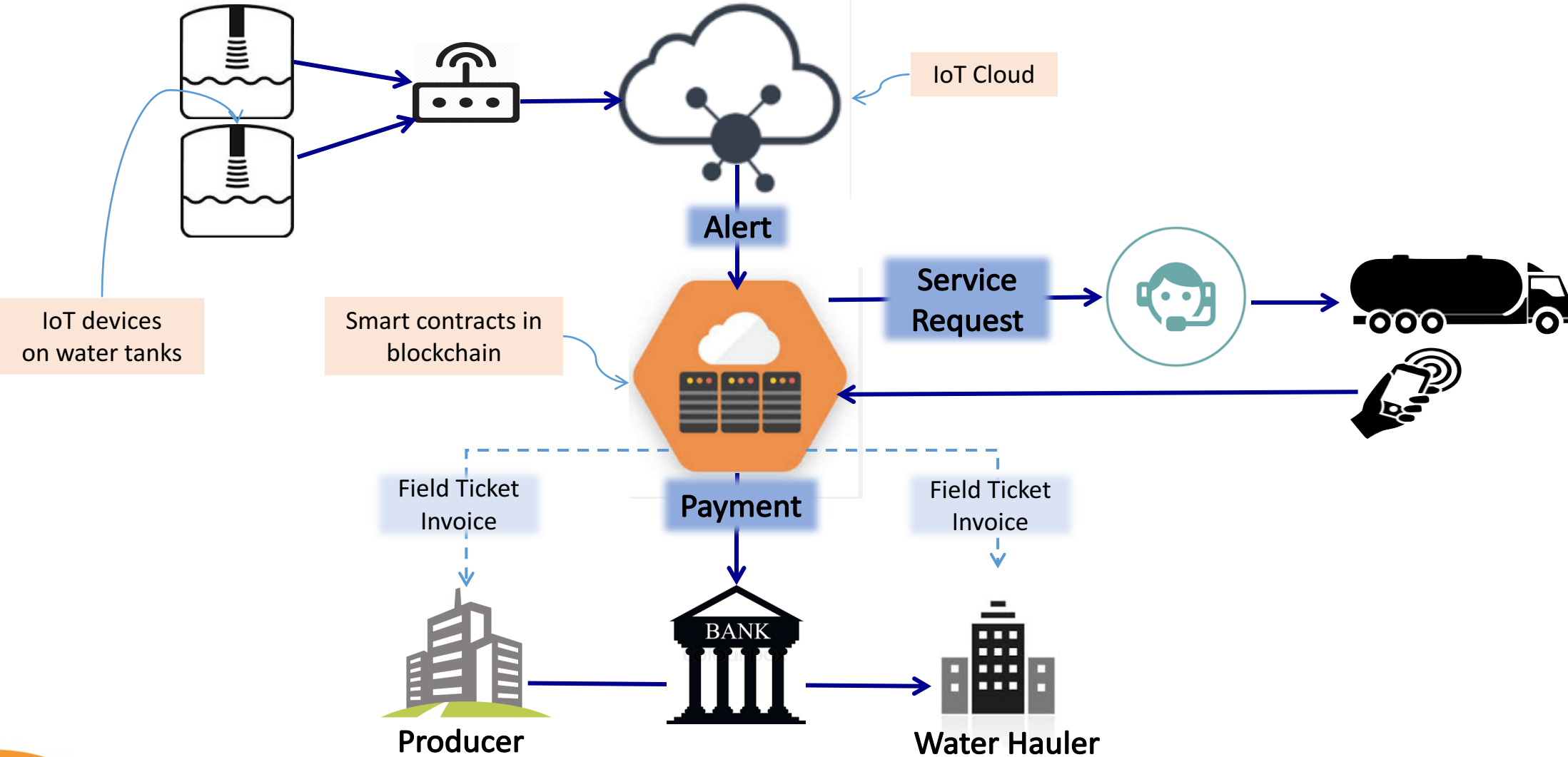


LARGELY MANUAL AND PAPER BASED ORDER-TO-CASH

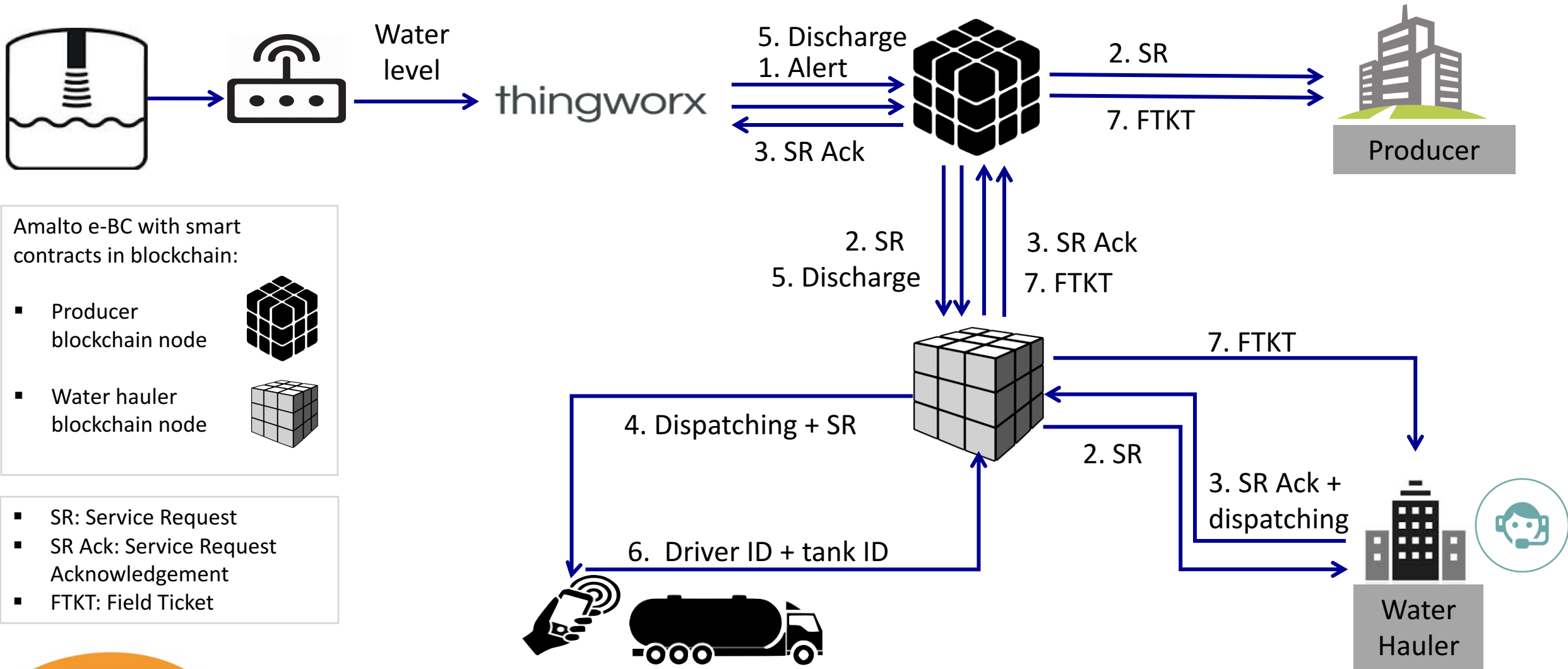
- ✓ **Truck scheduling and dispatching** not efficient
- ✓ Very labor intensive
- ✓ **High DSO** (80 to 100 days)
- ✓ Poor cash flow management
- ✓ Poor auditability
- ✓ Limited compliance to EPA rules


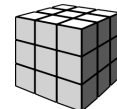


CONNECTING ALL STAKEHOLDERS AND ASSETS TO A DISTRIBUTED CLOUD PLATFORM



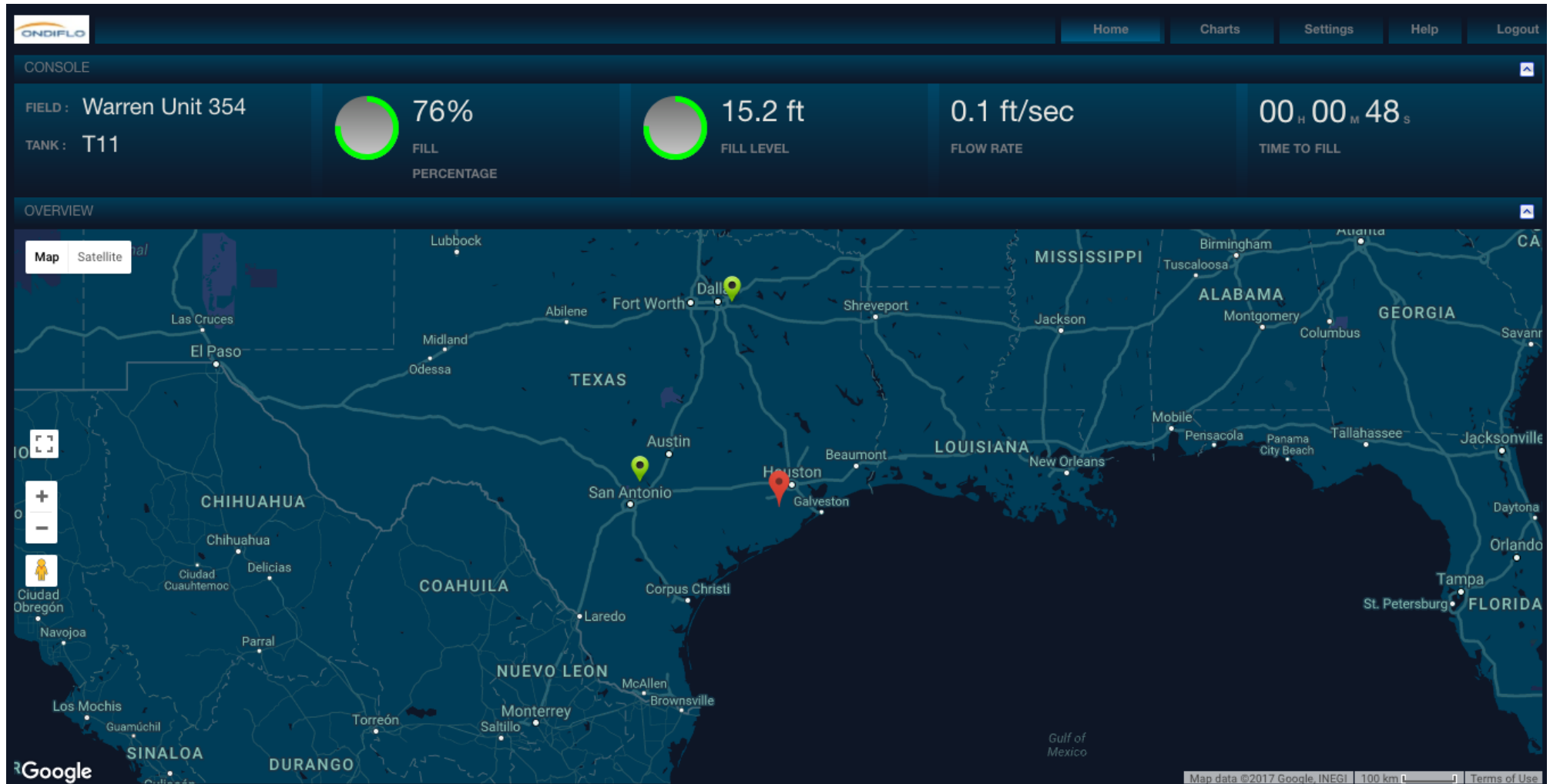
ONDIFLO SOLUTION : FROM SR TO FTKT




- Amalto e-BC with smart contracts in blockchain:
- Producer blockchain node 
 - Water hauler blockchain node 


- SR: Service Request
- SR Ack: Service Request Acknowledgement
- FTKT: Field Ticket

IOT PLATFORM (THINGWORX FROM PTC)



NODE (E-BC FROM AMALTO)






MESSAGES

566120e9-f1ad-4eec-9b23...

MENU

- Home
- Messages
- Reports
- Work Items
- Tables
- Administration
- Organizations
- Services



566120e9-f1ad-4eec-9b23-beda12329635

Service Request (id: 566120e9-f1ad-4eec-9b23-beda12329635)

Tank ID @ Field Name T12 @ Warren Unit 354	Tank Location 32.122138, -102.147891
Level 96 bbls	Fill 22.0 %
Operator Oildex Operator	Estimated Date Full Fri, 2 Jun 2017 13:53:50 GMT

Request Status

Status Discharge Completed	Status Date Fri, 2 Jun 2017 15:24:56 GMT
Alert Date Fri, 2 Jun 2017 13:52:36 GMT	

Blockchain Details

Smart Contract 0xa6b0c67c63319b66fca...	Block Number # Transaction 240829 # 0
Operator Address 0x035e19356880f86804...	Service Co. Address 0xc4849b7564b9763e65...
Gas Used 0	

Acknowledgment Details

Transaction Hash 0x62c684c2fc733907adf...	Block Number # Transaction 240831 # 0
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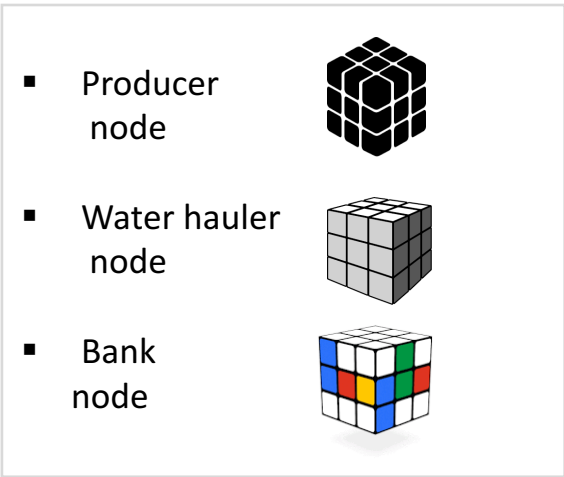
Discharges Details

Date Discharge	Volume (bbls)	Block Number # Transaction	Truck Driver Name	Truck Id	Date Service Start	Date Service End	Comment
Fri, 2 Jun 2017 13:55:24 GMT	130	240846 # 0 - 241233 # 0	BGR	1234	Fri, 02 Jun 2017 13:55:00 GMT	Fri, 02 Jun 2017 13:55:00 GMT	OK
Fri, 2 Jun 2017 13:55:40 GMT	130	240848 # 0 - 241383 # 0	BGR	123456	Fri, 02 Jun 2017 14:55:00 GMT	Fri, 02 Jun 2017 18:55:00 GMT	OK
Fri, 2 Jun 2017 13:56:01 GMT	130	240850 # 0					

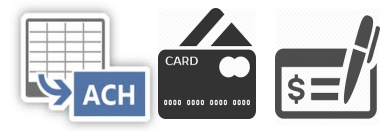
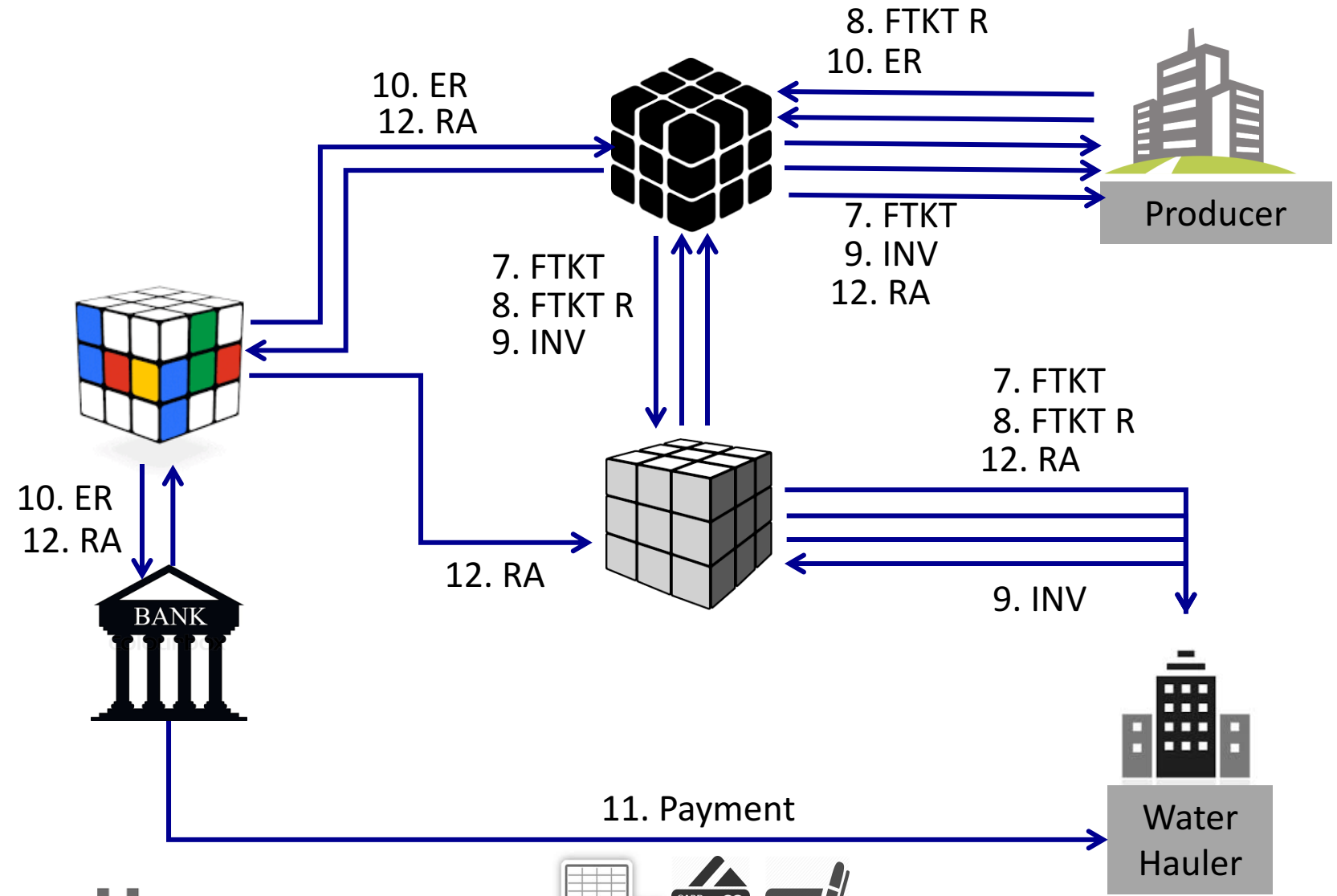
WORK ITEMS

Discharge date Fri, 2 Jun 2017 at 13:56:01 GMT	Volume 130 bbls	Assigned to Field Tickets Operators	<input type="button" value="Fill and Send"/>
Assignee(s) o bruno.grieder@amalto.com			

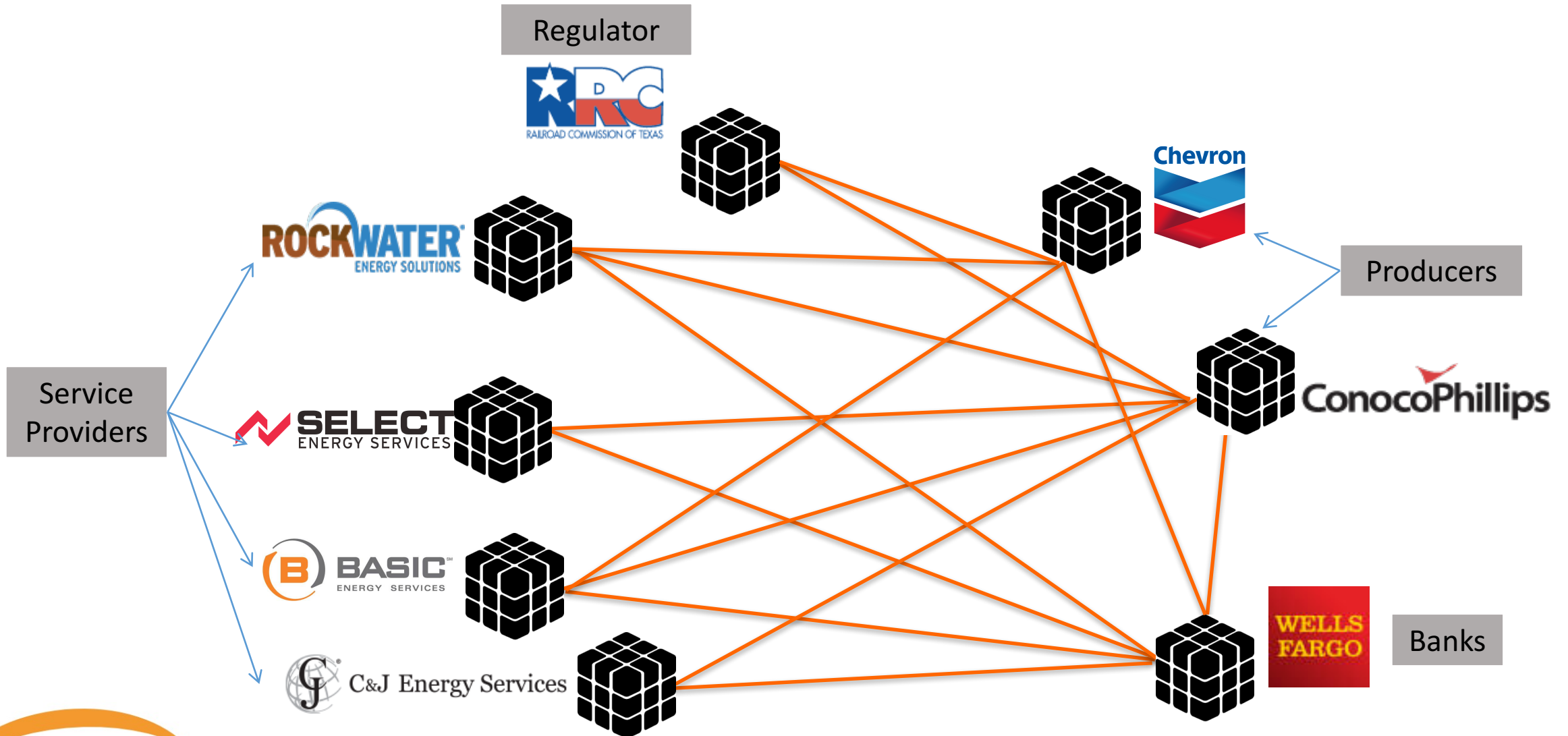
ONDIFLO SOLUTION: FROM FTKT TO PAYMENT



- FTKT: Field Ticket
- FTKT R: Field Ticket Response
- INV: Invoice
- ER: Evaluated Receipt (OK to Pay)
- RA: Remittance Advice



ALL STAKEHOLDERS SHARE A DISTRIBUTED LEDGER BUT TRANSACTIONS ARE PRIVATE- PERMISSIONED BLOCKCHAIN



WHY BLOCKCHAIN MAKES SENSE IN THIS CASE

- ✓ **Collaboration** between untrusting parties (disputes)
- ✓ **Increased transparency** desired (with regulators, partners)
- ✓ **Synchronicity** across locations/ functions/ entities (from the field to the back-office/ operations and finance/ producers and service companies)
- ✓ **Full auditability** (at all points of history) needed
- ✓ No central hub (that rules them all)
- ✓ Immediate connectivity to all parties



THANK YOU
QUESTIONS ?

