Accord Project - Supply Chain
Smart Legal Contracts: State-of-Play

1. **Contracts, Clauses, and Documents**
    a. Master supply agreement
    b. Purchase order
    c. Invoice
    d. Distribution Agreement
    e. Joint Development Agreement
    f. OEM Agreement
    g. Product Reseller Agreement
    h. Sale of Goods Agreement
    i. Sales Representative Agreement
    j. Transportation Agreement
    k. Vendor Managed Inventory Agreement
    l. Warehouse Agreement
    m. Commercial Letter of Credit
    n. Bill of lading (waybill)
    o. certificates of origin
    p. certificates of conformity
    q. packing lists

2. **Supply chain players**
    a. Raw Materials Providers
    b. Manufacturers
    c. Distributors
    d. Resellers
    e. Franchisers
    f. Sales Representatives
    g. Logistics Providers
        i. Transporters
        ii. Warehousemen
    h. Financiers
    i. Insurance and Credit Support Providers
    j. Customer Service Providers
    k. End Users
    l. Port/airport operators
    m. Independent arbitrators
    n. Customs authorities and other border agencies or authorities

3. **Existing Standards**
        i. GS1
        ii. CSCMP Supply Chain Process Standards

iii. APICS
iv. ISO
    1. 14001: environmental
    2. 9001: quality
    3. 28000: security management systems

4. Legal, Technical, and Operational Issues

a. Creating and managing intellectual property
b. Comprehensive and enforceable contracts
c. Consistent Up- and Downstream Terms and Conditions
d. Compliance with applicable jurisdiction- and industry-specific laws, rules, and regulations
e. Voluntary Industry Group Guidelines
f. Business Continuity Risks
g. Inventory Control Risks
h. Tort and Product Liability Risks
i. Security Risks
j. Strategic alliances
k. Fraud
    i. Something rotten in the state of shipping: what you need to know about Mandate Fraud and the fraudulent redirecting of payments, October 2017
    ii. Supply Chain Fraud, KPMG, April 19, 2017

l. erroneous pricing and other terms
m. lack of visibility into compliance with purchase order fulfillment and delivery terms
n. Interaction of computable contracts with a variety of supply chain-related blockchains (e.g., trade finance, provenance, supply)
o. warranty compliance and management
p. regulatory compliance with disparate regimes
q. incorporating new data sources for cost-based pricing
r. relationship management
s. invoice, purchase order, and payables administration
t. just-in-time contracting and supply chain financing
u. integration of master supply agreements with software systems that govern purchase orders, invoices, and related documents integration of participants' IT systems
v. visualizations that include contract and clause-level analytics among other supply chain management dashboards
w. adjustment of contract terms due to changes in supply or downstream conditions
x. sharing contract data among different supply chain-related participants
y. Geographical differentiation and distinctions
    i. Transfer of personal data (eg for low volume/high value goods)
z. payment of customs duties/tariffs/taxes

aa. verifying provenance/origin/conformity with specifications and agreements
bb. allocating and managing product quality control risks and returns (sometimes a supplier gives an extra discount on the price to avoid liability for defects/returns OR the supplier provides an additional quantity of goods free of charge to cover defective goods)
cc. Route planning
    i. balancing the time and cost of delivery and addressing issues such as force majeure (eg by specifying a route rather than merely identifying the points of departure and delivery). This concern stems from cases such as Tsakiroglou v Noblee Thorl, G.m.b.H [1960] 2 Q.B. 318
dd. accurate sensors to provide data feeds
ee. access to electronic communications networks for reliable transmission of data from sensors
ff. hacking and spoofing of sensors/location devices (eg spoofing gps using drones)
gg. the interaction of sensor data, contracts and letters of credit (eg will data be accessible to and easily understood by banks to inform the decision whether or not to pay under a letter of credit and how much to pay out.
hh. Whether there might also be a contract with an independent auditor or verification agency (eg Bureau Veritas) to check goods, particularly commodities

5. **Smart Contracts in Supply Chain**

a. Pilots and other Actual Implementations

i. Aussie Bank's 7000-Mile Blockchain Experiment Could Change Trade ("As port staff scan the bales, an update to an electronic contract will be triggered, transferring ownership of the goods and authorizing the release of payment")

ii. Walmart and 9 Food Giants Team Up on IBM Blockchain Plans, Aug. 22, 2017 ("aiming to use blockchains, a technology that made its name as the basis of the cryptocurrency Bitcoin, to maintain secure digital records and improve the traceability of their foodstuffs, like chicken, chocolate, and bananas")

iii. Alibaba, EY, IBM And Microsoft Use The Blockchain To Create A Transparent Supply Chain, Forbes, Aug 31, 2017

iv. Marine Transport International applies blockchain to shipping supply chain, Sept. 23, 2016

v. Air France (story: "Air France KLM's engineering and maintenance division is evaluating the potential for blockchain to become its new digital

ledger for managing replacement parts on in-service airplanes")

vi. Maersk uses blockchain to track shipping containers
    1. March 5, 2017: Maersk and IBM Unveil First Industry-Wide Cross-Border Supply Chain Solution on Blockchain

vii. Co-Op Food builds blockchain to track food sustainability

viii. BHP Billiton puts rock samples on the blockchain

ix. Everledger digitises Kimberley diamond certifying process with blockchain

x. Hitachi and Mizuho Strike Deal for Blockchain Supply Chain (Coindesk)

xi. Marine Technology International

xii. Transparency-One and Microsoft announce blockchain service for supply chain transparency
    1. Oct. 19, 2017: SC Digital: "Transparency-One customers will now have the option to add an additional layer of security to their data by storing critical supply chain information, captured in Transparency-One, in Microsoft Azure's Blockchain Services. Blockchain heightens the security of the data stored in Transparency-One by creating a ledger of all transactions between supply chain partners, and making it immutable. With this technology, all transactions, including any updates or modifications, are immediately recorded and stored in the blockchain. Blockchain data can immediately be accessed by designated supply chain partners, providing full transparency at each step of the supply chain."

xiii. TKI Dinalog project
    1. BN Amro, Delft University, the Port of Rotterdam and over a dozen other partners' project rooted in blockchain technology to connect operational information, financial flows and contracts

xiv. T-mining and Nxtport
    1. NxtPort joins T-Mining in blockchain initiative, Aug. 2017: " using blockchain to ensure only the right truck driver is given clearance to collect a particular container."

xv. Kouvola Innovation (Finnish local govt incubator)
    1. Tallinn Port Demos Blockchain-based Logistics (July 2017)

2. Slides - Smart Logistics With Blockchains.

b. **Potential Benefits and Uses Cases**
   i. faster and more accurate tracking of products and distribution assets
   ii. a reduction of errors on orders, goods receipts, invoices and other trade related documents due to less need for manual reconciliation
   iii. sharing of information about process improvements and maintenance in real-time
   iv. a permanent audit trail of every product movement or financial transaction from its source to ultimate destination, reducing opportunities for fraud
   v. Smart contracts
      1. route purchase orders, invoices, receipts, shipping notifications, inventory data and other trade related documents to be automatically matched and verified.
      2. Payments and replenishment orders can be triggered automatically, based on the codified rules within a smart contract.

6. Blockchain-Supply Chain Players and Initiatives

a. IBM Blockchain
b. Hyperledger Sawtoothlake
c. Trusted IoT Alliance
d. SAP Blockchain and IoT Co-Innovation Programme
   i. Companies including Capgemini, Deloitte, GrainCorp, HCL Technologies, HERE Technologies, Moog Inc., Natura Cosméticos S.A., NetApp and PeerNova are collaborating with SAP to validate use cases and business models for blockchain usage for product and asset lifecycle management solutions from SAP
e. Standards
   i. IBM, Microsoft, And GS1 Will Create Supply-Line Blockchain Standards, Sept. 13, 2017
f. Sweetbridge Alliance
g. MediLedger Project
   i. Chronicled, Inc. and The LinkLab LLC have announced The MediLedger Project, a joint venture that will explore and develop blockchain solutions for the pharmaceutical industry.

7. Challenges to Blockchain/Smart Contracts Adoption

8. Publications

a. Smart Contracts for Supply Chain, Chamber of Digital Commerce (see page 31)
b. Blockchain's Smart Contracts: Driving the Next Wave of Innovation Across Manufacturing Value Chains, Cognizant, June 2016
c. Blockchain can help transform supply chain networks in the chemicals and

petroleum industry (IBM Jan. 2017)

d. Blockchain-enabled supply chain (EY April 2017)
e. Risks and opportunities for systems using blockchain and smart contracts. Data61 (CSIRO 2017), 4.1 Use case 1: Supply chain.
f. Zillerium: A Decentralised Supply Chain Management Architecture
g. How Blockchain Can Slash the Manufacturing “Trust Tax”
h. Blockchain Technology for Ports