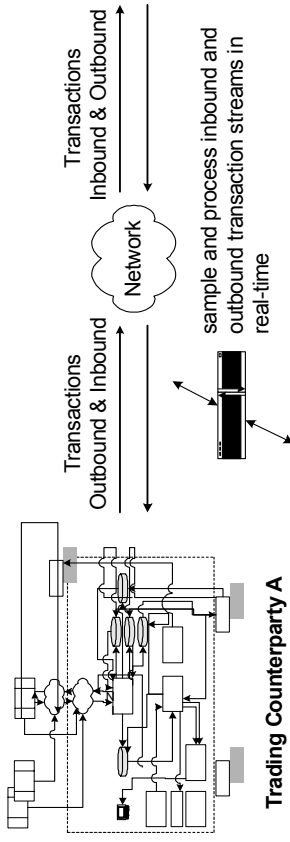


Semantic and Syntactic Interoperability in Transactional Systems

Industry Domain : Cross-Border Securities Trading
Business Problem : 30+% of Standards-Compliant Transactions Fail
Cost to Industry : \$10-100+ Million per Year per Company (+ Notional Value of Trades)

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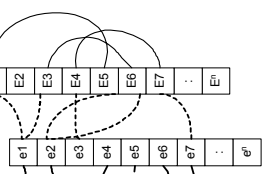
Solution



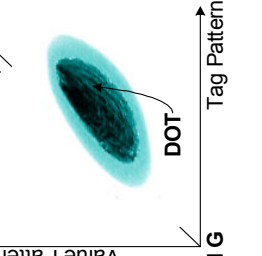
Results

- Straight-Through-Processing Improvements**
- ✓ Corporate Actions : 64 → 97% (↑ 33%)
 - ⊕ 3.2s average . . . 33h learning time
 - n=1000-3000 transactions per day over 25 days
 - ✓ Trade Settlement : 86 → 98% (↑ 12%)
 - ⊕ 0.8s average . . . 14h learning time

Counterparty A Transaction

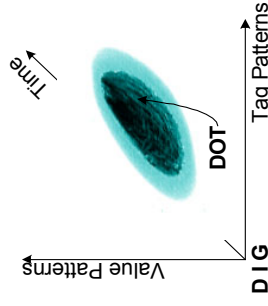


Counterparty B Transaction



Transaction Element Analysis

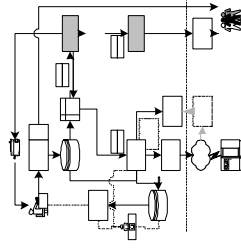
- within a counterparty transaction
- between counterparty transactions
- Tag & Value Patterns per Element
- track variations over time



DIG : Data Interoperability Grid
 3d array of similarity coefficients (tags, values within and across transactions) and changes over time

DOT : Data Operability Threshold
 mathematical region within DIG. When pierced, signals data transformation required for sampled transaction(s)

UDS : Universal Data Structure
 simple, consistent programmatic access to data interoperability attributes for query and transformation



Trading Counterparty B

Semantics :
 SWIFT Standards Financial Dictionary
<http://www.swift.com/>
Syntax :
 ISO 15022
<http://www.iso15022.org>
 [updated in Nov of each year]

Example (MT 564)
 Field 69A Period concept
 Format Options A,B,C,D,E,F,J
 Qualifier 4c Period Type
 Date/Time 8n,4n Start
 Date/Time 8n,4n End

SYNTAX
 :69B::REVO/20030428:1600/OPEN
INTERPRETATION
 Revocability period in which shareholder can withdraw or change their instructions for tender offers. Period starts 28 April 2003 and end of period will be determined later

Conclusions

- ★ b2b Integration In Advance via Standards
 - Standards necessary, but not sufficient
- ★ ★ b2b Integration On Demand by Sampling Transaction Streams
 - Semantics and Syntax are non-stationary

Future Directions

- ❖ Improve throughput and performance
- ❖ Optimize DOT resolution (via sampling window)
- ❖ New transaction types : Statements, Payments