



# FIXML

## FIX Technical Background



# FIX Session and Application Layers

## *Trading Application*

### *Session Layer*

- Establishing and terminating the connection
- Message Delivery  
data integrity, sequencing, addressing

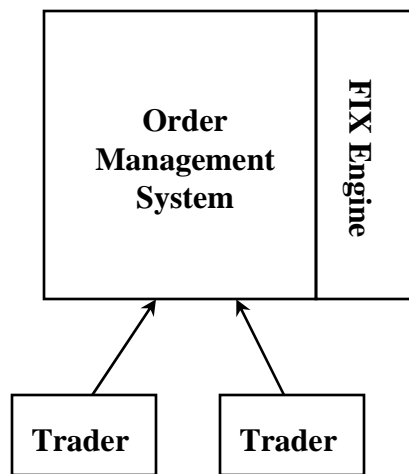
### *Application Layer*

- Business related content  
Order, Execution, IOI, etc

FIX Protocol

# FIX Connectivity

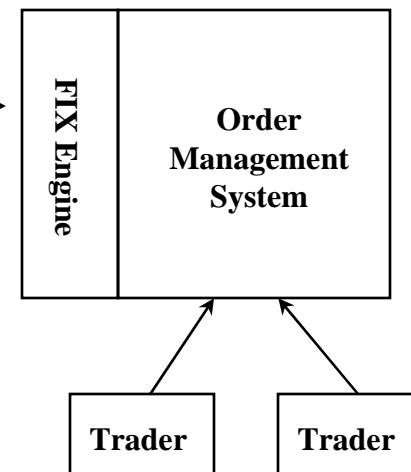
## Investment Manager



Wide Area Network Link

TCP/IP

## Broker/Dealer





# FIX Message Structure



TAG-VALUE

## Message Header

**Identifies message type, message length, sender/destination ,sequence number, sending time, etc**

## Message Body

**Contains specific session and application message content**

## Message Trailer

**Contains optional digital signature and the required checksum value**



# FIX 4.1 Message Types

## *Session Messages*

Heartbeat

Logon

Test Request

Resend Request

Reject

Sequence Reset

Logout

## *Application Messages*

Advertisement

Indications of Interest

News

New Order - Single

Execution Report

Don't Know

Order Cancel/Replace

Order Cancel Request

Order Cancel Reject

Order Status Request

Allocation

Allocation ACK

New Order - List

List Status

List Execute

List Cancel Request

List Status Request

Quote

Quote Request

Email

Don't Know Trade

Settlement Instr.



# Message Types Added for 4.2

## *Application Messages*

Mass Quote

Quote Ack

Market Data Request

Market Data Request Reject

Market Data - Full/Snapshot/Incremental

Security Request/Definition/Status

Trading Session - Request/Status

Bid Request/Response

Business Message Reject



# FIX Fields

**<TAG>=**<VALUE>**<DELIMITER>**

Composed of four parts

----- <TAG>

----- “=”

-----<VALUE>

-----<DELIMITER>

non-printing ASCII character called the SOH  
character

Example:

“8=FIX.4.2^”



# FIX Single Order Example

8=FIX.4.1^9=0235^35=D^34=10^43=N^49=VENDOR^50=CUSTOMER^56=BROKER^52=19980930-09:25:58  
^1=XQCCFUND^11=10^21=1^55=EK^48=277461109^22=1^54=1^38=10000^40=2^44=76.750000^59=0^10=165

## *Header*

8=FIX.4.1	Begin String
9=235	Body Length
35=D	MsgType
34=10	MsgSeqNum
43=N	PossDupFlag
49=VENDOR	SenderCompID
115=CUSTOMER	OnBehalfOfCompID
56=BROKER	TargetCompID
52=19980930-09:25:58	Sending Time

## *Body*

1=XQCCFUND	Account (optional)
11=12345	ClOrdID
21=1	HandInst
55=EK	Symbol
48=277461109	SecurityID (optional)
22=1	IDSource (optional)
54=1	Side
38=10000	OrderQty
40=2	OrdType
44=76.750000	Price (optional)
59=0	TimeInForce (optional)

## *Trailer*

10=165	Checksum
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# FIXML

## FIX and XML

# FIXML: Example Syntax

```
8=FIX.4.1^9=0235^35=D^34=10^43=N^49=VENDO
R^50=CUSTOMER^56=BROKER^52=19980930-
09:25:58
^1=XQCCFUND^11=10^21=1^55=EK^48=2774611
09^22=1^54=1^38=10000^40=2^44=76.750000^59=
0^10=165
```

**Becomes...**

```
<?xml version='1.0'?><!DOCTYPE FIXML SYSTEM 'fixmlmain.dtd'>
<FIXML>
  <FIXMLMessage>
    <Header>
      ...
    </Header>
    <ApplicationMessage>
      <Order>
        <ClOrdID>12345</ClOrdID>
        <HandlInst Value="1"/>
        <Instrument>
          <Security>
            <Symbol>EK</Symbol>
          </Security>
        </Instrument>
        <Side Value="1"/>
        <OrderQuantity>
          <OrderQty>10000</OrderQty>
        </OrderQuantity>
        <OrderType>
          <MarketOrder OrdType="1"/>
        </OrderType>
        <Currency Value="USD"/>
      </Order>
    </ApplicationMessage>
  </FIXMLMessage>
</FIXML>
```



# FIXML: Implementation Issues

- Easy migration for existing FIX engines
  - “Embedded FIXML”
- Backward-compatibility
  - optional field can co-exist with “standard” tag=value data
  - XML attributes represent existing FIX tags
- Session Layer remains intact
  - core engine is not affected

# FIXML: Embedded messages



FIXML

**FIXML can be “wrapped” as a value of a standard FIX tag**

**49=BROKER**

**56=HUB**

**128=INST**

**212=245**

**213=<FIXML>**

**<Header>**

**...**

**</Header>**

**<Indication>**

**...**

**</Indication>**

**</FIXML>**

**SenderCompID**

**TargetCompID**

**DeliverToCompID**

**FIXML Data Length**

**FIXMLData**



# FIXML: Major Business Goals

- Utilize existing systems and processes
- Protect investment in traditional FIX
- Provide migration path to next generation FIX systems
- Impose little or no impact on existing business applications
- Position FIX for greater interoperability with other industry standards