Testing, Certification and Monitoring
of FIX Connectivity Platform
Challenges and Best Practices

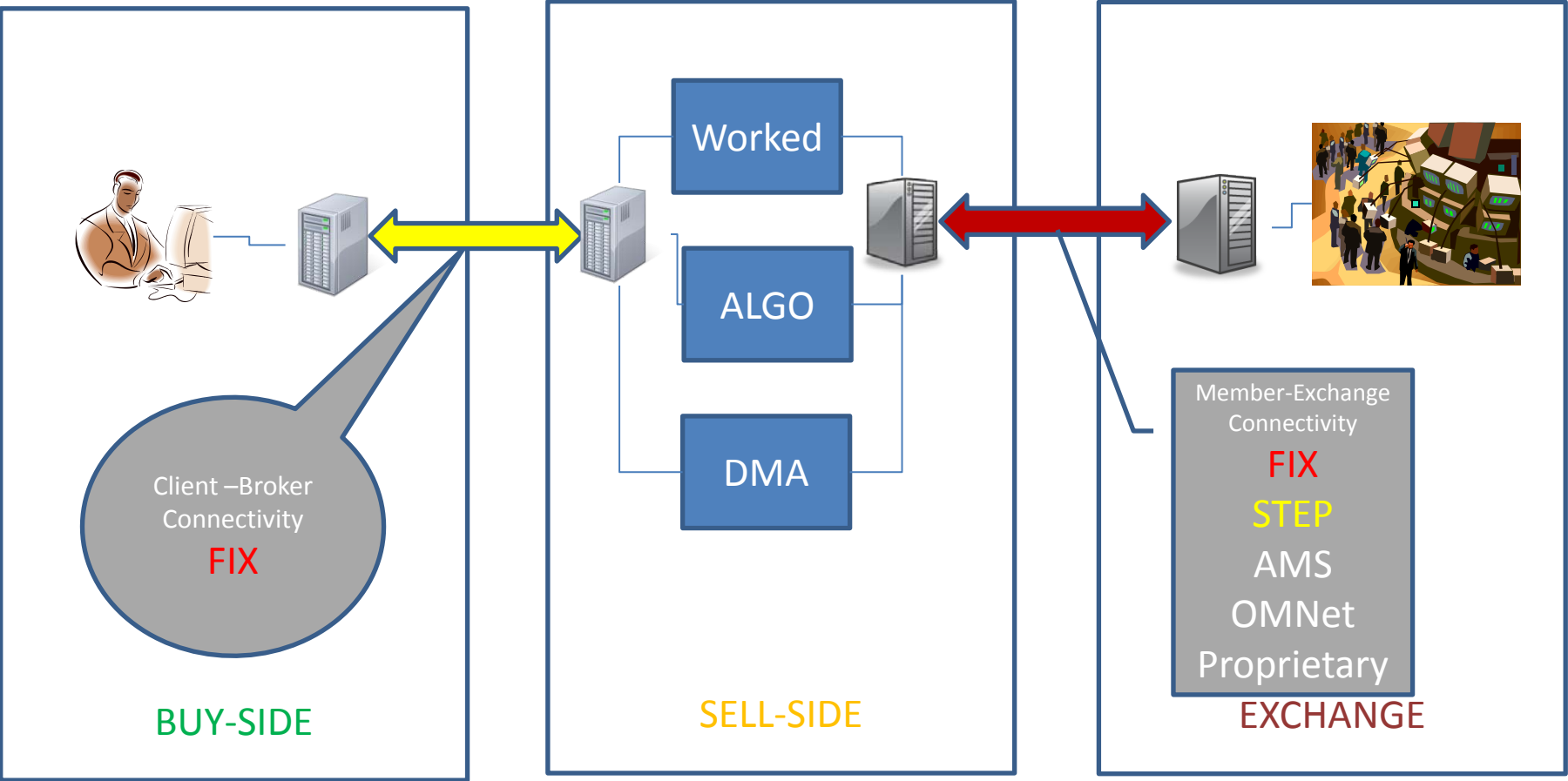Ameesh Kumar

Shanghai FIX Conference

June, 2011

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Agenda

- Connectivity for Electronic Trading
  - Buy-side←→Broker Connectivity
  - Member←→Exchange Connectivity

- FIX Connectivity Technology Life Cycle

- FIX Testing evolves through Implementation

- Client Onboarding and FIX Certification

- Supporting Clients through Effective Monitoring

- FIX Connectivity Maturity Assessment

- Best Practices for FIX Connectivity Maturity

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Connectivity for Electronic Trading

BUY-SIDE

Client –Broker Connectivity

FIX

SELL-SIDE

Worked

ALGO

DMA

EXCHANGE

Member-Exchange Connectivity

FIX
STEP
AMS
OMNet
Proprietary

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FIX Connectivity Technology Life Cycle

Stage I - Implementation	Stage II - Certification	Stage III - Production

Activities

- Platform Development/Procurement
- Integration with OMS and Risk systems
- Testing and Quality Assurance

Activities

- FIX Certification
  - Buyside-Broker
  - Member-Exchange
- Ensuring Message compatibility
- Certify products, markets, algos etc.

Activities

- Connectivity monitoring and support
- Client Issue trouble shooting
- Client communication and problem resolution

Critical Success Factors

- Meeting Functional and performance requirements
- Testing is imperative to ensure quality and validation

Critical Success Factors

- Time to market
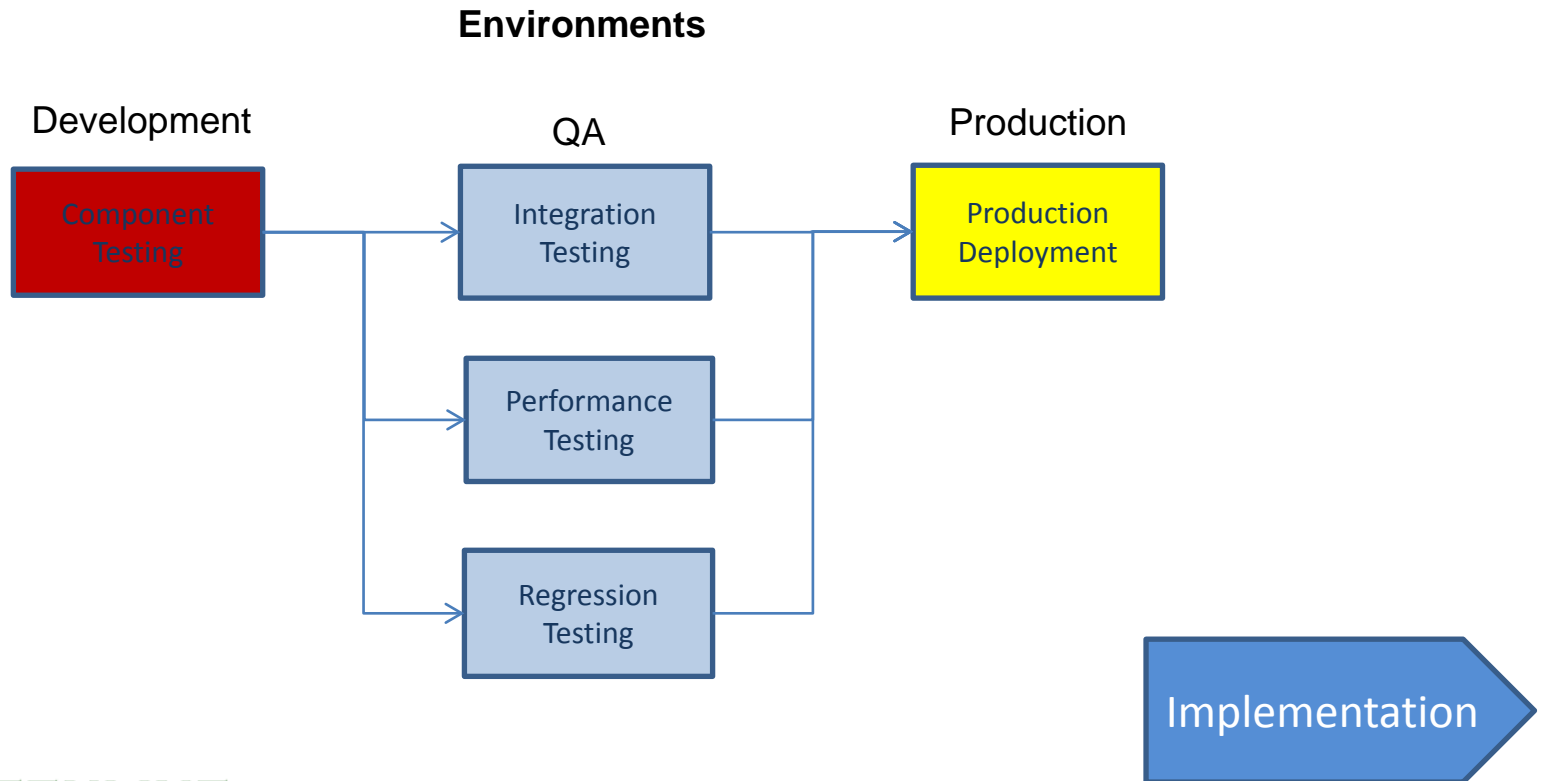- Accuracy of Certification
- Successful Client Onboarding for trading

Critical Success Factors

- Reaching client before they identify issues
- Response Time for resolution

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FIX Testing Evolves through Implementation

FIX Testing involves, testing of a FIX Platform and ensuring its compatibility with the trading, risk and other downstream systems.

The general approach to testing moves from component testing, to integration/ performance/regression testing before deploying to production.

Environments

Development

QA

Production

| Component Testing | Integration Testing | Production Deployment |

Performance Testing

Regression Testing

Implementation

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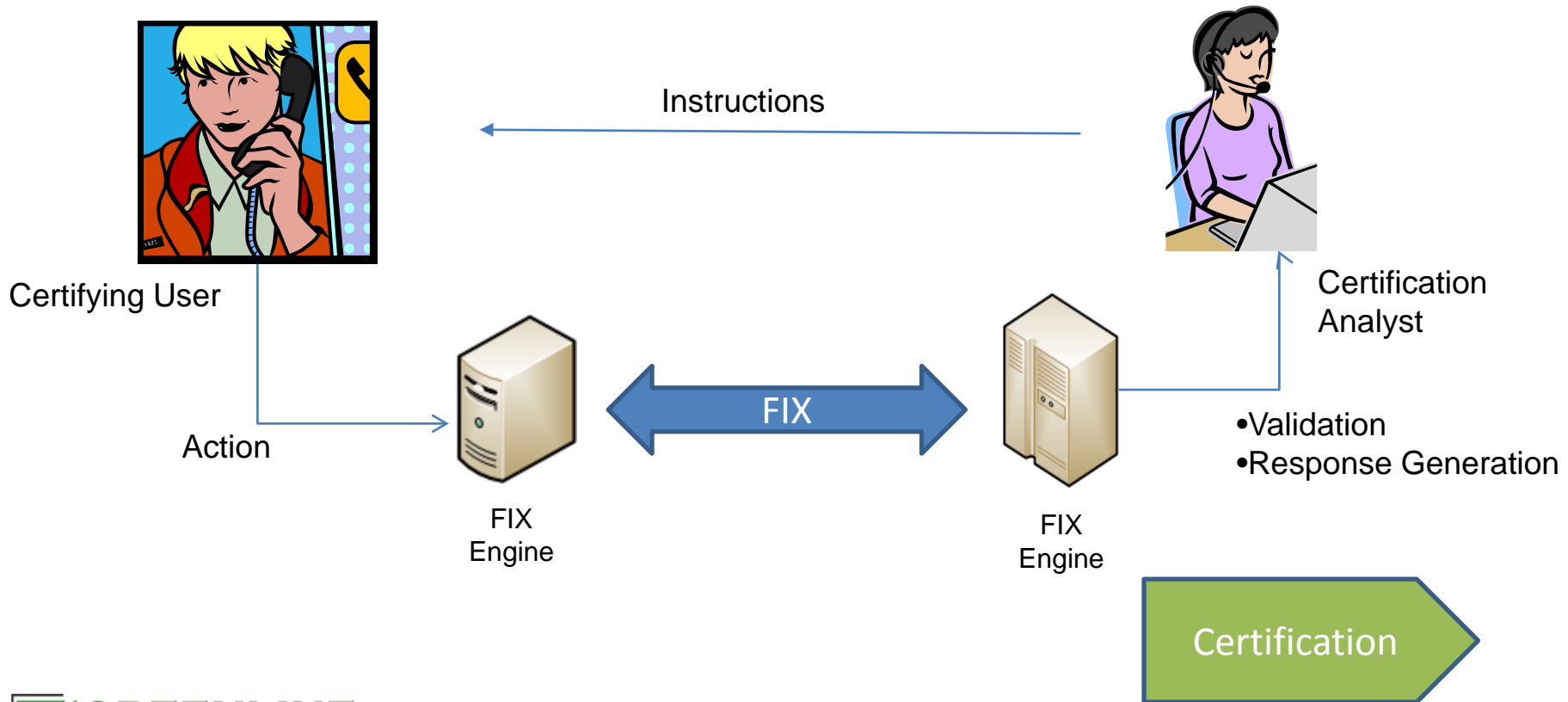FINANCIAL TECHNOLOGIES

Challenges of FIX Testing

- Simulation of Connectivity Partner (buy-side, sell-side and exchange)
- Wide range of fields and messages to be generated for outbound FIX
- Validation of incoming messages to ensure accuracy
- Testing required throughout the Implementation Cycle
- Wide range of Business Scenarios based on flows, markets and asset classes to test to ensure high quality
    - Business Scenarios typically range in the thousands even for a single asset class
- System and Negative Test Cases
- Adaptation of Testing framework to cater for FIX Specifications updates
- End to End testing of Connectivity and Trading Platform is critical but challenging to achieve

Implementation

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Client Onboarding and FIX Certification

FIX Certification: Special kind of testing conducted between connectivity partners to ensure message and system compatibility

- – Buy-side←→Broker FIX Certification
- – Broker←→Exchange FIX Certification

Instructions

Certifying User

Action

FIX
Engine

FIX

FIX
Engine

Certification
Analyst

•Validation
•Response Generation

Certification

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Client Onboarding and FIX Certification

- Manual repetitive activity which can be slow and error-prone

- Scheduling conflict with trading partners delays the Client Onboarding process directly impacting the revenue and liquidity opportunity

- Certification requires burst capacity based on significant business events such as:
  - Certification of new product launch
  - Re-certification due to new FIX specification or new FIX engine

- Scaling requires long term investment or requires quick modification of processes not designed to handle increased work load

- Operational challenges: Keeping lights on versus adding new certification capability is an ongoing conflict
  - Many organizations have a current backlog of certifications
  - Lack of organized processes for on boarding and certifications

- Skill-set mismatches: Existing certification processes are built around established configurations and standards. New standards and evolving specifications may requires a BA skill-set in addition to traditional technician skill-sets.

Certification

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Supporting Clients through Effective Monitoring

- Real time Monitoring Multiple FIX sessions and engines
- Troubleshooting connectivity and messaging issues
  - Disconnections
  - Rejections
  - Missing or Unknown Executions
- Capturing delay in messaging and connectivity
  - Order Acknowledgement Delay
  - Roundtrip time
- Determining Order Status in case of System or Connectivity Failure
  - Open Order
  - Unacknowledged Orders
- Define ownership and Quicker turn around for identified issues
- Client Facing skills along with technical skills to ensure Client expectation management

Production

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Connectivity Technology Maturity Assessment

Stage	Maturing	Mature
Implementation	Simulation using simple scripts	Simulation using tools
	Manual(eye balling) Validation	Automated Validation
	Manual Step by step testing	Automated Scenario based Testing
Certification	Specifications out of sync with FIX Engine	Documented up to date Specification
	Ad-hoc and/or Undocumented Process	Defined and Documented Process
	Primarily Manual FIX Certification capability	Primarily Automated FIX Certification tools
Production	Reactive	Proactive
	Manual investigation	Automated investigation tools
	No Notification	Exception Based Notification

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Best Practices for Connectivity Maturity

Stage I - Testing	Stage II - Certification	Stage III - Monitoring

Best Practices

- Client and Exchange Simulation Tools
- Automated Testing Tools
- Integrated Change Management Process

Best Practices

- Central Configuration Management
- Defined and documented Client On boarding Process
- Vendor Relationship Management
- Client Facing Skills
- Automated Tools for Certification

Best Practices

- Defined ownership and client focus
- Proactive Support Management
- Tools for monitoring and alerting
- Support Workflow management

Integrated Approach

- Standardized and documented FIX Specifications
- Sharing of Scenarios across all areas of connectivity engagement
- Integrated Change Management Processes
- Communication framework to ensure sharing of lessons learned across teams

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Tools for FIX Connectivity Maturity

Greenline's tools shown as an example of How tools help develop connectivity maturity.

Purpose is not to promote these products but to show that tools are available that facilitate FIX Connectivity Maturity.
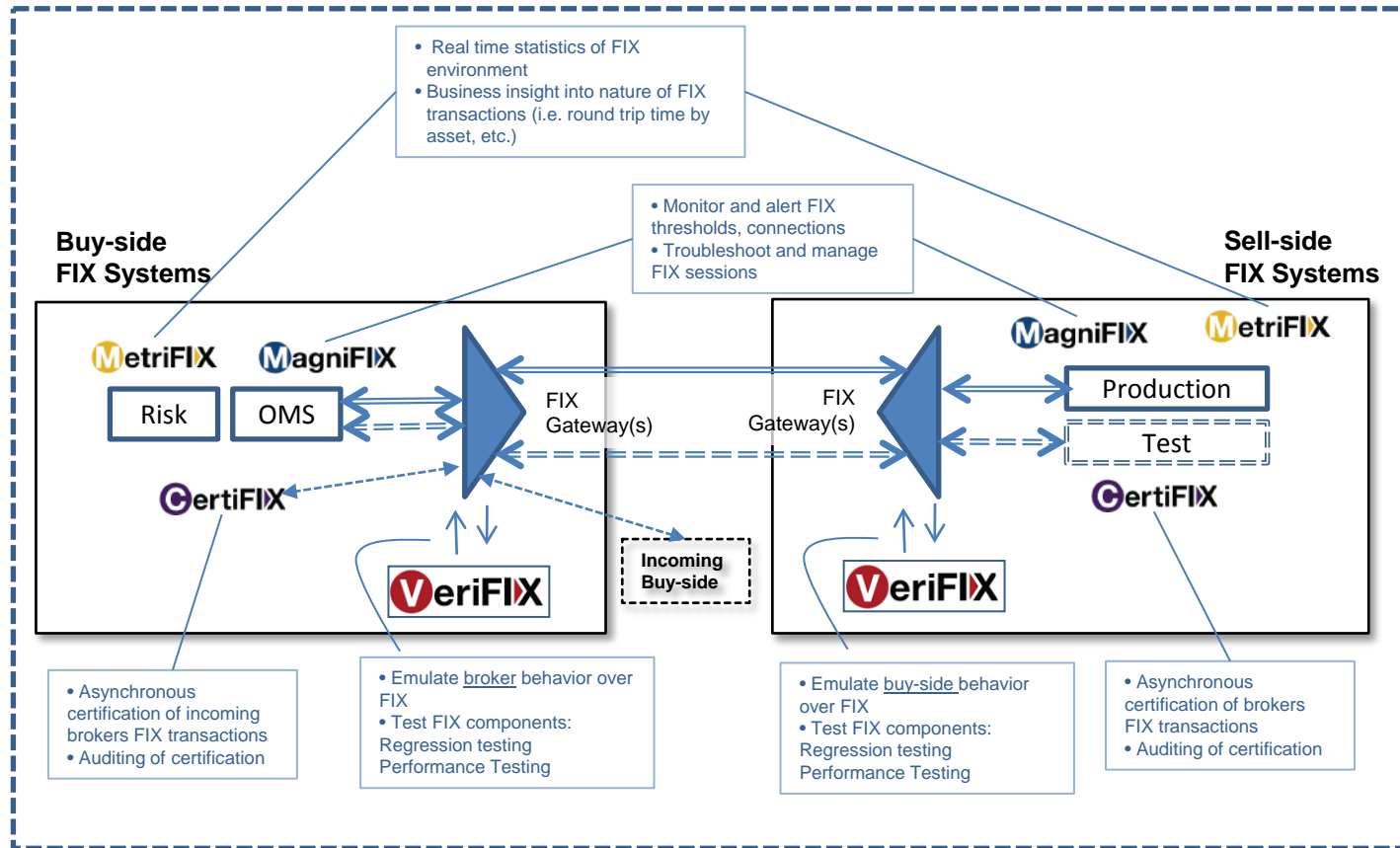
THANK YOU!

Questions? Contact Greenline

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