

# Financial Knowledge Optimizer (FKO)



# Financial Knowledge Optimizer Overview

# What is FKO?

- An **enabling technology** providing an index that is the link between your business applications and all of the legacy data within your company's information sets.
- The means to a **cohesive workflow solution**, allowing you to retrieve relevant data from all your databases using any company, security or quote identifier (name, ISIN, ticker, SEDOL, CUSIP).
- **Common Unique ID** provides links to every available source.

# FKO...

- Enables the seamless integration of Financial, third-party and/or clients' internal content
- Uses natural language processing and a business logic layer to create a cross-reference meta-database
- Cross references the disparate taxonomies and structures of unique sources to one attribute, the Permanent I.D.
- Presents fully normalized views of companies, securities, quotes, industries, and indices
- Facilitates symbology standardization by integrating and cross-referencing clients' proprietary company data with public identifiers such as CUSIP, Ticker, SEDOL, and ISIN.

***Lets all of your databases “talk” to each other using a common symbology – the Permanent ID!***

# What Can FKO Offer?

- Coverage of more than 1,000,000 public and private companies, with related securities and quotes
- Customizable views of parent/subsidiary relationships, index constituency, geographical segments, and industry classifications
- Combined TF proprietary IDs with standard industry IDs such as CUSIP, ISIN, SEDOL
- Fully distributed system utilizing messaging technology and natural language processing to manage data in near real-time
- Flexible metamodel and tool set can be extended to manage third-party content
- Outsourcing data management and content scrubbing operations

*FKO offers the key to a universe of information!*

# What Does FKO Cover?

- Deal Transactions
  - SDC (Securities Data)
    - M&A
    - New Issues
    - Venture Economics
- Earnings
  - First Call
  - I/B/E/S
- Financials/Research
  - Disclosure
  - Investext
- Contact
  - Nelson
- News
  - NewsEdge (2<sup>nd</sup> Quarter 2003)
- Fundamentals
  - Extel
  - Worldscope
  - Graham & Whiteside (2<sup>nd</sup> Quarter 2003)
- Ownership
  - CDA Spectrum/GEO
- Pricing
  - Datastream Equity
  - Datastream Fixed Income
  - Autex
  - ILX

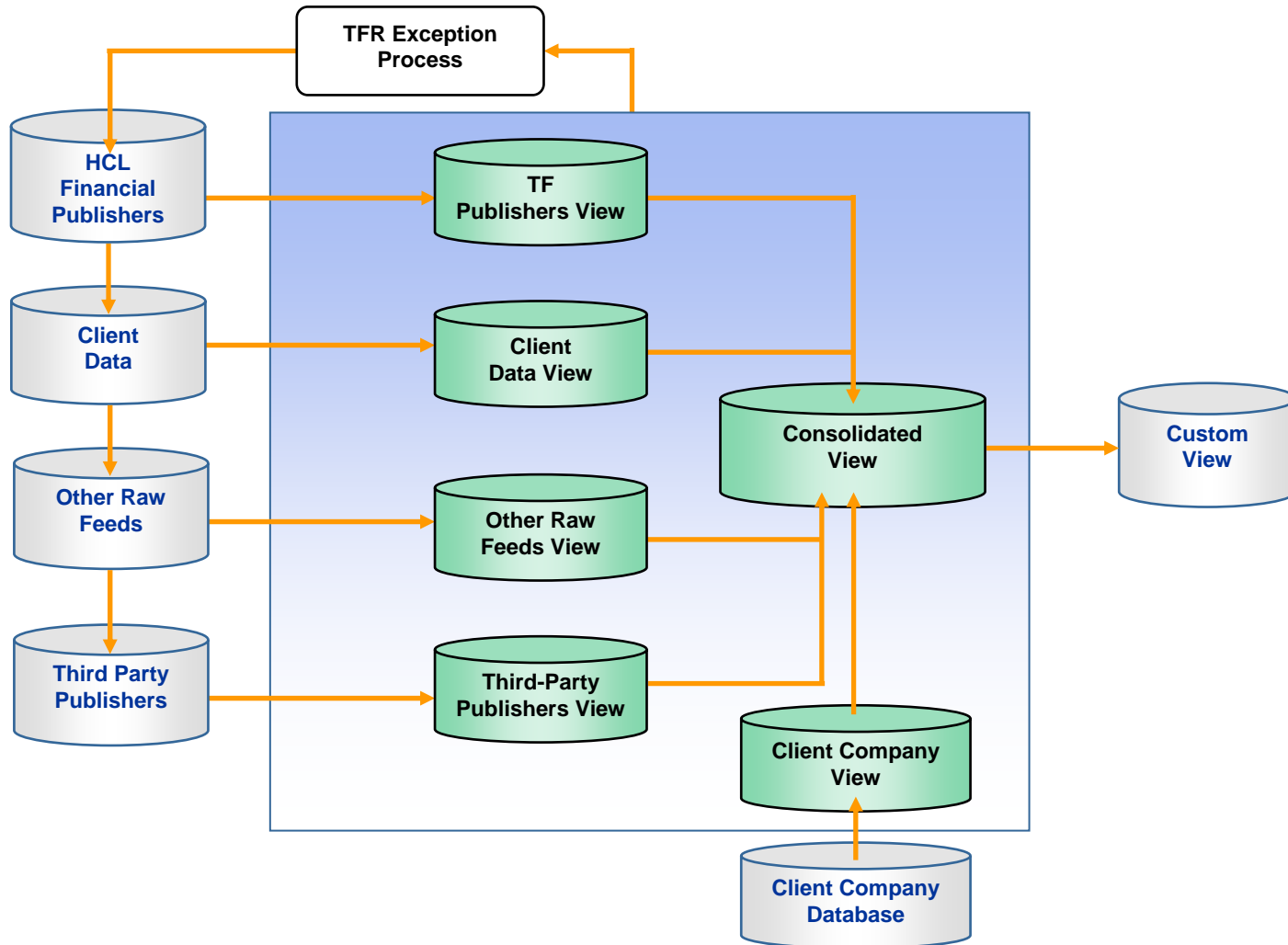
# FKO Data Flow, Technology & Ingestion

# The FKO Data Flow Process

- 1) The data flow process begins with **publishers/clients** providing the data to be cross-referenced.
- 2) The data is then normalized into a publisher view within the **FKO Concordance Process**.
- 3) Data integrity of publisher source content set is maintained and FKO provides the **Normalized View**.
- 4) After the automatic and manual mapping process is completed, the **FKO Consolidated View** is created.
- 5) With the **FKO Custom View**, clients will have access to a fully normalized cross-reference database.



# The FKO Data Flow Process Illustrated



# Technology - How FKO Functions

- Corporate Event Messaging System – update frequency set by publishers
- IBM's MQ-Series Messaging & Queuing – “near real-time” updates using industry standard
- FKO NEON's Rules Based Message Evaluation and Routing – automated matching and distribution
- FKO Database and Loader
- Natural Language Processor – FKO tool set used to manage private company data or data without standard industry symbology
- FKO Monitoring and Data Manipulation Interface – exception processing and quality control

# FKO Content

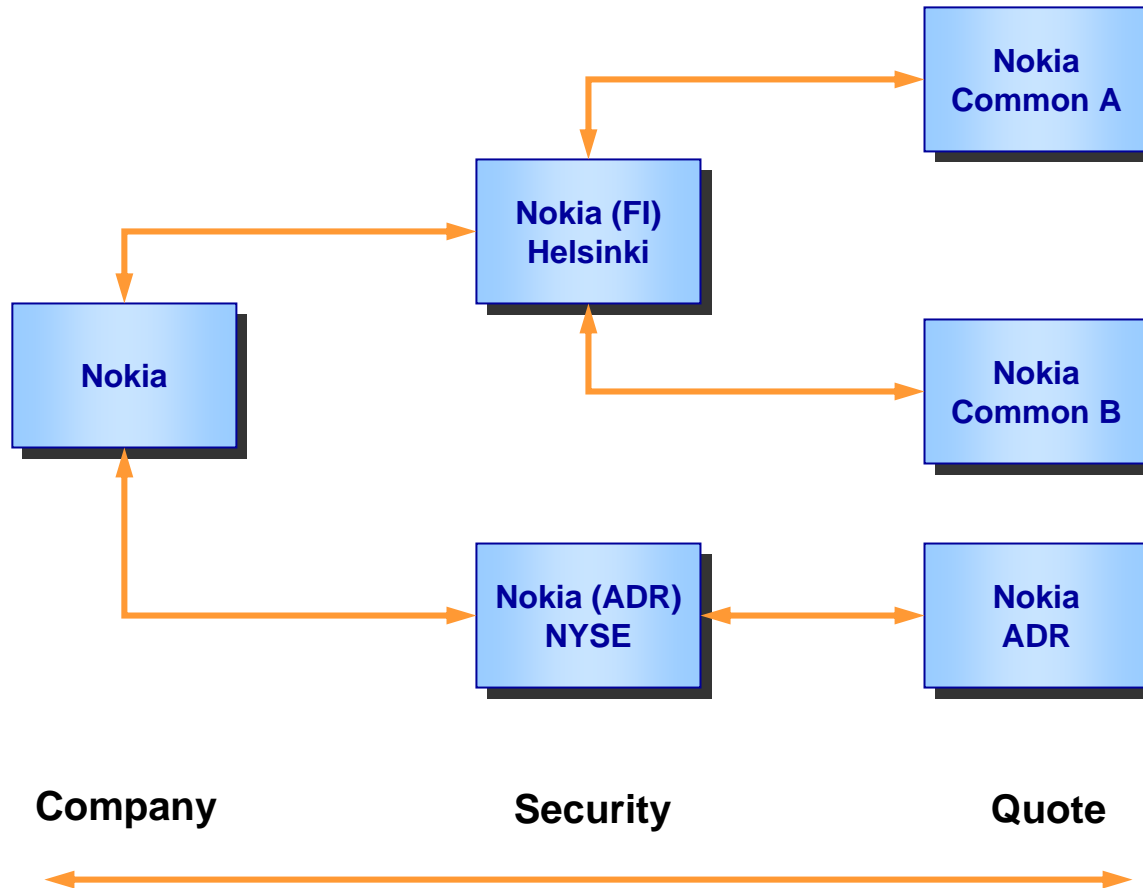
- **Cross-reference data:** the Permanent I.D. (company, security, quote, index, industry) is linked to CUSIP, SEDOL, and various publisher identifiers and metadata from the likes of Disclosure, Datastream, Investext and Worldscope
- **Validation data:** naming conventions (company, security, quote), corporate hierarchy, address, phone number, url, business description and ownership type
- **Navigation data:** company, security, quotation, index, institution, ADR, industry code, and stock exchange
- FKO is source independent and can support third-party data
- Among the current publishers: AutEx, Datastream, First Call, Investext, Securities Data (SDC), Venture Economics and Worldscope

# FKO Ingest

- **Data Batch Ingest Notification**
  - Begin batch, status, incomplete, end batch messages built-in
- **Ingest Monitoring**
  - Monitor ingest processes, MQ channels and routers
  - Monitor related engines, loaders, databases and servers
- **Web Statistics and Exception Reporting**
  - Daily statistics generated for each publisher and placed online
  - Automated and custom reports available
- **Multiple Redundant Chains within Ingest Infrastructure**
  - The concordance process includes verification and repetition within the concordance engine, the consolidated view and the master database

# FKO Data Retrieval

# FKO Navigation Retrieves Data



# FKO Data Delivery

# FKO Delivery Options

- Remote Access to FKO (Web Services)
  - HCL (Florida, Virginia) hosts the data
  - Clients access remotely via Internet or dedicated dial
- Client Subscribes to FKO Feed for Onsite Storage
  - MQ Message Updates – any client-defined interval
  - FTP File Updates – daily, weekly or monthly
- Client Publishes to HCL
  - Client uses HCL's operation, submits transactions remotely
  - HCL integrates into FKO via client keys
  - Client subscribes to FKO & gets concordable keys
- Client Uses FKO Infrastructure Onsite
  - Client subscribes to FKO
  - Processes are customized



# FKO Summary

# Main FKO Applications

- **HCL Financial Cross Reference Symbology Standard**
  - Utilized to help manage company data within TF
  - Utilized within TF application platforms
- **Middleware**
  - Utilized to navigate between TF content and 3rd party content through links among content sets (companies, prices, filings, deals, ownership, fundamentals, etc.)
- **Relational Database Product**
  - FKO contains unique content and significant company coverage (more than 1 million unique companies)
- **Outsourcing Services**
  - FKO offers clients a data management outsourcing opportunity for their internal CRM systems, company file maintenance, custom extracts, etc.

# Future FKO Initiatives

- **People**

- Utilize FKO technology to map individuals to unique i.d.'s (analysts, insider holders, officers and directors)

- **Institutions**

- Create unique institution identifiers

- **CRM**

- Utilize FKO as a TF “Company Master” thereby improving TF content and its dependent applications

- **Other HCL publishers**

- Vestec

# FKO Summary

- FKO is a value add service that allows applications and clients to concord multiple disparate data sources into one logical entity structure.
  - easily integrates third party data
  - improves client access to HCL's content
  - presents flexible system implementation
  - improves data content
  - partners with an established technology infrastructure
  - reflects content management experience (TFR)
  - offers outsourcing of data cleansing operations (TFR)
  - provides data normalization and standard taxonomies

## FKO Summary (cont.)

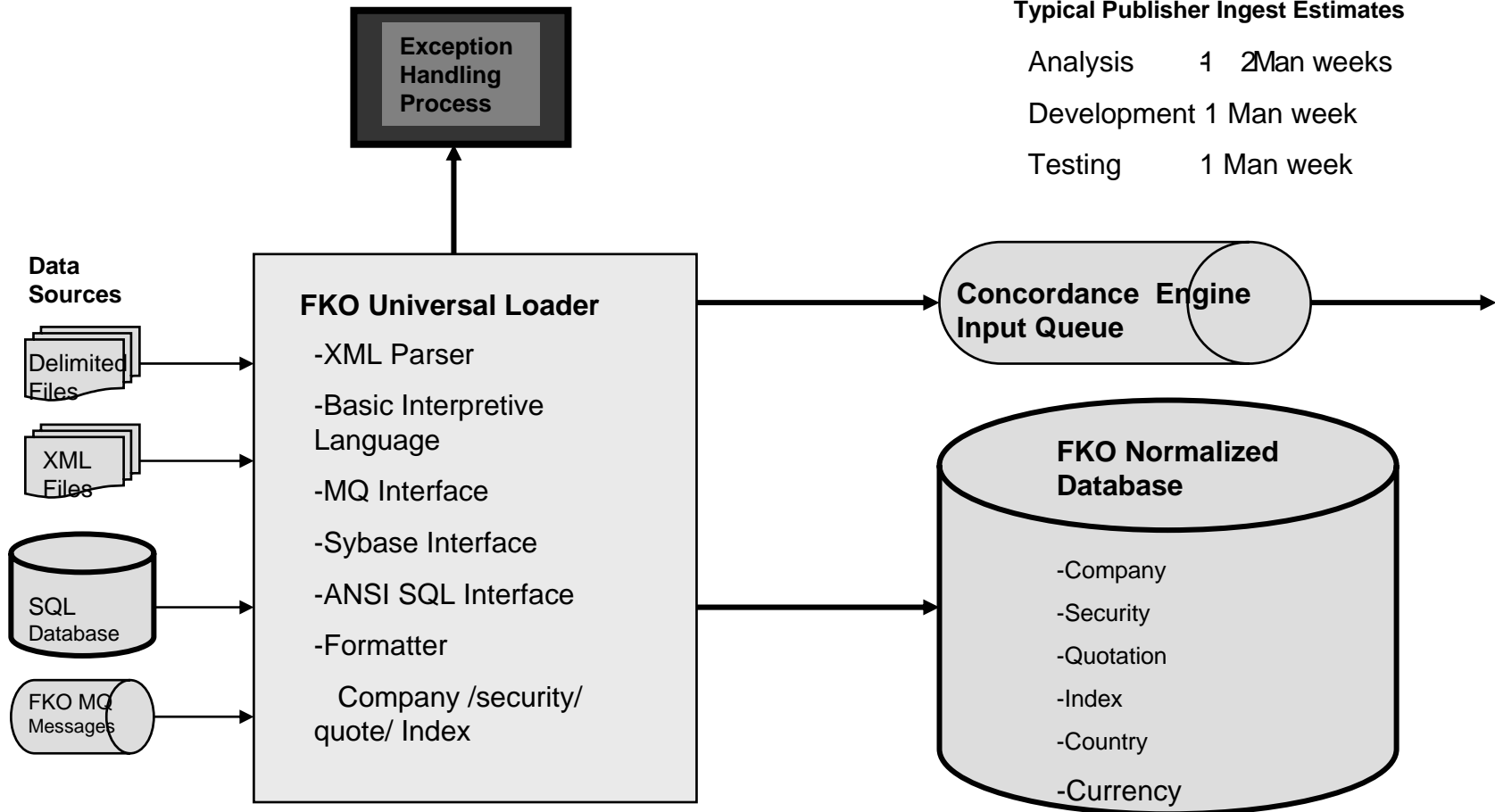
- Client options includes both publish and subscribe models with various customizable implementations.
  - Remote Access to FKO
  - Client Subscribes to FKO Feed for Onsite Storage
  - Client Publishes to HCL
  - Client Uses FKO Infrastructure Onsite
- The system is currently in use at numerous client sites and by many of HCL's core products.

# Appendix

## FKO Publishers' Statistics

	<b>Company</b>	<b>Security</b>	<b>Quote</b>
<b>FKO</b>	<b>1,449,226</b>	<b>248,656</b>	<b>140,609</b>
Autex	51,554	64,789	
CDA - Ownership	37,752	223,114	
DataStream	110,485	121,003	165,688
Datastream Fixed Income	29,905	187,327	
Disclosure	523,391	28,075	
Extel	32,578	50,562	52,035
First Call	20,639		
FTI	77,264	394,617	
I/B/E/S	42,321	42,319	
ILX		87,153	177,579
Investext	102,220		
SDC	844,308		
Venture Economics	48,916		

# The Ingestion Process - FKO Universal Loader



## Typical Publisher Ingest Estimates

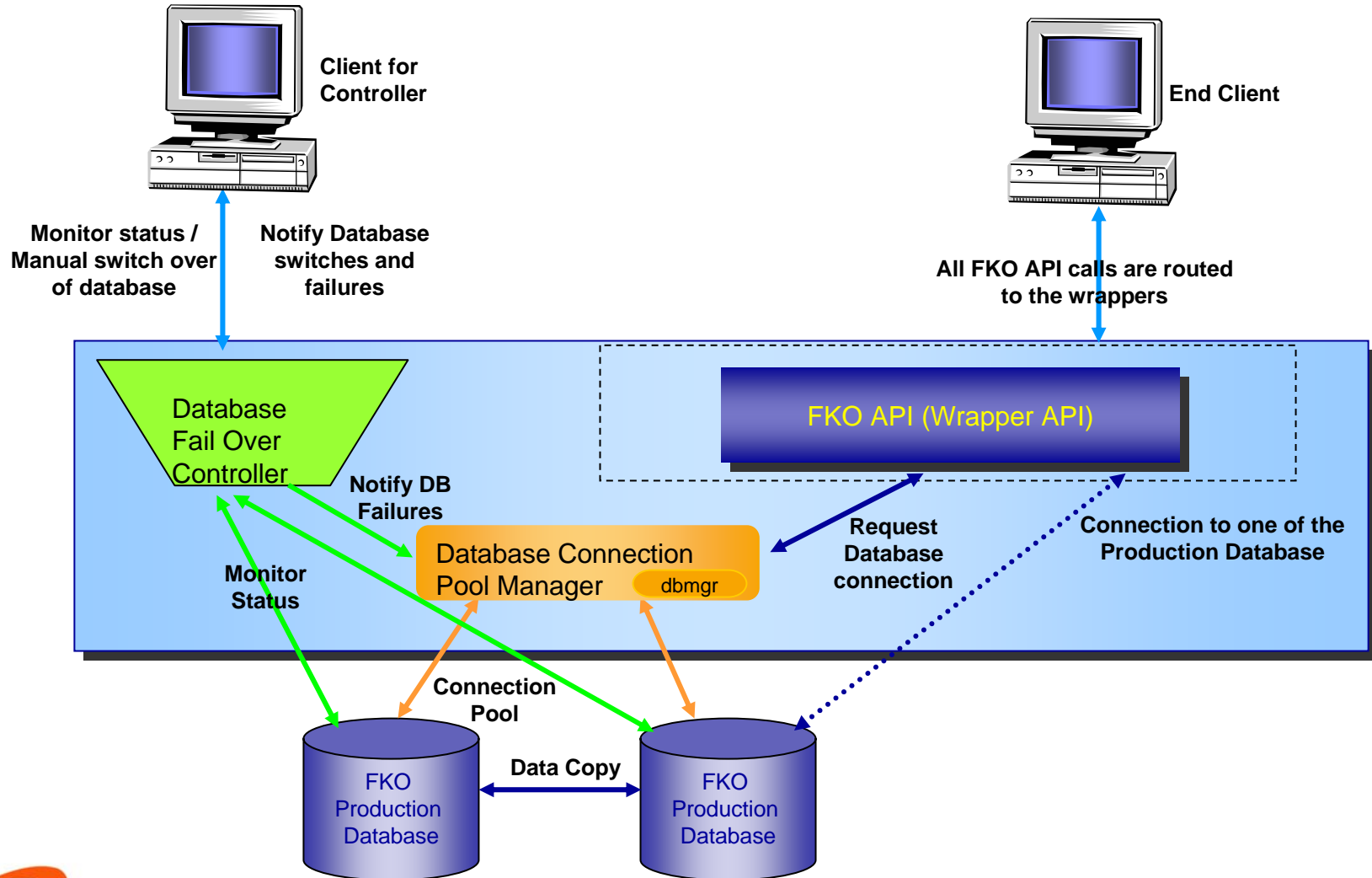
Analysis 4 2Man weeks

Development 1 Man week

Testing 1 Man week



# FKO Database Fail Over API – 24x7 Accessibility



# FKO Global Presence – Convenient Access

