Knowledge Tier™

to the power of

Performance – A Case Study

Historical Index Implementation of 3 x HY Indexes (from Dec 29, 2006)

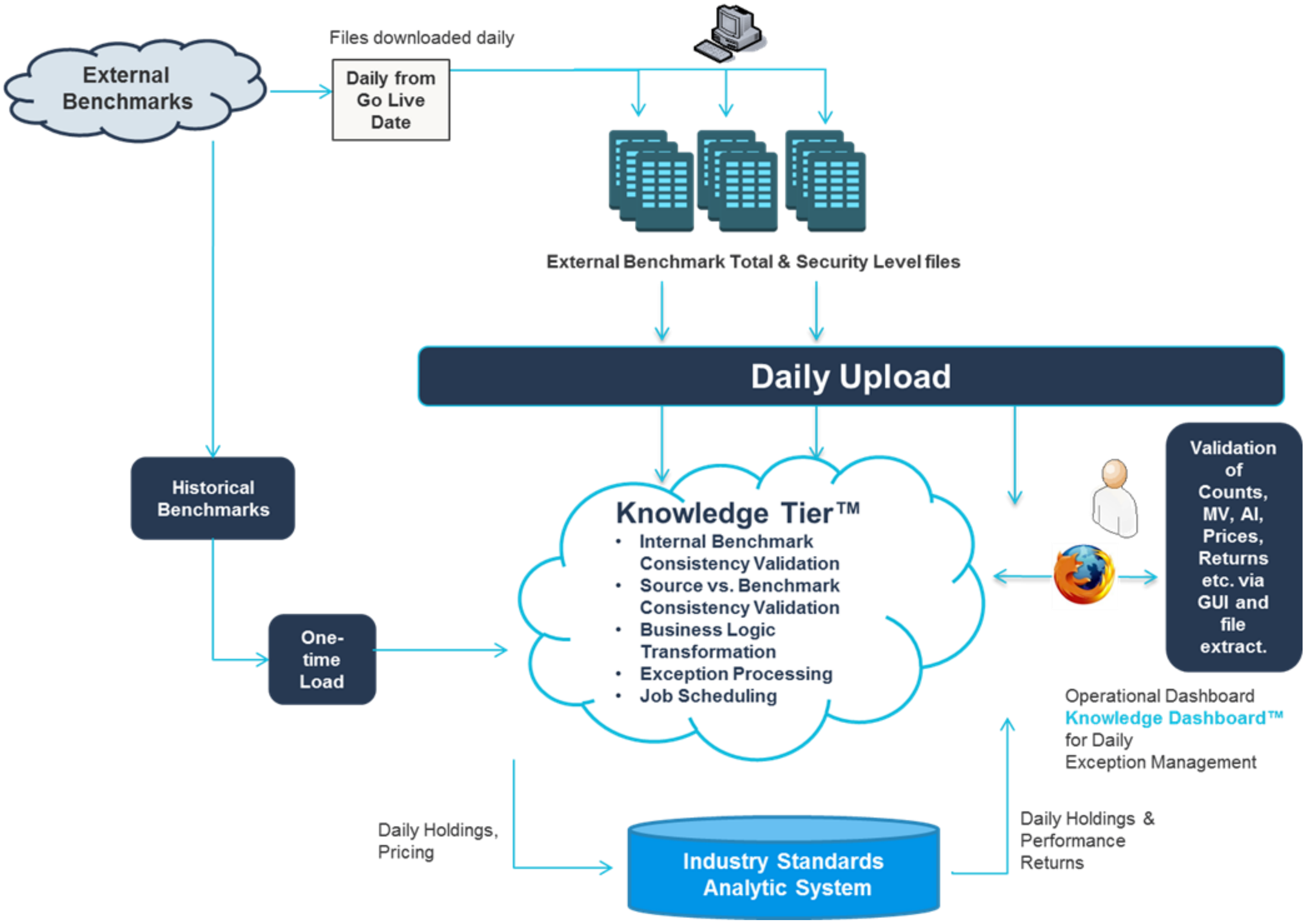
CHALLENGES

- Volume of data
- Indexes set up as portfolios in a leading industry standards analytics system 'SYS'
- Index re-balancing
- Differing accrued income and coupon treatment
- Defaults
- Index Provider versus 'SYS' SMF differences
- 2008 & 2009 global financial crisis

METRICS

- Index Universe
    - US High Yield Index
    - US High Yield Constrained Index
    - US Cash Pay High Yield Constrained Index
- Required daily index holdings and prices updated on 'SYS' via Knowledge Tier™
    - Daily Positions
    - Daily Prices >4 million prices
    - UDIs >1000 user defined instruments
    - 7.75 Years > 11.5 million positions
    - US High Yield Index/US High Yield Constrained Index = 1800 to 2300 securities
    - US Cash Pay High Yield Constrained Index= 1300 to 1800 securities

KNOWLEDGE TIER™
SOLUTIONS APPROACH



- Bulk updates to ‘SYS’ through Knowledge Tier™ of
  - Historical positions
  - Prices
  - Sectors
- Historical validation of performance returns via Knowledge Tier™
- Return tolerance level checking for
  - Monthly
  - Yearly
  - Rolling since inception periods
- Out of tolerance periods dissected via Knowledge Tier™ tools
  - Investigation -> Outlier identification
  - Analysis –> Root cause
  - Testing –> Solution determination
- Utilize Knowledge Tier™ to effect adjustments (see Table Appendix)
- Develop ongoing index maintenance processes built on Knowledge Tier™ capabilities

‘MISSION IMPOSSIBLE’

without the POWER of **KNOWLEDGE TIER™**

BULK LOADS

- Bulk updates to ‘SYS’ through Knowledge Tier™ of historical positions, prices and sectors
    - Automated File Transformation per required pre-defined formats
    - Automated File Delivery
    - Customizable Date Ranges to fit allowable parameters
    - Automated Delivery of Upload results back to Knowledge Tier™

VALIDATION / COMPARISONS & IDENTIFICATION OF DISCREPANCIES

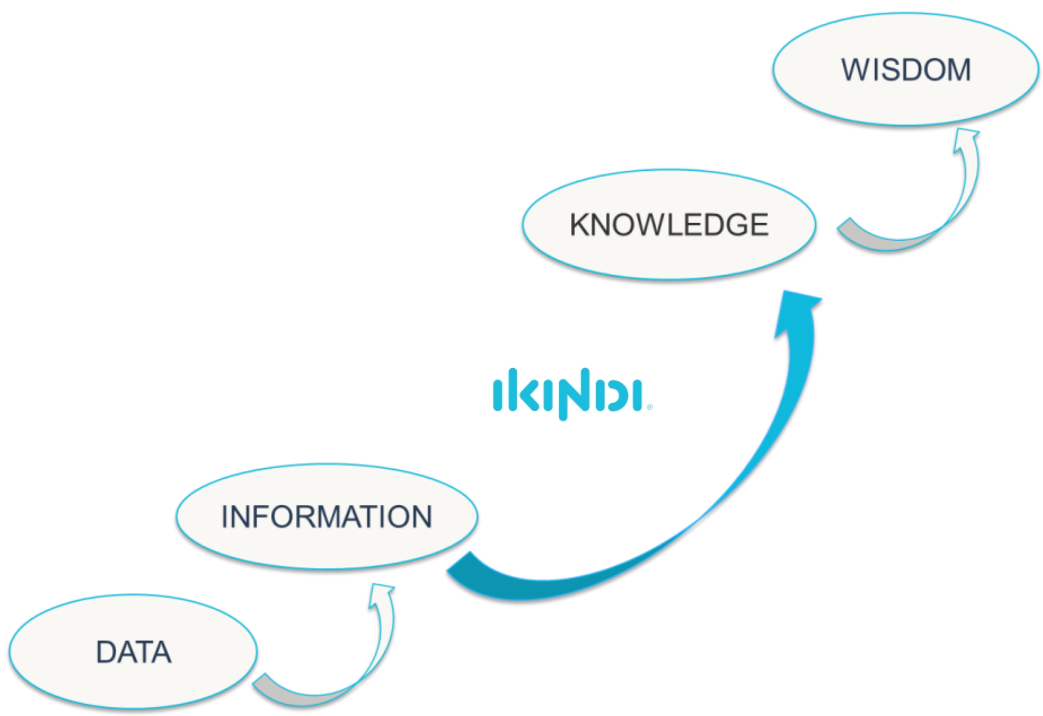
- Historical Performance Validation through Knowledge Tier’s Comparison Functionality
    - Total level performance check of periodic returns
    - Security level performance check on both
        - an absolute and
        - relative basis
    - Total level reconciliation of
        - Market Value
        - Accrued Income
        - Positions
        - Counts
    - Individual security comparisons of
        - Market Value
        - Accrued Income
        - Positions
        - Prices

MAKING ADJUSTMENTS within ‘SYS’ to bring RESULTS in line with INDEX

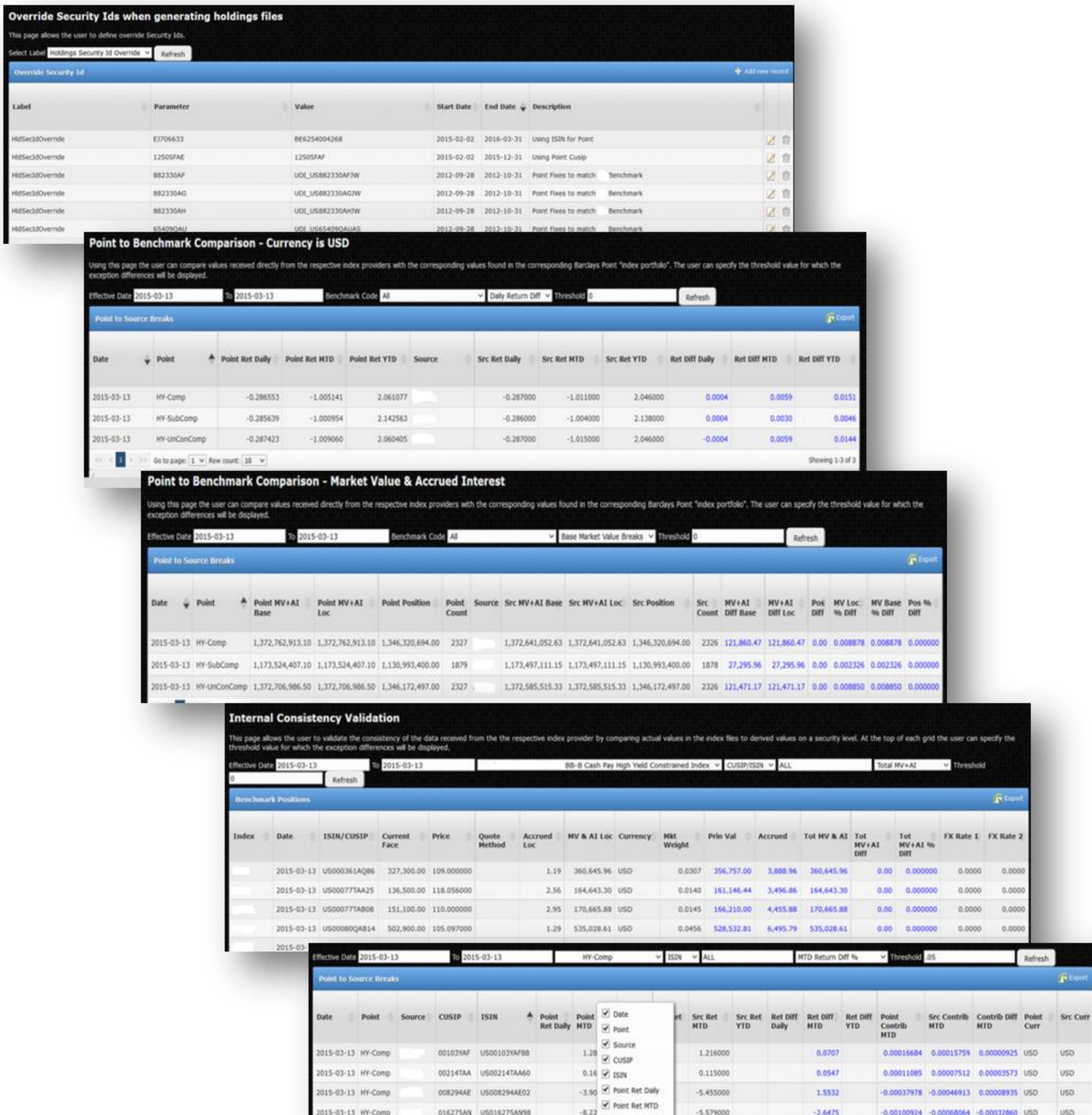
- Exception Management and Implementation through Knowledge Tier’s features
    - On-demand upload of
        - Holdings
        - Pricing
        - Accrued Interest
    - Security
        - Override
        - Mapping
        - User Defined Instrument Implementation
    - Default Pricing
    - Capability to Define Upload Preferences and Rules

Client Results Achieved

- Historical benchmarking delivered in 2014 with index information dated from December 29th 2006.
- Implementation of an ongoing production process to ensure integrity of data through the use of Knowledge Tier's value-added Performance functionalities and the Middle Office Command and Control power of Knowledge Dashboard™.
- Empowerment of the Front Office with Performance ***Knowledge*** they can trust.



Knowledge Tier™ Screenshots



APPENDIX TABLE

Use of Knowledge Tier™ to effect adjustments

ACTUAL SCENARIOS	FIXES APPLIED
AI Diffs (due to default timings)	
Point no AI whole month	UDI no default whole period
no AI whole month	UDI default whole period
Intra month diffs	UDI in default or not in default part of the period
Coupon added to AI	0 coupon UDI with AI override and instrument event to offset AI drop following month
Coupon Diffs	
Coupon paid on .not on PT	UDI not in default
Coupon paid on PT not .both had AI up to coupon pay da	UDI with default on coupon record date
Coupon paid on .but subsequently cancelled and no AI t	UDI in default coupon record date
Coupon paid on .& PT but for different amount	UDI and post instrument event to make adjustment
Coupon paid on PT not but no AI on PT	UDI and price adjustment to offset interest gain
Negative Cash Flows on	UDI and post negative income instrument event
Call Timing Diffs	UDI with attributes
Non-UDI Adjustments	
ERRONEOUS INTEREST ON DROPS	Price adjustment to offset interest gain
AI DIFFS (due to weekends)	AI override on entire portfolio for last day of the month on PT to include extra days AI
Positions Missing	Postions Upload
ADDS port missing	Addition of Adds portfolio
Drops processing	Drops processed
Missing Prices	Price Upload