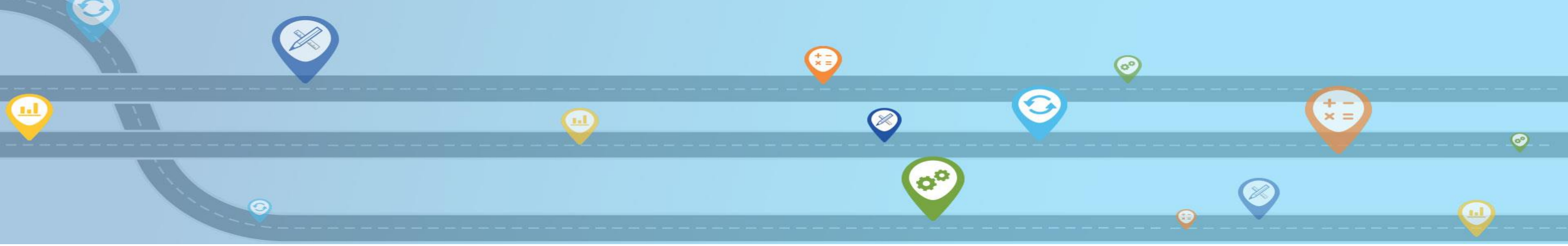
Moody's Analytics

CECL Webinar Series:

Empowering Users, Satisfying Auditors

Olivier Brucker, Senior Director
Emil Lopez, Director

October 5, 2017



Moody's Analytics CECL Webinar Series:

The Roadmap to Success

TODAY

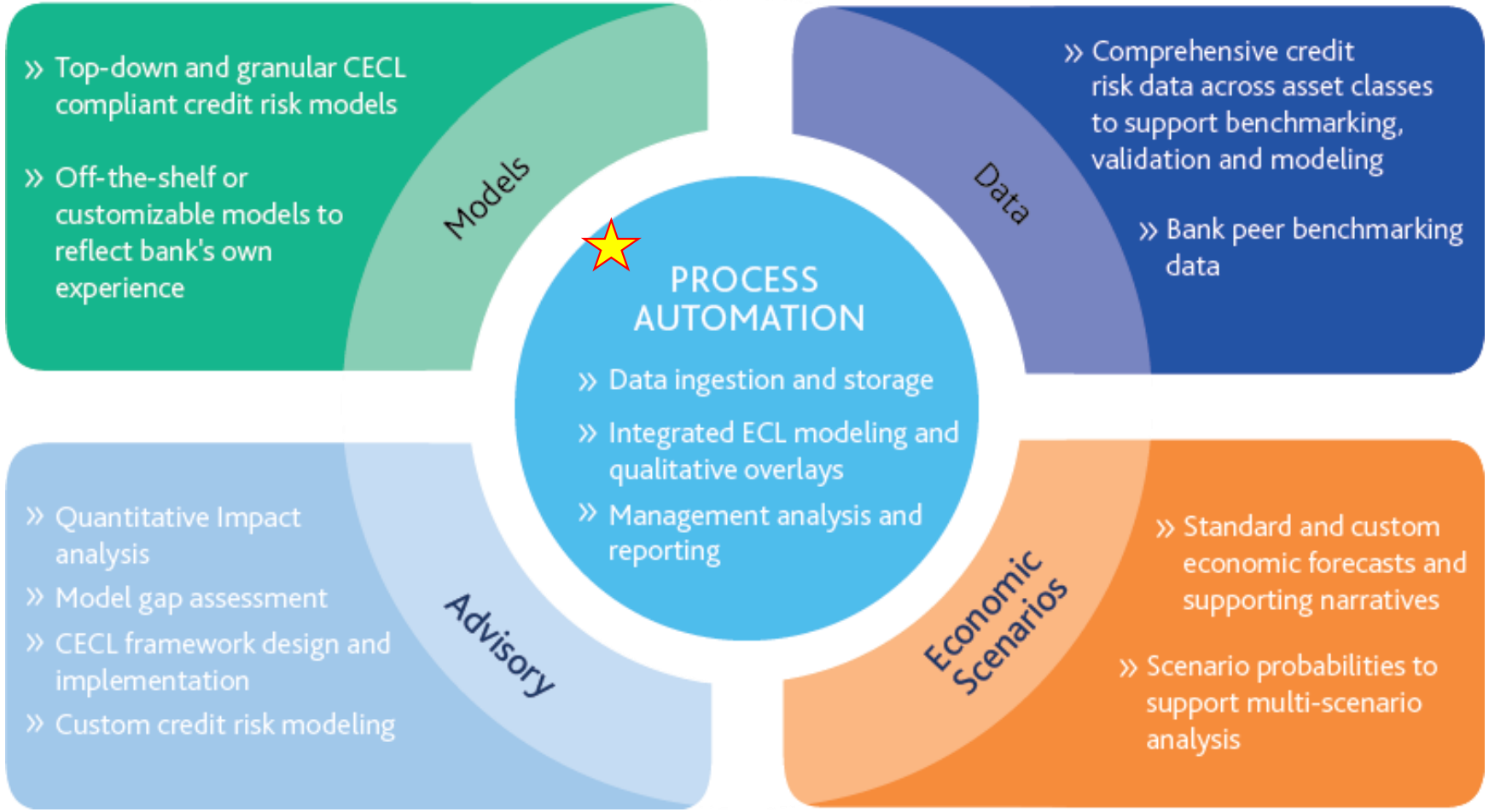
Empowering Users, Satisfying Auditors

ENTIRE SOLUTION WEBINAR SERIES IS AVAILABLE ON DEMAND AT WWW.MOODYSANALYTICS.COM/CECL

Aug 1	**Meeting the Analytic Challenges of CECL**
Aug 24	**Leveraging Industry Data for CECL Compliance**
Sep 6	**Lifetime Expected Credit Loss Modeling**
Sep 19	**Economic Scenarios for CECL: What's Reasonable and Supportable?**

Moody's Analytics CECL Solution Suite

Today's Focus is on Process Automation



Today's Speakers

Olivier Brucker

Senior Director, Banking RegTech

Olivier Brucker is a Senior Director and Sales Manager at Moody's Analytics working with its suite of Enterprise Risk Management Solutions. In his current role, Olivier consults with clients to maximize their return on investment from Moody's Analytics solutions. His focus is on implementation of regulatory compliance solutions such as ALLL/CECL, CCAR/DFAST as well as Basel capital and liquidity for domestic and international financial institutions.

Emil Lopez

Director, Risk and Finance Analytics

Emil is a Director in the Enterprise Risk Solutions Group, based in New York, focusing on the development of software and analytic solutions for impairment accounting (CECL/IFRS 9). Prior to joining the product strategy group, Mr. Lopez led risk rating and stress testing modeling projects for Basel and DFAST institutions. Mr. Lopez received his MBA from New York University and received his BS in finance and business administration from the University of Vermont.

Moderator

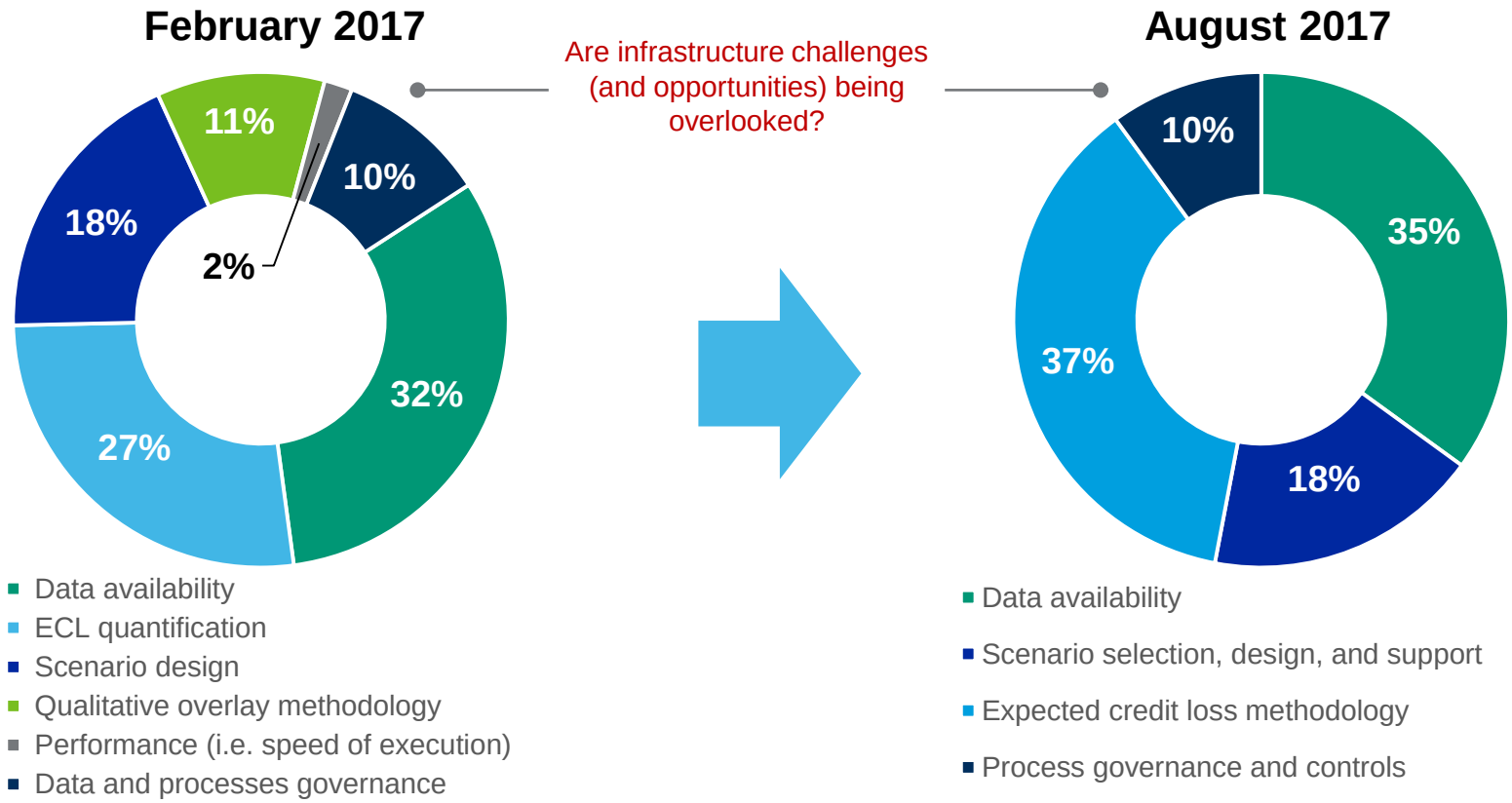
Dan Parker

Managing Director, Head of Enterprise Risk Services Sales, Americas

Dan is a Managing Director who manages the client facing teams in the Americas responsible for software and analytics solutions. The team works largely with banks and insurance companies on regulatory and accounting solutions, as well as products and services for portfolio management, capital management and credit origination.

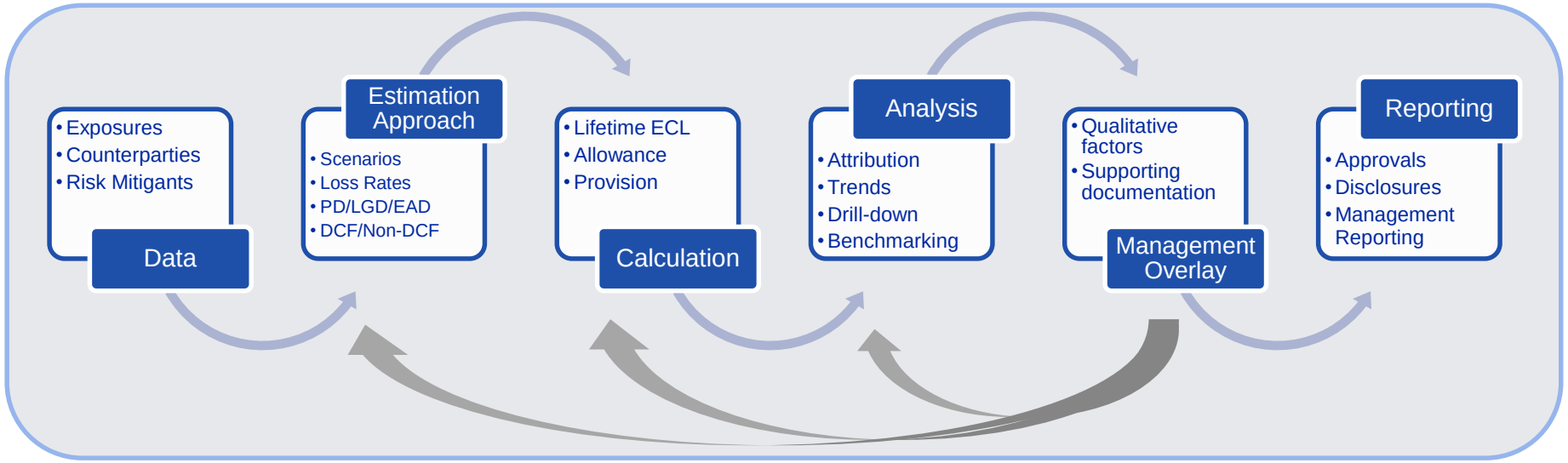
CECL Implementation Concerns

What is the most significant challenge you anticipate in CECL implementation?



Source: Moody's Analytics CECL Surveys

Typical CECL Process and Key Challenges



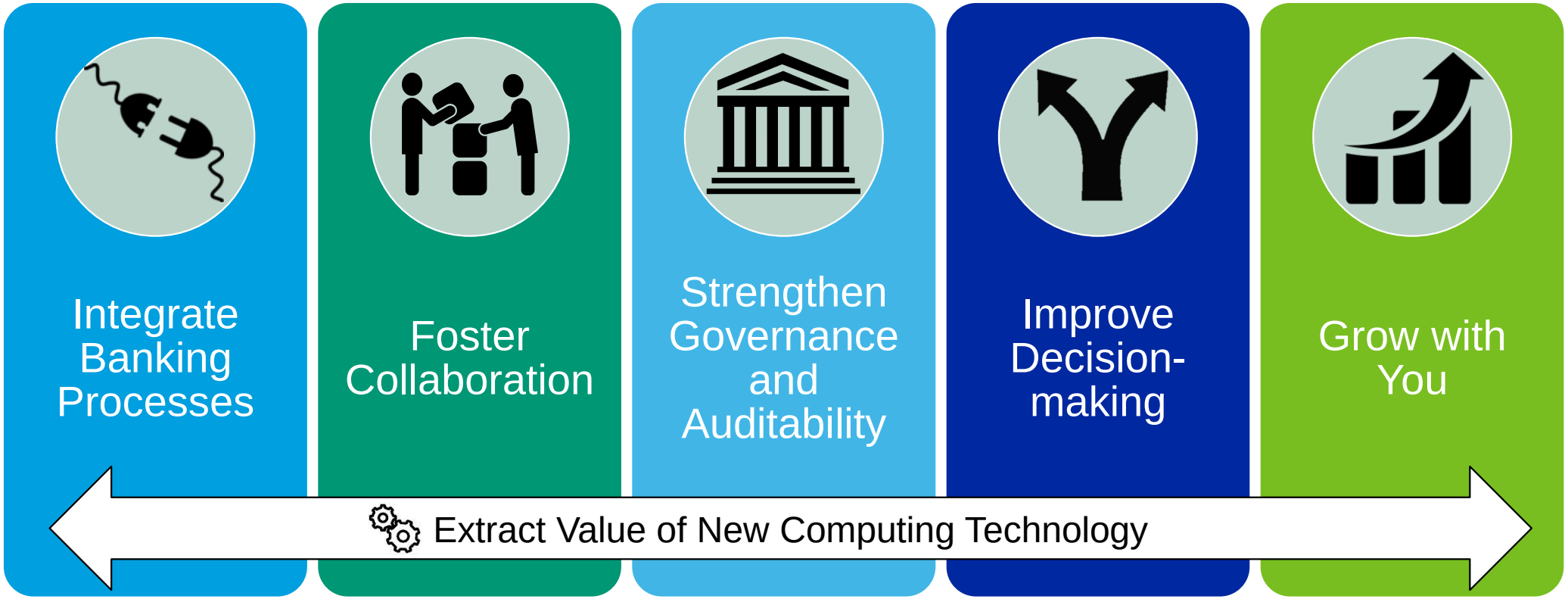
Quantification

- Portfolio segmentation
- Modeling methodology
- CECL compliant credit risk estimation
- Economic forecasts
- Sensitivity analysis
- Cash flow modeling
- Qualitative adjustment framework
- External support data

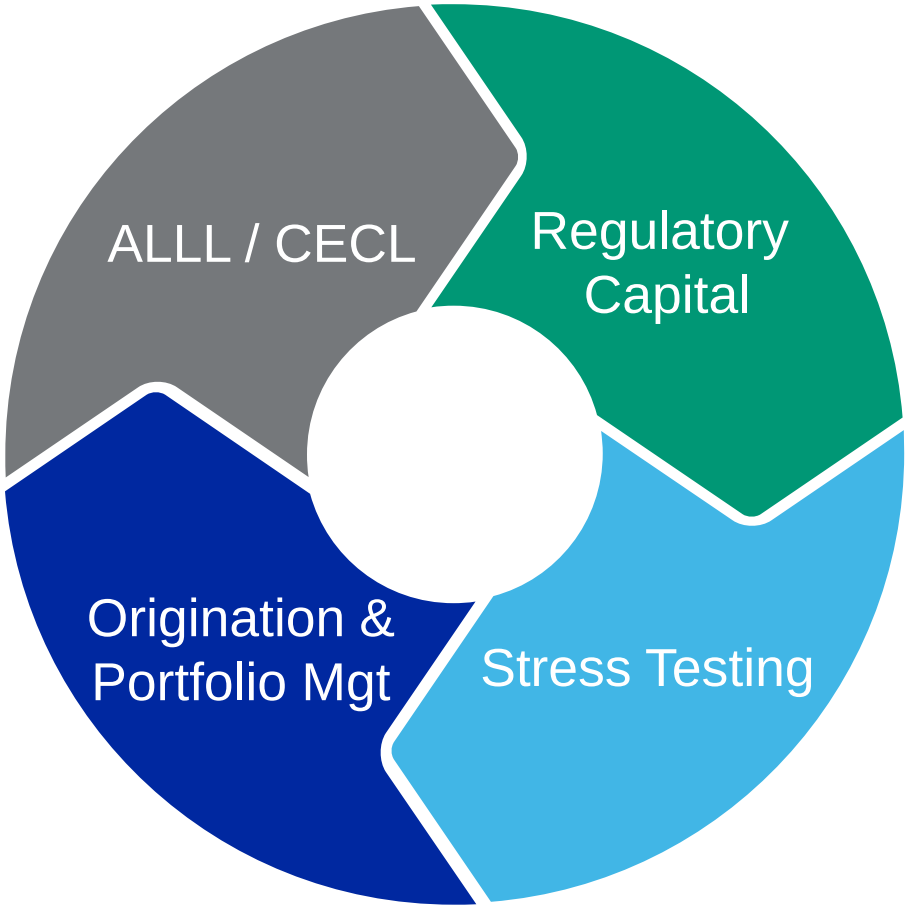
Automation & Reporting

- Centralized input data
- Multiple loss estimation approaches
- Results analysis and drill-down
- Qualitative and management overlays
- Governance and controls
- Comprehensive audit trail
- Disclosures and management reporting
- GL posting

Maximizing Value from your CECL Processes

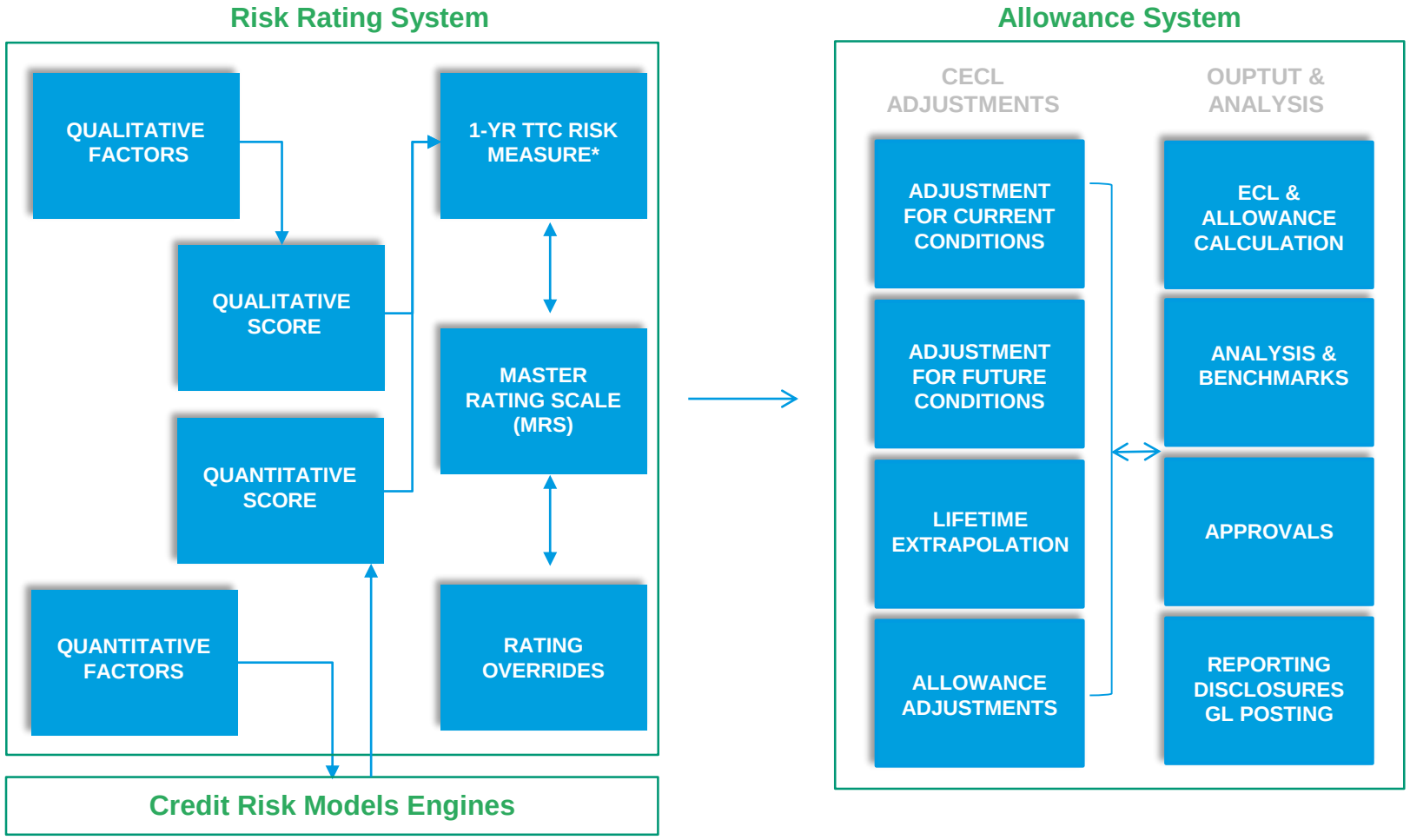


Integrate Banking Processes



Integrate Banking Processes

Risk Rating and CECL



Integrate Banking Processes

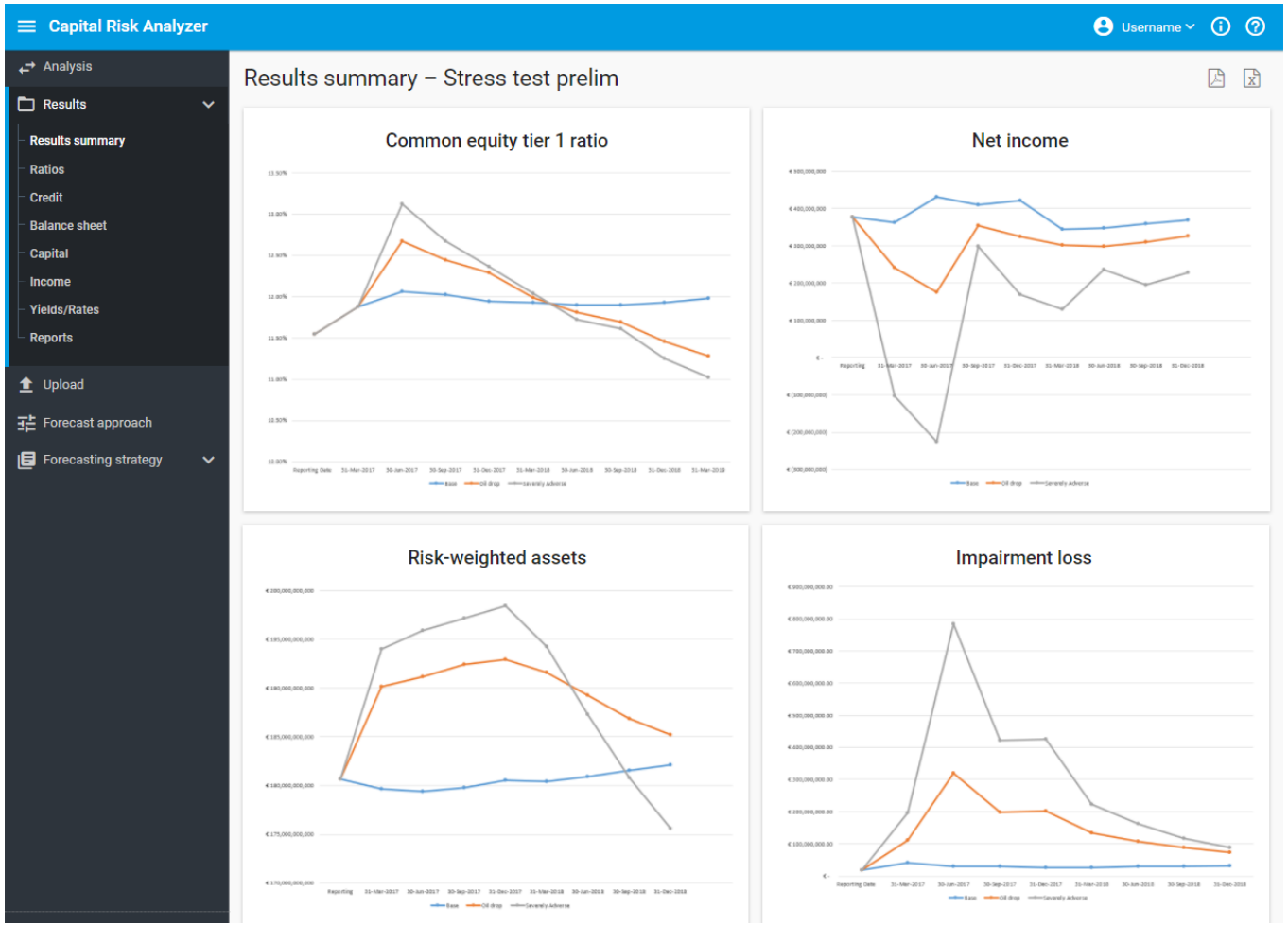
Regulatory Capital and CECL

Available Capital = Current Capital + (Change in Future Required Capital − Capital Consumed Due to Credit Risk)

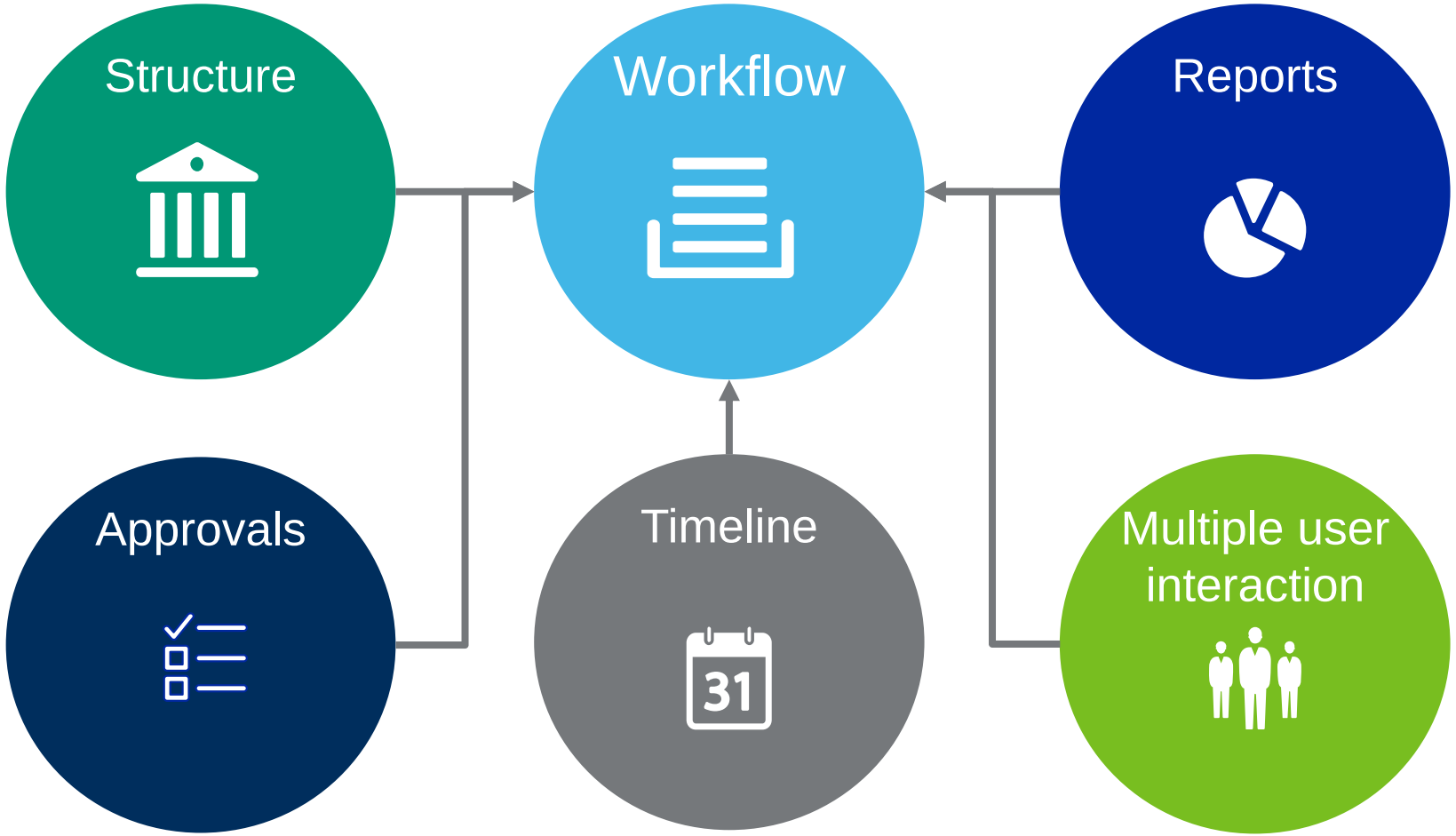
Credit Quality Impacts Both

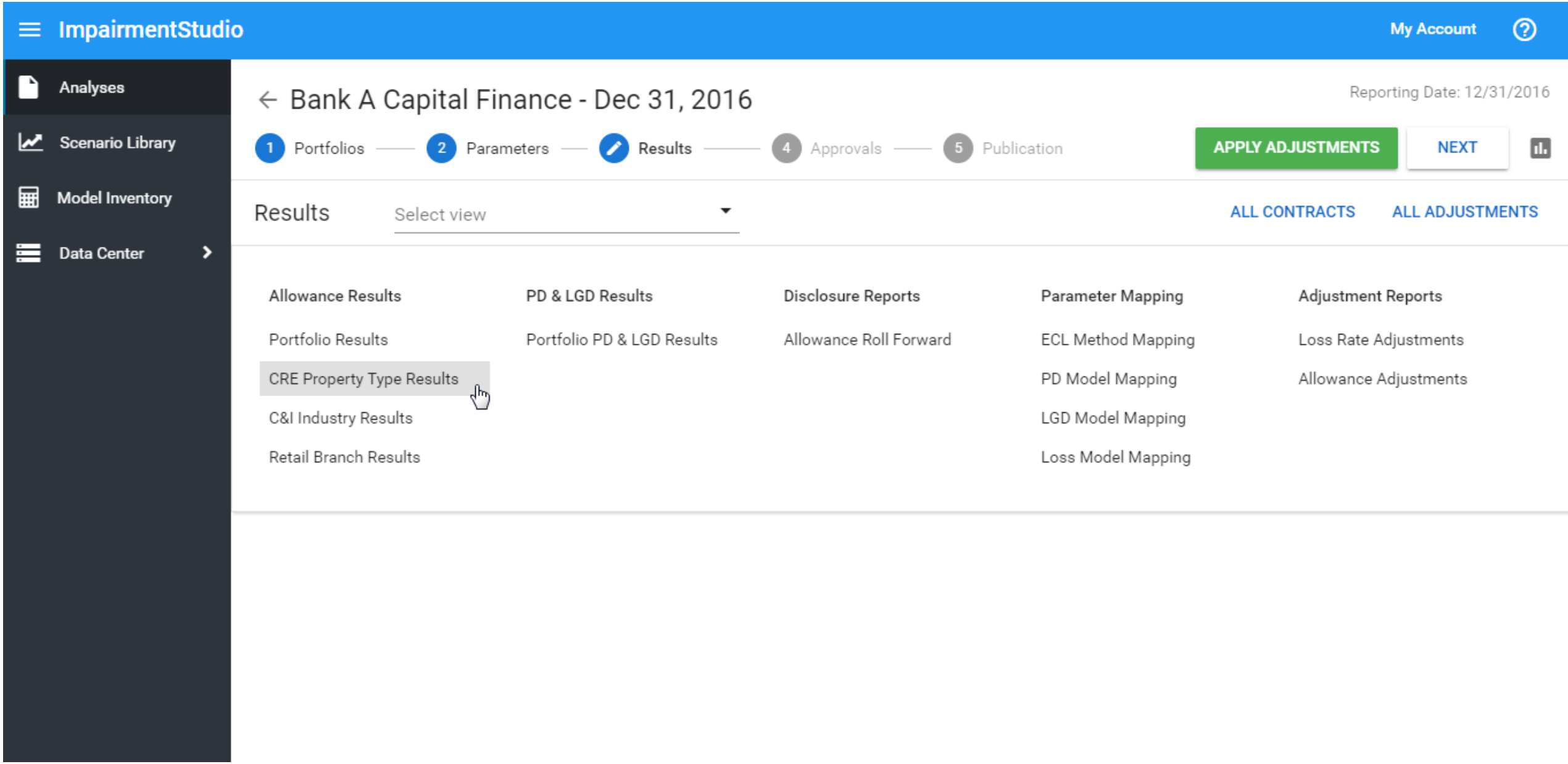
Integrate Banking Processes

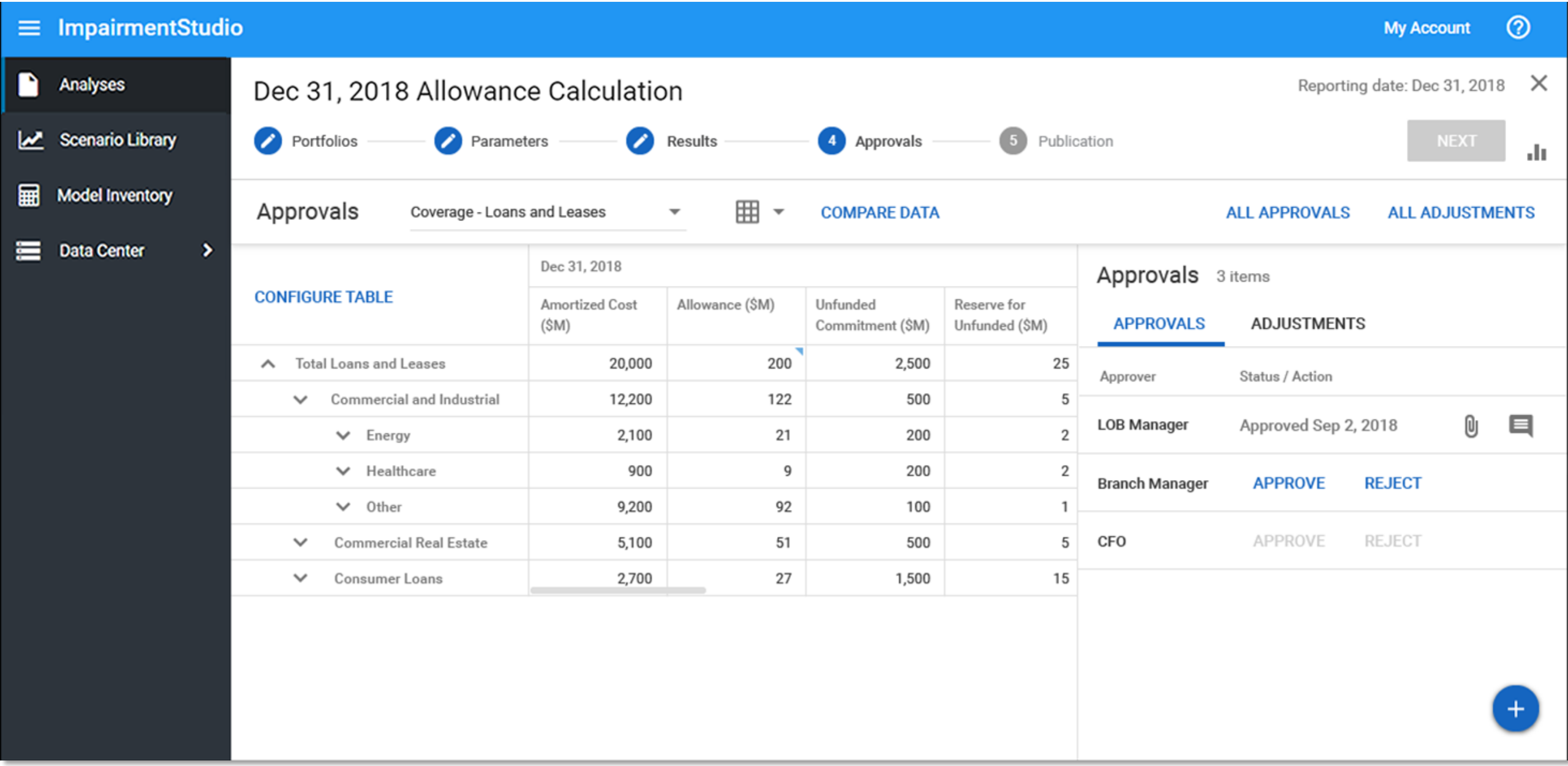
Stress Testing and CECL



Foster Collaboration



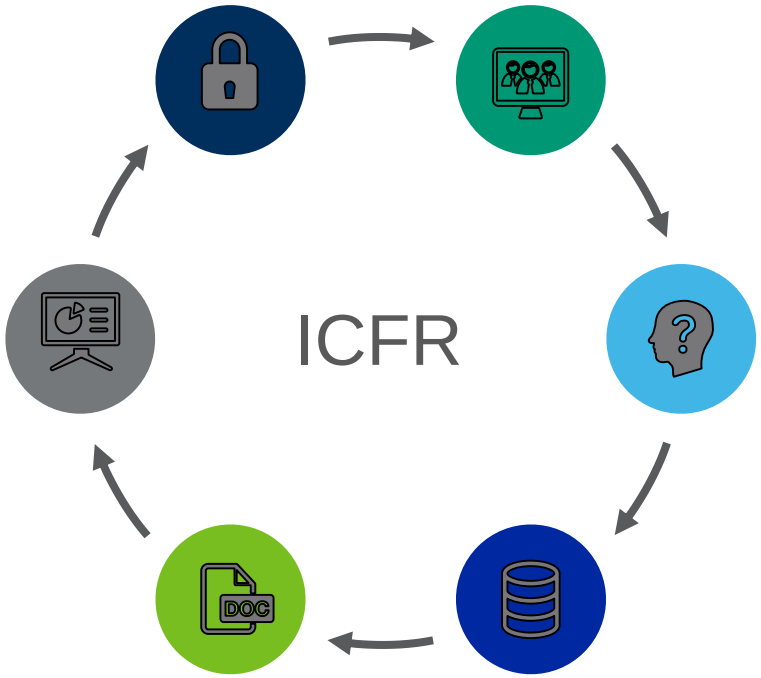

ImpairmentStudio
My Account
Analyses
Scenario Library
Model Inventory
Data Center
Bank A Capital Finance - Dec 31, 2016
Reporting Date: 12/31/2016
1 Portfolios
2 Parameters
Results
4 Approvals
5 Publication
APPLY ADJUSTMENTS
NEXT
Results
Select view
ALL CONTRACTS
ALL ADJUSTMENTS
Allowance Results
Portfolio Results
CRE Property Type Results
C&I Industry Results
Retail Branch Results
PD & LGD Results
Portfolio PD & LGD Results
Disclosure Reports
Allowance Roll Forward
Parameter Mapping
ECL Method Mapping
PD Model Mapping
LGD Model Mapping
Loss Model Mapping
Adjustment Reports
Loss Rate Adjustments
Allowance Adjustments


ImpairmentStudio
My Account
Analyses
Scenario Library
Model Inventory
Data Center
Dec 31, 2018 Allowance Calculation
Reporting date: Dec 31, 2018
Portfolios
Parameters
Results
4 Approvals
5 Publication
NEXT
Approvals
Coverage - Loans and Leases
COMPARE DATA
ALL APPROVALS
ALL ADJUSTMENTS
CONFIGURE TABLE
Dec 31, 2018
Amortized Cost ($M)
Allowance ($M)
Unfunded Commitment ($M)
Reserve for Unfunded ($M)
Total Loans and Leases 20,000 200 2,500 25
Commercial and Industrial 12,200 122 500 5
Energy 2,100 21 200 2
Healthcare 900 9 200 2
Other 9,200 92 100 1
Commercial Real Estate 5,100 51 500 5
Consumer Loans 2,700 27 1,500 15
Approvals 3 items
APPROVALS
ADJUSTMENTS
Approver
Status / Action
LOB Manager
Approved Sep 2, 2018
Branch Manager
APPROVE
REJECT
CFO
APPROVE
REJECT

Strengthen Governance and Auditability

How auditors will audit the CECL estimate:

- Obtain an understanding of management's process to establish CECL estimate
- Assess the reasonableness of the estimate by one or more approaches
- Internal Control over Financial Reporting (ICFR) framework is also tested to ensure that controls are designed and operating effectively



Analyses
Scenario Library
Model Inventory
Data Center

← Analyses / Dec 31, 2018 Allowance Calculation

DELETE ANALYSIS Item 4 of 4

SAVE CANCEL

Name *
Dec 31, 2018 Allowance Calculation

Reporting Date *
12/31/2018

Created By
Anna L

Creation Date
08/22/2017 22:36:42

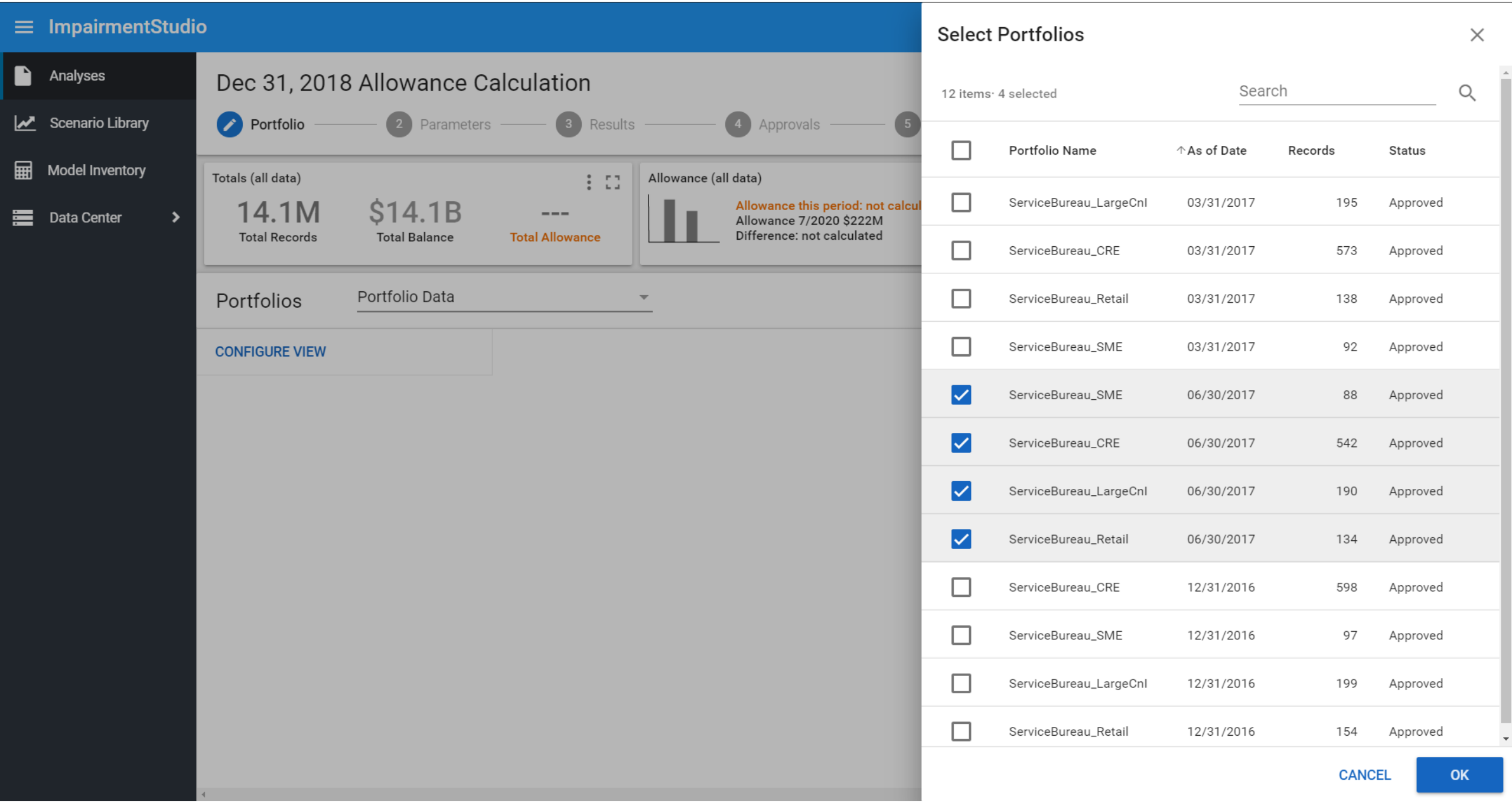
Last Modified By
Anna L

Modified Date
08/22/2017 22:36:42

Step
1 - Portfolios

Description

0 / 10,000


ImpairmentStudio
Analyses
Scenario Library
Model Inventory
Data Center
Dec 31, 2018 Allowance Calculation
Portfolio
2
Parameters
3
Results
4
Approvals
5
Totals (all data)
14.1M
Total Records
$14.1B
Total Balance

Total Allowance
Allowance (all data)
Allowance this period: not calcul
Allowance 7/2020 $222M
Difference: not calculated
Portfolios
Portfolio Data
CONFIGURE VIEW
Select Portfolios
12 items· 4 selected
Search
Portfolio Name
As of Date
Records
Status
ServiceBureau_LargeCnI 03/31/2017 195 Approved
ServiceBureau_CRE 03/31/2017 573 Approved
ServiceBureau_Retail 03/31/2017 138 Approved
ServiceBureau_SME 03/31/2017 92 Approved
ServiceBureau_SME 06/30/2017 88 Approved
ServiceBureau_CRE 06/30/2017 542 Approved
ServiceBureau_LargeCnI 06/30/2017 190 Approved
ServiceBureau_Retail 06/30/2017 134 Approved
ServiceBureau_CRE 12/31/2016 598 Approved
ServiceBureau_SME 12/31/2016 97 Approved
ServiceBureau_LargeCnI 12/31/2016 199 Approved
ServiceBureau_Retail 12/31/2016 154 Approved
CANCEL
OK

ImpairmentStudio

My Account

Analyses

Scenario Library

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Data Center

SCENARIO DATA

SCENARIOS

Filters

To view data, select at least one value from each filter. Up to twelve filter combinations can be displayed.

As of Date: 08/31/2017

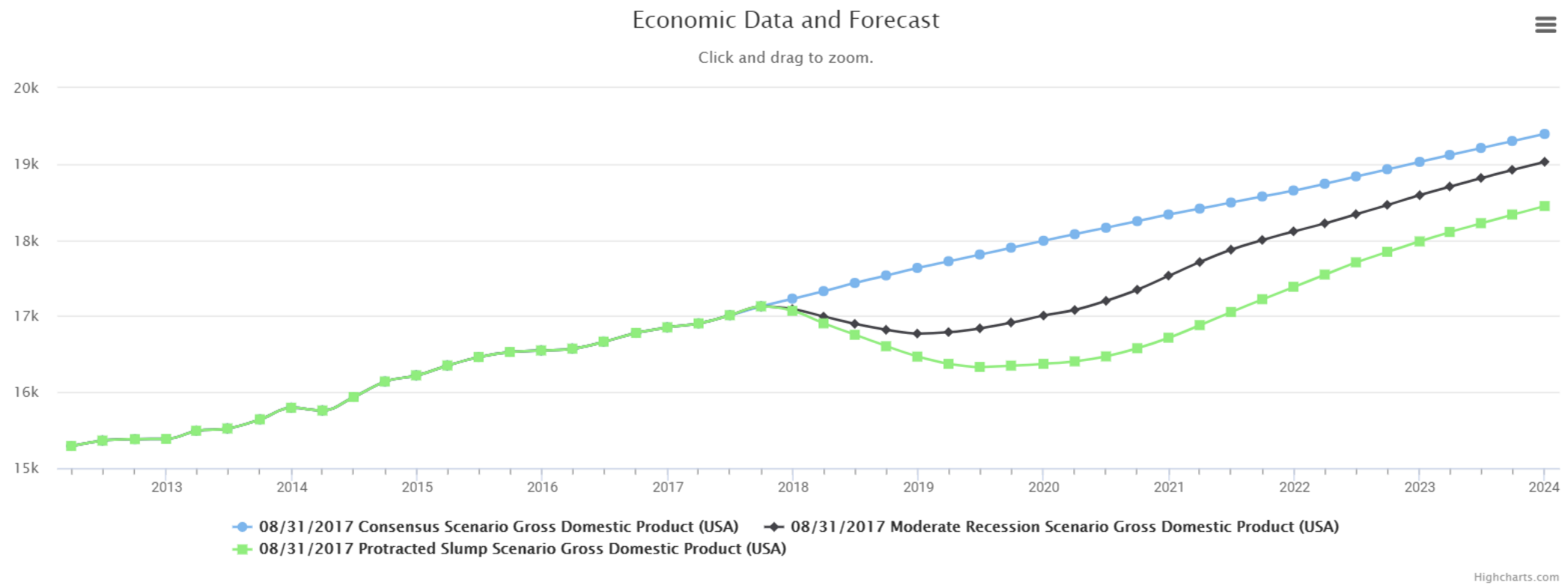
Scenario: 3 items

Macroeconomic Variables: Gross Domestic Product (USA)

UPDATE

View

CHART OPTIONS



Analyses
Scenario Library
Model Inventory
Data Center

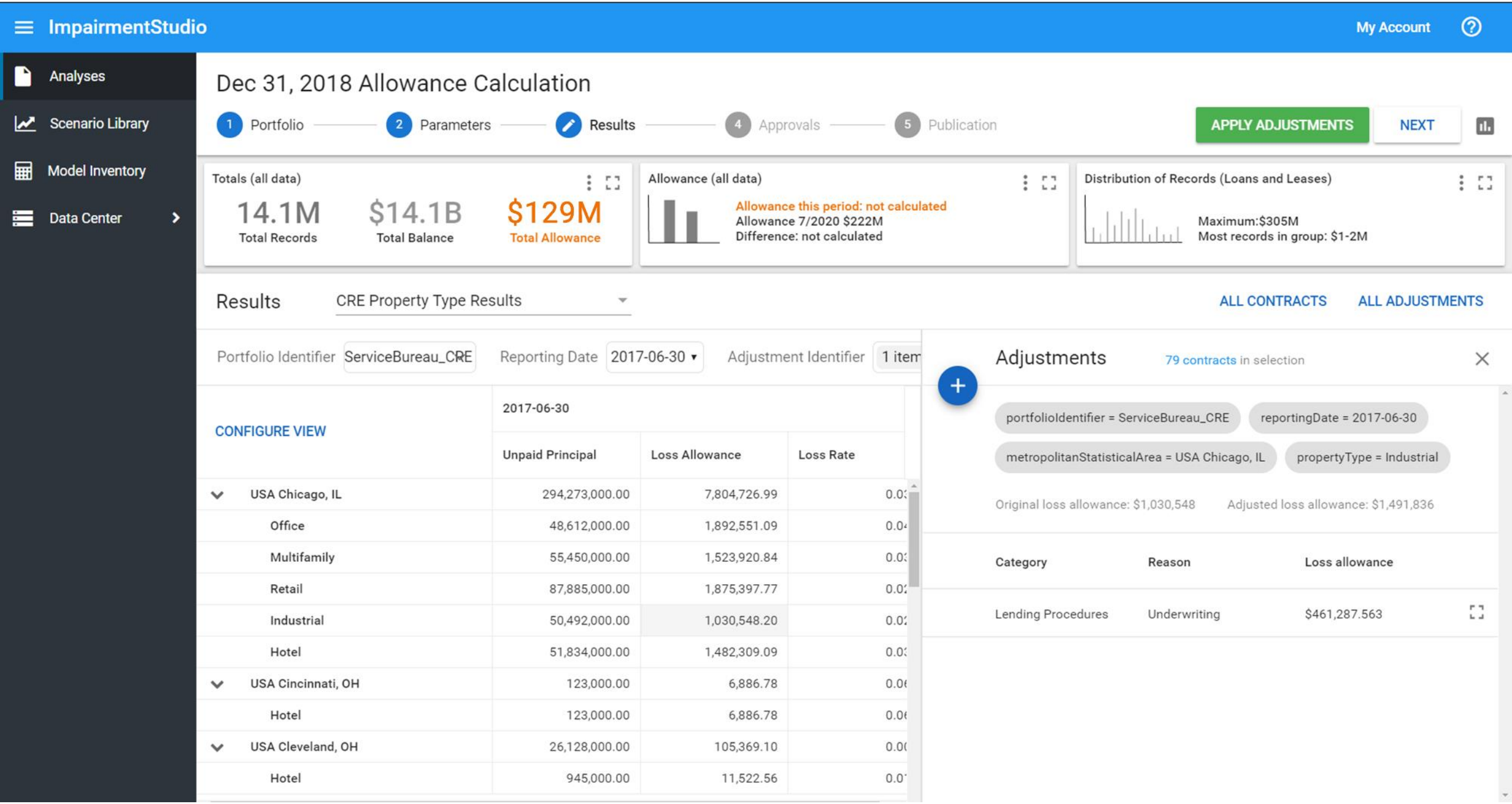
Model Inventory

Models

9 items

Search

Source	Name	Output	Validation Status	Type	Owner
MA	GCorr 2016	PD	Validated	Imported	Anna D.
MA	RiskCalc U.S. Corporate v4.0	PD	Validated	Imported	Mike S.
MA	CMM 3.0	PD	In progress	Imported	John S.
MA	Mortgage Portfolio Analyzer	LGD	In progress	Imported	Sarah T.
MA	Auto Portfolio Analyzer	PD	Validated	Imported	Mark K.
MA	CreditEdge	PD	Validated	Imported	Mike S.
MA	CreditCycle PD	PD	Pending	Imported	Anna D.
MA	CreditCycle LGD	LGD	Validated	Imported	Kevin D.
Internal	Expected Consumer Credit Losses	Loss Rate	Validated	Imported	John S.


ImpairmentStudio
My Account
Analyses
Scenario Library
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Data Center
Dec 31, 2018 Allowance Calculation
1 Portfolio
2 Parameters
Results
4 Approvals
5 Publication
APPLY ADJUSTMENTS
NEXT
Totals (all data)
14.1M
Total Records
$14.1B
Total Balance
$129M
Total Allowance
Allowance (all data)
Allowance this period: not calculated
Allowance 7/2020 $222M
Difference: not calculated
Distribution of Records (Loans and Leases)
Maximum:$305M
Most records in group: $1-2M
Results
CRE Property Type Results
ALL CONTRACTS
ALL ADJUSTMENTS
Portfolio Identifier ServiceBureau_CRE
Reporting Date 2017-06-30
Adjustment Identifier 1 item
CONFIGURE VIEW
2017-06-30
Unpaid Principal
Loss Allowance
Loss Rate
USA Chicago, IL 294,273,000.00 7,804,726.99
Office 48,612,000.00 1,892,551.09
Multifamily 55,450,000.00 1,523,920.84
Retail 87,885,000.00 1,875,397.77
Industrial 50,492,000.00 1,030,548.20
Hotel 51,834,000.00 1,482,309.09
USA Cincinnati, OH 123,000.00 6,886.78
Hotel 123,000.00 6,886.78
USA Cleveland, OH 26,128,000.00 105,369.10
Hotel 945,000.00 11,522.56
Adjustments
79 contracts in selection
portfolioIdentifier = ServiceBureau_CRE
reportingDate = 2017-06-30
metropolitanStatisticalArea = USA Chicago, IL
propertyType = Industrial
Original loss allowance: $1,030,548
Adjusted loss allowance: $1,491,836
Category
Reason
Loss allowance
Lending Procedures
Underwriting
$461,287.563

Improve Decision-making

Investment in process infrastructure can improve management decision-making:

- Diagnose trends and drivers of the allowance
- Inform portfolio management
- Enable ad-hoc inquiries

ImpairmentStudio

My Account

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Dec 31, 2018 Allowance Calculation

1 Portfolio — 2 Parameters — Results — 4 Approvals — 5 Publication

APPLY ADJUSTMENTS | NEXT

Totals (all data)

14.1M	$14.1B	$129M
Total Records	Total Balance	Total Allowance

Allowance (all data)

Allowance this period: not calculated
Allowance 7/2020 $222M
Difference: not calculated

Distribution of Records (Loans and Leases)

Maximum:$305M
Most records in group: $1-2M

Results

Portfolio Results

ALL CONTRACTS | ALL ADJUSTMENTS

Reporting Date 2017-06-30 ▾ Adjustment Identifier 6 item(s)

CONFIGURE VIEW

	2017-06-30		
	Unpaid Principal	Loss Allowance	Loss Rate
ServiceBureau_CRE	602,024,000.00	21,930,820.41	0.03
ServiceBureau_LargeCnI	169,885,000.00	2,278,897.28	0.01
ServiceBureau_Retail	3,443,684,000.00	28,033,935.07	0.01
ServiceBureau_SME	2,482,000.00	39,931.08	0.01

ImpairmentStudio

My Account

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Dec 31, 2018 Allowance Calculation

1 Portfolio — 2 Parameters — Results — 4 Approvals — 5 Publication

APPLY ADJUSTMENTS | NEXT

Totals (all data)

14.1M
Total Records

$14.1B
Total Balance

$129M
Total Allowance

Allowance (all data)

Allowance this period: not calculated
Allowance 7/2020 $222M
Difference: not calculated

Distribution of Records (Loans and Leases)

Maximum:$305M
Most records in group: $1-2M

Results

CRE Property Type Results

ALL CONTRACTS | ALL ADJUSTMENTS

Portfolio Identifier: ServiceBureau_CRE | Reporting Date: 2017-06-30 | Adjustment Identifier: 1 item(s)

CONFIGURE VIEW

	2017-06-30		
	Unpaid Principal	Loss Allowance	Loss Rate
USA Chicago, IL	294,273,000.00	7,804,726.99	0.03
Office	48,612,000.00	1,892,551.09	0.04
Multifamily	55,450,000.00	1,523,920.84	0.03
Retail	87,885,000.00	1,875,397.77	0.02
Industrial	50,492,000.00	1,030,548.20	0.02
Hotel	51,834,000.00	1,482,309.09	0.03
USA Cincinnati, OH	123,000.00	6,886.78	0.06
Hotel	123,000.00	6,886.78	0.06
USA Cleveland, OH	26,128,000.00	105,369.10	0.00
Hotel	945,000.00	11,522.56	0.01

ImpairmentStudio

My Account

- Analyses
- Scenario Library
- Model Inventory
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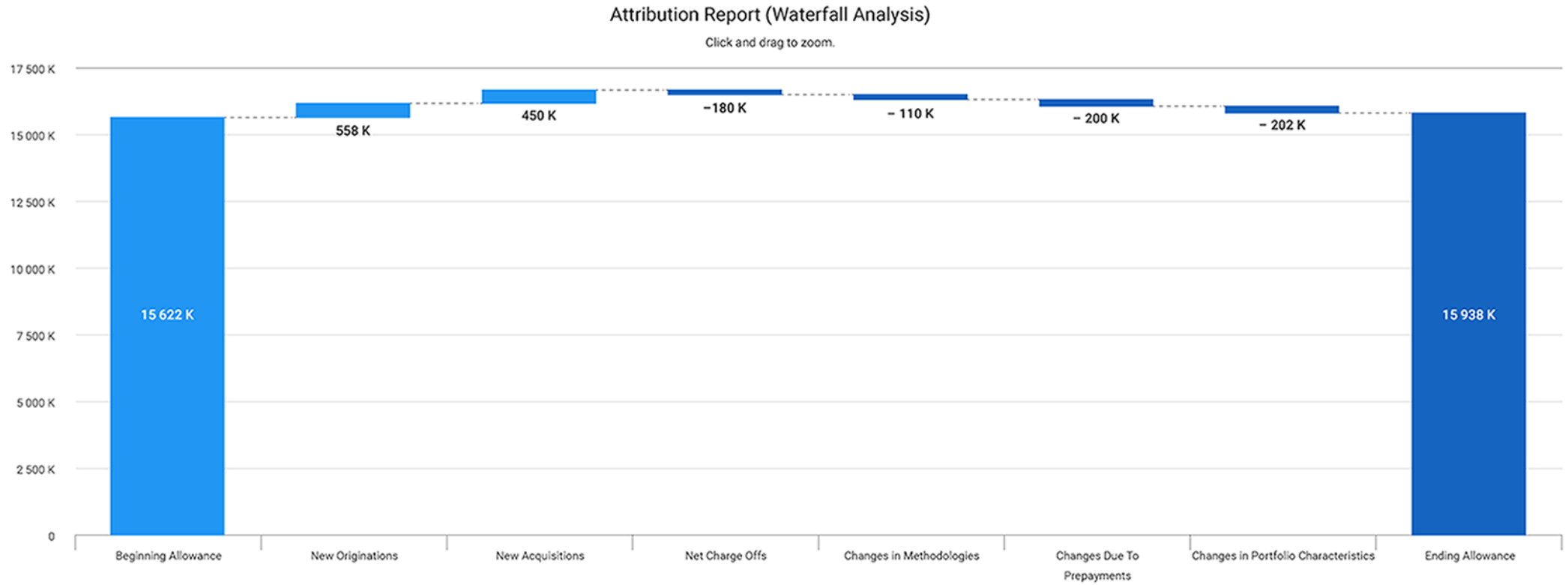
Dec 31, 2018 Allowance Calculation

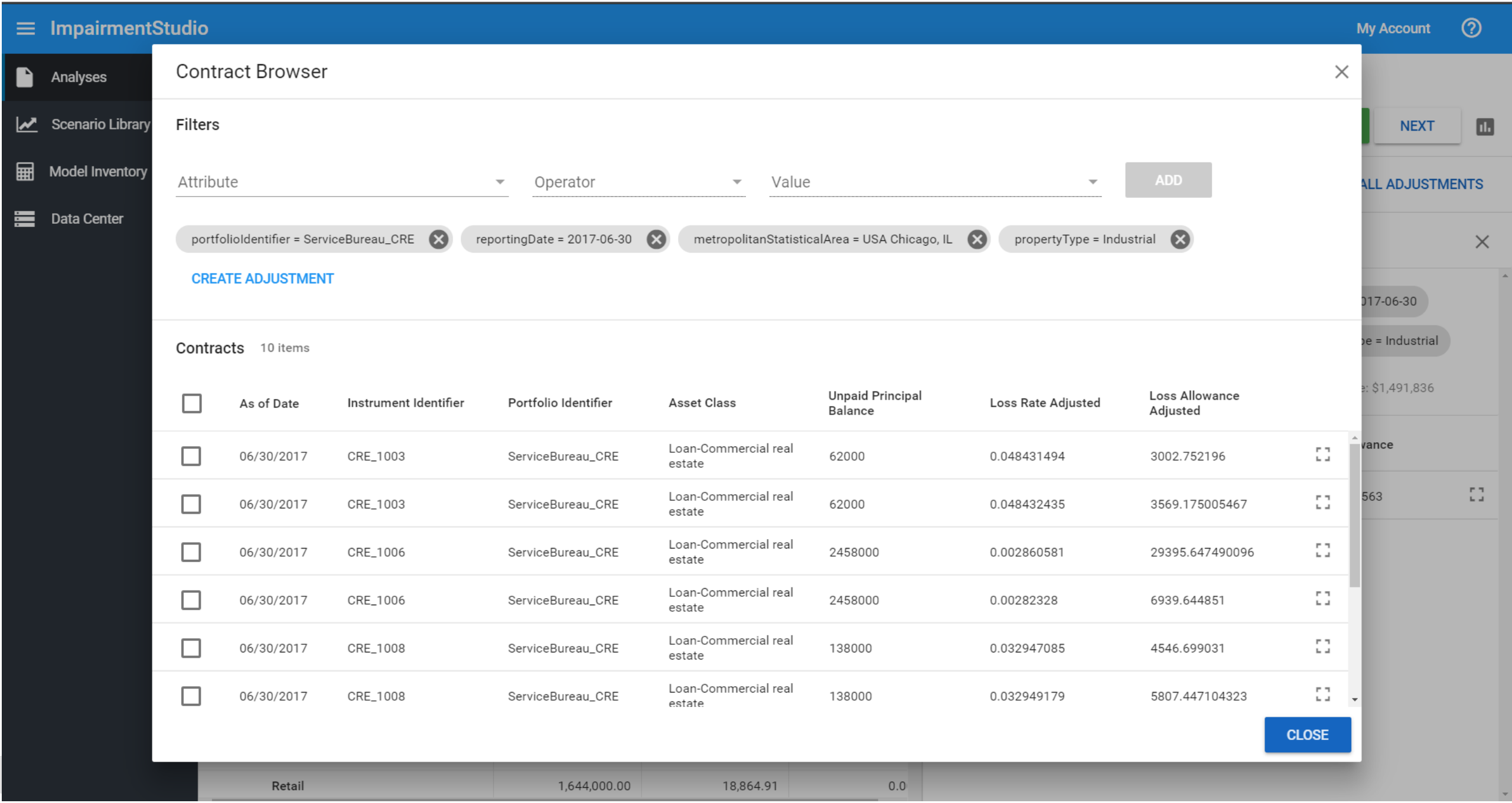
1 Portfolio — 2 Parameters — Results — 4 Approvals — 5 Publication

APPLY ADJUSTMENTS | NEXT

Results

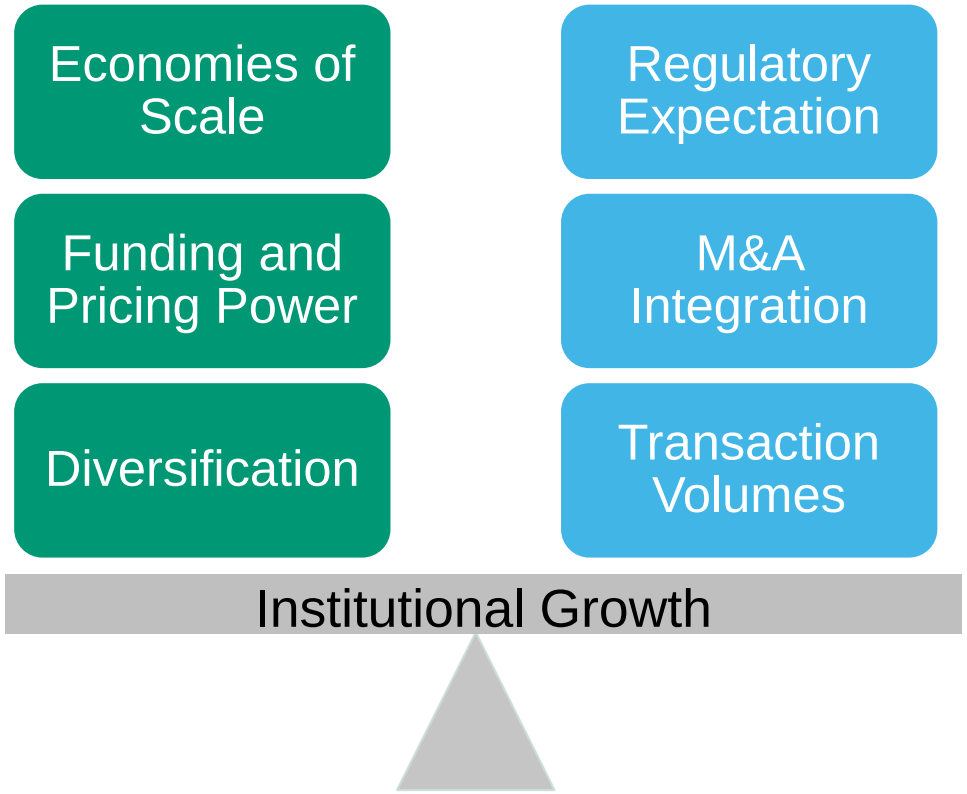
Attribution Report




ImpairmentStudio
My Account
Analyses
Scenario Library
Model Inventory
Data Center
NEXT
ALL ADJUSTMENTS
Contract Browser
Filters
Attribute
Operator
Value
ADD
portfolioIdentifier = ServiceBureau_CRE
reportingDate = 2017-06-30
metropolitanStatisticalArea = USA Chicago, IL
propertyType = Industrial
CREATE ADJUSTMENT
Contracts 10 items
As of Date
Instrument Identifier
Portfolio Identifier
Asset Class
Unpaid Principal Balance
Loss Rate Adjusted
Loss Allowance Adjusted
06/30/2017 CRE_1003 ServiceBureau_CRE Loan-Commercial real estate 62000 0.048431494 3002.752196
06/30/2017 CRE_1003 ServiceBureau_CRE Loan-Commercial real estate 62000 0.048432435 3569.175005467
06/30/2017 CRE_1006 ServiceBureau_CRE Loan-Commercial real estate 2458000 0.002860581 29395.647490096
06/30/2017 CRE_1006 ServiceBureau_CRE Loan-Commercial real estate 2458000 0.00282328 6939.644851
06/30/2017 CRE_1008 ServiceBureau_CRE Loan-Commercial real estate 138000 0.032947085 4546.699031
06/30/2017 CRE_1008 ServiceBureau_CRE Loan-Commercial real estate 138000 0.032949179 5807.447104323
CLOSE
Retail 1,644,000.00 18,864.91 0.0

Grow with You

"With great power comes great responsibility" - Spiderman's Uncle



As financial institutions grow, so do:

- Regulatory and auditor expectations
- M&A integration "pains"
- Datasets and transaction volumes

How can CECL software help?

Grow with You

Methodology Decision Paths

Segment Level Choices

Measurement Objective	» Incurred Loss or Lifetime ECL?
Estimation Approach	» Historical Loss Rate, PD/LGD, Migration/Roll Rates?
Relevant Risk Parameters	» Loss Rate, PD/LGD, Discount Rate, Line of Credit Usage
Risk Parameter Horizon	» Discounted Cash Flow (DCF) or non-DCF?
Information Profile at Starting Point	» Are existing risk measures already CECL compliant?
Risk Parameter Enhancements	» Incorporate current/forward-looking information quantitatively or qualitatively?

Analyses
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Dec 31, 2018 Allowance Calculation

1 Portfolio — Parameters — 3 Results — 4 Approvals — 5 Publication

GENERATE RESULTS | NEXT

Parameters

SCENARIO SETTINGS | MODEL MAPPING & PARAMETERS

- Expected Credit Loss
- Probability of Default
- Loss Given Default
- GCORR™
- Loss Rate
- Exposure At Default
- Prepayment

Expected Credit Loss

ADD SEGMENT

Order	Scope	Method
1	Asset Class = CRE	Annualized Loss Rate
2	Asset Class = C&I; Country = USA	Lifetime Loss Rate
3	Asset Class = Retail	DCF: Expected Cash Flow
4	ALL OTHER DATA	Loss Rate Curve

Analyses
Scenario Library
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Data Center

Dec 31, 2018 Allowance Calculation

1 Portfolio — Parameters — 3 Results — 4 Approvals — 5 Publication

GENERATE RESULTS | NEXT

Parameters

SCENARIO SETTINGS | MODEL MAPPING & PARAMETERS

- Expected Credit Loss
- Probability of Default
- Loss Given Default
- GCORR™
- Loss Rate
- Exposure At Default
- Prepayment

Probability of Default

ADD SEGMENT

Order	Scope	Methodology	Model
1	Asset Class = CRE	PD Model	CMM™ 3.0
2	Asset Class = C&I, Country = USA	PD Model	RiskCalc™ U.S. Corporate v4.0
3	Asset Class = Retail	PD Model	CreditCycle™
4	ALL OTHER DATA	Implied PD	Moody's Ratings

Analyses
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Dec 31, 2018 Allowance Calculation

1 Portfolio — Parameters — 3 Results — 4 Approvals — 5 Publication

GENERATE RESULTS NEXT

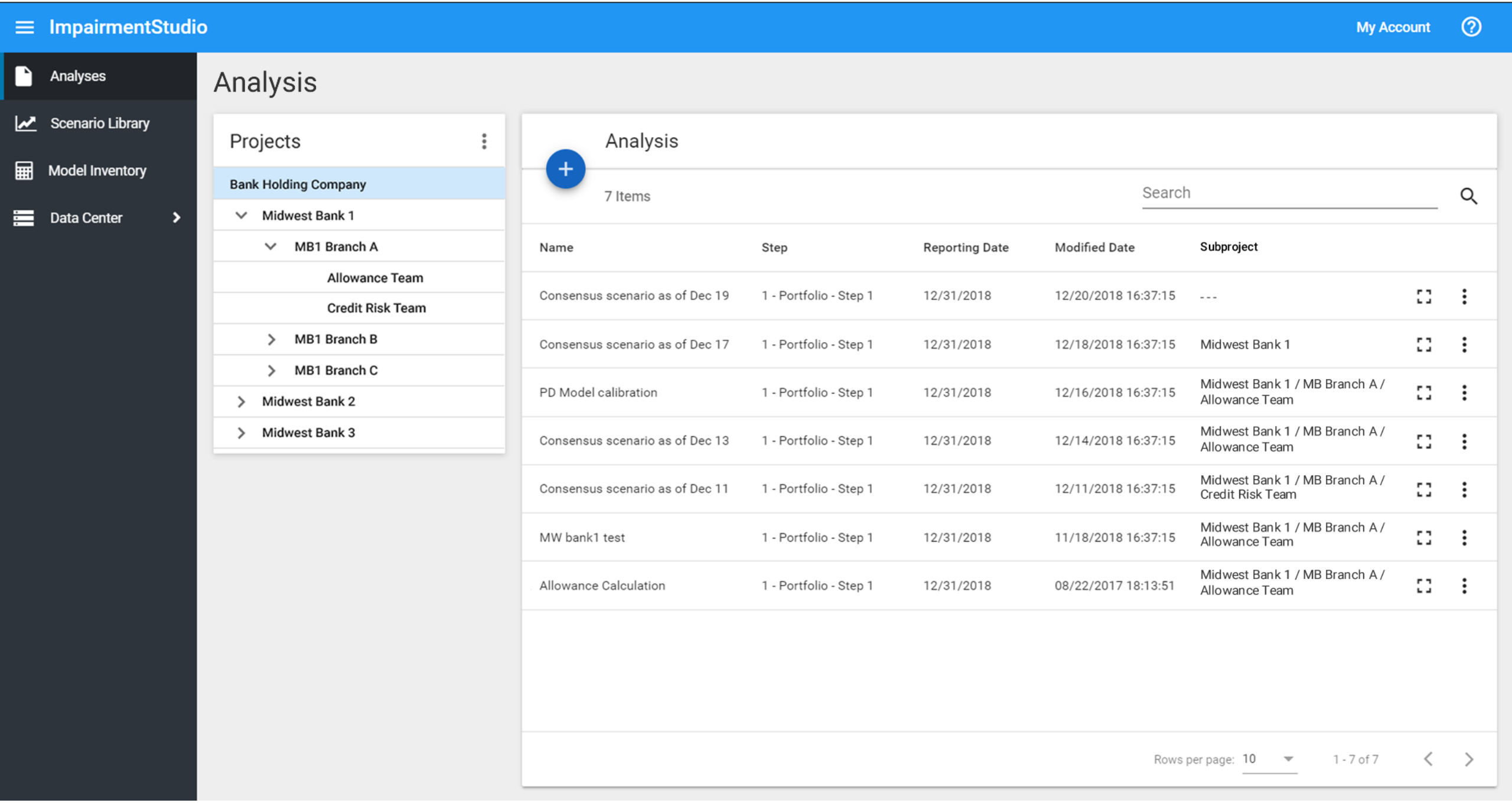
Parameters

SCENARIO SETTINGS MODEL MAPPING & PARAMETERS

Scenario Settings

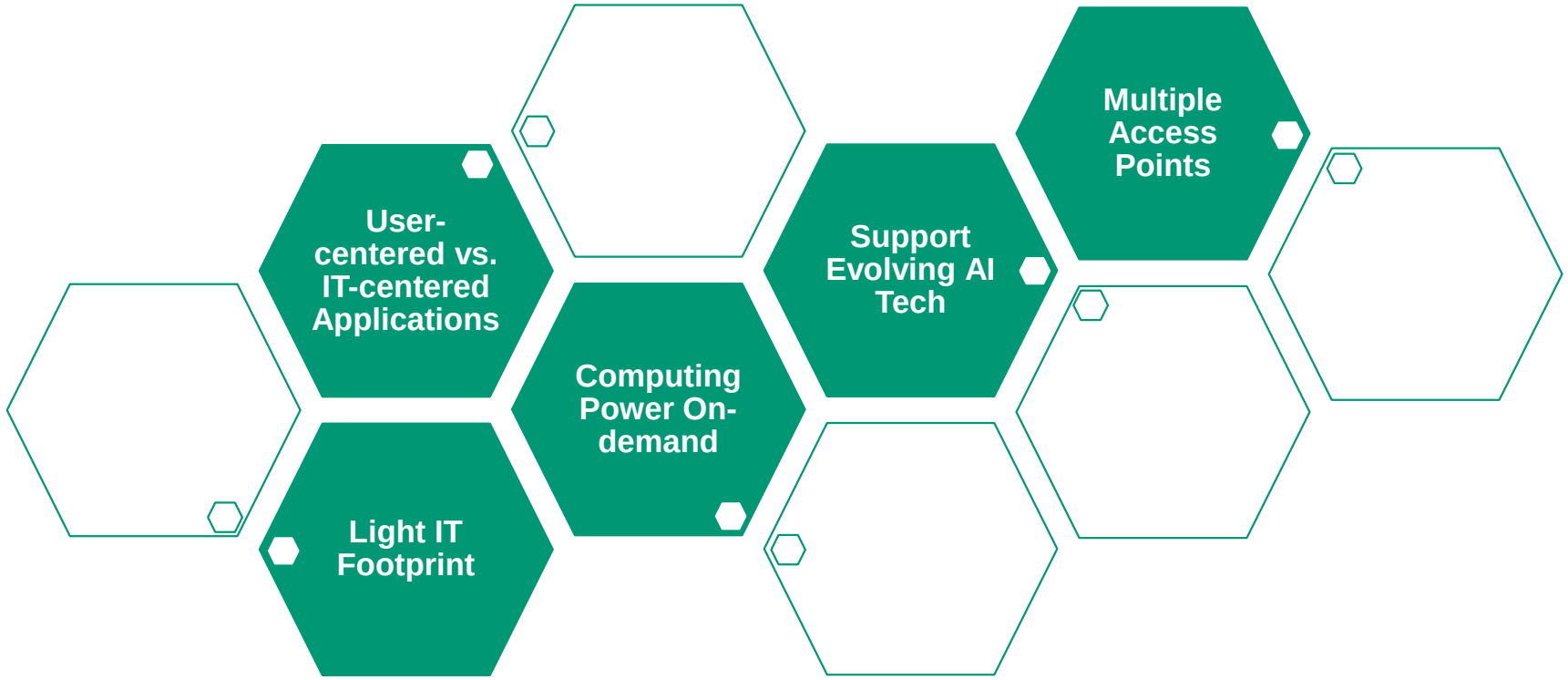
SELECT SCENARIOS

Scenario Name	Description	As of Date	Weight
S7	Consensus Scenario	12/19/2018	75%
S3	Moderate Recession	12/19/2018	25%
TOTAL WEIGHT			100%


ImpairmentStudio
My Account
Analyses
Scenario Library
Model Inventory
Data Center
Analysis
Projects
Bank Holding Company
Midwest Bank 1
MB1 Branch A
Allowance Team
Credit Risk Team
MB1 Branch B
MB1 Branch C
Midwest Bank 2
Midwest Bank 3
Analysis
7 Items
Search
Name
Step
Reporting Date
Modified Date
Subproject
Consensus scenario as of Dec 19
1 - Portfolio - Step 1
12/31/2018
12/20/2018 16:37:15

Consensus scenario as of Dec 17
1 - Portfolio - Step 1
12/31/2018
12/18/2018 16:37:15
Midwest Bank 1
PD Model calibration
1 - Portfolio - Step 1
12/31/2018
12/16/2018 16:37:15
Midwest Bank 1 / MB Branch A / Allowance Team
Consensus scenario as of Dec 13
1 - Portfolio - Step 1
12/31/2018
12/14/2018 16:37:15
Midwest Bank 1 / MB Branch A / Allowance Team
Consensus scenario as of Dec 11
1 - Portfolio - Step 1
12/31/2018
12/11/2018 16:37:15
Midwest Bank 1 / MB Branch A / Credit Risk Team
MW bank1 test
1 - Portfolio - Step 1
12/31/2018
11/18/2018 16:37:15
Midwest Bank 1 / MB Branch A / Allowance Team
Allowance Calculation
1 - Portfolio - Step 1
12/31/2018
08/22/2017 18:13:51
Midwest Bank 1 / MB Branch A / Allowance Team
Rows per page: 10
1 - 7 of 7

Extract Value from Computing Technology



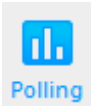
Extracting Value from Computing Technology

Total Cost of Ownership: On-Premise vs. Cloud

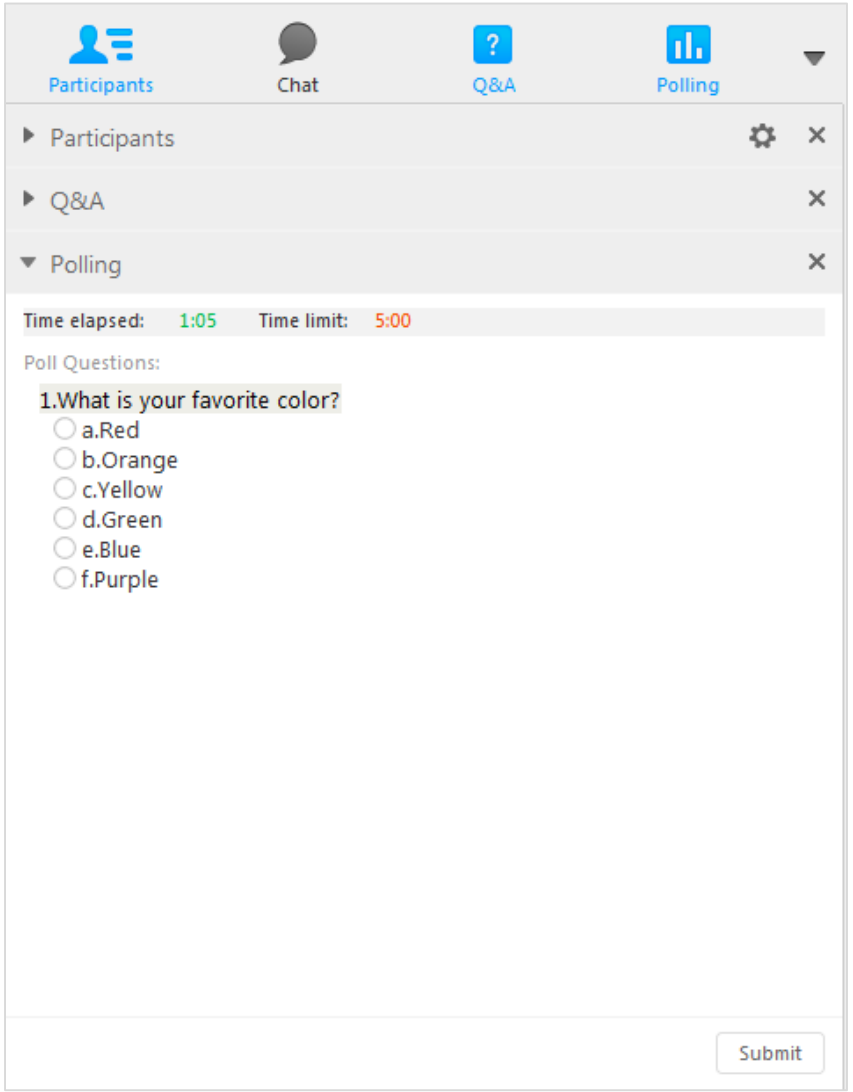
Summary

- CECL estimates will incorporate more information and judgment subject to examination from regulators, auditors, and other stakeholders
- Centralizing and streamlining the allowance estimation process is a significant investment, but one with the opportunity to:
  - Improve integration of risk management processes
  - Foster collaboration across functional groups
  - Strengthen process governance
  - Aid in portfolio management and decision making
  - Future-proof a growing organization

Polling Instructions

1. The 

icon will appear in the right hand corner of the WebEx platform when it comes time for polling.
2. Please select it, so that the icon is blue (as shown).
3. Select your answers in the Polling section that appears in the right hand panel of the platform.
4. Click “Submit.”
5. Results will display after the poll has ended.



Polling Questions

1. How does your institution plan to manage the allowance estimation process under CECL?
    a. Excel-based process
    b. Enhance existing system
    c. Deploy or build new solution
2. When do you plan to start implementing it?
    a. Already in progress
    b. Before the end of the year
    c. First half of 2018
    d. Second half of 2018
    e. After 2018
    f. Yet to be determined
3. What is the most important benefit you see in automating your CECL process?
    a. Improving governance and auditability
    b. Improving performance and efficiency
    c. Improving accuracy and decision-making

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