DISCOVER®

Discover Model Bank
Driving value with BIAN

May 2017

Benefits of a Business Capability Framework

Identify business capabilities across the enterprise that are key differentiators and worthy of new investment vs. commodities.

Eliminate duplication, fragmentation and gaps



Maintain awareness of cross-program touch points by viewing all programs through the capability "lens".

Integration solutions are optimized.



Frame DFS strategies

consistently across organization and program boundaries in terms of change to affected business capabilities (people, process, information, technology).



Keep stakeholders

"on the same page"

when key program

investment decisions

are made and progress
is tracked.





Create a variety of insights

Are we focused on the right aspects of our business relative to our stated strategies?

Could a particular capability be a shared service and not executed differently in each line business?

Do we have the skilled resources required to achieve the desired maturity of our business capabilities?



Ask the right questions

What are our systems' gaps and redundancies?

Which of our business capabilities require advancement (investment in new functionality)?

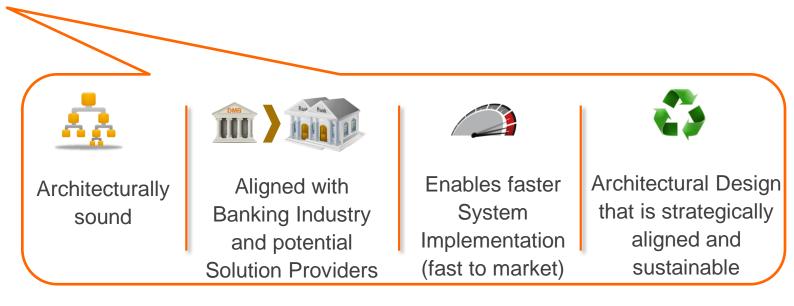
Where can solutions be redeployed?



What is the Discover Model Bank (DMB)?



The Discover Model Bank is our adaptation of the BIAN Business Capability Framework.



It is the entire set of business capabilities that Discover uniquely offers to the financial services ecosystem, our customers and business partners.



Business Direction Legal Compliance Corporate Policies Internal Audit Corporate Strategy Security Advisory Organizational Direction Security Assurance Product & Service Direction Continuity Planning HR Direction T Systems Direction Asset & Liability Mgmt Property Portfolio Investor Relations Corp Alliance/Stakeholde Corporate Communications **Resource Management** Business Unit Direction Business Unit Financial Ops Business Unit Accounting Rusiness Unit Fin Analysis Recruitment Empl Payroll & Incentives

Employee Benefits

Workforce Training

Travel & Expenses

Employee Access

Internal Network Operation

Systems Help Desk

Utilities Administration

Site Operation

Building Maintenance

Site Administration









Employee Assignment

Employee Evaluation

Employee Certification

Empl/Contractor Contract

Employee Data Mont

Systems Assurance

Systems Operations

ings & Equipmer

Fixed Asset Register

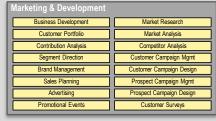
Equipment Administration

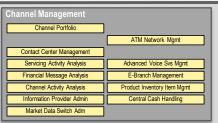
Equipment Maintenance

odels & Analytics	Quant Model	Solution Devel.
Contribution Models	Trading Models	IT Stds & Guideline
Customer Behavior Models	Fin Inst.Valuation Models	Systems Administrat
Credit Risk Models	Market Risk Models	Development Environ
Fraud Models	Liquidity Risk Models	System Developme









Public Reference Data Mgmt

Financial Instr Ref Data Mgmt

Financial Market Research

Financial Market Analysis

Market Data Switch Ops Information Provider Ops

Customer Workbench

Contact Handler

Contact Routing

Contact Dialogue

Party Authentication

Customer Access Entitlement

Transaction Authorization

Channel Activity History

ATM Network Operations

Advanced Voice Sys Ops

E-Branch Operations

Financial Gateway

Contact Center Operations

Point of Service

Interactive Help

Servicing Issue

Servicing Event History

Product Inventory Distribution

Correspondence

Discover Model Bank – Driving Value with BIAN

We have leveraged the Discover Model Bank across the Enterprise:

Communication

Drive common language across Discover.



Alignment to Goals

Understand how projects are aligned to strategic business goals based on Business Capabilities.



Organizing Organizing our API Catalog.



Decompose

Decompose functions from legacy applications/services/batch jobs to enable shared services and micro-services.



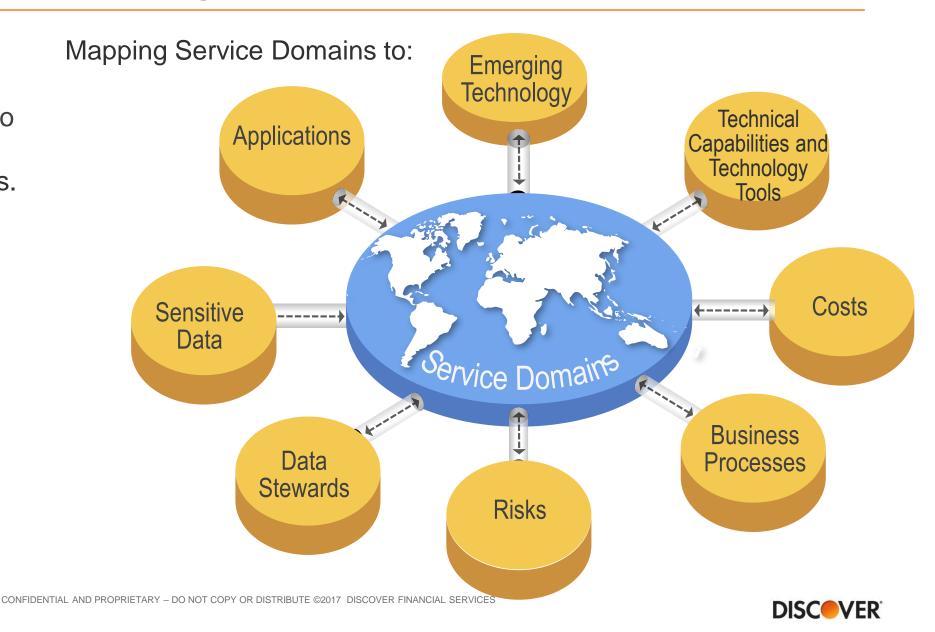
Environment

Structure our advanced analytics environment (Hadoop HDFS).



Discover Model Bank - Driving Value with BIAN

We have used the Discover Model Bank across the Enterprise to facilitate multiple architectural viewpoints.



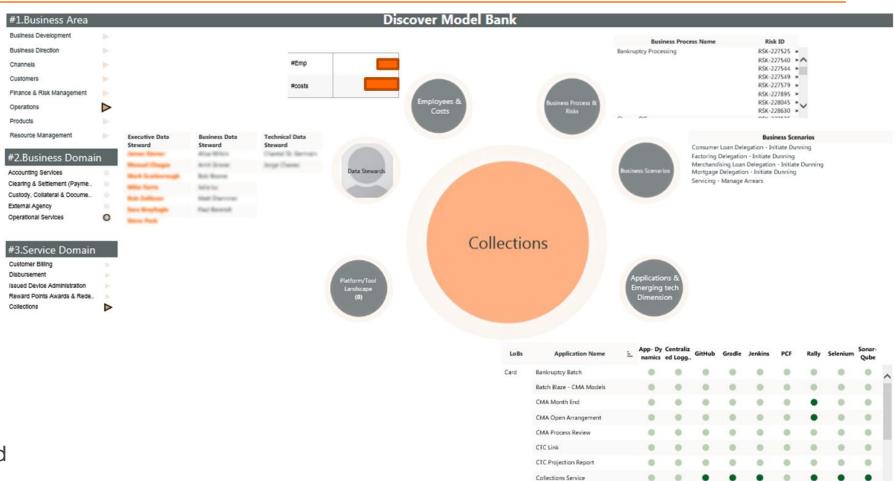
Multiple Viewpoints by Service Domain – Example: Collections

What we have done:

Taken a service domain centric view and rendered all of the viewpoints we have correlated with them.

How does it provide value?

- 1. This dashboard provides a perspective on all processes, risks, stewards, costs, applications / services, business scenarios associated with a single service domain.
- 2. We have never been enabled to take such an enterprise view based on consistent business capabilities until now.



Collections Web Site

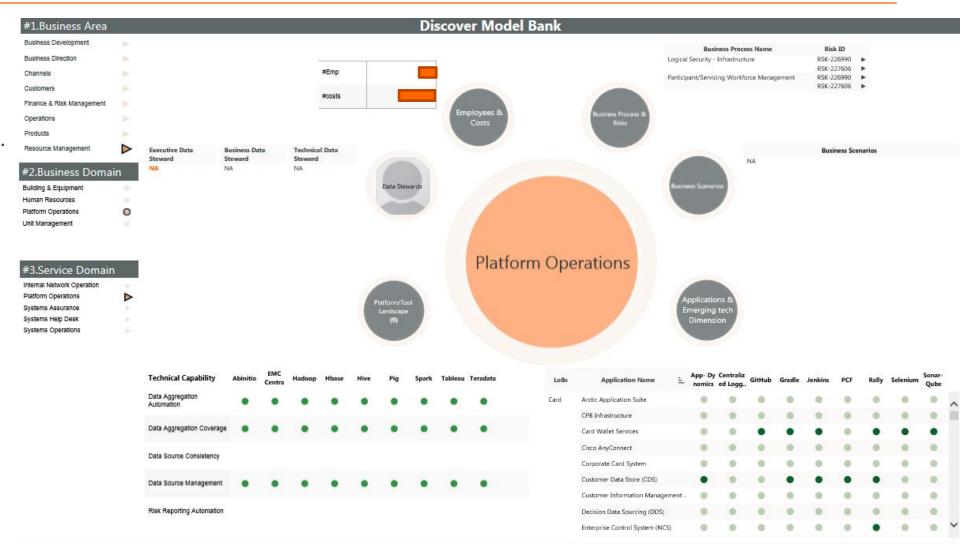


Multiple Viewpoints by Service Domain with Technical Capabilities and Technology Tools

What we have done:

Taken a service domain centric view and rendered all of the viewpoints we have correlated with them.

- 1. This dashboard provides a perspective where we are actually adopting emerging technology across our application landscape.
- 2. This view of the dashboard shows the nexus of our business and technical capabilities, again a perspective we previously did not have.



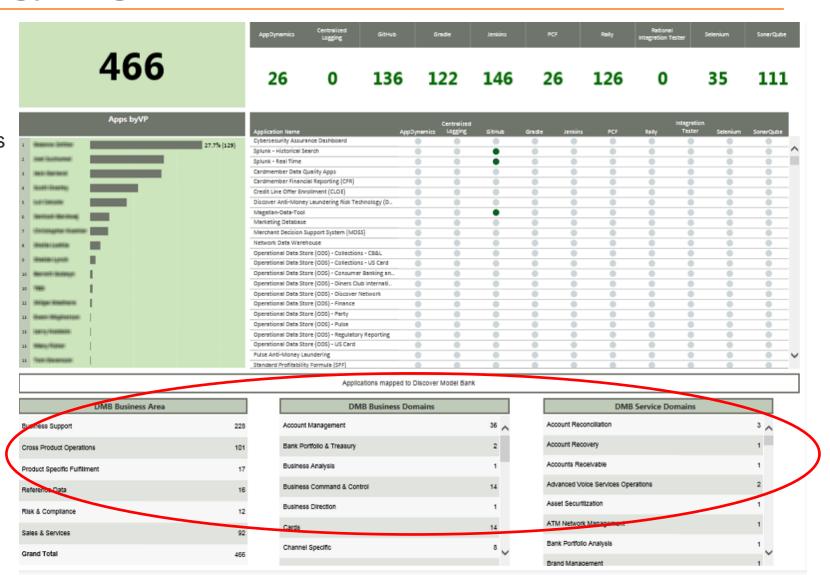


Emerging Technology Alignment

What we have done:

Mapped all applications to the DMB and the emerging technologies they are using. This way we have correlated the emerging technologies with Business Capabilities

- 1. We can gain visibility into where we are investing in new Technology Capabilities to support Business Capabilities this dashboard also includes the dimension of technical ownership.
- 2. This is our current state, we will use this same framework to road map where we will be in successive years.



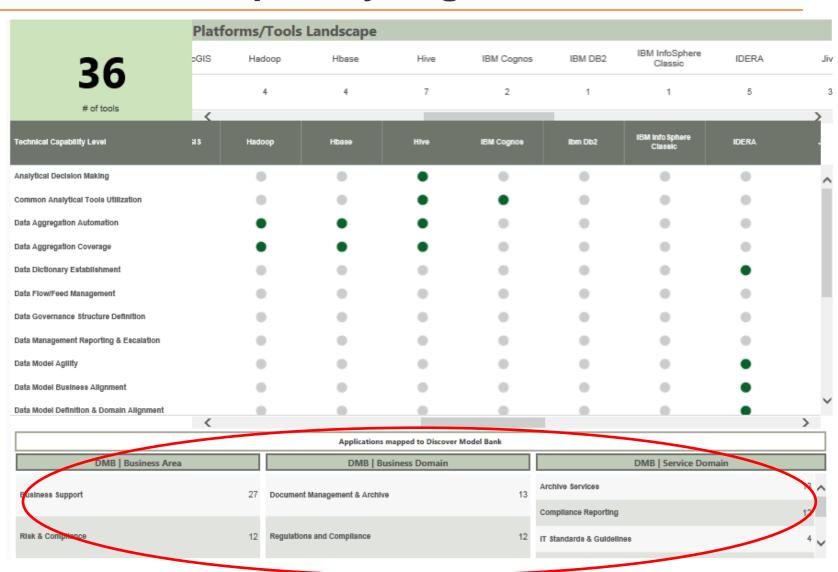


ED& DM Tools and Technical Capability Alignment

What we have done:

Mapped all tools within the Data Management/Decision Making organization to the DMB and technical capabilities.

- We can gain visibility into where we are investing in new Technology/Tools to support Business Capabilities
- 2. This is our current state, we will use this same framework to road map where we will be in successive years.



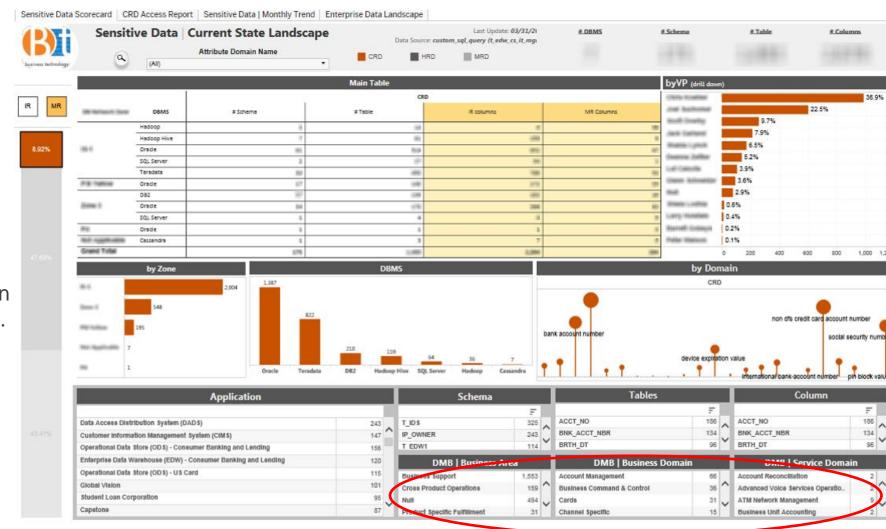


Sensitive Data Landscape

What we have done:

Mapped applications through schemas and tables down to single columns to service domains.

- We know by business capabilities where our sensitive data lives in addition to secured zones and DBMS.
- 2. We can see and manage to who has access to what and who is actually accessing sensitive data by business capability, again a new perspective and prioritization scheme to eliminate or obfuscate sensitive data.



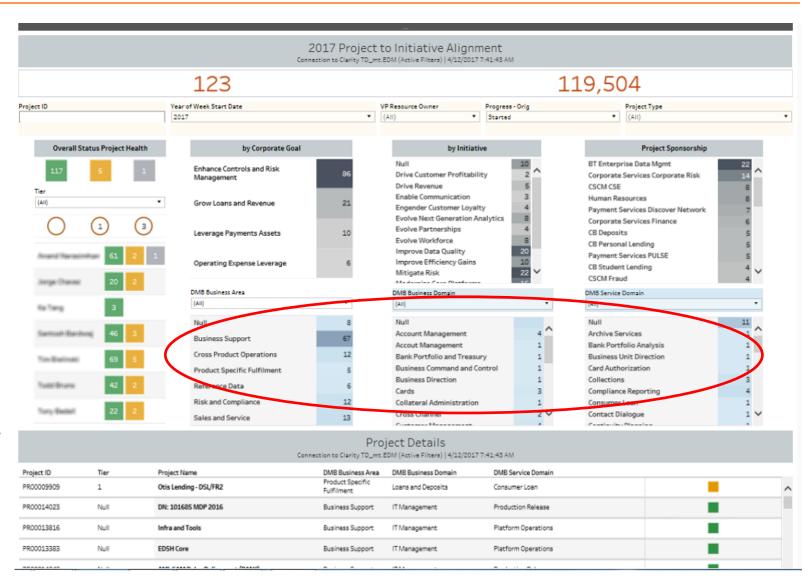


Project to Goal Alignment

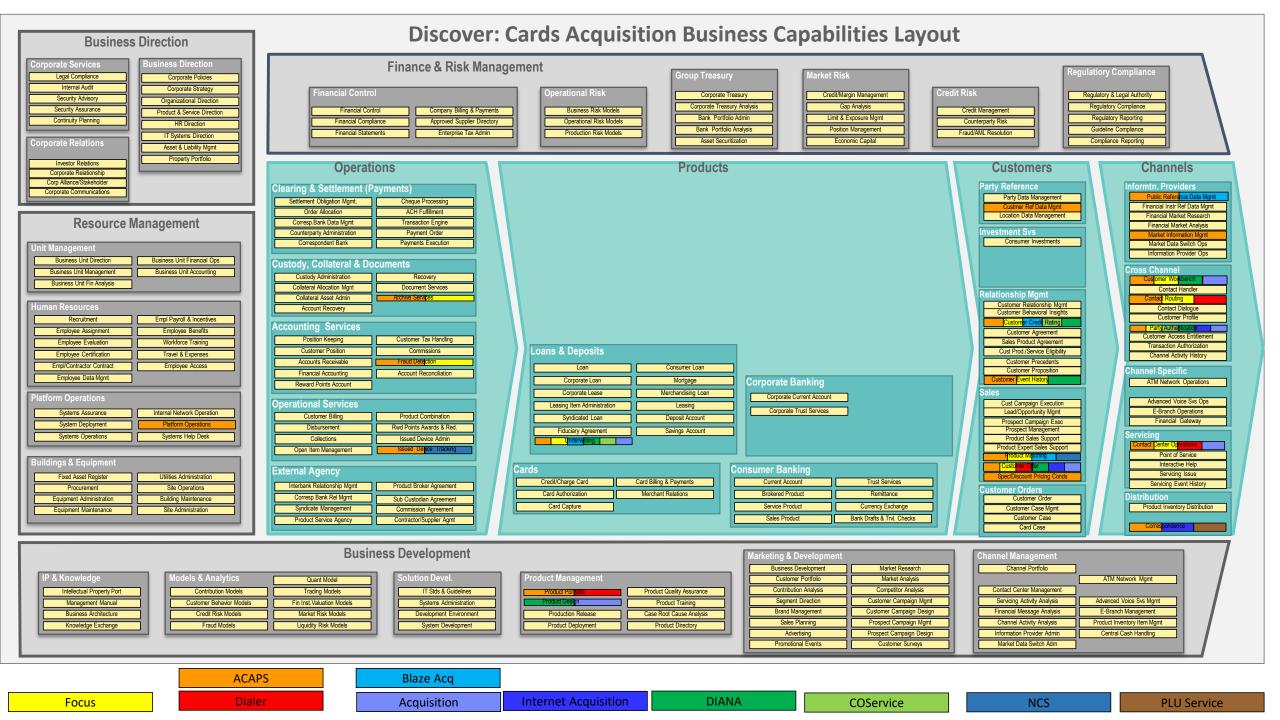
What we have done:

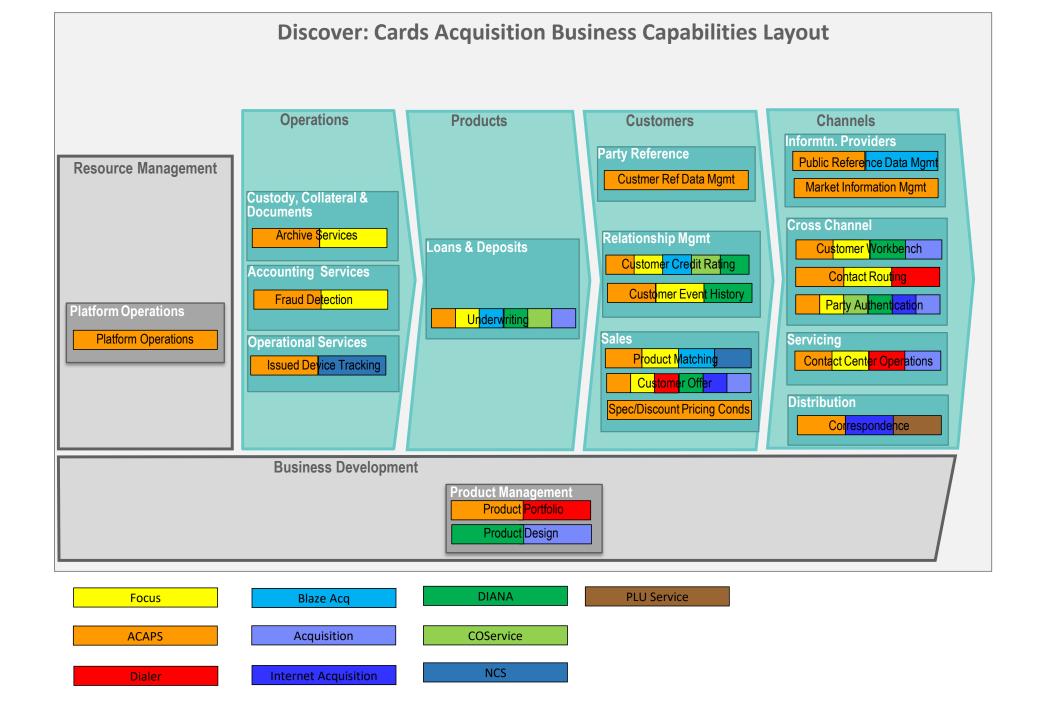
Aligned projects to both Goals/Initiatives and Business/Service Domains so you can navigate all projects related to a logical construct.

- 1. This view enables executive management to take an enterprise view that did not exist before within single lines of business and across the enterprise.
- 2. Provides a viewpoint to ensure projects & programs are actually aligned with business goals to support business capabilities.









DMB Use Case: Generic Example



Micro Service Use Case: AccountInfo-Service

AccountInfo is a card account "service" that provides an interface to various applications for Account information.

We are moving from a monolithic card account service into smaller more strategic set of micro-services.

To ensure the planned micro services are durable with minimal data overlap / duplication, we used "Service Domains" to categorize AccountInfo data fields into various buckets.

This categorization will help us determine the sets of fields that are most valuable to be available in an API in the first set of micro services we are planning to deliver.

DMB Service Domain	Field Count	Note
Position Keeping	47	Balance, Available Credit, over-limit, historical financial standing, etc
Party Data Management	34	Name/Address/Language
Sales Product Agreement	33	TL, Opt, Feature Set, etc
Card Billing & Payment	15	Min pay, cycle code, statement hold codes, payment history, PDD target stuff
Card Authorization	11	Status, Freeze, Activation
Issued Device Administration	10	ANR, Linked Accounts, Exp Date
Customer Credit Rating	9	Bureau stuff, high balance, risk code, etc.

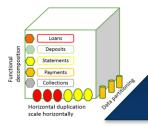


For Technology Transformation...



Goal

We will Build, Test & Deploy business functionality within one day for 80% of Applications.

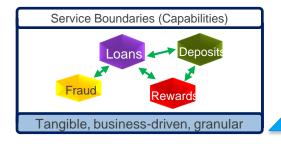


Decompose

Our functionality has to be "smaller", thoughtfully self-contained, loosely coupled with other things, and more modular than they are today.



Leverage Framework We must leverage a well-defined Business Capability Framework.



Architect

We must architect
Business Capabilities and
build Products from them.



Appendix

Discover Model Bank - Heatmaps

Subject Areas	Heatmap
Vendors	• Infosys - Finacle
Project/Pilot(s)	Instant Lending Capabilities
Line of Business	Acquisitions Applications Decomposition
	Shared Applications Shared Applications + Cards Shared Applications + Deposits
Application Alignment	Shared Applications + PULSE Shared Applications + DCI Shared Applications + DN
, , , p p	<u>Shared Applications + DHE</u> <u>Shared Applications + DSL</u> <u>Shared Applications + DPL</u>
Costs	*Sensitive – Can not share
BT Departments	Enterprise Decision & Data Management Emerging Tool Landscape
Departments	CONFIDENTIAL AND PROPRIETARY – DO NOT COPY OR DISTRIBUTE ©2017 DISCOVER FINANCIAL SERVICES



Discover Model Bank – Finacle Coverage Business Direction Finance & Risk Management egulatiory Compliance Corporate Policies Internal Audit Corporate Strategy inancial Control Regulatory & Legal Authority Corporate Treasury Credit/Margin Management Organizational Direction Corporate Treasury Analysis Security Assurance Financial Control Company Billing & Payments Business Risk Models Credit Management Product & Service Direction Bank Portfolio Admin Approved Supplier Directory Financial Compliance Counterparty Risk HR Direction Position Management Guideline Compliance Financial Statements Enterprise Tax Admir Production Risk Models T Systems Direction Asset Securitization Compliance Reporting Asset & Liability Mgmt Property Portfolio Investor Relations **Operations Products** Customers Channels Corp Alliance/Stakeholder Clearing & Settlement (Payments) Party Reference ormtn. Providers Corporate Communications Public Reference Data Mgmt Party Data Management Cheque Processing Custmer Ref Data Momt Financial Instr Ref Data Mgmt ACH Fulfillment Location Data Management Financial Market Research Corresp.Bank Data Mgmt **Resource Management** Transaction Engine Financial Market Analysis Counterparty Administration Payment Order Market Information Mgmt Consumer Investments Payments Execution Market Data Switch Ops Information Provider Ops Business Unit Financial Ops Custody, Collateral & Documents Business Unit Management Business Unit Accounting Custody Administration Recovery Customer Workbench Rusiness Unit Fin Analysis Collateral Allocation Mgnt Contact Handler Relationship Mamt Collateral Asset Admin Contact Routing man Resources Customer Relationship Mgmt Contact Dialogue Customer Behavioral Insights Recruitment Empl Payroll & Incentives Accounting Services Party Authentication Employee Assignment Employee Benefits Customer Agreement Customer Access Entitlement Customer Tax Handling Position Keeping Employee Evaluation Workforce Training Transaction Authorization Loans & Deposits Customer Position Cust Prod./Service Eliaibility Employee Certification Travel & Expenses Channel Activity History Accounts Receivable Empl/Contractor Contract Employee Access Consumer Loan Customer Proposition Channel Specific Financial Accounting Account Reconciliation Employee Data Mont Customer Event History Corporate Loan Mortgage Corporate Banking ATM Network Operations Reward Points Account Merchandising Loan Corporate Lease Corporate Current Account Advanced Voice Sys Ops Operational Services Cust Campaign Execution Leasing Item Administratio Leasing Corporate Trust Services E-Branch Operations Internal Network Operation Lead/Opportunity Mgmt Customer Billing Product Combination Deposit Account Syndicated Loar Financial Gateway Prospect Campaign Exec Rwd Points Awards & Red. Prospect Management Savings Account Systems Operations Systems Help Desk Collections Issued Device Admin Product Sales Support Underwriting Contact Center Operations Product Expert Sales Support Open Item Management Issued Device Tracking Point of Service lings & Equipmen Interactive Help Cards Consumer Banking External Agency Servicing Issue Fixed Asset Register Utilities Administration Credit/Charge Card Card Billing & Payments Current Account Trust Services Servicing Event History Interbank Relationship Mgmt Product Broker Agreement Customer Orders Remittance Merchant Relations Brokered Product Corresp Bank Rel Mgmt Equipment Administration Building Maintenance Sub Custodian Agreement Customer Orde Card Capture Service Product Currency Exchange Syndicate Management Customer Case Mgmt Product Inventory Distribution Commission Agreement Customer Case Contractor/Supplier Agmt Bank Drafts & Trvl. Checks Product Service Agency Card Case **Business Development** Marketing & Developme Channel Portfolio Business Development Market Research P & Knowledge odels & Analytics oduct Management Market Analysis Branch Portfolio ATM Network Mamt Contact Center Management Product Quality Assurance Competitor Analysis Intellectual Property Port Contribution Models Trading Models IT Stds & Guidelines Customer Campaign Mgmt Servicing Activity Analysis Customer Behavior Models Advanced Voice Svs Momt Systems Administration Product Design Product Training Management Manual E-Branch Management Brand Management Customer Campaign Design Financial Message Analysis Case Root Cause Analysis Rusiness Architecture Market Risk Models Production Release Sales Planning Product Inventory Item Mamt Knowledge Exchange System Development Product Deployment Product Directory Advertising Prospect Campaign Design Not Supported Promotional Events Customer Surveys Market Data Switch Adm Branch Currency Mgmt Supported by Finacle Supported by Alliance Partner

Discover Model Bank – Instant Lending Capabilities Business Direction Finance & Risk Management Market Risk Group Treasury Legal Compliance Corporate Policies Internal Audit inancial Control Corporate Treasury Credit/Margin Management Security Advisory Organizational Direction Corporate Treasury Analysis Security Assurance Financial Control Company Billing & Payments Business Risk Models Product & Service Direction Bank Portfolio Admin Limit & Exposure Mamt Continuity Planning Financial Complianc Bank Portfolio Analysis Position Managemen Financial Statements Enterprise Tax Admin Production Risk Models IT Systems Direction Asset Securitization Economic Capital Asset & Liability Momt Property Portfolio Investor Relations **Operations Products** Corporate Relationship Corp Alliance/Stakeholder Clearing & Settlement (Payments) Corporate Communications Settlement Obligation Mgmt. Cheque Processing ACH Fulfillment Order Allocation **Resource Management** Corresp.Bank Data Mgmt Transaction Engine Counterparty Administration Payment Order Payments Execution Business Unit Direction Business Unit Financial Ops Custody, Collateral & Documents Business Unit Management Business Unit Accounting Custody Administration Business Unit Fin Analysis Collateral Allocation Mont Collateral Asset Admin Archive Services Account Recovery Recruitment Empl Payroll & Incentives Accounting Services Employee Benefits Employee Assignment Customer Tax Handling Loans & Deposits Customer Position Travel & Expenses Employee Certification Accounts Receivable Employee Access Empl/Contractor Contract Consumer Loan Account Reconciliation Employee Data Mgmt Corporate Loan Mortgage Corporate Banking Reward Points Account Corporate Lease Merchandising Loan tform Operations Corporate Current Account Operational Services Leasing Item Administration Leasing Corporate Trust Services Systems Assurance Internal Network Operation Customer Billing Product Combination Syndicated Loan Deposit Account

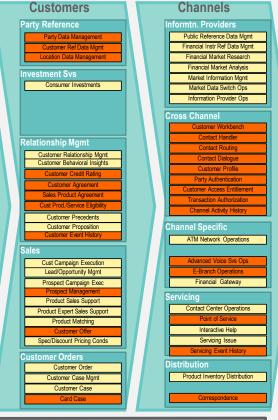




Credit Risk

Credit Management

Counterparty Risk



Business Development

Rwd Points Awards & Red.

Product Broker Agreement

Sub Custodian Agreement

Commission Agreement

Contractor/Supplier Agmt



Platform Operations

Systems Help Desk

Utilities Administration

Site Operations

Building Maintenance

Site Administration

System Deployment

Systems Operations

ildings & Equipment

Fixed Asset Register

Procurement

Equipment Administration

Equipment Maintenance

Quant Model
Trading Models
Fin Inst.Valuation Models
Market Risk Models
Liquidity Risk Models

Disbursement

Open Item Management

Interbank Relationship Mgmt

Corresp Bank Rel Mgmt

Syndicate Management

Product Service Agency

External Agency

Solution Devel.
IT Stds & Guidelines
Systems Administration
Development Environment
System Development

Product Management	
Product Portfolio	Product Quality Assurance
Product Design	Product Training
Production Release	Case Root Cause Analysis
Product Deployment	Product Directory

Fiduciary Agreement

Card Authorization

Savings Account

Card Billing & Payments

Consumer Banking

Current Account

Brokered Product

Service Product

Sales Product

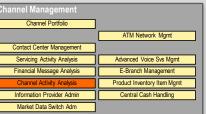
Business Development	Market Research
Customer Portfolio	Market Analysis
Contribution Analysis	Competitor Analysis
Segment Direction	Customer Campaign Mgmt
Brand Management	Customer Campaign Design
Sales Planning	Prospect Campaign Mgmt
Advertising	Prospect Campaign Design
Promotional Events	Customer Surveys

Trust Services

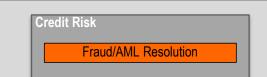
Remittance

Currency Exchange

Bank Drafts & Trvl. Checks



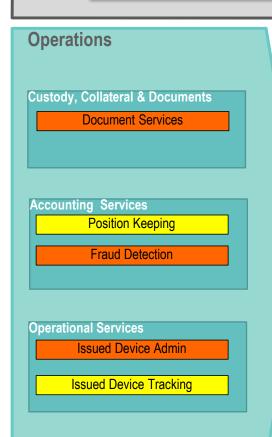
Discover Model Bank – Instant Lending Capabilities Finance & Risk Management Credit Risk **Regulatiory Compliance** Fraud/AML Resolution Regulatory Compliance **Operations** Channels **Products Customers Party Reference Cross Channel Customer Workbench** Party Data Management **Loans & Deposits** Custody, Collateral & Documents **Contact Handler** Customer Ref Data Mgmt Underwriting **Document Services** Contact Routing **Location Data Management** Contact Dialogue **Relationship Mgmt** Customer Profile Customer Credit Rating Party Authentication **Customer Agreement** Accounting Services **Customer Access Entitlement** Position Keeping Sales Product Agreement Cards Transaction Authorization Cust Prod./Service Eligibility Fraud Detection **Channel Activity History** Credit/Charge Card **Customer Event History** Card Capture **Channel Specific** Advanced Voice Svs Ops Sales **Merchant Relations E-Branch Operations** Prospect Management **Operational Services Customer Offer** Issued Device Admin Servicing Point of Service **Issued Device Tracking Customer Orders** Servicing Event History Card Case Distribution Correspondence **Business Development Channel Management Product Management** Models & Analytics **Channel Activity Analysis** Fraud Models **Product Directory**

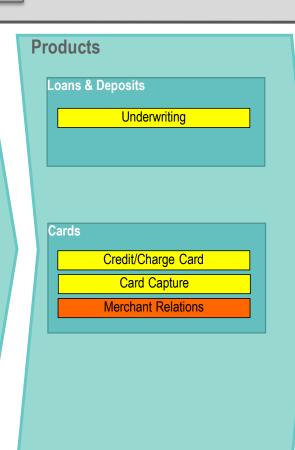


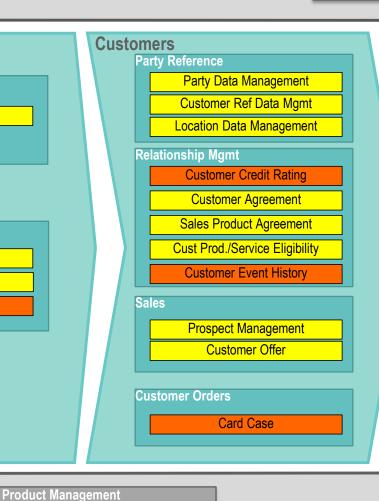
Finance & Risk Management

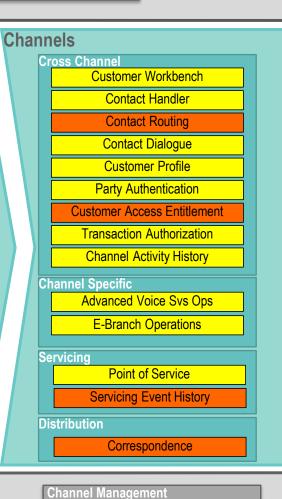
Regulatiory Compliance

Regulatory Compliance









Models & Analytics
Fraud Models

Business Development

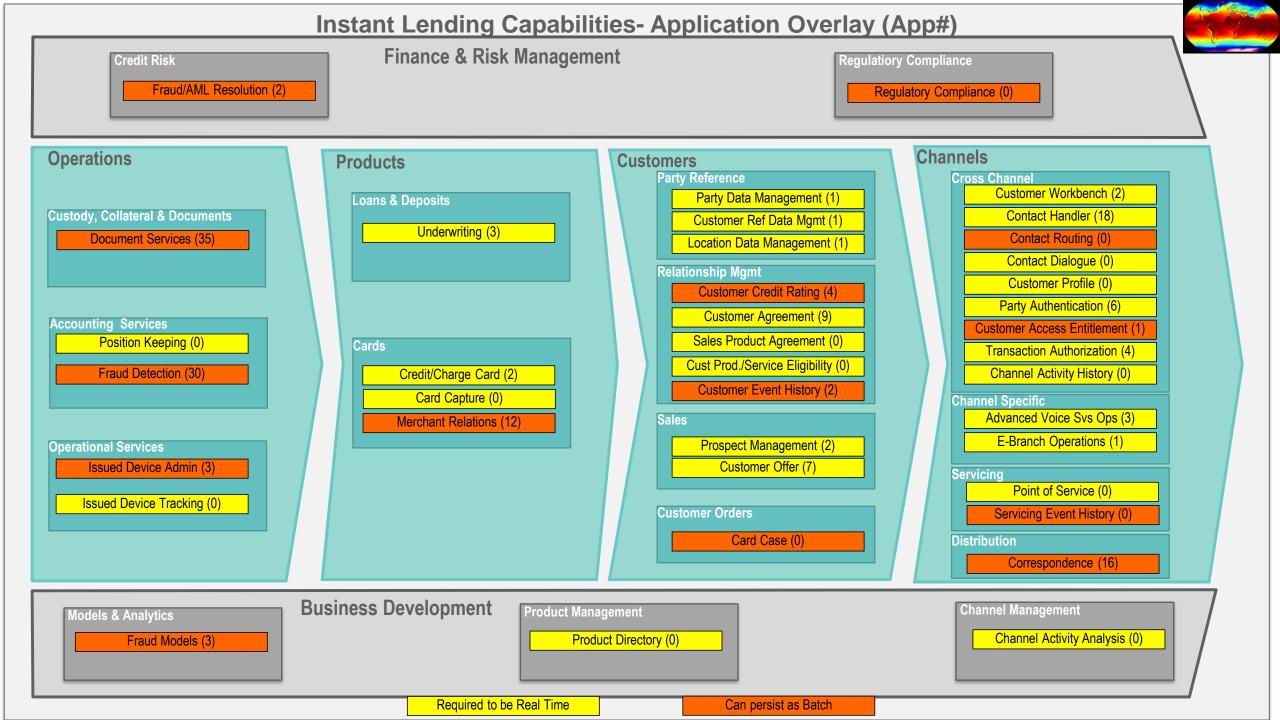
Product Directory

Directory

Channel Activity Analysis

Required to be Real Time

Can persist as Batch



Instant Lending Capabilities- Application Overlay (Acquisition) **Finance & Risk Management** Credit Risk **Regulatiory Compliance** Fraud/AML Resolution Regulatory Compliance **Operations** Channels **Products Customers Party Reference Cross Channel** Customer Workbench Party Data Management **Loans & Deposits Custody, Collateral & Documents** Contact Handler Custmer Ref Data Mgmt **Document Services** Contact Routing Underwriting **Location Data Management** Contact Dialogue Relationship Mgmt Customer Profile Customer Credit Rating Party Authentication **Customer Agreement** Accounting Services **Customer Access Entitlement** Position Keeping Sales Product Agreement Cards **Transaction Authorization** Cust Prod./Service Eligibility Channel Activity History Credit/Charge Card Fraud Detection Customer Event History Card Capture **Channel Specific** Advanced Voice Svs Ops Sales **Merchant Relations** E-Branch Operations Prospect Management **Operational Services** Issued Device Admin Customer Offer Servicing Point of Service Issued Device Tracking **Customer Orders** Servicing Event History Card Case Distribution Correspondence **Business Development Channel Management Product Management** Focus Models & Analytics ACAPS COService **Channel Activity Analysis** Fraud Models **Product Directory** Blaze Acq