# University of California Riverside

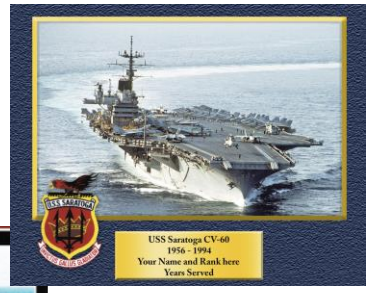
## Attain Data Services

May 31, 2024

# Introductions

# Introduction

Attain Data Services: Jason Hunter – Jason.hunter@attainpartners.com – Mobile: +1 (720) 254-4567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Children's Hospital Colorado

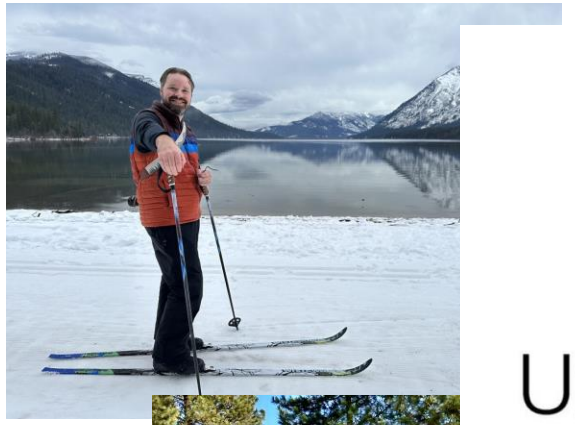
Sun microsystems

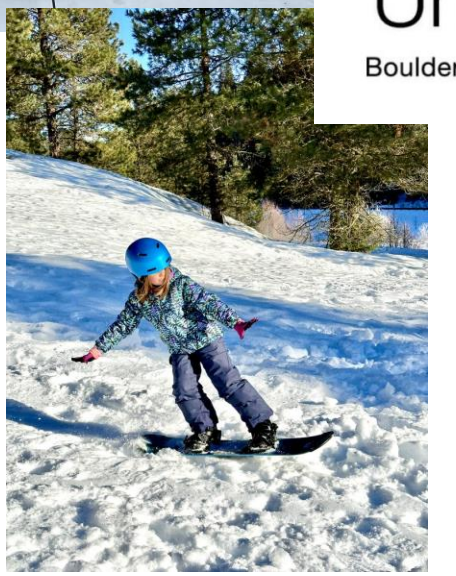
ORACLE

Interests

# Introduction

Attain Data Services: Ilya Pinchuk– iapinchuk@attainpartners.com – Mobile: +1 (503) 983-8261





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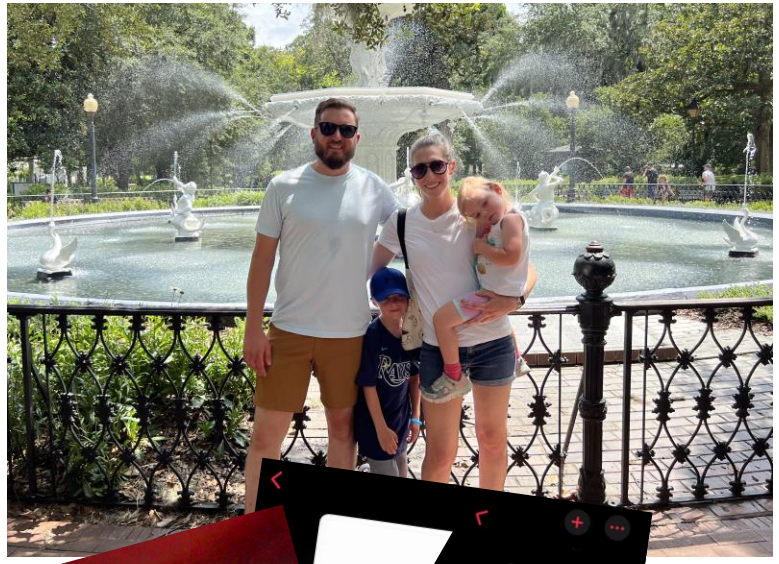
Oregon State University

University of Idaho

# Introduction

Attain Data Services: Matt Roush– mvroush@attainpartners.com – Mobile: +1 (704) 564-6552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# Who Are We (No, Really)


- Who we are:
  - Jason Hunter – jmhunter@attainpartners.com
  - Ilya Pinchuk – iapinchuk@attainpartners.com
  - Matt Roush - mvroush@attainpartners.com

- Who are you and why is data your jam?
- …AND why is data fun to you?

| Michael Debaise | Nikola Ugarkovic |
|---|---|
|  |  |
| Data Services Data Analyst | World Team Data Engineer |
| 3+ years leading Salesforce implementations and data migrations at Attain Partners & 16+ years Web Design and Application Administration experience | 3+ years API integration development, design, and implementation using Mulesoft |

# Agenda

- Introductions
- Teamworking & Data Strategy Activities
- Integration Process
- Strategy for Data Quality
- Integrations Best Practices
- Digital Workbook
- Roles & Responsibilities

# Warning: You may suffer from INFORMATION OVERLOAD!

# Teamworking & Data Strategy Activities

# Data Services & Best Practices

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| | |
|---|---|
| Gain Alignment & Understanding of an Institution's Overall Strategy | Assess Data & Project Governance |
| Assess the Maturity Level of Analyses & Data (data health check) | Initiate a Data Strategy Roadmap & Health Score |
| Review Data Architecture & Technology | Understand Data Analysis & Reporting Requirements |
| Culture Change & Acceptance | Work hard but have fun! |



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# Data Services Roles & Responsibilities

## UCR Data Team

### Data Team Lead

- Serves as point of contact
- Deep understanding of UCR data
- Committee liaison, can escalate quickly if needed

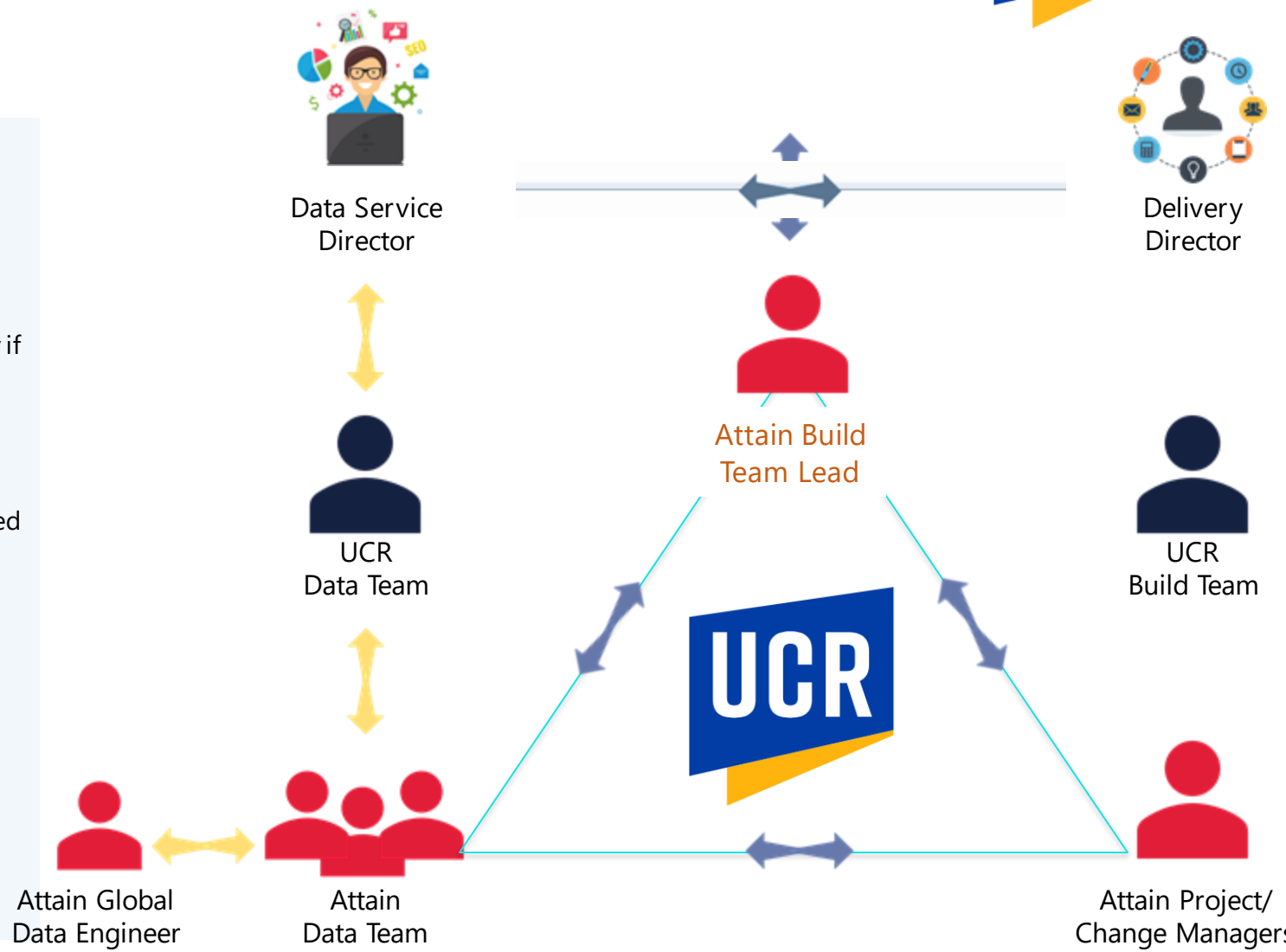
### Data Analyst

- Helps us understand data structures & layouts of systems that will be integrated with the CRM
- Assists with technical questions on how data is stored and tables being joined

### Integration Team Lead

*(may be a separate resource from Data Team Lead)*

- Works closely with Technical Architect
- Validates integration requirements
- Oversees and supports build and deployment of integrations



# Migration Process

# Data Migration Process

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**Requirement Analysis**

**Migration Design**

**Migration Build**

**Mock/ Validation/ UAT**

**Production Deployment**



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# Data Migration Requirement Analysis

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**Key Activities**

- Landscape Assessment
- Data Questionnaire
- Risk Identification
- Generate Migration Scope
- Develop Migration User Stories
- Source System Analysis
- Data Quality Assessment
- Gap Analysis
- Object Data Mapping
- ETL Requirements
- Data Security Requirements

Migration Design



Migration Build



Mock/ Validation/ UAT



Production Deployment



## Deliverables

- Object Level Mapping
- Migration Requirement Document
- Data Quality Assessment Report



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# Migration Design

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Requirement Analysis



**Key Activities**

- Finalize Migration Approach
- Request Data Extract
- Database Table Design
- Data Quality Improvement Strategy
- Transformation Cleaning, Standardization, Match, Merge, and Deduplication Strategy
- Finalize Detailed Source to Target Mapping
- Change Data Capture and Delta Load (If App)
- Pipelines, Dataflows Design
- Develop Data Test Cases
- Develop Functional Test Cases
- Environment Planning

Migration Build



Mock/ Validation/ UAT



Production Deployment



**Deliverables**

- Migration Design Approach
- Source to Target Transformation Logic
- ETL/ELT Pipelines Design Document
- Data and Functional Test Cases



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# Migration Build

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Requirement Analysis



Migration Design



## Key Activities

- Build Data Load Jobs
- Build Transformation Jobs
- Build Target Load Jobs
- Test ETL Jobs
- Review Data Stats and Job Performance
- Offshore Review with Attain
- Rework and Defects (Tracked in Jira)
- Move Code to GitHub
- Generate End-to-End Data Migration Task List

**Recommended Technology**

- Attain SaaS/PaaS (2024)
- MuleSoft
- Azure

Mock/ Validation/ UAT



Production Deployment



## Deliverables

- Data Migration Code/Build
- Test Results
- Defects Tracking



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# Data Migration Mock/Validation/UAT

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Requirement Analysis



Migration Design



Migration Build



## Key Activities

- Perform Mock-1 Migration w/ Internal Validation
- Gather UAT Feedback
- Rework and Defects
- Perform Mock-2 Migration w/ Internal Validation
- Gather UAT Feedback
- Rework and Defects
- Perform Final Mock-3 Migration w/ Internal Validation
- Gather UAT Feedback
- Rework and Defects
- Finalize Data Deployment Task List

Production Deployment



## Deliverables

- ETL Loads and Stats
- Test Results
- Documentation, Cataloging & Tracking



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# Data Migration Production Deployment

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Requirement Analysis



Migration Design



Migration Build



Mock/ Validation/ UAT



**Key Activities**

- Perform Database backup(s)
- Cutover Plan/ Blackout Period
- Execute Data Deployment Task List
- Post Deployment Validation
- Go Live Communication
- Delta Data Load

**Deliverables**

- Data Migration Code/Build
- Test Results
- Defects Tracking



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# Integration Process

# Integration Process

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**Requirement Analysis**

**Integrations Design**

**Integrations Build**

**Validation/ UAT**

**Production Deployment**



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# Integration Requirement Analysis

## Key Activities

- Current-State Integration Assessment
- Integration Questionnaire
- Risk Identification
- Generate Integration Scope
- Develop Integration User Stories
- Source System Analysis
- Data Quality Assessment
- Gap Analysis
- Object Data Mapping
- ETL Requirements
- Data Security Requirements
- Integration Technology Recommendation

Integration Design



Integration Build



Validation/ UAT



Production Deployment



## Deliverables

- Source-to-target mapping document
- Integration Requirements Document
- Data Quality Assessment Report
- Ongoing Support Plan

# Integration Design

Requirement Analysis



**Key Activities**

- Finalize Integration Approach
- Data Extract
- Database Table Design
- Data Quality Improvement Strategy
- Transformation Cleaning, Standardization, Match, Merge, and Deduplication Strategy
- Finalize Detailed Source to Target Mapping
- Change Data Capture and Delta Load (If App)
- Pipelines, Dataflows Design
- Develop Data Test Cases
- Develop Functional Test Cases
- Environment Planning

Integration Build



Validation/ UAT



Production Deployment



**Deliverables**

- Integration Design Approach
- Source to Target Transformation Logic
- Integration Pipelines Design Document
- Data and Functional Test Cases
- Self-Repairing Plan
- Divergent Plan
- Deployment Procedures

# Integration Build

Requirement Analysis



Integrations Design



**Key Activities**

- Build Data Load Jobs
- Build Transformation Jobs
- Build Target Load Jobs
- Test Integration Jobs
- Move Code to GitHub
- Generate End-to-End Data Integration Task List

Validation/ UAT



Production Deployment



**Deliverables**

- Data Migration Code/Build
- Test Results
- Defects Tracking

# Integration Validation/UAT

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Requirement Analysis



Integration Design



Integration Build



**Key Activities**

- Internal Validation
- External Validation via UAT with client
- Feedback and issue resolution (Jira)
- Final Internal Validation w/ resolved issues
- Finalize Data Deployment Task List

Production Deployment



**Deliverables**

- Integration Performance Metrics
- Test Results
- List of identified & resolved issues (Jira)



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# Integration Production Deployment

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Requirement Analysis



Integration Design



Integration Build



Validation/ UAT



## Key Activities

- Deployment of Integration Configuration into Production
- Post Deployment Validation
- Internal Testing of Deployed Integrations
- Final External Validation & First-Time Run of Integrations
- Go Live Communication

## Deliverables

- Delivered Integration List w/Data Dictionary
- Integration Processing Diagram
- Integration Deployment Diagram
- Integration Performance Metrics
- Monitoring plan



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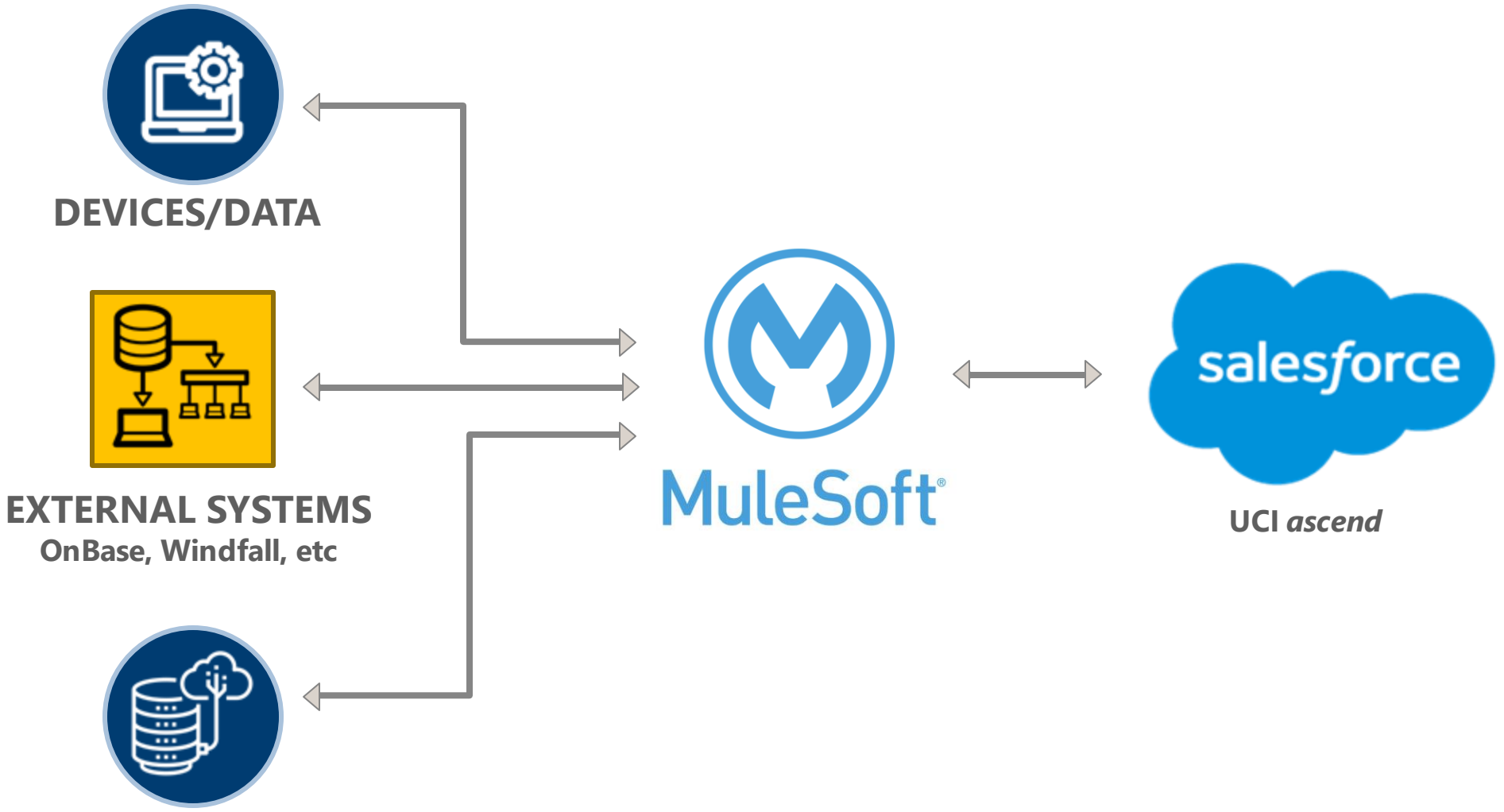
# Integration Architecture Design




- ✓ Bi-directional integration between Salesforce and external systems
- ✓ Mulesoft as single-source ETL tool
- ✓ Use established APIs when possible

# Strategy for Data Quality

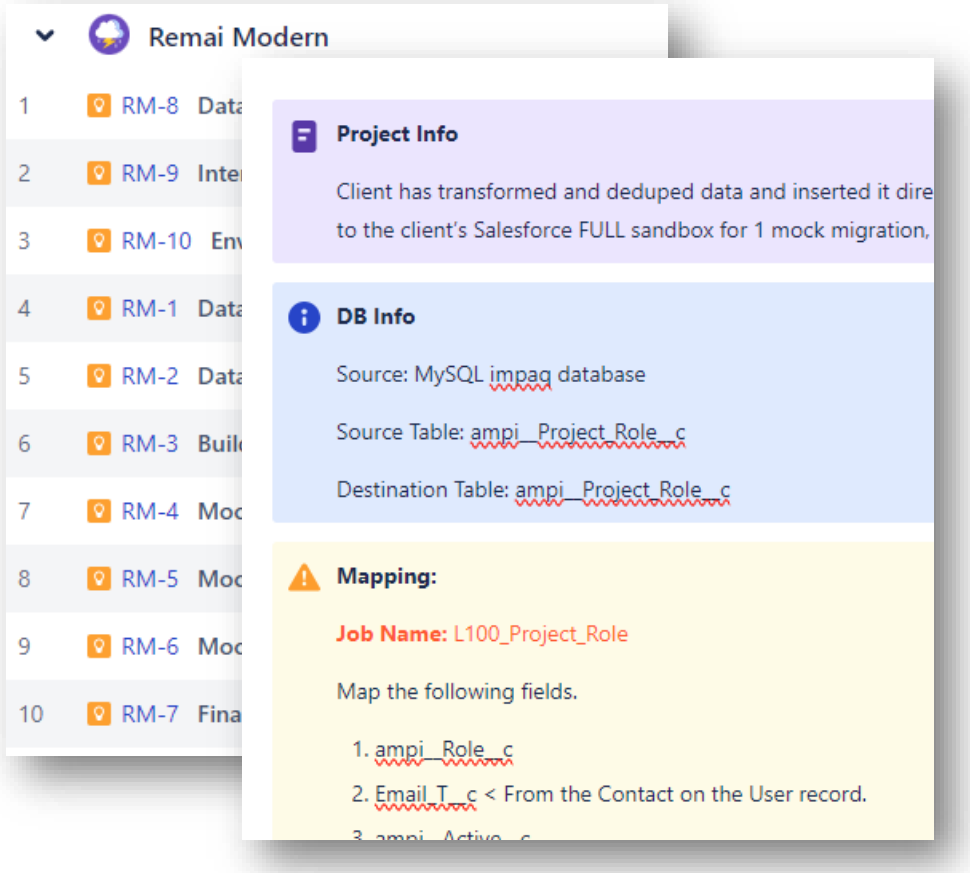
# Strategy for Data Quality

| DQ parameter | DQ issue | DQ Assessment | DQ rule |
|---|---|---|---|
| **Completeness** | | | |
| Data Completeness | Partial Information | Missing Data Checks | Data Audit Check Rules |
| Data Density | Null Values | Null Value Checks | Data Audit Checks Rules |
| **Conformance** | | | |
| Data Accuracy & Conformance | Wrong Data/ Wrong field usage/ Out of boundary values, Misspellings/ Dummy data | Domain Validations &Data Validations | Data Cleansing Rules |
| Data Format | Wrong data type, Wrong data format | Data Format Checks | Data Standardization Rules |
| Data Rule Conformance | Non-conformance to data rules | Data Rule Validations | Data Validation Rules |
| **Integrity** | | | |
| Identity | Difficult to identify | Identification Checks | Data Identity Rules, Matching Rules |
| Uniqueness | Data duplication | Data Duplication Checks | Data Merging & De-duplication Rules |
| Data Integrity | Data Integrity & Reference check Violations | Data Integrity & Relationship checks | Data Integrity Check Rules |
| **Consistency** | | | |
| Uniformity | Inconsistent data | Consistency Checks | Data Standardization & Cleansing Rules |
| Timeliness | Not up to date data | Data Refresh Checks | Data Administration Rules |

# Digital Workbook

# Digital Workbook: How We Track

- Jira
  - Attain Data Services uses Jira to track all integration activities throughout planning, design and build.
  - Jira tickets are used to track and resolve issues as they come up in data integration validation process.
- Confluence
  - Attain Data Services uses Confluence as a digital workbook, tracking all data integration methodology, policies and procedures, project tracking and serves as a historical record of integration work performed for UCR.



# Roles & Responsibilities

# Example RACI

## Design

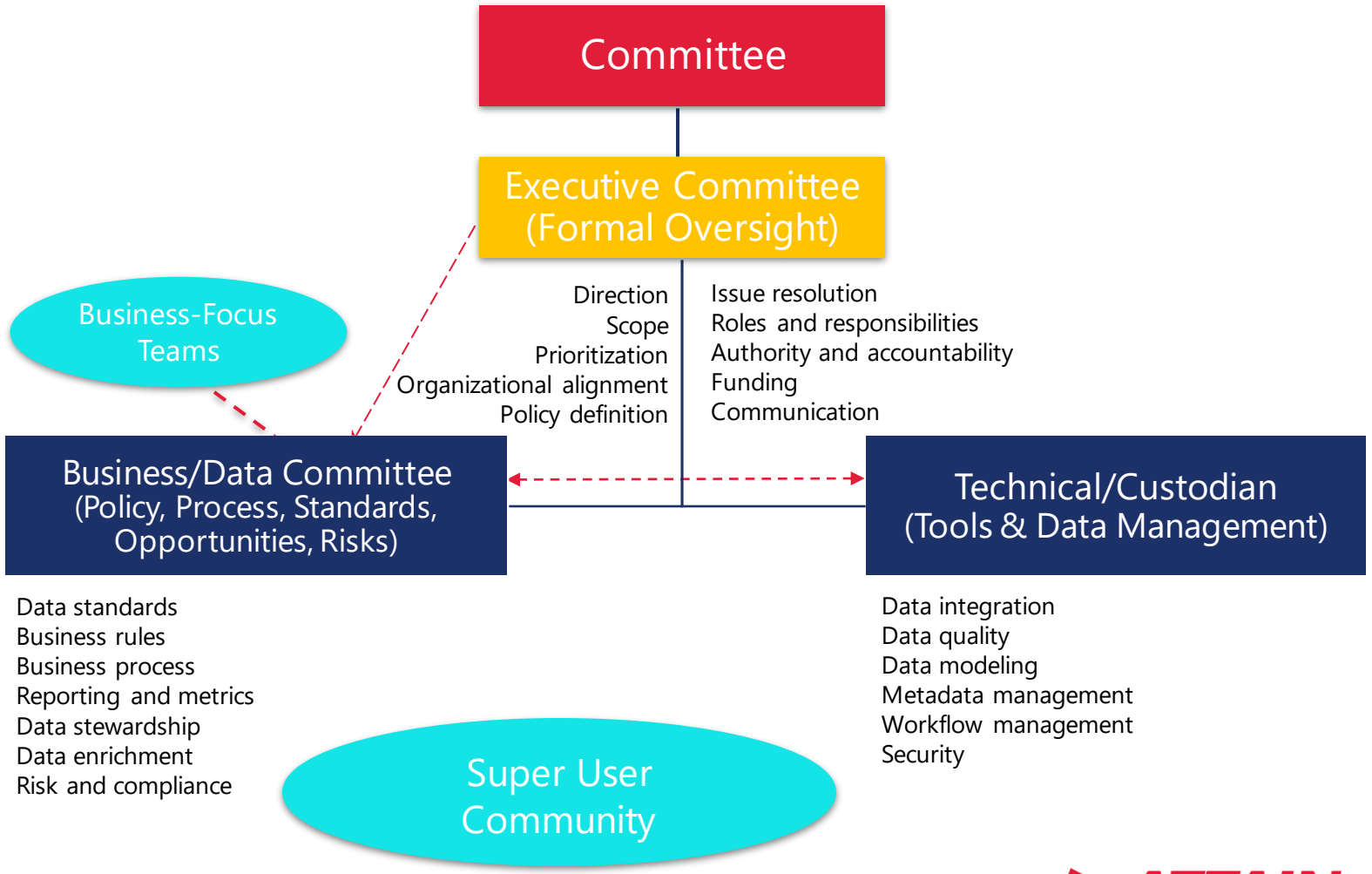
**R**: Responsible, **A**: Accountable, **C**: Consulted, **I**: Informed
**AP**: Attain Partners, **D**: Offshore, **C**: Customer

| Phase | R | A | C | I | Roles | Deliverables | Duration |
|---|---|---|---|---|---|---|---|
| **Migration Design** | | | | | | **1.** | |
| Finalize Data Migration Approach and Design | D, AP | D, AP | AP | C | •0.25 Project Manager - Onsite [AP]<br>•1 CRM Functional Consultant - Onsite [AP]<br>•0.5 Data Lead - Onsite<br>•0.25 Data Lead - Offshore<br>•1 Data Engineer - Offshore<br>•0.5 Infrastructure Engineer [TBD]<br>•0.25 Engagement Manager - Offshore | 1.Migration Design Approach<br>2.Update Source-to-Target Mapping sheet with Transformations logic<br>3.ETL/ELT Pipelines Design Document<br>4.Data Test Case and Functional Test cases | •2 weeks (single source w/o CDC)<br>•3 weeks (single source with CDC)<br>•3 weeks (2 sources w/o CDC)<br>•5 weeks (2 or more complex sources with CDC) |
| Data Extraction | D,AP | D | AP | AP | | | |
| Migration /ETL Physical tables, Design (Temp, Stage and Target Tables) | D,AP | D | D | AP | | | |
| Apply DQM strategy to DQ issues | D,AP | D | D | AP | | | |
| Transformation - Data Cleaning, Standardization, Match, Merge, Deduplication | D,AP | AP | AP | AP | | | |
| Low Level Source to Target Mapping Finalization | D,AP | AP | C | C | | | |
| CDC/Delta Load (Optional) | D,AP | AP | AP | AP | | | |
| Pipelines, Dataflows Design | D,AP | D | AP | AP | | | |
| Testing Approach | D,AP | AP | AP | C | | | |
| Data Test Cases | D,AP | D | AP | C | | | |
| Functional Test Cases | AP | AP | C | D | | | |
| Environment Setup – Dev, QA and Prod | D,AP | AP | C | D | | | |

# Appendix

# Data Governance

# Data Services - Data Governance

# Data Strategy, Governance and Management

*Attain's **Data Strategy** Services offers clients industry-leading expertise to help define a clear and actionable Data Strategy that is aligned with the overall Business Strategy and supported by effective Data Governance and Data Management practices.*

- *Data Strategy – How does Data play a role in the Organization's overall Business Strategy?*
- *Data Governance – How does Leadership oversee the implementation of the Data Strategy?*
- *Data Management – Do daily operations support the Strategy and Governance objectives?*
- *Communication – Are employees and stakeholders aware and informed?*

| Data Strategy | Data Governance | Data Management | Communication/Adoption |
|---|---|---|---|
| **Key Activities**<br>• Evaluate current state<br>• Recommend future-state<br>• Develop a plan/roadmap for implementing future state<br>• The capabilities within Data Strategy include:<br>  • A clear understanding of the organization's overall business strategy<br>  • An articulation of how data plays a role within the organization's business strategy | **Key Activities**<br>• Evaluate current state<br>• Recommend future-state<br>• Develop a plan/roadmap for implementing future state<br>• The capabilities within Data Governance include:<br>  • Roles and Responsibilities<br>  • Prioritization process<br>  • Mature business cases<br>  • A plan/roadmap | **Key Activities**<br>• Evaluate current state<br>• Recommend future-state<br>• Develop a plan/roadmap for implementing future state<br>• The capabilities within Data Governance include:<br>  • Thorough and accurate standard operating procedures<br>  • Measurable data health goals<br>  • Data Management Artifacts (e.g., data dictionary, knowledge management) | **Key Activities**<br>• Developing a mature communication plan to inform stakeholders about the organization's overall data strategy and the plan for governing and managing the strategy |
| **Deliverables**<br>• Mission, vision, and goals for the organization<br>• A multi-year data strategy to support the organization's business strategy<br>• Identifying a Data Strategy champion<br>• Funding to support the Data Strategy<br>• Alignment with the organization's other key strategies such as Sales, Marketing, Product, Service, Technology, Talent Management, and Information Security | **Deliverables**<br>• Data Governance model<br>• RACI<br>• Business cases<br>• Prioritization process | **Deliverables**<br>• Standard Operating Procedures<br>• Training plans<br>• Job descriptions<br>• Measurable success criteria<br>• Data dictionaries<br>• Knowledge management | **Deliverables**<br>• Data Communication Plan |

# Data Governance – Roles & Responsibilities

**Executive Council**
**Roles & Responsibilities**

- Approve data standards, policy, business and sharing rules
- Set goals for future state of data management and system capabilities
- Resolve issues escalated by Business Committee
- Exercise authority and control over the Data Practice
- Approve and ensure accountability for roles and responsibilities within governance structure, including associated project teams and individuals
- Provide funding recommendations to the Investment Committee
- Lead organizational change management
- Approve and uphold data sharing standards and policy with internal and external partners

**Business Committee**
**Roles & Responsibilities**

- As appropriate join and/or lead project teams to work directly on governance tasks
- Prioritize data governance projects (e.g., data quality, security, etc.)
- As directed by the executive committee, provide recommendations and implement changes to business process, rules, and other data management practices/efforts
- Ensure legal and other compliance standards are followed
- Manage data sharing agreements as defined by negotiated operating norms
- Monitor and regularly review data quality metrics
- Create data standards and business rules; ensuring all documentation is written and maintained
- Communicate and champion established standards and policies
- Escalate issues that cannot be resolved to the Executive Committee
- Negotiate data sharing standards and policy with partner business units

**Technical Delivery Team**
**Roles & Responsibilities**

- As appropriate join and/or lead project teams to work directly on governance tasks
- As directed by the executive committee, review technology solutions and develop recommendations for technical solutions, standards, and other data management practices/efforts
- Ensure technical support of legal and other compliance standards is provided
- Escalate issues that cannot be resolved to the Executive Committee
- Ensure alignment of Data Practice with other Attain Practice Areas

# Integrations Best Practices

# Data Integration, Best Practices

- Self-Repairing Capability
  - In the context of data integration, the process is monitored with the possibility of intervention in a fully automated manner. However, for integrations, relying on human intervention is insufficient. Integrations are designed to operate autonomously, ensuring smooth restarts after failures, provided there are no environmental changes. The code is programmed to independently verify and rectify states, prioritizing the ease of the data operations. Persistent issues may indicate potential environmental changes, prompting intervention by developers. This approach optimizes operations, simplifies run books, and reduces the need for late-night assistance calls.
- Divergent Planning Approaches
  - Another aspect to contemplate when developing integrations, a concern absent in migrations, is the concept of code handover. In migrations, the standard expectation is to execute the migration during the go-live phase and address any subsequent issues. However, in the context of data integrations, this scenario may vary. Irrespective of whether post go-live intervention is required, the intention is for integration jobs to run indefinitely. Thus, there's a need to factor in deployment strategies and formulate a long-term support plan.
- Deployment Procedures
  - Generally, unless constrained by policies, data migrations are executed in the same environment as the coding. The client securely provides migration data, and coding takes place on the development server. For go-live, a new dataset is requested, overwriting the source data with the updated information, and the production migration is executed on the development server. This practice, however, is not applicable to integrations. Separate environments for development, production, and potentially QA, UAT, and production support are essential for integrations. The go-live plan must involve setting up the new environment and deploying to it. Establishing a production environment and deploying code may include acquiring new hardware, obtaining software licenses, installing software, configuring the environment, provisioning users, presenting to architecture review boards, conducting code reviews, and other tasks. It is crucial to understand and include the production code deployment procedures in the plan.
- Planning for On-going Support
  - Initiating support planning begins with the selection of a product. In migrations, we handle the coding and execution. However, with integrations, ongoing support often falls on our client or another group. Therefore, it's crucial to choose a product (ETL tool or middleware) that the support team is familiar with and comfortable supporting. Additionally, we must comprehend the support team's scheduling tool, job monitoring processes, error-logging standards, required documentation, coding standards, and any other elements necessary for supporting our code within their existing processes. Early involvement of the support team, understanding their requirements, and planning accordingly are essential steps in this process.

# Expanded Data Migration Process

| Requirement Analysis | Migration Design | Migration Build | Mock/ Validation/ UAT | Production Deployment |
|---|---|---|---|---|
| **Key Activities**<br>• Landscape Assessment<br>• Data Questionnaire<br>• Risk Identification<br>• Generate Migration Scope<br>• Develop Migration User Stories<br>• Source System Analysis<br>• Data Quality Assessment<br>• Gap Analysis<br>• Object Data Mapping<br>• ETL Requirements<br>• Data Security Requirements | **Key Activities**<br>• Finalize Migration Approach<br>• Request Data Extract<br>• Database Table Design<br>• Data Quality Improvement Strategy<br>• Transformation Cleaning, Standardization, Match, Merge, and Deduplication Strategy<br>• Finalize Detailed Source to Target Mapping<br>• Change Data Capture and Delta Load (If App)<br>• Pipelines, Dataflows Design<br>• Develop Data Test Cases<br>• Develop Functional Test Cases<br>• Environment Planning | **Key Activities**<br>• Build Data Load Jobs<br>• Build Transformation Jobs<br>• Build Target Load Jobs<br>• Test ETL Jobs[1]<br>• Review Data Stats and Job Performance<br>• Offshore Review with Attain<br>• Rework and Defects (Tracked in Jira)<br>• Move Code to GitHub<br>• Generate End-to-End Data Migration Task List[2]<br>• Technology recommended:<br>  • Attain SaaS/PaaS (2024)<br>  • MuleSoft<br>  • Azure | **Key Activities**<br>• Perform Mock-1[3] Migration w/ Internal Validation<br>• Gather UAT Feedback<br>• Rework and Defects (Tracked in Jira)<br>• Perform Mock-2[3] Migration w/ Internal Validation<br>• Gather UAT Feedback<br>• Rework and Defects (Tracked in Jira)<br>• Perform Final Mock-3[3] Migration w/ Internal Validation<br>• Gather UAT Feedback<br>• Rework and Defects (Tracked in Jira)<br>• Finalize Data Deployment Task List | **Key Activities**<br>• Perform Database backup(s)<br>• Cutover Plan/ Blackout Period<br>• Execute Data Deployment Task List<br>• Post Deployment Validation<br>• Go Live Communication<br>• Delta Data Load |
| **Deliverables**<br>• Object Level Mapping<br>• Migration Requirement Document<br>• Data Quality Assessment Report | **Deliverables**<br>• Migration Design Approach<br>• Source to Target Transformation Logic<br>• ETL/ELT Pipelines Design Document<br>• Data and Functional Test Cases | **Deliverables**<br>• Data Migration Code/Build<br>• Test Results<br>• Defects Tracking | **Deliverables**<br>• ETL Loads and Stats<br>• Test Results | **Deliverables**<br>• Migration Deployment Diagram<br>• ETL Loads and Stats |
| **Estimate Baseline: 15% of total** | **Estimate Baseline: 30% of total** | **Estimate Baseline: 20% of total** | **Estimate Baseline: 20% of total** | **Estimate Baseline: 15% of total** |

**Attain's **Data Migration** Services provide clients with a proven approach for migrating data from legacy platforms to new state of the art solutions. The proprietary Data Migration methodology accounts for every step in a complex system migration, from initial requirements and analysis through system launch.*

# Data Integrations Process

| Requirement Analysis | Integrations Design | Integrations Build | Validation/ UAT | Production Deployment |
|---|---|---|---|---|
| **Key Activities**<br>• Current-State Integration Assessment<br>• Integration Questionnaire<br>• Risk Identification<br>• Generate Integration Scope<br>• Develop Integration User Stories<br>• Source System Analysis<br>• Data Quality Assessment<br>• Gap Analysis<br>• Object Data Mapping<br>• ETL Requirements<br>• Data Security Requirements<br>• Integration Technology Recommendation | **Key Activities**<br>• Finalize Integration Approach<br>• Data Extract<br>• Database Table Design<br>• Data Quality Improvement Strategy<br>• Transformation Cleaning, Standardization, Match, Merge, and Deduplication Strategy<br>• Finalize Detailed Source to Target Mapping<br>• Change Data Capture and Delta Load (If App)<br>• Pipelines, Dataflows Design<br>• Develop Data Test Cases<br>• Develop Functional Test Cases<br>• Environment Planning | **Key Activities**<br>• Build Data Load Jobs<br>• Build Transformation Jobs<br>• Build Target Load Jobs<br>• Test Integration Jobs<br>• Move Code to GitHub<br>• Generate End-to-End Data Integration Task List | **Key Activities**<br>• Internal Validation<br>• External Validation via UAT with client<br>• Feedback and issue resolution (Jira)<br>• Final Internal Validation w/ resolved issues<br>• Finalize Data Deployment Task List | **Key Activities**<br>• Deployment of Integration Configuration into Production<br>• Post Deployment Validation<br>• Internal Testing of Deployed Integrations<br>• Final External Validation & First-Time Run of Integrations<br>• Go Live Communication |
| **Deliverables**<br>• Source-to-target mapping document<br>• Integration Requirements Document<br>• Data Quality Assessment Report<br>• Ongoing Support Plan | **Deliverables**<br>• Integration Design Approach<br>• Source to Target Transformation Logic<br>• Integration Pipelines Design Document<br>• Data and Functional Test Cases<br>• Self-Repairing Plan<br>• Divergent Plan<br>• Deployment Procedures | **Deliverables**<br>• Data Migration Code/Build<br>• Test Results<br>• Defects Tracking | **Deliverables**<br>• Integration Performance Metrics<br>• Test Results<br>• List of identified & resolved issues (Jira) | **Deliverables**<br>• Delivered Integration List w/Data Dictionary<br>• Integration Processing Diagram<br>• Integration Deployment Diagram<br>• Integration Performance Metrics<br>• Monitoring plan |
| **Estimate Baseline[1]: 15% of total** | **Estimate Baseline[1]: 30% of total** | **Estimate Baseline[1]: 20% of total** | **Estimate Baseline[1]: 20% of total** | **Estimate Baseline[1]: 15% of total** |

*Attain's Data Integration Services provide clients with a proven approach for Integrating data from data source platforms to new state of the art solutions. The proprietary Data Integration process accounts for every step in a complex Integration, from initial requirements and analysis through system launch.*

# Attain Data Services Additional Offerings

# Full Data Health Assessment

# Data Health Assessment

*Attain's **Data Health Assessment** Services offers clients a comprehensive evaluation of their organization's overall approach to managing data and information. This starts with analyzing the alignment between an organization's overall business strategy against its data strategy. The health assessment produces a gap analysis with a corresponding plan and roadmap for remediating issues and capitalizing on opportunities.*

| Strategy | People | Process | Technology | Security |
|---|---|---|---|---|
| **Key Activities**<br>• Review current business strategies<br>  • Sales (Advancement)<br>  • Marketing<br>  • Product / Service<br>  • Technology<br>  • Talent Management<br>  • Information Security | **Key Activities**<br>• Review Current Org Design<br>• Review Current Job Descriptions<br>• Review individual and team goals and success criteria<br>• Conduct team health assessment | **Key Activities**<br>• Review current business process maps for accuracy and completeness<br>• Review Standard Operating Procedures (SOPs) for accuracy and completeness<br>• Review the organization's communication strategies<br>• Data hygiene assessment<br>• Review data retention strategy | **Key Activities**<br>• Evaluate current data architecture<br>• Identify any technology end-of-life risk<br>• Gap analysis between current technology platforms and future state business processes<br>• Review technology management practices (e.g., change control, upgrade strategies, testing strategies) | **Key Activities**<br>• Define Organization Compliance objectives<br>• Audit current data policies |
| **Deliverables**<br>• Working sessions to refine business Mission, Vision, and Business Strategy.<br>• Future state Data Strategy recommendations | **Deliverables**<br>• Future state Org Design<br>• Future state job descriptions<br>• Future state goals and measurement criteria<br>• Team Health Summary report | **Deliverables**<br>• Future state process maps<br>• Future state SOPs<br>• Communication plan<br>• Data hygiene assessment report with findings and recommendations<br>• Future state data retention strategy | **Deliverables**<br>• Future state data architecture<br>• Future state technology platform recommendations<br>• Future state technology management processes | **Deliverables**<br>• Data Policy Audit Summary<br>• Data Policy Plan |

# Example Scorecard

| Catagory | Sub Category | Characteristics | Notes and Examples | Satisfactory | Needs Some Improvement |
|---|---|---|---|---|---|
| **Organizational or Institutional Strategy** | **Technology Strategy** | A technology strategy is aligned with the overall Organizational Strategy. Characteristics should include:<br>*An understanding of whether the current technology capable of supporting the Institution's strategic objectives.<br>*A technology refresh strategy.<br>*Application architecture guiding principles<br>*Resource planning - Is IT staffed to deliver the objectives with the right Leadership and personnel?<br>*Cybersecurity risks and mitigation plans are identified.<br>*A plan for addressing IT and cybersecurity gaps is defined and funded | | A healthy technology strategy is in place. The strategy accounts for characteristics such as:<br>* Aligned with the overall business strategy and prioritized<br>* Technology is refreshed on a frequent basis<br>* IT standards are in place and adhered to for application architecture and design.<br>* IT is sufficiently funded and managed as an asset, not just as an expense.<br>* Resource planning is proactively managed for capacity, skills, career growth, sourcing, etc.<br>* Cybersecurity is proactively managed and embedded in the culture.<br>* Intuitive for end-users | A technology strategy is in place, but not consistently exhibit all of the desi characteristcs:<br>* Aligned with the overall business st and prioritized<br>* Refreshed on a frequent basis<br>* IT standards are in place and adhere application architecture and design.<br>* IT is sufficiently funded and manage asset, not just as an expense.<br>* Resource planning is proactively ma for capacity, skills, career growth, sou etc.<br>* Cybersecurity is proactively manage embedded in the culture.<br>* Intuitive for end-users |
| **Data Governance** | **Leadership Alignment** | The organization has a formal Data Governance Program with charateristics such as:<br>*Roles and Responsibilities clearly defined.<br>*Balanced representation across the organziation at the Leadership level.<br>*Decision-making authority is clearly understood.<br>*A communication plan for messaging key decisions is defined and adhered to.<br>*A prioritization model is in place.<br>*Predictable meeting frequency | | A strong Data Governance practice includes the following characterisitcs:<br>*Roles and Responsibilities clearly defined.<br>*Balanced representation across the organziation at the Leadership level.<br>*Decision-making authority is clearly understood.<br>*A communication plan for messaging key decisions is defined and adhered to.<br>*A prioritization model is in place and | The Data Governance practice does n include some of the following charact<br>*Roles and Responsibilities clearly de<br>*Balanced representation across the organziation at the Leadership level.<br>*Decision-making authority is clearly understood.<br>*A communication plan for messagin decisions is defined and adhered to.<br>*A prioritization model is in place an |

# Reporting

# Executive Reporting

**Deliverables**

- User Guides
- Templates (if needed)
- Interim Analysis Reports
- Integrated dashboards to drive performance
- Consistent monitoring of performance

**Key Action Items:**

- Database design
- Database setup
- Provides executives integrated dashboards to evaluate performance against custom KPIs
- Delivery through any modern BI tool such as PowerBI, Tableau (CRM Analytics), and QuickSight

# Data Exploration

## One-time strategic analysis of institution data

- **Outcome:** Strategic direction based on data
- Provides leaders of an organization a data-driven analysis to inform strategy and answer key questions
- Delivery through consultant selected tools that culminate in leave behind report for the organization
- Key Deliverables:
  - Analysis documents
  - Interim analysis report
  - Final report and recommendations

# Data Science Insights

## Leverage data science to make single variable predictions

- **Outcome:** Understand actions with the largest impact
- Provides organizations predictive insight into specific actions an institution can take to improve outcomes
- Delivery through standard data science tools culminate in leave behind report for the organization
- Key Deliverables:
  - Analysis documents
  - Interim analysis report
  - Final report with actions analysis

# Core Technology

## Core, highly available, extendable as needed

- Languages:
  - **Web:** JavaScript, TypeScript, .NET, C#, C++, Java, HTML5 / CSS
  - **Frameworks:** Angular, React, Node.JS
  - **Mobile:** Android / Kotlin, iOS / Swift
- Data
  - **Storage:** MongoDB, SQL Server, PostgreSQL, DynamoDB, Quickbase, SharePoint
  - **Migration:** Mulesoft, AWS Glue
  - **Data Science:** Python, R, MatLab
  - **Visualization:** PowerBI, Tableau, Quickbase
- Other
  - **QA:** Automated testing (Cypress, Selenium), Regression testing, Performance testing
  - **Hosting:** AWS, Azure

**Note:** We also have significant experience with:

- Serverless architectures using AWS services such as Lamba, AppSync, etc.
- AI tooling for development such as AWS Q and CodeWhisperer