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Integration Strategies

Your Guides:
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Introductions

- Take 5 Minutes
- Turn to a Person Near You
- Introduce Yourself



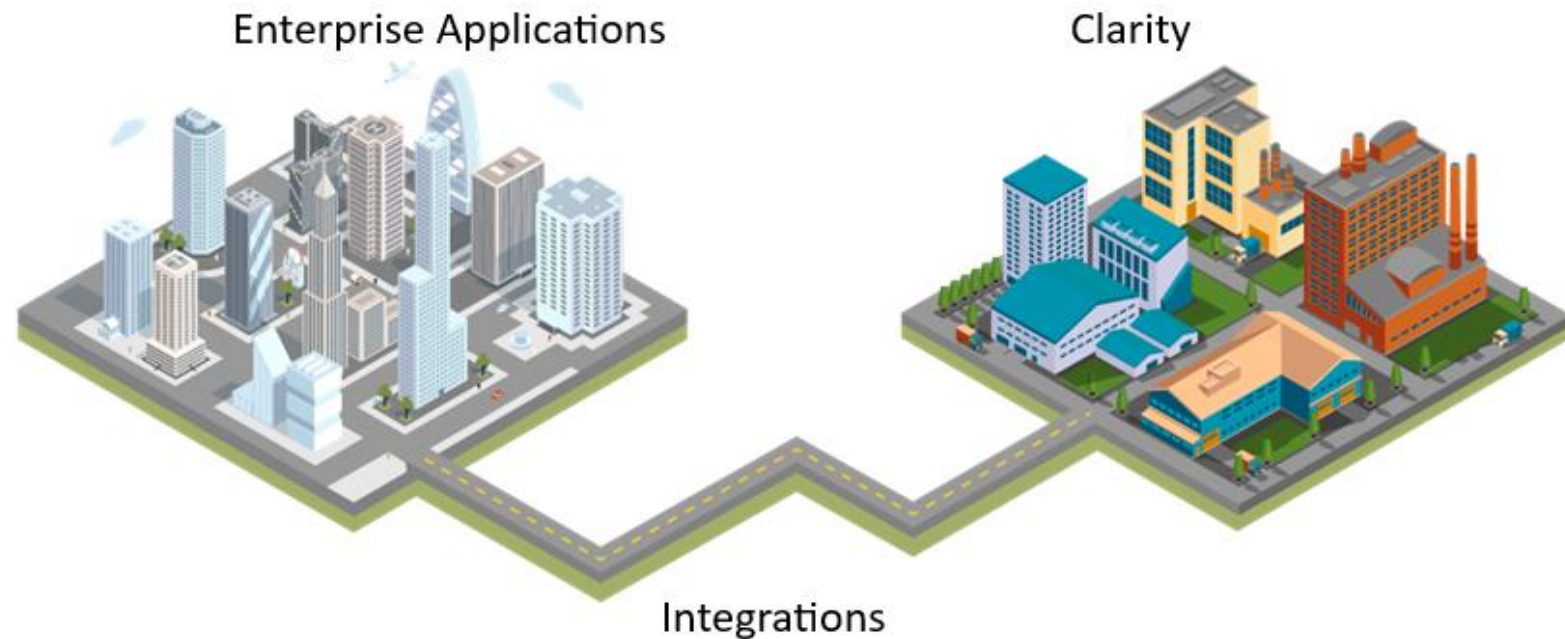
Agenda

- Why Integrate
- Framing the Integration
- Data Exchange Methods
- Real-Time Integrations
- Outbound Batch Integrations
- Inbound Batch Integrations

Introduction

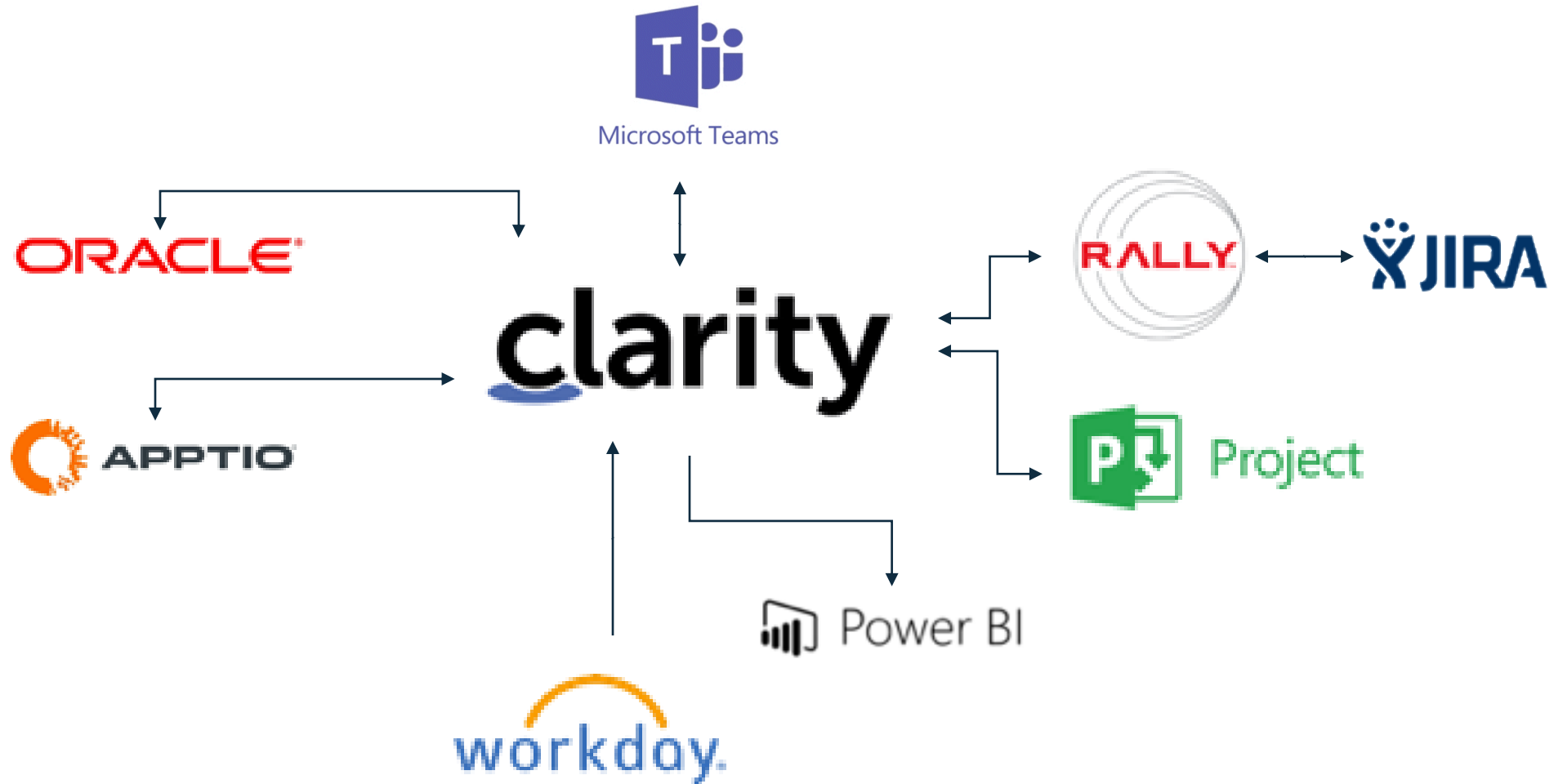
Why Integrate?

- Increasing number of applications with specialized functionality
- Organizations are allowing teams to use their own applications
- Facilitating business process
- Eliminating administrative activities
- Eliminate double entry
- Data consistency
- Proving a one-stop-shop
- Reduction of license costs
- Data is a valuable asset



Reference Architecture

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Most Common Integrations

Agile Tools

- Who: Rally, Jira, VersionOne
- How: API
- What: Project Lifecycle, Time Entry, Capitalization Data

ERP/Financial Systems

- Who: SAP, Oracle, JD Edwards, Lawson, Sage, Great Plains, Infinium, Peoplesoft
- How: Flat file
- What: Direct Expenses, Time Entry, Cost Centers Forecasts, Budgets



AI

- Who: ChatGPT, Gemini, Copilot
- How: API
- What: Project Descriptions, Staffing Decisions



HR/ Resources Systems

- Who: ERP Systems, Active Directory, Workday
- How: Flat file
- What: LDAP/SSO, Users and Resource Data, Organizational Structure,



ITSM

- Who: ServiceNow, Remedy
- How: API
- What: Idea and pipeline management, Ticket Escalation, Enhancement requests

Framing the Integration

Integration Guidelines

? Is there a Single Source of Truth (SSOT)?

- Ensure that everyone uses the same data when making business decisions
- Understand the accuracy and value of the source data
- Differentiate between data creation/maintenance and data usage

? Is the process mature?

- Integrations are built to match process
- You must understand the process and the flow of information
- You must have a solid repeatable process and be able to identify programmatically the exceptions



Don't over-integrate.

- Weigh the cost (one-time and ongoing) vs. benefit of each integration opportunity
- Understand the accuracy of the source data
- Identify the key integration points and invest in doing it correctly

Objective: Get More Out of your PPM Investment!

Framing the Integration

- ? What data is being exchanged?
- ? Directionality (inbound, outbound, bi-directional)?
- ? What is the source of the data?
- ? Which application is considered the source of truth?
- ? Data volume?
- ? Timing (real-time, batch)?

Location, Location, Location

- Is your Clarity system On Premise or SaaS?
- Is the system you are integrating to On Premise or SaaS?
- Understand the Technical Limitations/Restrictions
 - Protocol support (https, SFTP, etc.)
 - Firewall and security restrictions
- Scenarios:
 - Clarity SaaS to SaaS software
 - Common: Most SaaS products have a rich API suite for integrating
 - Clarity On-Premises to On-Premises Software
 - Common: If both products are within your company borders there are more flexible options for integrating.
 - Clarity SaaS to On-Premises Software
 - Uncommon: These integrations are more complex. Most will require security exceptions.

Data Exchange Methods

Data Exchange Options

	REST	XOG / SOAP	ODATA	Flat File
Relevance	Industry Standard	Legacy API	Industry Standard	Industry Standard
MUX Support	Fully supported in MUX	Not supported in MUX		
Message Payload	JSON	XML	JSON	
Authentication	Basic / API Key	Basic	Basic, API Key	SFTP User/Pass or Key
Data Volume	Low	Low	Medium	High
Performance / Scalability	Average	Slow	Average	High
Payload Precision	Good	Poor	Good	Good
Record Selection Capability	Good	Poor	Good	Good
Error Messaging	Good	Poor	Good	Good
Ease of Development	Average	Poor	Average	Easy
Documentation	Good	Poor	Good	Good

Integration Approaches (Real-Time)

Real-Time Integrations



Event based



Small, surgical data exchanges



Typically REST API is the preferred approach



Can be used for inbound or outbound integrations



Distinctly different than batch style integrations

Outbound Integration Approaches (Batch)

Outbound Integration Approaches

	REST	ODATA	Flat File
Description	External tool pulls data using Clarity's REST APIs	External tool pulls data using Clarity ODATA	Clarity produces a flat file for external tool to consume
Data Volume	Small	Medium	Any size
Data Stability	Pagination can result in data inconsistencies	Pagination can result in data inconsistencies	Read consistency ensured by database
Data Source	Transactional tables	Transaction (AWS Only) / DWH	Transaction / DWH
Query Ability (Ability to filter results)	Average (no "dot walking")	Good (custom query supported)	Highly
Response Size	Surgical	Surgical	Surgical
Security	HTTPS	HTTPS	PGP (optional)
Pros	Flexible, industry standard	Flexible, industry standard	Easy to design and test. Highly efficient and scalable.
Cons	Low volume, more difficult to design. Can require many API calls in quick succession	Medium volume, more difficult to design.	Middleware needed to move files

Data Extractor Overview



Purpose

- Efficiently pull data from Clarity into flat files



Used For

- Outbound Integrations
- Feed reporting tools and data warehouses



Advantages

- Highly configurable (only code required is a query)
- Highly performant, efficient, scalable
- Dynamically produce files based on the provided query
- Avoids Clarity GEL Script limitations / governors
- Standardized asset to avoid redundant GEL scripts that produce data extracts

Inbound Integration Approaches (Batch)

Inbound Integration Approaches

- Preference is to populate all inbound data into a staging table
 - All supporting data is present in Clarity
 - Easier to derive data, apply business logic, validate data, flag “no changes” records
 - SQL makes these steps easier and efficient
- Inbound Integrations built outside of Clarity
 - Not recommended
 - Reliant on another team to maintain
 - Clarity team has limited visibility into logic, errors, and data
 - Requires many API calls to derive data, apply business logic, validate data

Interface Architecture

- Import Data to staging table
- Derive Data
 - Unique Identifiers/Keys between both systems
 - Apply transformation logic and mappings
- Validate Data
 - Confirm derived data meets business rules
 - Ensure data meets Clarity's requirements
- Error Handling and Validation
 - Provide a record status on every record
 - Provide descriptive messages
- Load Data
 - Avoid unneeded data updates
 - Provide granular results and details





Clarity Pulls Data Into Staging Table

	REST API	Flat File
Description	Clarity executes API calls against another application to read data into the staging table	Clarity reads data from a flat file into the staging table
Approach	Modern approach	Battle tested approach used for many years
Development	All APIs are different. Can be complex to implement paging	Easy
Data Stability	Pagination can result in data inconsistencies	Read consistency ensured by database
Availability	Most modern applications provide APIs to pull data from. Firewall restrictions.	Requires a file location that Clarity can read from (SFTP site, network location)
Performance	Varies by application, but substantially slower than a flat file import. Ties up a bg thread.	Fast, efficient, highly scalable

Clarity Pulls Data Into Staging Table

	REST API	Flat File
Import Error Handling	Edge cases can result in records being skipped	Ensures entire dataset is imported and ability to rollback when errors are encountered
Instance Rights Bloat	Low Risk	Low Risk
Security	HTTPS	PGP (optional)

Data Pushed to Clarity Staging Table

-  Recommend REST for this approach
-  Records can be pushed individually or in batches of 50
-  Pros
 - Can be configured to prevent instance rights bloat
 - Does not tie up a bg thread
 - Nice compromise for those that are flat file averse
-  Cons
 - Relatively slow
 - No visibility into records that did not load
 - Need to implement logic to know when data push is complete

Data Processor Overview



Purpose

- Allow users to configure rather than code inbound integrations



Used For

- Inbound Integrations



Advantages

- Allows common integration tasks to be configured
- Implements best practices and standard approaches for integration tasks
- Avoids Clarity GEL Script limitations / governors
- Avoid bloating instance rights table
- Uses a Connection Manager to securely store authentication credentials

Questions?





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