



# Landfolio Regional User Conference

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## Landfolio Integration Case Studies using Microservices

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# Introduction

## Integration Services in the Past

- Typically, large bespoke development efforts
- Time consuming and costly
- What we discovered

## Integration Services in the Present / Future

- Makes use of Microservices Architecture for heavy lifting
- Possibly some smaller bespoke development at the edges
- Lower cost, less time to delivery

## Service Monitoring

- A microservice which monitors other services
- Monitors running or not running
- Monitors service run logs for error / warning messages
- Monitoring results sent to Dashboard
- Allows for rapid identification and resolution

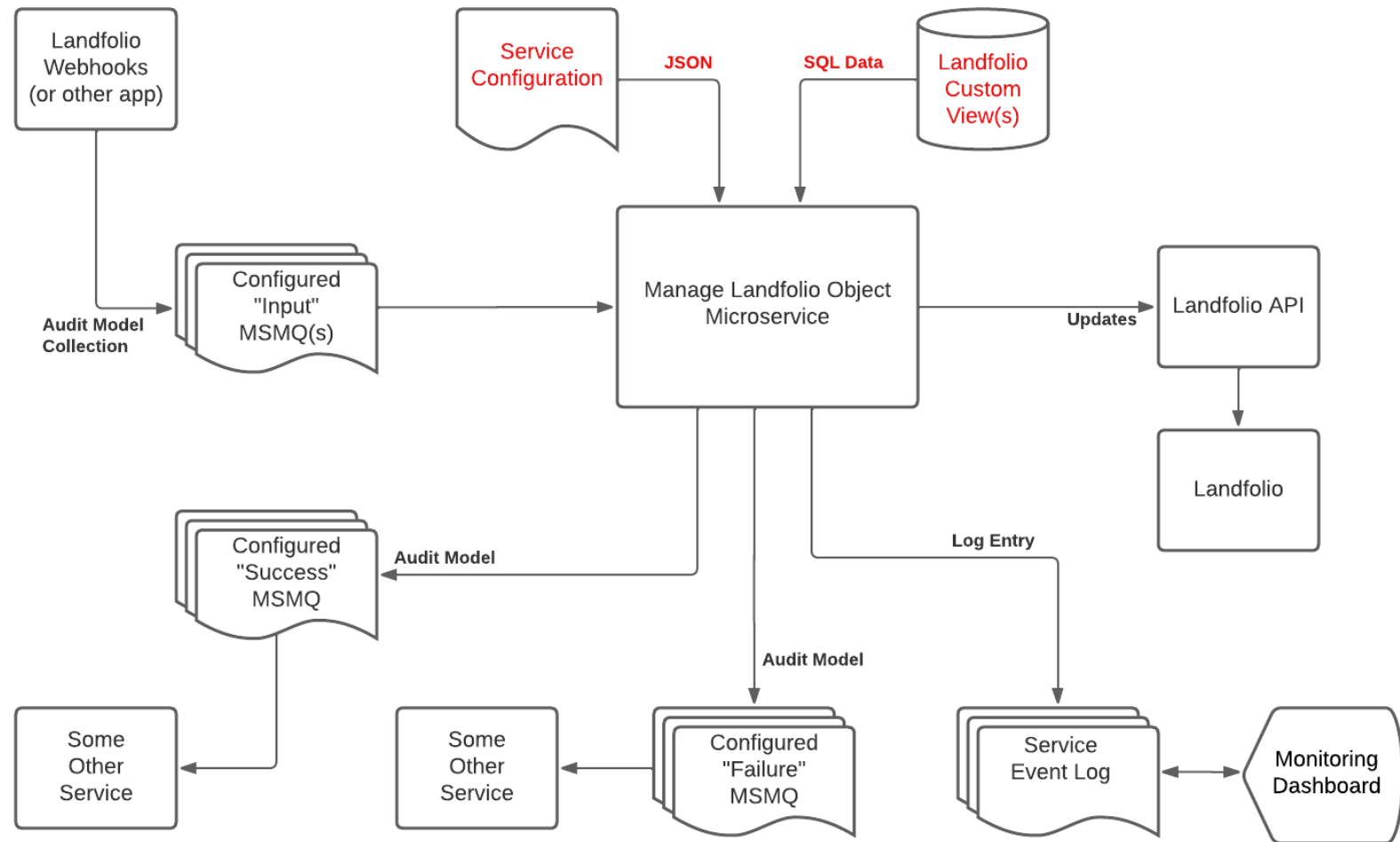
# What is a Microservice?

**Definition:** An architectural approach to software development that makes use of numerous small, independent services which communicate over well-defined interfaces. Each microservice:

- Performs an atomic task OR
- Performs a collection of very closely related atomic tasks
- Performs that task efficiently
- Makes use of a standard interface
- Self-contained, unaware of the existence of other services
- Is well-tested



# Microservices Diagram



# Case Study 1: Adding Payment Line Items using Structured Data

## The Problem

- The Client needs to pull values from Structured Data when creating a payment action for “final tax bill”
- A bespoke solution would require about a week of dedicated effort

< [License](#) > Details

**5811 160 001 01500 0001**

Code: 5811 160 001 01500 0001  
Name: 5811 160 001 01500 0001  
Parties:

Type: Tax Parcel  
Status: Active  
Expiry Date:

General	Tax Data			
Parties (2)	There are 5 items in the list.			
Address	Tax Year	First Payment	Second Payment	Total Tax Amount
Conditions	2024	125.35	356.00	481.35
Shape	2025	165.50	175.00	
Map References (4)	2026	188.00	200.00	
Documents	2027	220.00	225.00	445.00
Reference Codes (1)	2028	225.00	230.00	
Commodities				
Agreements				
Groups (1)				
Related Licenses				
Tax Data				

# Case Study 1: Adding Payment Line Items using Structured Data

## The Solution

- The payment action is created by the business rules engine with no line items
- Webhooks detects this and places a message in the “Add Payment Line Items” queue
- The microservice retrieves the message and the structured data values
- The microservice adds the payment line item, then discards the message
- No bespoke code was created, only configuration

< [Actions](#) > [Edit](#) > [Payment](#)

**5811 160 001 01500 0001**

Code: 5811 160 001 01500 0001

Name: 5811 160 001 01500 0001

Parties:

Type: Tax Parcel

Status: Active

Expiry Date:

### Payment: Final Property Tax

General

Documents

Reference Codes

Discussions

Audit

Created By: 09 Tax Parcel > Final Payment: Property Tax

Trigger Action: Final Property Tax Bill Received

Due Date: 08/15/2028

Accounting Code:

#### Payment

Direction: Payable

General **Items**

There are 1 Payment Items in the list.

1

All	Description	Quantities	Value
<input type="checkbox"/>	Payment: Final Property Tax / 2028	230.00 (Amount)	230.00
Total			230.00

1

# Case Study 2: Create / Update Structured Data

## The problem

- The Client maintains Project data in an existing COTS non-enterprise low-code system
- The Project data must be replicated in Landfolio as Structured Data
- A bespoke solution would require about 3-4 weeks dedicated effort

# Case Study 2: Create / Update Structured Data



## The Solution

- Bespoke development to pull raw low-code system data into a temporary integration table
- This informs the “Manage Structured Data” microservice
- The microservice compares all values in the temporary table to what is in Landfolio
- The microservice adds SD which does not yet exist, updates SD where necessary, and skips SD where no difference exists

The screenshot displays the Trimble Landfolio web application interface. The top navigation bar includes the Trimble logo and the text "landfolio". Below this is a search bar and a breadcrumb trail "Asset > Details". The left sidebar contains a menu with various options, with "Project" highlighted in yellow. The main content area shows the details for "Rt 5", including its status (Active), interest (Construction), type (Project), and official area. A table of project details is shown, with the "Project Details" section highlighted by a red box. The table lists various attributes and their values.

General	Project Details
Project Details	Portfolio Name: NY Dev-CDG
Project Milestones (1)	Project Market: ISO-NE/NYISO
Project Team (1)	DC System Size (MW DC): 6.578
Project WBS	AC System Size (MW AC): 4.975
Project Acreage	Storage Power (MW AC): 0.000
REAP	Grid Integration Details
Parties	WBS Code: GUSWA.21.0128
Shape	Company Code: USYP
Map References	Company Name: AES Rt 5 Storage Solar, LLC
Documents	
Agreements	
Related Assets	
Actions Open	
Actions Closed	



# Case Study 3: Daisy Chain Services

## The Problem

- The Client must collect Compensation & Resettlement data in the field using a mobile device, and import the data to Landfolio
- Importing this data to Landfolio creates numerous business objects and relationships between them
- We must avoid double data entry
- Bespoke development would be prohibitively expensive



# Case Study 3: Daisy Chain Services

## The Solution

- Use the “Mobile Integration Service” to upload Landfolio data to mobile device, perform data collection, and download collected data to Landfolio
- Configure integration microservices in a daisy chain, where output of one service is the input for the next service
- Create Legal Entity → Add Legal Entity as Party to Agreement → Create payment action on Agreement → Add payment line items → etc



ArcGIS Survey123

TEST Exploration Compensation

### Crop Owners Details & Crops Details

**Instructions:**  
Please ensure that all the necessary information is provided for each Crop Owner below. This includes details about the crop owner and the specific crops that they cultivate. If a Landowner also has crop ownership, they should be included as a Crop Owner with all the relevant details about the crops they own.

▼ **Crop Owner Information**

**First Name \***  
John  
Dean

**Last Name \***  
Doe  
van den Heever

**Primary Occupation / Source of Livelihood \***  
Farmer  
Business Analyst

2 of 4

# Microservice Library

## Existing Microservices Library (Create / Read / Update / Delete)

- Assets
- Asset Relationships
- Asset Shapes
- Actions
- Payment Action Line Items
- Conditions
- Documents
- Document Relationships
- Legal Entities
- Legal Entity Relationships
- Reference Codes
- Structured Data



# Key Takeaways

## Microservices Reduce Cost and Time to Implementation

- Each microservice is engineered to do one thing, and do it well
- Microservices do the heavy lifting and hide complexity
- Test once and reuse
- Standard inputs and outputs
- Configuration rather than developing new software
- Custom views using SQL
- Daisy chain for more complex solutions
- Some bespoke development may be required at the edges
- Requirements analysis and solution design are still required
- Monitoring Dashboard for rapid response to issues
- All of the other tools in the Integrations Toolkit are still available



# Sample Monitoring Dashboard

Home > Dashboards > Implementation Engineering > Monitoring - Client List

Search or jump to... ctrl+k

### Data Received From Clients

Client	Sending Logs	Sending Services	Sending Aggregated Logs	Sending Tasks	Sending Versions
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	No	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	No	No
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	Yes	Yes	Yes	Yes	Yes
[Redacted]	No	No	No	Yes	Yes
[Redacted]	Yes	Yes	No	Yes	Yes

Dik asante BEDANKT tesekkurler SALAMAT TAKK grazie Khuplei TAK  
 P a x м e т GRAZAS MERCI Ngiyabonga  
 謝謝 MASI TAK kiitos kammagar SALAMAT Diakuju  
 mahalo SUWUN ありがとう tesekkurler  
 TAK Dik THANK YOU grassie SUWUN  
 HVALA tesekkurler  
 gracias Спасибо! daank GRANTANGI grazie TAKK  
 DAKUJEM TAKK ASANTE Kammagar MERCI daank  
 kammagar Хвала hvala Dik اركش DANKE Grassie  
 kiitos bedankt  
 SUWUN danke DANKE GRAZAS arigato TAK  
 HVALA MERCI  
 daank Dik  
 TAK grazas  
 Dik

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