Deep Dive into the ParcelMap BC
Spatial Alignment Resources

ICI Society Virtual Café

Workshop

June 24, 2021

Presented by

LTSA & Esri Canada

Agenda

ICI Society Virtual Café: ParcelMap BC Spatial Alignment Workshop

- Introduction
- Adoption Transition Steps
- Spatial Improvement Overview
- Case Study: Anytown Adoption of ParcelMap BC
- Step 1: Situation Assessment
- Step 2: Initial Alignment
- Step 3: Ongoing Alignment
- Experience using Data Alignment Workflow Package (DAWp)
- Resources and Q & A
- Wrap Up

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Spatial Alignment Resources: Why & what are they?

ParcelMap BC Spatial Alignment Resources – Why?

[ParcelMap BC AWG](#) identified several Issues related to the alignment of parcel data with other datasets as transitional challenges & opportunities for adopting ParcelMap BC

ParcelMap BC Data Alignment Resources Plan devised to guide the activities of LTSA and partner organisations to ensure these resources meet the needs of Adopters and can be deployed effectively within Adopter organisations.

Goal: Support ParcelMap BC adoption through the delivery of Spatial Alignment Resources to:

1. Achieve initial geometric alignment between ParcelMap BC and local related spatial data sets at Adopter organisations (if necessary); and

2. Maintain alignment between ParcelMap BC and local related data sets, as required, on an ongoing basis at Adopter organisations.

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Spatial Alignment Resources: Why & what are they?

ParcelMap BC Spatial Alignment Resources – What?

Data Alignment Workflow Package (DAWp) Development:

ArcGIS Desktop based workflows and tools to assist Adopters in achieving initial and ongoing spatial alignment of internally maintained data sets with ParcelMap BC.

Third Party Data Sets:

Access to Third Party maintained Data Sets that are "pre-aligned" to ParcelMap BC.

Transition Planning Resource Integration:

Coordinated & centralized access to ParcelMap BC Adoption resources

Implementation Partners:

Coordination of Implementation Partners who can support Adopters in successfully utilising ParcelMap BC Data Alignment Resources

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Data Alignment Workflow Package (DAWp): Overview

ParcelMap BC DAWp – What is it?

Esri Canada's Installer:

Package Components:

DataAlignmentWorkflowPackage

- AddIns
- LayerFiles
- License
- Scripts
- UserGuide
- DataAlignmentWorkflow

esri Canada

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Data Alignment Workflow Package:
User Guide

Version 1.0

Key Workflows:
DAWp Background
Installation & Configuration
Initial Alignment (incl. optional Pre-Alignment)
Ongoing Alignment

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Adoption Transition Steps: Transition Project Management Guide

A **Transition Project Management Guide** has been developed by LTSA to assist organisations with planning and execution of their Transition to ParcelMap BC adoption.

Recommended Transition activities in the guide are presented in a Work Breakdown Structure (WBS) which is broken into two phases: **Planning** & **Execution**.

The Spatial Alignment Resources play an important role in the Transition process in both the Planning & Execution phases.

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ParcelMap BC Adoption
Transition Project Management Guide

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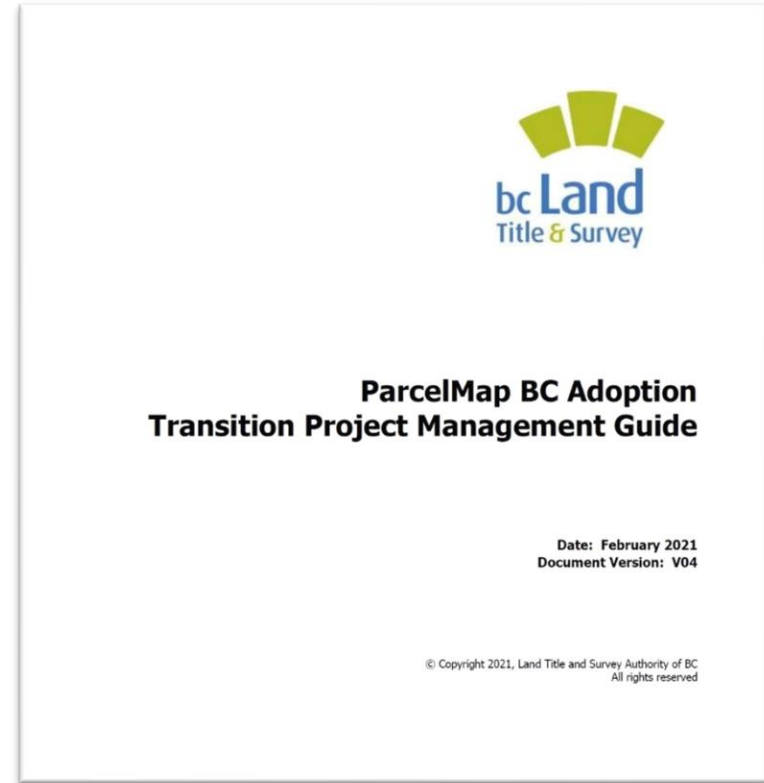
Transition Project Management Guide - WBS

Table 1 – Phase 1 WBS "superset" for a typical ParcelMap BC Transition Plan.

ID	Task Area / Name	Description (Scope)	Notes
Phase 1: Project Planning		Tasks related conducting a current situation assessment, obtaining approval to proceed and planning detailed project activities.	
1.0	**Current Situation Assessment**	**Perform a Situation Assessment of the "Current State" and identify high level gaps related to ParcelMap BC adoption.**	**The intent of this exercise is to better understand the current state at the organisation and identify and quantify relevant areas of scope within the Transition Plan required to achieve ParcelMap BC adoption.**
1.1	Current Situation Assessment – Parcel Fundamentals	Documentation of high-level "Parcel Fundamentals" that characterise the approach to parcel fabric data management at the organisation.	Relevant Transition Planning Resources: - Transition Planning Situation Assessment Template
1.2	Current Situation Assessment – Primary Cadastre Schema Comparison	Mapping of current parcel fabric schema to ParcelMap BC and schema-related (spatial and attribute) adoption criteria. - Identification of significant schema gaps that must be addressed during transition.	Relevant Transition Planning Resources: - Transition Planning Situation Assessment Template - XRAY
1.3	Current Situation Assessment – Primary Cadastre Geometric Comparison	Comparison of current parcel fabric feature geometry to ParcelMap BC to identify areas of significant misalignment and assess approach/effort to address such gaps.	Relevant Transition Planning Resources: - Transition Planning Situation Assessment Template - Data Alignment Workflow Package (DAWp)

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Transition Project Management Guide - WBS

	Management	duration of the project.	determined by internal PMO standards and the size of the project team required to execute the Transition.
5.0	**Local Parcel Data / ParcelMap BC Realignment**	**Achieve Realignment between LG parcel fabric data and ParcelMap BC**	
5.1	Geometric Data Analysis / Confirm Adoption Path	Determine, via collaboration with LTSA and the use of available LTSA-provided Alignment Resources, where there are significant deviations in geometry due to non-plan adjustments or other factors. Confirm the Adoption Path most suitable for the organisation.	Applies primarily to organisations with "self maintained" parcel fabrics. Relevant Transition Planning Resources: - Data Alignment Workflow Package (DAWp)
5.2	Horizontal Data Integration Analysis: Parcel Fabric and Business System Integrations	Develop/confirm the approach to support required ParcelMap BC attribution while supporting other required parcel attribution (e.g. business data / foreign keys).	Key focus area(s) typically include: - Ensuring required ParcelMap BC attribution is supported by the "future state" schema. - Ensuring that existing integrations with other business systems continue to be supported by the

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Transition Project Management Guide - WBS

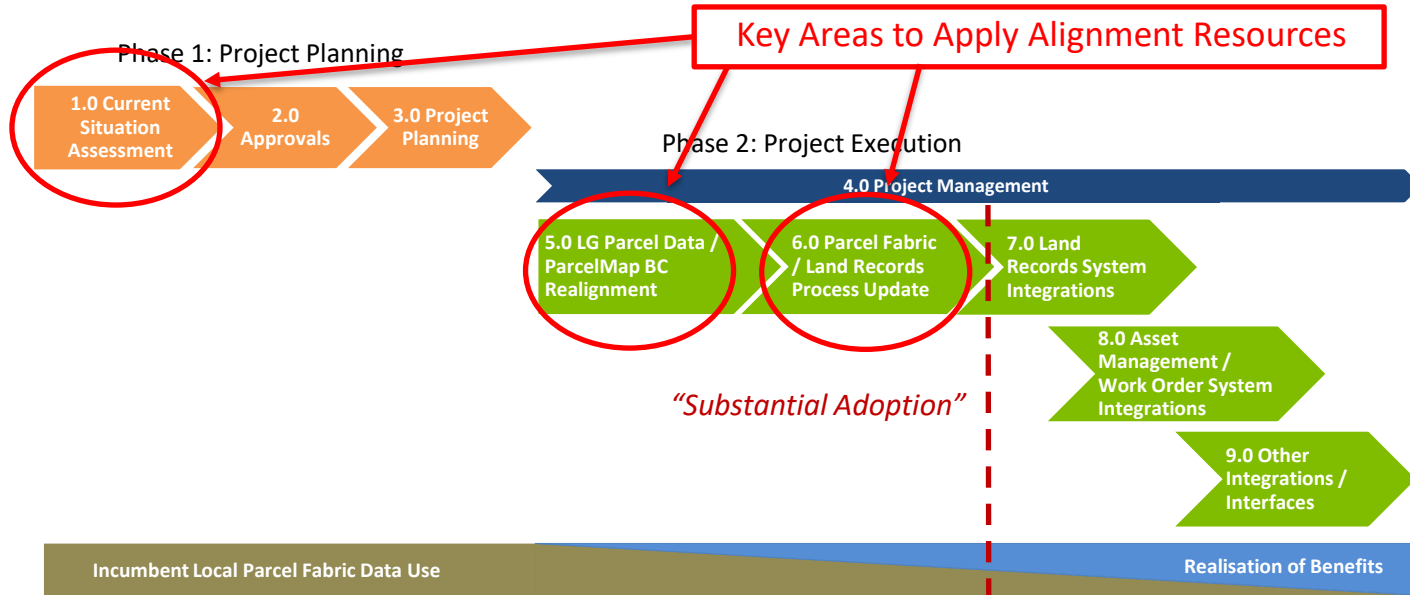|			
			"future state". - May represent an opportunity to automate current workflows used to create and maintain such data sets.
5.5	Local Parcel Data / ParcelMap BC Processing	Engage in a collaborative effort with LTSA to realign geometric features of local parcel fabric with ParcelMap BC as required.	Applies primarily to organisations who chose to "realign" their current parcel geometry with ParcelMap BC. Relevant Transition Planning Resources: - Data Alignment Workflow Package (DAWp)
5.6	Implement Horizontal Data Integration Updates	Implement any changes to supporting required ParcelMap BC attribution while supporting other required parcel attribution (e.g. business data / foreign keys).	Key focus areas for this task area include: Confirming that the "future state" schema includes all required ParcelMap BC attribution.

Transition Project Management Guide - WBS

			to explore opportunities to automate these processes using tools such as FME.
6.0	**Parcel Fabric / Land Records Update Process**	**Update processes / workflows associated with parcel fabric and land records updates**	
6.1	ParcelMap BC Land Parcel Intake Process(es)	Develop and implement new intake process to accept ParcelMap BC data from LTSA and update parcel layer(s).	This task area should consider both the initial implementation of ParcelMap BC and intake of regular updates thereafter.
6.2	BC Assessment Land Record Intake Process(es)	Confirm and implement the approach for accepting BCA Data Advice (if applicable) in parallel with accepting ParcelMap BC updates.	For many organisations, this aspect of the "current state" will not change, however, confirming ongoing compatibility of the incumbent approach for BCA Land Records Intake with the "future state" ParcelMap BC Land Parcel Intake Process(es) above should be confirmed.
7.0	**Land Records System**	**Update integrations with land records systems (if required)**	

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Transition Steps:

Key Transition Steps and Milestones:

Phase 1: Project Planning

Key Areas to Apply Alignment Resources

1.0 Current Situation Assessment → 2.0 Approvals → 3.0 Project Planning

Phase 2: Project Execution

4.0 Project Management

5.0 LG Parcel Data / ParcelMap BC Realignment → 6.0 Parcel Fabric / Land Records Process Update → 7.0 Land Records System Integrations

8.0 Asset Management / Work Order System Integrations

9.0 Other Integrations / Interfaces

"Substantial Adoption"

Incumbent Local Parcel Fabric Data Use

Realisation of Benefits

"Substantial Adoption" is achieved when ParcelMap BC data supersedes the incumbent self-maintained parcel fabric data as the primary source for truth for the geometric representation of parcel features.

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Understanding ParcelMap BC Spatial Improvements

Why, Where and When is ParcelMap BC spatially improved?

Concepts:
- Spatial Improvement Program
- Spatial Improvement Assessment (SIA) App, Layers and Improvement Planning
- Enhancements coming to the Spatial Improvement Assessment App – July 2021!
- Cad Tie Submission Program

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Parcel Fabric Spatial Improvements

The ParcelMap BC Operations team targets delivery of spatial improvements for 1-4 Areas of Interest each month.

Areas of Interest are prioritized to address those areas of the parcel fabric most in need of improvement or through collaboration with the customer dependent on operational priories and a set of criteria.

In well-aligned areas, where an adjustment would not provide a meaningful improvement (e.g. shifting parcels by a few centimetres), spatial improvements are not generally applied.
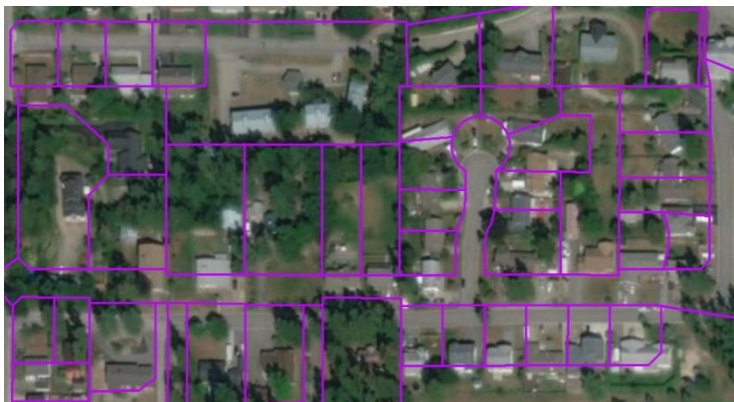

Armstrong Before Improvement

Armstrong After Improvement

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Spatial Improvement Assessment App & Map Layers

[Spatial Improvement Assessment app](#) delivers a visualization of the analysis used by the ParcelMap BC Operations team to plan and prioritize spatial improvement work across the province.

[Help resources](#) for using the App and accessing the WebMap & Layers
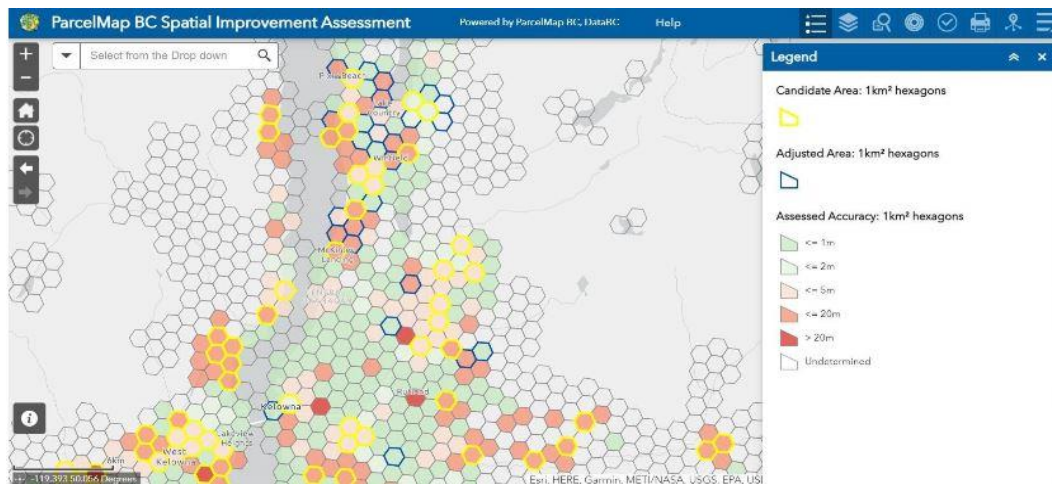
1. Provides transparency and insight into spatial improvement planning for our customers.
2. Provides a view into the assessed accuracy of the parcel fabric to broadly identify areas across the Province with significant misalignment to control – used to plan where adjustments should be targeted.
3. Highlights areas where the assessment indicates an area's readiness and, if appropriate, as a candidate for improvement – see the list of Targeted [Spatial Improvement Areas](#).

Cadastral Ties Submission for Spatial Improvements

[Cadastral Tie Submission Guidelines](#) have been defined for organizations to submit cadastral ties captured outside legal survey plans to provide additional input to support spatial improvements.
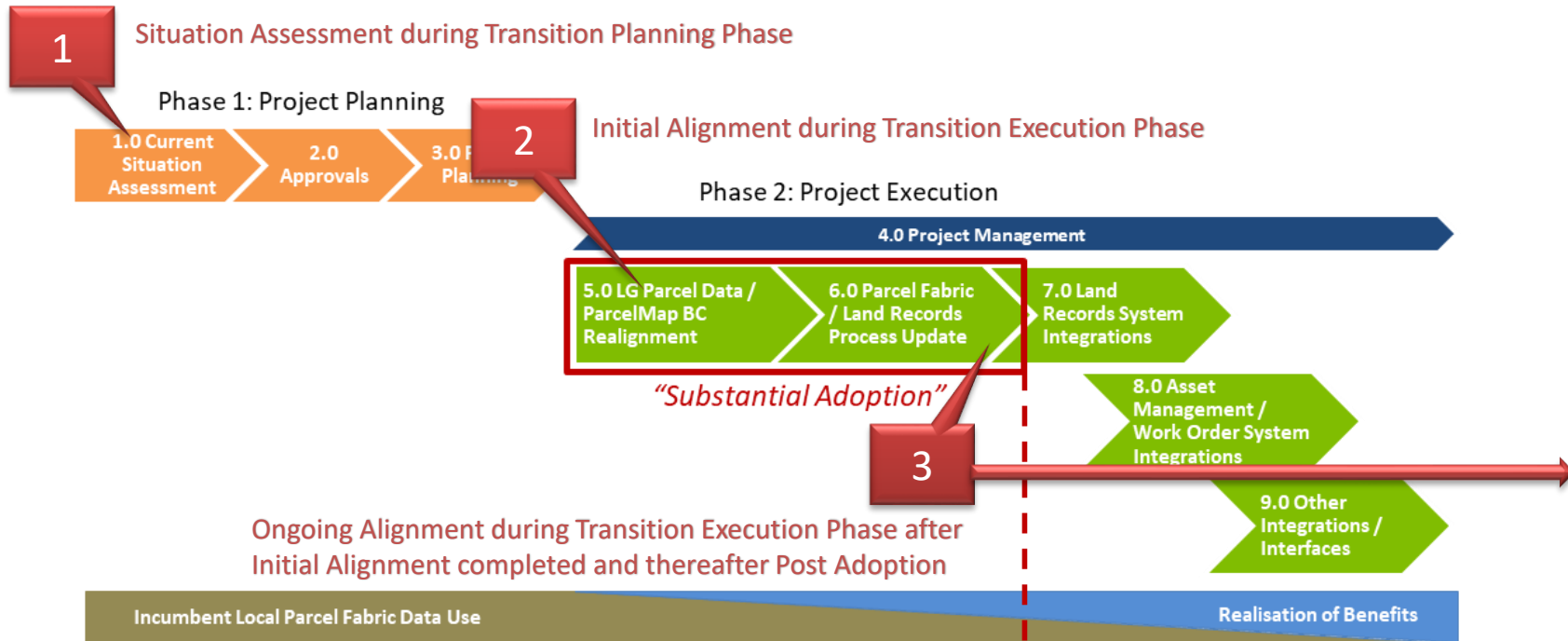
- New candidate areas for adjustment can be created with additional control.
- Standards / Guidelines and a Template (input data model) are available for those who want to participate.

Point_Id	UTM_N	UTM_E	Elevation	Monument_Type	Survey_Date	Monument_Comment	Plan	Positional Accuracy	Survey_Method	UTM_Zone	Horizontal_Datum_Ver	CSF
ID	5553706.646	330453.995	395.512	IP	dd/mm/yyyy		KAP80402	0.051	GNSS or conventional ties to passive control points	NAD_1983_CSRS_UTM_Zone_11N	NAD83(CSRS) 4.0.0.BC.1	0.99989080
M	M	M	O	M	M	O	O	M	M	M	M	M

Success!!

District of Summerland, Thompson Nicola Regional District as well as several BC Land Surveyors have participated in this program providing control ties which were integrated and used to spatially improve ParcelMap BC.

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Context: Where do the Alignment Tools "Fit" during Transition?

1 Situation Assessment during Transition Planning Phase

Phase 1: Project Planning

- 1.0 Current Situation Assessment
- 2.0 Approvals
- 3.0 Planning

2 Initial Alignment during Transition Execution Phase

Phase 2: Project Execution

4.0 Project Management

- 5.0 LG Parcel Data / ParcelMap BC Realignment
- 6.0 Parcel Fabric / Land Records Process Update
- 7.0 Land Records System Integrations
- 8.0 Asset Management / Work Order System Integrations
- 9.0 Other Integrations / Interfaces

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3 Ongoing Alignment during Transition Execution Phase after Initial Alignment completed and thereafter Post Adoption

Incumbent Local Parcel Fabric Data Use

Realisation of Benefits

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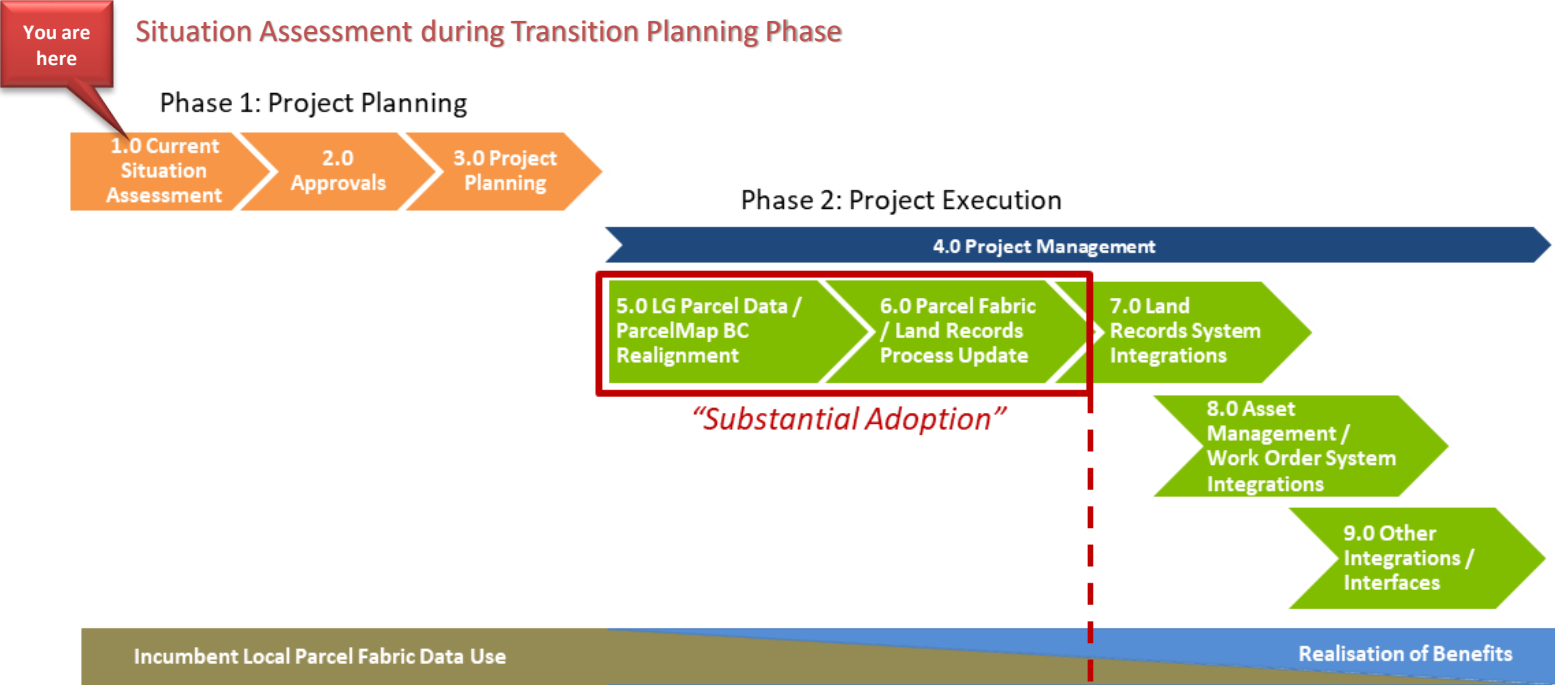# Case Study – "Anytown" Considering ParcelMap BC Adoption

Use Cases for the DAWp as part of the ParcelMap BC Transition Workflow

Step 1: Situation Assessment – Current Spatial Alignment (*Transition Planning Phase 1*)

Step 2: Initial Alignment – Aligning data to ParcelMap BC (*Transition Execution Phase 2*)

Step 3: Ongoing Alignment – Staying aligned with ParcelMap BC (*Transition Execution Phase 2 & continuing post-Adoption*)

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Step 1: Situation Assessment – Current Spatial Alignment

Situation Assessment during Transition Planning Phase

You are here

Phase 1: Project Planning

1.0 Current Situation Assessment
2.0 Approvals
3.0 Project Planning

Phase 2: Project Execution

4.0 Project Management

5.0 LG Parcel Data / ParcelMap BC Realignment
6.0 Parcel Fabric / Land Records Process Update
7.0 Land Records System Integrations

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8.0 Asset Management / Work Order System Integrations

9.0 Other Integrations / Interfaces

Incumbent Local Parcel Fabric Data Use

Realisation of Benefits

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Step 1: Situation Assessment - Current Spatial Alignment

Using the DAWp - Considerations

Choosing dataset(s) to align
- Shared boundaries with ParcelMap BC

Analyzing misalignment
- Spatial reference
- Consistent shift (pre-alignment)
- Choosing threshold

Problematic data
- Preprocessing
- Extracting inflection points

Spatial Improvements by ParcelMap BC Ops in your area
- Planned & Completed

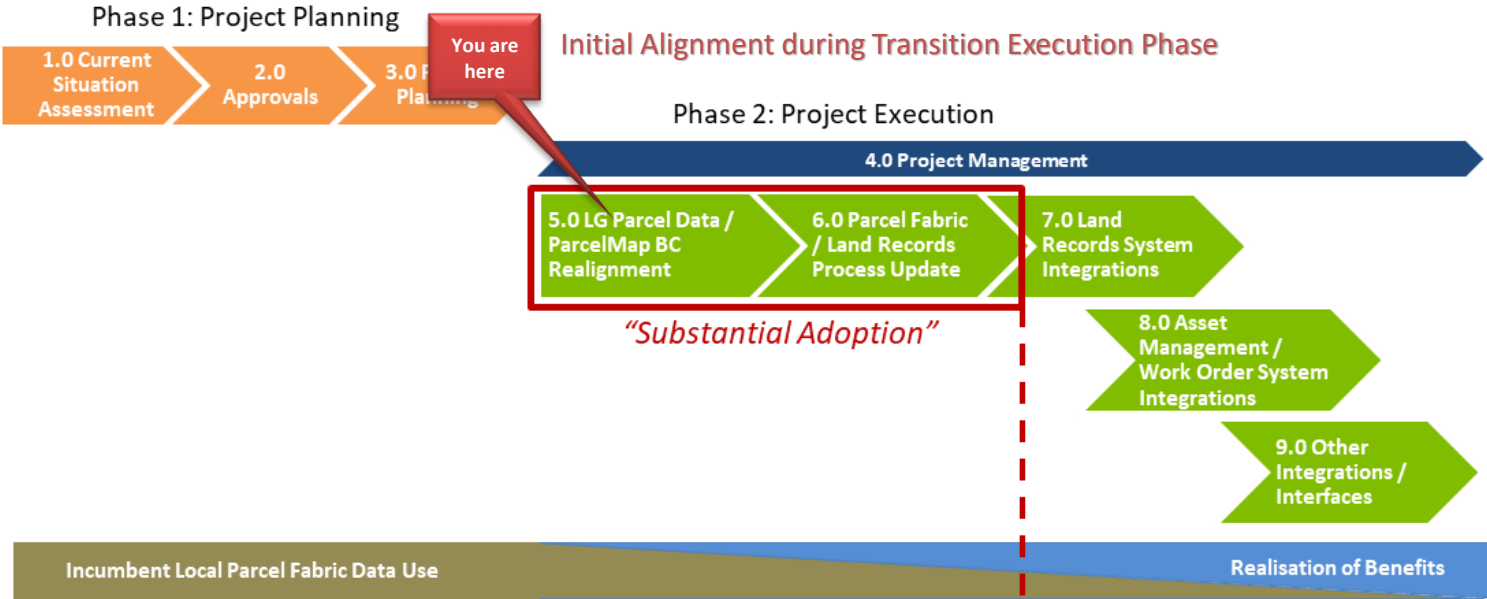Threshold Considerations
- How well does data align

Method to use
- Rubbersheet vs Fabric Shift

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Step 1: Situation Assessment - Current Spatial Alignment

Demo showing Pre-Analysis
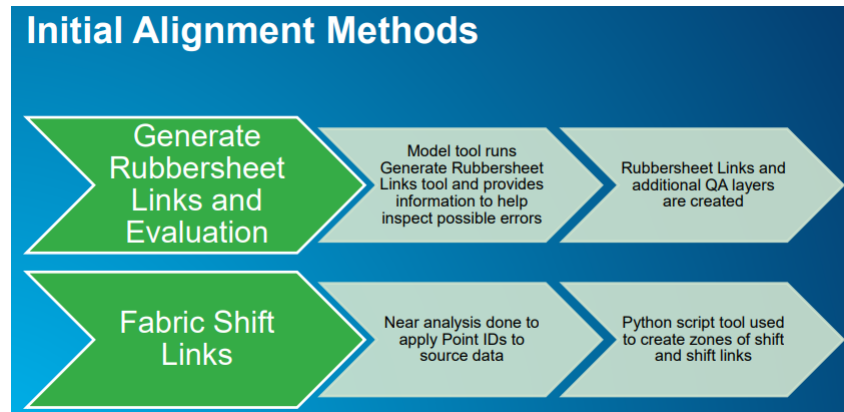
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Pre-Analysis

Step 2: Initial Alignment - Aligning data to ParcelMap BC

Step 2: Initial Alignment – Aligning data to ParcelMap BC

Bring data into alignment with ParcelMap BC

- Fabric Shift Method
- Rubbersheet Method
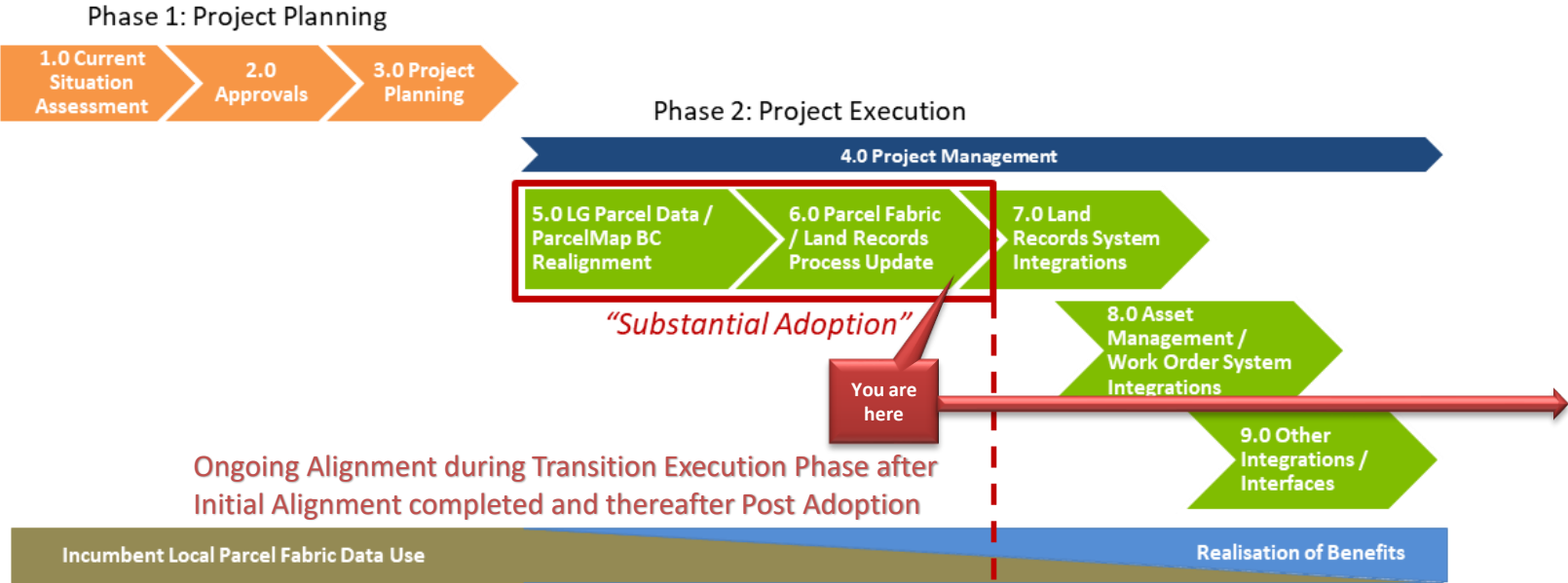- Other related datasets (e.g., centrelines, annotation)

Initial Alignment Methods

Generate Rubbersheet Links and Evaluation → Model tool runs Generate Rubbersheet Links tool and provides information to help inspect possible errors → Rubbersheet Links and additional QA layers are created

Fabric Shift Links → Near analysis done to apply Point IDs to source data → Python script tool used to create zones of shift and shift links

Step 2: Initial Alignment - Aligning data to ParcelMap BC

Demos showing Initial Alignment

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Initial Alignment: Rubbersheet Method

Step 3: Ongoing Alignment – Staying aligned with ParcelMap BC

Phase 1: Project Planning

1.0 Current Situation Assessment → 2.0 Approvals → 3.0 Project Planning

Phase 2: Project Execution

4.0 Project Management

5.0 LG Parcel Data / ParcelMap BC Realignment → 6.0 Parcel Fabric / Land Records Process Update → 7.0 Land Records System Integrations

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You are here

8.0 Asset Management / Work Order System Integrations

9.0 Other Integrations / Interfaces

Ongoing Alignment during Transition Execution Phase after Initial Alignment completed and thereafter Post Adoption

Incumbent Local Parcel Fabric Data Use

Realisation of Benefits

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Step 3: Ongoing Alignment – Staying aligned with ParcelMap BC

Maintaining Alignment with ParcelMap BC

Two options:
- Using ParcelMap BC Fabric Spatial Improvements
- Doing a Mini-Initial Alignment (Fabric Shift using parcel points)

Ongoing Alignment Methods

| Fabric Shift from Change Vectors | Shift information is captured from Change Vectors | Python script tool used to create zones of shift and shift links |
| Fabric Shift from Parcel Points | Shift information is captured from Parcel Points | Python script tool used to create zones of shift and shift links |

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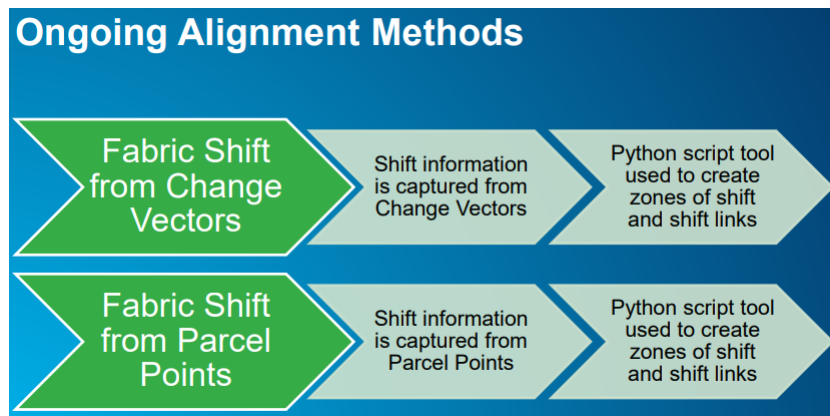
Step 3: Ongoing Alignment – Staying aligned with ParcelMap BC

Demo showing Ongoing Alignment

Alignment Summary

Recap

- Assessment – Visual vs Analytical
- Initial – Rubbersheet vs Fabric Shift
- Ongoing – Spatial Improvements vs Discovery

Enhancements under consideration

- Better inflection point extraction
- Near analysis refinement
- Automating realignment
- Harmonizing links between methods
- ArcGIS Pro

User Experience with DAWp

The following are some organisations that have begun applying the DAWp:

- City of Kamloops
- Township of Langley
- LTSA's ParcelMap BC Operations

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DATA ALIGNMENT WORFLOW PACKAGE (DAW$_P$) REVIEW

Review by

Kerrie-Anne Martin, GIS Specialist

Why Align?

- TOL shares land boundaries.

Why Align?

- Reduce the potential for disputes

Why Align?

- Reduce the potential for disputes

Mitigate potential for misinformation
https://www.obsev.com/life/neighbor-changes-the-property-line/

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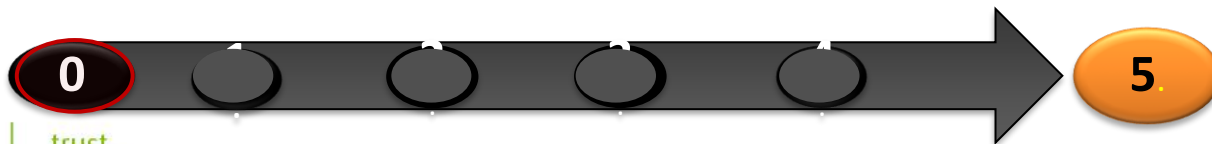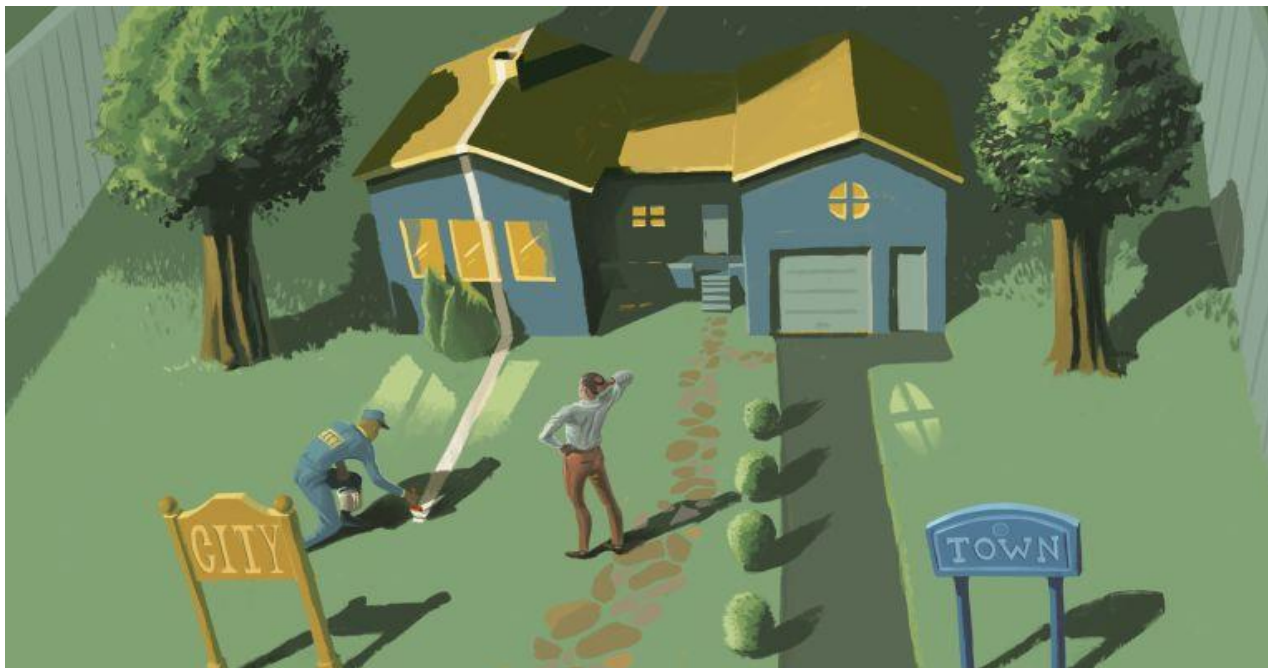
Before & AFTER (Fabric Shift / Rubbersheet)

Legend
- PMBC parcel
- TOL parcel

A — Before

A — After

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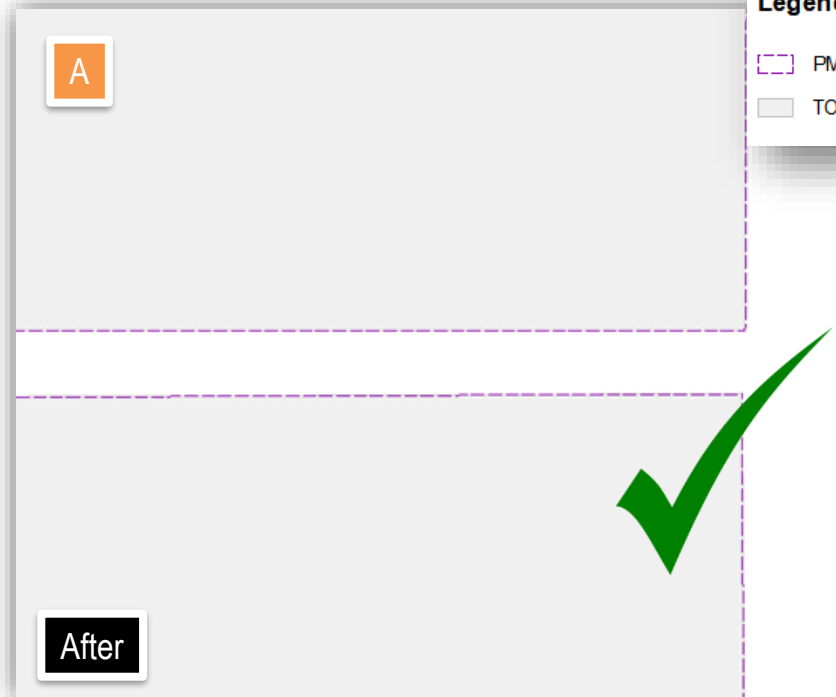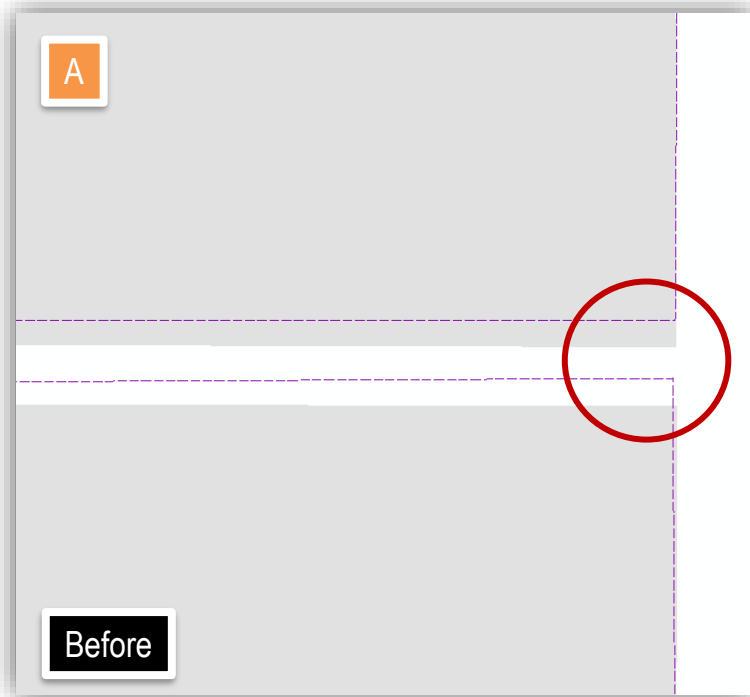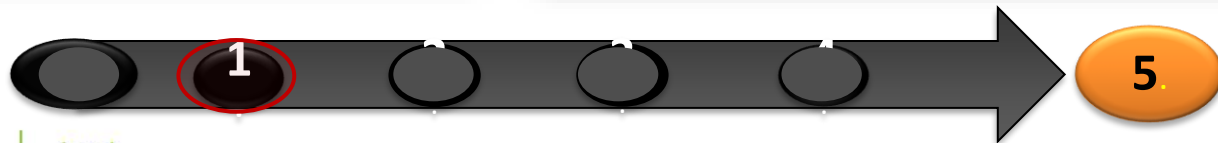
Before & AFTER (Fabric Shift (FS) / Rubbersheet (RS))

Legend
- PMBC parcel
- TOL parcel

Before

After

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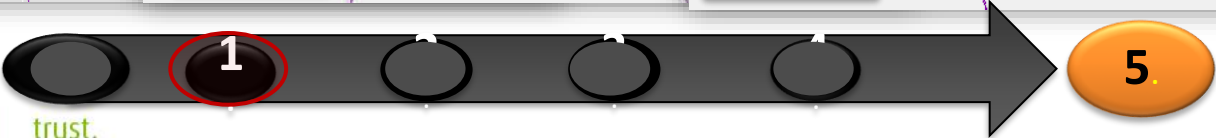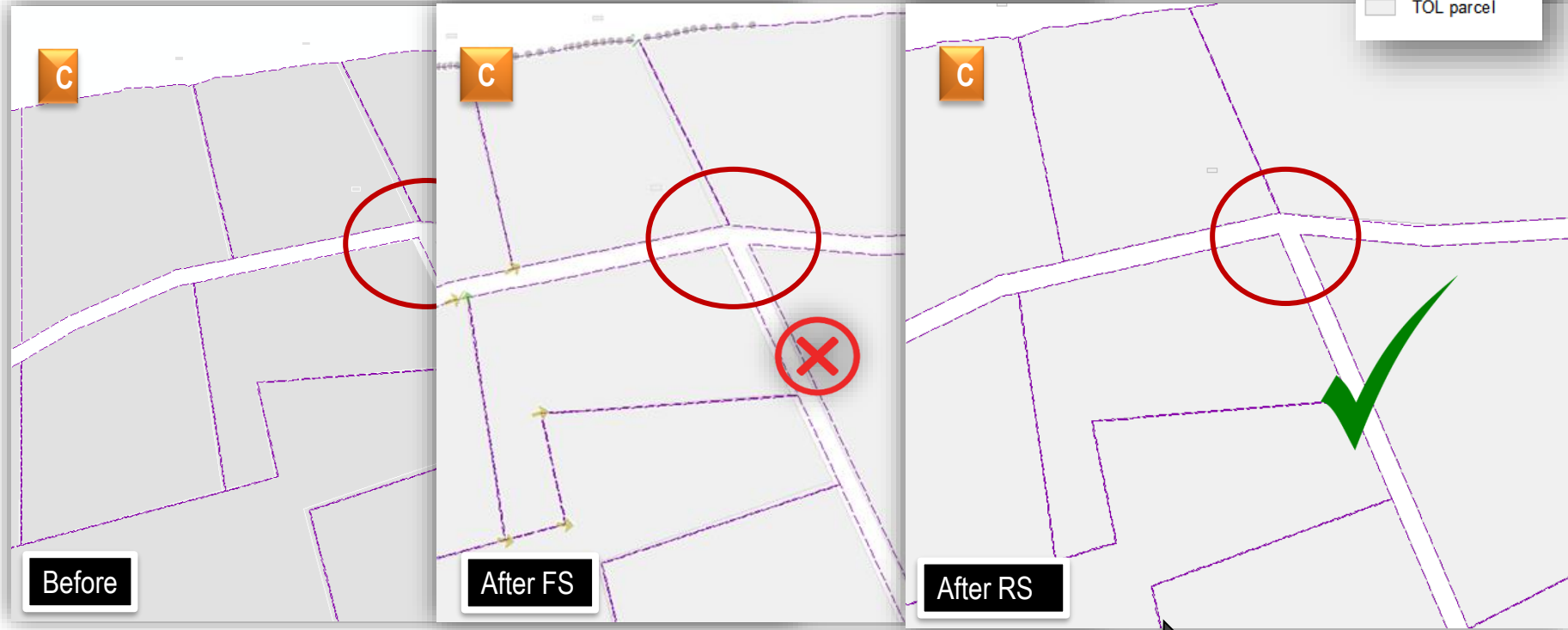innovation. | integrity. | trust.

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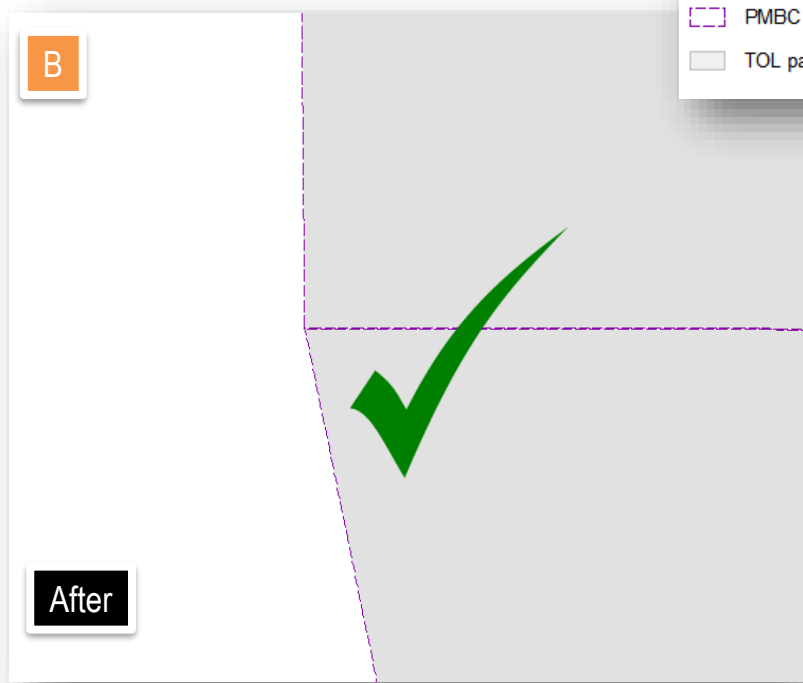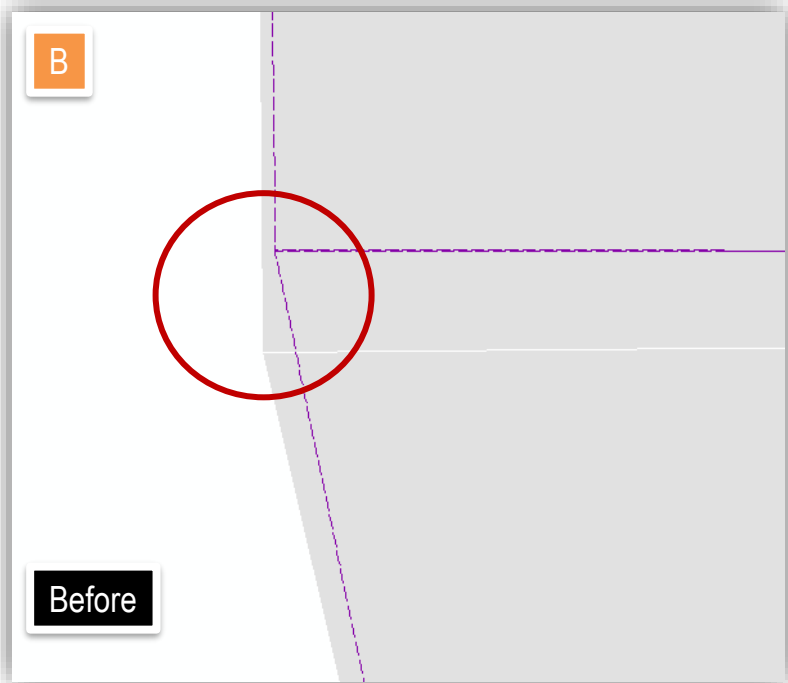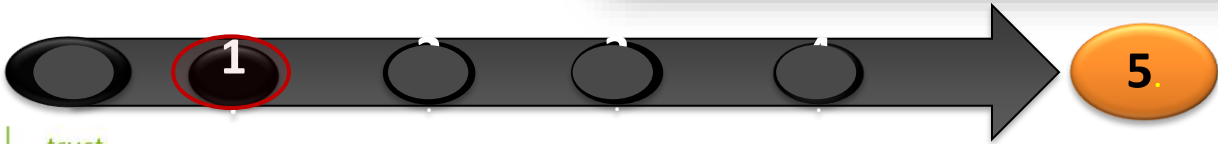
Before/After (Rubbersheet (RS) Succeeds where Fabric Sheet (FS) did not
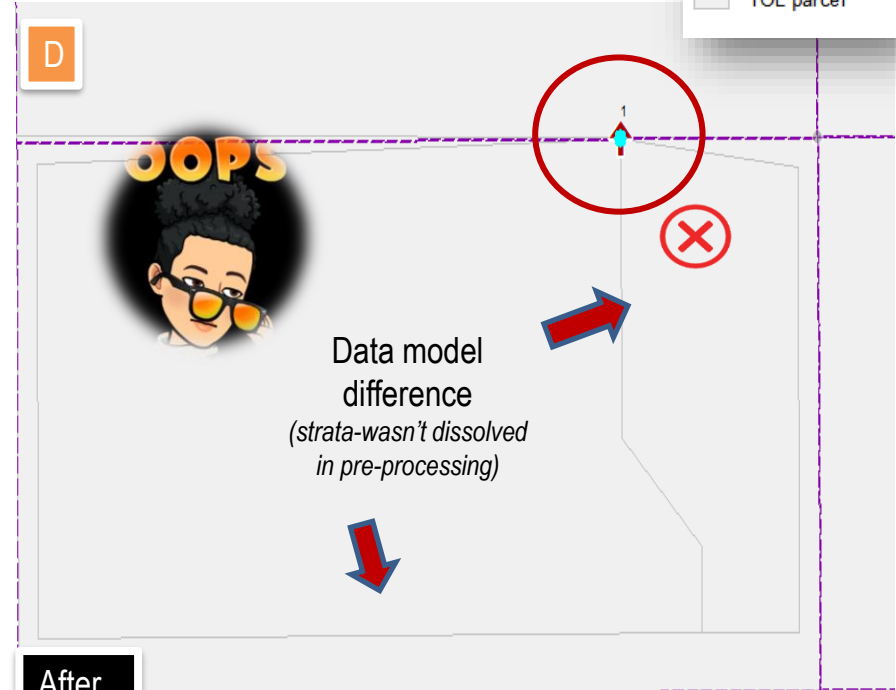
Legend
- PMBC parcel
- TOL parcel

Before

After FS

After RS

Before/After   The importance of Pre-processing; Rubbersheet catches error

Legend

- PMBC parcel
- TOL parcel

D

D

OOPS

Data model difference
(strata-wasn't dissolved in pre-processing)

Before

After

2   5.
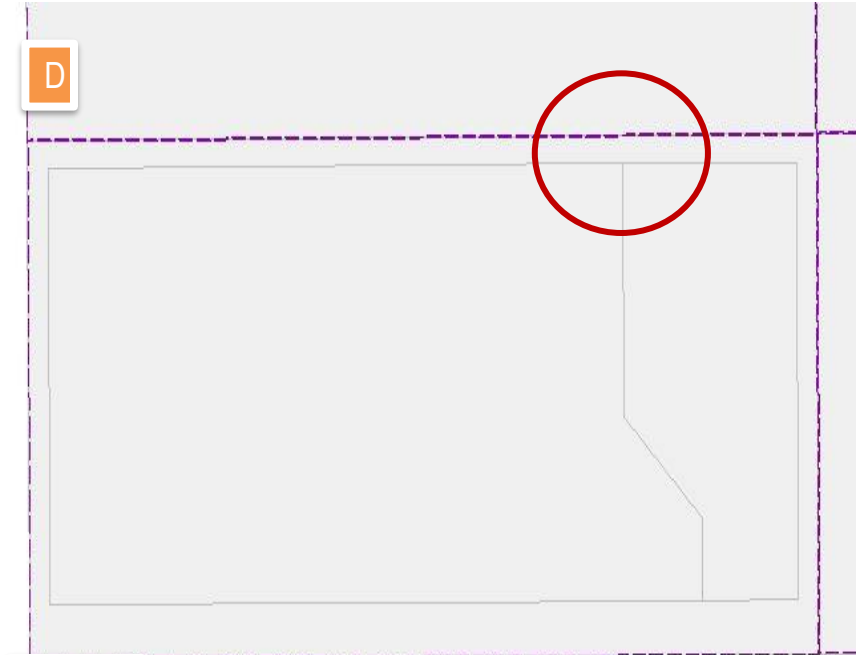
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The experience

Appreciated

- Collaboration

- Innovation: - Seeing the parcels align

- Validation

Challenges

- Determining the correct error range

- Preparing the data for initial alignment

- Selecting the best method

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Feedback

Lessons learned

- The initial preparation is key

- Prefer the Rubber Sheet method

Suggestions

– More guidance on error

range determination

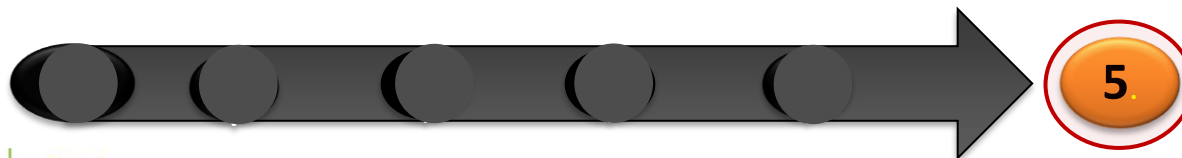innovation. | integrity. | trust.

Conclusion

- The DAWp Tool effectively aligns the majority of parcels accurately.

- The process can enhance quality control of cadastre

Thank You

For the opportunity
to share our findings with you!

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Accessing ParcelMap BC Spatial Alignment Resources

Spatial Alignment Resources include the Data Alignment Workflow Package (DAWp)

Download the DAWp from the ICI Society GeoShare Page (*requires ICI Society credentials*):
    Includes User Guide, Installation Package & License

Tutorial videos featuring:
    Pre-Alignment Workflow (Optional)
    Initial Alignment Workflow
    Ongoing Alignment Workflow

Guidelines featuring Tips and Tricks for using the DAWp

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Wrap Up Questions / Next Steps

Feedback & Questions

Go give the Alignment Resources a try!

Reach out with any inquiries to
ParcelMapBC@ltsa.ca

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