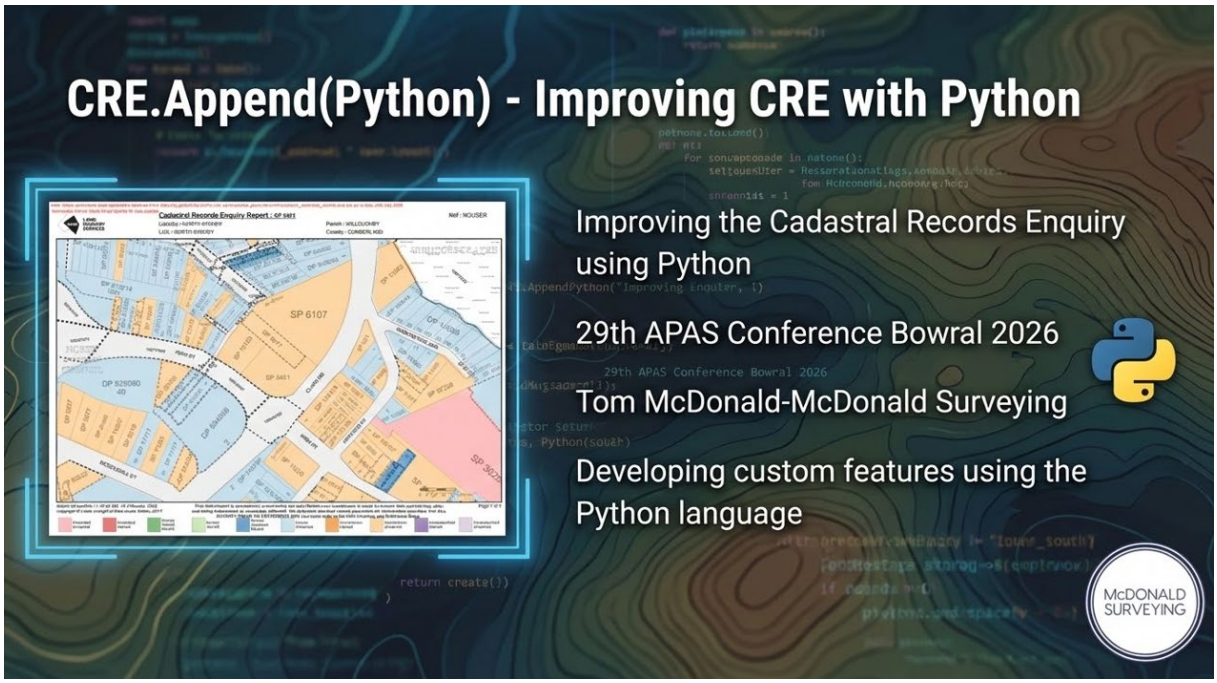
CRE.append(Python): Improving the Cadastral Records Enquiry (CRE) with Python Scripts

Tom McDonald
McDonald Surveying
tom.mcdonald@mcdonaldsurveying.com.au

ABSTRACT

The Cadastral Records Enquiry (CRE) is a critical source of information for registered surveyors when trying to ascertain the position of the boundary. However, traditional CRE systems often lack the contextual information that individual surveyors and companies possess, limiting their effectiveness in professional practice. This presentation showcases our Python-based solution designed to augment existing CRE functionality through intelligent data integration and enhanced user experience. Our approach involved developing a bespoke python script that enriched CRE outputs with three key features: (1) automated identification of survey plans already in user possession that reduce redundant data requests, (2) direct integration of download links for required plans to streamline data acquisition workflows, and (3) real-time flagging of plans that have been amended post-registration, ensuring surveyors work with the most current information available. The solution was deployed using a Flask-based web application architecture, providing a robust Python backend that seamlessly integrates with existing cadastral databases, while maintaining data security and system reliability. This presentation details the development methodology, technical challenges encountered and solutions implemented throughout the project lifecycle. Additionally, it explores future development opportunities, including integration with Web Map Services (WMS) data and incorporation of NSW Land Registry Services (LRS) information to create a more comprehensive cadastral information ecosystem. Our enhancement of the CRE system represents a significant advancement in surveying technology, demonstrating how targeted software development can improve professional workflows while maintaining compatibility with existing infrastructure.

KEYWORDS: *CRE, Python, Flask, cadastral, productivity.*


CRE.Append(Python) - Improving CRE with Python
Improving the Cadastral Records Enquiry using Python
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Developing custom features using the Python language
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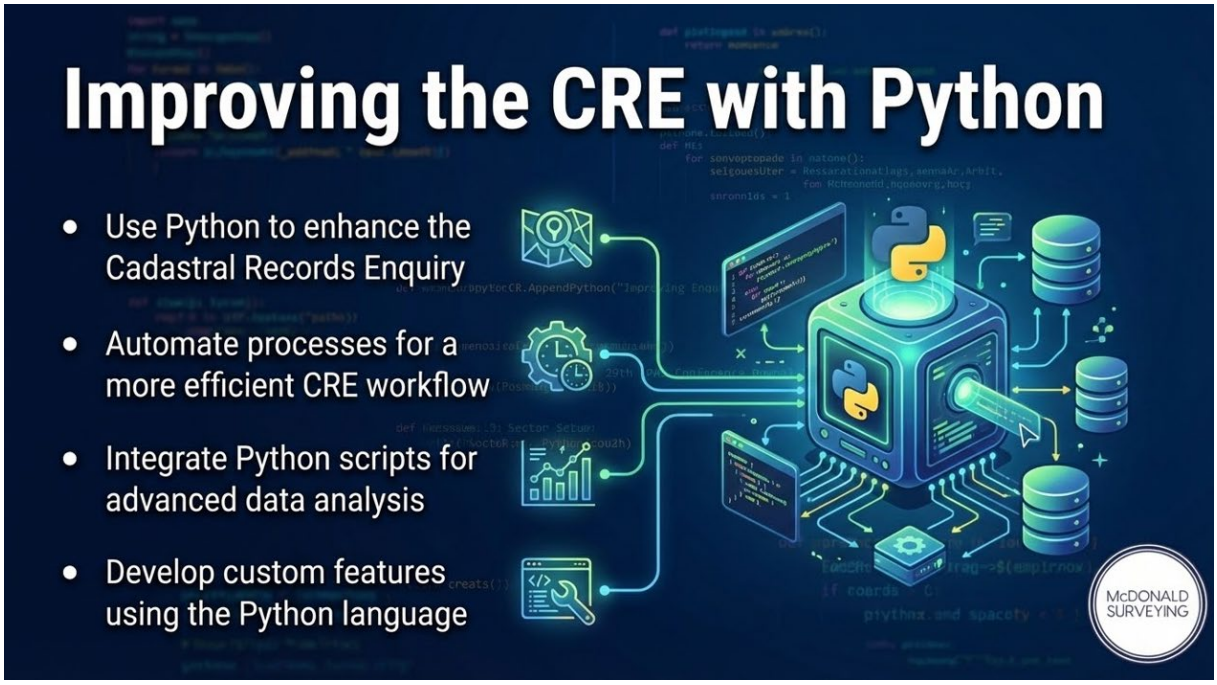
Improving the CRE with Python
Use Python to enhance the Cadastral Records Enquiry
Automate processes for a more efficient CRE workflow
Integrate Python scripts for advanced data analysis
Develop custom features using the Python language
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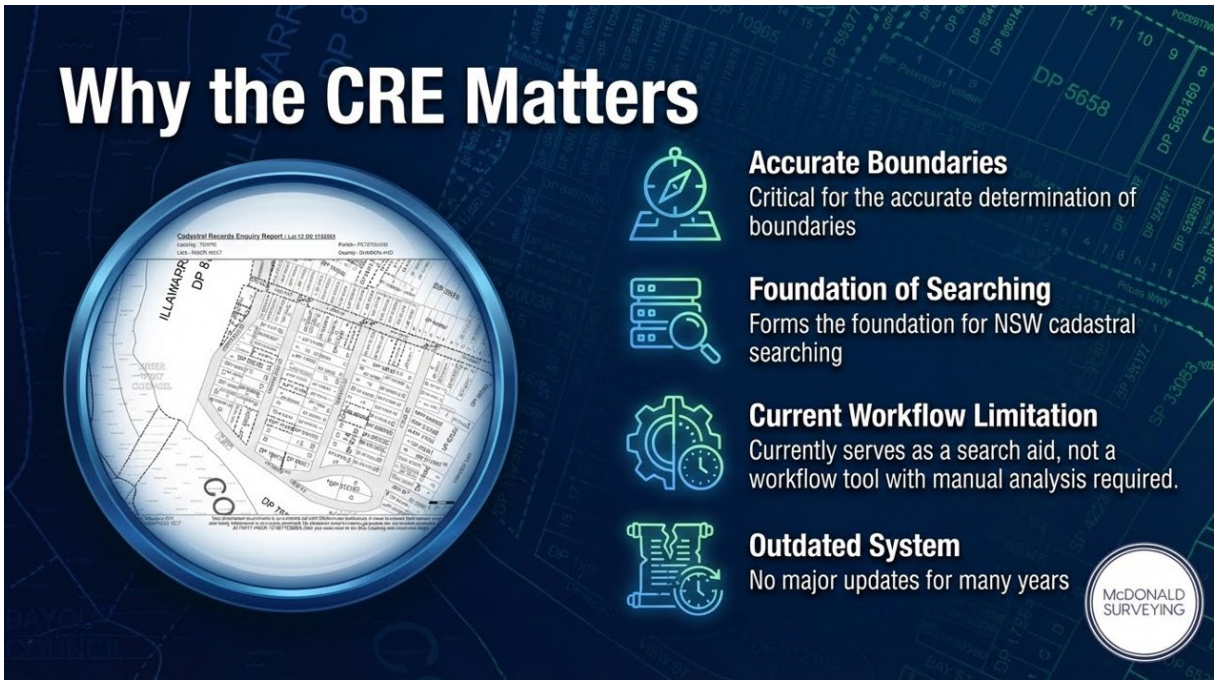
Why the CRE Matters
Accurate Boundaries
Critical for the accurate determination of boundaries
Foundation of Searching
Forms the foundation for NSW cadastral searching
Current Workflow Limitation
Currently serves as a search aid, not a workflow tool with manual analysis required.
Outdated System
No major updates for many years
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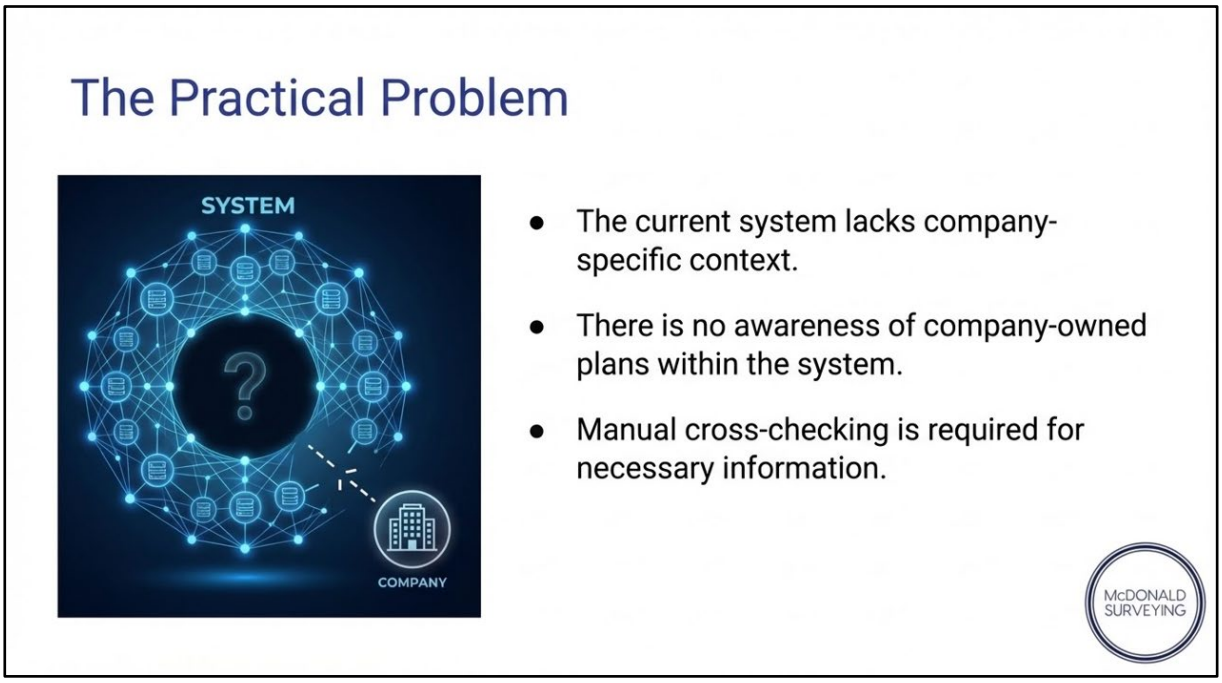
The Practical Problem
SYSTEM
?
COMPANY
The current system lacks company-specific context.
There is no awareness of company-owned plans within the system.
Manual cross-checking is required for necessary information.
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Real Workflow Impact

Redundant Data & Costs
Multiple requests for the same information create unnecessary expense.

Risk of Missing Amendments
Post-registration changes can be easily overlooked.

Manual Cross-Checking
The current workflow relies on error-prone manual verification.

Lacks Company-Specific Context
The system has no awareness of company-owned plans.

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Project Objectives

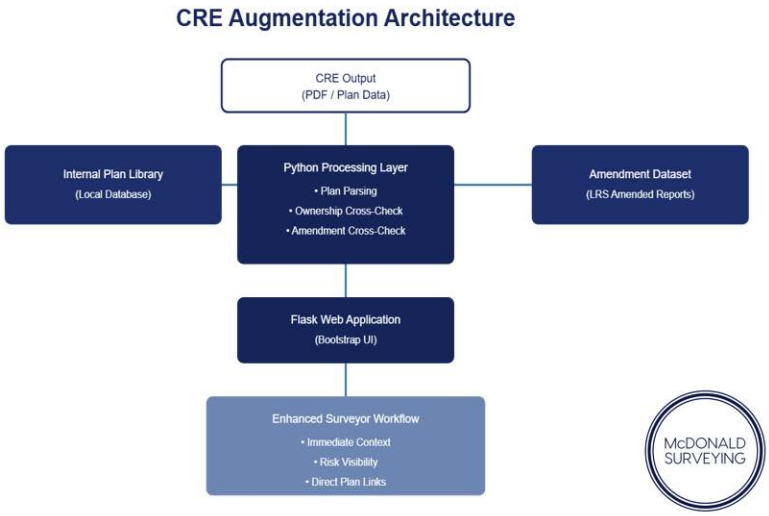
01 Augment the Cadastral Records Enquiry not to replace it

02 Inject contextual intelligence into the existing system

03 Maintain compatibility with the LRS infrastructure seamlessly

The Architecture

- The new design integrates with the existing LRS
- Contextual intelligence is now part of the system
- The Customer Relationship Engine is augmented, not replaced



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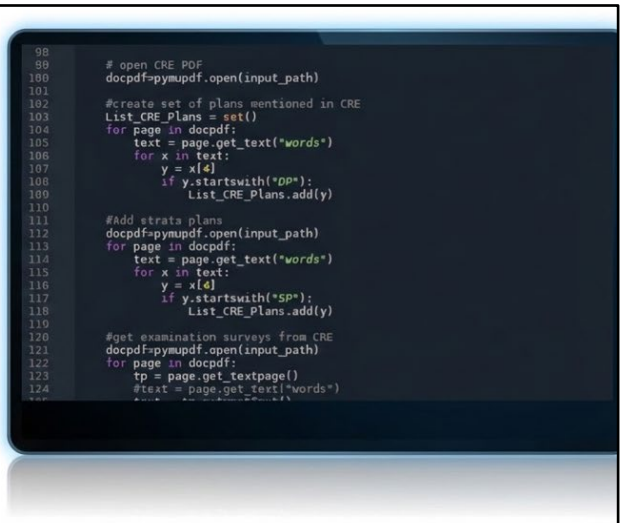
Feature 1: Ownership

- Automated cross-reference enhances internal database searches
- Instant visual identification removes any guesswork
- Eliminates redundant purchases, saving company resources
- Processed CRE utilises highlighting for clarity



```
    # open CRE PDF
    docpdf=pymupdf.open(input_path)

    #create set of plans mentioned in CRE
    List_CRE_Plans = set()
    for page in docpdf:
        text = page.get_text("words")
        for x in text:
            y = x[4]
            if y.startswith("DP"):
                List_CRE_Plans.add(y)

    #Add strata plans
    docpdf=pymupdf.open(input_path)
    for page in docpdf:
        text = page.get_text("words")
        for x in text:
            y = x[4]
            if y.startswith("SP"):
                List_CRE_Plans.add(y)

    #get examination surveys from CRE
    docpdf=pymupdf.open(input_path)
    for page in docpdf:
        tp = page.get_textpage()
        #text = page.get_text("words")
```

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Feature 2: Amendments

- **Integrates amended plan reports** into the system
- **Real-time risk flagging** provides immediate alerts
- **Forces verification of dates** for necessary information
- **Processed CRE** utilizes red and pale red flags

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Feature 3: Web based

- **Embedded** direct download links for one-click acquisition
- **Protects codebase** from employees or others
- **Reduced navigation** overhead through direct download links

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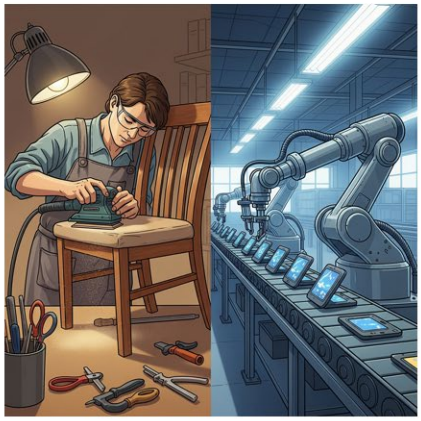
Before and After



- The traditional approach is manual and extremely slow.
- The traditional method has an associated high level of risk.
- The enhanced process is now automated for better efficiency.
- The improved workflow delivers instant results with low risk.

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Next Steps and Future

- Integrate WMS and LRS APIs for enhanced functionality
- Move towards building a more intelligent data ecosystem
- Surveyors should develop new and necessary tools for surveyors

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