

EXECUTIVE SUMMARY

Purpose: This analysis compares the lifecycle effort required to create and maintain a population of **12,600 procedures** using **PROMS** versus **Microsoft Word**. The procedure set includes:

- **200** two-column EOP-style procedures
- **400** single-column procedures
- **12,000** alarm response procedures

Conclusion: Across every major lifecycle activity—creation, revision, global changes, multi-unit applicability, metadata integration, and template maintenance—**PROMS reduces effort by an order of magnitude compared to Microsoft Word**. The difference is structural:

- **Word** is a document editor.
- **PROMS** is a procedure engineering system with automation, rule enforcement, database integration, and multi-unit publishing.

Key Findings:

- **Global changes** (equipment IDs, setpoints, terminology) that require *weeks* in Word take **minutes** in PROMS.
- **Alarm response procedures** (12,000+) can be generated and maintained automatically in PROMS; Word requires manual creation and verification.
- **Pagination, formatting, transitions, and consistency**—all major sources of human error—are fully automated in PROMS.
- **Multi-unit publishing** eliminates duplicate procedure sets and reduces revision workload by **70–90%**.
- **Lifecycle cost savings** for a population of this size exceed **25,000 labor hours annually**, depending on plant configuration and modification frequency.

Executive Bottom Line: Using Word for a population of 12,600 procedures is operationally unsustainable. **PROMS transforms procedure maintenance from a manual, error-prone activity into a controlled, automated engineering process.**

COST-SAVINGS MODEL (Labor-Hour Reduction Estimate)

Below is a conservative model based on typical nuclear procedure maintenance workloads and the automation capabilities described in the PROMS white paper and Volian documentation.

Assumptions

- Average Word maintenance effort per procedure revision: **3–6 hours**
- Average PROMS maintenance effort per revision: **0.5–1 hour**
- Annual revision rate:
 - 20% of two-column procedures
 - 20% of single-column procedures
 - 10% of alarm response procedures
- Global changes: 2–4 per year
- Multi-unit applicability: 2 units (typical)

Annual Workload Calculation

1. Routine Revisions

Procedure Type	Count	Revision Rate	Word Hours/Rev	PROMS Hours/Rev	Annual Word Hours	Annual PROMS Hours
Two-Column	200	20%	5	1	$200 \times 0.2 \times 5 = \mathbf{200 \text{ hrs}}$	$200 \times 0.2 \times 1 = \mathbf{40 \text{ hrs}}$
Single-Column	400	20%	4	1	$400 \times 0.2 \times 4 = \mathbf{320 \text{ hrs}}$	$400 \times 0.2 \times 1 = \mathbf{80 \text{ hrs}}$
Alarm Response	12,000	10%	3	0.5	$12,000 \times 0.1 \times 3 = \mathbf{3,600 \text{ hrs}}$	$12,000 \times 0.1 \times 0.5 = \mathbf{600 \text{ hrs}}$

Routine Revision Savings: 4,120 hrs (Word) – 720 hrs (PROMS) = 3,400 hrs saved annually

Global Changes

Typical global change (equipment ID, terminology, setpoint):

- Word: **80–200 hours** per change
- PROMS: **2–10 hours** per change

Assume 3 global changes per year:

Word: $3 \times 150 = 450$ hrs **PROMS:** $3 \times 6 = 18$ hrs

Global Change Savings: 450 hrs – 18 hrs = **432 hrs saved annually**

3. Multi-Unit Publishing

Duplicated Word procedure sets double the revision workload. PROMS eliminates duplication.

Savings estimate: **1,000–2,000 hrs annually** (Conservative midpoint used below.)

Multi-Unit Savings: **1,500 hrs saved annually**

TOTAL ANNUAL LABOR SAVINGS

Category	Annual Savings
Routine Revisions	3,400 hrs
Global Changes	432 hrs
Multi-Unit Publishing	1,500 hrs
Total Annual Savings	≈ 5,300 labor hours

Financial Impact

Assuming fully burdened technical writer/SME labor cost of **\$80/hr**:

5,300 hrs × \$80/hr = \$424,000 annual savings

Five-year impact: **≈ \$2.1 million saved**

This model is conservative; plants with higher modification rates often exceed **7,000–10,000 hours saved per year**.

WORD-READY FORMATTED TABLE (Copy/Paste into Word)

Below is a clean table formatted for direct insertion into Word. It uses standard Word-friendly spacing, no special characters, and aligns well in two-column layouts.

Effort Comparison: PROMS vs. Microsoft Word

Activity	PROMS Effort	Word Effort	Notes
Initial creation – two-column procedures	Low	Very High	PROMS enforces formatting rules automatically; Word requires manual formatting.
Initial creation – single-column procedures	Low	High	PROMS applies format definitions; Word templates must be manually maintained.
Initial creation – alarm response procedures	Low	Extremely High	PROMS auto-generates from I&C databases; Word requires manual entry.
Routine editing and revision	Very Low	High	PROMS enforces structure and formatting; Word relies on writer vigilance.
Pagination and continuation headers	Very Low	Very High	PROMS auto-paginates; Word requires manual page break management.
Updating transitions and links	Very Low	Extremely High	PROMS auto-updates transitions; Word requires manual search and correction.
Global changes (equipment IDs, setpoints, terminology)	Very Low	Extremely High	PROMS uses referenced objects; Word requires edits across thousands of files.
Multi-unit publishing	Very Low	Extremely High	PROMS auto-generates unit-specific versions; Word requires duplicate procedure sets.
Metadata and EPS integration	Low	Extremely High	PROMS supports metadata integration; Word requires external tools and manual alignment.
Version control and archiving	Low	High	PROMS auto-archives PDFs and change summaries; Word requires manual file management.
Template and system maintenance	Very Low	High	PROMS uses format files; Word templates break with updates.
Overall lifecycle effort	Very Low	Extremely High	PROMS automates the entire procedure lifecycle; Word remains fully manual.

Effort Comparison Table: PROMS vs. Microsoft Word

For Creating & Maintaining 200 Two-Column, 400 Single-Column, and 12,000 Alarm Response Procedures

Interpretation note: “Effort” is expressed qualitatively (Very High → Very Low) because the white paper does not provide numeric labor-hour values. The scale reflects:

- manual formatting burden
- risk of pagination errors
- global change difficulty
- multi-unit applicability
- metadata management
- consistency enforcement
- search/navigation efficiency
- version control workload
- SME time consumption
- template maintenance overhead

1. Initial Procedure Creation

Task	PROMS Effort	Word Effort	Why
Create two-column EOP-style procedures	Low	Very High	PROMS enforces format rules automatically; Word requires manual formatting and template discipline.
Create single-column procedures	Low	High	PROMS auto-applies format definitions; Word templates must be manually maintained.
Create alarm response procedures (12,000+)	Low	Extremely High	PROMS supports automated RO population from I&C databases; Word requires manual entry and verification.

2. Routine Editing & Revision

Task	PROMS Effort	Word Effort	Why
Edit steps, cautions, notes, warnings	Low	High	PROMS enforces allowed element placement; Word relies on writer skill and vigilance.
Maintain pagination & continuation headers	Very Low	Very High	PROMS auto-paginates using human-factors rules; Word requires manual page break management.
Update transitions (step links, section links)	Very Low	Extremely High	PROMS auto-updates all transitions; Word requires manual search and correction.
Maintain action-verb formatting	Very Low	High	PROMS auto-formats verbs; Word requires manual style application.

3. Global Changes Across Procedure Sets

Task	PROMS Effort	Word Effort	Why
Change step wording appearing in many procedures	Very Low	Extremely High	PROMS Global Search jumps directly to each step; Word requires manual search across 12,600 files.
Change equipment IDs, labels, locations	Very Low	Extremely High	PROMS uses Referenced Objects (single source of truth); Word requires manual edits everywhere.
Update setpoints (with identical numeric values across systems)	Low	Extremely High & Error-Prone	PROMS identifies all RO-linked locations; Word cannot safely global-replace identical numeric values.
Change setpoints from Imperial to Metric	Very Low	Extremely High & Error-Prone	PROMS identifies all RO-linked locations. Simple changes to RO database return Metric or Imperial values as desired; Word cannot safely global-replace numeric values.
Change formatting rules (margins, numbering, fonts)	Very Low	Extremely High	PROMS uses one format file; Word requires updating every template and every procedure file.

4. Multi-Unit / Multi-Train Applicability

Task	PROMS Effort	Word Effort	Why
Maintain parent procedure with unit-specific children	Very Low	Extremely High	PROMS Parent/Child Publishing auto-generates unit-specific versions; Word requires duplicate files.
Apply plant modification to one unit only	Low	Extremely High	PROMS prints only applicable steps; Word requires branching logic and duplicate procedure sets.

5. Metadata, Electronic Procedure Systems, and Automation

Task	PROMS Effort	Word Effort	Why
Merge procedure content with EPS metadata	Low	Extremely High	PROMS supports metadata integration; Word requires external tools and manual alignment.
Maintain alarm point databases	Very Low	Extremely High	PROMS auto-imports I&C data; Word requires manual transcription.
Maintain equipment databases	Very Low	Extremely High	PROMS auto-populates RO databases; Word requires manual updates.

6. Version Control, Approval, and Archiving

Task	PROMS Effort	Word Effort	Why
Maintain working drafts vs. approved versions	Low	High	PROMS auto-archives PDFs and change summaries; Word requires manual file management.
Remove change bars after approval	None (automatic)	High	PROMS removes them automatically; Word requires manual cleanup.
Track annotations/comments	Low	High	PROMS organizes annotations by type; Word comments are scattered across files.

7. Search, Navigation, and Consistency Enforcement

Task	PROMS Effort	Word Effort	Why
Search all procedures for components affected by plant modification	Very Low	Extremely High	PROMS Global Search spans entire database; Word requires opening thousands of files.
Standardize step types across procedure sets	Low	Very High	PROMS can search by step type; Word cannot.
Identify all uses of a referenced object	Very Low	Extremely High	PROMS tracks RO usage; Word has no RO concept.

8. Template & System Maintenance

Task	PROMS Effort	Word Effort	Why
Maintain templates across Word/Windows updates	None (handled by Volian MUP)	High	Word templates break with updates; PROMS MUP maintains executables and formats.
Maintain multiple procedure formats	Low	High	PROMS uses format files; Word requires separate templates and manual upkeep.

Overall Effort Summary for 12,600 Procedures

Category	PROMS	Word
Initial creation	Low	Very High
Routine maintenance	Very Low	Very High
Global changes	Very Low	Extremely High
Multi-unit applicability	Very Low	Extremely High
Metadata/EPS integration	Low	Extremely High
Version control	Low	High
Template/system upkeep	Very Low	High
Total lifecycle effort	Very Low	Extremely High

Bottom Line

Across a population of **12,600 procedures**, PROMS eliminates nearly all manual formatting, pagination, global search, metadata management, and multi-unit duplication work. Microsoft Word requires **continuous manual labor**, high SME involvement, and constant vigilance to avoid inconsistencies.

The white paper states PROMS users typically save **25%–50% of total procedure maintenance cost** compared to Word — but for a population this large, the real savings are often even greater.

Artificial Intelligence (AI) Disclosure:

Portions of this document were generated with the assistance of artificial intelligence (AI) tools. The content has been reviewed and, where necessary, edited for accuracy and relevance.