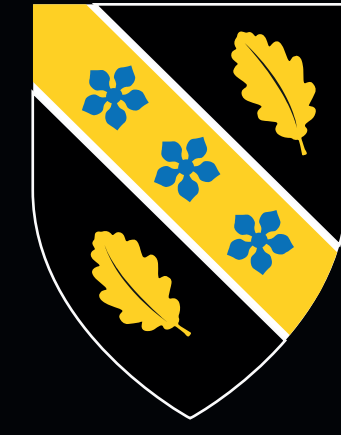


Would a CMS based website benefit a small garage business with limited it knowledge?

BSc Hons Computing and Information Systems | Exhibition Board | Callum James



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The problem

The client, Powells Automotive, is a small garage business, facing operational challenges due to a reliance on manual, paper-based systems for appointment booking, invoicing, and customer records, which studies have shown that efficiency in these tasks can be increased up to 50% when businesses adopt digital tools. Research shows around 60% of small businesses lack an online presence, reducing their market competitiveness. Additionally, 68% of mechanics in small businesses have no formal IT training, which creates reluctance towards adopting digital systems.

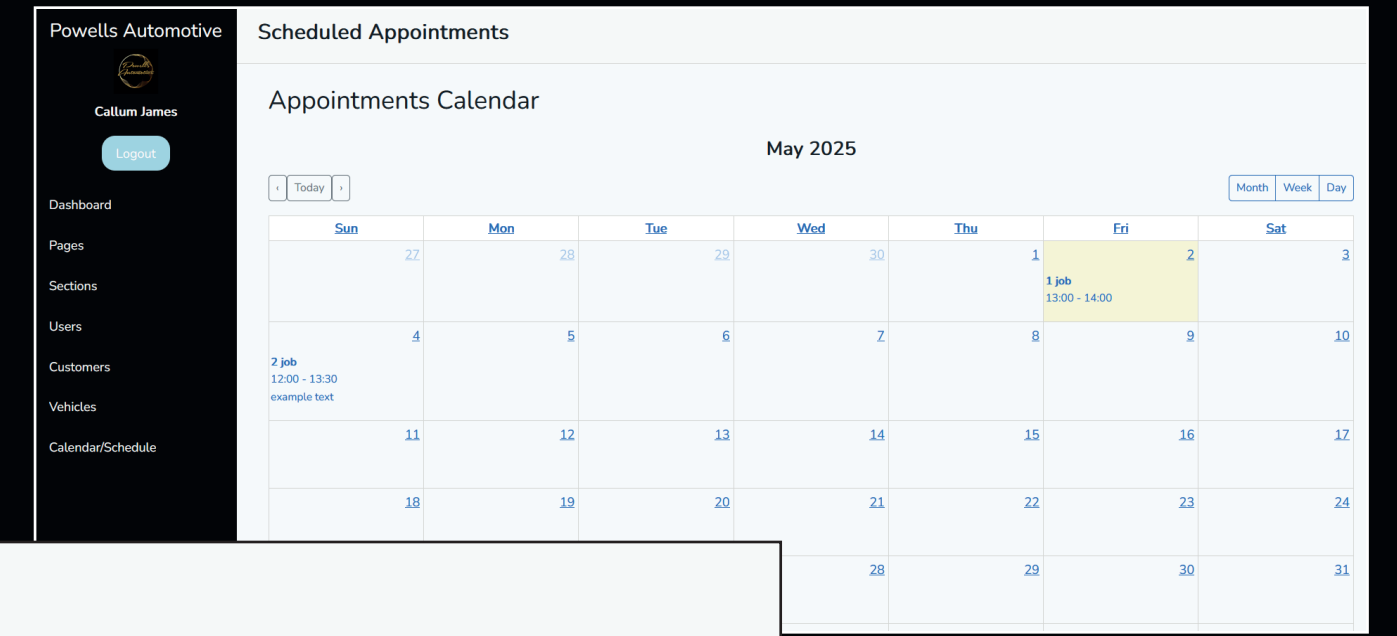
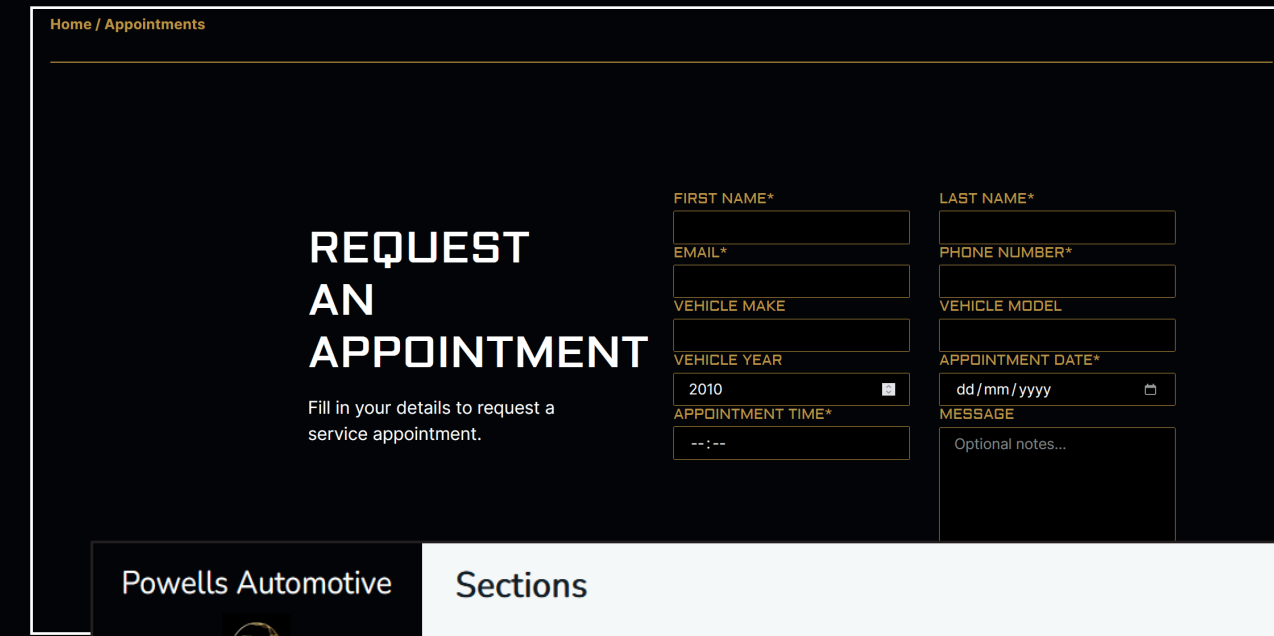
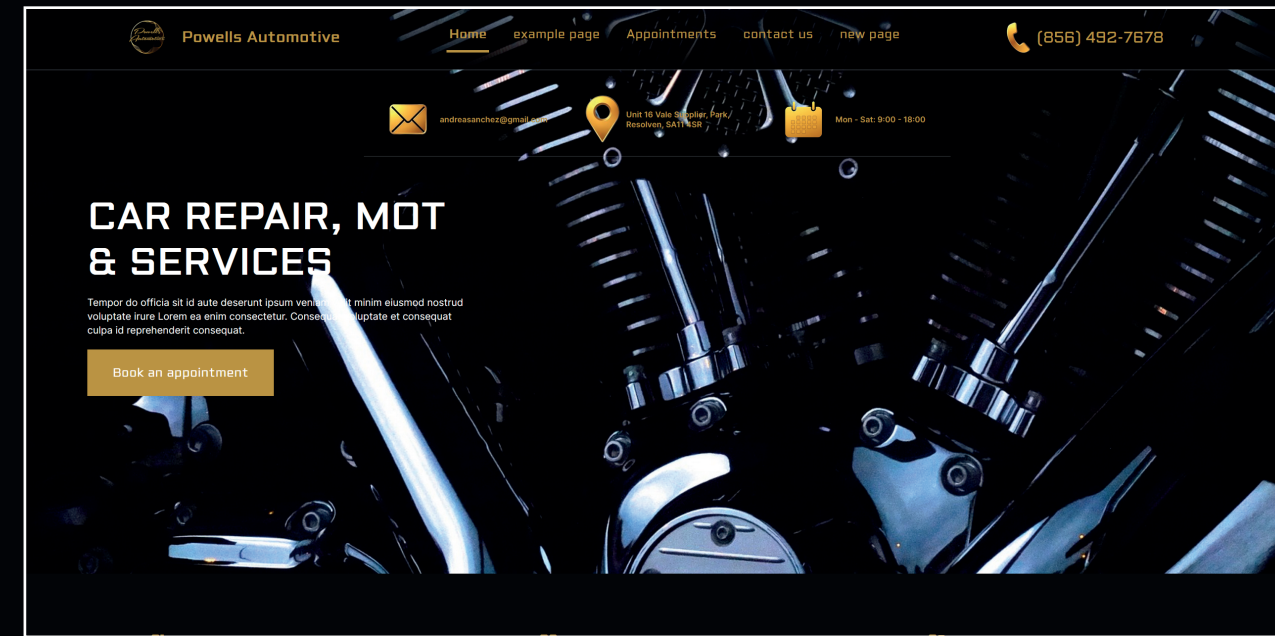
Objectives

The primary objective was to design and develop a user-friendly content management system (CMS) tailored specifically to the client's needs, allowing for the client to implement effective appointment scheduling and website content management without any expertise in coding websites. Further goals included assessing the potential operational benefits gained through digital tool adoption over a manual process in the clients business, validating the usability of the CMS through client feedback, and documenting the potential impact of the system on the business's operational efficiency and client confidence.

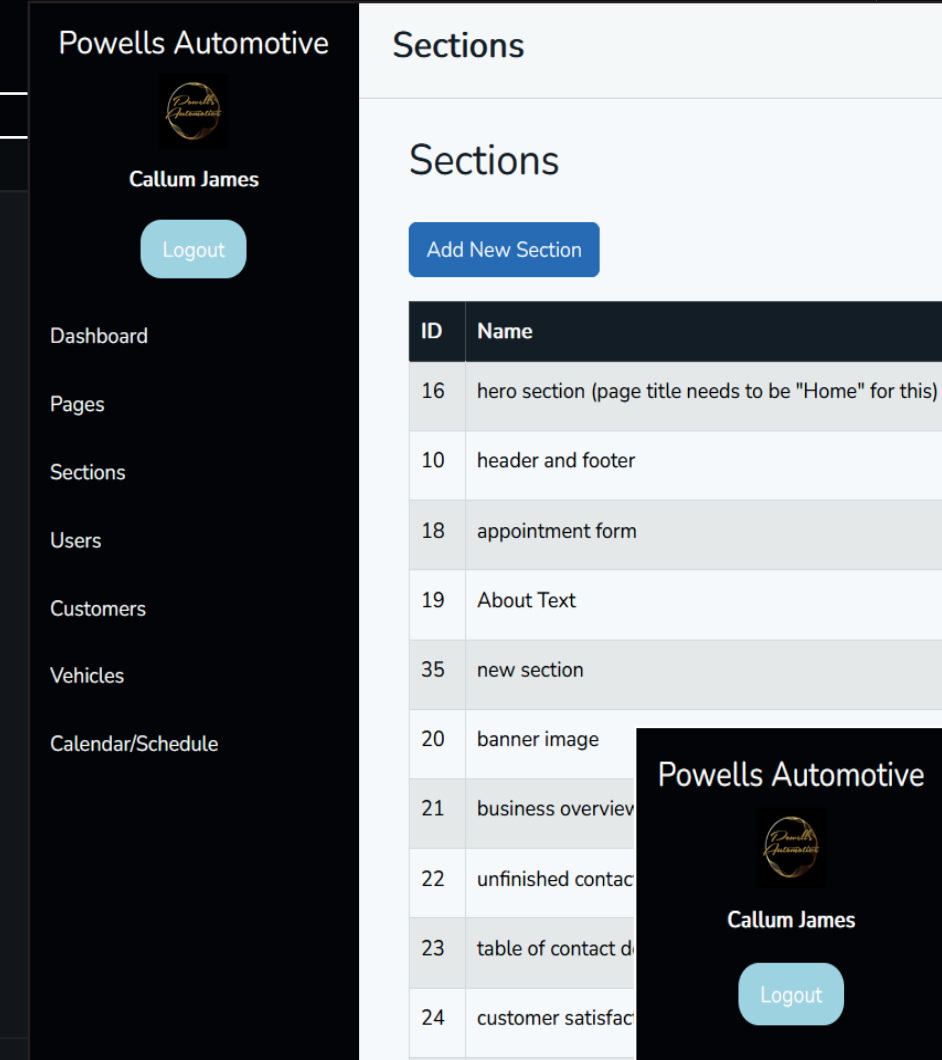
Design iterations

The CMS development process involved multiple design iterations guided by informal interviews and regular feedback sessions with the client. Early design prototypes identified usability issues, particularly around content editing and navigation complexity. Client discussions allowed for customised refinements to both frontend (customer-facing pages) and backend (staff administration) pages, ensuring clarity and ease of use. Accessibility was prioritised through careful colour choices and interface adjustments, accommodating the client's colour vision deficiency to enhance overall usability.

Built CMS



```
page.blade.php X
CMS > resources > views > page.blade.php > ...
1 @php
2 /**
3  * Decode the ordered section IDs from the current page
4  * These IDs determine which sections are shown and in what order.
5  */
6 $orderedIds = json_decode(json: $page->sectionIdarray ?? '[]', associative: true);
7 $orderedIds = is_array(value: $orderedIds) ? $orderedIds : [];
8 /**
9  * Remove the layout section ID (10) from the list of ordered IDs.
10  * This is done because we will handle the layout separately below.
11  */
12 $orderedIds = array_filter(array: $orderedIds, callback: fn($id): bool => $id != 10);
13 /**
14  * Convert section list for lookup by ID.
15  */
16 $sectionMap = collect(value: $sections)->keyBy(keyBy: 'id');
17 /**
18  * Initialise an empty string to hold the compiled section content.
19  */
20 $slotContent = '';
21 /**
22  * Render each section in order:
23  * - Skip any disabled sections
24  */
25 foreach ($orderedIds as $id) {
26     if (isset($sectionMap[$id])) {
27         $section = $sectionMap[$id];
28         // skip if the section is marked as disabled
29         if (empty($section->disableSection)) continue;
30         $html = $section->partialFile;
31         // Fix relative image from the html
32         $html = preg_replace(pattern: '/src=["\']images\/i', replacement: 'src="" . asset(path: 'images/') . '/', subject: $html);
33         // Render Blade content inside the section HTML
34         $slotContent .= Blade::render(string: $html);
35     }
36 }
37 $layoutSection = $sectionMap[10] ?? null;
38 @endphp
39 @if ($layoutSection)
40 @php
41     $layoutContent = $layoutSection->partialFile;
42     echo Blade::render(string: $layoutContent, data: [
43         'slot' => $slotContent,
44         'pageTitle' => $page->pageTitle,
45         'pages' => $pages
46     ]);
47 @endphp
48 @else
49     {{-- Show fallback error if layout section is missing --}}
50     <div style="color: red;">Layout section missing a header and footer.</div>
51 @endif
52
```



Sections

Sections

Add New Section

ID	Name	Description	Status	Enable/Disable	Actions
16	hero section (page title needs to be "Home" for this)	home page opening view	Enabled	☒	Code View Only Delete
10	header and footer	header and footer	Enabled	☒	Code View Only Delete
18	appointment form	appointment form with php	Enabled	☒	Code View Only Delete
19	About Text	text in the about us page	Enabled	☒	Edit Delete
35	new section	showcase	Enabled	☒	Edit Delete

Pages

Pages

Create New Page

ID	Page Title	Sections	Created	Updated	Actions
4	Home	header and footer hero section (page title needs to be "Home" for this) banner image business overview section customer satisfaction (hardcoded version for prototype) dedicated services testimonials why choose us	2025-03-29	2025-05-02	Edit Delete Preview
10	example page	header and footer banner image map linked to resolve garage question/FAQ section new section	2025-04-04	2025-04-04	Edit Delete Preview
6	Appointments	header and footer appointment form	2025-03-31	2025-04-03	Edit Delete Preview
7	contact us	header and footer unfinished contact form table of contact details map linked to resolve garage	2025-04-01	2025-04-01	Edit Delete Preview
9	new page	header and footer dedicated services why choose us	2025-04-03	2025-04-03	Edit Delete Preview

Results

Usability testing demonstrated the effectiveness of the CMS prototype, built using Laravel, MySQL, Quill.js, FullCalendar, and PHP. The client successfully performed key tasks, such as appointment booking and content editing, after minimal guidance. Although certain limitations like mobile responsiveness and navigation link reordering were identified, overall, the CMS increased operational efficiency and administrative ease, with the client claiming the same tasks completed with a paper based method usually required a similar time frame to complete even with the unfamiliarity with the software. The client recognised its potential value, expressing interest in further refinements to address existing usability issues and expand functionality.

Conclusion

overall the project successfully showed the benefits of a custom CMS for a small automotive businesses. Powells Automotive's increased confidence in digital processes was a key positive outcome. Influenced by project research and ongoing client discussions, the client independently adopted professional third-party garage management software offering features beyond the original project's scope. The client also expressed a keen interest in progressing the prototype into full development for future use within their business.