

Roadmap Visual

Test Report

Product: Roadmap Visual for Power BI
Version: 1.0.0
Test Date: 18 January 2026
Testers: Development Team

Executive Summary

Category	Status	Notes
Automated Linting	PASS	2 minor issues (non-blocking)
Security Audit	PASS	No high-severity vulnerabilities in production code
Dependency Audit	ADVISORY	7 vulnerabilities in dev dependencies only
Functional Testing	PASS	All core features working
Performance Testing	PASS	Tested with 500+ work items
Power BI Certification	PASS	All required APIs implemented
Accessibility	PASS	ARIA labels and high contrast mode implemented

Overall Result: PASS

1. Automated Testing Results

1.1 ESLint Static Analysis

Command: npm run lint

Result: 2 issues found (non-critical)

File	Line	Issue	Severity
visual.ts	35	RowBounds defined but never used	Warning
visual.ts	976	predecessorRow should use const	Warning

Assessment: Minor code quality issues. No security or functional impact.

1.2 TypeScript Compilation

Command: `npx tsc --noEmit`

Result: PASS - No type errors

Code Statistics:

- Source file: `src/visual.ts`
- Lines of code: 1,373
- Language: TypeScript 5.x

1.3 Dependency Security Audit

Command: `npm audit`

Result: 7 vulnerabilities detected

Package	Severity	Type	Production Impact
dompurify	Moderate	XSS in edge cases	LOW - jsPDF dependency
elliptic	Critical	Crypto implementation	NONE - Dev tooling only
browserify-sign	Low	Depends on elliptic	NONE - Dev tooling only
crypto-browserify	Low	Depends on above	NONE - Dev tooling only

Assessment: Critical vulnerability is in `powerbi-visuals-tools` (development dependency only). Production bundle is not affected. The moderate `dompurify` vulnerability is mitigated by our use of `sanitizeString()` for all user input.

Recommendation: Update dependencies when Power BI tools releases a fix.

2. Security Testing

2.1 Input Sanitization

Test Case	Method	Result
HTML entity injection	<script>alert(1)</script>	PASS - Escaped
Quote injection	"onclick="alert(1)	PASS - Escaped
Ampersand injection	<script>	PASS - Double-escaped
Unicode bypass	\u003cscript\u003e	PASS - Handled

Implementation: sanitizeString() at line 1109 escapes all 5 HTML entities (& < > " ').

2.2 URL Validation

Test Case	Input	Result
Valid HTTPS	https://example.com	PASS - Allowed
Valid HTTP	http://example.com	PASS - Allowed
Data URI (image)	data:image/png;base64,...	PASS - Allowed
JavaScript URI	javascript:alert(1)	PASS - Blocked
Data URI (script)	data:text/html,...	PASS - Blocked

Implementation: sanitizeUrl() at line 1113 uses allowlist approach.

2.3 External Communications

Check	Result
fetch() API calls	NONE FOUND
XMLHttpRequest	NONE FOUND
WebSocket	NONE FOUND
External scripts	NONE FOUND
Telemetry/tracking	NONE FOUND

Conclusion: Zero external data egress confirmed.

3. Functional Testing

3.1 Data Rendering

Test Case	Dataset Size	Result
Empty dataset	0 items	PASS - Shows placeholder
Small dataset	10 items	PASS
Medium dataset	100 items	PASS
Large dataset	500 items	PASS
Very large dataset	1000+ items	PASS - Performance acceptable

3.2 Date Handling

Test Case	Scenario	Result
Leap year	Feb 29, 2024	PASS
Year boundary	Dec 31 to Jan 1	PASS
ISO Week 53	End of 2020	PASS
DST transition	March/October	PASS - UTC normalization handles correctly
Invalid dates	null/undefined	PASS - Graceful handling

Note: DST handling uses UTC normalization in `DataService.daysBetween()` to ensure consistent day counts regardless of timezone transitions.

3.3 Interactive Features

Feature	Test	Result
Pan/zoom	Mouse drag and wheel	PASS
Selection	Single click	PASS
Multi-select	Ctrl+click	PASS
Context menu	Right-click	PASS

Tooltips	Hover	PASS
PDF export	Export button	PASS

3.4 Grouping and Filtering

Group By Option	Result
Area Path	PASS
Assigned To	PASS
Iteration Path	PASS
Work Item Type	PASS
State	PASS
Parent	PASS
Tags	PASS

4. Performance Testing

4.1 Render Performance

Dataset Size	Initial Render	Re-render
100 items	<100ms	<50ms
500 items	<300ms	<100ms
1000 items	<800ms	<200ms

Test Environment: Chrome 120, 16GB RAM, Intel i7

4.2 Memory Usage

Scenario	Memory	Notes
Initial load	~15MB	Baseline
500 items rendered	~25MB	Normal
After 10 re-renders	~26MB	Stable (no leak)

Memory Leak Status: RESOLVED - The destroy() method now properly removes window event listeners (mousemove.dragpan, mouseup.dragpan) at line 1350-1354.

5. Power BI Certification Compliance

5.1 Required APIs

Requirement	Implementation	Line	Status
Rendering Events	renderingStarted() / renderingFinished()	177, 222	PASS
Selection Manager	createSelectionIdBuilder()	146	PASS
Context Menu	showContextMenu()	958	PASS
Destroy Method	destroy() with cleanup	1350	PASS
No Special Privileges	pbviz.json	-	PASS

5.2 Sandbox Compliance

Restriction	Status
No direct DOM access outside container	COMPLIANT
No external network requests	COMPLIANT
No browser storage APIs	COMPLIANT
CSP compliant	COMPLIANT

6. Accessibility Testing

6.1 WCAG 2.1 Compliance

Criterion	Requirement	Status
1.1.1	Non-text content	PASS - ARIA labels on all interactive elements
1.4.1	Use of color	PASS - ID shown with color
1.4.3	Contrast ratio	PASS - High contrast mode implemented
2.1.1	Keyboard accessible	PARTIAL - Basic support
4.1.2	Name, Role, Value	PASS - ARIA attributes implemented

6.2 Implemented Accessibility Features

Feature	Implementation	Location
High contrast mode	isHighContrast setting with CSS class	Line 230, 384
Timeline ARIA label	aria-label="Roadmap timeline visualization"	Line 484
Work items list ARIA	aria-label="Work items list"	Line 491
SVG ARIA label	aria-label="Timeline with work item bars..."	Line 506
Milestone ARIA labels	Dynamic labels with title, dates	Line 845
Bar ARIA labels	Dynamic labels with work item details	Line 883
Row count ARIA	aria-label on item counts	Line 762, 782

6.3 Remaining Accessibility Work

Feature	Priority	Notes
Full keyboard navigation	Low	Tab/arrow key support for bar selection
Focus indicators	Low	Visual focus styles for keyboard users

7. Resolved Issues

7.1 Previously Critical Issues - NOW RESOLVED

ID	Issue	Resolution	Verified
T-001	Memory leak in destroy()	Added window event listener cleanup at lines 1353-1354	YES

7.2 Previously Moderate Issues - NOW RESOLVED

ID	Issue	Resolution	Verified
T-002	Incomplete high contrast mode	Implemented isHighContrast setting with CSS class toggle	YES
T-003	DST edge case in daysBetween()	DateService uses UTC normalization (lines 49-52)	YES
T-004	Missing ARIA attributes	Added aria-labels throughout (lines 484, 491, 506, 845, 883)	YES

7.3 Low Priority (Non-blocking)

ID	Issue	Impact	Status
T-005	Unused RowBounds type	Code cleanliness	Open
T-006	const vs let warning	Code style	Open

8. Test Environment

Component	Version
Node.js	18+
TypeScript	5.9.3
Power BI Visuals API	5.8.0
D3.js	7.9.0

jsPDF	2.5.2
ESLint	8.57.1

9. Conclusion

The Roadmap Visual passes all critical functional, security, and accessibility tests. All previously identified critical and moderate issues have been resolved:

1. Memory leak - FIXED: Window event listeners properly cleaned up in destroy()
2. High contrast mode - FIXED: Fully implemented with setting and CSS class
3. DST handling - FIXED: DateService uses UTC normalization
4. ARIA accessibility - FIXED: Labels added to all interactive elements

Recommendation: Approved for production release.

Document Control

Version	Date	Author	Changes
1.0	18 Jan 2026	Test Team	Initial report
1.1	18 Jan 2026	Test Team	Updated to reflect resolved issues T-001 through T-004
