TacDraw — Product Roadmap

Tagline: Staff graphics in minutes, not hours.
Product Type: Browser-based tactical map graphics tool
Deployment: GitHub Pages (static, zero-install, zero-backend)
Classification: UNCLASSIFIED // FOUO handling only
Last Updated: 20 FEB 2026

Problem Statement

Staff officers spend disproportionate time in PowerPoint building tactical graphics —
MCOOs, COA sketches, decision support tools, OPORD overlays — that should take minutes
but routinely take hours. The tool was never designed for this work. Symbols drift from
doctrinal standard, products look inconsistent across units, and iteration is brittle. Every
change risks breaking the slide.

The result: graphics slow down the planning process instead of accelerating it.

TacDraw fixes this by giving staff officers a purpose-built, browser-based canvas where
doctrinal graphics are first-class objects — spawnable in one click, draggable, editable, and
exportable in a format ready for any briefing or OPORD annex.

Product Principles

1. Speed above all else. A staff officer under time pressure should produce a briefing-
quality graphic in under 15 minutes. Every feature decision is evaluated against this
constraint first.

2. Doctrinal by default. Symbols, overlays, and graphics conform to FM 1-02.1, ATP 2-01.3,
and FM 3-90 out of the box. The user should never have to manually correct a symbol to
match doctrine.

3. Zero friction to start. No install, no account, no license. Open a browser, load a map,
start drawing. Works on NIPR. Can be saved and run fully offline.

4. Staff-cycle aware. Products are designed around the outputs staff actually need: IPB
products, COA sketches, synchronization graphics, OPORD annexes. Not generic drawing

tools.

5. Lightweight and maintainable. No feature bloat. If a capability doesn't directly reduce the time a staff officer spends building a common product, it belongs on the backlog, not in the release.

Users

Primary: Staff Officer (S2/S3/G2/G3)

Building tactical graphics during the MDMP — COA development, IPB products, decision support tools, and OPORD annexes. Time-constrained, working from existing map imagery, needs a clean exportable product fast.

Secondary: Instructor / Schoolhouse

Building training scenarios, example graphics, and student exercise materials. Benefits from the same speed and doctrinal fidelity, with the added need for repeatable, templated products across iterations of the same scenario.

Tertiary: Commander / XO

Quick annotation of a map image during a brief or VTC. Needs the simplest possible path from "here's a map" to "here's what I want to show."

Current State — v0.1 Prototype

A single HTML file (~1,500 lines, vanilla JS + HTML5 Canvas) demonstrating the MCOO use case. Proves out the core interaction model: load map → spawn elements → drag to position → export JPG/PDF.

Established:

- Map image load via drag-and-drop or file picker

- 13 element types (terrain overlays, obstacles, AA arrows, callouts, legend, title block)

- Drag-to-move, resize handles, properties panel, layers panel

- Double-click text editing, right-click context menu

- JPG and PDF export (print-dialog based)

- Fully offline capable

Not yet built:

- Undo/redo

- Save/load project files

- Freehand polygon drawing

- Full doctrinal symbol library

- Multi-select, snap-to-grid, zoom/pan

- OPORD and COA graphics element types

Scope & Phasing

The product grows in three deliberate phases, each shipping a complete, usable tool before expanding scope.

```
Phase 1 —— IPB Graphics Suite ——————————————— v1.0  [Foundation]
Phase 2 —— COA & OPORD Graphics ————————————— v2.0  [Full Staff Tool]
Phase 3 —— Workflow & Collaboration ————————— v3.0  [Scale]
```

Phase 1 — IPB Graphics Suite (v1.0)

Goal: Replace PowerPoint for IPB products entirely. A G2 should be able to build a complete MCOO, threat COA overlay, and event template faster in TacDraw than in any alternative.

Success metric: A competent S2 produces a briefing-ready MCOO in under 15 minutes on first use.

1.1 Core Infrastructure

The prototype is rewritten in React + Konva.js for a maintainable, extensible foundation. This is not user-visible but is prerequisite for everything else.

- React 18 + Vite project scaffold

- Konva.js canvas engine (replaces manual hit-testing in prototype)

- Zustand state management

- Undo/redo — 50-step history (Ctrl+Z / Ctrl+Y)

- Save/load project files (`.tacdraw` JSON format — map referenced by filename, not embedded)

- True PDF export via jsPDF at full canvas resolution

- PNG/JPG export

- GitHub Actions CI/CD → GitHub Pages auto-deploy

1.2 Terrain & Obstacle Elements (MCOO Complete)

All elements draggable, resizable, rotatable, labeled, and serializable.

Element	Doctrinal Ref
Water / Unfordable	ATP 2-01.3
Severely Restrictive Terrain	ATP 2-01.3
Restrictive Terrain	ATP 2-01.3
Dead Ground / Defilade	ATP 2-01.3
Linear Obstacle (ticked line)	ATP 2-01.3
Point Obstacle	ATP 2-01.3
Elevated Movement Restrictor	ATP 2-01.3
Freehand Polygon Tool	—

The freehand polygon tool is the single most important upgrade from the prototype. Analysts must be able to trace irregular terrain features by clicking vertices and closing the polygon — not be limited to rectangles and ovals.

1.3 IPB Tactical Graphics

Element	Doctrinal Ref
Avenue of Approach (with label box)	ATP 2-01.3
Key Terrain marker (K#)	ATP 2-01.3
Objective box	FM 3-90

Named Area of Interest (NAI)	ATP 2-01.3
Targeted Area of Interest (TAI)	ATP 2-01.3
Assembly Area	FM 3-90
Engagement Area	FM 3-90

1.4 Threat COA Overlay Elements

Element	Notes
Threat Axis of Advance	Solid arrow, threat color (red)
Threat Avenue of Approach	Labeled, doctrinal red
Threat Assembly Area	Red-bordered
Threat Objective	Red box
Threat Unit Symbol (generic)	Echelon-selectable rectangle frame
Decision Point marker	DP# label, diamond symbol

1.5 Annotations & Map Admin

Element	Notes
Analyst Callout Box	Titled box + bullet body, color-coded
AA / Zone Label Box	Two-line identifier
Free Text Label	Adjustable font size + color
AO Boundary	Dashed rectangle
Title Block	AO, grid, scale, datum, DTG, prepared-by
Auto-populated Legend	Reads element types on canvas, builds legend automatically
Classification Header/Footer	UNCLASSIFIED // FOUO bars
North Arrow	
Graphic Scale Bar	User inputs map scale, bar auto-sizes

1.6 Canvas UX

- Zoom and pan (mouse wheel + middle-click drag or trackpad)

- Snap-to-grid (optional, configurable spacing)

- Multi-select (Shift+click, Ctrl+A, rubber-band drag select)

- Group move and delete on multi-select

- Rotation handles on all elements

- Keyboard shortcuts (see §Shortcuts)

- Layers panel with drag-to-reorder z-order

Phase 2 — COA & OPORD Graphics (v2.0)

Goal: Expand from IPB into the full MDMP graphics suite. A S3 should be able to build a complete COA sketch, scheme of maneuver overlay, and fire support overlay without touching PowerPoint.

Success metric: An experienced S3 produces a COA sketch with unit symbols, axes of advance, phase lines, objectives, and control measures in under 20 minutes.

2.1 Maneuver Graphics

Element	Doctrinal Ref
Axis of Advance (friendly)	FM 1-02.1
Direction of Attack	FM 1-02.1
Main Attack / Supporting Attack	FM 1-02.1
Air Assault / Airborne Assault axis	FM 1-02.1
Infiltration Lane	FM 1-02.1
Passage Lane	FM 1-02.1
Route (named)	FM 1-02.1
Air Corridor	FM 1-02.1

2.2 Control Measures

Element	Doctrinal Ref
Phase Line (with PL name)	FM 3-90
Line of Departure (LD)	FM 3-90
Limit of Advance (LOA)	FM 3-90
Line of Contact (LC)	FM 3-90
Coordinating Altitude	FM 3-90
Boundary (unit boundary line)	FM 3-90
Zone of Action (ZOA)	FM 3-90
Attack Position	FM 3-90
Assault Position	FM 3-90
Battle Position (BP)	FM 3-90
Strong Point	FM 3-90
Checkpoint	FM 1-02.1

2.3 Unit Symbols (Simplified)

A simplified unit symbol system — not full MILSTD-2525, but covering the 80% case for COA sketches. Echelon selectable (TM/PLT/CO/BN/BDE/DIV). Affiliation selectable (friendly/enemy/unknown). Function selectable (INF/AR/MECH/FA/ADA/AVN/EN/LOG/SIG/MP).

Full MILSTD-2525 via milsymbol.js is a Phase 3 stretch goal — the simplified system ships in Phase 2 because COA sketches need it.

2.4 Fire Support Graphics

Element	Doctrinal Ref
Fire Support Coordination Line (FSCL)	FM 3-09
Coordinated Fire Line (CFL)	FM 3-09

No-Fire Area (NFA)	FM 3-09
Restrictive Fire Area (RFA)	FM 3-09
Free Fire Area (FFA)	FM 3-09
Target reference point (TRP)	FM 3-09
Target symbol	FM 3-09
Final Protective Line (FPL)	FM 3-09
Principal Direction of Fire (PDF)	FM 3-09

2.5 Multi-Canvas / Overlay System

Staff products often require multiple overlays on the same base map — COA 1, COA 2, fire support overlay, logistics overlay. The multi-canvas system allows multiple named overlay layers on a single map image, togglable for comparison and individually exportable.

- Named overlay tabs (e.g. "COA 1 Maneuver", "COA 1 Fire Support")

- Toggle overlays on/off for comparison view

- Export individual overlay or composite of selected overlays

- Each overlay independently saveable

2.6 Template Library

Pre-built templates for common products that can be loaded and customized:

- Blank MCOO template (title block, legend, classification bars, AO boundary)

- Threat COA template (title block, threat-color scheme)

- COA sketch template

- Decision Support Template (DST) starter

- Event Template starter

Users can save their own templates from any canvas state.

Phase 3 — Workflow & Scale (v3.0)

Goal: Make TacDraw the default tool across a staff section — consistent products, reusable

work, shareable outputs.

3.1 Recent Files & Session Management

- Recent files list (localStorage — no server required)

- Auto-save to localStorage every 60 seconds with recovery on next open

- "New from template" flow on app open

3.2 Shareable URL State

Lightweight canvas state encoded in URL hash — share a link, recipient opens the same graphic in their browser. Useful for quick sharing within a staff section without file transfer.

Scope: small graphics only (few elements, no embedded images). Full projects still require file share.

3.3 Full MILSTD-2525 Symbol Library

Integration of milsymbol.js for the complete MILSTD-2525D symbol set. Searchable panel — type "infantry" and see all infantry variants. Symbols render as SVG, scale cleanly at any size.

This replaces the simplified symbol system from Phase 2 for users who need doctrinal precision on every symbol.

3.4 Measurement & Scale Tools

- Draw a line, read estimated ground distance based on user-input map scale

- Area measurement on closed polygons

- Grid reference readout (cursor coordinates as MGRS if scale/datum provided)

3.5 Offline PWA

Service worker caches the entire app — installable on desktop, usable on isolated NIPR workstations without any internet access. No server, no network, no IT ticket.

3.6 Export to PPTX

Generate an editable PowerPoint file via PptxGenJS. Base map as slide background, all TacDraw elements as native PowerPoint shapes. Bridges the gap for units that must deliver products in PPTX format.

What This Is Not

These are explicit non-goals. They keep the product lightweight and avoid scope creep that would compromise the core speed principle.

Out of Scope	Reason
Backend / server / user accounts	Adds friction, creates network dependency, security surface
Real-time collaboration	Complexity disproportionate to benefit; file-sharing covers the use case
Live map tile integration (Google Maps, etc.)	Licensing issues; users bring their own map imagery
Full GIS capability (projections, georeferencing)	This is a graphics tool, not a GIS
Classification levels above FOUO	Requires accreditation process outside project scope
Mobile-first design	Staff officers work at desks; mobile is a stretch goal not a priority

Keyboard Shortcuts (Target v1.0)

Action	Shortcut
Undo	Ctrl+Z
Redo	Ctrl+Y
Delete selected	Delete / Backspace
Duplicate selected	Ctrl+D
Select all	Ctrl+A
Deselect	Escape
Bring to front	Ctrl+]
Send to back	Ctrl+[

Save project	Ctrl+S
Export JPG	Ctrl+Shift+E
Export PDF	Ctrl+Shift+P
Zoom in/out	Ctrl+scroll
Fit canvas to window	Ctrl+0
Toggle grid snap	Ctrl+G
New polygon point	Click (in polygon mode)
Close polygon	Double-click (in polygon mode)

File Format — `.tacdraw`

Projects serialize to a JSON file. Human-readable, version-tagged, small.

```
{
  "version": "1.0",
  "meta": {
    "title": "Operation IRON HORSE — COA 1",
    "created": "2026-02-20T09:00:00Z",
    "author": "S3, 1-68 AR",
    "classification": "UNCLASSIFIED//FOUO"
  },
  "canvas": {
    "width": 1200,
    "height": 800,
    "mapImageFilename": "AO_map_1_50000.png"
  },
  "overlays": [
    {
      "id": "overlay_001",
      "name": "COA 1 Maneuver",
      "visible": true,
      "elements": [ ... ]
    },
    {
      "id": "overlay_002",
      "name": "COA 1 Fire Support",
      "visible": false,
      "elements": [ ... ]
```

```
        }
    ]
  }
```

Map images are never embedded — referenced by filename only. On load, the app prompts the user to re-select the image file. This keeps project files small and avoids storing map imagery in JSON.

Milestones Summary

Milestone	Scope	Key Unlock
v0.1	MCOO prototype (current)	Proves interaction model
v1.0	Full IPB graphics suite	Replaces PPT for all IPB products
v1.5	Freehand polygon + full MCOO element set	Irregular terrain tracing
v2.0	COA sketch + OPORD graphics + unit symbols	Replaces PPT for full staff graphics
v2.5	Multi-canvas overlay system + template library	Consistent products across staff
v3.0	MILSTD-2525 symbol library + measurement tools	Full doctrinal precision
v3.1	Offline PWA + PPTX export	Isolated network use + PPT bridge

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The goal is not to build every feature. The goal is to build the right features fast enough that a staff officer chooses TacDraw over PowerPoint without being told to.

TacDraw — maintained by Kellen. Last updated 20 FEB 2026.