

VCLASS Portal Marketing Visuals

VCLASS Portal: Visual Summary & Infographics Reference

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3. Data Volume Challenge: Why This Matters
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 - Extended Journey Through Phase 2 (AI Analysis)
 - Full Journey Through Phase 3 (Multi-Site Federation)

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VLASS Portal: Visual Summary & Infographics Reference

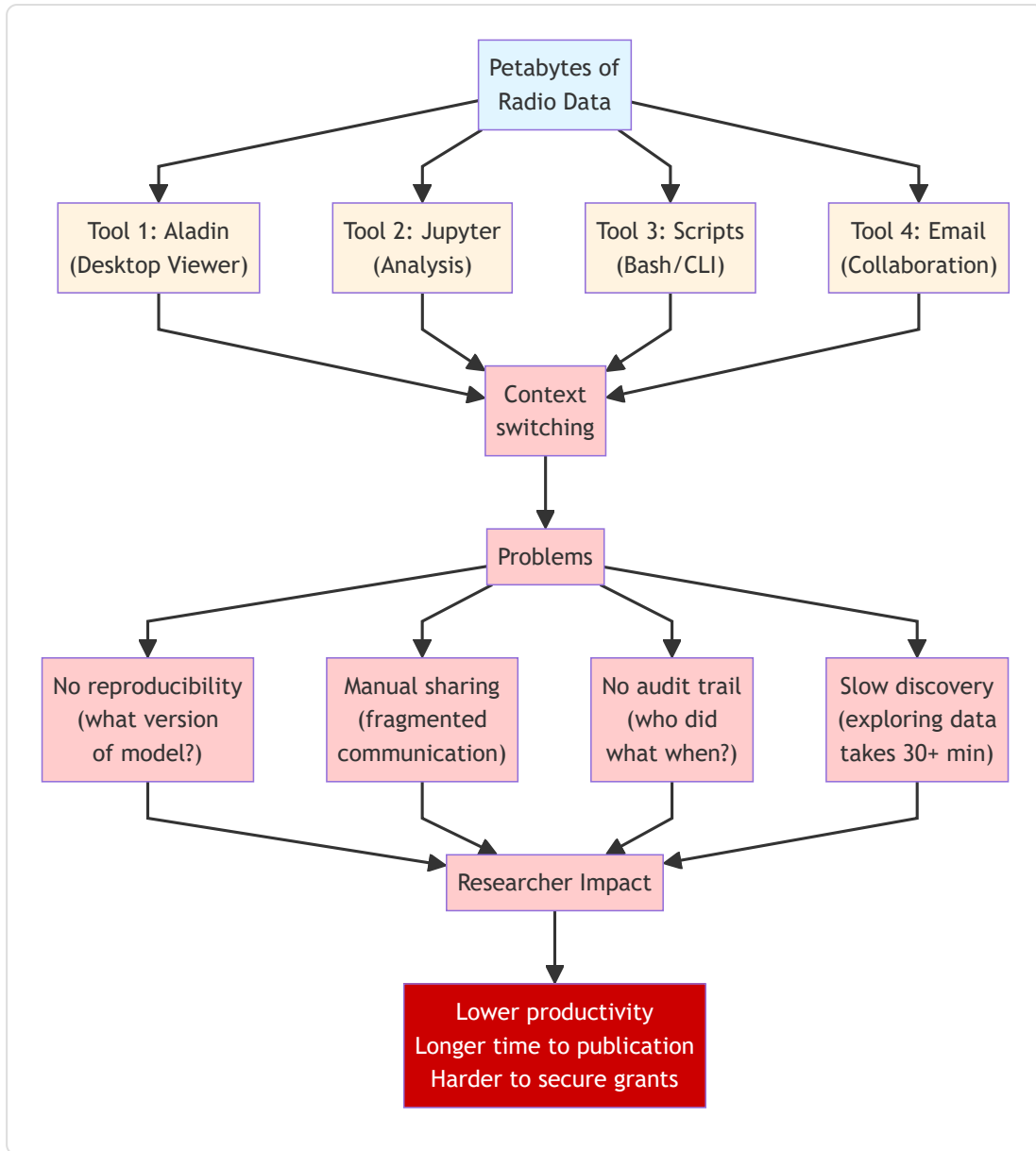
Document Purpose

This document provides **detailed specifications and Mermaid diagrams** for creating professional marketing visuals and infographics for VLASS Portal. It complements the main marketing overview and is suitable for conversion to PDF or graphic design workflows.

1. Problem Statement Visualization

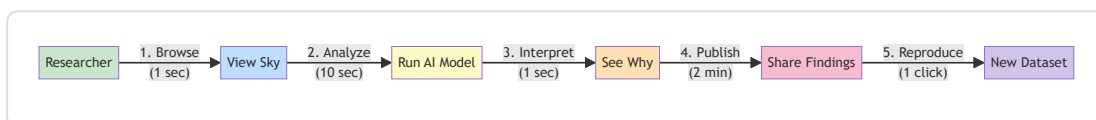
The Fragmentation Problem

The current radio astronomy workflow is scattered across incompatible tools:



The Opportunity

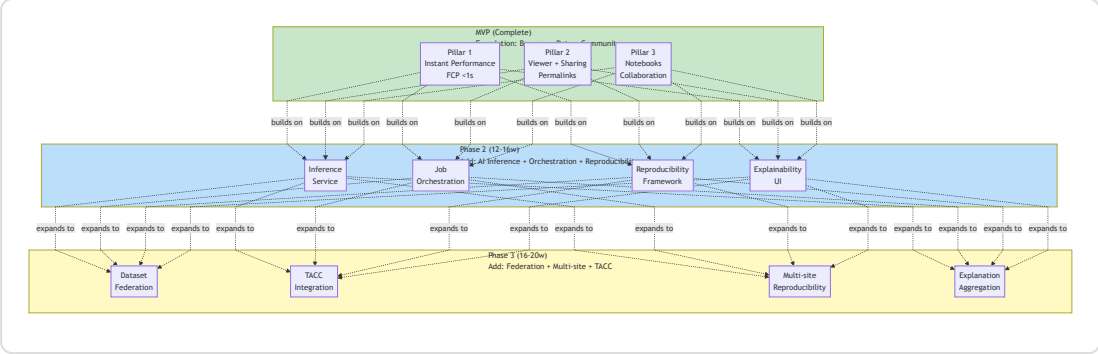
What researchers *could* do with unified platform:



Estimated end-to-end time: approximately 3 minutes from data to publication.

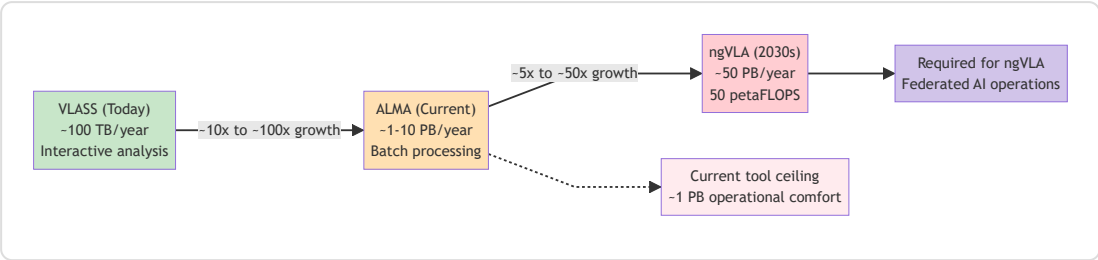
2. Capability Pyramid: MVP → Phase 2 → Phase 3

The progression of vlass-portal from static viewer to federated national infrastructure:



3. Data Volume Challenge: Why This Matters

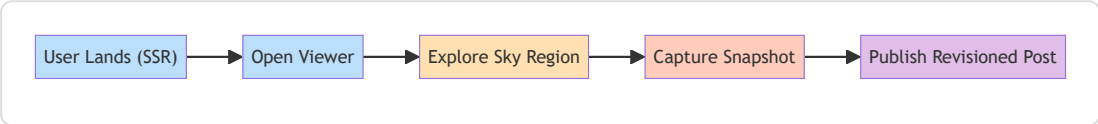
Comparing radio astronomy data scales across facilities:



Facility	Annual Data Volume	Analysis Mode	Operational Implication
VLASS (Today)	~100 TB	Interactive (<30s)	Desktop/notebook workflows are still workable
ALMA (Current)	~1-10 PB	Batch (hours)	Requires shared institutional infrastructure
ngVLA (2030s)	~50 PB	Real-time + distributed	Demands federated orchestration and high-scale AI operations

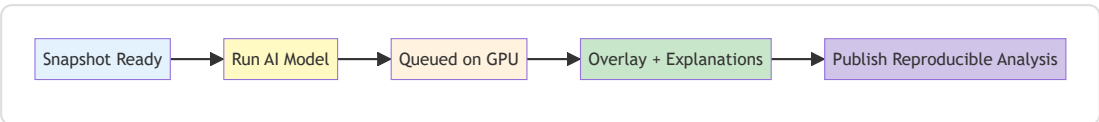
4. User Journey: From Discovery to Publication

Journey Through MVP (What Exists Today)



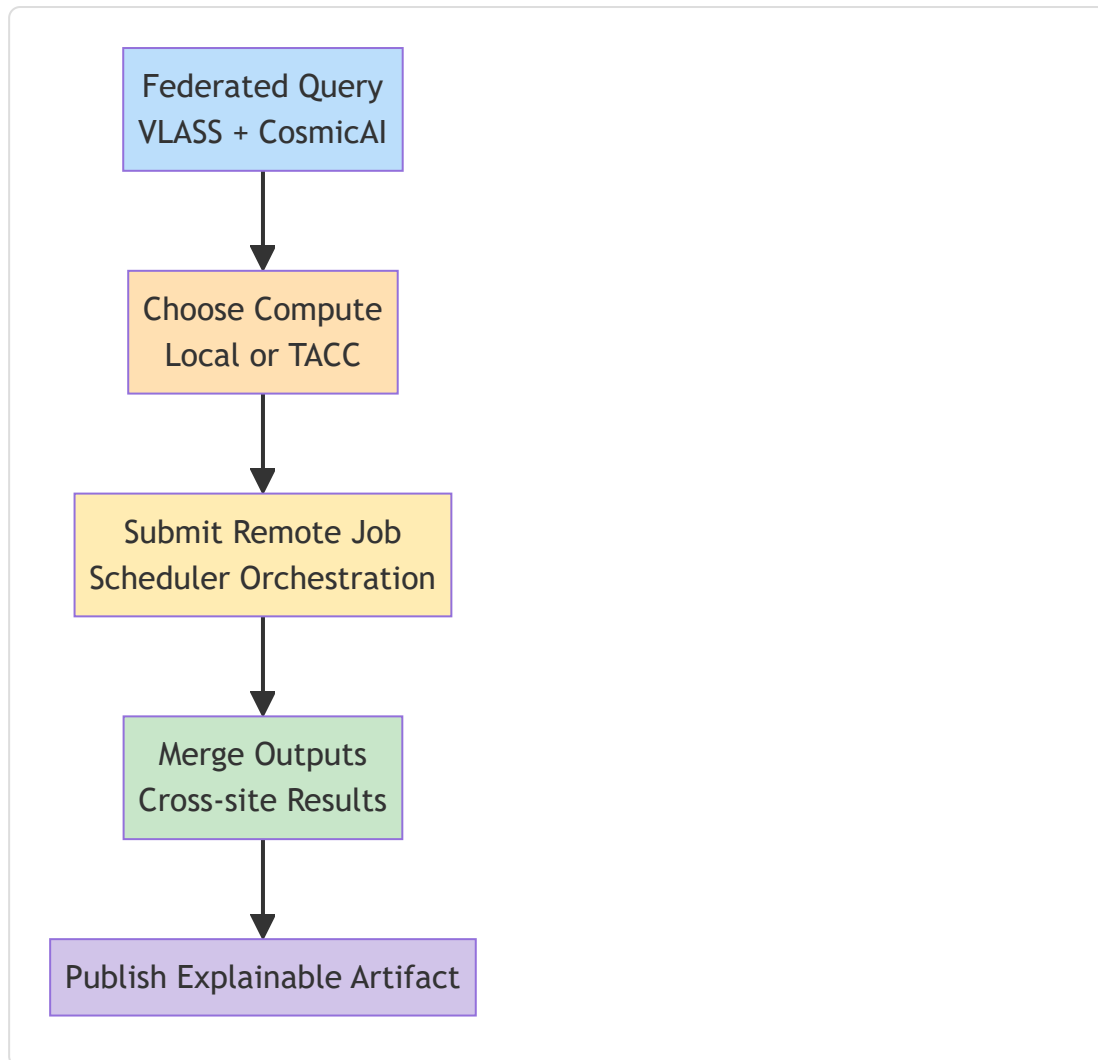
Step	Action	Typical Time
1	Land on SSR page (mobile/desktop)	0s
2	Viewer loads preview	~20s
3	Explore target sky region	~1 min
4	Capture snapshot and share link	~1.5 min
5	Publish post with embedded context	~2 min

Extended Journey Through Phase 2 (AI Analysis)



Step	Action	Typical Time
6	Select model and click Analyze	~10s
7	Job queued/executed on GPU	~20s
8	Overlay + explainability returned	~30s
9	Publish reproducible AI-assisted analysis	~30-60s

Full Journey Through Phase 3 (Multi-Site Federation)

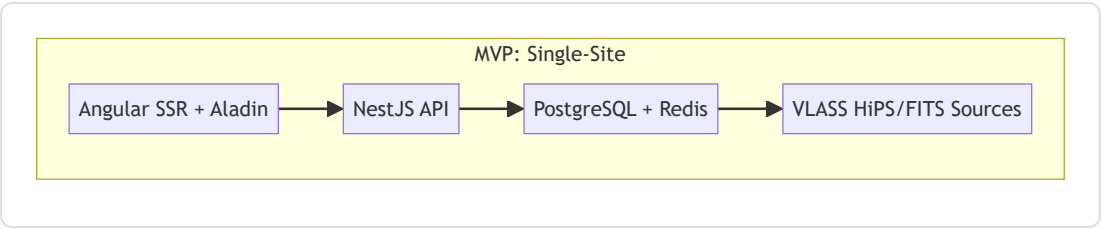


Multi-site flow summary

1. Select federated datasets (VLASS + CosmicAI) with sub-2s query time.
 2. Choose compute path (local GPU for fast runs, TACC for large jobs).
 3. Submit federated job (staging + scheduler + live status + cache checks).
 4. Compare multi-model outputs and expert review for confidence scoring.
 5. Publish reproducible artifact (data versions, model versions, params, outputs, DOI).
-

5. Architecture Evolution

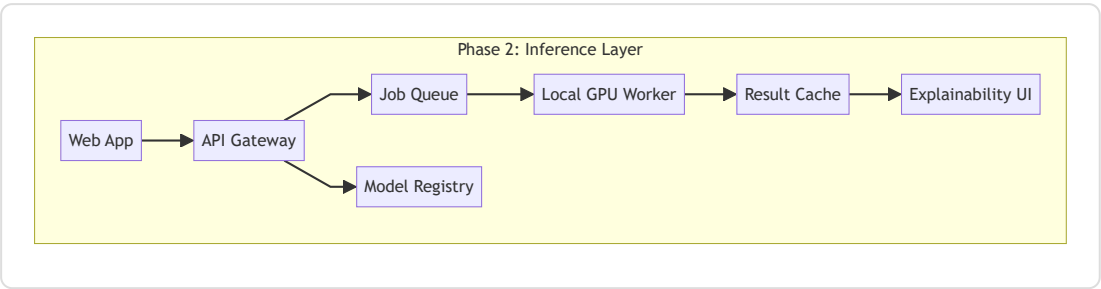
MVP Architecture (Simple, Single-Site)



MVP profile

- Complexity: Low
- Deployment: Docker Compose
- Scalability: Single server

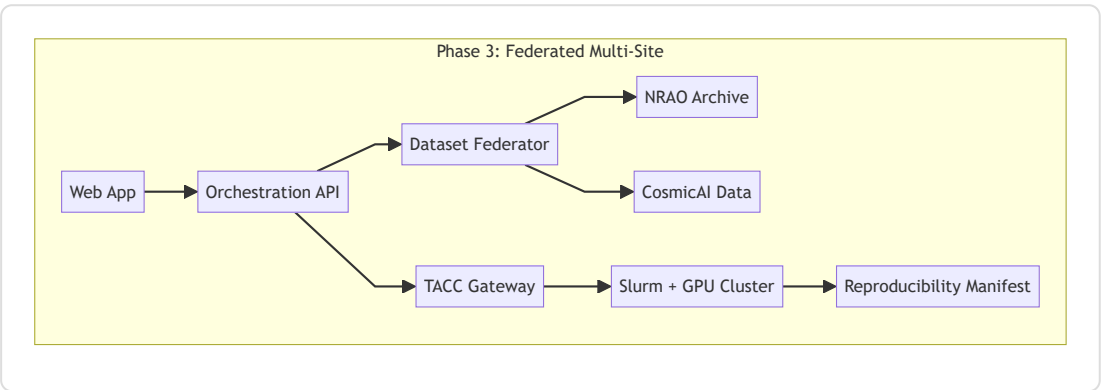
Phase 2 Architecture (Local AI + Inference)



Phase 2 profile

- Complexity: Medium
- Deployment: Kubernetes-ready
- Scalability: Single GPU node

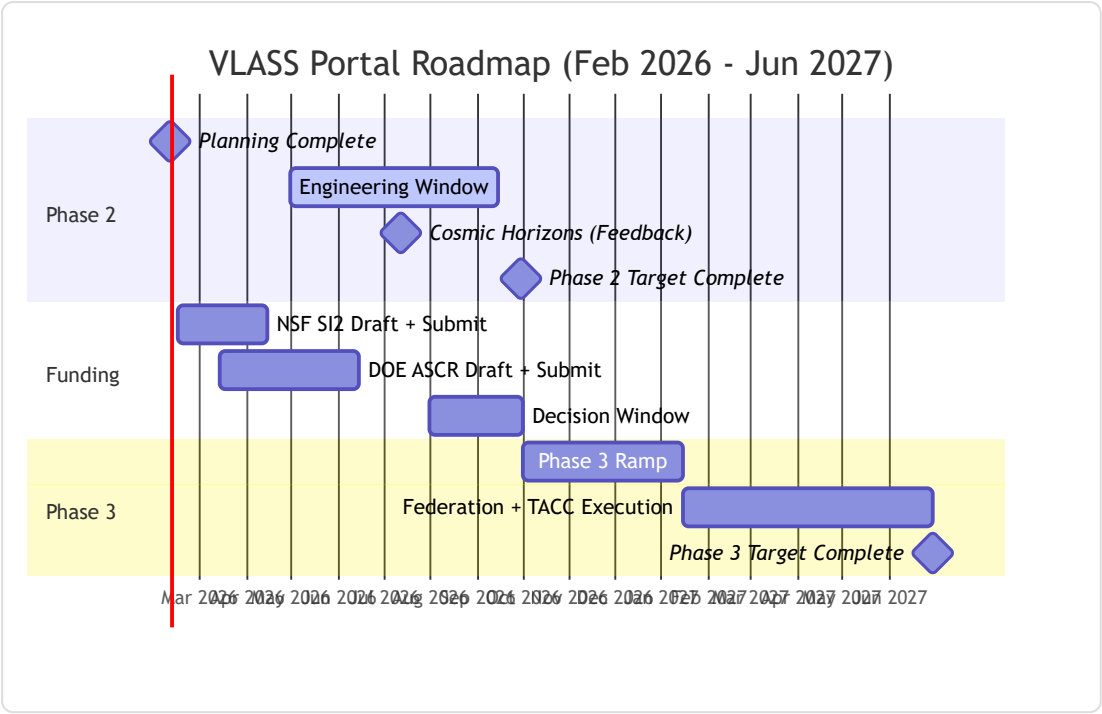
Phase 3 Architecture (Federated Multi-Site)



Phase 3 profile

- Complexity: High
- Deployment: Kubernetes + Helm
- Scalability: Multi-region, petaflop-scale

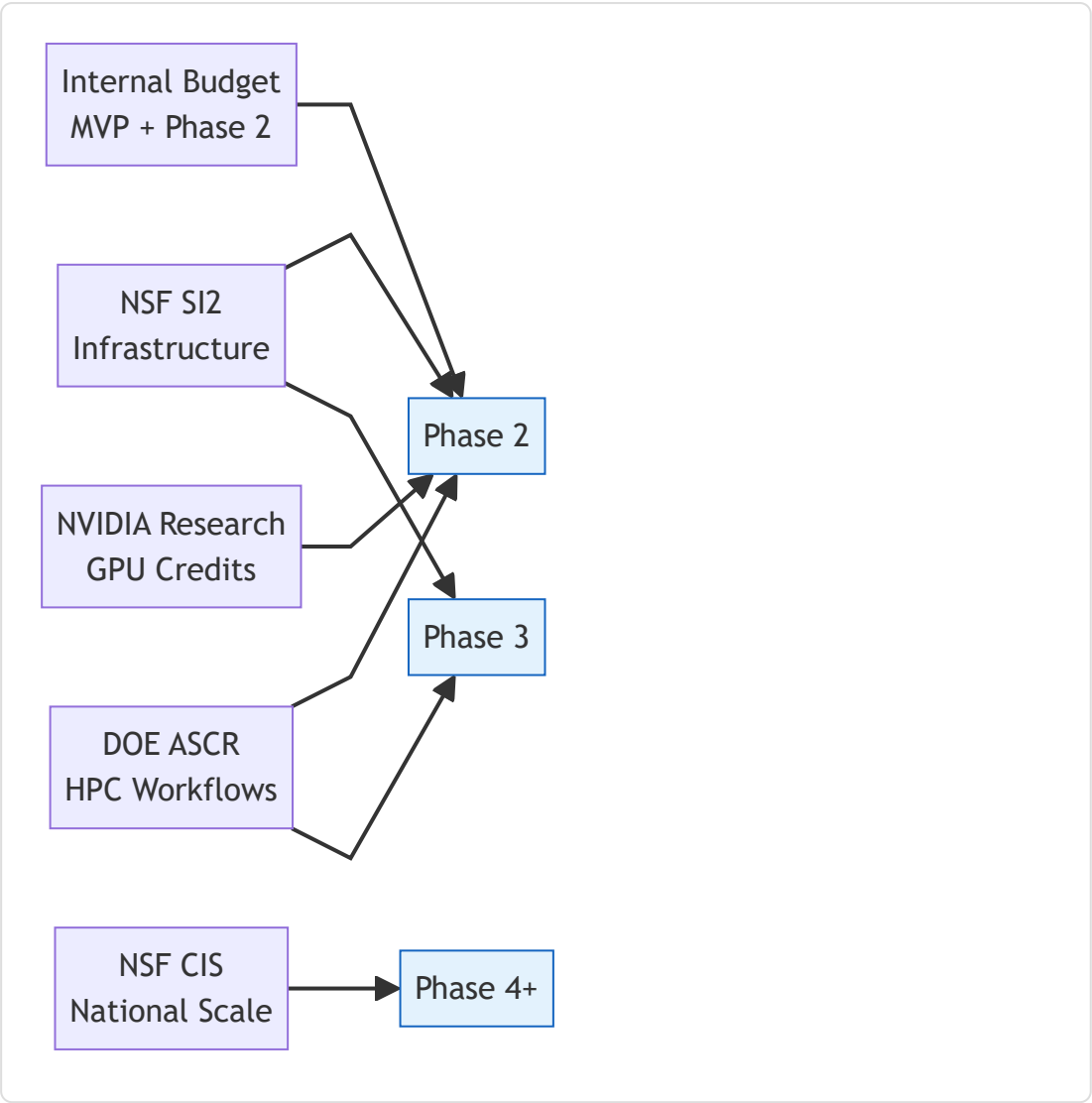
6. Timeline: Gantt-Style Roadmap



Window	Milestones
Feb-Apr 2026	Phase 2 planning complete, NSF/DOE/NVIDIA prep
May-Sep 2026	Phase 2 engineering execution and integration
Jul 2026	Cosmic Horizons feedback milestone
Aug-Oct 2026	Funding decision window
Oct 2026-Jun 2027	Phase 3 federation + TACC execution
Jun 2027	Phase 3 target completion and pilot readiness

7. Funding Landscape

Who Funds What

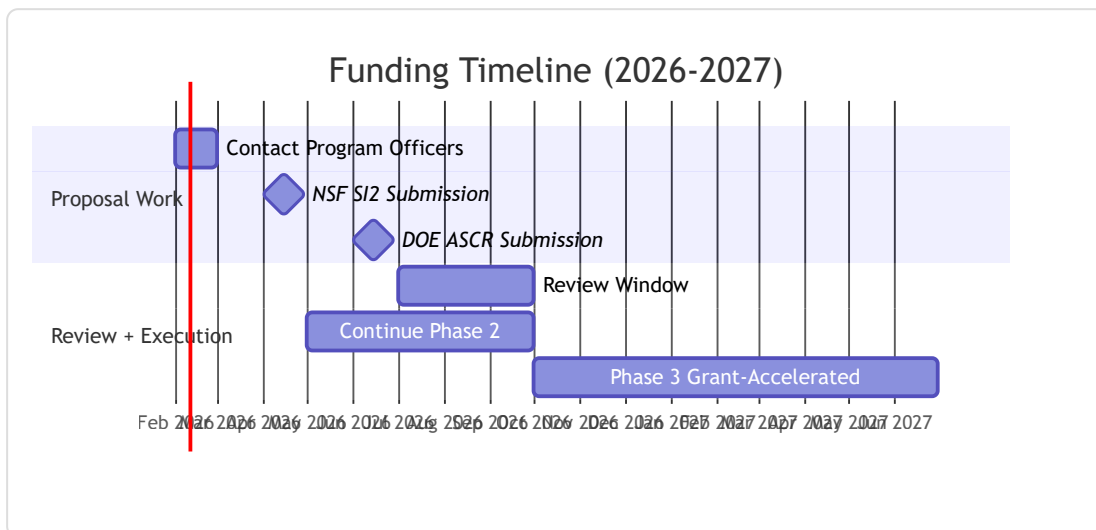


Funding Source	Primary Phase Coverage	Budget Range	Notes
Internal budget (dept/R&D)	MVP + Phase 2	~\$150K	Self-funded bridge
NSF SI2 (software infrastructure)	Phase 2-3	150K–300K	24 months, ~20-25% success
DOE ASCR (advanced computing)	Phase 2-3	200K–400K	24 months, ~25-30% success
NVIDIA research support	Phase 2	50K–150K	Credits/hardware, ~60-70% success
NSF CIS (later-stage infra)	Phase 4+	500K–1M+	36+ months, ~15-20% success

Realistic blended range

\$800K–\$1.6M over staged cycles.

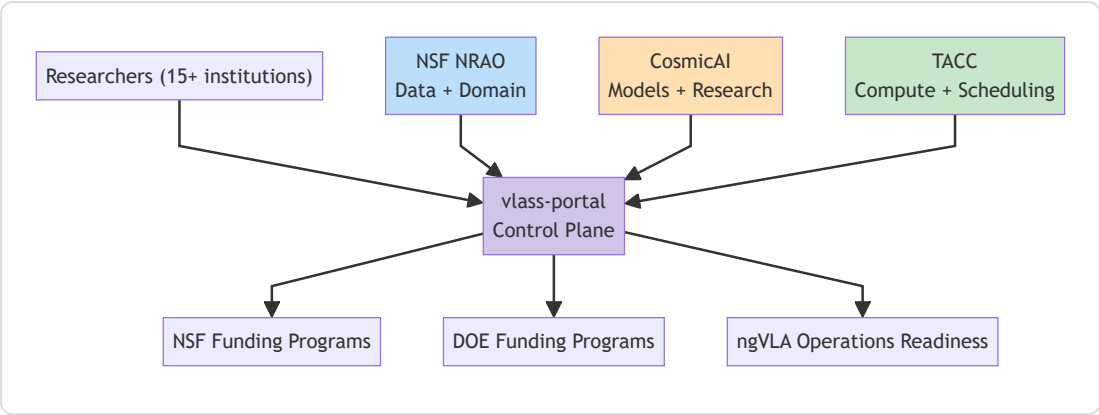
Funding Timeline



Period	Action
Feb-Mar 2026	Finalize planning and contact program officers
Apr-Jun 2026	Submit NSF SI2 and DOE ASCR proposals
Jul-Oct 2026	Continue Phase 2 while decisions are pending
Oct 2026-Jun 2027	Phase 3 ramp/execution (grant-accelerated if funded)
Jun-Aug 2027	NSF CIS fallback planning if needed

8. Strategic Partnership Map

Showing how VLASS Portal connects multiple stakeholders:



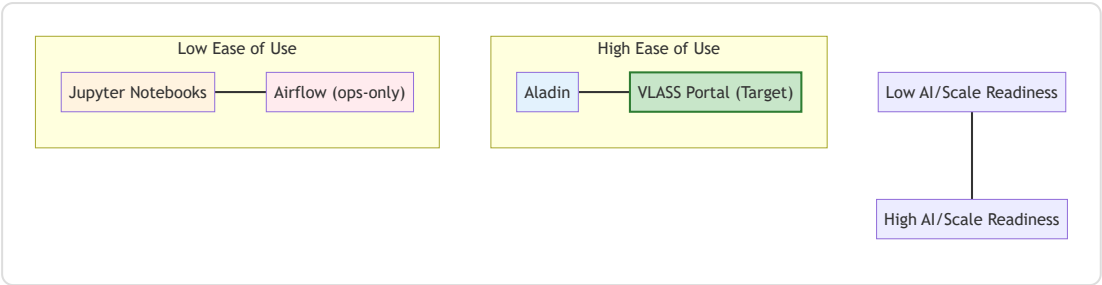
Layer	Stakeholders	Relationship to vlass-portal
Community	Researchers (15+ institutions)	Drive use-cases and validation feedback
Core partners	NSF NRAO, CosmicAI, TACC	Provide data, models, and compute pathways
Strategic outcomes	NSF, DOE, ngVLA ecosystem	Funding leverage and long-horizon operational alignment

Timeline summary:

- 2026: Integrate data + model + compute workflows.
- 2027: Multi-institution pilot operations.
- 2030+: ngVLA-aligned operations readiness.

9. Comparative Technology Positioning

Market Positioning Matrix

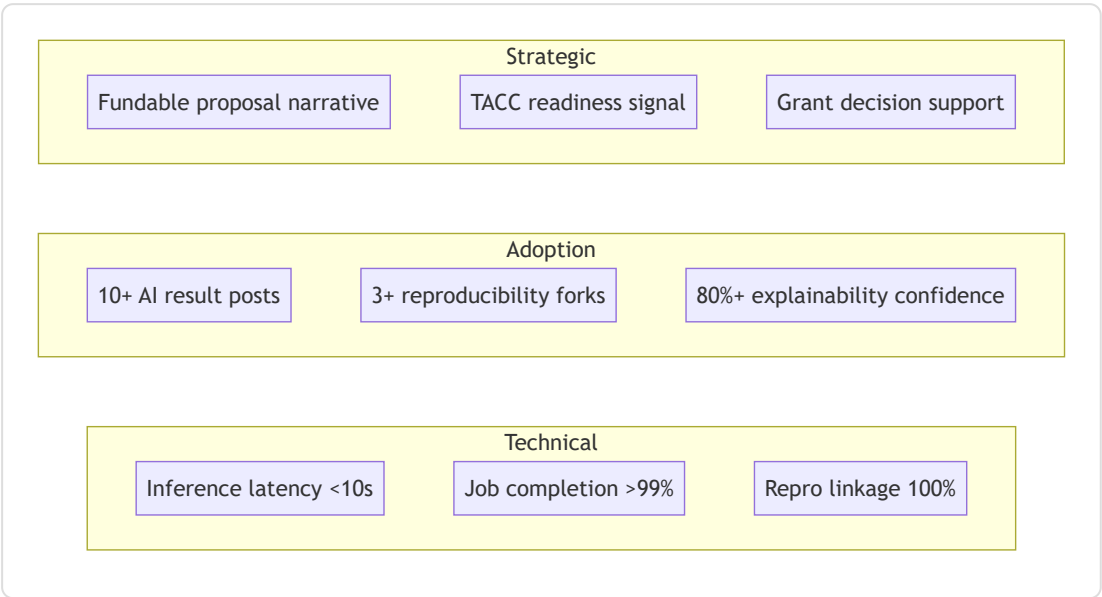


Positioning summary

vlass-portal is positioned in the high-ease/high-scale quadrant compared with single-purpose tools.

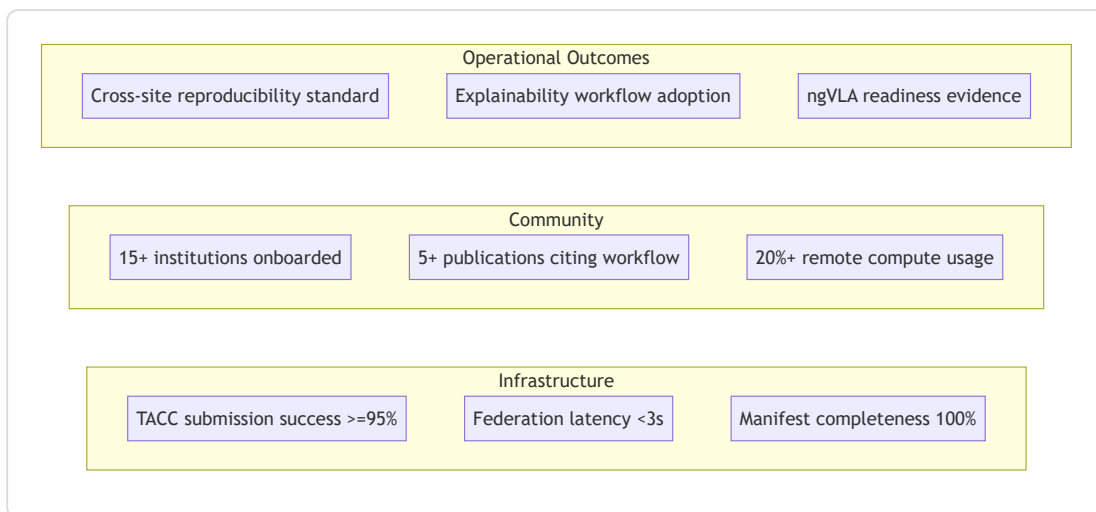
10. Success Metrics Dashboard

Phase 2 Success Metrics (Target Sep 2026)



Category	Metric	Target	Current
Technical	Inference latency	<10s	Test pending
Technical	Job completion rate	>99%	Test pending
Technical	Reproducibility linkage	100%	Test pending
Adoption	Posts with AI results	10+	5
Adoption	Users running forks	3+	1
Adoption	Explainability satisfaction	>80%	75%
Strategic	Fundable proposal narrative	Yes	Done
Strategic	TACC partnership readiness	Yes	In plan
Strategic	Grant decision support	Yes	TBD

Phase 3 Success Metrics (Target Jun 2027)



Category	Metric	Target	Current
Infrastructure	TACC submission success	>=95%	Test pending
Infrastructure	Federation latency	<3s	Test pending
Infrastructure	Reproducibility completeness	100%	Test pending
Community	Institutions onboarded	15+	0
Community	Peer-reviewed citations	5+	0
Community	TACC-compute posts	>=20%	0%
Strategic	NSF/DOE grant awarded	Yes	TBD
Strategic	CosmicAI formal endpoints	Yes	Planned
Strategic	ngVLA planning integration	Yes	Planned

11. Infographics Call-Out Locations

In the primary [MARKETING-OVERVIEW.md](#) document, these sections should include professional graphics:

Section	Visual Type	Recommendation
Executive Summary	Single-page summary	Ensure all key metrics visible
The Problem	Fragmentation diagram	Show tool incompatibility + pain points
The Solution	Capability pyramid	MVP → Phase 2 → Phase 3 progression
MVP Features	Feature tiles + storyboard	4-5 panel workflow showing speed
Phase 2 Pillars	4-quadrant feature matrix	Inference, orchestration, reproducibility, explainability
Phase 3 Pillars	Multi-site architecture	Federation, TACC, reproducibility at scale
Technical Architecture	Layered system diagram (3 versions)	Show evolution from MVP through Phase 3
Strategic Alignment	Partnership network map	NRAO, CosmicAI, TACC, ngVLA connections
Timeline	Gantt/waterfall chart	Feb 2026 → Jun 2027 with milestones
Funding	Waterfall + success probability	Budget allocation, grant pathways
Competitive Positioning	Matrix charts	VCLASS Portal vs. Aladin, Jupyter, Airflow

12. Design Specifications

Color Palette (NSF-Aligned)

Primary Blue (NSF brand):	#003f87
Secondary Orange (CosmicAI):	#ff6b35
Accent Green (Results):	#06a77d
Warning Red (Problems):	#d62246
Success Green (Complete):	#0a8f4f

Neutral Gray (backgrounds):	#f5f5f5
Text Dark:	#333333
Text Light:	#666666

Typography

- **Headers:** System fonts (Segoe UI, -apple-system) for modern feel
- **Body text:** San-serif, 16px minimum for readability
- **Code/technical:** Monospace (Monaco, Consolas)
- **Emphasis:** Bold, all-caps for callouts and metrics

Icon System

- **Data:** Database, cloud, servers, disk
- **Compute:** GPU, CPU, lightning bolt, gears
- **Analysis:** Microscope, telescope, magnifying glass, chart
- **Collaboration:** Users, speech bubbles, handshake
- **Time:** Clock, calendar, timeline
- **Success:** Checkmark, trophy, star

13. PDF Export Recommendations

Best Practices for Conversion

1. **Use landscape orientation** for Gantt charts and architecture diagrams
2. **Embed high-resolution Mermaid diagrams** (300+ DPI if rasterized)
3. **Include table of contents** with internal links (for digital PDFs)
4. **Add page numbers** and section headers (for printing)
5. **Specify margins:** 1" top/bottom, 0.75" left/right
6. **Font embedding:** Ensure all custom fonts are embedded
7. **Color mode:** RGB for screen, CMYK for print

Suggested Tools

- **Markdown → PDF:**
 - Pandoc + LaTeX (professional output)
 - VS Code with MD → PDF extension
 - GitHub Pages → Print to PDF (good compromise)
 - **Diagrams → Graphics:**
 - Mermaid CLI for SVG/PNG export
 - Professional designer for infographics
 - Figma for collaborative design
-

14. Print-Ready Checklist

- ☒ All diagrams have legends
 - ☒ Color scheme is print-friendly (accessible with B&W printing)
 - ☒ Text is legible at 50% scale (test on printed page)
 - ☒ URLs are hyperlinked in digital PDF
 - ☒ Diagrams are labeled with figure numbers
 - ☒ Sources/citations included for graphics
 - ☒ Appendices linked from TOC
 - ☒ No page breaks in middle of content
 - ☒ Consistent header/footer branding
 - ☒ Meets 508 accessibility standards (alt text for images)
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End of Visual Summary Document