Nexus (Spectra Systems) — Technical Debt Report

Consolidated technical debt analysis covering both CI/CD pipeline and application (backend + frontend).

2. Technical Debt Matrix — Pipeline (CI/CD)

ID	Category	Description	Impact	Priority	Plan	Status
P-01	Security	Frontend lacks HTTPS; 29 insecure requests detected (Lighthouse)	High	High	Enable Managed Cert + Redirect in GKE Ingress	Pending
P-02	Observability	Jenkins doesn't record deployed SHA/tag in deployment metadata	Medium	Medium	Add 'build-sha' label via Kustomize patch to Deployment manifests	Pending
P-03	Automation	No automatic rollback if deployment rollout fails	Medium	High	Add 'kubectl rollout undo' or ArgoCD rollback hook	Pending
P-04	Testing	Load testing (JMeter) executed manually, not automated in CI/CD	High	High	Add headless JMeter tests as GitHub Action or Jenkins post-build stage	Planned
P-05	Security	Secret rotation is manual in GitHub/Google Cloud Auth	Medium	Medium	Use GCP Secret Manager with rotation policy (90 days)	In Progress
P-06	Sustainability	No linting stage for code consistency (Svelte & Java)	Low	Low	Add npm lint + Gradle Checkstyle tasks to CI pipeline	Pending

3. Technical Debt Matrix — Application (Backend + Frontend)

ID	Area	Finding	Impact	Priority	Plan	Status
A-01	Performance	18% of 1000 login requests returned HTTP 400 during JMeter load test	High	High	Review AuthController validation & concurrency logic	Open
A-02	Security	Frontend served over HTTP instead of HTTPS	High	High	Enable TLS in GKE Ingress with managed certificate	Pending
A-03	Testing	Frontend test coverage only 7.8% (Sonar)	Medium	High	Integrate Vitest + coverage reports in CI/CD	In Progress
A-04	Maintainability	Commented and non-standard code across modules	Medium	Medium	Refactor and remove commented code; apply naming conventions	Planned
A-05	Observability	No Micrometer metrics or structured logging in backend	Medium	Medium	Enable Prometheus metrics and JSON logging in Spring Boot	Pending
A-06	Accessibility	ARIA/alt attributes incomplete (Lighthouse <95%)	Low	Low	Fix accessibility issues and improve ARIA labels	Pending
A-07	Database	Database migrations managed manually; no versioning system	Medium	Medium	Implement Flyway baseline and versioned migrations	Pending