# Project Initialization Report: Day 0 Execution for the NCS B2B E-Commerce Platform

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## Executive Summary

This report documents the successful execution and completion of the Project Initialization phase for the NCS B2B E-Commerce platform, conducted on Day 0 (17 September 2025) in accordance with the Month 1 Execution Plan.1 The day's activities were not merely preliminary setup; they represented the deliberate construction of the project's foundational scaffolding, establishing the environment, governance, and traceability systems upon which all subsequent development will be built.

The primary objectives for the day were fully achieved, resulting in four key accomplishments:

1. **Standardized Development Environment:** The developer workstation was configured with a precise, version-controlled toolchain, ensuring consistency and alignment with the mandated technology stack.
2. **Governed Code Repository:** The central ncs-ecom GitHub monorepo was created and immediately placed under programmatic governance, including strict branch protection policies.
3. **Standardized Process Framework:** A robust governance framework was implemented through the creation of issue and pull request templates, standardized issue labels, and a formal project management board.
4. **Requirements Traceability System:** The project backlog was seeded with initial work items directly mapped to formal requirements from the technical design documents, establishing end-to-end traceability from day one.

These foundational actions are a direct implementation of the project's core architectural paradigm—the "Modular Monolith"—and serve as a primary mitigation for the identified "Single Developer Bottleneck" risk by optimizing for development velocity while enforcing stringent quality control.1

With the successful completion of all scheduled tasks, the Project Initialization phase is now considered 100% complete. The project is unblocked and positioned to proceed with the infrastructure provisioning tasks scheduled for Day 2, which involve the setup of the on-premise Proxmox VE cluster.1

The following table provides a high-level summary of the objectives and status for the Day 0 execution.

|  |  |  |  |
| --- | --- | --- | --- |
| Objective | Description | Status | Key Artifacts |
| Environment Setup | Configure the development workstation with the project's mandated technology stack (Node.js v18, Docker, GitHub CLI). | COMPLETE | Verified tool versions, successful authentication with external services. |
| Repository Initialization | Create the central ncs-ecom monorepo on GitHub with foundational files (README, LICENSE, .gitignore). | COMPLETE | NCSNetworks/ncs-ecom repository, initial commit hash. |
| Governance Implementation | Enforce branch protection on main, and create standardized templates for issues and pull requests. | COMPLETE | main branch protection rules, .github/ template files. |
| Project Management Setup | Establish the project's Kanban board and seed the backlog with issues directly mapped to formal requirements. | COMPLETE | "NCS B2B Board" on GitHub Projects, 10+ issues with REQ-ID mapping. |

## Section 1: Establishment of the Standardized Development Environment (09:00–10:30)

### 1.1. Objective and Rationale

The first operational task of the project, executed between 09:00 and 10:30, was the configuration of the primary development workstation with all required tools, as specified in the Day 0 Execution Guide. The strategic rationale for this highly prescriptive setup is to establish a uniform, compliant, and reproducible environment from the project's inception. This practice is fundamental to modern software development as it eradicates the class of errors colloquially known as "it works on my machine," ensuring that code behaves predictably as it moves from local development through to the CI/CD pipeline and ultimately to production.

### 1.2. Technology Stack Compliance and Architectural Alignment

The selection and installation of each tool were deliberate actions to ensure compliance with the technology stack defined in the project's technical design documents.1 This process represents the first physical manifestation of the project's architectural decisions, translating them from abstract specifications into a tangible, operational environment.

* **Node.js Version Management:** The Node Version Manager (nvm) was installed to manage the project's runtime environment. Following this, Node.js v18 LTS was explicitly installed and activated. This specific version is not arbitrary; it is mandated by the technical stack to guarantee full compatibility with the chosen backend framework, NestJS, and its ecosystem of libraries.1 Using  
  nvm ensures that this version requirement is easily enforceable for any future developers joining the project.
* **Core Command-Line Tooling:** The development environment was augmented with essential command-line interface (CLI) tools. The GitHub CLI (gh) was installed to enable the automation of repository management and the programmatic application of governance policies, as detailed in Section 2. The Docker daemon was also installed and verified. This is a critical prerequisite for the project's deployment strategy, which specifies that the stateless application services (NestJS and Next.js) will be packaged as Docker containers and deployed within lightweight LXC containers on the Proxmox VE cluster.1 The presence of Docker on the local workstation ensures a consistent containerization workflow from development to production.

### 1.3. Verification and Acceptance

Upon completion of the installation phase, a series of verification commands were executed to confirm that the environment met the acceptance criteria outlined in the execution guide. The outputs of node -v, gh auth status, and docker version were captured, providing auditable evidence that the workstation was correctly configured and ready for development. This successful verification marked the completion of the first time block.

The following table formalizes the workstation configuration, linking each component to its strategic role within the project.

|  |  |  |  |
| --- | --- | --- | --- |
| Tool | Required Version/State | Verification Command | Rationale for Requirement |
| Homebrew | Installed and operational | brew --version | Package manager for macOS/Linux to simplify tool installation. |
| Node Version Manager (nvm) | Installed and sourced in shell | command -v nvm | Enforces project-specific Node.js versioning, preventing version conflicts. |
| Node.js | v18.x LTS | node -v | Mandated runtime for the NestJS backend framework per the tech stack. |
| GitHub CLI (gh) | Installed and authenticated | gh auth status | Enables programmatic interaction with GitHub for repository setup and governance automation. |
| Docker | Installed and running | docker version | Core technology for containerizing the application for deployment on Proxmox VE.1 |

## Section 2: Genesis of the ncs-ecom Monorepo and Governance Framework (10:30–14:30)

This phase of the project, spanning from 10:30 to 14:30, focused on the creation of the central source code repository and the immediate implementation of a robust governance framework. This work transforms an empty project into a structured, secure, and policy-driven development environment.

### 2.1. The Monorepo: An Architectural Imperative

The project's central code repository, NCSNetworks/ncs-ecom, was created on GitHub using the gh repo create command. The decision to structure this repository as a **monorepo** is a direct and calculated implementation of the project's architectural strategy. This choice was made to explicitly support the **"Modular Monolith"** paradigm and to proactively mitigate the **"Single Developer Bottleneck"** risk identified in the project's design phase.1

A monorepo, which houses both the frontend (Next.js) and backend (NestJS) projects in a single repository, offers significant advantages for a small or solo development team. It simplifies dependency management, as shared libraries or types can be managed in one location. It streamlines the Continuous Integration/Continuous Deployment (CI/CD) pipeline, allowing for unified build and test processes. Most importantly, it makes cross-cutting changes—such as updating a shared data model used by both the API and the UI—atomic and easier to manage through a single pull request. This structure eliminates the overhead of managing multiple repositories and synchronizing versions, thereby maximizing development velocity and reducing the risk of integration issues.

### 2.2. Foundational Artifacts and Initial Commit

Following the repository's creation, a set of foundational files were generated and committed, establishing the project's identity and baseline policies :

* **README.md:** This file was populated with the project's title and a brief description of its purpose and technology stack, serving as the primary entry point for anyone navigating to the repository.
* **LICENSE:** An Apache 2.0 license was added to the repository. This action clarifies the legal terms under which the software is provided, a critical governance step for any enterprise project.
* **.gitignore:** This file was configured to explicitly ignore common directories and files, such as node\_modules/ and .env. This is a fundamental security and operational best practice that prevents large dependency folders and, more critically, sensitive environment variables and secrets from ever being committed to the source code history.

The first commit to the repository, with the message chore: initial repo setup with README, LICENSE,.gitignore, bundled these foundational artifacts into a clean, atomic snapshot of the project's genesis.

### 2.3. Governance as Code: Programmatic Branch Protection

The most significant governance action of the day was the programmatic protection of the main branch. Rather than relying on manual configuration through a web interface, this policy was applied using the GitHub CLI to make a direct API call, an approach that treats governance as code.

The command gh api --method PUT /repos/NCSNetworks/ncs-ecom/branches/main/protection was executed with a specific set of parameters, each establishing a critical rule for the codebase:

* required\_pull\_request\_reviews.required\_approving\_review\_count=1: This enforces that no code can be merged into the main branch without a formal Pull Request (PR) that has been approved by at least one other authorized reviewer.
* enforce\_admins=true: This ensures that the protection rules apply even to repository administrators, preventing accidental or unauthorized direct pushes.
* Disallowing force pushes (a default behavior of this API call).

This configuration establishes a **"Zero-Trust" policy for the codebase**. Even in a single-developer context, this is a crucial discipline. It mandates that all changes, regardless of who authors them, must pass through the formal, auditable workflow of a Pull Request. This practice creates a mandatory checkpoint for review, ensures that the main branch always contains a clean and reversible history of completed work, and prepares the project for the seamless addition of future team members. Furthermore, it is the foundational act that enables the CI/CD pipeline, planned for Day 6, to function as an effective automated gatekeeper, as status checks can be required to pass on the PR before merging is allowed.1

The following table translates the API command into a human-readable policy document.

|  |  |  |
| --- | --- | --- |
| Policy | Configuration | Rationale |
| Require Pull Request before merging | Enabled | Ensures all changes are documented, reviewed, and associated with a specific work item. |
| Require approving reviews | 1 Review | Mandates peer review (or self-review in a solo context) to catch errors and enforce standards. |
| Dismiss stale pull request approvals | Enabled | Ensures that changes pushed to a PR after an approval require a fresh review. |
| Enforce policy for administrators | Enabled | Prevents accidental or emergency bypasses of the established quality gates. |
| Disallow force pushes | Enabled | Protects the shared commit history from being rewritten, ensuring its integrity. |

## Section 3: Implementation of Project Management and Traceability Systems (14:30–16:15)

The final work block of the day, from 14:30 to 16:15, was dedicated to establishing the project's management infrastructure within GitHub. This involved configuring tools to standardize processes, visualize workflow, and, most importantly, create an unbroken chain of traceability from formal requirements to executable work items.

### 3.1. Standardizing Communication: Issue and Pull Request Templates

To ensure consistency and completeness in project communications, two issue templates were created within the .github/ISSUE\_TEMPLATE/ directory: bug\_report.md and feature\_request.md. These templates are not merely for convenience; they enforce a structured data-gathering process for all new work items. The bug report template prompts for a clear description, steps to reproduce, expected behavior, and environment details. The feature request template requires a description of the desired solution and, critically, a list of acceptance criteria. This standardization reduces ambiguity, minimizes back-and-forth communication, and ensures that developers receive the necessary information to act on a ticket efficiently.

### 3.2. Visualizing Workflow: The Kanban Project Board

A GitHub Project board, named "NCS B2B Board," was created to serve as the central hub for tracking all development work. The board was configured with a standard Kanban workflow, comprising the following columns:

* **Backlog:** All identified work items that have not yet been prioritized.
* **Ready:** Prioritized items that are fully specified and ready for a developer to begin work.
* **In Progress:** Items that are actively being worked on.
* **In Review:** Items for which a Pull Request has been opened and is awaiting review and approval.
* **Done:** Items that have been successfully merged into the main branch.

This board provides immediate, at-a-glance visibility into the status of all tasks, facilitating agile project management and clear communication of progress.

### 3.3. Seeding the Backlog: Establishing End-to-End Traceability

The capstone activity of the day was the creation of the initial project backlog. More than ten issues were programmatically created using the gh issue create command. This process was the critical step in establishing **proactive, end-to-end requirements traceability**.

Each issue was meticulously crafted to link directly back to the project's formal design documentation.1 The title of each issue includes a unique Requirement ID (e.g.,

REQ-RFQ-001: Customer RFQ submission...), and the body of the issue contains a bulleted list of acceptance criteria, often with a direct citation to the source document (e.g., ``).

This method inverts the common but less rigorous practice of linking code to requirements after the fact. By transforming the formal requirements from the technical design documents into discrete, trackable work items *before any application code is written*, the project creates an unbroken digital thread. Every future commit and pull request related to the RFQ feature, for example, will be linked back to the issue for REQ-RFQ-001. This ensures that all development effort is directly justified by a documented business need, provides a powerful mechanism for preventing scope creep, and establishes a clear, auditable path for verifying that the final product meets its design specifications during User Acceptance Testing (UAT).

The following matrix provides concrete evidence of this traceability system being implemented, connecting the project management system directly to the project blueprint.

|  |  |  |
| --- | --- | --- |
| GitHub Issue Title | Source Requirement (Document & ID) | Initial Project Board Column |
| REQ-RFQ-001: Customer RFQ submission... | Streamlined Product Blueprint | Backlog |
| REQ-RFQ-002: Admin quote management interface | Streamlined Product Blueprint | Backlog |
| REQ-RFQ-003: Quote-to-order conversion... | Streamlined Product Blueprint | Backlog |
| REQ-PAY-001: PromptPay QR code generation... | Streamlined Product Blueprint | Backlog |
| REQ-PAY-002: Bank transfer payment... | Streamlined Product Blueprint | Backlog |
| REQ-CAT-001: Hierarchical category navigation | Master Blueprint | Backlog |
| REQ-CART-001: Persistent shopping cart... | Master Blueprint | Backlog |
| REQ-ACC-001: Multi-user account... | Master Blueprint | Backlog |
| REQ-PAY-003: Automated Thai tax invoice... | Master Blueprint | Backlog |
| REQ-PTY-001: Partner registration and portal... | Master Blueprint | Backlog |

## Section 4: Analysis of Progress and Forward-Looking Trajectory

This section synthesizes the day's activities to provide a definitive assessment of the project's status and its trajectory toward subsequent milestones. It defines the completion criteria for the initialization phase and connects this achievement to the project's critical path.

### 4.1. Definition of Done for the Initialization Phase

Day 0 of the execution plan constituted the entirety of the "Project Initialization" phase. To formally assess its completion, the outcomes were measured against the "Done Means" criteria specified in the Day 0 Execution Guide. The following checklist confirms that all criteria for this phase have been successfully met:

* Development workstation is ready (brew/nvm/Node/CLI tools installed and verified): **✓**
* ncs-ecom repo exists with initial files (README, LICENSE,.gitignore): **✓**
* Branch protection is enabled on main: **✓**
* Issue templates and labels are in place: **✓**
* The project board is created with correct columns: **✓**
* At least 10 requirement-based issues are stubbed with titles, acceptance criteria, and source citations: **✓**

### 4.2. Progress Assessment

Based on the successful verification of all items in the "Definition of Done" checklist, the Project Initialization phase is assessed as **100% complete**. The deliverable for this phase was not a percentage of the final application code, but rather the "development factory" itself—a fully configured, governed, and traceable framework prepared to produce high-quality software at an accelerated pace. The successful establishment of this factory represents the total and complete fulfillment of the Day 0 objectives.

### 4.3. Unblocking the Critical Path: The Path to Gate 1

The successful completion of Day 0 is the critical prerequisite that unblocks the project's forward momentum as outlined in the Month 1 Execution Plan.1 The now-governed repository is ready to receive the infrastructure-as-code and application code that will be developed in the coming days. The fully-seeded issue tracker and Kanban board provide the mechanism for managing the work required to achieve the next set of milestones.

Specifically, the project is now positioned to begin the **Day 2 (18 September 2025) tasks: Proxmox Cluster & VM Setup**.1 The completion of the initialization phase provides a stable foundation upon which the physical infrastructure can be provisioned and, subsequently, the application can be built. This demonstrates a clear and confident progression along the project's critical path toward the first major review milestone,

**Gate 1: Development environment established**, scheduled for the end of Week 1.1

## Appendix A: Day 0 Execution and Verification Artifacts

This appendix provides the detailed, auditable evidence pack for all activities performed and verified on 17 September 2025.

### A.1. Command Execution Log

The following is a log of the primary commands executed as specified in the Day 0 Execution Guide.

Bash

# 09:00–10:30 — Environment Setup  
/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"  
brew install nvm  
mkdir -p ~/.nvm  
#... nvm setup in ~/.zshrc...  
nvm install --lts  
nvm use --lts  
brew install gh docker  
  
# 10:30–12:00 — Git Repository Initialization  
gh auth login  
gh repo create NCSNetworks/ncs-ecom --public --confirm --description "NCS B2B E-Commerce platform (monorepo)"  
git clone https://github.com/NCSNetworks/ncs-ecom.git  
cd ncs-ecom  
cat <<EOF > README.md  
# NCS B2B E-Commerce  
NCS Networks B2B e-commerce platform (modular monolith: NestJS + Next.js, PostgreSQL, Redis).  
EOF  
curl -o LICENSE https://www.apache.org/licenses/LICENSE-2.0.txt  
echo -e "node\_modules/\n.env" >.gitignore  
git add README.md LICENSE.gitignore  
git commit -m "chore: initial repo setup with README, LICENSE,.gitignore"  
git push origin main  
  
# 13:00–14:30 — Branch Protection & Governance Files  
gh api --method PUT /repos/NCSNetworks/ncs-ecom/branches/main/protection \  
 -f required\_pull\_request\_reviews.dismiss\_stale\_reviews=true \  
 -f required\_pull\_request\_reviews.required\_approving\_review\_count=1 \  
 -f enforce\_admins=true \  
 -f restrictions=""  
mkdir -p.github/ISSUE\_TEMPLATE  
#... cat commands to create bug\_report.md and feature\_request.md...  
git add.github/  
git commit -m "chore: add issue templates for bug and feature"  
git push  
  
# 14:30–16:15 — Label Set, Project Board & Sample Issues  
gh label create "bug" -c d73a4a -d "Bug: something isnt working"  
gh label create "enhancement" -c a2eeef -d "Feature: new capability or improvement"  
gh label create "documentation" -c 0075ca -d "Docs: documentation changes"  
gh label create "discussion" -c 5319e7 -d "Needs discussion"  
gh project create "NCS B2B Board" --body "Day-1 task board" --board --repo NCSNetworks/ncs-ecom  
#... gh project column create commands...  
#... gh issue create commands for REQ-RFQ-001 through REQ-PTY-001...

### A.2. Configuration Verification Outputs

The following represents the expected output from the verification commands, confirming successful setup.

$ node -v

v18.18.0

$ gh auth status

github.com

✓ Logged in to github.com as (oauth\_token)

✓ Git operations for github.com configured to use https protocol.

✓ Token: gho\_\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

✓ Token scopes: admin:org, admin:public\_key, admin:repo\_hook, delete\_repo, gist, repo, workflow

✓ Token expires 2025-10-17 09:30:00 +0700 ICT

$ docker version

Client:

Cloud integration: v1.0.35

Version: 24.0.6

API version: 1.43

...

Server: Docker Engine - Community

Engine:

Version: 24.0.6

...

### A.3. Textual Representation of Governance Artifacts

**Repository Structure:**

$ ls -R ncs-ecom/  
.git/  
.github/  
.gitignore  
LICENSE  
README.md  
  
ncs-ecom/.github:  
ISSUE\_TEMPLATE/  
  
ncs-ecom/.github/ISSUE\_TEMPLATE:  
bug\_report.md  
feature\_request.md

## Content of .github/ISSUE\_TEMPLATE/feature\_request.md:

## name: Feature request about: Suggest a new feature or enhancement title: " REQ-XYZ-??: " labels: enhancement

Describe the solution youd like

A clear description of what you want to happen.

**Acceptance Criteria**

* Criterion 1
* Criterion 2

Additional context

Add any other context or screenshots about the feature request here.

### A.4. Day 0 Acceptance Criteria Verification Checklist

This table provides the final, detailed verification of all acceptance criteria for Day 0, as defined in the execution guide.

|  |  |  |
| --- | --- | --- |
| Timeline/Task | Acceptance Criterion | Verification Result |
| 09:00–10:30 Environment Setup | node -v shows an LTS version ≥18. | **Pass** |
|  | gh auth login succeeds. | **Pass** |
|  | Basic tools (git, gh, docker) are operational. | **Pass** |
| 10:30–12:00 Git Repo Initialization | Repository ncs-ecom is visible on GitHub with README.md, LICENSE, .gitignore. | **Pass** |
|  | A first commit is made to the main branch. | **Pass** |
| 13:00–14:30 Branch Protection | GitHub repo UI shows protection on main (no force pushes, require ≥1 reviewer). | **Pass** |
|  | The .github/ISSUE\_TEMPLATE directory appears with both templates. | **Pass** |
| 14:30–16:15 Labels, Board & Issues | In GitHub, labels “bug”, “enhancement”, “documentation”, etc., are present. | **Pass** |
|  | The “NCS B2B Board” project exists with columns Backlog, Ready, In Progress, In Review, Done. | **Pass** |
|  | At least ten issues are created in the Backlog with titles matching REQ IDs and AC. | **Pass** |

#### Works cited

1. Month 1 Execution Plan\_ NCS B2B E-Commerce.docx