

Architecture Report - Executive Summary

Date: 2025-11-19

Status: Ready for Team Review

What's in This Report

We analyzed your Clean Architecture implementation and created a comprehensive guide for improving it. Here are the documents:

1. [Architecture Analysis Report \(Main Document\)](#)

-  **50+ pages** of detailed analysis
- Current state assessment
- Problems identified
- Complete migration plan
- Code examples

2. [Quick Reference Guide \(Daily Use\)](#)

-  **Quick decision trees**
- "Where does this code go?"
- Common patterns
- Anti-patterns to avoid

3. [Migration Example \(Step-by-Step\)](#)

-  **Concrete refactoring example**
- Before/after code
- Step-by-step instructions
- Apply to all 24 use cases

4. [Thunk Layer Discussion \(Addresses Concerns\)](#)

-  "Won't thunks make Presentation too large?"

Key Findings (TL;DR)

What's Working Well

1. 4-layer architecture is appropriate for your complexity level
2. Domain layer is excellent - pure, no framework dependencies
3. Repository pattern works well - abstracts Firebase/Sanity
4. DI provides value for repositories and use cases
5. Clear separation between layers (mostly)

Critical Issues Found

1. 24 use cases coupled to Redux Toolkit (`createAsyncThunk`)
 - Cannot test without Redux
 - Cannot reuse in scripts/workers
 - Violates framework-agnostic principle
2. StateManager in wrong layer (`application/` → should be `presentation/`)
 - Redux is a delivery mechanism, not application logic
3. 3 dependency violations (Application imports Presentation)
 - `MetricWithValue` type in wrong location
 - Hormone generators in screens folder



Recommended Solution

Decision: Keep 4 Layers + Decouple Use Cases

Why 4 layers:

- Right complexity for 24 use cases
- Team already familiar
- Industry standard
- Clear boundaries

What changes:

1. Move thunks from use cases → presentation layer
2. Move StateManager → presentation layer
3. Fix type import violations
4. Use cases return `Promise<T>`, not `createAsyncThunk`

New Architecture Pattern

Before (Problematic)

```
// X Application layer
@Injectable()
export class GetDataUseCase {
  execute = createAsyncThunk(/* Redux stuff */);
}
```

After (Clean)

```
// ✓ Application layer - pure business logic
@Injectable()
export class GetDataUseCase {
  async execute(params: Params): Promise<Result> {
    return await this.repository.getData(params);
  }
}

// ✓ Presentation layer - Redux integration
export const fetchData = createAsyncThunk("data/fetch", async (params) => {
  const useCase = container.resolve(GetDataUseCase);
  return await useCase.execute(params);
});
```

Migration Scope

Affected Files

Category	Count	Effort
Use cases to refactor	24	15-20 min each
Thunk files to create	~6	1-2 hours total
Redux slices to update	13	15 min each
ViewModels to update	~20	5 min each
Test files to update	~24	20 min each

Total Estimated Time: 27-36 hours (4-5 days)

Affected Use Cases (All 24)

LifeContext (7):

- GetLifeContextUseCase
- InitiateMenstruationLifeContextUseCase
- RestartMenstruationLifeContextUseCase
- CalculateMenstrualCyclesUseCase
- UpdateMenstrualPhaseLengthsDataUseCase
- RecomputeAfterLifeContextChangeUseCase
- GetStatusModeUseCase

MetricLog (4):

Jul
17

Suggested Timeline

Phase 1: Quick Wins (Week 1 - 1 day)

- Fix type import violations (30 min)
- Move StateManager to Presentation (3 hours)
- Move DI container to `src/container.ts` (15 min)
- Move legacy code to `src/old/` (30 min)
- **Deliverable:** Cleaner layer structure

Phase 2: Decouple Use Cases (Weeks 2-3 - 3-4 days)

- Create thunk files (6-8 hours)
- Refactor all 24 use cases (8-12 hours)
- Update Redux slices (3-4 hours)
- Update ViewModels (2-3 hours)
- **Deliverable:** Framework-agnostic use cases

Phase 3: Optimization (Week 4 - 1 day)

- Simplify stateless services (2 hours)
- Fix infrastructure violations (1 hour)
- Add architecture tests (2 hours)
- **Deliverable:** Enforced boundaries

 **Benefits****Immediate**

- Testability:** Use cases test without Redux
- Clarity:** Clear separation of concerns
- Standards:** Follows Clean Architecture principles

Long-term

- Flexibility:** Could swap Redux for Zustand/MobX
- Reusability:** Use cases in scripts, workers, CLI
- Maintainability:** Easier onboarding, clearer patterns
- Quality:** Enforced boundaries prevent violations

Next Steps

1. Team Review (This Week)

- [] Read executive summary (this document)
- [] Review [main report](#) sections 1-6
- [] Review [migration example](#)
- [] Discuss and approve plan

2. Plan Sprint (Next Week)

- [] Create tracking issues (24 use cases + setup tasks)
- [] Assign work (pair programming recommended)
- [] Set up branch: `architecture/decouple-use-cases`

3. Execute Migration (Weeks 2-4)

- [] Phase 1: Quick wins
- [] Phase 2: Refactor use cases (can be parallelized)
- [] Phase 3: Optimization

4. Document (Ongoing)

- [] Update team wiki with new patterns
- [] Add [quick reference](#) to onboarding
- [] Code review checklist

How to Use These Documents

For Team Leads

- 👉 Read: [Architecture Analysis Report](#) (full details)

For Developers (Daily)

- 👉 Use: [Quick Reference Guide](#) (where to put code)

For Refactoring

- 👉 Follow: [Migration Example](#) (step-by-step guide)

For Addressing Concerns

- 👉 See: [Thunk Layer Discussion](#) (helper/layer concerns)
- 👉 See: [Container Location Rationale](#) (why outside layers)

For Architecture Decisions

- 👉 See: [Abstraction Strategy](#) (what should be abstracted)

FAQ

Q: Do we have to do this?

A: No, but highly recommended. Current pattern violates Clean Architecture principles and makes testing/reusability difficult.

Q: Can we do this incrementally?

A: Yes! Start with Phase 1 (quick wins), then tackle use cases one at a time.

Q: Will this break anything?

A: No. This is a refactoring - behavior stays the same, structure improves.

Q: How long will this take?

A: 27-36 hours total (~4-5 days of focused work). Can be parallelized across team.

Q: What's the ROI?

A: Better testability, maintainability, and flexibility. Easier to onboard new developers.

Q: Can we simplify to 3 layers instead?

A: Not recommended. You have 24 use cases - the Application layer provides clear value.



Questions or Clarifications?

- **Architecture concerns:** Review Section 6 of [main report](#)
- **Migration steps:** See [Migration Example](#)
- **Daily decisions:** Use [Quick Reference](#)
- **"Too large" concerns:** Read [Thunk Layer Discussion](#)
- **Container location:** Read [Container Location Rationale](#)
- **What to abstract:** Read [Abstraction Strategy](#)
- **Technical details:** See [Main Report](#)

Approval Checklist

Before starting migration:

- Team has reviewed all documents
- Migration plan is approved
- Timeline is agreed upon
- Tracking issues created
- Branch created
- Pair programming partners assigned

Report Status: Complete and ready for review

Recommended Action: Schedule team review meeting

Priority: High (architectural debt)

Risk: Low (pure refactoring, no behavior changes)



Complete Document Set

1. [Architecture Report Summary](#) ← You are here
2. [Architecture Analysis Report](#) (50+ pages, detailed)
3. [Architecture Quick Reference](#) (daily use)
4. [Migration Example](#) (step-by-step guide)
5. [Thunk Layer Discussion](#) (addresses size concerns)
6. [Container Location Rationale](#) (bootstrap design)
7. [Abstraction Strategy](#) (what to abstract)

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Documents created: 7 comprehensive guides