

# Petfolio – Week 9 Progress

Lost & Found Mode

# This Week's Goals (Week 9)

- Implement Lost & Found Mode to help users quickly respond to missing pets
- Enable "Mark as Lost" and "Mark as Found" functionality with visual status indicators
- Generate shareable lost pet posters including photo, name, and contact details
- Integrate lost pet status into the Pet List Dashboard for visibility
- Ensure data persistence and smooth transitions between lost/found states

# Key Numbers (Week 9)

## Lines of Code (approx.)

- New/edited this week: ~1,500–2,000 LoC
- New files created: 8
- Files modified: 6
- Features completed: 4 / 6 → 67%
- Requirements completed: 11 / 15 → 73%
- Burndown Rate: 67% for Sprint 2 (4 of 6 features)



# What Was Shipped

## Lost & Found Core Functionality

- **LostReport Domain Model** - Complete data model with all required fields
- **LostReportRepository** - Firestore operations for lost reports
- **LostFoundNotifier** - Riverpod state management for lost/found operations
- **Poster Generation Service** - Widget-to-image conversion with Firebase Storage upload
- **Poster Widget** - Professional poster design with pet information



## What Was Shipped (cont.)

### User Interface Components

- **Mark as Lost/Found Buttons** - Integrated into PetDetailPage
- **LostPetPosterPage** - Poster display and sharing interface
- **LostPetPosterWidget** - Reusable poster widget design
- **Dashboard Indicators** - Visual lost pet status on HomePage
- **View Poster Button** - Quick access to generated poster



## What Was Shipped (cont.)

### Firebase Integration

- **Firestore Security Rules** - Secure access to `lost_reports` collection
- **Storage Security Rules** - Secure access to poster images
- **Real-time Streams** - Live updates for lost report status
- **Poster Caching** - Efficient poster URL storage in LostReport



## What Was Shipped (cont.)

### Testing & Quality Assurance

- **Unit Tests** - LostReport domain model and LostFoundNotifier
- **Widget Tests** - LostPetPosterWidget rendering and behavior
- **Integration Tests** - End-to-end lost/found workflow
- **Test Coverage** - Comprehensive test suite with 240+ tests passing



## Technical Highlights

### Domain Layer

- `lib/features/lost_found/domain/lost_report.dart` - LostReport domain model
- Complete JSON serialization/deserialization
- Nullable optional fields (`lastSeenLocation`, `notes`, `posterUrl`)
- Timestamp handling for created date



## Technical Highlights (cont.)

### Data Layer

- `lib/features/lost_found/data/lost_report_repository.dart` - Firestore repository
- Stream-based methods for real-time updates
- CRUD operations for lost reports
- Proper error handling and null safety



## Technical Highlights (cont.)

### Application Layer

- `lib/features/lost_found/application/poster_generator_service.dart` - Poster generation
- Widget-to-image conversion using `RepaintBoundary`
- Firebase Storage integration for poster upload
- Image loading detection and error handling



## Technical Highlights (cont.)

### Presentation Layer

- `lib/features/lost_found/presentation/state/lost_found_provider.dart` - State management
- `lib/features/lost_found/presentation/pages/lost_pet_poster_page.dart` - Poster page
- `lib/features/lost_found/presentation/widgets/lost_pet_poster_widget.dart` - Poster widget
- Integration with PetDetailPage and HomePage



# Technical Implementation

## Lost & Found Architecture

```
// Domain model
LostReport {
    id: string,
    petId: string,
    ownerId: string,
    createdAt: Timestamp,
    lastSeenLocation: string?,
    notes: string?,
    posterUrl: string?
}

// Repository layer
LostReportRepository {
    createLostReport(LostReport report)
    getLostReportByPetId(String petId)
    deleteLostReport(String reportId)
    watchLostReportForPet(String petId)
```



# Technical Implementation (cont.)

## Poster Generation Flow

```
// Poster generation service
PosterGeneratorService {
    - Generate poster widget with pet information
    - Convert widget to image using RepaintBoundary
    - Upload image to Firebase Storage
    - Return download URL for sharing
}

// State management
LostFoundNotifier {
    markPetAsLost() - Update pet status and create report
    markPetAsFound() - Update pet status and delete report
}
```



# Technical Implementation (cont.)

## UI Integration

```
// PetDetailPage integration
- "Mark as Lost" button when pet.isLost == false
- "Mark as Found" button when pet.isLost == true
- Optional dialog for last seen location and notes
- Navigation to LostPetPosterPage after marking as lost

// HomePage integration
- Red border/background for lost pets
- "LOST" badge on pet cards
- Visual indicators for lost status
```

## Demo Path

1. **Mark as Lost:** Open pet profile, tap "Mark as Lost", enter optional info
2. **Poster Generation:** Poster is generated and displayed on LostPetPosterPage
3. **Poster Sharing:** Tap "Share Poster" to share via native share dialog
4. **Dashboard View:** Return to HomePage, see lost pet indicators
5. **View Poster:** Tap "View Poster" button to see generated poster
6. **Mark as Found:** Tap "Mark as Found" to restore pet status
7. **Status Update:** Dashboard updates in real-time via



## Current Status vs Plan

### ✓ Completed (100% of Week 9 goals)

- **LostReport Model:** ✓ Complete with all fields and serialization
- **LostReportRepository:** ✓ All CRUD operations implemented
- **LostFoundNotifier:** ✓ State management with error handling
- **Poster Generation:** ✓ Widget-to-image conversion with Storage upload
- **UI Components:** ✓ All components integrated and functional
- **Dashboard Indicators:** ✓ Visual indicators for lost pets



# Known/Resolved Issues



## Resolved

- **Poster Overflow:** Fixed text overflow in poster widget with proper constraints
- **Hero Tag Conflict:** Resolved navigation conflicts with unique hero tags
- **Upload Errors:** Improved error handling for poster upload failures
- **Image Loading:** Added image loading detection for poster generation
- **View Poster Button:** Fixed button functionality and navigation
- **Firebase Security:** Created and deployed Firestore and

## Known/Resolved Issues (cont.)

### Resolved (cont.)

- **Error Handling:** Improved error messages for user feedback
- **Poster Caching:** Implemented poster URL caching in LostReport
- **Stream Updates:** Real-time updates for lost report status
- **Test Coverage:** Fixed all failing tests (MockFirebaseUser, auth state, stream subscriptions)



# Testing & Quality

## Test Coverage

- **Unit Tests:** LostReport domain model (9 tests)
- **Unit Tests:** LostFoundNotifier state management (13 tests)
- **Widget Tests:** LostPetPosterWidget rendering (8 tests)
- **Integration Tests:** Lost & Found workflow (7 tests)
- **Total Tests:** 240+ tests passing (2 flaky timing tests)



## Testing & Quality (cont.)

### Test Quality

- Comprehensive test coverage for all components
- Mock implementations for external dependencies
- Stream-based testing for real-time updates
- Error handling tests for failure scenarios
- Widget tests with proper surface sizing
- Integration tests for end-to-end workflows

 Requirements Met

## Week 9 Milestones (100% Complete)

- **✓ Mark as Lost/Found** - One-tap functionality with optional information
- **✓ Poster Generation** - Automatic poster generation with pet information
- **✓ Poster Sharing** - Native share functionality via share\_plus
- **✓ Dashboard Indicators** - Visual lost pet status on HomePage
- **✓ Real-time Updates** - Firestore streams for live status updates
- **✓ Firebase Security** - Secure Firestore and Storage rules



# User Stories Completed

ID	User Story	Status
US-009	As a pet owner, I want to mark my pet as lost so that I can quickly share information with others	 COMPLETED
US-010	As a pet owner, I want to generate a lost pet poster automatically so that I can spread the word quickly	 COMPLETED
US-011	As a pet owner, I want to easily toggle my pet's lost status so that I can update their status when found	 COMPLETED



## Key Benefits

### Emergency Response

- **Quick Action** - One-tap "Mark as Lost" functionality
- **Automatic Poster** - Professional poster generation with pet information
- **Easy Sharing** - Native share functionality for maximum reach
- **Status Visibility** - Clear lost pet indicators on dashboard



## Key Benefits (cont.)

### Technical Excellence

- **✓ Stream-Based Architecture** - Real-time updates via Firestore streams
- **✓ Scalable Design** - Handles multiple pets and lost reports
- **✓ Performance Optimized** - Poster caching and efficient image generation
- **✓ Secure Implementation** - Firebase security rules for data protection



## Success Metrics (Week 9)

### Performance Metrics

- ✓ **Lost Mode Activation:** < 3 seconds (target met)
- ✓ **Poster Generation:** < 5 seconds (target met)
- ✓ **Poster Sharing:** Native share dialog (target met)
- ✓ **Dashboard Update:** < 1 second via Firestore streams (target met)



## Success Metrics (cont.)

### Quality Metrics

- ✓ **Test Coverage:** 240+ tests passing (target met)
- ✓ **Error Handling:** Comprehensive error messages (target met)
- ✓ **User Feedback:** Loading states and success messages (target met)
- ✓ **Visual Clarity:** Clear lost pet indicators (target met)



# Project Statistics

## Week 9 Additions

- **Total Files Created:** 8 new files
- **Files Modified:** 6 files
- **Core Services:** 1 new service (PosterGeneratorService)
- **UI Components:** 3 new components (PosterPage, PosterWidget, Buttons)
- **Lines of Code:** ~1,500-2,000 lines (excluding comments)
- **Features Implemented:** 1 major feature (Lost & Found Mode)



## Project Statistics (cont.)

### Overall Sprint 2 Progress

- **Features Completed:** 4 of 6 (67%)
  - Feature 1: Onboarding Improvements (Week 6)
  - Feature 2: Bottom Navigation System (Week 7)
  - Feature 3: Real-Time Task Completion Sync (Week 8)
  - Feature 4: Lost & Found Mode (Week 9)
- **User Stories Completed:** 11 of 15 (73%)
- **Requirements Completed:** 11 of 15 (73%)

# Scope Decisions

## Implemented

-  Lost & Found mode with poster generation
-  Firebase Storage integration for poster upload
-  Real-time status updates via Firestore streams
-  Dashboard indicators for lost pets
-  Comprehensive test suite
-  Firebase security rules (Firestore and Storage)

## Deferred

-  Geolocation features (GeoPoint, radius alerts)
-  Push notifications for lost pets
-  Advanced poster customization



## Alignment to Sprint 2

### Sprint 2 – Emergency Features & Real-World Utility

- US-009: Mark pet as lost functionality – ✓ Met
- US-010: Generate lost pet poster automatically – ✓ Met
- US-011: Toggle lost status easily – ✓ Met

### Delivered for Week 9:

- Lost & Found mode, poster generation, sharing functionality, dashboard integration, and comprehensive testing

# Known/Remaining Items

## Completed This Week

-  Lost & Found mode implementation
-  Poster generation and sharing
-  Dashboard indicators
-  Firebase security rules
-  Comprehensive test suite

## Future Enhancements

-  Geolocation features (GeoPoint, radius alerts)
-  Push notifications for lost pets
-  Advanced poster customization
-  Lost pet search and filtering



## Outcome

Week 9 successfully implemented Lost & Found Mode:

- Complete lost & found workflow with poster generation
- Real-time status updates via Firestore streams
- Professional poster design with pet information
- Native share functionality for maximum reach
- Dashboard indicators for lost pet visibility
- Production-ready implementation with comprehensive testing

Ready to proceed to Week 10: Basic UI improvements and error handling.

# Next Week (Week 10 Preview)

## Feature 5: Basic UI Improvements

- Success/error feedback animations
- Improved loading indicators
- Better button states and interactions
- Basic page transitions

## Feature 6: Error Handling Improvements

- User-friendly error messages
- Basic retry mechanisms
- Clear guidance for common issues
- Better offline handling

# Sprint 2 Burndown (features)

Progress: 4 of 6 Features Complete (67%)

-  Week 6: Feature 1 – Onboarding Improvements –   
Completed
-  Week 7: Feature 2 – Bottom Navigation System –   
Completed
-  Week 8: Feature 3 – Real-Time Task Completion Sync –  
 Completed
-  Week 9: Feature 4 – Lost & Found Mode –   
Completed
-  Week 10: Feature 5 – UI Improvements – Planned
-  Week 10: Feature 6 – Error Handling – Planned



# Lost & Found Milestone Reached!

Petfolio now provides emergency pet management:

- **Quick Response** - One-tap "Mark as Lost" functionality
- **Professional Posters** - Automatic poster generation with pet information
- **Easy Sharing** - Native share functionality for maximum reach
- **Status Visibility** - Clear lost pet indicators on dashboard
- **Real-time Updates** - Live status updates via Firestore streams
- **Production Ready** - Robust implementation with comprehensive testing



## Achievement Summary

**Week 9 Complete:** Successfully implemented Lost & Found Mode that enables pet owners to quickly respond to missing pets. The implementation includes poster generation, sharing functionality, dashboard integration, and comprehensive testing, providing a production-ready emergency pet management feature.

**Lost & Found Status:** COMPLETE - All Week 9 requirements met

**Ready for Week 10:** Basic UI improvements and error handling to complete Sprint 2.

