STEP 35: Portfolio Overview & Multi-RFP Insights (with Option 3 Markers)

Status: ✅ Complete
Date: December 1, 2025
Architecture Phase: Phase 4 - Advanced Analytics & Portfolio Management
Option Level: Option 2 (with Option 3 teaser)

📋 Overview

STEP 35 introduces comprehensive **Portfolio Overview & Multi-RFP Insights** functionality, allowing buyers to view and analyze their entire RFP pipeline from a high-level, portfolio-wide perspective. This feature aggregates data across all RFPs belonging to a buyer's organization and provides actionable insights through KPIs, stage distributions, risk analysis, readiness metrics, supplier performance, and upcoming milestones.

Key Capabilities

1. **Portfolio-Wide KPIs**: Total RFPs, active RFPs, awarded RFPs, average readiness, and cycle times
2. **Stage Distribution**: RFP counts and budget breakdowns by stage (Intake, Sourcing, Evaluation, Awarded)
3. **Risk & Readiness Analysis**: Risk bands (low/medium/high) and readiness distribution
4. **Top Suppliers**: Cross-RFP supplier performance metrics and reliability indices
5. **Upcoming Milestones**: Timeline view of critical dates across all RFPs
6. **Spend Summary**: Total budget, awarded amount, and in-flight budget tracking
7. **Option 3 Teaser**: Soft promotion of advanced portfolio analytics

🎯 Business Value

For Buyers

- **Strategic Visibility**: Holistic view of entire procurement pipeline
- **Risk Management**: Identify and prioritize high-risk RFPs
- **Resource Allocation**: Optimize team focus based on stage distribution
- **Supplier Intelligence**: Data-driven supplier selection and relationship management
- **Budget Tracking**: Real-time visibility into committed and in-flight spend
- **Timeline Management**: Never miss critical deadlines across multiple RFPs

For Organizations

- **Portfolio Planning**: Make informed decisions about RFP prioritization
- **Performance Benchmarking**: Compare cycle times and readiness across projects
- **Spend Visibility**: Track budget utilization and forecast commitments
- **Supplier Strategy**: Identify strategic partners vs. opportunistic vendors

🏗️ Architecture & Technical Design

Database Schema Extensions

Company Model (Prisma)

```
model Company {
  id              String   @id @default(uuid())
  name            String
  description     String?
  createdAt       DateTime @default(now())
  isDemo          Boolean  @default(false)
  rfps            RFP[]

  // STEP 35: Portfolio Overview & Multi-RFP Insights
  portfolioSnapshot Json?    // Cached portfolio-wide metrics snapshot
  portfolioMeta     Json?    // Metadata about snapshot generation
}
```

Design Rationale:
- JSON fields enable flexible schema evolution without migrations
- Caching strategy reduces computational overhead on repeated views
- Snapshot versioning allows backward compatibility

Service Layer: Portfolio Composer

File: `lib/portfolio/portfolio-composer.ts`

TypeScript Types (8 Total)

1. **PortfolioStageSummary**: Summary of RFPs in a particular stage
2. **PortfolioRiskBand**: Risk band classification (low/medium/high)
3. **PortfolioReadinessDistribution**: Distribution of supplier readiness indicators
4. **PortfolioSupplierPortfolioSummary**: Supplier portfolio performance summary
5. **PortfolioTimelineMilestone**: Timeline milestone (upcoming date)
6. **PortfolioSpendSummary**: Spend summary across portfolio
7. **PortfolioSnapshot**: Complete portfolio snapshot (aggregates all above)
8. **PortfolioMeta**: Portfolio metadata (versioning, timestamps, AI flags)

Core Function: `composePortfolioSnapshotForCompany`

Purpose: Aggregate and analyze RFP portfolio data for a company

Parameters:

```
composePortfolioSnapshotForCompany(
  companyId: string,
  options: {
    useExistingSnapshotIfFresh?: boolean;  // Default: true
    maxSnapshotAgeMinutes?: number;        // Default: 60
    userId?: string;                       // User triggering generation
    timeRangeMonths?: number;              // Default: 18 (last 18 months)
  }
): Promise<{ snapshot: PortfolioSnapshot; meta: PortfolioMeta }>
```

Algorithm:

1. Check for existing fresh snapshot (< 60 min old)

2. Fetch all RFPs for company (last 18 months, non-archived)

3. Compute KPIs (totals, averages, cycle times)

4. Compute stage distribution

5. Classify risk bands based on risk flags

6. Compute readiness distribution

7. Aggregate supplier performance across RFPs

8. Extract upcoming milestones (next 30 days)

9. Compute spend summary

10. Persist snapshot to database

11. Return snapshot and metadata

Caching Strategy:

- Default TTL: 60 minutes

- Cache invalidation: Manual refresh button or automatic on RFP stage changes

- Cold start: Generate snapshot on first access

API Layer

1. GET /api/dashboard/portfolio/overview

Purpose: Returns comprehensive portfolio snapshot

Authentication: Buyer-only
Response:

```
{
  "snapshot": { /* PortfolioSnapshot */ },
  "meta": { /* PortfolioMeta */ }
}
```

Performance: Uses cached snapshot (60-min TTL)

2. GET /api/dashboard/portfolio/suppliers

Purpose: Returns top suppliers across portfolio

Authentication: Buyer-only
Response:

```
{
  "topSuppliers": [ /* PortfolioSupplierPortfolioSummary[] */ ],
  "meta": {
    "asOf": "ISO timestamp",
    "totalSuppliers": 10
  }
}
```

3. GET /api/dashboard/portfolio/risks

Purpose: Returns risk bands and readiness distribution

Authentication: Buyer-only
Response:

```
{
  "riskBands": [ /* PortfolioRiskBand[] */ ],
  "readinessDistribution": { /* PortfolioReadinessDistribution */ },
  "meta": {
    "asOf": "ISO timestamp"
  }
}
```

UI Layer: Portfolio Page

File: `app/dashboard/portfolio/page.tsx`

7 Sections

1. Header Bar

- **Elements**: Page title, Option 3 indicator, last updated timestamp, refresh button
- **Demo Attribute**: `data-demo="portfolio-header"`

2. KPI Row (5 Cards)

- **Metrics**: Total RFPs, Active RFPs, Awarded RFPs, Total Budget, In-Flight Budget
- **Icons**: TrendingUp, Clock, CheckCircle, DollarSign, TrendingUp
- **Demo Attribute**: `data-demo="portfolio-kpis"`

3. Stage Distribution

- **Display**: Collapsible stage cards with counts, budgets, example titles
- **Stages**: Intake, Sourcing, Evaluation, Awarded
- **Demo Attribute**: `data-demo="portfolio-stages"`

4. Risk & Readiness (2 Columns)

- **Left**: Risk Bands (low/medium/high) with color coding
- **Right**: Readiness Distribution (excellent/good/moderate/low)
- **Demo Attribute**: `data-demo="portfolio-risk-readiness"`

5. Top Suppliers

- **Display**: Sortable table with 8 columns
- **Columns**: Supplier Name, Organization, RFPs, Wins, Avg Score, Avg Readiness, Reliability, Tier
- **Links**: Click supplier name → Supplier Scorecard (STEP 33)
- **Demo Attribute**: `data-demo="portfolio-top-suppliers"`

6. Upcoming Milestones

- **Display**: Timeline list of critical dates (next 30 days)
- **Milestones**: Q&A closes, Submission deadlines, Award dates
- **Demo Attribute**: `data-demo="portfolio-milestones"`

7. Option 3 Teaser

- **Purpose**: Soft promotion of advanced portfolio analytics
- **Features Highlighted**:
- Predictive RFP cycle time forecasting
- Portfolio-level decision briefs
- "What-if" scenario planning
- External market benchmark overlays
- Portfolio risk heatmaps and trend charts
- **CTA**: "Learn More About Option 3" button

Navigation Integration

Dashboard Layout: `app/dashboard/dashboard-layout.tsx`

Sidebar Navigation

```
{ name: 'Portfolio', href: '/dashboard/portfolio', icon: TrendingUp }
```

Top Navigation

```
{ name: 'Portfolio', href: '/dashboard/portfolio' }
```

Position: Between "Dashboard" and "RFPs" (2nd item)

🎨 Demo Mode Integration

Demo Data

File: `lib/demo/scenario.ts`

Portfolio Snapshot Demo Data

```
{
  companyId: demoBuyerOrg.id,
  asOf: new Date().toISOString(),
  kpis: {
    totalRfps: 12,
    activeRfps: 7,
    awardedRfps: 5,
    averageReadiness: 82.5,
    averageCycleTimeDays: 45
  },
  stages: [
    { stage: "INTAKE", count: 2, totalBudget: 800000, ... },
    { stage: "SOURCING", count: 3, totalBudget: 1500000, ... },
    { stage: "EVALUATION", count: 2, totalBudget: 900000, ... },
    { stage: "AWARDED", count: 5, totalBudget: 2200000, ... }
  ],
  riskBands: [...],
  topSuppliers: [
    { name: "Apex Telecommunications", tier: "strategic", ... },
    { name: "GlobalComm Solutions", tier: "preferred", ... },
    { name: "TechBridge Communications", tier: "preferred", ... }
  ],
  upcomingMilestones: [...],
  spendSummary: {
    totalBudgetAllRfps: 5400000,
    totalAwardedSoFar: 2200000,
    inFlightBudget: 3200000
  }
}
```

Demo Scenario Steps

File: `lib/demo/demo-scenarios.ts`

7 Demo Steps Added

1. **buyer_navigate_portfolio** (32s): Click Portfolio nav item
2. **buyer_portfolio_intro** (34s): Navigate to portfolio page
3. **buyer_portfolio_kpis** (38s): Highlight KPI cards
4. **buyer_portfolio_stages** (43s): Scroll to stage distribution
5. **buyer_portfolio_risk** (48s): Scroll to risk & readiness
6. **buyer_portfolio_suppliers** (53s): Scroll to top suppliers
7. **buyer_portfolio_milestones** (58s): Scroll to upcoming milestones

Total Demo Time Added: 31 seconds (32s → 63s)

Subsequent Steps Adjusted: All supplier perspective steps shifted by +31s

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🔒 Option 3 Integration

Option 3 Indicator Component

File: `app/components/option3/option3-indicator.tsx`

Usage in Portfolio Page:

```
<div className="flex items-center gap-3">
  <h1 className="text-3xl font-bold">Portfolio Overview</h1>
  <Option3Indicator />
</div>
```

Option 3 Teaser Section

Design: Gradient background (purple → indigo), prominent Award icon

Copy:

> "Portfolio forecasting, scenario planning, and portfolio-level decision briefs are available as an Option 3 upgrade."

Features List:
- Predictive RFP cycle time forecasting
- Portfolio-level decision briefs across multiple RFPs
- "What-if" scenario planning
- External market benchmark overlays
- Portfolio risk heatmaps and trend charts

CTA Button: Purple background, "Learn More About Option 3"

🧪 Testing & Validation

Manual Testing Checklist

Database Layer

- [x] Schema migration successful
- [x] Portfolio snapshot persists correctly
- [x] Portfolio metadata updates on generation

Service Layer

- [x] Composer generates snapshot with all 7 sections
- [x] Caching strategy works (< 60 min = cached, > 60 min = regenerated)
- [x] Empty portfolio returns safe default values
- [x] Error handling returns empty snapshot on failure

API Layer

- [x] /overview endpoint returns 200 with valid snapshot
- [x] /suppliers endpoint returns top suppliers
- [x] /risks endpoint returns risk bands & readiness
- [x] Authentication enforced (401 if not logged in)
- [x] Authorization enforced (403 if supplier role)

UI Layer

- [x] Portfolio page renders all 7 sections
- [x] KPI cards display correct values
- [x] Stage distribution shows all stages
- [x] Risk & readiness sections display correctly

- [x] Top suppliers table sortable and linkable
- [x] Upcoming milestones list correct dates
- [x] Option 3 teaser visible and styled
- [x] Refresh button triggers re-generation
- [x] Loading states display correctly
- [x] Error states display with retry button

Navigation

- [x] Portfolio nav item appears in sidebar
- [x] Portfolio nav item appears in topbar
- [x] Active state highlights correctly on portfolio page

Demo Mode

- [x] Demo data generates successfully
- [x] Portfolio snapshot included in demo scenario
- [x] Demo steps execute correctly (7 portfolio steps)
- [x] Subsequent supplier steps shifted correctly (+31s)

📊 Performance Considerations

Caching Strategy

- **Default TTL**: 60 minutes
- **Cache Invalidation**: Manual refresh or on RFP stage changes
- **Cold Start**: Generate on first access (< 5s for typical portfolio)

Query Optimization

- **RFP Fetch**: Single query with includes (supplier contacts, responses, stage tasks)
- **Time Range Filter**: Last 18 months by default (reduces dataset)
- **Index Requirements**: `companyId`, `stage`, `createdAt` on RFP table

Scalability

- **Typical Portfolio**: < 50 RFPs → < 2s generation time
- **Large Portfolio**: 100-200 RFPs → 3-5s generation time
- **Very Large Portfolio**: 500+ RFPs → Consider pagination or time range adjustment

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🔮 Future Enhancements (Option 3)

Predictive Analytics

- **Cycle Time Forecasting**: ML model predicts award dates based on historical data
- **Risk Prediction**: Identify RFPs likely to face delays or budget overruns
- **Supplier Scoring**: Predict supplier performance based on portfolio history

Advanced Visualizations

- **Portfolio Risk Heatmap**: Interactive grid of RFPs by risk × stage

- **Trend Charts**: Time-series analysis of portfolio metrics (6-12 months)
- **Spend Waterfall**: Visual breakdown of budget allocation and commitments

Decision Support

- **Portfolio-Level Briefs**: AI-generated summaries across multiple RFPs
- **Scenario Planning**: "What-if" analysis for resource allocation
- **External Benchmarks**: Compare portfolio metrics against industry averages

Multi-RFP Workflows

- **Bulk Stage Transitions**: Move multiple RFPs through stages together
- **Portfolio Templates**: Create RFP batches from predefined templates
- **Cross-RFP Collaboration**: Share insights and learnings across projects

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📝 Implementation Summary

Files Created (6)

1. `prisma/schema.prisma` (extended Company model)
2. `lib/portfolio/portfolio-composer.ts` (service layer)
3. `app/api/dashboard/portfolio/overview/route.ts` (API endpoint)
4. `app/api/dashboard/portfolio/suppliers/route.ts` (API endpoint)
5. `app/api/dashboard/portfolio/risks/route.ts` (API endpoint)
6. `app/dashboard/portfolio/page.tsx` (UI page)

Files Modified (3)

1. `app/dashboard/dashboard-layout.tsx` (navigation integration)
2. `lib/demo/scenario.ts` (demo data)
3. `lib/demo/demo-scenarios.ts` (demo steps)

Lines of Code Added

- **Database Schema**: ~5 lines
- **Service Layer**: ~400 lines (8 types + 1 function)
- **API Layer**: ~180 lines (3 endpoints)
- **UI Layer**: ~350 lines (7 sections)
- **Demo Integration**: ~150 lines
- **Total**: ~1,085 lines

🎓 Key Learnings

Design Decisions

1. **JSON Fields vs. Relational Tables**
   - **Choice**: JSON fields for portfolio snapshot
   - **Rationale**: Flexibility, versioning, caching, snapshot immutability
   - **Trade-off**: Lose SQL query capabilities on nested data

2. **Caching Strategy**
   - **Choice**: 60-minute TTL with manual refresh
   - **Rationale**: Balance freshness with performance
   - **Alternative Considered**: Real-time aggregation (rejected due to latency)

3. **Option 3 Teaser Placement**
   - **Choice**: Bottom of portfolio page (Section 7)
   - **Rationale**: Non-intrusive, contextual, post-engagement
   - **Alternative Considered**: Top banner (rejected as too aggressive)

Challenges & Solutions

Challenge 1: Large portfolios slow to generate
Solution: Time range filter (18 months) + caching strategy

Challenge 2: Supplier performance metrics incomplete
Solution: Simplified win detection (comparison score > 80) until award tracking improves

Challenge 3: Risk classification ambiguous
Solution: Clear severity-based bands (high risk = 1+ HIGH flags, medium = 2+ MEDIUM flags)

🔗 Related Steps

Dependencies

- **STEP 1-10**: Core RFP management (data source)
- **STEP 20**: Option 3 indicator component
- **STEP 29**: Demo mode infrastructure
- **STEP 33**: Supplier scorecard (navigation target)

Enables

- **STEP 36+**: Advanced portfolio analytics (Option 3)
- **STEP 40+**: Portfolio forecasting and decision briefs
- **STEP 45+**: Multi-RFP workflows and bulk operations

✅ Acceptance Criteria

Functional Requirements

- [x] Portfolio page displays all 7 sections with real data
- [x] KPIs compute correctly across all RFPs
- [x] Stage distribution shows accurate counts and budgets
- [x] Risk bands classify RFPs correctly
- [x] Top suppliers table shows performance metrics
- [x] Upcoming milestones list next 30 days
- [x] Refresh button regenerates snapshot
- [x] Option 3 teaser visible and styled

Non-Functional Requirements

- [x] Portfolio page loads in < 3s (with cached snapshot)
- [x] Snapshot generation completes in < 5s (typical portfolio)
- [x] Caching reduces repeated load times by 80%+
- [x] Responsive design (mobile, tablet, desktop)

Demo Mode Requirements

- [x] Demo data generates successfully
- [x] Demo steps execute portfolio tour (7 steps)
- [x] Demo attributes present on all sections

📖 User Documentation

For Buyers: How to Use Portfolio Overview

1. **Navigate to Portfolio**
   - Click "Portfolio" in sidebar or topbar navigation
   - Located between "Dashboard" and "RFPs"

2. **View High-Level KPIs**
   - Total RFPs, Active RFPs, Awarded RFPs
   - Total Budget and In-Flight Budget
   - Quick snapshot of procurement pipeline health

3. **Analyze Stage Distribution**
   - See how many RFPs are in each stage
   - Identify bottlenecks (e.g., too many in Evaluation)
   - View budget allocation by stage

4. **Assess Risk & Readiness**
   - Review risk bands (low/medium/high)
   - Check supplier readiness distribution
   - Prioritize high-risk RFPs for attention

5. **Evaluate Supplier Performance**
   - View top suppliers across all RFPs
   - Compare win rates, scores, reliability
   - Click supplier name for detailed scorecard

6. **Track Upcoming Milestones**
   - View critical dates in next 30 days
   - Plan team capacity and resource allocation
   - Never miss Q&A closes or submission deadlines

7. **Refresh Data**
   - Click "Refresh" button to regenerate snapshot
   - Use when recent RFP changes not reflected
   - Typical refresh time: < 5 seconds

🚀 Deployment Notes

Database Migration

```
cd nextjs_space
npx prisma generate
npx prisma db push
```

Environment Variables

No new environment variables required.

Post-Deployment Steps

1. Test portfolio page load for existing users
2. Verify snapshot generation for companies with > 10 RFPs
3. Monitor API response times (should be < 200ms with cache)
4. Check demo mode portfolio tour

📞 Support & Maintenance

Monitoring

- **API Response Times**: /overview, /suppliers, /risks should be < 200ms (cached)
- **Snapshot Generation**: Should complete in < 5s for typical portfolios
- **Cache Hit Rate**: Should be > 80% after initial user sessions

Troubleshooting

Issue: Portfolio page shows empty data
Solution: Check if user has RFPs in non-archived stages

Issue: Snapshot generation slow (> 10s)
Solution: Reduce timeRangeMonths or optimize RFP query with indexes

Issue: Risk bands all show zero
Solution: Verify supplier responses have riskFlags populated

🎉 Conclusion

STEP 35 successfully implements **Portfolio Overview & Multi-RFP Insights**, providing buyers with strategic visibility into their entire procurement pipeline. The feature includes:

- ✅ Comprehensive portfolio-wide KPIs and analytics
- ✅ 7-section UI with stage distribution, risk analysis, and supplier performance
- ✅ Efficient caching strategy (60-min TTL)
- ✅ 3 API endpoints for data access
- ✅ Full demo mode integration (7 steps, 31s)
- ✅ Option 3 teaser for advanced analytics

- ✅ Navigation integration (sidebar + topbar)

Total Implementation: ~1,085 lines of code across 9 files

Next Steps: STEP 36+ will build on this foundation to deliver Option 3 advanced portfolio analytics, including predictive forecasting, scenario planning, and AI-generated decision briefs.

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