



# School Financial Planning Application – Blueprint Document

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## 1. Purpose & Vision

A modern, web-based **School Financial Planning Application** built for strategic and operational forecasting over a 25-year horizon. The app enables: - Dynamic financial modeling (P&L, Balance Sheet, Cash Flow) - Version management and benchmarking - Built-in financial controls and reconciliations - Professional-grade reporting (PDF & Excel) - Executive dashboard with KPIs and growth insights

**Objective:** Replace static Excel/SAC models with a scalable, data-driven, and user-friendly planning environment.

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## 2. System Overview

Layer	Description	Technologies
<b>Frontend</b>	Modern, responsive SPA for assumption input, reports, and visualization	Next.js 15 (React 19), Tailwind, shadcn/ui, Framer Motion
<b>Backend / Engine</b>	Performs calculations, stores versions, generates outputs	Node.js (NestJS) or Python (FastAPI)
<b>Database</b>	Stores assumptions, model results, and versions	PostgreSQL with JSONB
<b>Auth</b>	Secure multi-user access with audit trails	JWT / OAuth2
<b>Export Engine</b>	Generates board-ready outputs	Puppeteer (PDF), XLSXWriter (Excel)
<b>Formatting</b>	All UI values displayed in <b>M SAR</b> (1M = 1,000,000 SAR)	UI-level formatting

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## 3. Functional Modules

### 3.1 Assumptions Workspace

Structured panels for all planning inputs:

- **General Setup** – School name, planning horizon, currency, and display units.
- **Strategic Near-Term (2025–2027)** – Students, tuition, growth %, staff %, opex %, rent model.

- **Strategic Long-Term (2028–2052)** – Multi-year enrollment and tuition trends.
- **CAPEX Table** – Year, Amount (SAR), Depreciation period, Description.
- **Working Capital** – AR days, AP days, Deferred income, Inventory days.
- **Opening Balance Sheet (2024)** – Full asset, liability, and equity listing.

**Features:** Inline validation, autosave, conditional field display, draft states.

## 3.2 Calculation Engine

When user clicks **Run Model**: 1. Computes Revenue Streams (French, IB, Other) 2. Builds Profit & Loss from cost ratios and depreciation 3. Reconciles Cash Flow (Operating, Investing, Financing) 4. Rolls forward Balance Sheet from 2024 opening values 5. Executes control checks (Balance Sheet & Cash Flow) 6. Saves a complete version snapshot

**Stored version structure:**

```
{
  "id": "ver_2025_base_001",
  "name": "Base Case - Sep 2025",
  "created_by": "Faker",
  "assumptions": { ... },
  "results": {
    "revenue_streams": [...],
    "pnl": [...],
    "balance_sheet": [...],
    "cash_flow": [...],
    "controls": {...},
    "ratios": {...}
  }
}
```

## 4. Reporting Views

View	Purpose	Key Data	Unit
<b>Revenue Streams</b>	Show each tuition and income source	Tuition French, IB, Other	M SAR
<b>Profit &amp; Loss</b>	Operational profitability	Revenues → Opex → EBITDA → Net Result	M SAR
<b>Balance Sheet</b>	Financial position	Assets, Liabilities, Equity	M SAR
<b>Cash Flow</b>	Liquidity tracking	Operations, Investing, Financing	M SAR

View	Purpose	Key Data	Unit
<b>Controls – BS</b>	Parity validation	Assets = Liab + Equity	M SAR
<b>Controls – CF</b>	Cash reconciliation	Ending Cash (CF) = Cash (BS)	M SAR
<b>Ratios &amp; KPIs</b>	Strategic metrics	Profitability, Liquidity, Growth	% / M SAR
<b>Version Comparison</b>	Scenario benchmarking	Variance between versions	% / M SAR

## 5. Control Pages

### 5.1 Balance Sheet Control

**Purpose:** Ensure parity between Assets and Liabilities + Equity.

Year	Total Assets	Liab + Equity	Difference	Status
2024	50.497	50.497	0.000	✓ OK
2025	54.233	54.231	0.002	⚠

- **Difference:**  $\Delta = \text{Assets} - (\text{Liab} + \text{Equity})$
- **Tolerance:**  $\pm 0.001$  M SAR
- **Chart:** Asset/Liability composition (stacked bar).

### 5.2 Cash Flow Control

**Purpose:** Verify ending cash matches balance sheet cash.

Year	Ending Cash (CF)	Cash (BS)	Difference	Status
2024	21.581	21.581	0.000	✓ OK

- **Formula:**  $\text{Difference} = \text{CF\_ending\_cash} - \text{BS\_cash}$
- **Sub-table:** Movement summary (Net result, Dep, WC, Capex,  $\Delta$ Cash)

## 6. Ratios & KPI Dashboard

### Profitability

- EBITDA Margin (%)
- Net Margin (%)
- Staff Cost % of Revenue

- Opex % of Revenue
- Rent % of Revenue

### Productivity

- Revenue per Student (M SAR)
- Operating Cost per Student (M SAR)
- Students per Teacher (optional future)

### Liquidity

- Operating Cash Flow / Revenue
- Cash Balance (M SAR)
- Deferred Income / Revenue

### Balance Sheet Health

- Current Ratio
- Cash / Current Liabilities
- Provisions / Total Liabilities

### Growth

- Revenue CAGR (5 years)
- Student CAGR (5 years)
- Capex / Revenue (%)

**Display:** Cards (latest year), tables, line charts for key trends.

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## 7. Versioning & Benchmarking

- Each run saved as a **version** with full metadata and results.
  - Supports comparison across versions (Base, Optimistic, Downside).
  - Benchmark view: variance % and M SAR difference.
  - Ability to reload historic versions into the latest engine.
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## 8. Export Engine

### PDF Export

- High-resolution, board-ready, generated via Puppeteer.
- Includes:
  - Cover page (logo, title, date, author)
  - Summary KPIs (Revenue, EBITDA, Cash)
  - Key statements (10-year horizon)
  - Ratios and control highlights

- Footer: page numbers + confidentiality note.

Excel Export

- Sheets:
- Assumptions
- Revenue\_Streams
- P&L
- Balance\_Sheet
- Cash\_Flow
- Controls
- Ratios
- Includes metadata tab (version ID, date, author)
- Raw data stored in SAR, label: *Displayed in M SAR in app.*

9. UI/UX Framework

- **Design System:** shadcn/ui + Tailwind
- **Layout:** 3-panel (Navigation / Workspace / Context)
- **Interactions:** Inline validations, smooth transitions, auto-save
- **Accessibility:** Full keyboard support, dynamic scaling
- **Visual Design:** Modern minimalist (neutral backgrounds, teal/blue accents)
- **Light/Dark modes**

10. Key Design Rules

1. **Display Unit:** M SAR in UI, SAR in backend.
2. **Base Year:** 2024 (for BS & CF roll-forward).
3. **Parity Enforcement:** BS and CF reconciliations mandatory per version.
4. **Version Integrity:** Immutable record per run.
5. **Scalability:** Ready for multi-campus and role-based access.

11. Deliverables Summary

Deliverable	Description
App Architecture	Frontend, backend, DB, and calc engine integration diagram
Data Model Schema	Entities: Assumptions, Results, Versions, Users
API Contract	<code>/run-model</code> , <code>/get-report/{version}</code> , <code>/compare-versions</code>
UI Mockups	Panels (assumptions, controls, ratios)

Deliverable	Description
<b>Export Templates</b>	PDF and Excel format specs
<b>Validation Rules</b>	Business logic and tolerance thresholds

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## 12. Future Extensions

- Multi-school consolidation
- Integration with ERP / HR feeds
- Arabic language toggle
- Scenario automation (sensitivity slider)
- Embedded analytics (Power BI, Metabase)

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**End of Blueprint Document**