

KM Nugget Wireframes Design Concept

Design Philosophy: DNA Memory Integration

Core Metaphor

The KM Nugget interface will visualize knowledge as a biological memory system, where:

- **Knowledge Nuggets = Codons:** Individual units of information (3-nucleotide sequences)
- **Knowledge Strands = DNA Chains:** Connected sequences of related nuggets
- **Memory Graph = Genome:** Complete knowledge structure with relationships
- **Session DNA = Interaction History:** Temporal sequence of knowledge access

Visual Design Elements

Color Palette

- **Primary Blue (#2E86AB):** Trust, knowledge, depth
- **Secondary Teal (#A23B72):** Innovation, creativity
- **Accent Green (#F18F01):** Growth, connections, life
- **Background Gray (#C73E1D):** Neutral, professional
- **DNA Helix Colors:** Alternating blue/teal for complementary strands

Typography

- **Headers:** Modern sans-serif (24px-36px) for clarity
- **Body Text:** Clean, readable font (16px-20px)
- **Code/Data:** Monospace font for technical elements

- **Labels:** Smaller sans-serif (12px-14px) for metadata

Layout Structure

- **Left Panel:** DNA Strand Navigator (hierarchical knowledge tree)
- **Center Panel:** Active Nugget Display (detailed view)
- **Right Panel:** Related Nuggets & Connections
- **Bottom Panel:** Session DNA Timeline (interaction history)

Interface Components

1. DNA Strand Navigator

- **Visual:** Vertical double helix representation
- **Function:** Navigate knowledge hierarchy
- **Interaction:** Click to expand/collapse branches
- **Metadata:** Show codon tags (type, origin, strength)

2. Knowledge Nugget Panel

- **Visual:** Hexagonal cards with DNA-inspired borders
- **Content:** Title, summary, tags, connections
- **States:** Active, related, archived
- **Actions:** Expand, connect, tag, share

3. Memory Graph Visualization

- **Visual:** Network diagram with DNA-like connections
- **Nodes:** Individual nuggets with size based on importance

- **Edges:** Relationship strength and type
- **Layout:** Force-directed with clustering

4. Codon Tagging System

- **Visual:** Color-coded tags resembling nucleotide bases
- **Types:** A (Action), T (Theory), G (Goal), C (Context)
- **Display:** Small badges on nugget cards
- **Function:** Filter and categorize knowledge

5. Session DNA Timeline

- **Visual:** Horizontal strand showing interaction sequence
- **Elements:** Chronological nugget access pattern
- **Features:** Replay sessions, identify patterns
- **Metadata:** Timestamps, duration, frequency

Wireframe Specifications

Screen Dimensions

- **Desktop:** 1920x1080 (primary target)
- **Tablet:** 1024x768 (responsive adaptation)
- **Mobile:** 375x667 (simplified view)

Grid System

- **12-column grid** for flexible layout
- **24px base unit** for consistent spacing

- **8px increments** for fine-tuned adjustments

Interactive Elements

- **Hover States:** Subtle glow effects on nuggets
- **Click Feedback:** DNA strand animation
- **Loading States:** Helix rotation animation
- **Transitions:** Smooth 300ms ease-in-out

Technical Considerations

Accessibility

- **Color Contrast:** WCAG AA compliance
- **Keyboard Navigation:** Full keyboard support
- **Screen Readers:** Semantic HTML structure
- **Focus Indicators:** Clear visual focus states

Performance

- **Lazy Loading:** Load nuggets on demand
- **Virtualization:** Handle large knowledge graphs
- **Caching:** Store frequently accessed nuggets
- **Optimization:** Minimize DNA animation overhead

Responsive Design

- **Breakpoints:** 768px, 1024px, 1440px
- **Mobile First:** Progressive enhancement

- **Touch Targets:** Minimum 44px for mobile
- **Gesture Support:** Pinch to zoom, swipe navigation

Implementation Notes

DNA Visualization Library

- Consider D3.js for custom DNA strand rendering
- Three.js for 3D helix visualization (optional)
- Canvas API for performance-critical animations

Data Structure

- Graph database (Neo4j) for knowledge relationships
- JSON format for nugget metadata
- Real-time updates via WebSocket connections

Integration Points

- API endpoints for nugget CRUD operations
- Search functionality with DNA-based relevance
- Export capabilities (JSON, PDF, visual formats)