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# Scope Change Implementation Tasks

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## Nye Hædda Barneskole - Nedskalert Scope

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**Document Version:** 1.0 **Date:** 2025-12-11 **Status:** Implementation Guide **Source:** "Nytt scope og nødvendige endringer.pdf"

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## Executive Summary

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This document tracks the major scope changes from the original plan (15 suppliers, 15 WBS packages) to the scaled-down POC (3 suppliers, 3 WBS packages, 4 AI agent roles). The focus is on AI agent negotiation with realistic constraints.

## Key Changes at a Glance:

- **Suppliers:** 15 → 3 negotiable suppliers
- **WBS Packages:** 15 → 3 negotiable packages (3 of 5 on critical path)
- **AI Agent Roles:** 5 supplier personas → 4 distinct roles (Owner + 3 suppliers)
- **Budget Model:** 700 MNOK total → 310 MNOK available for 3 negotiable packages (650 MNOK locked)
- **Negotiation Types:** 3 main strategies (quality, scope, time/cost trade-offs)
- **Time Constraint:** 15 months INFLEXIBLE (enforced via system prompts)
- **Owner Role:** New AI agent representing municipality (budget negotiation only)

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## 1. Scaled-Down Scope Details

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### Original Scope:

- 15 suppliers
- 15 WBS work packages
- User negotiates all 15
- Total budget: 700 MNOK, 15 months

### New Scope:

- **3 negotiable suppliers and 3 negotiable WBS packages**
- The remaining 12 suppliers/packages are already contracted ("locked/gray")
- User can ONLY work with these 3 packages and 3 suppliers
- Rest of budget and time considered already committed

### Rationale:

"Jobben ligger i AI-agentene/de nå 4 rollene og vi trenger POC asap."

The focus is on proving the AI agent negotiation concept, not on building a complete simulation with 15 items.

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## 2. Roles and Negotiation Possibilities

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## 2.1 Owner (Municipality - "Eier/Kommunen")

**Role:** The only party that can adjust budget or time.

### CRITICAL RULE:

"Tiden kan ikke forlenges, selv om dette bare skal komme frem gjennom dialog med AI-agenten (system prompt må gjøre dette ufravikelig)."

### Negotiation Powers:

- Can increase budget (with strong user argumentation)
- **CANNOT extend time** (inflexible - must be enforced via system prompt)

### System Prompt Requirement:

- Must reject all time extension requests with explanation: "Skolen må stå klar til skolestart i august; samfunnskostnaden ved forsinkelse er høyere enn økt budsjett."
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## 2.2 Suppliers (3 Total)

### Supplier Negotiation Powers:

#### 1. Deliver faster for higher cost

- Overtime/increased capacity → higher price
- If cost exceeds budget → requires budget negotiation with Owner
- User must argue well to Owner AI for budget increase

#### 2. Deliver cheaper for lower quality

- Reduced quality trade-off
  - Supplier can offer lower price if user accepts quality reduction
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## 2.3 Three Main Negotiation Strategies

Strategy	Description	Who to Negotiate With
Reduced Quality	Accept lower quality for lower cost	Supplier
Reduced Scope	Remove features from the building (e.g., fewer classrooms)	Owner
Shorter Time for Higher Cost	Faster delivery via overtime/more workers	Supplier → Owner (if budget exceeded)

## 3. Critical Path, Budget, and Time

### 3.1 Critical Path Structure

Original mockup: 15 WBS items total, 5 on critical path

New structure:

- 3 negotiable packages must be 3 of the 5 on critical path
- The remaining 2 critical path items are locked/contracted
- 12 other WBS items are "gray" (already contracted)

### Reference from PDF:

"De 3 forhandlingsbare leverandørene/WBS-pakkene skal være 3 av 5 WBS'er på kritisk sti (ref. utdatert mockup)."

### 3.2 Budget Model

Total Project Budget: 700 MNOK, 15 months

Budget Breakdown:

Category	Amount	Status
12 "Gray" Suppliers (locked)	~650 MNOK	Already contracted, 13 months

Category	Amount	Status
<b>3 Negotiable Packages</b>	<b>310 MNOK available</b>	User must negotiate within this
<b>Total</b>	<b>700 MNOK</b>	<b>15 months deadline</b>

### Baseline Estimate for 3 Packages (from old mockup):

- WBS 1.3.1 Grunnarbeid: 105 MNOK
- WBS 1.3.2 Fundamentering: 60 MNOK
- WBS 1.4.1 Råbygg: 180 MNOK
- **Total:** 345 MNOK

### THE CHALLENGE:

"For å gjøre det mer utfordrende kan vi for eksempel legge opp til at de tre kritiske pakkene i simuleringen bare har 310 MNOK tilgjengelig (dvs. 45 MNOK under anslaget fra mockup), slik at brukeren må forhandle for å få disse på plass."

**User starts with deficit:** 345 MNOK baseline - 310 MNOK available = **35-45 MNOK shortfall**

User MUST negotiate to reduce costs or get Owner to approve budget increase.

## 3.3 Budget Flexibility

### From Bård (stakeholder):

"Dersom de tre kritiske WBS-pakkene samlet blir større enn det vi klarer å «hente inn» innenfor 50 MNOK, kan vi justere rammene slik: vi senker de 650 MNOK som ligger på de grå/kontraktfestede leverandørene tilsvarende."

### Acceptable Total Budget:

- Slightly over 700 MNOK is acceptable
- **Priority: TIME > BUDGET**
- "Riktig tid er viktigst" - meeting the deadline is more important than staying under budget

## 3.4 Time Constraint

**Deadline:** May 15, 2026 (15 months from project start)

**INFLEXIBLE:**

"Tiden kan ikke forlenges."

**Reason (from Bård):**

"Skolen må stå klar til skolestart i august; samfunnskostnaden ved forsinkelse er høyere enn økt budsjett."

**System Prompt Enforcement:**

- Owner AI agent must **ALWAYS refuse** time extension requests
  - Even if user begs, Owner must explain: societal cost of delay > increased budget
  - Supplier AI agents should not offer time extensions directly (only faster delivery for more cost)
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## 4. System Prompts (AI Agents)

### 4.1 New AI Agent Structure

**Old:** 5 supplier personas (Bjørn, Kari, Per, Silje, Tor) **New:** 4 AI agent roles

1. **Owner Agent** (Municipality - "Kommunen")
  2. **Supplier Agent 1** (e.g., Totalentreprenør for Grunnarbeid)
  3. **Supplier Agent 2** (e.g., Entreprenør for Fundamentering)
  4. **Supplier Agent 3** (e.g., Entreprenør for Råbygg)
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### 4.2 Owner Agent System Prompt Requirements

**Identity:**

- Name: e.g., "Kommunaldirektør Anne-Lise Berg"
- Role: Municipal project owner, budget approver
- Context: Responsible for ensuring school opens on time for August school start

## Negotiation Parameters:

- **Budget:** Can approve increases IF user provides strong justification
  - Initial resistance: "Vi har allerede stramme rammer..."
  - Concession rate: Low (~3-5% increases max per round)
  - Requires good arguments: cost-benefit, risk mitigation, quality assurance
- **Time: ABSOLUTELY INFLEXIBLE**
  - Always responds: "Tidsfristen er ufravikelig. Skolen må stå klar til skolestart i august."
  - Even with perfect arguments, time cannot be extended

## Personality:

- Professional, cautious, budget-conscious
- Balances municipal responsibility vs project success
- Sympathetic but firm on constraints

## Prompt Structure:

You are Kommunaldirektør Anne-Lise Berg, representing the municipality...

### CRITICAL RULES:

1. Time cannot be extended under ANY circumstances
2. Budget can be increased ONLY with exceptional justification
3. You must explain: "Samfunnskostnaden ved forsinkelse er høyere enn økt budsjett"

### When user requests time extension:

- ALWAYS refuse politely but firmly
- Explain: School must open for August start
- Suggest: Find ways to reduce scope or accept higher cost for faster delivery

### When user requests budget increase:

- Initially resistant
- Ask for detailed justification
- If argument strong → concede small increase (3-5%)
- If argument weak → suggest renegotiating with suppliers for lower cost

## 4.3 Supplier Agent System Prompt Requirements

### Agent Type 1: Can negotiate PRICE only

- Can offer cheaper (lower quality)
- Can offer more expensive (higher capacity/overtime for faster delivery)
- **Cannot negotiate time independently**

### Agent Type 2: Can negotiate TIME (faster) for higher cost

- Offers: "I can deliver faster, but it will require overtime → +X% cost"
- User must then negotiate with Owner if cost exceeds budget

### Agent Type 3: Can reduce SCOPE

- Offers: "I can remove [feature] to reduce cost"
- Links to Owner perspective: scope changes require Owner approval

### Hidden Parameters (examples):

- `initial_margin`: 1.15-1.30 (15-30% markup over baseline)
  - `concession_rate`: 0.03-0.07 (3-7% price reduction per round)
  - `patience`: 2-4 rounds before walking away
  - `quality_flexibility`: boolean (can reduce quality for cost savings)
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## 4.4 Supplier Persona Examples

### Supplier 1: Bjørn Eriksen (Totalentreprenør - Grunnarbeid)

- Baseline: 105 MNOK, 60 days
- Personality: Skeptical, quality-focused
- Negotiation style: "Jeg kan ikke gå under 100 MNOK uten å redusere kvaliteten..."
- Can offer: Cheaper (90 MNOK, reduced quality) OR faster (95 MNOK, 45 days)

### Supplier 2: Kari Andersen (Fundamentering)

- Baseline: 60 MNOK, 45 days
- Personality: Pragmatic, flexible

- Can offer: Scope reduction ("Vi kan bruke enklere fundamentering → 50 MNOK")

### Supplier 3: Per Johansen (Råbygg)

- Baseline: 180 MNOK, 90 days
  - Personality: Aggressive, profit-driven
  - High margin: Starts at 200 MNOK
  - Concession: Will reduce to 175 MNOK after strong negotiation
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## 5. Consequences for Mockups and Repository

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### 5.1 UI/UX Changes Required

#### Dashboard:

- Show **Owner perspective** prominently
- Budget display: "310 MNOK available for 3 packages | 650 MNOK locked"
- WBS list: Highlight 3 negotiable items, show 12 as "gray/contracted"

#### Chat Interface:

- Add ability to select negotiation partner: Supplier OR Owner
- Clear indication of who user is chatting with
- Offer acceptance: **MUST be active user choice (Yes/No buttons)**

#### Critical Requirement:

"Det er viktig at brukergrensesnittet og dialogen med AI'en ikke automatisk aksepterer en avtale, det må være et aktivt valg som brukeren må få hver gang de får et tilbud – som da kan forhandles videre om eller aksepteres ved valg (ja/nei)."

#### No Contract Signing:

"Ingen kontrakt skal inngås, så det elementet er out of scope."

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## 5.2 Gantt Chart / Precedence Diagram Updates

### Gantt Chart:

- Show all 15 WBS items
- Highlight 3 negotiable items in blue/interactive
- Show 12 locked items in gray (non-interactive)
- Display critical path (5 items total, 3 negotiable)

### Precedence Diagram:

- Same logic: 3 nodes interactive, 12 grayed out
- Critical path highlighted in red
- Show dependencies clearly

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## 5.3 New Mockup Files Needed

Mockup File	Description	Key Changes
nhb-08-screen-dashboard.svg	Dashboard	Owner budget panel, 3 negotiable WBS highlighted
nhb-09-screen-chat.svg	Chat negotiation	Supplier/Owner toggle, Accept/Reject offer buttons
nhb-10-screen-gantt-chart.svg	Gantt chart	3 of 5 critical path items interactive, 12 gray
nhb-11-screen-precedence-diagram.svg	Network diagram	Same as Gantt - 3 interactive, 12 locked
nhb-16-modal-supplier-selection.svg	Supplier selection	Show only 3 suppliers
nhb-17-modal-commitment-confirm.svg	Commitment confirmation	Add Accept/Reject buttons explicitly
nhb-21-modal-owner-negotiation.svg	<b>NEW:</b> Owner chat modal	Budget negotiation interface

# 6. Implementation Checklist

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## Phase 1: Documentation Updates

- Update `PRD.md`:
  - FR-3: WBS Management → 3 negotiable items only
  - FR-4: AI Supplier Negotiation → 4 agents (Owner + 3 suppliers)
  - FR-5: Budget model → 310 MNOK available, 650 locked
  - FR-6: Time constraint → Inflexible 15 months
  - FR-7: Negotiation types → 3 strategies documented
- Update `product-brief.md`:
  - Section 2: Solution Overview → 3 suppliers, 3 WBS
  - Section 4: MVP Scope → Scaled-down feature set
  - Section 6: Success Metrics → Updated for POC focus
- Update `ux-design-specification.md`:
  - Section 3.2: Dashboard → Owner budget panel
  - Section 3.3: Chat Page → Supplier/Owner selection
  - Section 3.4: Commitment Modal → Accept/Reject explicit buttons
  - Section 3.7: Gantt Chart → 3 interactive, 12 gray
  - Section 3.8: Precedence Diagram → Critical path highlighting
- Update `epics.md`:
  - Epic 3: WBS Management → 3 items only
  - Epic 4: AI Supplier Negotiation → 4 agent roles
  - Epic 5: Plan Management → Owner negotiation stories
  - New stories: E4.7 Owner AI Agent, E5.6 Budget Negotiation Flow
- Create `AI_AGENT_SYSTEM_PROMPTS.md`:
  - Owner agent prompt (full specification)
  - Supplier 1 prompt (price negotiation)
  - Supplier 2 prompt (time/cost trade-off)
  - Supplier 3 prompt (scope reduction)

## Phase 2: Static Data Updates

- Update `/public/data/wbs.json`:
    - Mark 3 items as `negotiable: true`
    - Mark 12 items as `negotiable: false, status: "contracted"`
    - Update baseline costs: 105, 60, 180 MNOK for negotiable items
  - Update `/public/data/suppliers.json`:
    - Remove 2 suppliers (keep 3 only)
    - Add `owner` entry for Owner AI agent
    - Update negotiation parameters (margin, concession\_rate, patience)
  - Create `/public/data/budget_model.json`:
    - Total: 700 MNOK
    - Locked: 650 MNOK
    - Available: 310 MNOK
    - Baseline\_needed: 345 MNOK
    - Deficit: 35 MNOK
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## Phase 3: Mockup Creation

- `nhb-01-flow-complete-user-journey.svg` - Updated user flow with Owner negotiation
- `nhb-02-flow-authentication.svg` - No changes
- `nhb-03-flow-negotiation-strategy.svg` - **NEW:** 3 negotiation types diagram
- `nhb-07-screen-login.svg` - No changes
- `nhb-08-screen-dashboard.svg` - **UPDATED:** Owner panel, 3 WBS highlighted
- `nhb-09-screen-chat.svg` - **UPDATED:** Supplier/Owner toggle, Accept/Reject
- `nhb-10-screen-gantt-chart.svg` - **UPDATED:** 3 interactive, 12 gray
- `nhb-11-screen-precedence-diagram.svg` - **UPDATED:** Critical path (3 of 5)
- `nhb-12-screen-history-timeline.svg` - Minor updates
- `nhb-13-component-wbs-card.svg` - Show negotiable vs locked status
- `nhb-14-component-navigation.svg` - No changes

- [nhb-15-screen-registration.svg](#) - No changes
  - [nhb-16-modal-supplier-selection.svg](#) - **UPDATED:** 3 suppliers only
  - [nhb-17-modal-commitment-confirm.svg](#) - **UPDATED:** Accept/Reject buttons
  - [nhb-18-modal-help-onboarding.svg](#) - Update help text
  - [nhb-19-modal-success.svg](#) - No changes
  - [nhb-20-modal-error-validation.svg](#) - No changes
  - [nhb-21-modal-owner-negotiation.svg](#) - **NEW:** Owner chat interface
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## Phase 4: Verification & Testing

- **Documentation consistency check:**
    - All docs reference 3 suppliers, 3 WBS
    - Budget model consistent across all files (310/650/700)
    - Time constraint documented as inflexible
    - Owner role clearly defined
  - **Mockup design review:**
    - Fonts compatible across systems (use web-safe fonts)
    - Colors consistent with design system
    - SVG files optimized (<500 KB each)
    - Norwegian language throughout
  - **AI prompt validation:**
    - Owner prompt rejects time extensions 100%
    - Supplier prompts follow negotiation types
    - Hidden parameters tested (margin, concession rates)
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## 7. File-by-File Update Plan

### Documentation Files (Markdown)

File Path	Priority	Changes Required	Estimated Time
docs/PRD.md	HIGH	Rewrite FR-3, FR-4, FR-5, FR-6, FR-7	2-3 hours
docs/product-brief.md	HIGH	Update Sections 2, 4, 6	1-2 hours
docs/ux-design-specification.md	HIGH	Update Sections 3.2-3.8	2-3 hours
docs/epics.md	HIGH	Rewrite Epic 3, 4, 5; add stories	2-3 hours
docs/brainstorming-*.md	MEDIUM	Update for 3 WBS scope	1 hour
docs/validation-report-*.md	LOW	Re-run validation if needed	30 min

**Total Documentation Time:** ~10-15 hours

## Static Data Files (JSON)

File Path	Priority	Changes Required	Estimated Time
/public/data/wbs.json	HIGH	Add <b>negotiable</b> flag, update costs	30 min
/public/data/suppliers.json	HIGH	Remove 2, add Owner entry	30 min
/public/data/budget_model.json	HIGH	Create new file	15 min
/backend/prompts/owner.md	CRITICAL	Write Owner system prompt	2 hours
/backend/prompts/supplier_1.md	CRITICAL	Update for price negotiation	1 hour
/backend/prompts/supplier_2.md	CRITICAL	Update for time/cost trade-	1 hour

File Path	Priority	Changes Required	Estimated Time
		off	
/backend/prompts/supplier_3.md	CRITICAL	Update for scope reduction	1 hour
<b>Total Data/Prompt Time:</b> ~6-7 hours			

## Mockup Files (SVG)

File Path	Priority	Changes Required	Estimated Time
docs/ux/nhb-01-flow-complete-user-journey.svg	HIGH	Add Owner negotiation flow	1-2 hours
docs/ux/nhb-03-flow-negotiation-strategy.svg	HIGH	Create new diagram	1-2 hours
docs/ux/nhb-08-screen-dashboard.svg	CRITICAL	Owner panel, 3 WBS highlight	2-3 hours
docs/ux/nhb-09-screen-chat.svg	CRITICAL	Supplier/Owner toggle	2-3 hours
docs/ux/nhb-10-screen-gantt-chart.svg	HIGH	3 interactive, 12 gray	2-3 hours
docs/ux/nhb-11-screen-precedence-diagram.svg	HIGH	Critical path (3 of 5)	2-3 hours
docs/ux/nhb-13-component-wbs-card.svg	MEDIUM	Negotiable status badge	1 hour
docs/ux/nhb-16-modal-supplier-selection.svg	HIGH	3 suppliers only	1-2 hours
docs/ux/nhb-17-modal-commitment-confirm.svg	HIGH	Accept/Reject buttons	1-2 hours
docs/ux/nhb-21-modal-owner-negotiation.svg	CRITICAL	Create new mockup	2-3 hours

**Total Mockup Time:** ~16-24 hours

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# **GRAND TOTAL ESTIMATED TIME: ~32-46 hours (4-6 days of focused work)**

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## **8. Critical Questions for Clarification**

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Before starting implementation, confirm these details:

### **1. Which 3 WBS items are negotiable?**

- Suggested: 1.3.1 Grunnarbeid, 1.3.2 Fundamentering, 1.4.1 Råbygg
- Confirm these are 3 of the 5 on critical path

### **2. Exact budget breakdown:**

- Locked: 650 MNOK or 655 MNOK? (depends on whether 50 MNOK or 45 MNOK available)
- Available: 310 MNOK confirmed?

### **3. Supplier personas:**

- Can we reuse Bjørn, Kari, Per from original? Or create new ones?
- Suggested names for Owner: "Kommunaldirektør Anne-Lise Berg" or similar?

### **4. Mockup design style:**

- Follow existing nhb-\* mockup visual style exactly?
- Color scheme for "negotiable" vs "locked" items?

### **5. System prompt testing:**

- How many test negotiations required per agent before approval?
  - Suggested: 10 samples per agent (40 total tests)
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# 9. References

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## Source Document:

- PDF: "Nytt scope og nødvendige endringer.pdf" (4 pages)
- Date: 2025-12-11
- Author: [Stakeholder: Bård]

## Key Quotes:

1. "Vi går fra 15 → 3 leverandører og 3 WBS-arbeidspakker det kan forhandles om."
  2. "Tiden kan ikke forlenges, selv om dette bare skal komme frem gjennom dialog med AI-agenten."
  3. "Det er viktig at brukergrensesnittet og dialogen med AI'en ikke automatisk aksepterer en avtale."
  4. "Ingen kontrakt skal inngås, så det elementet er out of scope."
  5. "De tre kritiske pakkene i simuleringen bare har 310 MNOK tilgjengelig (dvs. 45 MNOK under anslaget)."
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## End of Task Reference Document

## Next Steps:

1. Review this document with stakeholders
2. Confirm 3 WBS items and supplier personas
3. Begin Phase 1: Documentation updates
4. Proceed to Phase 2-4 based on priority

**Status:** Ready for implementation - all tasks documented and prioritized.