Work Sample Assignment: Solutions Architect

Your Assignment

Listen to a customer discovery call, identify what they need, build a working prototype, and demo it in a live interview.

You are the Solutions Architect. You decide what the customer needs and how to solve it.

Time Investment: ~3 hours
Required Deliverables: Working implementation + 1-hour interview

The Scenario

Hoth Industries manufactures air handling and cooling products for data centers. You just completed a discovery call with their team. They urgently need help and are asking for many things.

Your job:

1. "Listen" to what they said (read transcript below)
2. Decide what they need
3. Build a working prototype that solves a real problem
4. Demo it like you're presenting back to them for feedback

Meeting Transcript: Hoth Industries Discovery Call

Attendees: Mike Chen (Plant Manager), Graham Smith (Engineering Director), Cody Williams (Senior Engineer), You

MIKE (Plant Manager):

> "Okay thanks for coming out. So our big problem is we keep making bad sourcing decisions. We source from like 40 different suppliers for components—fan motors, heat exchangers, control systems, sheet metal fabrication. Every time we need to place a new order, it's a crapshoot. We're sending RFQs to suppliers who burned us before, or worse, we're missing out on great suppliers because nobody remembers we used them 3 years ago."

GRAHAM (Engineering Director):

> "Yeah, it's ridiculous. Last month Cody sent an RFQ for aluminum heat exchanger fins to QuickFab Industries. Three weeks late, 30% reject rate. Later we remembered we'd used them before in 2021 with the same issues! I don't blame Cody, because he hasn't slept this quarter. Meanwhile, we have this other supplier, Stellar Metalworks, who's been perfect every time, but we almost never use them because they're not in anyone's 'favorite suppliers' list."

MIKE:

> "And here's the business impact: We're losing money two ways. First, we're paying too much because we don't know pricing history. Supplier quotes us $50 per part, we accept it, then we find out we paid them $20 for the same part last year. Second, quality issues from bad suppliers cost us rework, delays, customer complaints. This mistakes cost us $4M a year. Right now our orders are through the roof: data center buildouts are exploding, but our quality and on-time delivery metrics are getting worse. We're growing but our competitors are taking our customers as we miss deliveries.

YOU:

> "So the core issue is lack of supplier intelligence?"

CODY (Senior Engineer):

> "Exactly. We need to know: who's reliable? Who delivers on time? Who has good quality? Who gives us good pricing? But all that data is scattered. Some is in Sarah's Excel files in procurement, some is in our ERP system, some is just in people's heads."

MIKE:

> "Sarah, she's our procurement manager, she emails out these monthly supplier performance reports. But they're just Excel spreadsheets that nobody really uses. The data's all there: delivery dates, quality inspection results, pricing. But it's not actionable."

GRAHAM:

> "And the supplier names are a mess. Same company shows up as 'Apex Mfg', 'Apex Manufacturing Inc', 'APEX MFG' in different spreadsheets. How are you supposed to see patterns when you can't even match company names?"

CODY:

> "Plus we have like 10 years of this data. Thousands of orders. If we could see: 'For aluminum heat exchangers, these 5 suppliers have 95%+ on-time delivery and lowest cost'—that would be game-changing."

MIKE:

> "Right! And we need it to integrate with SAP. That's our ERP system. And actually we also have this old AS/400 system that runs production scheduling. Can you pull data from both and make them talk to each other?"

YOU:

> "What's your timeline?"

MIKE:

> "We needed this yesterday. We have a big sourcing decision coming up in 3 weeks. If we could make that decision based on actual data instead of gut feel, that'd be huge."

GRAHAM:

> "Oh and it needs to be mobile. Our procurement team is often at supplier sites or on the shop floor. They need to pull up supplier history on their phones, not wait until they're back at their desk."

CODY:

> "And can it learn over time? Like, machine learning where it gets smarter as we use it? Self-improving AI?"

MIKE:

> "Yes! AI-powered recommendations. 'Based on your order history and this part specification, we recommend these 3 suppliers.' That's the future!"

GRAHAM:

> "Also, can it predict which suppliers might have issues? Like, if a supplier's performance is declining, flag it before we send them a critical order?"

YOU:

> "Let me make sure I understand. You need: supplier performance analytics from Sarah's spreadsheets, SAP and AS/400 integration, mobile app, AI recommendations, machine learning that improves over time, and predictive alerts. Is that all?"

MIKE:

> "Exactly! Can you build all that by the end of the month?

GRAHAM:

> "And remember, we have basically no IT support. It's just Dave part-time, and he's buried with other stuff. So whatever you build needs to be turnkey. We can't be setting up servers and configuring databases."

CODY:

> "The data formats are all over the place too. Sarah's spreadsheets are different every month—different column names, some in CSV, some in Excel. The ERP exports are inconsistent."

MIKE:

> "What's this going to cost? I've got maybe $30,000 approved for this project, including your time and any software licenses."

GRAHAM:

> "Oh, and we need dashboards. I want to walk into the Monday morning meeting and show charts: on-time delivery trends, quality scores by supplier, cost savings from smart sourcing. Executive-level stuff."

MIKE:

> "Yes! Make it look professional. Something we can show to our board. I want to see it pop!"

YOU:

> "Thank you for your time. Let me think about this and I'll come back with a proposal."

What We Provide

Sample data files we provide: (shared via download)

- `supplier_orders.csv` - 500 rows of order history (messy supplier names, missing dates)
- `quality_inspections.csv` - 200 rows of quality/rejection data
- `rfq_responses.csv` - 100 rows of supplier quotes and pricing
- `supplier_notes.txt` - Tribal knowledge ("QuickFab was 3 weeks late AGAIN")

Use this real data in your prototype.

Submission

Submit your work (email chris_cope@caddi.com) at least a few hours before your interview. This should consist of your code, such as a github link, or a link to download an archive file.

The Interview (1 hour)

You'll present your solution to our team like you're presenting to the customer. Be prepared to demo your working prototype, explain your scope and design decisions, and their trade-offs.

What We're Evaluating

We're looking for Solutions Architects who can:

- **Focus on a working demo.** How you get there is up to you. You can't build everything in 3 hours.
- **Use AI coding tools.** We expect you to! Just own the output and be able to explain the choices made.
- **Think critically about customer asks.** Extract the real needs from the customer conversation. If they know how to solve their problem, they would have already.
- **Move fast with the technical stack you know**. We care about your thinking, not the language or framework.
- **Communicate clearly**. Whether you are most effective with showing your code, or PowerPoint, or architectural diagrams, the goal is to effectively explain and defend your decisions with confidence.

This tests the core of Solutions Architecture: figuring out what to build when customers don't know what they should ask for, and delivering on it.

-- Team CADDi