Salesforce Certified Technical Architect

Mock Scenario

Constructus Temporary Buildings

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This document contains my comments and thinking on how this scenario could be solved. Do not read it if you want to make use of this scenario in a 'real test' situation.

I have not included artefacts, such as Data Model, System Landscape, Environment Strategy, Role Hierarchy, etc. but you would be expected to produce these.

Finally… these are my thoughts only. There are many ways to solve all requirements. The key is that you bring it all together.

Remember, what the judges are looking for are:

- **Did the candidate identify the requirement?**
- **Did they solve the requirement?**
- **Did they justify their solution?**

Identify - Select - Justify

Scenario

Instructions

For the hypothetical scenario described below, the candidate will have 120 minutes to read, evaluate, and document a high-level architectural solution. The solution should:

- Address where the Force.com platform will and will not be used.
- Describe how the Force.com platform portion of the solution will interact with the other systems needed to complete the solution
- Identify any potential key risk areas.

The candidate should target the presentation to a technical IT architecture audience. In cases where requirements are not explicitly stated for the scenario, the candidate should user his or her best judgement and make appropriate assumptions based on the information provided. The candidate should indicate to the review board any assumptions that were made when designing the proposed solution. The candidate will not have an opportunity to ask clarifying questions related to the hypothetical scenario.

The candidate will be evaluated on his or her ability to assess the scenario requirements, design a solution, communicate the proposed architecture, and justify the design decisions. The candidate will not be evaluated on the tools used for the presentation.

Project Overview

Constructus Temporary Buildings (CTB) provides marquees and semi-permanent structures for hire across Europe, mostly to other businesses. Their buildings are used at concerts, sporting events, corporate functions, university events and the occasional private party or event. Most buildings are in place for a few weeks (or less) but there are some longer terms projects where structures can be in place for months.

So this is an unusual industry. Sometimes that will be the case. If a scenario is in an industry that you have experience of then that's great. But if not, don't panic - solve the requirements and you'll be on safe ground.

As well as the buildings, the provide lighting, generators, bar and kitchen fixtures and fittings, gas supplies for the kitchen, electrical fittings as well as tables, chairs and some decorations.

They operate out of 3 offices: a UK office in Northampton where all invoicing and collections takes place; a regional office in Geneva that handles operations for France, Italy, Germany and Switzerland and a headquarters in Tilburg, Netherlands that manages operations for the Lowlands and Scandinavia as well as service for the whole of Europe. There are approximately 100 employees in the UK office, 50 in Switzerland and 250 in the Netherlands.

There are few NFRs in here, hiding in the 'colour' of the background.:

- **Multiple countries suggest multi languages, be sure to cover that off**
- **Currencies are not mentioned, so make an assumption based on your experience**

Each office also has a depot attached, and there are a further 7 depots across Europe. Each of the 10 depots employees roughly 50 staff broken down to 10 team leaders and 40 labourers.

The Users break down as follows:

- 100 Service Agents – these handle customer queries, complaints or any other contact that a customer requires throughout the contract.

  The wording here strongly suggests that these users will require Service Cloud licenses. As a working assumption that is fine, but you will need to justify all license types.

- 150 Operations Specialists – these handle the equipment allocation and assign the build to a Team Leader who will complete the construction with his small team. They are also responsible for maintenance of all equipment, cleaning and other elements of asset management.

  You will probably get creative with solving the Operations requirements, so don't tie yourself to a license type at this time.

- 100 Sales Reps – these are mostly mobile and operate at customers or conferences. They will visit sites when work is underway to ensure that it's being delivered to plan

  The word 'Sales' is leading, like 'Service' is above. Again, it's a reasonable assumption but make sure your license selection for these users takes into account all features they will need. Don't solve it purely off the name.

- 30 Team Leaders – these are responsible for the build, working closely with the Sales Reps to ensure that was is delivered is correct, and that was is built is accurate to the quote. It is the team leaders who carry out inspections on site.

- 400 Labourers – it is not anticipated that these will require system access.

At this point, it's too soon to say what licenses all these users will require but it is a good approach to consider that these five persona types will be different in their use of the system. They might still end up with the same license type, but be prepared to be flexible.

CTB is looking to grow significantly in the next 5 years, both within their current markets and into new countries. They want advice on how to move from very manual processes to a more automated way of working. They consider themselves a 'high-tech' company but are aware their current systems to not reflect this.

Current Systems

CTB has a mixture of custom-built applications and COTS packages, all hosted in their own data centre in Tilburg. A new CIO has been appointed to completely overhaul the IT infrastructure as CTB looks to grow its business by double in the next two years and she has chosen Salesforce as the backbone of a new solution.

The current systems are:

1. Custom built CRM with a .NET front end and a SQL Server backend. CTB are looking to sunset their current CRM solution and migrate all relevant data to Salesforce.

   A clearly stated system that will be retired. Note the requirement for data migration.

2. There is a very simple telephony solution in place in Tilburg – this is not integrated to the CRM and needs to be replaced.

   Again, a system to be replaced. We can get creative with a CTI system. Perhaps Salesforce Voice? Or another CTI vendor that you have experience of

3. IMS – The Inventory and Maintenance system, it contains all asset information, including scheduling for each piece of equipment (and a history of where it has been used for the

lifetime of the equipment). CTB want to retire this system and move the functionality to Salesforce

A third system to remove. Salesforce isn't, naturally, a great solution for inventory management so you will either be using the AppExchange or creating something within Salesforce. Either is fine, as long as justified but you should establish your principals (Buy before Build, for instance) in your assumptions and approach if the scenario doesn't outline what the customer is after.

4. SAP ERP (on premise). Billing and Invoicing is carried out by SAP. This system is viewed as fit for purpose so is not looking to be replaced at the moment. CTB would like approved users to be able to access the SAP system directly from Salesforce without additional authentication steps.

   Back office integration is a common theme in a scenario. Don't be surprised to see something like this.

5. Drupal based Website. The content of the site is mostly static, and although content is changed occasionally there is no integration from the web to any other system. CTB are open to replacing this website.

   Note that there is some flexibility here. We could host the site on Salesforce (or elsewhere) or leave where it is. Again it comes down to justification. It's pretty static - for now… will that remain the case? What value add could you give if Salesforce hosted the site?

6. Safety First – Safety First is used for auditing safety inspections once buildings are assembled. It contains a list of rules of what checks need to be completed based on a number of complex criteria (location, type of buildings, utilities provided, country, etc.). CTB would like to keep this system purely for specifying inspections that are required but store all inspection data within Salesforce. A SOAP based interface is available.

   This is also a fairly commonly seen item in a scenario - an existing system that will continue to operate in a 'headless' manner. Note the integration patterns that are available; consider the data that will be integrated and how it will be secured. Start to think about the need for any middleware.

7. CTB use an internal Active Directory. Their MS Sales Exec has been pushing them to try some Azure products – they are happy to consider this as part of this project but would like advice on use cases.

   Standard iDP in place, though for internal users only. This also comes up a lot.

   Reference to other Azure products - use of these will depend on your experience but could include Pipelines, Data Lake, Azure AD, etc.

8. Planning. Some buildings in some countries require planning permission or a permit to be granted before a temporary building can be assembled. This is currently manually completed by Operations but if there is an automated way, CTB would like to explore this.

   Callouts to external - unknown - systems. Given CTB operate in multiple countries, we can assume different systems and therefore some way of orchestrating this is required.

There is currently no marketing systems – this is outsourced to an agency – but CTB would like to consider making this an internal function for email campaigns.

Clear request for a value add here. Marketing Cloud?

There is no mobile solution for employees or customers and CTB would like to provide both sets of users with a mobile solution.

TWO mobile solutions needed…

All CTB Employees are issued iPhone devices.

OK, they have consistency for internal users. Could consider Salesforce Mobile, or we might want to build something… it'll depend on future requirements.

CTB would like the customer facing app to be media rich and heavily branded. They would like logins to be persisted, and for authorised users to be able to raise support cases (with supporting photos and GPS information) from the mobile device.

Some key words in here: access to phone features, heavily branded, the use of refresh tokens. This suggests either a hybrid or a native app. Think about user base devices and how the app will be distributed. What's clear is that Salesforce Mobile IS NOT the answer here.

Business Process Requirements

Now we get into the requirements. You should look to solve each one quickly and as efficiently as possible. At all times tying the solution back to the scenario. Also think about the real world - what would you *actually* do here?

Sales (and Marketing)

As mentioned, Marketing is currently outsourced. CTB run several campaigns a year which result in leads. Sometimes enquiries inbound will also lead to successful deals. CTB want to be able to track enquires via all channels in a single place. These are all from a mix of new and existing customers.

1. Sales Reps will visit a prospect and meet with them to fully understand their needs.

2. When it is a new customer, the Sales Rep will co-ordinate with Operations to ensure the account is viable (see Operations).

3. Reps will evaluate the location and make a discretionary decision if planning or a permit is required. This judgement has led to fines in the past, CTB would like a more robust process in place.

   Screen flow maybe? Using decision points to guide the Rep towards the correct decision?

4. The Reps will also take pictures of the construction area on their iPhones and will email these to Operations.

   Standard mobile feature. To be stored as Chatter Files

5. The Reps will often work with the same Team Leaders (as they are regionally organised) so will often discuss and share information with them throughout the Sales Cycle.

   Manual sharing or - perhaps better - teams?

6. Most buildings are modular, so can be assembled in a number of different ways, though some are standard dimensions.

   Products. Hinting towards complex products

7. There are also some bundles of products (tables and chairs, for instance) as well as product dependencies that are currently managed and manually tracked by the Sales Reps (stoves require gas, for instance, a generator requires fuel and access, etc.). All of this needs to be considered when pricing takes place as sometimes dependencies are missed and have to be provided free of charge.

   Clear complex products. Consider some sort of CPQ, but be careful with the justification and impacts.

   ANY managed package you suggest has an impact on the licensing AND the data model, and you need to be aware of those impacts.

8. The Sales Rep will generally sketch the layout and then email a picture to the Team Leader but would like a proposal for a more sophisticated method.

   Get creative here. Some kind of touchpad solution, which is then uploaded to Files?

9. Sales Rep can apply discretionary discounts – the maximum they can apply is determined by the Account. Anything more than that needs to go to the Area Operations Manager, but can also be approved by the Regional OM.

   Standard Approvals.

10. Note that assembly and construction are the most expensive components of any booking, though there is also a 'daily' rate: Each asset has both prices listed (Assembly and Removal, Day Rate)

    Pricing is getting complicated now, again pushing towards some sort of CPQ solution.

11. Once a customer and the Rep have agreed a price, CTB want to be able to capture a signature immediately so that they have the longest lead time for construction they possibly can.

    Electronic signature. Pick a 'go to' e-Sig solution and use it in any scenario that asks for it.

    That's good practice for other such solution components: iDP, Middleware, Data Warehouse, Doc Gen, etc.

At this point the order is handed to Operations, who will find and reserve the equipment required in IMS.

Operations

1. Operations will carry out credit checks on new customers as part of the initial sign up. This is currently a manual process working with external suppliers to get a credit rating. There are number of ratings agencies used across Europe.

   So we have guided screens and an integration callout. We have different credit agencies and NO INFORMATION on protocol or response SLAs.

   So make an assumption (REST) and callout pattern (async) and go with that. The judges can challenge you if they wish, but assumptions are your friends.

   Solution: 'Fire and Forget' callout initiated once the account is at a certain status. Validation rules to make sure the required information is captured.

2. Operations will query IMS to find the equipment that is listed on the opportunity, and make sure it is available at the dates requested. If available at a local depot, they will reserve it.

They currently create a ‘Booking’ and want advice on how to manage this reservation mechanism in Salesforce.

Custom object in Salesforce to store bookings, and either SF Connect to view IMS data in Salesforce or some kind of mashup, or a Flow. Think about your experiences and chose the right solution.

Think about the licensing, the security, the data exchange and THE FUNCTIONALITY at all times.

3. Where equipment is not available locally, Ops will check if it’s available at another location and then consider the costs of shipping. If viable, they will reserve it and organise shipping.

   Covered in the above process. Sub-Flow, perhaps, if using Screen Flows.

4. Where not viable, or unavailable, a procurement order will be raised.

   Also covered in the above. Another Sub-Flow would do it. Where are POs stored? Where do they go.

5. Ops then assign the job to a Team Leader.

   Manually, or is Assignment running? Choose!

Operations also handle maintenance of assets

1. Each asset has a separate maintenance schedule by product type (there are roughly 20 types of products)

   Custom object, with a lookup from Product.

2. The maintenance required will vary in terms of skillsets, so different skills are required for different assets. CTB would like to track the required skills for ease of scheduling.

   Skill and SkillUser standard objects.

3. All maintenance is carried out by external employees: contract engineers. CTB would like to be able to show data from the system directly to these engineers – currently information is emailed.

   Community. Can probably use Customer Community Plus, but know the difference.

4. Most maintenance is managed at the depots, but occasionally it’s necessary to maintain equipment that is in use.

Exception process. We need to know where items are (depot or site location) when servicing is due.

I think that Field Service Lightning would be too much for the requirements here, but interested if it is positioned on the justification of why.

Construction / Assembly & Inspection

1. The allocated Team Leader needs to have full visibility of what was sold.

   Visibility impact. We need a sharing rule in place here, depending on the OWD

2. They will double check the inventory in IMS and confirm delivery dates/times with Ops

   Process. Perhaps activities, so that it is tracked.

3. They will carry out a site inspection and also take photos to be emailed in.

   Photos into Files again.

4. They will check off the inventory as it's delivered and ring Ops if there is any issue (missing or damaged assets most typically)

   Case type for damaged or missing assets. Do they HAVE to ring, or is there a better way of doing this?

5. They will document the build through photos.

   Photos into Files again.

6. After assembly, they will complete all inspections and tests as determined by Safety First.

   Some kind of checklist, that is generated in an external system. SO definitely an integration, but consider when the checks are generated and where they (and the results) are stored. Do we want to also use the eSig tool, for 'proof' and certainty.

7. When complete, they will perform a 'readiness review' with the Sales Rep and the customer. At this point, there may be a 'snag list' of issues to be resolved.

   Standard review (custom object?) and Case with snags.

8. Once all issues are closed, the customer needs to sign off of the building.

   eSig again, perhaps a roll up from the booking on Case and a validation rule?

For disassembly, the process is the same but in reverse. The customer will sign off when the site has been cleared, but will also be made aware of any damages that have been incurred through use. These will be passed to Operations who will work to raise invoices for the damages costs.

Work through the dissembly process… is there anything we can't capture/not covered as part of the assembly.

If a customer incurs significant damage, future opportunities will require further approvals and possibly a deposit. This is currently managed through the Sales Rep, by CTB want this automated.

Approval process.

There are some consumable products that are also charged after use (gas, fuel, etc.). Although this will be estimated in the initial quote, a final invoice (or refund) will be raised once the booking is complete.

Invoice generation, done in back office (we assume) so integration required. Standard integration concerns.

Service / In-Life Care

Customers can purchase different levels of customer service as part of their package. All customers get Bronze service, but Silver and Gold are available that increase response times and reduce SLAs.

Service Cloud Entitlements.

Currently customers will either email or phone the Service Centre to report issues.

Omni-Channel. Consider industry best practice here: deflection, automation, Bots, etc.

Most cases are technical or related to the equipment or building, but there are also sensitive payment queries and complaints. Complaints are handled by a small subset of the Service Agents, and only they should be able to see them. Operations will get involved in payment queries, and will require access to activities and tasks on the case that might be assigned to them.

Some sharing rules required on Case object, therefore the OWD cannot be public. Make sure the Role Hierarchy allows for easy and maintainable rules.

Data Migration Requirements

Data Quality in the .NET system is OK, but as there is not mobile or remote access, CTB know that a lot of the Sales Reps work in Outlook or Excel and don't always update the central system when they return to the office. All customer data needs to be migrated, but given the disparate sources CTB would like advice on how to consolidate this data.

IMS contains approximately 40,000 inventory items. Each item is used 15 times a year (on average) and the life of an asset is an average of 10 years. All historic information needs to be migrated to Salesforce.

Image Folder. All photos taken are currently in an Exchange folder and CTB want these accessible from Salesforce. There are approximately 200,000 files at the moment, each roughly 2MB in size. The emails contain the customer and booking reference in the subject – the amount of pictures taken each time varies, but can be as high as 100.

Do the maths here on data volumes and look for anything with a 'red flag'. Otherwise, standard descriptions of best practice for data migration should cover this. Be sure to align with your Environment strategy to make sure that you can test the migration process.

Visibility and Security

1. Service agents require the ability to see all Customers, with one exception:

    a) There are "VIP" customers (high net worth individuals) who are handled by a small central team only. These records, and orders and cases, should only be visible to these few users

    Private OWD, sharing rules in place. FLS to control key fields.

2. Sales Reps can only view their own opportunities. They may share them with Team Leaders.

    Private OWD with manual sharing. Consider automation for sharing with Team Leaders (would be a nice to have)

3. Operations require visibility of an Opportunity within their country only, but only once it has closed.

    Private OWD and Sharing Rules.

4. Only Operations can see assets and inventory and maintenance schedules.

    More sharing!

5. Team Leaders should be able to see booking information, including all asset details.

    Sharing, sharing, sharing.

6. Payment details, including PO numbers, should be limited to just the Operations team.

    FLS.

7. Sales Reps and Team Leaders require the ability to upload photos.

   Standard feature.

Currently customers cannot see any information, but CTB would like to make it possible for their customers to see booking history and be able to raises cases through the website.

Community. But of what type? Consider Sharing Sets and Groups to make sure customers have visibility of what they should.

Reporting

Most reporting requirements will be standard reports, but check and be sure.

Sales Reps require the following reports

1. Account Summary, including details of all open/recent Cases, Bookings and Opportunities
2. Operations required a maintenance schedule – to see:
   a. All assets that required maintenance in the next 3 months
   b. All assets that require maintenance that are currently in use
   c. A list of all assets over 5 years
3. Operations Require a list of all 'high risk' customers (though who have damaged equipment in the last 3 months)
4. Operations require an easily accessible archive of all pictures to be presented "in context"

Project and Development Requirements

CTB have usually run projects in house, and so do not follow any particular methodology. They would like advice on the following areas:

1. How to minimise code errors and ensure code quality throughout the delivery

   Discuss best practice is both tooling and process. Demonstrate you understand DevOps and how to use CI/CD and associated tooling to minimise risk and accelerate delivery.

2. How to engage users to ensure adoption of the new system

   Discuss some engagement ideas. Perhaps Adoptions Champions, Floor Walkers, etc.

3. A clear understanding of what their responsibilities would be during the project

   You won't have time to discuss a full project team structure and RACI, so cover the highlights: Exec SteerCo, Project Board, etc.

They have a quarterly leadership strategy meeting and would like to be able to show progress within the first 6 months (the second meeting after the project begins)

Sounds like Agile would get us some quick results, but consider that there are lots of integrations to other systems that we know nothing about. Maybe a blended solution?

They would like to be self-sufficient within 12 months and would like advice on how to enable this.

Setup COE, engage Salesforce for onboarding and training resources. Consider Citizen Developer Programme (in due course…)

As they move into new markets, they would like to be able to rapidly enable the system to operate in these markets which will involve different languages and currencies, but which should be a common way of working.

Single Org, built with currencies and languages enabled and a Role Hierarchy and way of working that can be 'lifted and shifted' to a new market.