

Strategic ICT & eBusiness Implementation:
PGDDA

Part 2: Project Implementation Report
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on

MyCastleCam Project

Martin Mohan, Declan Moore

Martin Mohan x18191339 ,Declan Moore x18150713

MSc/PGDip Data Analytics – 2019

Submitted to: Ciaran Hayden

National College of Ireland
Project Submission Sheet – 2019
School of Computing



Student Name:	Martin Mohan, Declan Moore
Student ID:	Martin Mohan x18191339 ,Declan Moore x18150713
Programme:	MSc Data Analytics
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Lecturer:	Ciaran Hayden
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We hereby certify that the information contained in this (our submission) is information pertaining to our own individual work that we conducted for this project. All information other than our own contribution is fully and appropriately referenced and listed in the relevant bibliography section. We assert that we have not referred to any work(s) other than those listed. We also include my TurnItIn report with this submission.

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Martin Mohan, Declan Moore
Martin Mohan x18191339 ,Declan Moore x18150713

April 20, 2019

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Abstract

MyCastleCam (the client) is a small start-up which has developed an electronic security device targeted at home DIY users. The product consists of a control system which monitors several cameras.

Initially the client wish to start small and sell the product online. The client would like a largely automated online system which is robust and cheap. It must also be scalable as more products and employees are foreseen to be added in the future.

1 Introduction

MyCastleCam want to sell a monitoring control system online. The MyCastleCam product is a central control system attached to several cameras such as those shown on the company's test website ¹.

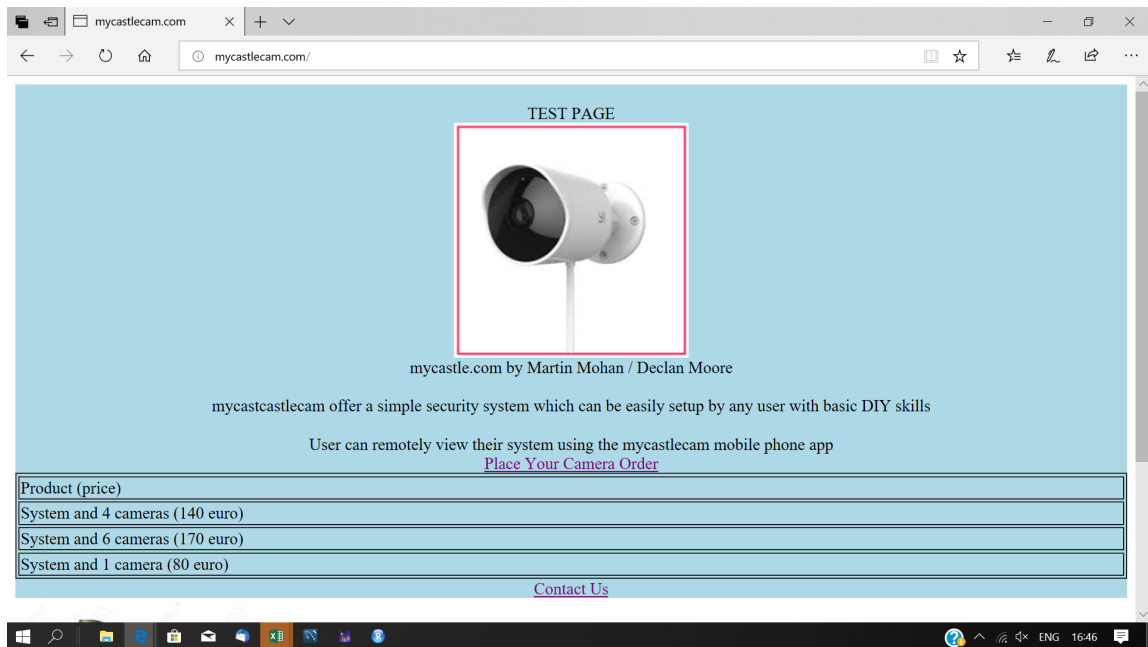


Figure 1: mycastlecam.com web page

Customers can choose from 3 packages offered in table 1.

Package Nr.	Description	Price (euro)
1	System and 1 camera	80
2	System and 4 camera	140
3	System and 6 camera	170

Table 1: Customer product offering

MyCastleCam would like to see the whole business process flow from start to end before.

It should be intuitive and automated as much as possible. The client MyCastleCam has

supplied initial requirements 2 but has stressed the system must be flexible enough to add new products easily.

Salesforce (2019) is used as the development tool in accordance with Hayden (2019*b*) project guidelines shown in appendix 4. Also in accordance with guidelines an ER diagram is supplied 2.2. Part 1 of the project provided a skeleton framework which this report fleshes out.

2 Requirements

Customer requirements are summarised in table 2.

Requirements	Synopsis	Priority
Company website	Company website for product sales and customer contact company using salesforce	1
Entity Relationship	A diagram of the entity relationship diagram about which salesforce objects will be modelled	1
In-house Admin	In-house administration to relate Staff , departments and their tasks	1
Sales Process Flow	A system for customers to input orders for a product using the web	1
Payments Cash Management	Merchant Service Provider and Online Payments such as PayPal	2
Dashboard management	For better faster decision making purposes we will have a number of management reports	1
Couriers	Feedback and control of deliveries	2
After sales customer care	Customer case issue management for items like missing, wrong and damaged	2

Table 2: Summary of customer requirements

Priority 1: This requirement should be implemented

Priority 2: This requirement should be implemented but it may be beyond the scope of this project requiring a 3rd party supplier - such as Amazon

2.1 Company website (<http://www.mycastlecam.com>)

Company website for product sales and customer contact company using salesforce

Website Front page displays of product offerings. Main marketing tool in attracting customers and is the entry point / portal to Salesforce management tool where the sales process will be managed.

Basic design below that will represent the technique but not the final look. Items to be considered for this site might be

90 day returns policy or maybe just 28 ?

Terms and conditions of sales

Call Back button that sends a suggested time for our Sales staff to contact them

Contact Info In event of concerns or issues a simple message tab to give customer a direct method to instigate contact / and look for resolution of issues

About / Home tab

The webpage is shown in 1

2.2 Entity Relationship

A diagram of the entity relationship diagram about which salesforce objects will be modelled Data is captured from user input and employee input. It is then put into a database and used to generate reports. Customer data will be generated by the customer at input. Other data must be added by employees. Initially this data must be emulated.

Entity relationship Diagram on the objects that will need to be created and managed within salesforce to maximise the efficiency of the Sales / CRM tool.

Customer account data Captured and checked for delivery acceptance i.e. is it within the region that we intend to distribute Castlecams. If so Salesforce will auto update to this live customer account table which will enable the customer to process an order and make payments.

Employee Table List of employee details and departments they work for, multiple IDS for same employee if he works cross functional tasks across Sales / Customer Care and Aftersales Department Table Functions to differentiate Warehouse/Stock / Sales/Customer Care/ Aftersales / Administration

Product data Table of products for sale with standard prices (Options to run discounted models from marketing vouchers can be referenced at a later date). As well as the camera products there will probably be installation, extended warranty products, maintenance. Order table & Order Product table After a completed order to the salesforce app this table

Stock table For capturing incoming stock delivery input and item dispatches to provide a net stock figure to reconcile to.

Installation Rep table A table of approved and recommended installers for the product. Envisaged we will charge for this service in advance and pay the installer when the customer is satisfied with the service.

Courier table Name of couriers example AnPost / DHL envisaged we could move between many couriers depending on their service levels and changing cost structure.

Courier cost table Installation costs will vary depending on area and provide different charges for the different products.

Vat Table Envisaged that all goods will be either domestic at 23% or exported within the EU at Vat exempt rates. Levels of exports to EU regions will be capped to avoid any reporting within an liability within that region. For the purpose of this exercise we are making the assumption that BREXIT will fail and that BRITAIN will remain in the EU.

Delivery Table Once ordered the orders will be matched to a delivery reference from the courier tags assigned in the warehouse which is an essential part of tracking and tracing issues.

Statuses to include will be ordered , in transit , delivered successfully and issue/problem Courier deliveries tables Manually uploaded back to our salesforce app we will use our couriers tags to identify the deliveries in process , fully completed along with expected selections. This process will be ad hoc based on the available time of management to complete task. A creation of a CSV file upload process should be straight forward taking no more than ten minutes a week. Customer Care Feedback table Envisaged that issues will need to be resolved either by automated email or call backs. Events such as those will be captured here and the status should be either open or resolved.

ER diagram is 2 which is based on a mixture of microsoft's classic cars example *Classic Models* (2019) and company which sells bicycles. The ER diagram was subsequently

mapped into Salesforce.

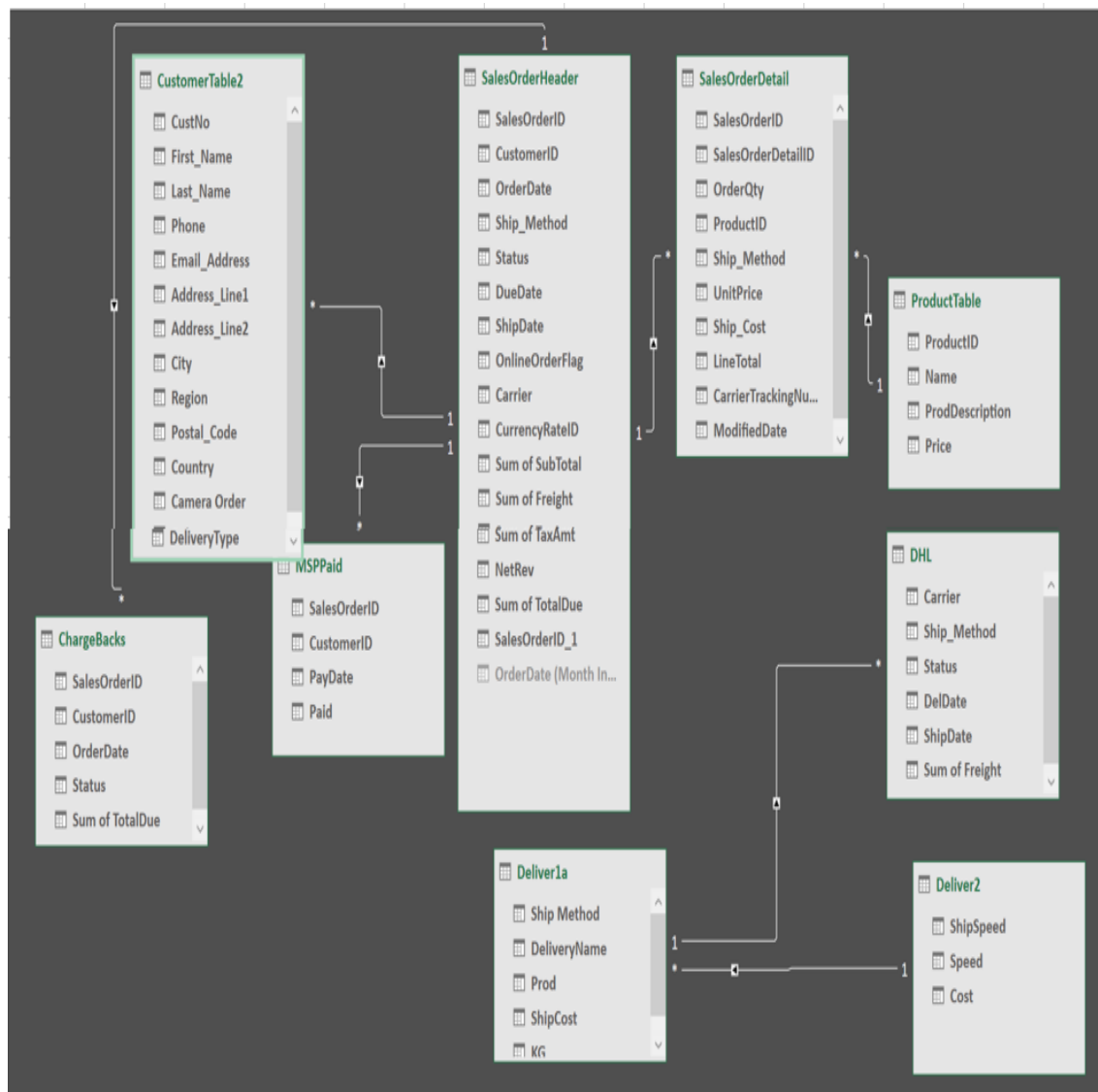


Figure 2: Entity Relationship diagram

Action	Label	Master Object	Deployed	Description
Edit Del	ChargeBack		✓	
Edit Del	DHL		✓	
Edit Del	Deliver1		✓	
Edit Del	Deliver2		✓	
Edit Del	MSPPaid		✓	
Edit Del	Product Table		✓	Description of the product
Edit Del	SalesOrderDetail		✓	
Edit Del	SalesOrderHeader		✓	
Edit Del	mycastlecam		✓	Top level object.
Edit Del	mycastlecam_crm		✓	
	Deleted Objects (1)			

Figure 3: Custom Objects related to Entity relationship Diagram

2.3 In-house Admin

In-house administration to relate Staff , departments and their tasks. This requirement is still to be fulfilled.

2.4 Sales Process Flow

A system for customers to input orders for a product using the web

From first Customer contact through to creation of dispatch courier reference starting at our landing / front web page to creation of order and for the warehouse to dispatch

Order creation by customer followed by submit for invoice approval. Sales invoicing and payment process Before an order can be confirmed for dispatch.

1. Order has to be processed into a final invoice for payment.
2. Payment processed within an automated instruction to our Merchant services provider for Card payments (MSP)
3. Confirmation of approval of payment from (MSP) to be received
4. Order Listed for dispatch for warehouse with ability to update and print invoice with Courier dispatch ID

(As we sell one product packaged into different offerings by our warehouse a check as to whether the item is on stock should not be necessary, if stock is not available then the order will not be dispatched until the new delivery is received and will need a manual intervention by the warehouse to inform the customer of the delay in a standard template)

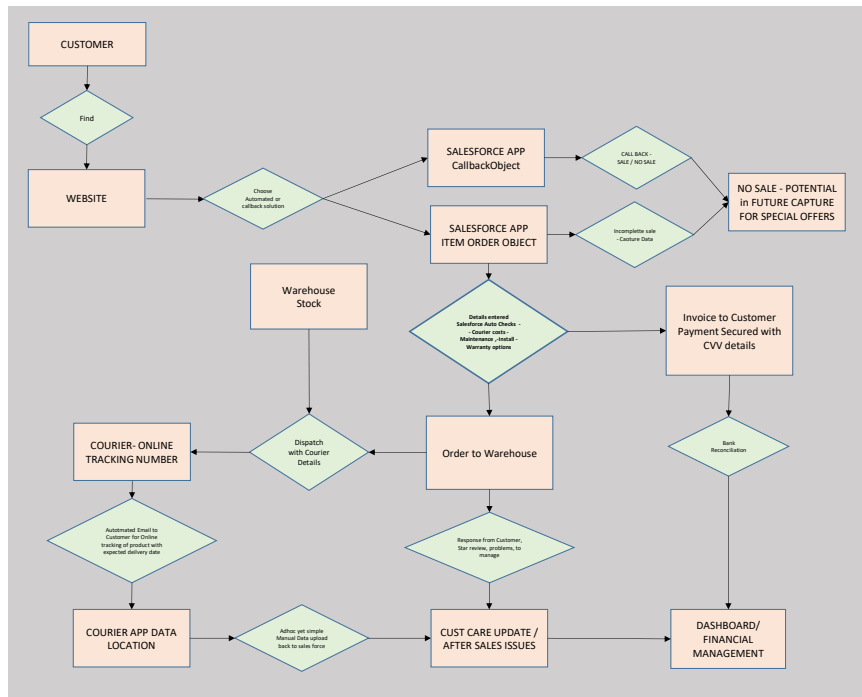


Figure 4: Customer relationship flow diagram

2.4.1 "Customer Order via website"

The customer website 1 has 2 links to salesforce the first is "Place Your Camera Order" clicking on this brings you to the customer order page.

A workprocess flow 6 was setup on salesforce. Payment management is beyond the scope of this report but will be included in future as part of customer input. We sill assume payment has been confirmed. 4

The input from the customer is put into a custom salesforce object called mycastlecam which is equivalent to the CustomerInfo table shown in . In this case a record named mycastlecam-21 was created.

Once payment is confirmed an Order Acknowledgement email to the customer 7 and sends an email to the employee responsible for shipping the product, both of these emails reference the order number (mycastlecam-21)

2.4.2 "Dispatch"

The employee responsible for the sales sends a request to ship the package from warehouse along with sales order data. Salesforce checks availability of system in warehouse and if available sends dispatch information to courier and sends customer an automated email with online tracking info and expected arrival date 4. Five days after "expected arrival date" an automated email is sent to customer asking for feedback and rating along with a link to "contact us" page on 1 should they have comments/complaints (missing, wrong or damaged). The feedback is treated as described in section 2.8.

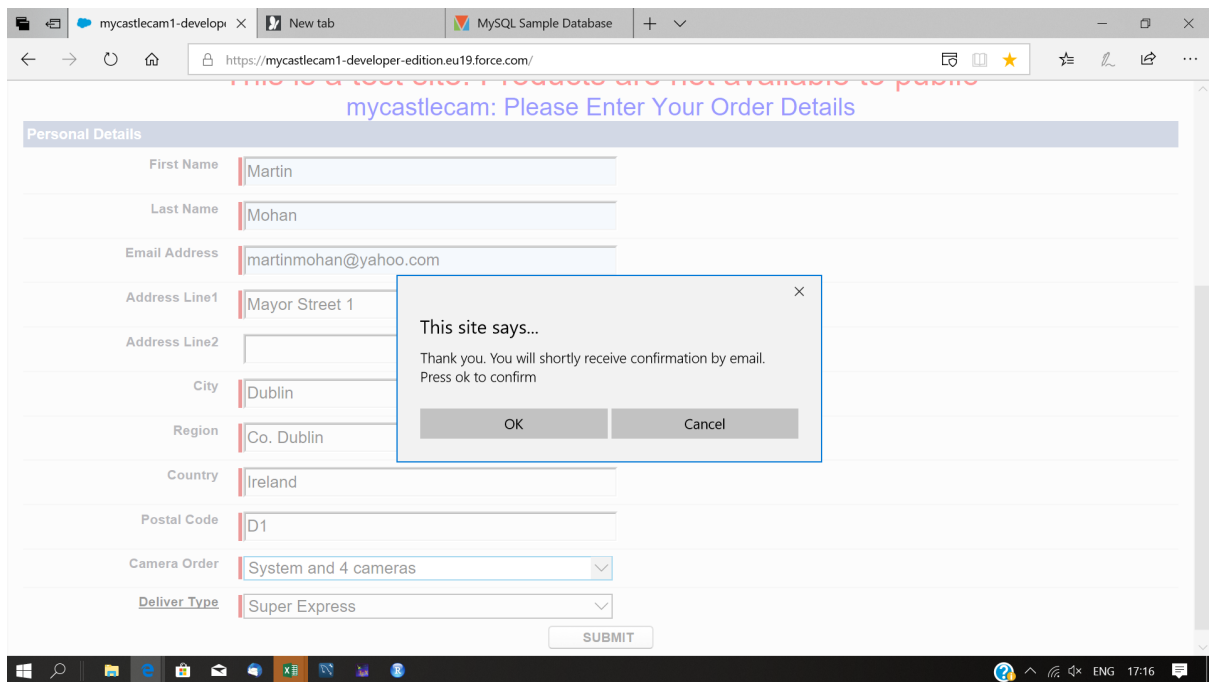


Figure 5: Successful customer order

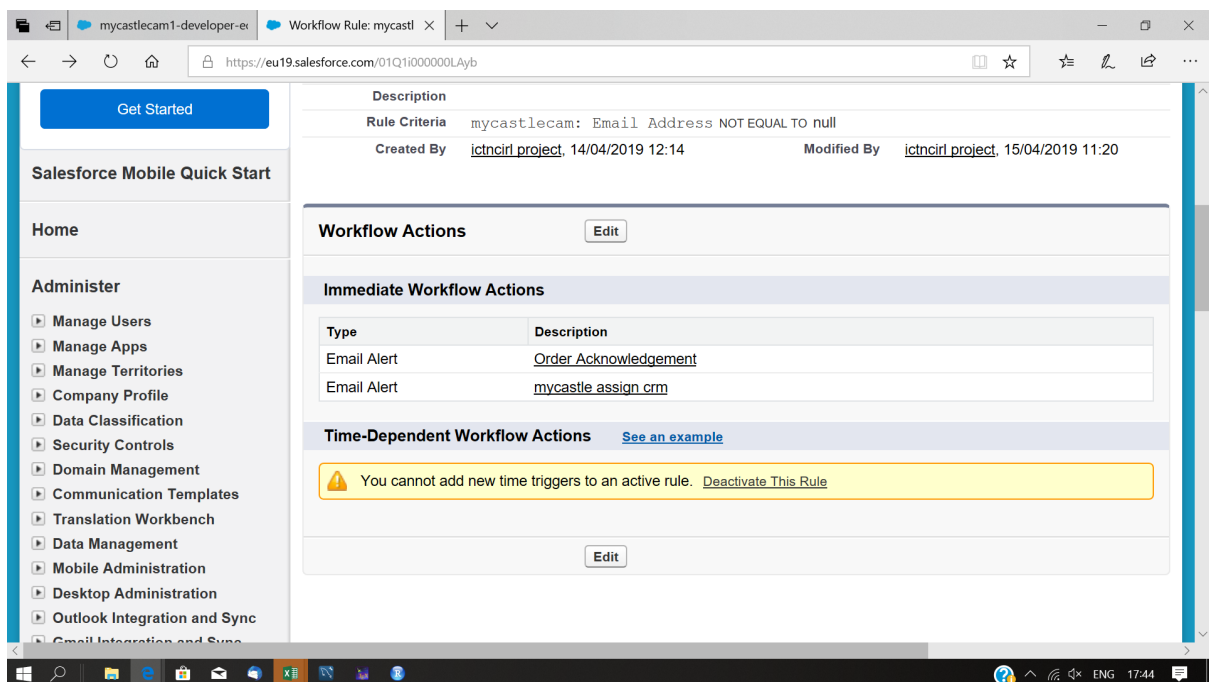


Figure 6: Customer Order Workflow

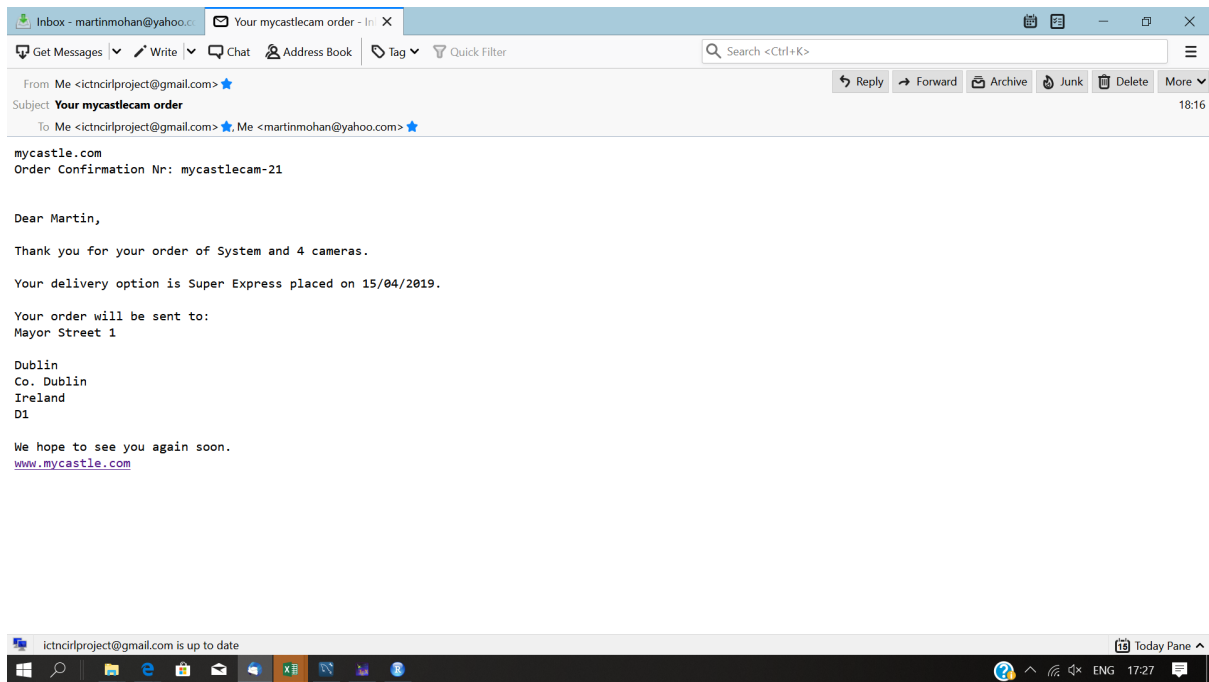


Figure 7: Customer Order Confirmation Email

2.5 Payments Cash Management

Merchant Service Provider and Online Payments such as PayPal Payments receipted will be either credit / debit cards through an MSP or via PayPal type accounts. Chargebacks report must be checked daily and integrated into the Salesforce app. Chargebacks exist on all MSPs and all PayPal type providers

The payment approval confirmation from 2.4 must be stored for future queries and reconciliation of payments to invoices should be possible from reports generated from managing the data available from the MSP / PayPal portals via a CSV upload / lookup

2.6 Dashboard management

For better faster decision making purposes we will have a number of management reports Stock report - Orders to be dispatched Orders dispatched in transit Orders delivered successful Orders Missing Wrong or Damaged Ship to Commit (Did order arrive within acceptable time limit) Sales Reports (Invoice based) - Courier Expected Cost Management- Gross Margin Report Cash flow Report.

Due to the time element of the project and Salesforce developer license limitations we experienced when exceeding the data limits of the original project we have successfully proved that all the data currently in our new Salesforce project can drive the dashboards contained below as they have been modelled from a mirror image of the same data utilising a BI tool (Power Pivot – A Comms add-on for Excel)

It will not be possible to include all these dashboards as working dashboards under a sales force banner in the submission however given just few more hours these dashboards below would now be possible to create.

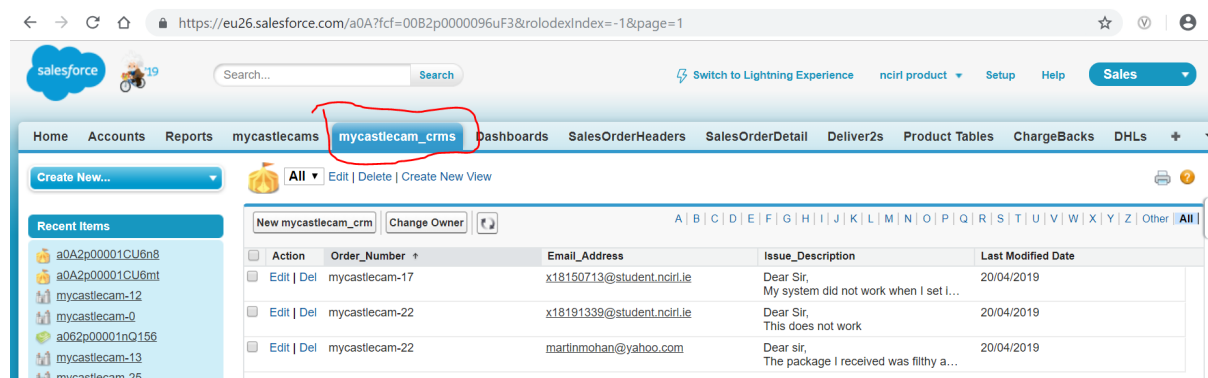


Figure 8: Customer Issue Page

2.7 Couriers

Feedback and control of deliveries Multiple courier companies will be used over time as their product and cost base tend to fluctuate and we need to be prepared to switch provider to manage efficiencies. - management of their costs is essential to success. They will send their invoices in CSV format and we must integrate this data into our system to reconcile these invoices and investigate variances.

Variances will often point to a change in costs or environment that we may have missed and it will become important to verify our postal charge matrix is up to date i.e. there are three main weights associated to our products which will attract a varying charge per region so these tables need to be verified against the end results.

They provide important documentation and delivery confirmation scans, signatures that will be needed in the event of credit card fraud and the DREADED CHARGEBACK i.e. we must follow all procedures and manage any chargeback claims immediately with this data.

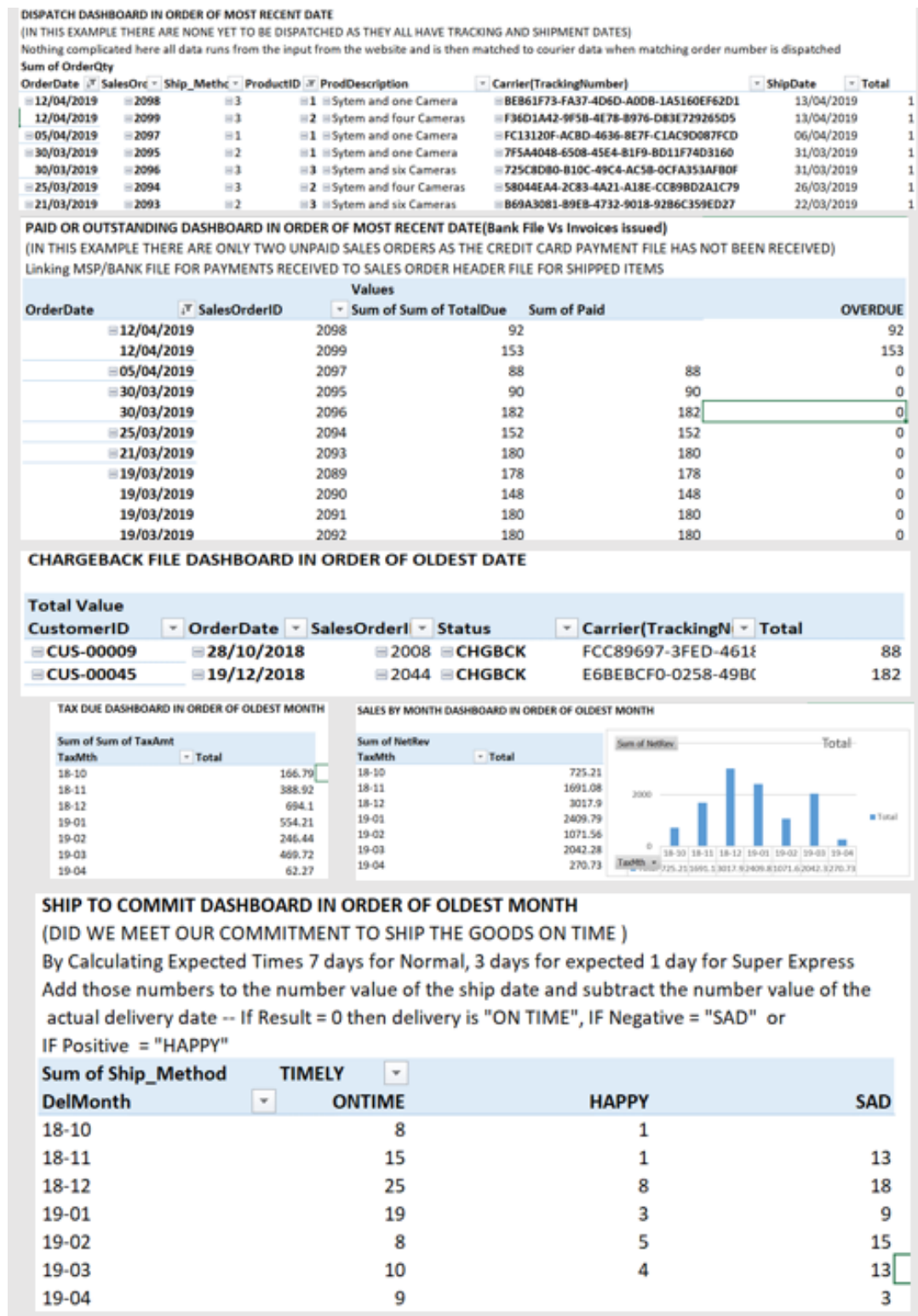


Figure 9: Business Dashboards

The screenshot shows the Salesforce interface for a user named 'mycast'. The search bar at the top shows 'mycast' with 'No results'. The left sidebar contains a 'Recent Items' list with several items including 'a052a00001CJ6s8' and 'mycastcam-13'. The main content area displays a table titled 'New Chargeback' with columns: Action, Chargebacks Name, CustomerID, OrderDate, SalesOrderID, Status, Sum of TotalDue, and Created Date. The table contains two rows of data.

Action	Chargebacks Name	CustomerID	OrderDate	SalesOrderID	Status	Sum of TotalDue	Created Date
<input type="checkbox"/> Edit Del	a072a00001EC450a	CUS-00099	28/10/2018	2,008	CHGBCK	88	20/04/2019
<input type="checkbox"/> Edit Del	a072a00001EC450a	CUS-00045	18/12/2018	2,044	CHGBCK	182	20/04/2019

Figure 10: Example of Chargeback in Salesforce

2.8 After sales customer care

Customer case issue management for items like missing, wrong and damaged List below of many issues that will need a resolution centre Item is now Unwanted Returns process and policy to be adhered to. Customers have rights to return items within EU and often have legal rights that extend to 90 days.

Item is Missing Never got delivered, what process to follow to receive refund from our couriers, give refund to our customer or resend item again.

Item is Damaged Faulty items process to retrieve and seek refund from our supplier. Resend Item or refund customer , Pay installation partner for identifying problem

Damaged in Transit - Item is Wrong Maybe we sent 2 cameras when 6 were ordered. Vat issues Often certain companies or individuals are exempt from Vat in Ireland and can provide details such as Revenue certification that necessitates the adjustment of automated invoices

Further identification of fraudulent activities at this point when chargeback or customer information is received

Up selling opportunities Customer is happy with product and would like help with additional features such as mobile connection , online data storage of video streaming

The webpage 1 provides a link "Contact Us" 11 for customers to report any issues.This could be any of the issues mentioned above.

As with customer order a workflow has been set up to send an acknowledgement of email to customer and to assign an employee this new salesforce object customer_issue 12

Several CRM templates have been created for use by the employee assigned. If there is a problem with camera an employee will try to resolve the issue 2.8.1. A replacement may be necessary 2.8.2

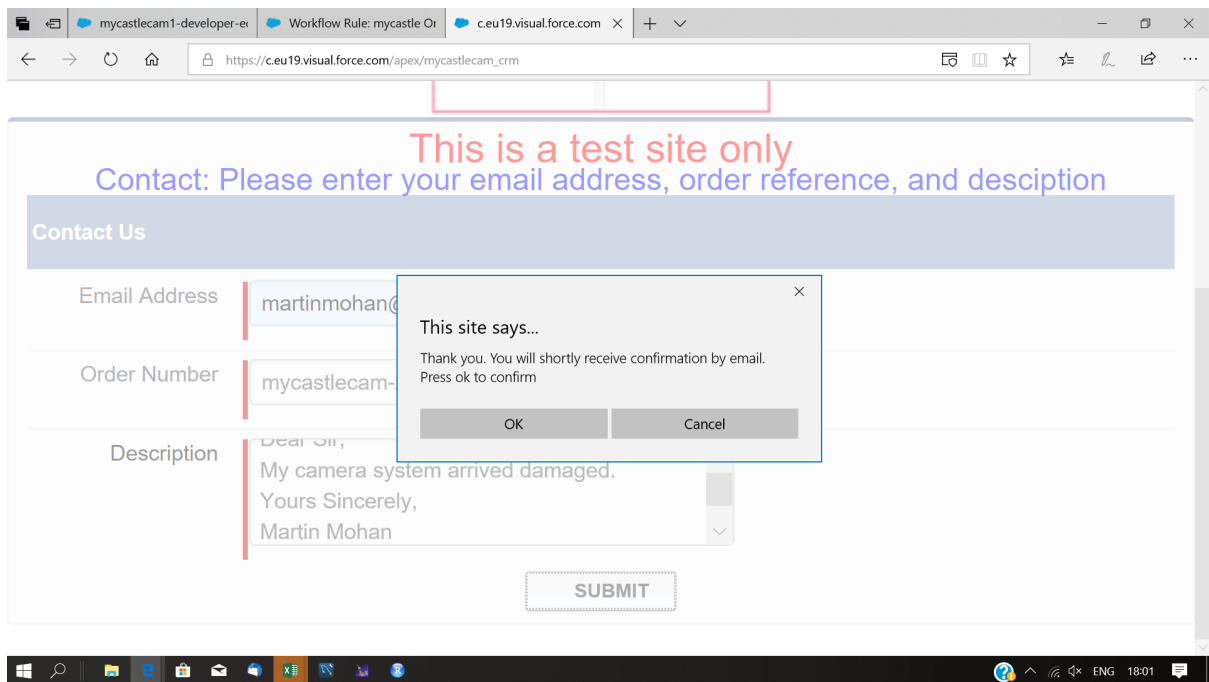


Figure 11: Customer Issue Web input

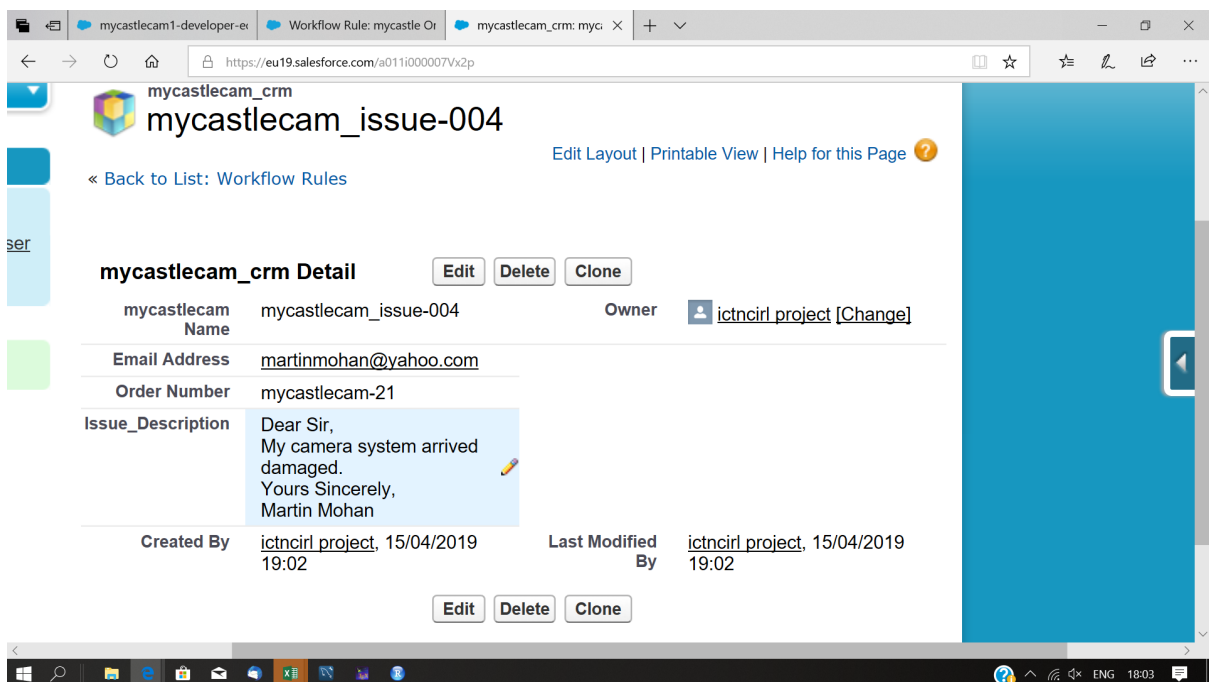


Figure 12: Customer Issue record

2.8.1 CRM template1

mycastle.com

Issue Nr: {!mycastlecam_crm__c.Name}

Dear Customer,

I am sorry to hear about the issues you are experiencing with your product.

We will be glad to help you, but as it is not possible to try advanced troubleshooting.

Please note that replacement for device can only be done over the phone or chat as we

I realise that at this point of time asking you to contact us via phone or chat would

You can reach Customer Support via free-phone or chat by clicking one of the below li

To contact us via phone:

To contact us via chat:

It is our privilege to have you as our valued customer. You are certainly the type of

Thanks for your patience and understanding in this regard.

We hope you can contact us soon so we can help solve this problem quickly.

We'd appreciate your feedback. Please use the links below to tell us about your exper

Did I solve your problem?

Yes No

2.8.2 CRM template2

mycastle.com

Issue Nr: {!mycastlecam_crm__c.Name}

Dear Customer,

I'm sorry your mycastlecam product isn't working. I'm sending you a replacement system

Here's your replacement order information:

Order Number: mycastlecam-34

Estimated Delivery Date: \{date\}

Your delivery option is {!mycastlecam__c.Delivery_Type__c} placed on {!mycastlecam__c

Your order will be sent to:

{!mycastlecam__c.Address_Line1__c}

{!mycastlecam__c.Address_Line2__c}

{!mycastlecam__c.City__c}

{!mycastlecam__c.Region__c}

{!mycastlecam__c.Country__c}

{!mycastlecam__c.Postal_Code__c}

Please don't modify the replacement order in Your \company{} product, as that may del

If clicking on the link doesn't work, please make sure you're signed into the account

Additional Instructions for mailing your parcel

Cut out the bar code and pre-paid return mailing label. Affix the personalised return
Securely package the item and include the separate barcode in the package. To avoid d
To ensure safe transportation, the battery must be returned inside the product.

Thank you for allowing us to work through this with you. Your replacement system will

We'd appreciate your feedback. Please use the buttons below to vote about your experi
Did I solve your problem?

Yes No

Warmest regards,
Andrea
mycastlecam.com

3 Development and release management process

When producing a production software system development is done on one system and when developers are ready they release this to a production environment. There are several ways to manage *Deployment environment* (2019) and we used salesforce's package environment

3.1 Importing test data

An example test database used for selling bikes was used for test data. Data can be imported from csv files using the salesforce "Data- >Import".

Custom objects had been setup and data from csv files containing bike data was imported into the custom salesforce objects 13. The data in the custom object mycastlecam contained dummy data from the bike database and data input by customers from the website 1.

3.2 Sandbox and production environments

Salesforce provides a system called Package 13 for deploying from testing to production environment. This was useful for automatic update of production environment from the development environment. There are restrictions in the development environment (you cannot package workflows or email templates.)

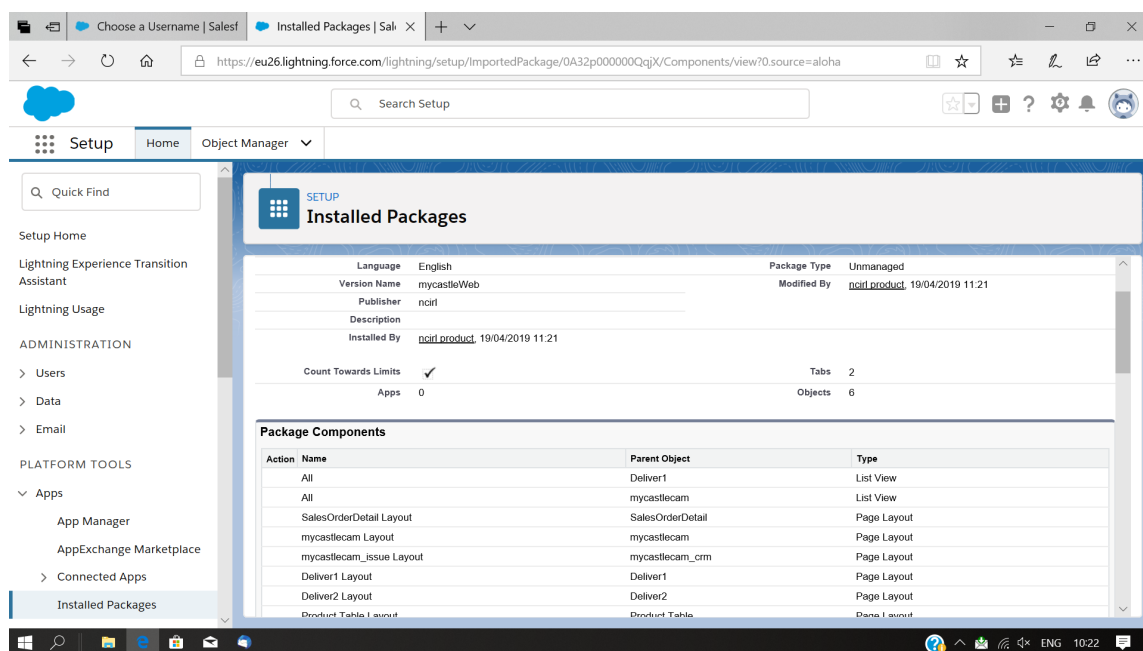


Figure 13: Package Deployment

4 Conclusion

MyCastleCam sells several security systems. The product is seen as DIY where the customer installs the system but an installation service could be considered in future.

An ICT system based on Salesforce was setup to help sell MyCastleCam devices. A test website has been setup at *mycastlecam* (2019). Here it is possible for the customer to order the product and to supply feedback/complaints on the product.¹ The salesforce system automates the buying process from acknowledging order to dispatching the system and dealing with customer complaints

A salesforce sandbox environment is used for testing and configuration before exporting to a production server.

This development was done using a Salesforce development environment but it would be necessary to buy a salesforce license to overcome some of the restrictions of this license. Namely, number of records is restricted, number of url's is restricted (e.g. Although the "contact us" works on *mycastlecam* (2019) we could only have one url so "Place Your Camera Order" was chosen).

All the requirements except In-house administration were acheived. Following feedback from the initial report we also added a lot of dashboards and the Salesforce tabs also provide ready made dashboards.

References

- Classic Models* (2019), <http://www.mysqltutorial.org/mysql-sample-database.aspx>. Accessed: 2019-04-15.
- Deployment environment* (2019), "https://en.wikipedia.org/wiki/Deployment_environment". Accessed: 2019-04-19.
- Hayden, C. (2019a), 'ICT Project guidelines', https://moodle.ncirl.ie/pluginfile.php/299810/mod_resource/content/1/projectdescriptionsfjan19.pdf. Accessed: 2019-03-06.
- Hayden, C. (2019b), 'NCIRL STRATEGIC IT & E-COMMERCE lectures', <https://moodle.ncirl.ie/course/view.php?id=1625>. Accessed: 2019-03-06.
- mycastlecam* (2019), <http://www.mycastlecam.com>. Accessed: 2019-04-19.
- Salesforce (2019), 'Salesforce crm home page', <https://www.salesforce.com/>. Accessed: 2019-03-06.

¹Due do Salesforce development license restrictions the feedback url is not available unless you are logged in

Appendix

CA Project Description

Strategic ICT & E-Business Implementation

Assessment Project

January 2019

Project Outline

You have been hired by an organisation of your choice to oversee the selection and implementation of a strategic management information system. Your proposed solution must be scalable, low cost and capable of being deployed swiftly.

1. Prepare a project specification document detailing:

- (a) Background information on the organisation, the marketplace in which they participate and the scope of processes to be considered;
- (b) The rationale for selecting an appropriate infrastructure and the associated benefits/risks of that infrastructure;
- (c) An appropriate system design, using process flow diagrams, showing data capture points, analytics requirements etc. Discuss how the solution might integrate customers in the process. Your design should also consider the key analytical requirements for a management dashboard and include details of the access and authorisation features of your solution; and
- (d) A database design, including entity-relationship diagrams and a data dictionary, showing the data structures, fields, relationships and process control features;

2. Using the Salesforce¹ platform:

- (a) Configure data structures and access controls to accommodate the design identified during your analysis;
- (b) Configure the business rules (field checks, workflows etc) as per the requirements identified in the analysis phase;
- (c) Create a basic web integration solution to allow the capture of data from a web page into the system;
- (d) Populate the solution with sufficient test data to demonstrate all the features of the solution;
- (e) Build reports and management dashboards to meet the analytical requirements discussed in your analysis;

3. Produce an implementation report, building on the project specification report that:

- (a) Describes the development process and details the final architecture, process control features as well as the operations and benefits of the solution;
- (b) Through the inclusion of screen-shots of the system developed in part 2, shows Objects (including access controls), Custom Fields, Field Sets, Relationships, Layouts, Validation Rules, Record Types, Lookups, Filters, and Triggers, showing how they fulfil the data management portion of the solution
- (c) Includes screen-shots of the reports and dashboards used in the solution, demonstrating how they fulfil the management reporting part of the solution;
- (d) Clearly shows the web capture portion of the project and details how it integrates with the solution; and
- (e) Reflects on and discusses how well the team worked together to achieve the objectives of the project

¹To activate a free developer licence to Salesforce see <https://developer.salesforce.com/signup>

Team Member Workload Distribution

The report should be accompanied by a separate page detailing the extent to which each student team member contributed, percentage-wise, to the project. Percentages may not be equal and must total to 100%. This is different from the reflection on the team-working aspect of the project that forms part of the report, which is designed to shed light on the group's collaboration and communication difficulties and how they were addressed.

For each of the students, we will calculate a deviation from the mean workload. Those who have a positive deviation receive the group mark. Those with negative deviations will have marks deducted, with the amount of marks deducted being the deviation from the mean. Examples are given in the tables below.

Example 1 - Group with a mark of 60%

	Workload Distribution	Deviation from mean	Group Mark	Student Mark
Student 1	25.00%	0	60	60
Student 2	28.00%	3	60	60
Student 3	23.00%	-2	60	58
Student 4	24.00%	-1	60	59
	100.00%			

Example 2 - Group with a mark of 75%

	Workload Distribution	Deviation from mean	Group Mark	Student Mark
Student 1	21.00%	-4	75	71
Student 2	32.00%	7	75	75
Student 3	29.00%	4	75	75
Student 4	18.00%	-7	75	68
	100.00%			

Deadlines

Part 1 due by 23:59 12th March 2019 at the latest Parts 2/3 due by 23:59 20th April 2019 at the latest

Submissions not made through Moodle or submitted after the deadlines shown cannot be accepted!

Member Workload Distribution

Team Member Workload Distribution is listed as required by ICT guidelines Hayden (2019*a*). Two students were involved in the project and brought different complementary skills to the table. The teamwork was co-ordinated and collegial.

Student Name	Workload Distribution	Deviation from mean	Group Mark	Student Mark
Martin Mohan	49			
Declan Moore	51			

Table 3: Member Workload Distribution