/\*\*\*\*\*\*\*\*\* slide 1 & 2 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* First of all, I want to thank all of you for coming to my graduation speech.
* Well!
* Like every graduation speech, I will start by presenting the plan, so let’s begin!
* Here is my plan, in the first step we will talk about ???, then we will talk about ????, and in the final step we will do a technical demonstration.

/\*\*\*\*\*\*\*\*\* slide 3 & 4 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* If you’re working in advertising agency or media agency you always ask these questions, where I will spend the money, is it the Radio better than TV or the opposite? how much money I will spend on TV and Radio?
* How much Revenue I will gain If I spend this budget?
* How much Budget should I spend to gain this Revenue?
* How much Budget, in which channels and in which periods should I spend to gain the high Revenue?
* What is the optimal budget across channels for this advertising activity, while taking into consideration the direct and halo impact of all the campaigns at the product level (3 products: iPhone, iPad and iMac)?
* How much money I spend in each period (Monthly, Quarterly, Annually, Semi-Annually)?

/\*\*\*\*\*\*\*\*\* slide 5 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* MassTer Insight is end to end, actually is Software as a Service.
* After understand our challenge and problematic now let me present the bossiness that we going to server.
* Since many of you are not familiar with the term marketing mix modeling, I will proceed to explain the process to put you in the picture.
* The client collects all the data available from media activity, distribution, promotion etc., and sends it to mass analytics.
* **After cleaning and processing** the data, the files are uploaded to Masster.
* Masster, the mmm software, helps the data analyst build and estimate a marketing mix model contain the predictors (independent Variable) that are mostly to impact sales.
* Mass analytics then offers recommendations of an optimized budget allocation to the client.
* For it to be able to estimate models; Masster encompasses advanced techniques and algorithms, amongst linear regression and genetic algorithms are highlighted.

/\*\*\*\*\*\*\*\*\* slide 6 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now let me present the hosting company.
* MASS Analytics, a Tunisian start-up founded in 2012, is the first and only independent Marketing Mix Modeling (MMM) agency in the MENA region.
* MASS Analytics’ core competency is the deep analysis and understanding of what impacts the consumer's path to purchase to make companies more effective with their marketing budget.
* It was founded by Dr. Ramla Jarrar (Chief Executive Officer), Dr. Firas Jabloun (Chief Technology Officer), Nadia Bouzguenda (Business Development Director) &Rafal Kozlowski (Director).
* It offers Training and MMM Consultancy
* MASS Analytics runs specific courses and training sessions on advanced predictive modeling (log linear, nested modeling, fixed effect modeling…), budget optimization and return on Investment calculation. It also offers its clients coaching sessions to help improve their marketing analytics process and project delivery.
* Also, MASS Analytics has been developing internally its own Marketing Mix Modeling Software “MassTer”.
* It is one of the most powerful Marketing Mix Modeling software products/solutions in the world and comes in three packages: standard, professional, and premium.

/\*\*\*\*\*\*\*\*\* slide 7 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now will present the list of technologies used to achieve this project:
* In the first place we decide to choose JEE platform for Developing our application, and the most recommended framework for this platform I mean JEE is spring MVC Framework, now we granted the Server side with Spring MVC.
* For the front-end we chosen AngularJS JavaScript framework to take charge mostly all the action of the user, and also to make request client/Server.
* AngularJs takes the place of the technology JSP.
* And to make a responsive web application and powerful design, we chosen Bootstrap and AngularJS Material Design.
* And finally, to connect to MassTer Server API we used SOAP web Services.

/\*\*\*\*\*\*\*\*\* slide 8 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now I will present the logical architecture to understand deeply how technologies interact between each other.
* As you can see Our application is web application accessible through web browser.
* In the first place we find AngularJS layer, to take charge all event from the part of the client.
* Our web application connects to the API, where the business logic lies using SOAP webservice,
* The layer Service contains Java classes.
* Then we find the mvc layer

/\*\*\*\*\*\*\*\*\* slide 9 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* After understood our project, the business that we satisfied and the customers that we served, now let’s move to the next part of graduation speech.
* Now I will explain to you, the “Run Optimisation Use Case”, but before this I have to present the whole Use Case diagram of our project.
* As you can see, our Use Case Diagram it’s pretty simple, the actors involved in our Application are any kind of person working in head of media agencies or any kind of employee exercise advertising, also data-Analyst can use our application.
* In the other side, we have another type of actor, it is “the API MassTer Server”, where the business code lies, maybe we called “an external Actor” in our Use case diagram.
* After connecting to MassTer Server API with success, now the Data-Analyst able to start load project.
* Once the loading of project is done with success, the user enters the budget range or the whole budget that you reserved for the advertising after this, the user starts to choose the list of channels where will put money to advertising, channels means Radio, TV, Outdoor and any source of advertising, then will be able to run updates settings with success.
* After that update settings are done with success, now the user can run Scenario based on the list of channels and the budgets that the user choose.
* Once the Scenario is done with success, the Data-Analyst can manage report by select report, save report and remove report.
* Another important features: save project and save as project, with these features our Data-Analyst save and overwrite the current project or also can save the current project with another name by using save as.

/\*\*\*\*\*\*\*\*\* slide 10 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now Let me explain in details how works Run Scenario Use case.
* In fact the process of Run Scenario works like this; in first place the user select list of channels and the budget range; when I say budget range I mean the whole budget reserved for advertising, after two these steps the user geos automatically to updates settings, the role of updates settings it is pretty simple it saved any modification in the list of channels, Once the updates is done with success, the user move to the next step of Run Scenario; he will choose a Max budget or min Target then finish the Run scenario by get the new optimization Results which contains the budget for each channels that you will put to get a better Revenue.

/\*\*\*\*\*\*\*\*\* slide 11 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* And now to understand what behind the scene in this Use Case I will move to Sequence Diagram of Run Scenario in details.
* Once the user clicks on the button “RUN”, AngularJS Controller take charge of this action to satisfied.
* Once AngularJS capture the Run Action from the side of the user, it will execute the run method in AngularJS Controller.
* Inside the method Run, AngularJS create OptimisationConstrainstHolder JSON object.
* After creation of OptimisationConstrainstHolder JSON object and assign to it the proper data, such as listselectedVariables; I mean the list of the channels where you want to put money for advertising example Radio, TV or Press. Another data should be assign to OpimisationReport is budget Range and Max-Budget or Mini-Target, and I will explain the difference between Max-budget and Mini-Target; Max-budget represent the amount that you want to invest this in this Scenario, and should not be bigger than Budget Range, Mini-Target represent the Revenue that you want to achieve in this Scenario.
* Let’s come back to our OptimisationConstrainstHolder JSON Object, After the assign of the proper data, now the JSON Object ready to be send it to OptimisationController to the side of Spring MVC, through POST request, AngularJS will use REST API to send this request, by the way the request POST contains two important parameters, the first is the URL and the second is our JSON Object OptimisationConstrainstHolder, the URL contains “/run” and late I will explain why The URL contain “/run”.
* Once AngularJS Controller send OptimisationConstrainstHolder JSON Object to the path “/run”, a major Actor comes, to handle this request, this Actor called Dispatcher Servlet.
* The Dispatcher Servlet or in Spring MVC documentation they called Front-controller, this front-Controller is a part of Spring MVC Framework, it acts like a dispatcher, it will decide for each URL will execute the proper Method, in our The URL exist in the POST request is /run, Dispatcher Servlet will have mapped he method RUN in the optimisationController, and now we move to Optimisation Controller.
* In the Optimisation Controller and After that Dispatcher choose the proper method for URL, now Tomcat will execute the method Run.
* The method run will take as parameter the OptimisationConstrainstHolder JSON Object, inside this method will call the run method exist in OptimisationModel and also will pass the OptimisationReport JSON Object.
* Now we move to the OptimisationModel, in OptimisationModel we call a function in OptimisatonHandler to get the current OptimisationReport and assign OptimisationConstraintsHolder.
* After assign the OptimisationConstraintsHolder, now we have to serialized the OptimisationReport using toXML function, the output of this function is XMLReport.
* After serialized the OptimisationReport to XML, the OptimisationModel call the function run in MassTerClient and gives to run two parameters XMLReport which is OptimisationReport serialized and ServerSessionId.
* In MassTerClient we call a function run in IServerProxy.
* In IServerProxy we prepare the Connection between our application and The API by calling the function InitIServerProxy (), then we invoke remotely the method run in MassTerSever API by using SOAP web service request, then we get SOAP response from MassTerServer API.
* This soap Response it is OptimisationReport xml object.
* After getting this xml Object, we forward it to the function setOptimisationReport.
* In OptimisationController we call the function notifyView () to serialize the new OptimisationReport to JSONObject.
* After Serialized OptimisationReport to JSON object, now we will send to AngularJS Controller using API REST Web service.
* Once the AngularJS Controller receive, then will refresh the optimization View by gives to the user new scenario; new allocation for each channel.

/\*\*\*\*\*\*\*\*\* slide 12 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now let’s move to the phase of implementation and deployment.
* In the phase of implementation, we used a development Platform as Service which is CloudForge which gives you the ability to deploy you code and it integrate the system of version control SVN.
* Once we finish the development of our application, we move to the part of deployment, and as you can see we chosen AWS to deploy our application and MassTer Server API.
* For THE API we Chosen EC2 which A IaaS.
* And for MassTer Insight web application we chosen Elastic beanstalk which is PaaS.

/\*\*\*\*\*\*\*\*\* slide 13 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

* Now we will move to technical demonstration.

(Note once you do Demo : Make sure that after any change you did in channels or budget range you have to do successfully the update settings, then to be able to run Scenario).