**1) HeadCT: Head Count Tracking**

Advertising FP& A team manages the head counts for fast-growing Advertising org 6000+ across multiple teams at the Q4 2018. One Financial Analyst from the Advertising FP& A team was dedicated to tracking day-to-day changes (corresponding efforts account for ~50% bandwidth) by maintaining excel spreadsheets based on the email, chimes and hallway conversations with the customers and manually map the position id (PID) one by one to create a report once a week. Head count tracking on the surface looks simple, however, since it is having multiple variables such as Butts in seats (BIS), Pending starts, Reqs in approval, Reqs in hiring process, Not yet open reqs, Backfill, On Leave, internal and external transfers makes it harder to manage the headcounts manually on a daily basis.

FP& A team reached out Finance BI team to solve their problem I.e. to automate the work. Sharath understood, it is a full fledge Tool development where information needs to be collected based on standard user inputs such as 1) transfer request 2) Long Leave information 3) Fund owner mapping, store the 1) employee 2) requisition and 3) transfer related data, transform the data based on the multiple variables to automatically assign a PID for the each position type and display the final results in the dashboard to display to the Leadership. Sharath created complete end to end design using Share point user input forms and excel VBA based solution to collect the information. He used Redshift cluster for storing user inputs, HR related data and applied SQL transform logics to automatically assign PIDs. He used Quicksight to display the final data to Leadership and other finance partners. Sharath also helped the team to understand Head count tracking is not just an automated solution, it is to have the right process to collect info from Business and finance partners. Sharath worked with project teams to re-define the process, owner's roles and responsibilities. He also created an audit mechanism for identifying if any data mapping goes incorrect, which is used to pro-actively fix the issues. During this project, Sharath also noticed an inaccuracy in upstream HR data, such as 1) not having the latest data req id for BIS 2) Same req mapped to multiple BIS etc. Sharath worked with an upstream HR BI team to fix these issues which impacted across amazon.

Head CT eliminates manual efforts in headcount tracking and transaction management. HeadCT will provide the following benefits 1) a scalable solution that will allow efficient headcount management for the fast-growing Advertising org: The manual tracking won’t sustain for next year. 2) Significantly improved accuracy: Headcount reconciliation has been very time-consuming, but critical when dealing with headcount investment decisions. 3) The possibility for all headcount stakeholders to eliminate time spent on offline headcount tracking and reconciliation. 4) Saves about ~50% bandwidth of one financial analyst in FP & A team. Head CT is used by multiple VP's regularly to monitor their team Head Counts.

Wikis: <https://w.amazon.com/bin/view/Advertising_Finance/Central_FP%26A/HeadCT/>

<https://w.amazon.com/bin/view/Advertising_Finance/Central_FP&A/HeadCT/Dashboard/>

<https://w.amazon.com/bin/view/Advertising_Finance/Central_FP&A/HeadCT/Data_Sources_and_Data_flow/>

Head CT Dashboard: <https://us-east-1.quicksight.aws.amazon.com/sn/dashboards/78d63ee0-c500-435d-a694-c94e573915e2>

**2) Total Ads Revenue QuickSight dashboard:**

Advertising Display Finance team wanted to view revenue performance of all business areas in Ads at the end of a month, quarter or year, it’s helpful to understand not only what the year-over-year growth rates of a particular business area, but what were the key drivers contributing to that growth. This dashboard serves to provide insight into the growth contributors for many different cuts of the Display Advertising Business, with the ability to view not only monthly, quarterly and yearly YoY growth contributors, but month-over-month contributors as well.

Sharath worked to create a dashboard with 1) High Level View, 2) YoY CtG Bridge: Use to view monthly, quarterly and yearly YoY growth contributors. This view will always compare against the same period in the prior year and 3) Advertise level view: To easily deep dive an advertiser, set View By to Parent Name and click on one of the names in the table below. You will be taken to an advertiser specific view with campaign detail.

**Dashboard link:** <https://us-east-1.quicksight.aws.amazon.com/sn/dashboards/0c2a116c-9120-430a-affe-f971ba1abbc5>

**3) SDP:** **Sponsored Display Product**

Sponsored Display (SD) being a new product in Advertising for about 6 months, the product team hasn’t had in-depth data to report to Paul Kotas (SVP). There were multiple escalation to get the deeper level data Kotas apart what ML team used to produce which is was not business friendly. Sharath was tasked to understand various Data sources as where it is coming from, how to store them and how to use the data for WBR and MBR report for two SD products 1) CPC (Cost per clicks)(SD – Remarketing) and 2) CPM(Cost per impressions) (SD - Searches and Purchases - Analysis).

Sharath reached out to various teams and understand data is coming from various sources for, such as 1) CPC performance metrics sourced from Athena (AWS Service) 2) CPC campaign related metrics sourced from the ACH Redshift cluster (AWS Service) 3) CPM performance and campaign related metrics sourced from ADW Redshift cluster (AWS Service) and 4) Sales force data from Disad redshift cluster (AWS Service). Sharath planned to bring all the different data sources under one redshift cluster for building scalable dashboard and reports. While working on building pipelines for these data sources, each data source had a unique engineering challenges such as 1) Athena cluster didn’t data publisher and scheduler mechanism, Sharath utilized SQL workbench, S3 and copy command in Datanet to build a pipeline where data can be loaded into Redshift on a regular basis. 2)  CPC Campaign in ACH redshift cluster had more than 8 dimensions and fact tables with billions of records. However, instead of bringing the entire table, Sharath created a transform job to combine them and limit to only require data set and loaded into Disad redshift using Datanet. 3) CPM Metrics, was complex query and getting the data from ADW were difficult and had multiple failures, Sharath used his SQL expertise to optimize the query to ensure it runs on a daily basis. Once all the data were present in Disad cluster Sharath used his Quick Sight expertise to quickly create a dashboard for CPC and CPM products with various performance metrics such as ROAS, Revenue, CPC,  Gross Margin, Impressions, Clicks, Attributed OPS, Units Sold, ROAS and etc. as per user requirements to refresh on a daily basis. Sharath also worked on transforming the SD data and stack them into URR reporting. Along with main infrastructure and dashboard tasks, Sharath also participated with Product Finance and SD Product team to do Glance view analysis for the advertisers and diving deep to identify bugs in the billing team codes, which was not able to identify during SDE/Product teams code review.

Within a short time of 3 months, Sharath displayed his Data engineering and BI engineering skills to enable the Finance, Product and Sales team to have the WBR/ MBR reports on time with a deeper level of data insight in hand this helped the teams to take faster decisions scale the product.

SD: <https://us-east-1.quicksight.aws.amazon.com/sn/dashboards/733418a8-485b-482f-9833-4391967e7bd2>

SDP: <https://us-east-1.quicksight.aws.amazon.com/sn/dashboards/be11e1e0-fd00-411b-a2f9-2d5303b7347c>

**4) Forecasting Display revenue based on Expected incremental:**

The scope of this project is to generate an automated expected incremental for all countries on the following slices of data by Property & by Vertical & by Product for weekly update.

More details: <https://drive.corp.amazon.com/documents/sharab@/Expected%20incremental%20Doc.pdf>

**5) Pervious team wikis:** **Health Safety Security Sustainability and Compliance (**HS3C) **BIA team**

The HS3C BIA team has on-boarded 50+ required tables into HS3C redshift from multiple sources such as Selection Classification data, DW Booker and DW VIRT (the table details are in the [RP wiki](https://w.amazon.com/bin/view/HS3C/BIA/Restricted_Products_Compliance_%28RPC%29_BI_&_A/#HFactTablesandSimplifiedDataTable)). In order to simplify the querying and compiling part for the end user, the team created the fact tables as outlined in below table. By joining the fact tables and making some additional changes to it, the team created a De-Normalized table with 100+ columns, with most of the information Restricted Products (RP) team requires. By having all the required data in one table in simplified form, anyone with basic SQL knowledge should be able to query RP related data. In addition, once the model studio tables are on board it will be easy to plug model studio ASINs data. Below are the fact tables created (additional details are in the [RP wiki](https://w.amazon.com/bin/view/HS3C/BIA/Restricted_Products_Compliance_%28RPC%29_BI_&_A/#HFactTablesandSimplifiedDataTable)).

**Infrastructure document:** <https://drive.corp.amazon.com/documents/sharab@/RPC%20BI%20Data%20Architecture%20Tableau.docx>

Wikis: <https://w.amazon.com/bin/view/HS3C/BIA/Restricted_Products_Compliance_%28RPC%29_BI_&_A/>

<https://w.amazon.com/index.php/HS3C/BIA/Restricted_Products_Compliance_(RPC)_BI_%26_A>

**6) Quicksight training video for Finance BIE community:**

<https://broadcast.amazon.com/videos/164515>