

TALLINNA TEHNIKAÜLIKOOL

Informaatikainstituut

Infosüsteemide õppetool

ANDMELAO PRAKTILINE KOOSTAMINE

Projekt õppeaines IDU0010 „Andmeidad, ERP- ja CRM-süsteemid“

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TALLINN 2014

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Sissejuhatus

Käesoleva töö eesmärgiks on andmeaida koostamine Adventure Works Cycles ostuosakonna analüütikvajadustest lähtuvalt ostmise ja hankijate halduse kohta.

Valdkonna kirjeldus

Adventure Works Cycles (AWC) on väljamõeldud suur ja rahvusvaheline ettevõtte, mis tegeleb jalgrataste tootmise ja müügiga Ameerika, Euroopa ja Aasia turgudel. Ettevõtte peakontor asub WA osariigis Bothelli linnas ning annab tööd 290 töötajale. Lisaks sellele on Ameerika kaetud kohalike müügiüksustega.

Aastal 2000 ostis AWC Mehhikos väikese tootmistehhi (Importadores Neptuno), mis valmistab AWC jalgrataste tarbeks mitmeid olulisi komponente. Neptunos toodetud komponendid saadetakse Bothelli tehasesse, kus toimub lõplik toote koostamine ja valmistamine. Aastal 2001 sai Importadores Neptuno maastikujalgrataste tooteliini peamiseks tootjaks ning ainuedasimüüjaks.

AWC soovib laiendada oma turuosa suunates turundustegevusi oma parimatele klientidele, laiendades veebikaubamajas pakutavate toodete saadavust ning vähendades müügikulu tootmistegevuse optimeerimise kaudu.

AWC ostuosakond vastutab jalgrataste valmistamiseks vajaliku tooraine ja komponentide hankimise eest. Ühtlasi tegeleb AWC ka jalgrattaspordi toodete, nt. riietus, varustus (veepudelid, pumbad) edasimüügiga, millede sisseostmise ja laovarude haldamine kuulub samuti ostuosakonna ülesannete hulka.

Hankijapõhiselt on defineeritud kontaktisikud, kellega ostuosakonna agendid suhtlevad tellimuste esitamiseks jm igapäevaste operatiivtegevuste läbiviimiseks. Hankijapoolseid kontaktisikuid võib olla mitu, nt. müügiagent (Sales Agent) ning müügijuht (Sales Manager), igapäevaste operatiivtegevuste jaoks suhtlevad agendid omavahel.

Ühte toodet võib osta mitmelt hankijalt (ProductVendor) ning sageli küsitakse suuremate koguste

korral kõikidelt hankijatelt hinnapakumisi. Kauba tarnimiseks võivad hankijad kasutada sõltuvalt asukohast ja tellitud kogusest maismaa- või meretransporti (ShipMethod).

Käesolevas töös on analüüsitud ostuosakonna vajadusi andmetele ja aruannetele ostuosakonna töö paremaks korraldamiseks:

- Tarnekindluse ajaline ja koguseline analüüs
- Saabunud praagi analüüs
- Toodete hinnakõikumise analüüs
- Ostuosakonna töö analüüs

Dimensioonide loetelu

1. PRODUCT

Päring: [KY_DimProduct view ja tabelisse lisamine](#)

Table name: [KYDimProduct](#)

Fields:	Data type	Nullability	Table	PK
ProductCode	int	Not Null	AdventureWorks2012.Production.Product P	Primary key
ProductName	nchar(50)	Not Null	AdventureWorks2012.Production.Product P	
SafetyStockLevel	smallint	Not Null	AdventureWorks2012.Production.Product P	
ListPrice	money	Not Null	AdventureWorks2012.Production.Product P	
CategoryName	nvarchar(50)	Null	AdventureWorks2012.Production.ProductCategory C	
SubCategoryName	nvarchar(50)	Null	AdventureWorks2012.Production.ProductSubcategory SC	
ReorderPoint	smallint	Not Null	AdventureWorks2012.Production.Product P	
SellEndDate	datetime	Null	AdventureWorks2012.Production.Product P	
SellStartDate	datetime	Not Null	AdventureWorks2012.Production.Product P	
StandardCost	money	Not Null	AdventureWorks2012.Production.Product P	
DiscontinuedDate	datetime	Null	AdventureWorks2012.Production.Product P	
VIEW:	vwKYDimProduct			

2.VENDOR

Päring: [KY_DimVendor view ja tabelisse lisamine](#)

Table name: [KYDimVendor](#)

Fields:	Data type	Nullability	Table	PK
VendorBusinessEntityCode	int	Not Null	AdventureWorks2012.Purchasing.Vendor V	Primary key
VendorName	nvarchar(50)	Not Null	AdventureWorks2012.Purchasing.Vendor V	
AccountNumber	nvarchar(15)	Not Null	AdventureWorks2012.Purchasing.Vendor V	
CreditRating	tinyint	Not Null	AdventureWorks2012.Purchasing.Vendor V	
PreferredVendorStatus	bit	Not Null	AdventureWorks2012.Purchasing.Vendor V	
ActiveFlag	bit	Not Null	AdventureWorks2012.Purchasing.Vendor V	
AddressID	int	Not Null	AdventureWorks2012.Person.BusinessEntityAddress BA	

AddressLine1	nvarchar(60)	Not Null	AdventureWorks2012.Person.Address A
AddressLine2	nvarchar(60)	Null	AdventureWorks2012.Person.Address A
City	nvarchar(30)	Not Null	AdventureWorks2012.Person.Address A
VIEW:	vwKYDimVendor		

3.EMPLOYEE

Päring: KY_DimEmployee view ja tabelisse lisamine

Table name: KYDimEmployee

Fields:	Data type	Nullability	Table	PK
EmployeeID	int	Not Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	Primary Key
JobTitle	nvarchar(50)	Not Null	AdventureWorks2012.HumanResources.Employee HR	
FirstName	nvarchar(50)	Not Null	AdventureWorks2012.Person.Person PC	
LastName	nvarchar(50)	Not Null	AdventureWorks2012.Person.Person PC	
EmployeeName	nvarchar(101)	Not Null	AdventureWorks2012.Person.Person PC	
Gender	nvarchar(1)	Not Null	AdventureWorks2012.Person.Person PC	
VIEW:	vwKYDimEmployee			

4. PURCHASE ORDER

Päring: KY_DimPurchaseOrder view ja tabelisse lisamine

Table name: KYDimPurchaseOrder

Fields:	Data type	Nullability	Table	PK
PurchaseOrderID	int	Not Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail OD	Primary Key
VendorID	int	Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader OH	
EmployeeID	int	Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader OH	
ShipMethodID	int	Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader OH	
ShipMethodName	nvarchar(50)	Not Null	AdventureWorks2012.Purchasing.ShipMethod SM	
OrderDate	datetime	Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader OH	
ShipDate	datetime	Null	AdventureWorks2012.Purchasing.PurchaseOrderHeader OH	
VIEW:	vwKYDimPurchaseOrder			

4. DATE

Table name: KYDimDate

Fields: [DateKey]

,[FullDateAlternateKey]
 ,[DayNumberOfWeek]
 ,[EnglishDayNameOfWeek]
 ,[SpanishDayNameOfWeek]
 ,[FrenchDayNameOfWeek]
 ,[DayNumberOfMonth]
 ,[DayNumberOfYear]
 ,[WeekNumberOfYear]
 ,[EnglishMonthName]
 ,[SpanishMonthName]
 ,[FrenchMonthName]
 ,[MonthNumberOfYear]
 ,[CalendarQuarter]
 ,[CalendarYear]
 ,[CalendarSemester]

.[FiscalQuarter]
 .[FiscalYear]
 .[FiscalSemester]

Kuupide (faktide) loetelu

Alustabelite loetelu ja kasutatud lühendid:

KY_FactPurchaseOrder

<u>Fields</u>	<u>Data type</u>	<u>Nullability</u>	<u>Table</u>	<u>Comment</u>
ProductID	int	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
ProductName	nvarchar(50)	Not null	AdventureWorks2012.Production.Product P	
VendorID	int	Not null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	
VendorName	nvarchar(50)	Not null	AdventureWorks2012.Purchasing.Vendor V	
PurchaseOrderID	int	Not null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	
EmployeeID	int	Not null		
OrderQty	smallint	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
UnitPrice	money	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
LineSum	money	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	Computed as OrderQty * UnitPrice
ReceivedQty	decimal(8, 2)	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
RejectedQty	decimal(8, 2)	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
StockedQty	decimal(8, 2)	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	Computed as ReceiveQty - RejectedQty
OrderDueDate	datetime	Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
AverageLeadTime	int	Not null	AdventureWorks2012.Purchasing.ProductVendor PV	
OrderDate	datetime	Not null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	
Shipdate	datetime	Not null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	
ShipMethodID	int	Not null	AdventureWorks2012.Purchasing.ShipMethod SM	
ShipMethodName	nvarchar(50)	Not null	AdventureWorks2012.Purchasing.ShipMethod SM	
StandardPrice	money	Not null	AdventureWorks2012.Purchasing.ProductVendor PV	Vendor's usual selling price.
LasteReceiptCost	money	Null	AdventureWorks2012.Purchasing.ProductVendor PV	The last purchased price
LasteReceiptDate	datetime	Null	AdventureWorks2012.Purchasing.ProductVendor PV	The product last received date
MinOrderQty	int	Not null	AdventureWorks2012.Purchasing.ProductVendor PV	
MaxOrderQty	int	Not null	AdventureWorks2012.Purchasing.ProductVendor PV	

KYFactPrice

<u>Fields</u>	<u>Data type</u>	<u>Nullability</u>	<u>Table</u>	<u>Comment</u>
ProductID	int	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	

ProdctName	nvarchar(50)	Not null	AdventureWorks2012.Production.Product P
UnitPrice	money	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D
UnitPriceModDate	datetime	Not null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D
StandardPrice	money	Not null	AdventureWorks2012.Purchasing.ProductVendor PV
StandardPriceModDate	datetime	Not null	AdventureWorks2012.Purchasing.ProductVendor PV
ListPrice	money	Not null	AdventureWorks2012.Production.Product P
StandardCost	money	Not null	AdventureWorks2012.Production.Product P
ModifiedDate	datetime	Not null	AdventureWorks2012.Production.Product P

FactEmployee

<u>Fields</u>	<u>Data type</u>	<u>Nullability</u>	<u>Table</u>	<u>Comment</u>
EmployeeID	int	Not null	AdventureWorks2012.Purchasing.PurchaseOrderHeader H	
EmployeeName	nvarchar(50)	Not null	AdventureWorks2012.Person.Person PC	COALESCE (PC.FirstName,')+' +COALESCE (PC.LastName,') as EmployeeName,
JobTitle	nvarchar(50)	Not null	AdventureWorks2012.HumanResources.Employee HR	
Gender	nchar(10)	Not null	AdventureWorks2012.HumanResources.Employee HR	
PurchaseOrderQty	int	Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
ReceivedQty	decimal(38, 2)	Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
StockedQty	decimal(38, 2)	Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	
RejectedQty	decimal(38, 2)	Null	AdventureWorks2012.Purchasing.PurchaseOrderDetail D	


KYFactScrap

<u>Fields</u>	<u>Data type</u>	<u>Nullability</u>	<u>Table</u>
ProductID	int	Not null	AdventureWorks2012.Production.Product P
ProductName	nvarchar(50)	Not null	AdventureWorks2012.Production.Product P
OrderQty	int	Not null	AdventureWorks2012.Production.WorkOrder WO
StockedQty	int	Not null	AdventureWorks2012.Production.WorkOrder WO
ScrappedGty	smallint	Not null	AdventureWorks2012.Production.WorkOrder WO
ScrapReasonID	smallint	Null	AdventureWorks2012.Production.WorkOrder WO
ScrapReasonName	nvarchar(50)	Not null	AdventureWorks2012.Production.ScrapReason SR
StartDate	datetime	Not null	AdventureWorks2012.Production.WorkOrder WO
EndDate	datetime	Null	AdventureWorks2012.Production.WorkOrder WO
WO.EndDate	datetime	Not null	AdventureWorks2012.Production.WorkOrder WO

Alustabelid (lühend):

AdventureWorks2012.Purchasing.PurchaseOrderDetail (D)
AdventureWorks2012.Purchasing.PurchaseOrderHeader (H)
AdventureWorks2012.Purchasing.ProductVendor (PV)
AdventureWorks2012.Purchasing.Vendor(V)
AdventureWorks2012.Purchasing.ShipMethod (SM)
AdventureWorks2012.Production.Product(P)
AdventureWorks2012.Production.WorkOrder (WO)
AdventureWorks2012.Production.ScrapReason (SR)
AdventureWorks2012.HumanResources.Employee (HR)
AdventureWorks2012.Person.Person (PC)

Realisatsiooni lühikirjeldus


















Andmebaasi nimi: t12_Astrid_Hergauk_ (andmeaida dimensionaalne andmebaas relatsioonilises andmebaasis (SQL-is)).  t12_Astrid_Hergauk

Projektfailide asukoht: ararat.ttu.ee: C:\Users\astrid.hergauk\Documents\SQL Server Management Studio\KY2-Andmelao prakt.koost

Realisatsioon koosneb:

Operatiivandmebaasist (AdventureWorks2012) andmete andmeaita (t12_Astrid_Hergauk) tõstmine SQL päringute põhine. SQL päringute osas on salvestatud protseduurid (stored procedure).

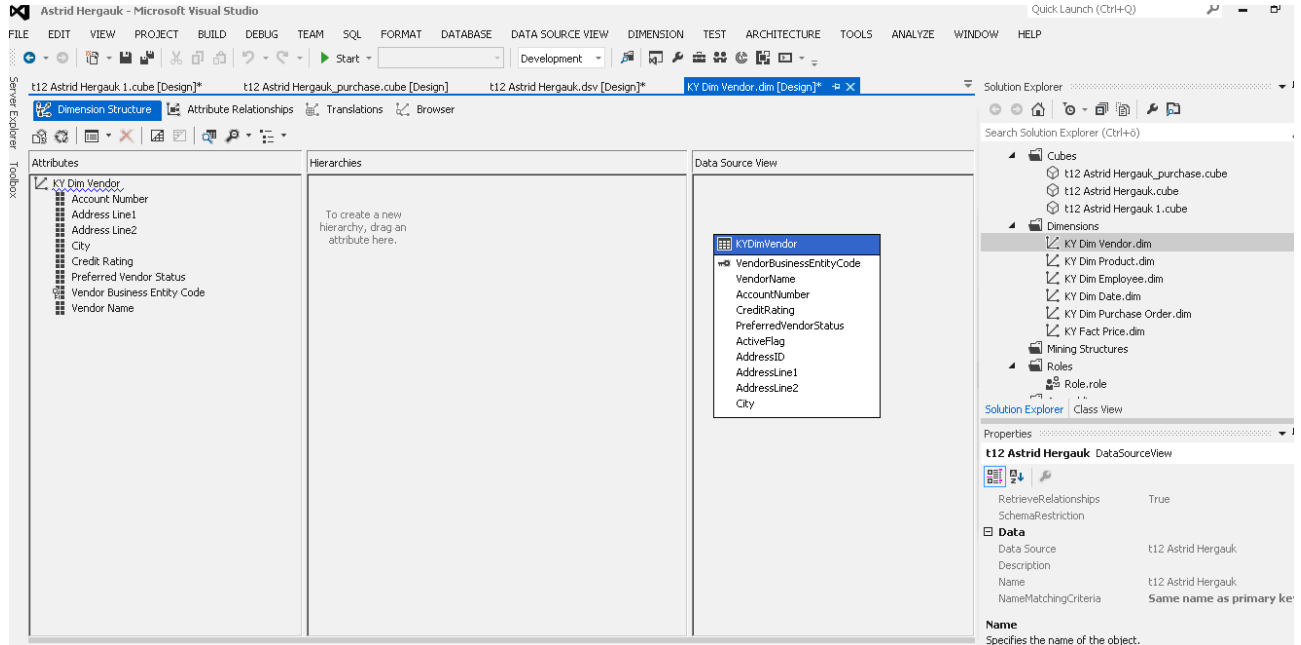
KY2-Andmelao prakt.koost

Name ^	Date modified	Type
 KY_DimDate_view_ja_tabelisse_lisamine	12/12/2014 9:31 PM	Microsoft SQL Serv...
 KY_DimEmployee_view_ja_tabelisse_lisamine	12/6/2014 1:30 AM	Microsoft SQL Serv...
 KY_DimEmployeeSP_stored_procedure	12/6/2014 3:36 PM	Microsoft SQL Serv...
 KY_DimProduct_view_ja_tabelisse_lisamine	12/5/2014 3:35 PM	Microsoft SQL Serv...
 KY_DimPurchaseOrder_view_ja_tabelisse_lis...	12/6/2014 3:51 AM	Microsoft SQL Serv...
 KY_DimVendor_view_ja_tabelisse_lisamine	12/9/2014 12:14 AM	Microsoft SQL Serv...
 KY_DimVendorSP_stored_procedure	12/6/2014 3:27 PM	Microsoft SQL Serv...
 KY_FactEmployee	12/6/2014 4:12 PM	Microsoft SQL Serv...
 KY_FactPriceSP_stored_procedure	12/6/2014 11:53 PM	Microsoft SQL Serv...
 KY_FactPurchaseOrder	12/6/2014 1:20 PM	Microsoft SQL Serv...
 KY_FactPurchaseOrderSP_stored_procedure	12/6/2014 4:33 PM	Microsoft SQL Serv...
 KY_FactScrap	12/6/2014 11:24 PM	Microsoft SQL Serv...
 KY_KYFactPrice	12/6/2014 11:51 PM	Microsoft SQL Serv...
 KYDimProductSP_stored_procedure	12/6/2014 3:31 PM	Microsoft SQL Serv...
 KYDimPurchaseOrderSP_stored_procedure	12/6/2014 3:53 PM	Microsoft SQL Serv...
 KYFactEmployeeSP_stored_procedure	12/6/2014 4:24 PM	Microsoft SQL Serv...
 KYFactScrapSP_stored_procedure	12/6/2014 11:25 PM	Microsoft SQL Serv...

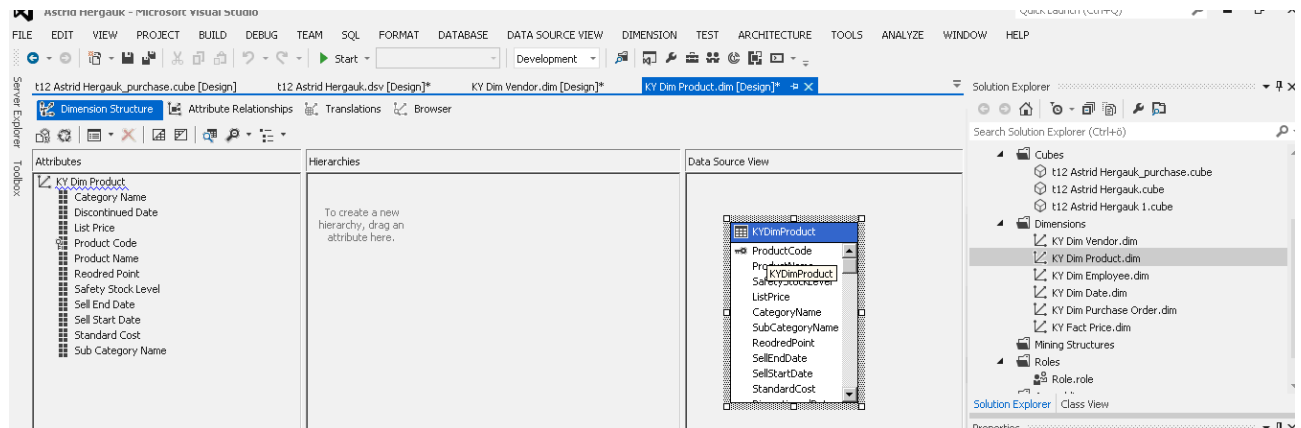
Analysis Services Visual Studio vahendiga tehtud järgmised dimensioonid ja kuubid:

Dimensioonid:

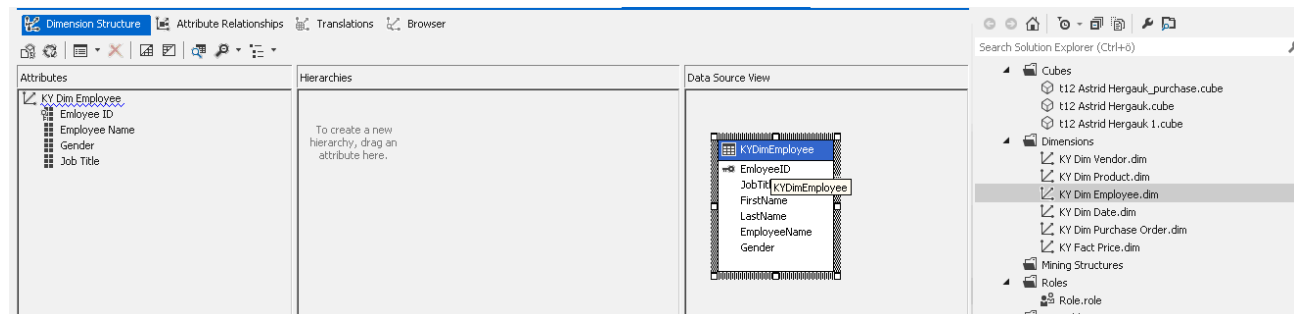
1) Vendor - tarnija



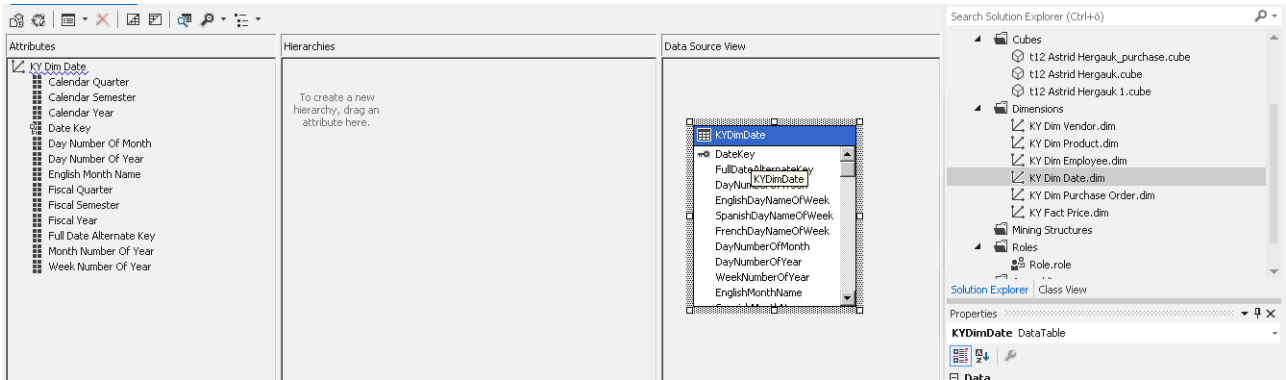
2) Product - toode



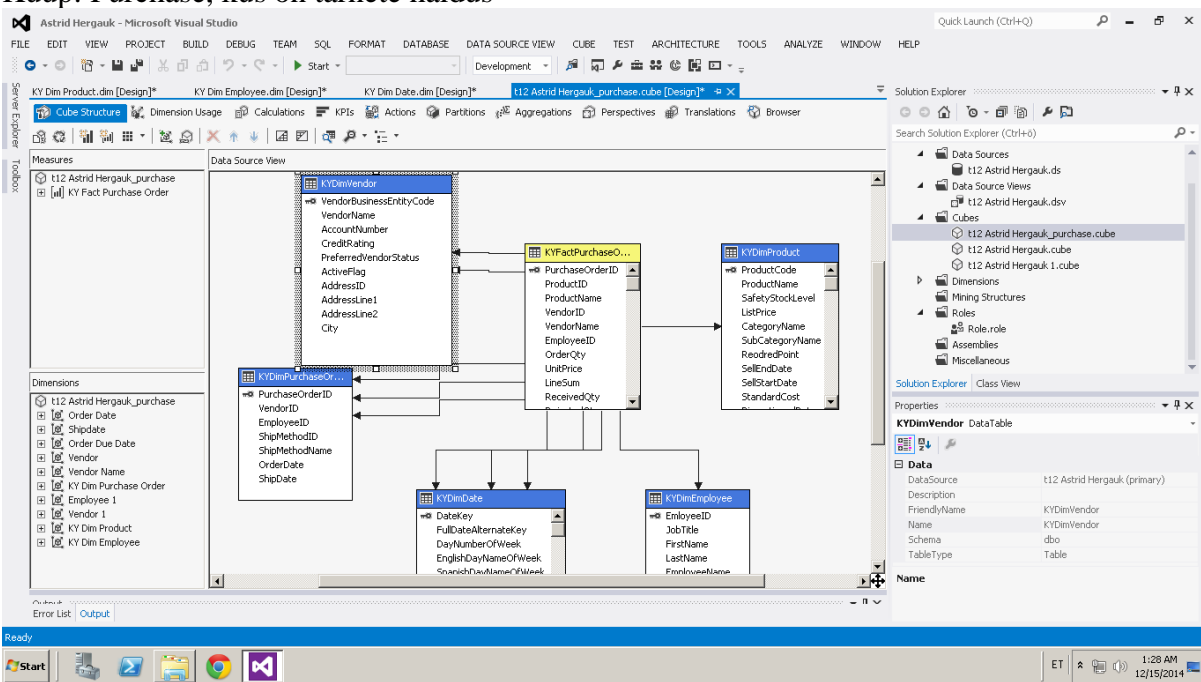
3) Employee - Töötaja



4) Date - kuupäev



Kuup: Purchase, kus on tarnete haldus



Edasi on koostatud töölaua kujul väljundaruanded. Tegemist on Excel töölehtedega vastavate risttabelitega (pivot table), mis katab teatud küsitud analüütikavajadused (tabelite asukoht: ararat.ttu.astrid.hergauk\Libraries\Documents).

Hankija_tarnekindlus	12/15/2014 1:15 AM	Microsoft Office Exc...	31 KB
Hinnad	12/15/2014 12:12 AM	Microsoft Office Exc...	26 KB
Praagianalüüs	12/15/2014 12:05 AM	Microsoft Office Exc...	22 KB

- Töötajate koormus tellitud toodete (kogus, tellimused) põhjal:

