|  |  |
| --- | --- |
| Medina Municipality GIS Data Transformation and New Geodatabase Design | Summary  The GIS data of the Municipality of Medina have been stored in the Oracle database for many years and are produced using the Mapinfo program interface and quality control is performed. Different data types and structures are created for each unit. The Municipality of Medina has initiated a single-door database creation project where GIS system is used by all units and can access information within the framework of their powers. In this context, data in Oracle 11g SDO format must be transferred to Esri Geodatabase. This report describes the transfer process.  Ömer Seyfettin KAR  October 2018 |

FİGURES TABLE

[Figure 1 madgıs data on Mapinfo 2](#_Toc528072294)

[Figure 2 SPOOL GEODATABASE MODEL 6](#_Toc528072295)

[Figure 3 EXAMPLE SOME FORMAT OF THE FME PROGRAM CAN SUPPORT 7](#_Toc528072296)

[Figure 4 FORMAT TRANSFER EXAMPLE 7](#_Toc528072297)

[Figure 5 FME WORKFLOW AUTOMATION 7](#_Toc528072298)

[Figure 6 CREATE A WORKSPACE IN FME PROGRAM 8](#_Toc528072299)

[Figure 7 EXAMPLE SOME LAYERS TRANSFER SCHEMA 8](#_Toc528072300)

[Figure 8 LGIM WORKS 10](#_Toc528072301)

[Figure 9 LGIM Geodatabase model architect 11](#_Toc528072302)

[Figure 10 Migrate deed, sak, elc\_buıldıngs and gov lands parcels schema ın fme program 16](#_Toc528072303)

[Figure 11 create for migration parcels to “parcel fabric” an arcgıs model 16](#_Toc528072304)

[Figure 12 some process model in ArcGIS for migration 17](#_Toc528072305)

[Figure 13 used the parcel fabric migration toolbox in ArcGIS 17](#_Toc528072306)

[Figure 14 some example data for topology problem ( short geometry) 18](#_Toc528072307)

[Figure 15 another topology problem before fixed 18](#_Toc528072308)

[Figure 16 migrated all data show in ArcGIS 19](#_Toc528072309)

# Summary:

The GIS data of the Municipality of Medina have been stored in the Oracle database for many years and are produced using the Mapinfo program interface and quality control is performed. Different data types and structures are created for each unit. The Municipality of Medina has initiated a single-door database creation project where GIS system is used by all units and can access information within the framework of their powers. In this context, data in Oracle 11g SDO format must be transferred to Esri Geodatabase. This report describes the transfer process.

# Purposes of the project :

* 1. The objective of this project is to perform the following services:
  2. Carrying out a comprehensive user study within the Municipality and associated government and private agencies for data conversion, integration and sharing,
  3. Designing and implementing ONE DOOR – ONE DATABASE concept in the Municipality followed by data conversion and integration to the national standards and formats,
  4. Designing and establishing the Madinah Municipality Geospatial Information System (MMGIS),
  5. Carrying out capacity building and training.

# The current technology and GIS data format of the municipality of Medina:

The GIS data of the municipality of Medina is stored in the Spatial data format (SDO – Service data Objects) in the ORACLE 11g database. The MapInfo program is used as a GIS user interface. In addition, the spatial data associated with GIS data is carried out between the ORACLE Form applications used in various departments and the relations between non-spatial statements and the operations required by the municipality.

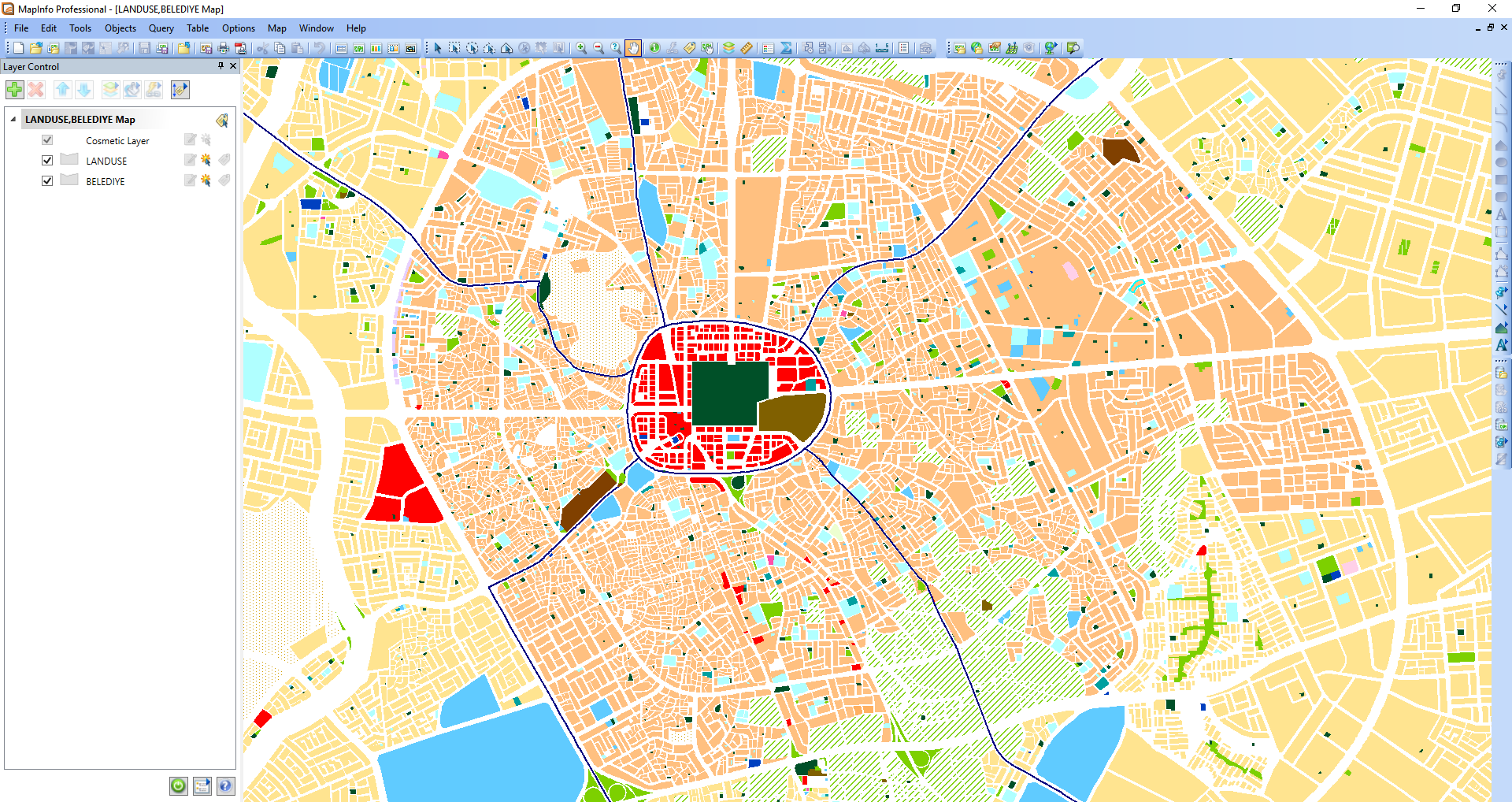


Figure 1 madgıs data on Mapinfo

# Current GIS data of Madinah Municipality:

* 1. MADGIS Special features layers ( Oracle SDO format):

| **No** | **Layer Name** | **Data Type** | **Source** | **Explanation** |
| --- | --- | --- | --- | --- |
| 1 | AIRPORT\_BUILDING\_HEIGTHS | Oracle-SDO | MADGIS-Oracle 11g | Airport landing corridor approach heights |
| 2 | ATM\_BANK | Oracle-SDO | MADGIS-Oracle 11g | The Position of Bank ATM's |
| 3 | AXIS | Oracle-SDO | MADGIS-Oracle 11g | Road Axis |
| 4 | BAQI\_NEW\_PLOT | Oracle-SDO | MADGIS-Oracle 11g | Cemetery blocks area |
| 5 | BAQI\_NEW\_POLY | Oracle-SDO | MADGIS-Oracle 11g | Tomb Position |
| 6 | BELAG\_940 | Oracle-SDO | MADGIS-Oracle 11g | Quality control of garbage collection |
| 7 | BELEDIYE | Oracle-SDO | MADGIS-Oracle 11g | Metropolitan Municipality border |
| 8 | BENCH\_MARKS\_FOR\_ROADS | Oracle-SDO | MADGIS-Oracle 11g | Benchmarks are for Road Survey |
| 9 | BLD\_PENALTY | Oracle-SDO | MADGIS-Oracle 11g | Unauthorized construction penalty points |
| 10 | BLD\_PERMITS | Oracle-SDO | MADGIS-Oracle 11g | Building license area |
| 11 | BUILDING | Oracle-SDO | MADGIS-Oracle 11g | Buildings |
| 12 | BUILDING\_NO | Oracle-SDO | MADGIS-Oracle 11g | Buildings Numbers |
| 13 | CITY\_CENTERS | Oracle-SDO | MADGIS-Oracle 11g | Urban area City Name |
| 14 | DEED | Oracle-SDO | MADGIS-Oracle 11g | Title deed area |
| 15 | DEMOLISH\_BLD | Oracle-SDO | MADGIS-Oracle 11g | Demolished building |
| 16 | DIGG\_PERMITS | Oracle-SDO | MADGIS-Oracle 11g | Digging Permits |
| 17 | DIGGING\_FORBIDDEN\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Digging Forbidden Area |
| 18 | DISTRICT | Oracle-SDO | MADGIS-Oracle 11g | Precincts Area |
| 19 | DRAFT\_PLAN | Oracle-SDO | MADGIS-Oracle 11g | Before GIS like New Parcel |
| 20 | ELC\_BUILDINGS | Oracle-SDO | MADGIS-Oracle 11g | Unregistered Building and lands for Electric connection |
| 21 | ELC\_BUILDINGS\_REJECTED | Oracle-SDO | MADGIS-Oracle 11g | Unregistered Building and lands rejected |
| 22 | ELC\_FORBIDEN\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Unregistered Building and lands rejected |
| 23 | ELECT\_STATIONS | Oracle-SDO | MADGIS-Oracle 11g | Electric Stations |
| 24 | EXECUTIVE\_COMMITTEE | Oracle-SDO | MADGIS-Oracle 11g | Layer of the Executive Committee sites |
| 25 | FENCE | Oracle-SDO | MADGIS-Oracle 11g | Fences |
| 26 | FORBIDEN\_LND | Oracle-SDO | MADGIS-Oracle 11g | Forbidden lands for building permits |
| 27 | GAS\_STATION | Oracle-SDO | MADGIS-Oracle 11g | Gas Stations remarks |
| 28 | GOV\_LANDS | Oracle-SDO | MADGIS-Oracle 11g | Government Lands |
| 29 | GRID1000 | Oracle-SDO | MADGIS-Oracle 11g | Raster map sheets key date at 1387 ( 1966 ) |
| 30 | GRID10K | Oracle-SDO | MADGIS-Oracle 11g | Raster map sheets key date at 1387 ( 1966 ) |
| 31 | GRID2500 | Oracle-SDO | MADGIS-Oracle 11g | Map sheets key date at 1988 |
| 32 | HAJLIC | Oracle-SDO | MADGIS-Oracle 11g | Hajj Housing Committee |
| 33 | HEJAZ\_RAILWAY | Oracle-SDO | MADGIS-Oracle 11g | Old Hejaz railway track |
| 34 | HISTORICAL\_PLACES | Oracle-SDO | MADGIS-Oracle 11g | Historical monuments in Madinah |
| 35 | HUDUDALHARAM | Oracle-SDO | MADGIS-Oracle 11g | The boundaries of the ancient Medina (Haram) |
| 36 | IKHTIZAL\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Area to be expropriated for deed |
| 37 | IKHTIZAL\_WADI | Oracle-SDO | MADGIS-Oracle 11g | Valley area be expropriated for deed |
| 38 | ILLEGAL\_USAGE | Oracle-SDO | MADGIS-Oracle 11g | Infringements |
| 39 | INVESTMENT\_POINT | Oracle-SDO | MADGIS-Oracle 11g | The Investment Locations |
| 40 | ISTIHKAM | Oracle-SDO | MADGIS-Oracle 11g | Clusters |
| 41 | KARAR\_REMAIN | Oracle-SDO | MADGIS-Oracle 11g | Clean Parcel Part |
| 42 | LAND\_DONATION | Oracle-SDO | MADGIS-Oracle 11g | Donation of land |
| 43 | LANDMARK | Oracle-SDO | MADGIS-Oracle 11g | Landmarks |
| 44 | LANDUSE | Oracle-SDO | MADGIS-Oracle 11g | Land use |
| 45 | MAIN\_ROADS | Oracle-SDO | MADGIS-Oracle 11g | Main Road Center Lines |
| 46 | MAINRDCURB | Oracle-SDO | MADGIS-Oracle 11g | Main Road Curbs |
| 47 | MARHUM | Oracle-SDO | MADGIS-Oracle 11g | Dead people names |
| 48 | MAX\_BUILDING\_HIGH | Oracle-SDO | MADGIS-Oracle 11g | Regulate Building heights in Development Plan |
| 49 | MP\_BOXED\_CHANNEL | Oracle-SDO | MADGIS-Oracle 11g | Boxed Channels Line |
| 50 | MP\_CENTERLINE | Oracle-SDO | MADGIS-Oracle 11g | Master Plan Roads Centerline |
| 51 | MP\_CURB | Oracle-SDO | MADGIS-Oracle 11g | Master plan sidewalks |
| 52 | MP\_ELEC\_LINE | Oracle-SDO | MADGIS-Oracle 11g | Master Plan Electric Lines |
| 53 | MP\_ELEC\_TOWER | Oracle-SDO | MADGIS-Oracle 11g | Master Plan Electric Towers |
| 54 | MP\_TANZEEM | Oracle-SDO | MADGIS-Oracle 11g | Boundaries of the Planning Block Area |
| 55 | MP\_TANZEEM\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Boundaries of the Planning Block Global Area |
| 56 | MP\_WATER\_LINE | Oracle-SDO | MADGIS-Oracle 11g | Master Plan Water Line |
| 57 | NEIGH | Oracle-SDO | MADGIS-Oracle 11g | Neighborhood |
| 58 | NEW\_PARCEL | Oracle-SDO | MADGIS-Oracle 11g | Land plots procedure until the adoption and transfer |
| 59 | OLD\_SHOPS | Oracle-SDO | MADGIS-Oracle 11g | Old Shops |
| 60 | OLDGRID1000 | Oracle-SDO | MADGIS-Oracle 11g | Raster map sheets key date at 1387 ( 1966 ) |
| 61 | PAR\_BOUNDRY | Oracle-SDO | MADGIS-Oracle 11g | Urban planning boundary |
| 62 | PARCEL | Oracle-SDO | MADGIS-Oracle 11g | Parcel by approved plans |
| 63 | PARCEL\_IFRAZ | Oracle-SDO | MADGIS-Oracle 11g | Parcel divide up |
| 64 | PARCEL\_IFRAZ\_HISTORY | Oracle-SDO | MADGIS-Oracle 11g | Parcel divide up history |
| 65 | PARKING\_LINES | Oracle-SDO | MADGIS-Oracle 11g | Road Auto Park Lines |
| 66 | PETROL\_STATION | Oracle-SDO | MADGIS-Oracle 11g | Petrol Station Locations |
| 67 | PLAN\_FORBIDEN\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Zoning plan forbidden areas |
| 68 | RAILWAY | Oracle-SDO | MADGIS-Oracle 11g | Railway |
| 69 | RP\_MARAKIZ\_SHADED | Oracle-SDO | MADGIS-Oracle 11g | County boundaries |
| 70 | RP\_MUHAFAZAT\_SHADED | Oracle-SDO | MADGIS-Oracle 11g | Sub Municipals boundaries |
| 71 | RP\_URBAN\_CENTERS\_ADMIN\_SHAD | Oracle-SDO | MADGIS-Oracle 11g | Urban Centers Name |
| 72 | SAK | Oracle-SDO | MADGIS-Oracle 11g | Not yet approved Deed area |
| 73 | SETTLEMENTS\_MAP | Oracle-SDO | MADGIS-Oracle 11g | Not yet approved Deed area sketch |
| 74 | SHOPS | Oracle-SDO | MADGIS-Oracle 11g | The Shops |
| 75 | SIDEWALK | Oracle-SDO | MADGIS-Oracle 11g | Road Sidewalk |
| 76 | STORM\_MANHOLE | Oracle-SDO | MADGIS-Oracle 11g | Strom Water Manholes |
| 77 | STREETCENTERS | Oracle-SDO | MADGIS-Oracle 11g | Street centers |
| 78 | STREETNETWORK | Oracle-SDO | MADGIS-Oracle 11g | Street centers |
| 79 | TARMEEM | Oracle-SDO | MADGIS-Oracle 11g | Building renovation permit |
| 80 | TICARI\_ROAD\_BUFFER | Oracle-SDO | MADGIS-Oracle 11g | Business Place Road Buffer |
| 81 | VALVES | Oracle-SDO | MADGIS-Oracle 11g | Valves |
| 82 | WADI | Oracle-SDO | MADGIS-Oracle 11g | Valley |
| 83 | WADI\_PERMITS | Oracle-SDO | MADGIS-Oracle 11g | Permits of Digging valleys |
| 84 | WADI\_VIOLATIONS | Oracle-SDO | MADGIS-Oracle 11g | Valley Violations Areas |
| 85 | WATER | Oracle-SDO | MADGIS-Oracle 11g | Water Area |
| 86 | WATER\_DISTRIBUTIONLINE | Oracle-SDO | MADGIS-Oracle 11g | Water Distribute Lines |
| 87 | WATER\_GRAVITYPIPE | Oracle-SDO | MADGIS-Oracle 11g | Water Gravity Pipe |
| 88 | WATER\_PONDS | Oracle-SDO | MADGIS-Oracle 11g | Water Ponds |
| 89 | WATERSTATION | Oracle-SDO | MADGIS-Oracle 11g | Water Station |
| 90 | ZAIDAH\_AREA | Oracle-SDO | MADGIS-Oracle 11g | Request for ownership of vacant land |
| 91 | ZAIDAH\_EXPROPRIATION | Oracle-SDO | MADGIS-Oracle 11g | Request for ownership land Expropriation |

* 1. From RPS Spatial Feature Class ( Esri Geodatabase format):

The original database created by Arabic and its translate to English.

| **No** |  | **Data Type** | **Source** | **Explanation** |
| --- | --- | --- | --- | --- |
| 92 | Administrative\_Boundry | Esri-SFC | RPS-Geodatabase | Administrative Borders Spool Line |
| 93 | Belediya | Esri-SFC | RPS-Geodatabase | Municipality Boundary’s |
| 94 | Existing\_Regional\_Roads | Esri-SFC | RPS-Geodatabase | Existing Regional Roads Line |
| 95 | KSA\_Regions | Esri-SFC | RPS-Geodatabase | KSA Regions Boundary’s |
| 96 | Madinah\_Neigborhood\_Region | Esri-SFC | RPS-Geodatabase | Neighborhood |
| 97 | Markaz | Esri-SFC | RPS-Geodatabase | Markaz Boundary’s |
| 98 | Muhafazat | Esri-SFC | RPS-Geodatabase | Muhafazat Boundarys |
| 99 | Petrol\_Line | Esri-SFC | RPS-Geodatabase | Petrol Line |
| 100 | RedSea | Esri-SFC | RPS-Geodatabase | Red Sea Boundary |
| 101 | Urban\_Name | Esri-SFC | RPS-Geodatabase | Urban City Names |

* 1. MADCAP non-Spatial Tables ( Oracle 11g):

| **NO** | **NAME** | **Data Type** | **SOURCE** | **EXPLANATION** |
| --- | --- | --- | --- | --- |
| 1 | MADCAP\_AWDT1010 | SDO | Madcap-Oracle 11g Database |  |
| 2 | MADCAP\_AWDT1011 | SDO | Madcap-Oracle 11g Database |  |
| 3 | MADCAP\_AWDT2020 | SDO | Madcap-Oracle 11g Database |  |
| 4 | MADCAP\_AWDT2030 | SDO | Madcap-Oracle 11g Database |  |
| 5 | MADCAP\_GLST3090 | SDO | Madcap-Oracle 11g Database |  |
| 6 | MADCAP\_HAJT1000 | SDO | Madcap-Oracle 11g Database |  |
| 7 | MADCAP\_LCPT2010 | SDO | Madcap-Oracle 11g Database |  |
| 8 | MADCAP\_LCPT2011 | SDO | Madcap-Oracle 11g Database |  |
| 9 | MADCAP\_LMNT2010 | SDO | Madcap-Oracle 11g Database |  |
| 10 | MADCAP\_LNDT2010 | SDO | Madcap-Oracle 11g Database |  |
| 11 | MADCAP\_LNDT2011 | SDO | Madcap-Oracle 11g Database |  |
| 12 | MADCAP\_LNDT2012 | SDO | Madcap-Oracle 11g Database |  |
| 13 | MADCAP\_LNDT2013 | SDO | Madcap-Oracle 11g Database |  |
| 14 | MADCAP\_LNDT4010 | SDO | Madcap-Oracle 11g Database |  |
| 15 | MADCAP\_LNDT4030 | SDO | Madcap-Oracle 11g Database |  |
| 16 | MADCAP\_LNDT4700 | SDO | Madcap-Oracle 11g Database |  |
| 17 | MADCAP\_LNDT5700 | SDO | Madcap-Oracle 11g Database |  |
| 18 | MADCAP\_LNDT5800 | SDO | Madcap-Oracle 11g Database |  |
| 19 | MADCAP\_LNDT7000 | SDO | Madcap-Oracle 11g Database |  |
| 20 | MADCAP\_LNDT7010 | SDO | Madcap-Oracle 11g Database |  |
| 21 | MADCAP\_LNDT7020 | SDO | Madcap-Oracle 11g Database |  |
| 22 | MADCAP\_MAPT4000 | SDO | Madcap-Oracle 11g Database |  |
| 23 | MADCAP\_MAPT4010 | SDO | Madcap-Oracle 11g Database |  |
| 24 | MADCAP\_MAPT5062 | SDO | Madcap-Oracle 11g Database |  |

# Transfer Current data to Spool Geodatabase model:

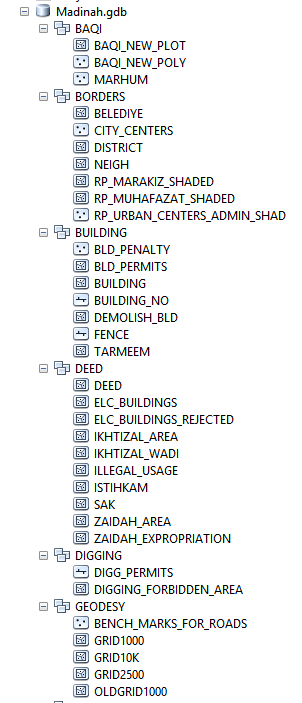
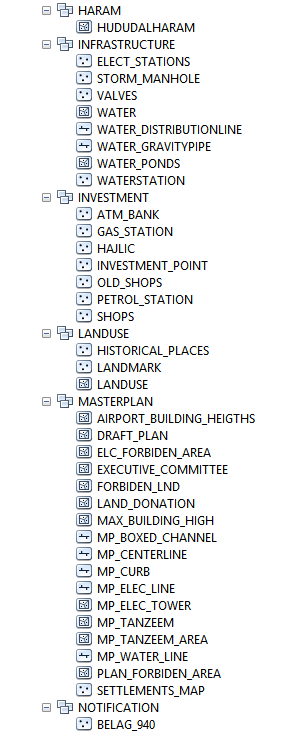
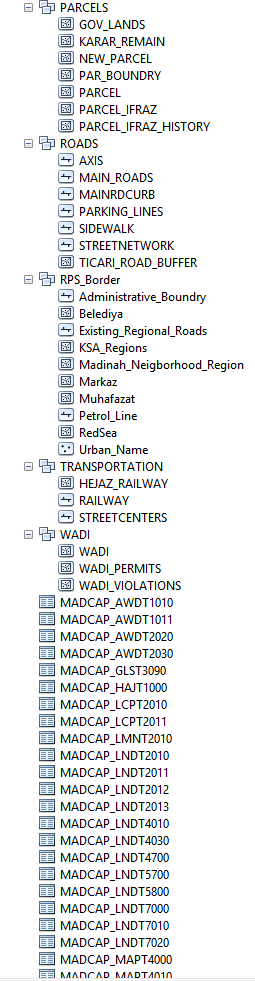
  

Figure 2 SPOOL GEODATABASE MODEL

# FME Desktop Application (Using Data Transfer/İntegration):

* 1. **What is FME Program:** The FME Desktop program input data from hundreds of sources and output to hundreds more convert data from A to B, perform complicated enterprise integrations, or simplify a tedious task. FME Desktop also includes 475+ transformers, giving you complete control over the content, structure, and style of data. Plus, you can never find a tool better able to handle the complexity of spatial data. For reason in the project will using the FME program for transfer and integrate data.



Figure 3 EXAMPLE SOME FORMAT OF THE FME PROGRAM CAN SUPPORT

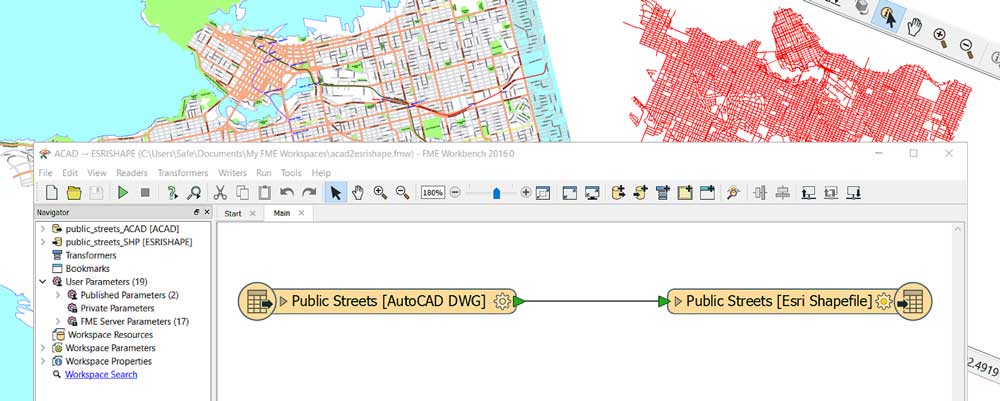


Figure 4 FORMAT TRANSFER EXAMPLE

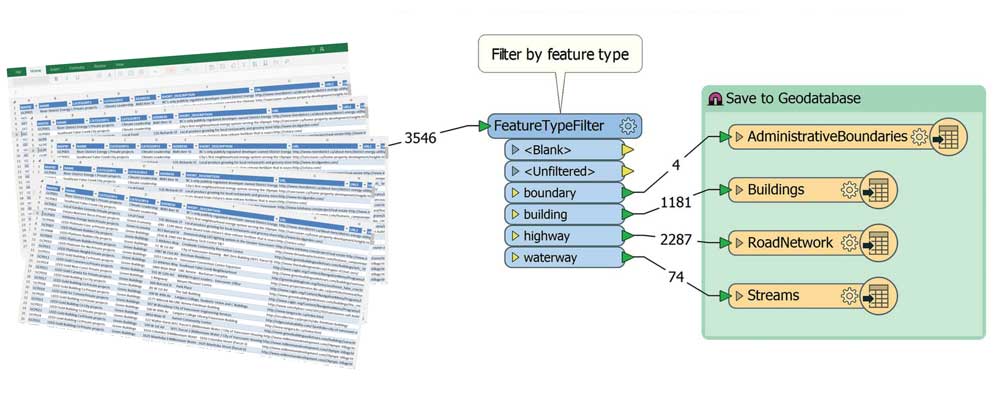


Figure 5 FME WORKFLOW AUTOMATION

* 1. MADGIS Spatial data schema and MADCAP tables held in Oracle 11g database version are transferred to ESRI geodatabase format using FME Desktop program. A workspace schema has been created in the FME program for this process. The temporary database was created by taking data from the copy database created by the Municipal Information Processing Unit in the Working Office.

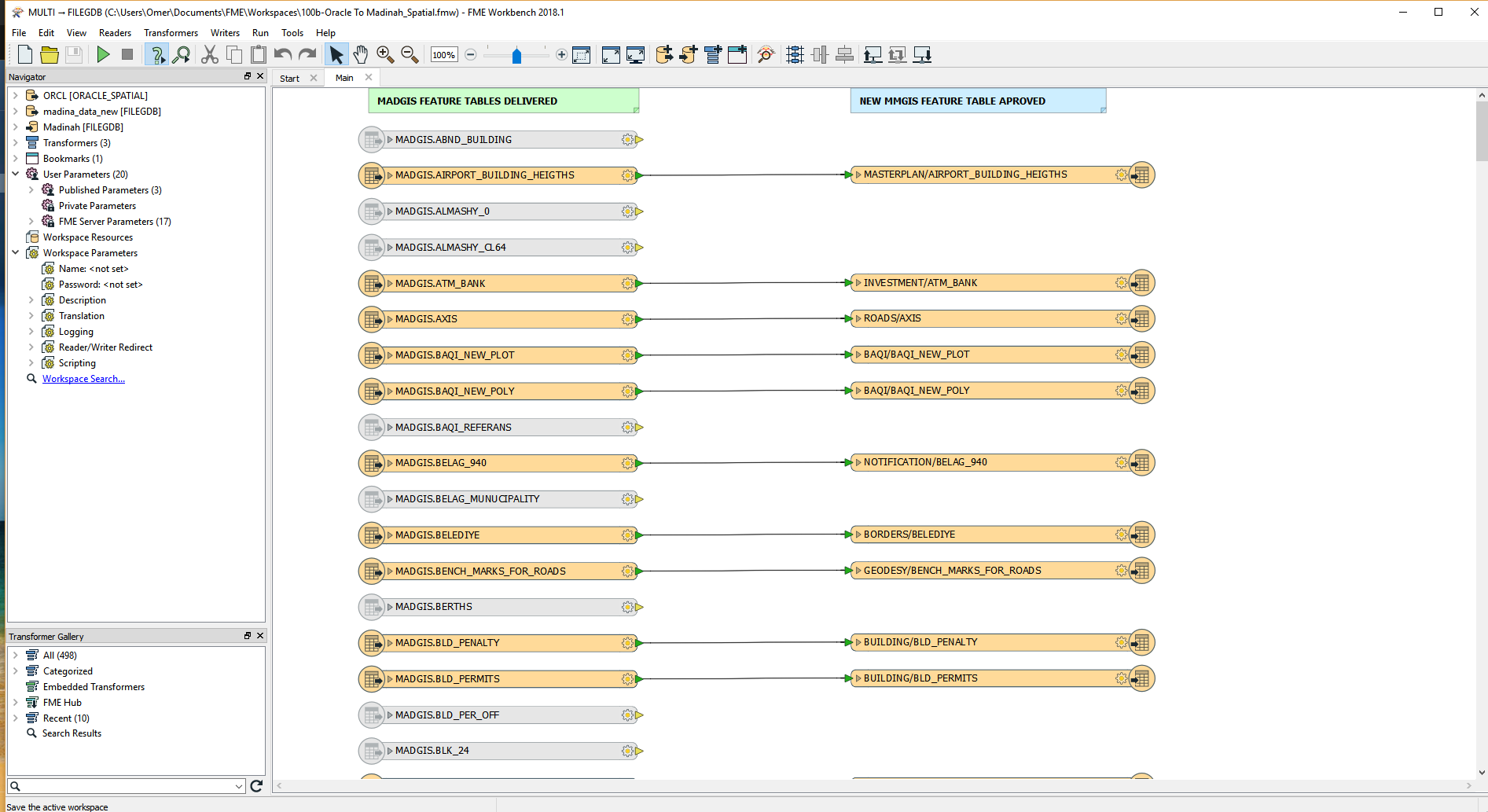


Figure 6 CREATE A WORKSPACE IN FME PROGRAM

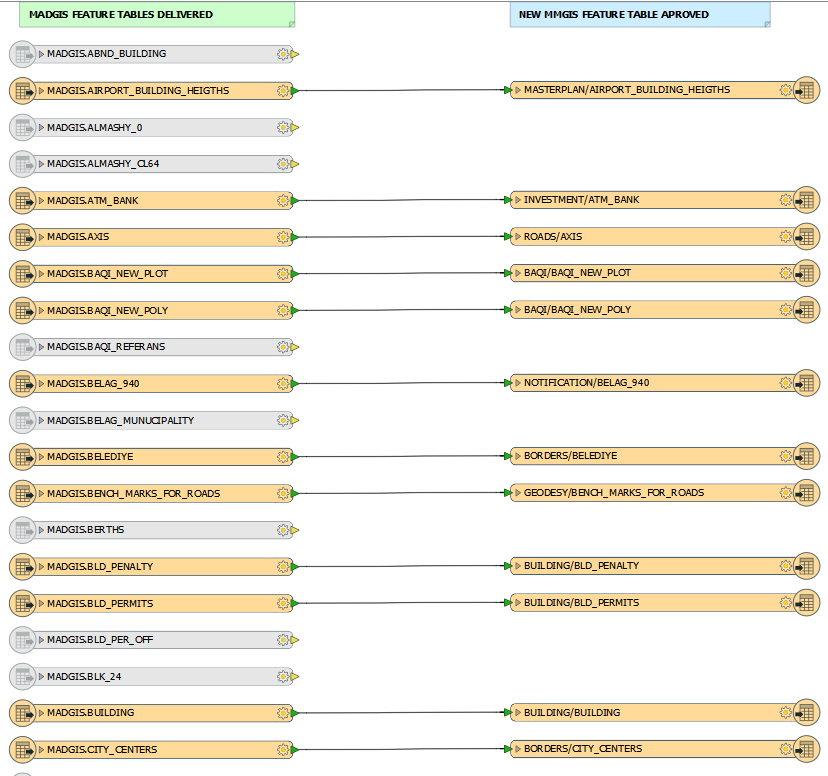


Figure 7 EXAMPLE SOME LAYERS TRANSFER SCHEMA

# Esri Local Government İnformation Model (LGIM):

* 1. The Local Government Information Model can be used to organize your geographic information and deploy many of the ArcGIS Solutions for Local Government maps and apps. It is a harmonized information model of GIS datasets designed to support the data management and analysis maps and apps deployed with an ArcGIS geodatabase. The information model is supported by the Service Catalog. This service catalog provides a collection of layers that can be used to publish feature layers in your ArcGIS organization and deploy a series of ArcGIS for Local Government solutions. You can configure the information model and feature layers to support specific business needs in your organization by selecting and implementing specific features that are part of this integrated information model or by adding fields and modifying field and layer aliases to reflect terms more widely used in your organization. (ESRI, 2018)
  2. The feature classes and feature datasets in the Local Government Information Model are “harmonized” meaning that they are designed to work across and support typical functions of local governments without duplication and redundancies. This enables municipal departments, functions within an organization or entire organizations to manage data that is specific to their domain and utilize data from other domains within local government as base data. We are using the term Information Model because this is more than just a data schema. In the GIS realm the term “data model” has commonly implied a schema or database structure only. The Local Government Information does include a schema, but we consider things like the Map Documents for our maps and apps and specifications for services to be part of the information model as well. (Crothers, Howard;ESRI, 2011)
  3. In March 2017, we made changes to the Local Government Information Model and as a result we’ve received several questions from the water, wastewater and storm water ArcGIS user community. What Changed? : With the March 2017 ArcGIS Solutions release, the water, wastewater, and storm water feature datasets (along with the associated feature classes, domains, tables, and relationships) were removed from the Local Government Information Model. The feature datasets to support water, wastewater, and storm water were moved into a series of geodatabases that are included with individual ArcGIS for Water Utilities configurations.

For example, LocalGovernment.gdb was removed from the Water Utility Network Editing and Analysis configuration and was replaced with WaterUtilities.gdb and RefrenceData.gdb. WaterUtilities.gdb is structured with the schema to implement the configuration as-is and contains sample water, waste water, and storm water data. ReferenceData.gdb contains sample base mapping data. We also removed LocalGovernment.gdb from the Capital Improvement Planning configuration and replaced it with WaterUtilities.gdb and CapitalImprovementPlanning.gdb. CapitalImprovementPlanning.gdb contains the schema to implement the configuration as-is with the Capital Planning Add-In. (Crothers Howard, ESRI, 2018)

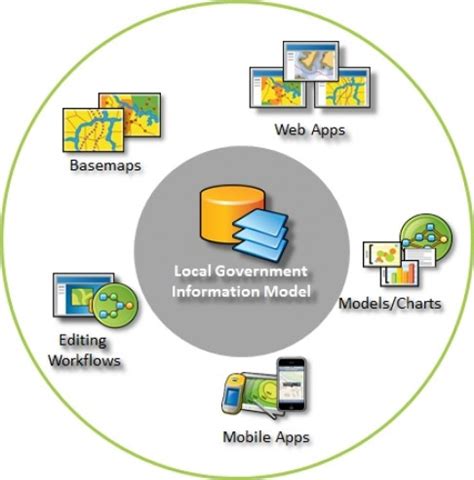


Figure 8 LGIM WORKS

* 1. Once you’ve performed a thorough assessment and have an understanding of the goals and future state of GIS for your government, then you are able to really evaluate if the LGIM will be a good fit for you. In our experience, the LGIM is a good starting point. In most implementations the LGIM will need to be configured to the governments specific needs and the existing data converted and augmented. The solution is often a hybrid. At the end of the day, ESRI’s LGIM is a great starting point and offers most governments the flexibility to grow and extend their services and offerings. Understanding where you are starting from can be as important as deciding how you envision the end state for your government’s GIS, we will help you get there. (ESSNOVA, 2015)
  2. LGIM Advantages :
     1. Supported Many Esri Partners
     2. Sets and industry standard
     3. Improves data interoperability/Sharing
     4. Provides structured framework for data consistency
     5. Out maps and applications for both and desktop
     6. Attribute assistant automates many tasks
     7. Support for Parcel Fabric / Geometric Networks
     8. Use as much / as little as you need

metin içeren bir resim

Çok yüksek güvenilirlikle oluşturulmuş açıklama

Figure 9 LGIM Geodatabase model architect

# Prepare Before Migration from Spool to LGIM

Before migrating from the accumulated geographic data file to the Local Governance Information Model (LGIM), we will prepare some customization areas, Feature Class and domain name that we need to change in LGIM. Some sample data is listed in the following table. All the customized list is prepared for an Excel file. The name of this file is "Data Mapping.xlsx". The red colored field names in the LGIM fields column in the table refer to the fields that have been added to the property class field structure on the same line. If all field names colors are red that’s feature class was added new to LGIM.

| **MMGIS Dataset  Name** | **MMGIS Feature  Class Name** | **MMGIS Geometry** | **MMGIS Fields** | **MmLocal Goverment Feature Class Name** | **LGIM  FC Type** | **LGIM  Fields** | **MMGIS Into Fields** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| MASTERPLAN | AIRPORT\_BUILDING HEIGTHS | POLYGON | HEIGHT | OverlayDistrict | SFC | districtid | "AIR-"+ HEIGHT |
| MI\_PRINX | name | HEIGHT + "m Air obstacle" |
|  | disttype | "Transportation" |
|  | agency |  |
|  | agencyurl |  |
|  | pocname |  |
|  | pocphone |  |
|  | pocemail |  |
| RPS\_Borders | Belediya | POLYGON | Clases | Belediya | SFC | Clases | Clases |
| Municipal\_Election | Municipal\_Election | Municipal\_Election |
| Election\_1436 | Election\_1436 | Election\_1436 |
| Independant\_Municipalities | Independant\_Municipalities | Independant\_Municipalities |
| Code | Code | Code |
| Muhafaza\_Name | Muhafaza\_Name | Muhafaza\_Name |
| Municipality\_Name | Municipality\_Name | Municipality\_Name |
| Area\_Km\_square | Area\_Km\_square | Area\_Km\_square |
| Sattelment\_No | Sattelment\_No | Sattelment\_No |
| Population\_1437 | Population\_1437 | Population\_1437 |
|  |  |  |
|  |  |  |
| BUILDING | BLD\_PERMITS | POLYGON | ORDRNO | BuildingPermits | SFC | ORDRNO | ORDRNO |
| PLANNO | PLANNO | PLANNO |
| PLAN\_TYP | PLAN\_TYP | PLAN\_TYP |
| PARCEL\_NO | PARCEL\_NO | PARCEL\_NO |
| STR\_NO | STR\_NO | STR\_NO |
| BLD\_NO | BLD\_NO | BLD\_NO |
| X\_COORD | X\_COORD | X\_COORD |
| Y\_COORD | Y\_COORD | Y\_COORD |
| MI\_PRINX | MI\_PRINX | MI\_PRINX |
| MODUSR | MODUSR | MODUSR |
| UPDATE\_DAT | UPDATE\_DAT | UPDATE\_DAT |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| BUILDING | BUILDING | POLYGON | TYPE | Building | SFC | BUILDINGID |  |
| B\_NO | FACILITYKEY |  |
| STREET\_NO | SHORTNAME | B\_NO |
| ST\_NAME | LONGNAME |  |
| BEL\_CODE | FLOORCOUNT |  |
| SOURCE | BLDGAREA | TYPE |
| MI\_PRINX | BLDGTYPE |  |
| LCNNO | OPERHOURS |  |
| MMGIS\_BUILDINGID | OPERDATE |  |
|  | ACCESSTYPE |  |
|  | CONDITION |  |
|  | OWNEDBY |  |
|  | MAINTBY |  |
|  | LASTUPDATE |  |
|  | LASTEDITOR |  |
|  | BLDGHEIGHT |  |
|  | STREET\_NO | STREET\_NO |
|  | ST\_NAME | ST\_NAME |
|  | BEL\_CODE | BEL\_CODE |
|  | SOURCE | SOURCE |
|  | LCNNO | LCNNO |
|  | MI\_PRINX | MI\_PRINX |
| DEED | DEED | POLYGON | ORDRNO | ParcelFabricParcel | SFC | Name | CNTNO |
| LTRNO | Type | 4 |
| CNTNO | Historical |  |
| CNTDAT | LegalStartDate | INSERT\_DATE |
| CNTSRC | LegalEndDate |  |
| OWNNAME | Accuracy | 2 |
| OWNID | ConveyanceType |  |
| SRVNO | ConveyanceDesignator |  |
| SRVDAT | SimConDivType |  |
| BERAUNO | BlockDesignator |  |
| ADTRNO | EncumbranceType |  |
| MNGRNO | SeparatedRightType |  |
| STAG | HistoryType |  |
| LOCATION | FloorDesignator |  |
| PARTASIZE | PrincipalMeridian |  |
| NRTHBRD | TownshipNumber |  |
| SUTHBRD | TownshipFraction |  |
| EASTBRD | TownshipDirection |  |
| WESTBRD | RangeNumber |  |
| NRTHARA | RangeFraction |  |
| SUTHARA | RangeDirection |  |
| EASTARA | TownshipDupCode |  |
| WESTARA | FirstDivisionType |  |
| NOTE | FirstDivisionDupCode |  |
| ORDRDAT | SecondDivisionNumber |  |
| MI\_PRINX | SecondDivisionSuffix |  |
| MODUSR | SecondDivisionType |  |
| INSERT\_DATE | SpecialSurveyNumber | CNTNO |
| UPDATE\_DATE | SpecialSurveySuffix |  |
| UPDATE\_DATE | SpecialSurveyType | DE |
|  | SpecialSurveyNotes |  |
|  | CreatedBy |  |
|  | ModifiedBy | MODUSR |
|  | ModifyDate | UPDATE\_DATE |
|  | PLSSID |  |
|  | ORDRNO | ORDRNO |
|  | MI\_PRINX | MI\_PRINX |
|  | PLANNAME |  |
|  | PLANNO |  |
|  | PLAN\_TYPE |  |
|  | B\_NO |  |
|  | REMARKS | NOTE |
|  | LIC\_NO | SRVNO |
|  | LIC\_STATUS | SRVDAT |
|  | RASTERNAME | BERAUNO |
|  | LEVEL\_STATUS |  |
|  | LUSE\_CODE |  |
|  | N\_STR\_LEVEL | STAG |
|  | S\_STR\_LEVEL |  |
|  | E\_STR\_LEVEL |  |
|  | W\_STR\_LEVEL |  |
|  | LTRNO | LTRNO |
|  | LETDAT |  |
|  | CNTNO | CNTNO |
|  | CNTDAT | CNTDAT |
|  | CNTSRC | CNTSRC |
|  | OWNNAME | OWNNAME |
|  | OWNID | OWNID |
|  | SRVNO |  |
|  | SRVDAT |  |
|  | BERAUNO |  |
|  | ADTRNO | ADTRNO |
|  | MNGRNO | MNGRNO |
|  | PARTASIZE | PARTASIZE |
|  | STAG |  |
|  | BLDTYP |  |
|  | PLNUSE |  |
|  | FLOORS |  |
|  | FLATS |  |
|  | BLDPER |  |
|  | LOCATION | LOCATION |
|  | GIS\_CODE |  |
|  | MACPALTY |  |
|  | REGON |  |
|  | AREA |  |
|  | STREET\_NAME |  |
|  | STREETNO |  |
|  | NRTHBRD | NRTHBRD |
|  | SUTHBRD | SUTHBRD |
|  | EASTBRD | EASTBRD |
|  | WESTBRD | WESTBRD |
|  | NRTHTXT |  |
|  | SUTHTXT |  |
|  | EASTTXT |  |
|  | WESTTXT |  |
|  | NRTHARA | NRTHARA |
|  | SUTHARA | SUTHARA |
|  | EASTARA | EASTARA |
|  | WESTARA | WESTARA |
|  | NTOIN |  |
|  | STOIN |  |
|  | ETOIN |  |
|  | WTOIN |  |
|  | NTOOUT |  |
|  | STOOUT |  |
|  | ETOOUT |  |
|  | WTOOUT |  |
|  | PARTNO |  |
|  | PLANDATE |  |
|  | ORDRDAT | ORDRDAT |
|  | P\_AREA |  |
|  | D\_AREA |  |
|  | D\_AREA2 |  |
|  | GOVERMENT |  |
|  | B\_NRTHTXT |  |
|  | B\_SUTHTXT |  |
|  | B\_EASTTXT |  |
|  | B\_WESTTXT |  |
|  | B\_NRTHARA |  |
|  | B\_SUTHARA |  |
|  | B\_EASTARA |  |
|  | B\_WESTARA |  |
|  | K\_ID |  |
|  | K\_STR\_NAME |  |
|  | K\_STR\_NO |  |
|  | STATUS |  |
|  | BERAUNAME |  |
|  | SUBJECT |  |
|  | EVIND |  |
|  | MUN\_NAME |  |
|  | DIST\_NAME |  |
|  | NEIGH\_NAME |  |
|  | UPLOAD\_DATE |  |
|  | OFF\_NOTE |  |
|  | P\_CHK |  |
|  | ZAIDAH\_OWNER\_TYPE |  |
|  | MIN\_OWNER\_NAME |  |
|  | TAKSIS\_NO |  |
|  | TAKSIS\_DATE |  |
|  | APPROVED\_NO |  |
|  | APPROVED\_DATE |  |
|  | EXPORTATION\_ID |  |

# Migration Data from Spool to LGIM:

* 1. After prepared for migration from Spool database ( Madinah.gdb) to new geodatabase model in "MmLocalGovernment.gdb" made some customized existing feature class, domains and relations or created a new feature class. For migration, used an easy and understanding very well program FME. For each feature type prepared a workspace for migrate to new geodatabase model. The parcels type features are migrated to Esri Parcel Fabric class typed different 8 parcel type. The detailed report will have prepared after finished the all migration data and integrates.

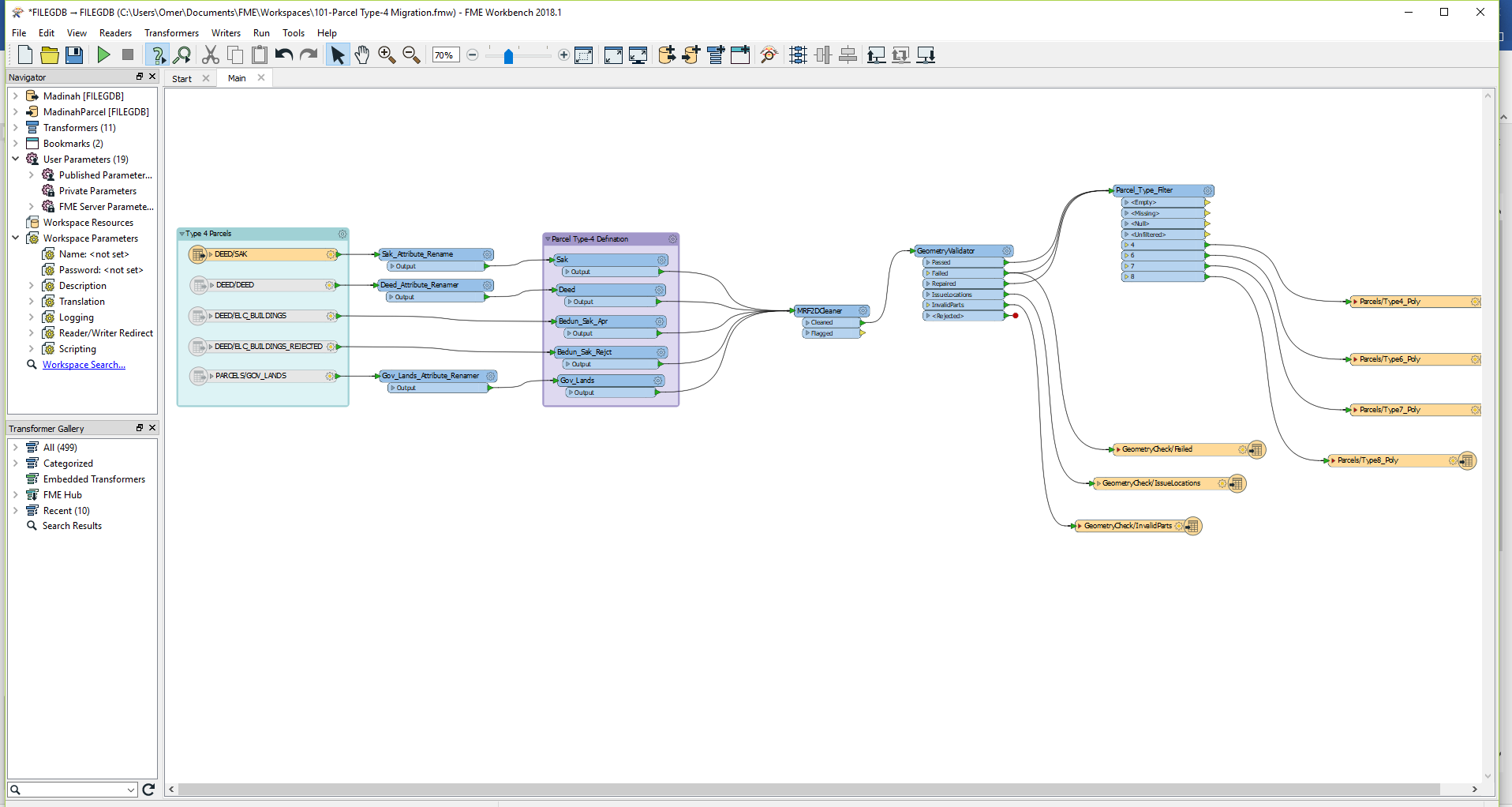


Figure 10 Migrate deed, sak, elc\_buıldıngs and gov lands parcels schema ın fme program

* 1. However, the FME program alone is not sufficient to transfer all the data to the new database model. Therefore, the use of Arcgis for the transfer process was mandatory. A series of operations were needed to transfer the parcel-type property classes. Process models have been created at Arcgis to accelerate and effectively use processes.

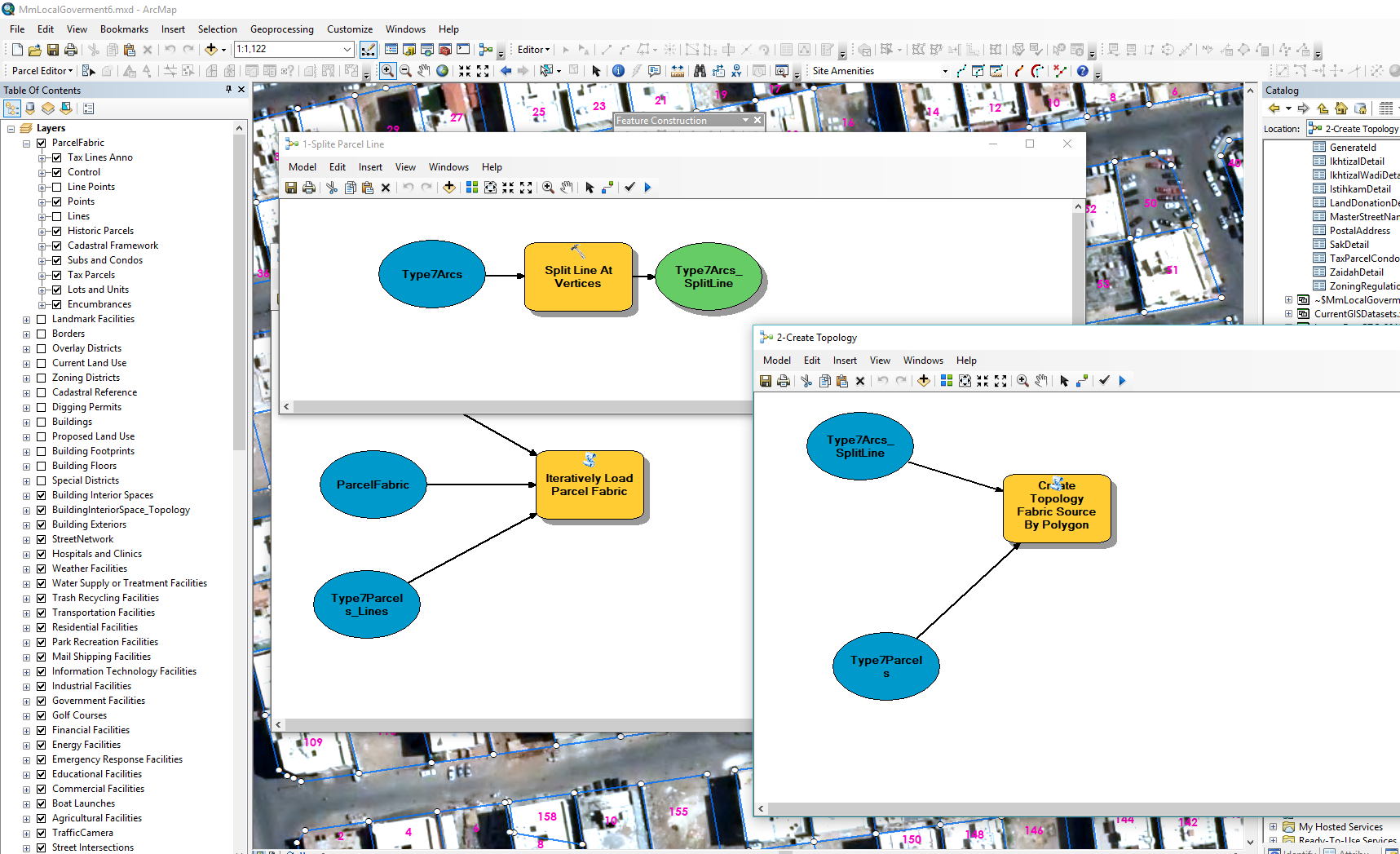


Figure 11 create for migration parcels to “parcel fabric” an arcgıs model

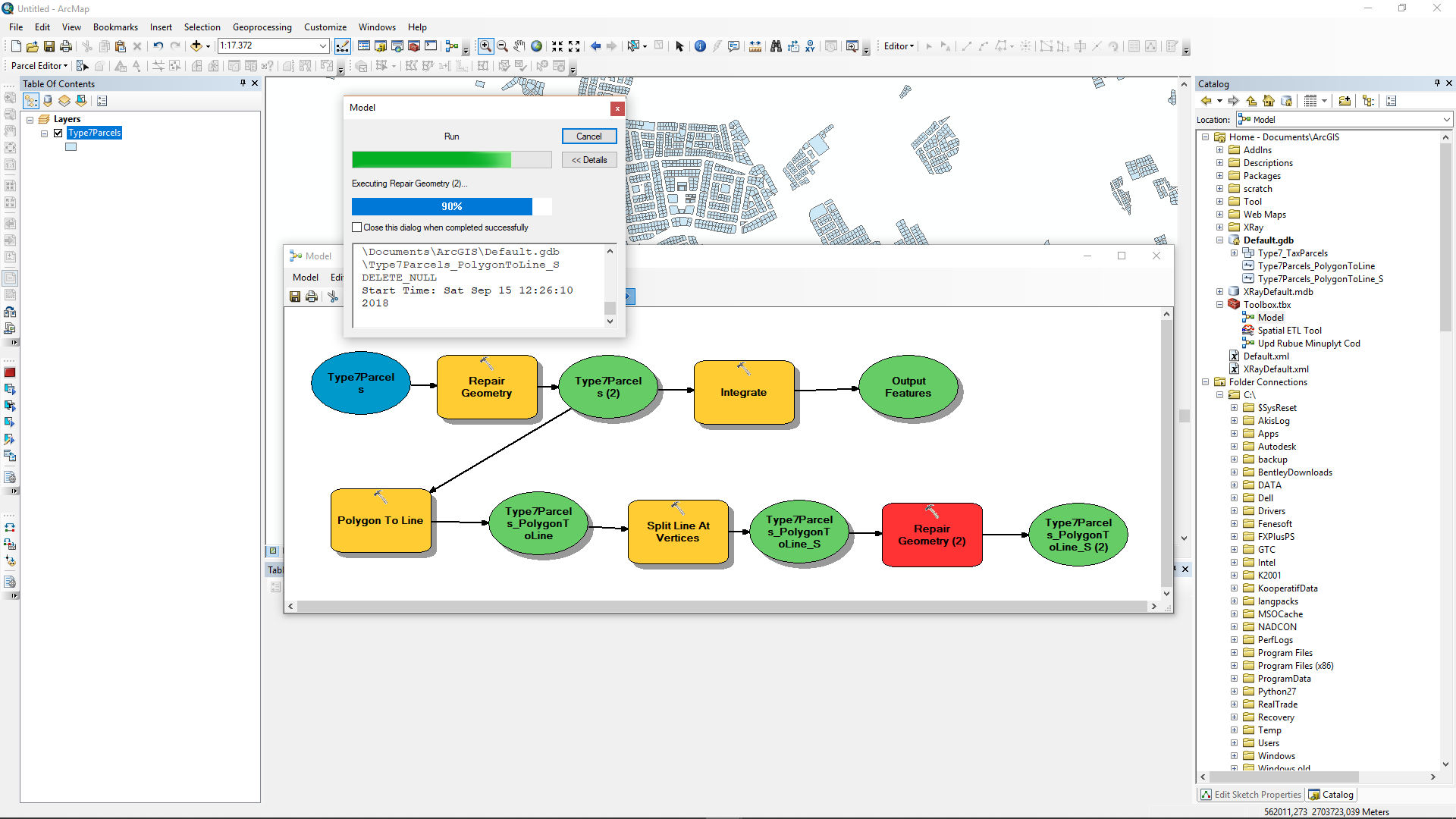


Figure 12 some process model in ArcGIS for migration

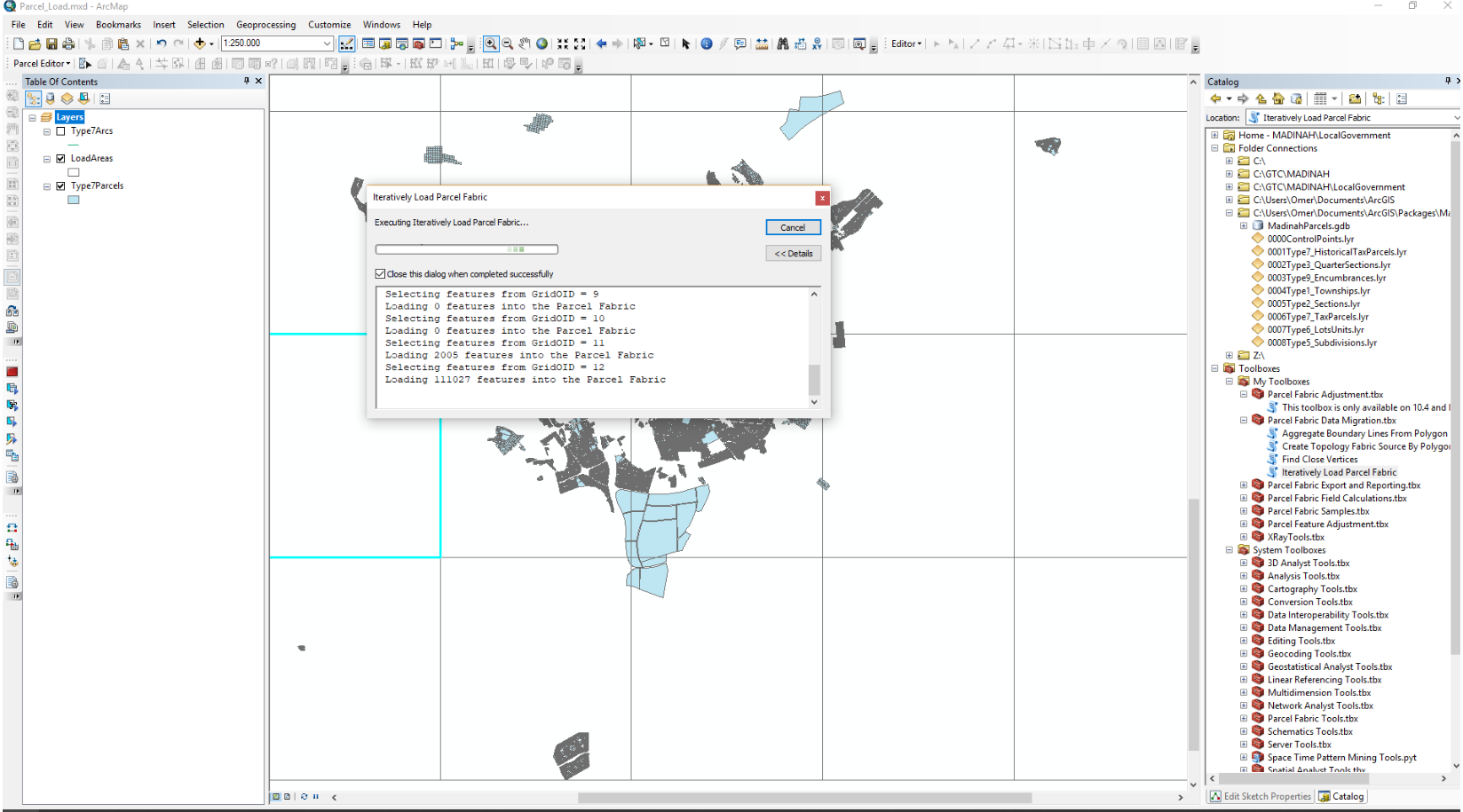


Figure 13 used the parcel fabric migration toolbox in ArcGIS

# Finding Some Topology problem and Fixed :

The existing GIS system of the municipality of Medina has been working for many years. The municipality has always had to be active and ready for service due to its needs. The data produced by different users in different departments are checked daily and the problems and errors that occur during data production are corrected. The fact that the same type of data, which is one of the indispensable elements of the CBS logic, should not be overlapped has been violated from time to time. This was due to the fact that the Municipality was processing more than one application, especially in SAK and DEED applications. Sometimes, due to user errors, the data has been duplicated and caused unnecessary space and pollution in the database. These errors were identified in the data transfer studies and information was given to the GIS department of the municipality of Medina. The GIS unit cleared these errors to ensure that the data was healthy.

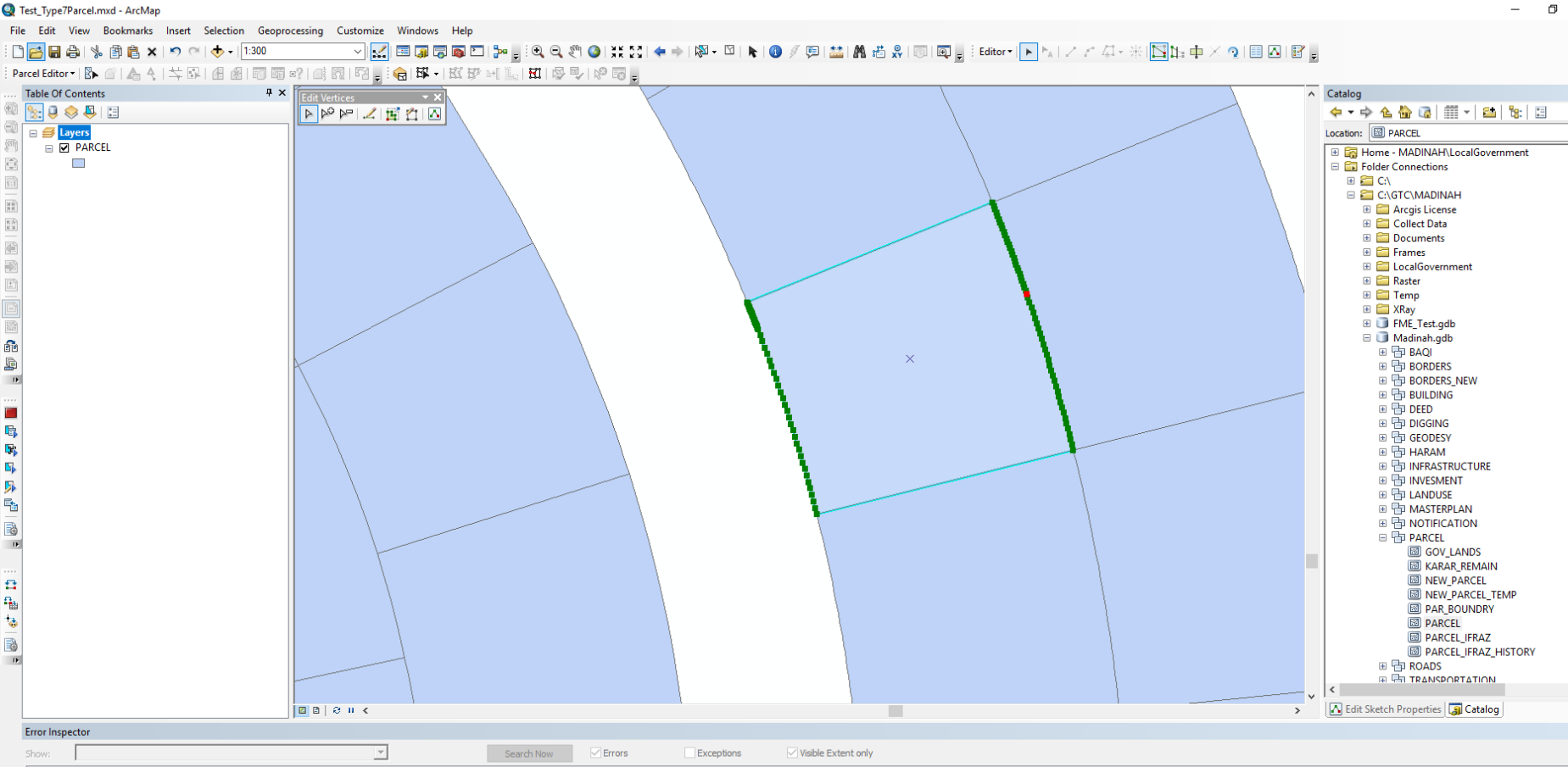


Figure 14 some example data for topology problem ( short geometry)

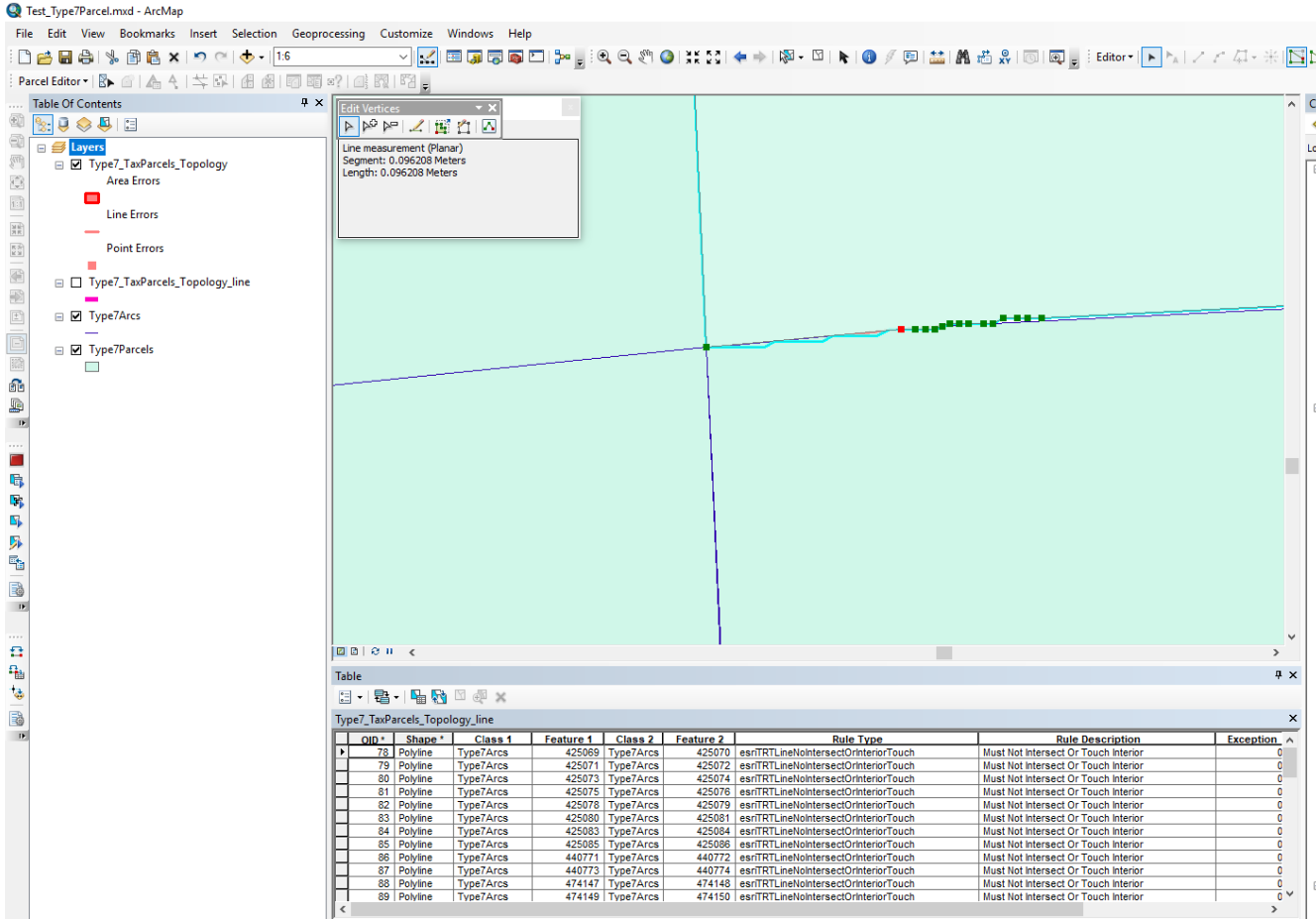


Figure 15 another topology problem before fixed

# Finally, Data Migration from Oracle database schema “Madgis” and “Madcap” to New Geodatabase in “MmLocalGovernmet”

As a result of approximately 3 months of study, 90% data were transferred to the new model as a result of analysis, research and analysis on MADGIS and MADCAP data in the Oracle 11g data base of the Medina Municipality GIS system. The remaining 10% is the infrastructure information. Since this data is not in the direct responsibility of the municipality, it is not included in the model since there are static data that need to be renewed in certain time periods. If these data are taken from the institutions and organizations that are taken from the institutions and organizations that are taken from them as an instantaneous service, it will be possible to ensure that the municipal departments in need of this data are considered as passive. it will be reliable.

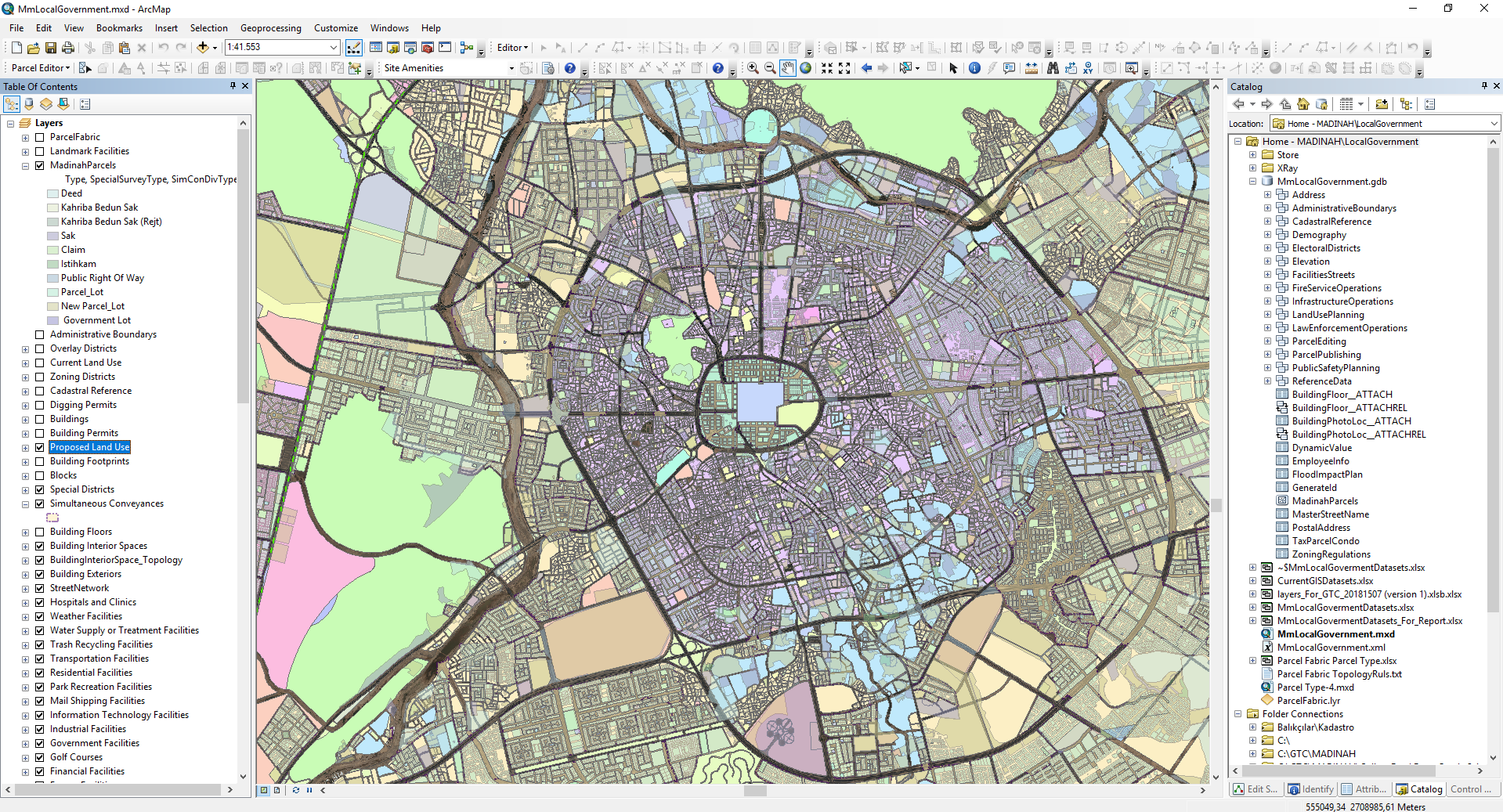


Figure 16 migrated all data show in ArcGIS

# References

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Crothers, Howard;ESRI. (2011, September 28). *What is the Local Government Information Model?* www.esri.com: https://www.esri.com/arcgis-blog/products/arcgis-solutions/water/what-is-the-local-government-information-model/

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