

# SymbolEditor: Creazione dinamica di un plugin per CAD generico

TULBURE ANGELO MAXIMILIAN

SESSIONE II

RELATORE: PROF. PAOLO CIACCIA

CORRELATORE: ING. MATTIA D'ARPA



# CAD

## Computer Aided Design

- riduzione dei costi di sviluppo dei prodotti.
- incremento della produttività.
- miglioramento della qualità dei prodotti.
- visualizzazione accurata del prodotto finale e dei componenti all'interno di un sistema.
- massima precisione che contribuisce a ridurre al minimo gli errori.
- permette di documentare in modo più semplice e affidabile qualsiasi progetto.
- facile riutilizzo dei dati di progettazione.



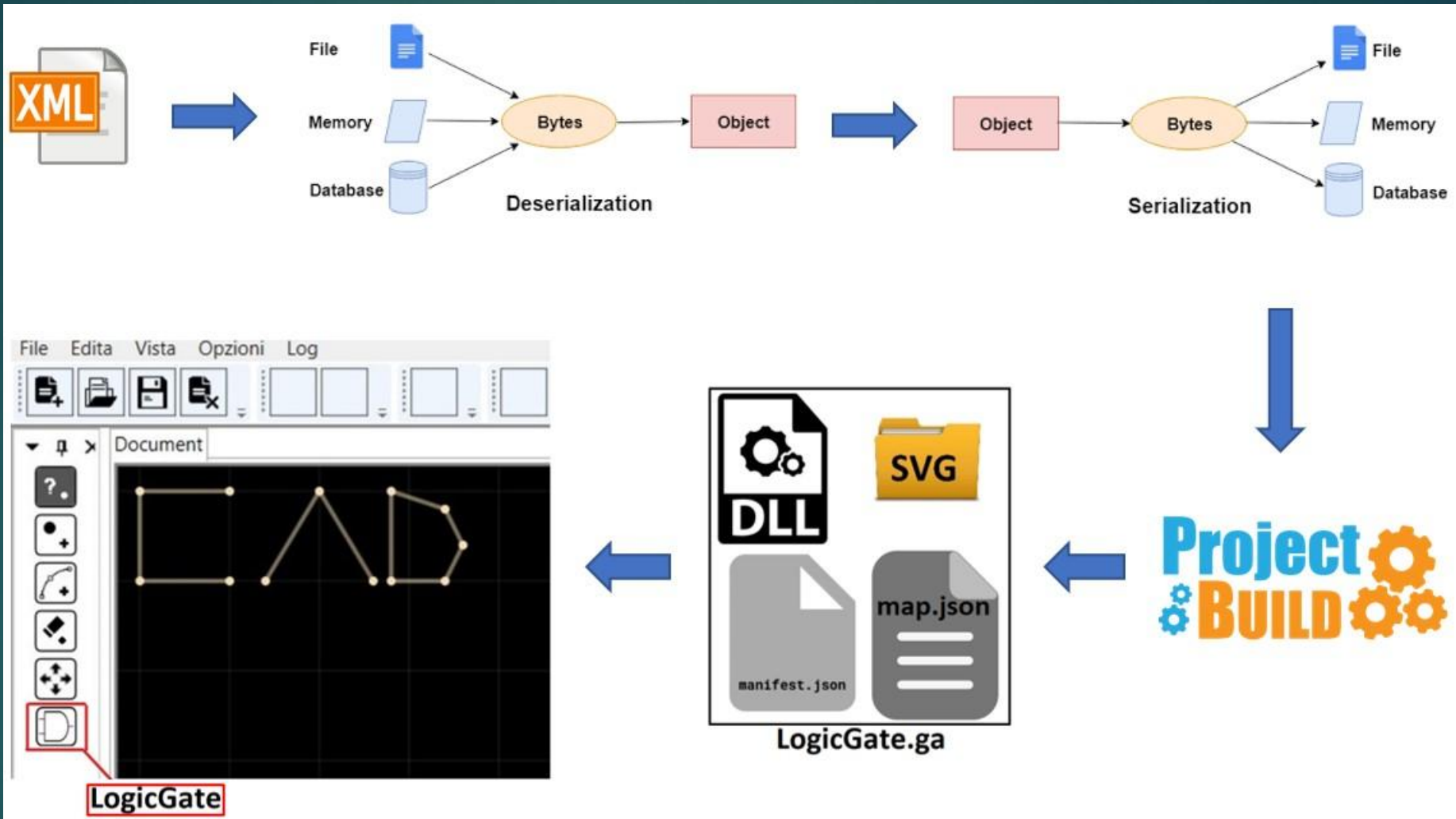


SymbolEditor: Sviluppo di un plugin con interfaccia grafica per CAD 2D che consenta la creazione e l'inserimento di nuovi oggetti dentro il CAD stesso

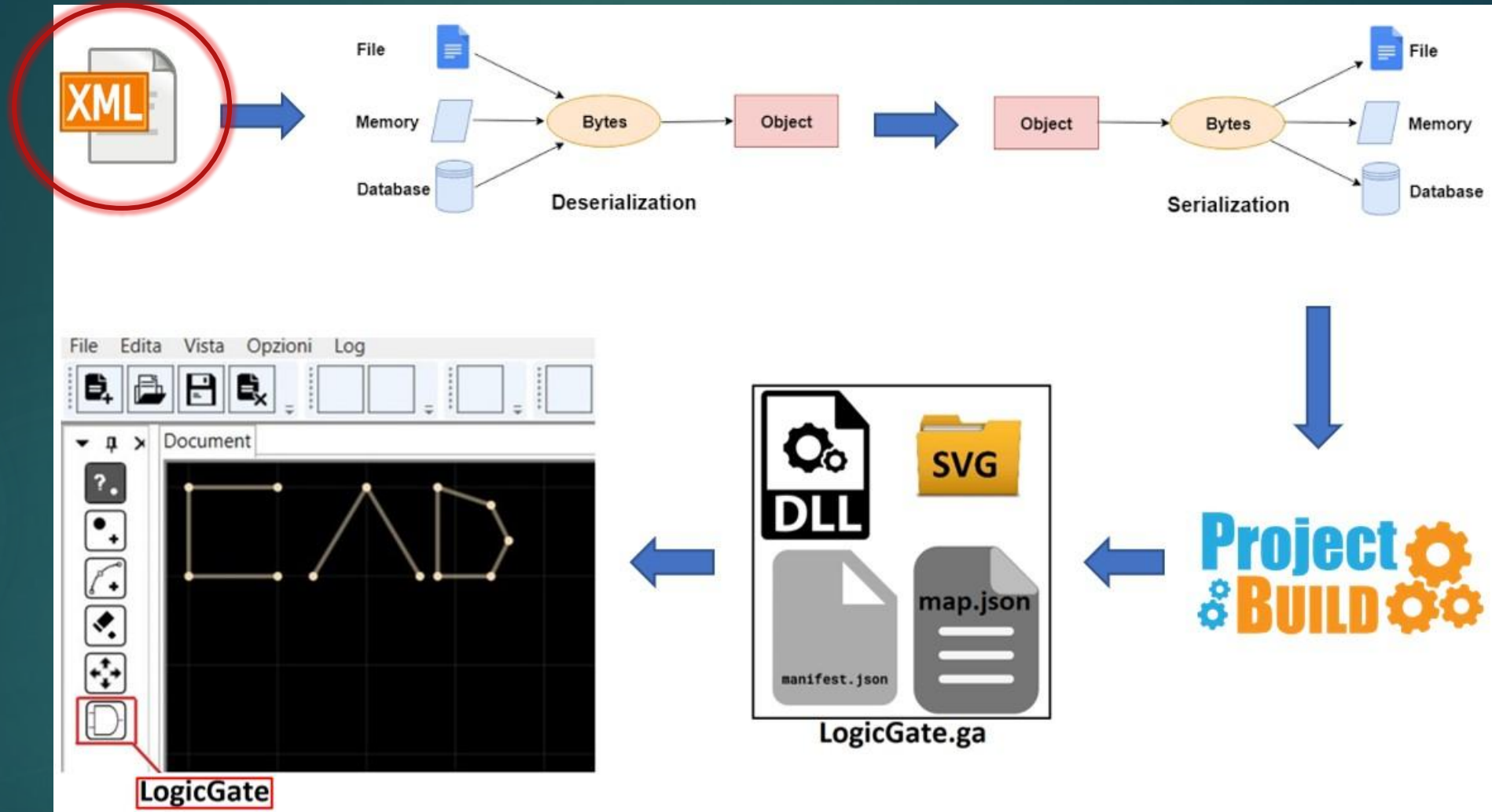
*Progetto sviluppato presso MeXage S.r.l.*



# Progetto SymbolEditor



# Template XML



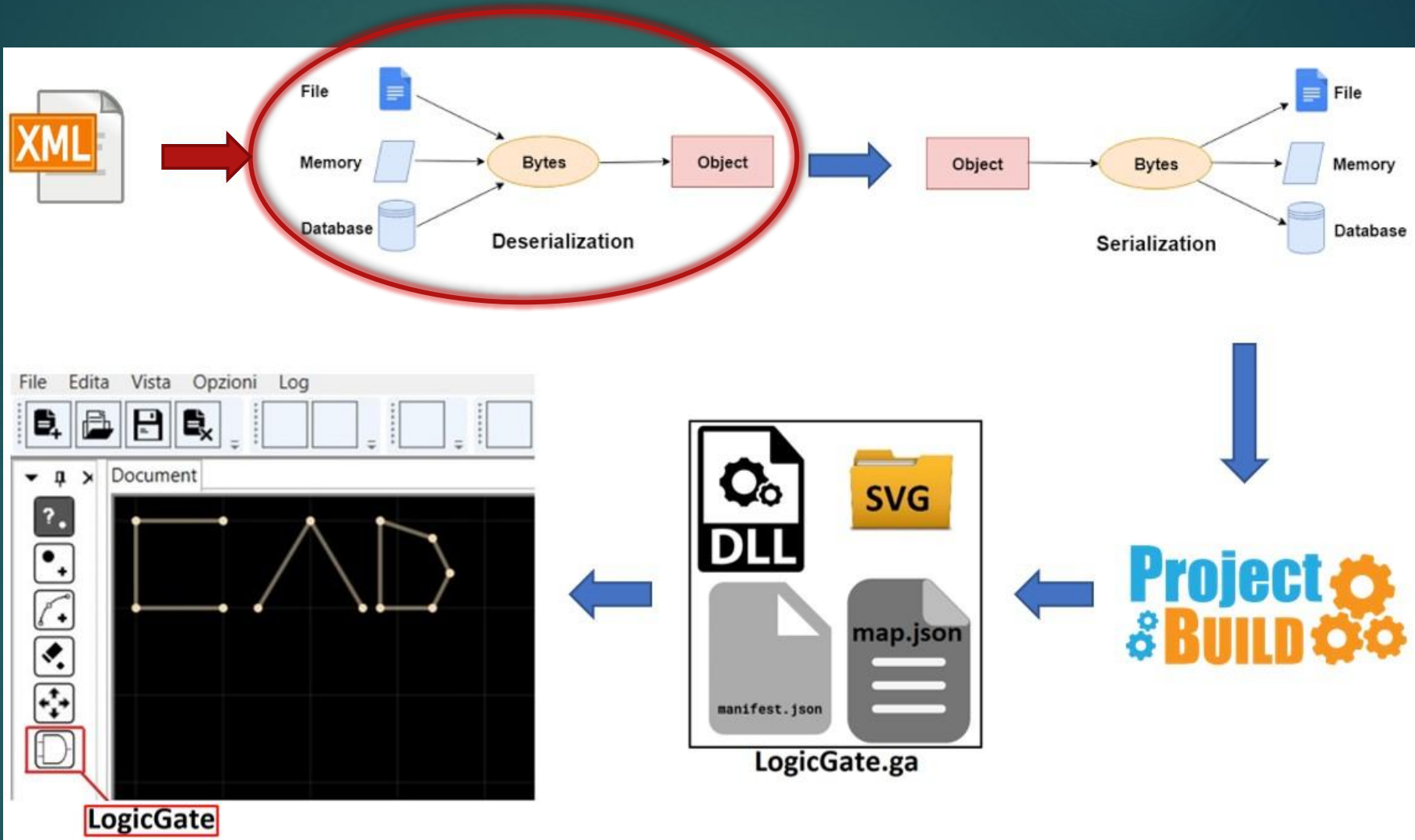
# Template file XML

## PERCHÉ XML?

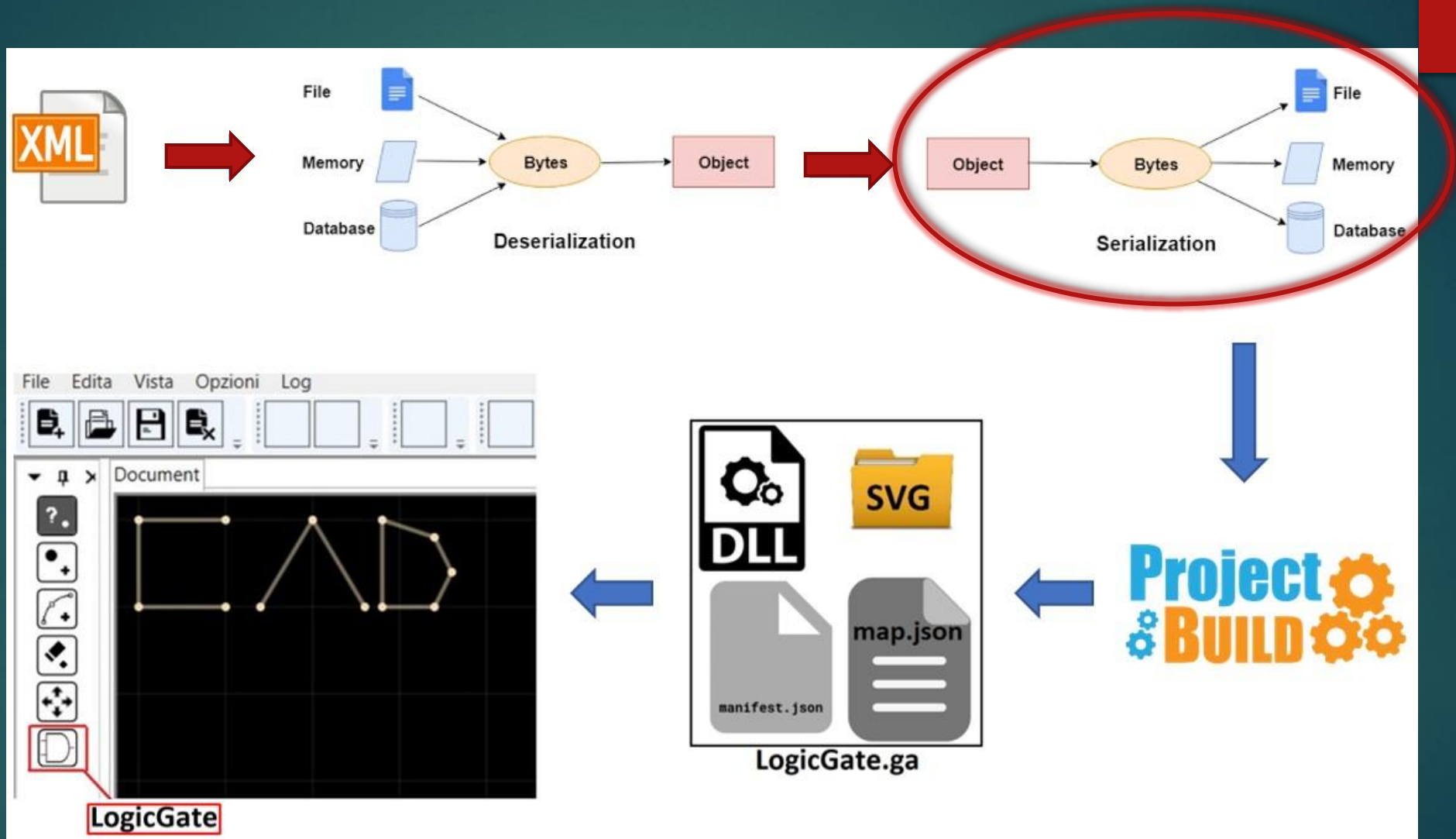
- INDIPENDENTE DALLA PIATTAFORMA
- SEMPLICITÀ DI LETTURA
- MINORE SFORZO DI MANUTENZIONE
- ALTO LIVELLO DI ASTRAZIONE
- OTTIMO RIUTILIZZO DELLA PROGRAMMAZIONE ESISTENTE E DELLA TECNOLOGIA

```
<?xml version="1.0" encoding="UTF-8"?>
<plugin Name="LogicGate" Description="PluginDescription" xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <PackageSource>
    <SourceItem Folder="programmi_pc\Paket\packages"/>
    <SourceItem Folder="DLL_ToUse\myLogicNuget"/>
  </PackageSource>
  <PackageMap>
    <PackageItem Name="MexageCoreLib" Nuget="Microsoft.Azure.DocumentDB.Core" Version="1.0.0"/>
    <PackageItem Name="MexageExtensionLib" Nuget="Newtonsoft.Json.Bson" Version="1.0.2"/>
  </PackageMap>
  <UsingMap>
    <MapItem ClassName="LocDisplayName" Using="MexageCoreLib.attribute" Package="MexageCoreLib"/>
    <MapItem ClassName="LocDescription" Using="MexageCommonInterfaces.project" Package="MexageStandardLib"/>
    <MapItem ClassName="LocDescription2" Using="MexageExtensionLib.natives" Package="MexageExtensionLib"/>
    <MapItem ClassName="LocDescription3" Using="MexageCoreLib.attribute" Package="MexageCoreLib"/>
  </UsingMap>
  <Type Name="And" Visibility="public" extend="LogicGate" Description="ClassDescriptionAnd">
    <Field Name="PropertyNameAnd" Type="FieldTypeAnd" Description="FieldDescriptionAnd">
      <Attribute Name="A_Field_Name1" Parameters="ParamField1, ParamField2, ....., ParamFieldN"/>
      <Attribute Name="A_Field_Name2" Parameters="ParamField1, ParamField2, ....., ParamFieldN"/>
    </Field>
    <Property Name="NInput" Type="int" Description="Number of signals in input">
      <Attribute Name="LocDisplayName" Parameters="loc_LogicGate_NInput"/>
    </Property>
    <Attribute Name="A_Class_Name1" Parameters="Param1, Param2, ....., ParamN"/>
    <MapView>
      <MapViewItem Value="logicgate.svg" Description="Logic gate con due input">
        <ViewProperty Name="NumberOfInput" Value="2" />
        <ViewProperty Name="NumberOfOutput" Value="1" />
      </MapViewItem>
      <MapViewItem Value="and3.svg" Description="AND con tre input">
        <ViewProperty Name="NumberOfInput" Value="3" />
        <ViewProperty Name="NumberOfOutput" Value="1" />
      </MapViewItem>
    </MapView>
  </Type>
  <Enum Name="EDirection" Description="Direction of objects" Values="Undef, Left, Right, Top, Bottom"/>
  <svg>
    <svgItem Name="and2.svg" Path="svgAnd\and2.svg"/>
    <svgItem Name="and3.svg" Path="svg2\and3.svg"/>
  </svg>
</plugin>
```

# Deserializzazione file XML

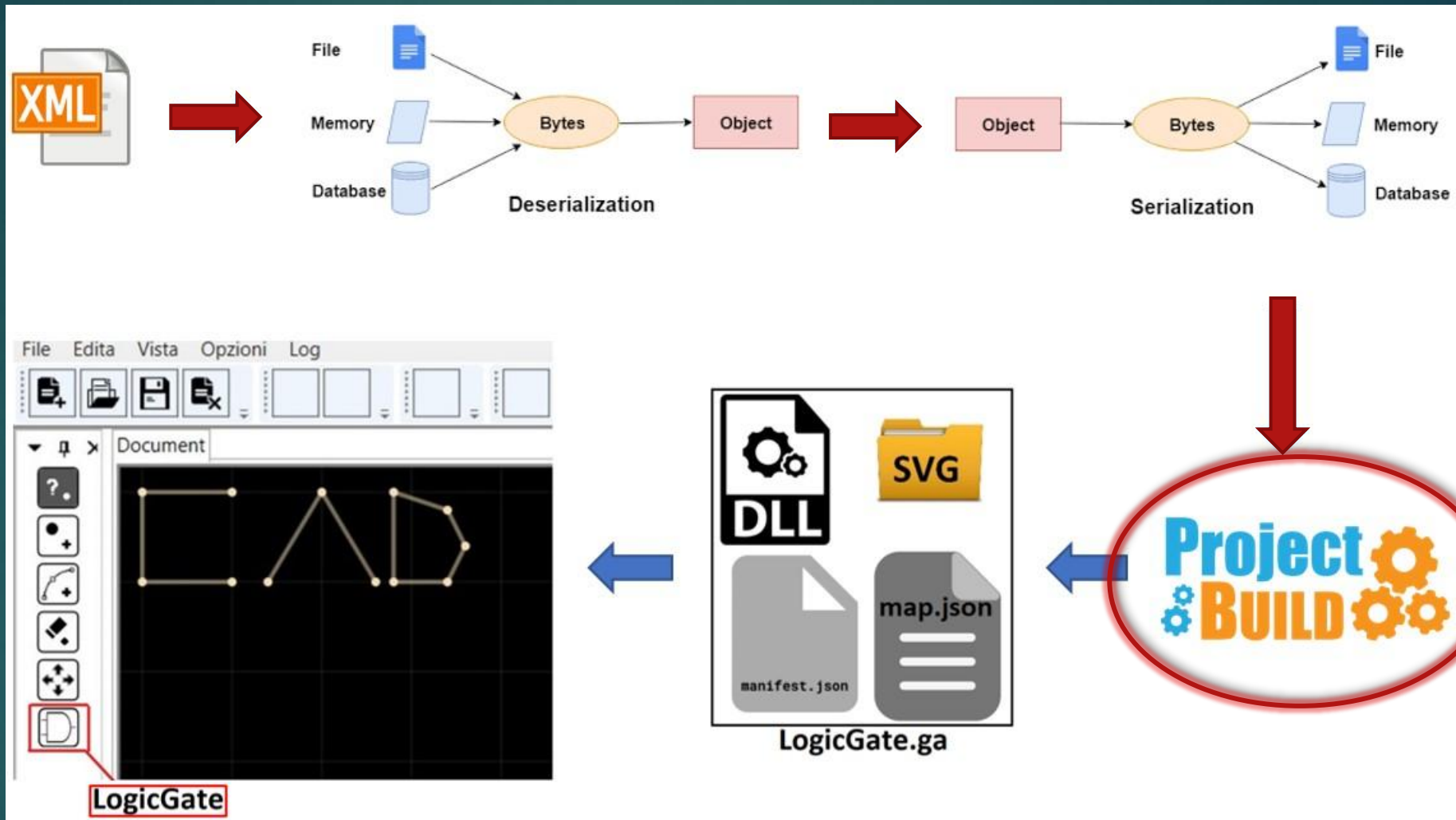


# Serializzazione in classe

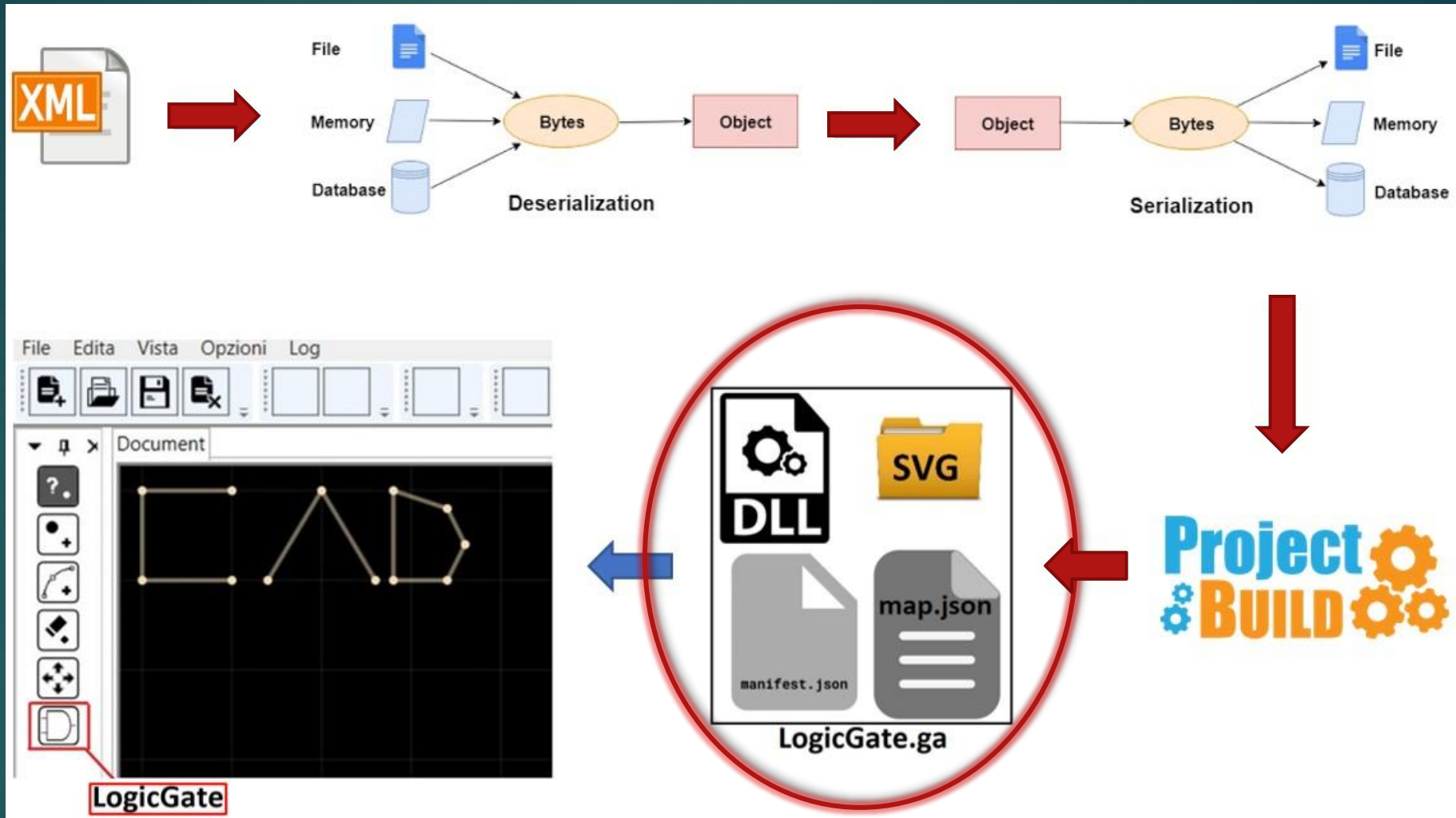




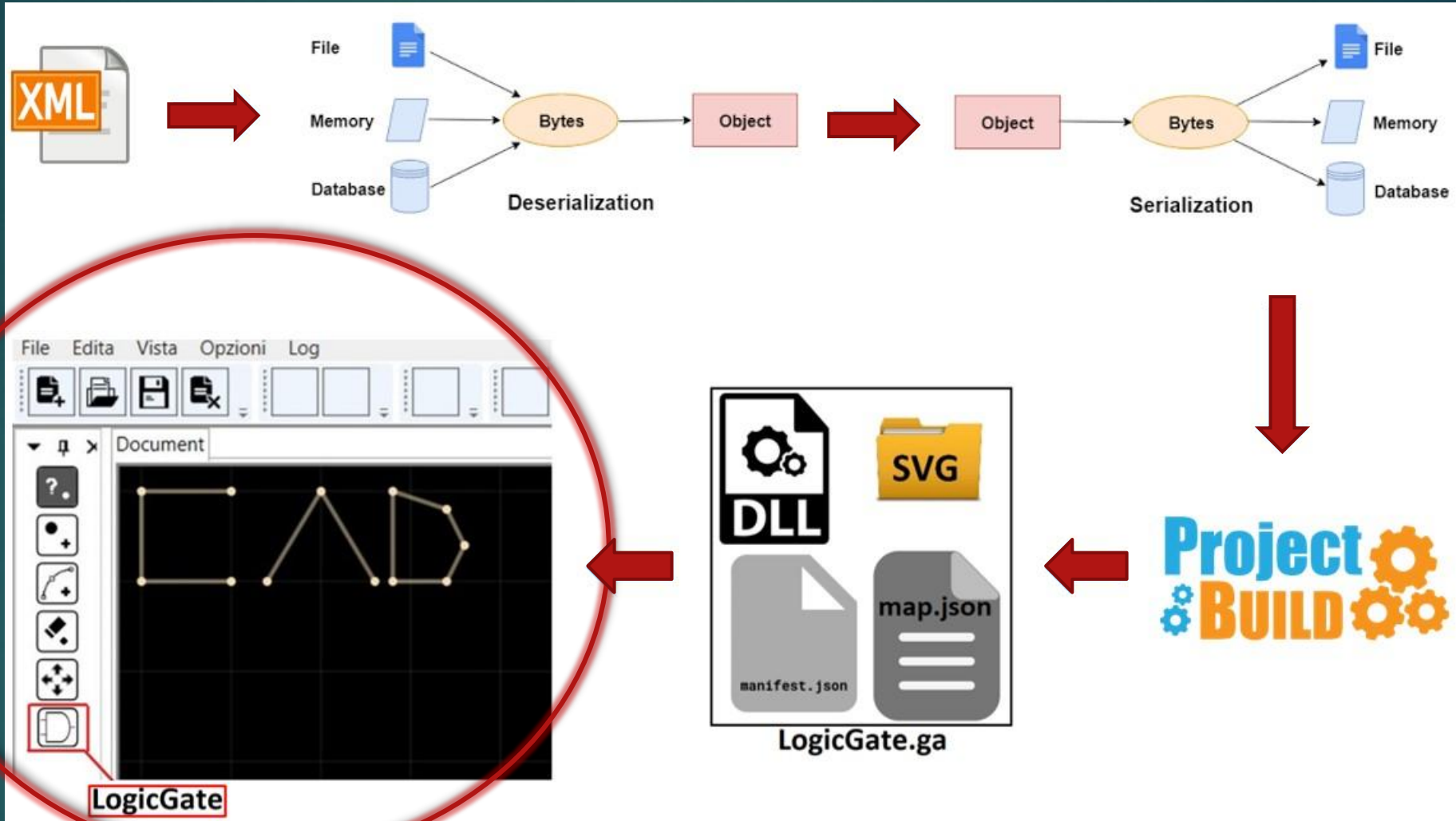
# Project Build



# Zip file GA



# Nuovo oggetto in CADdy



# GUI SymbolEditor

Tecnologie utilizzate:

- WPF (Windows Presentation Foundation)
- XAML (eXtensible Application Markup Language)

The screenshot shows the 'GUI Symbol Editor' application window. At the top, there's a title bar with the application name and standard window controls. Below the title bar is a toolbar with icons for various functions like zooming and saving. A secondary bar contains 'Import' and 'Chiudi' (Close) buttons. The main area has four tabs: 'General', 'Input', 'Type', and 'View'. The 'General' tab is active, showing a form with fields for 'Name', 'Version', and 'Description'. The 'Name' and 'Version' fields are short text boxes, while the 'Description' field is a larger text area. At the bottom right, there's a 'Save data:' label and a 'Select File' button. A large, empty white rectangular area is on the left side of the 'General' tab, possibly for a preview or additional input.



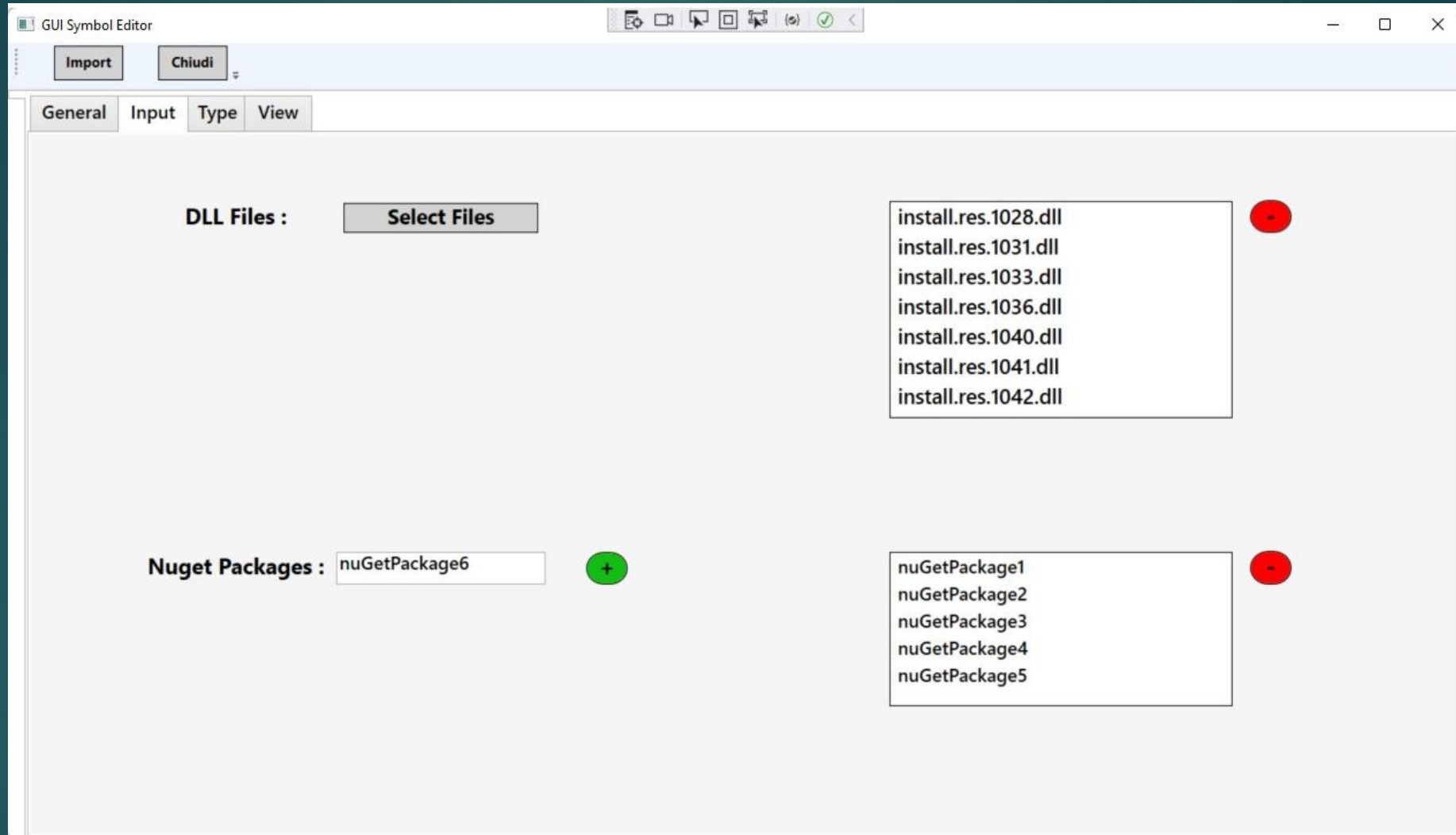
# Sezione General

The screenshot shows the 'GUI Symbol Editor' window. At the top, there is a toolbar with icons for various functions. Below the toolbar, there are two buttons: 'Import' (highlighted with a red box) and 'Chiudi'. The main area has four tabs: 'General', 'Input', 'Type', and 'View'. The 'General' tab is active, showing a list of symbols on the left with 'LogicGate' selected. The main configuration area contains the following fields:

- Name :** LogicGate
- Version :** 1.0.0
- Description :** PluginDescriptionVersion1

At the bottom right, there is a 'Save data:' label and a 'Select File' button (highlighted with a red box).

# Sezione Input



# Sezione Type

The screenshot shows the 'GUI Symbol Editor' window with the 'Type' tab selected. On the left, a list of logic gates is shown, with 'And' selected. The main area contains configuration fields: 'Name' is set to 'And', and 'Extend' is set to 'LogicGate'. Below these are two buttons: '+ Add' (highlighted with a red box) and '- Remove'. At the bottom, a text area lists seven properties: 'PropertyNameAND1 : string', 'PropertyNameAND2 : string', 'PropertyNameAND3 : string', 'PropertyNameAND4 : string', 'PropertyNameAND5 : string', 'PropertyNameAND6 : string', and 'PropertyNameAND7 : string'.

GUI Symbol Editor

Import Chiudi

General Input Type View

LogicGate

And

Or

Not

Xor

Nand

Nor

Xnor

Name : And

Extend : LogicGate

+ Add - Remove

PropertyNameAND1 : string  
PropertyNameAND2 : string  
PropertyNameAND3 : string  
PropertyNameAND4 : string  
PropertyNameAND5 : string  
PropertyNameAND6 : string  
PropertyNameAND7 : string

# Sezione Type

The screenshot shows the 'GUI Symbol Editor' window with the 'Type' tab selected. On the left, a list of logic gates includes 'LogicGate', 'And', 'Or', 'Not', 'Xor', 'Nand', 'Nor', and 'Xnor'. The 'And' gate is currently selected. The main configuration area contains the following elements:

- Name :** A text field containing the value 'And'.
- Extend :** A dropdown menu with 'LogicGate' selected.
- Buttons:** A green '+ Add' button and a red '- Remove' button are positioned above a large text area.
- Text Area:** A list of property names followed by their types: 'PropertyNameAND1 : string', 'PropertyNameAND2 : string', 'PropertyNameAND3 : string', 'PropertyNameAND4 : string', 'PropertyNameAND5 : string', 'PropertyNameAND6 : string', and 'PropertyNameAND7 : string'.
- Form Fields:** Three text input fields are labeled 'Property Name :', 'Property Type :', and 'Property Description :'. The 'Property Name' field is currently empty.
- + Add New:** A green button with a red border located below the 'Property Description' field.



# Sezione View

GUI Symbol Editor

Import Chiudi

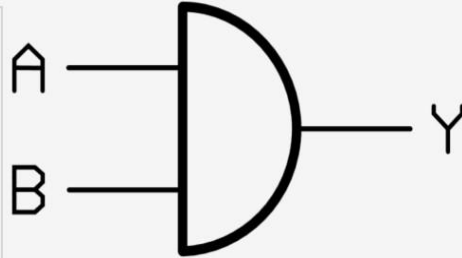
General Input Type View

LogicGate

- And
- Or
- Not
- Xor
- Nand
- Nor
- Xnor

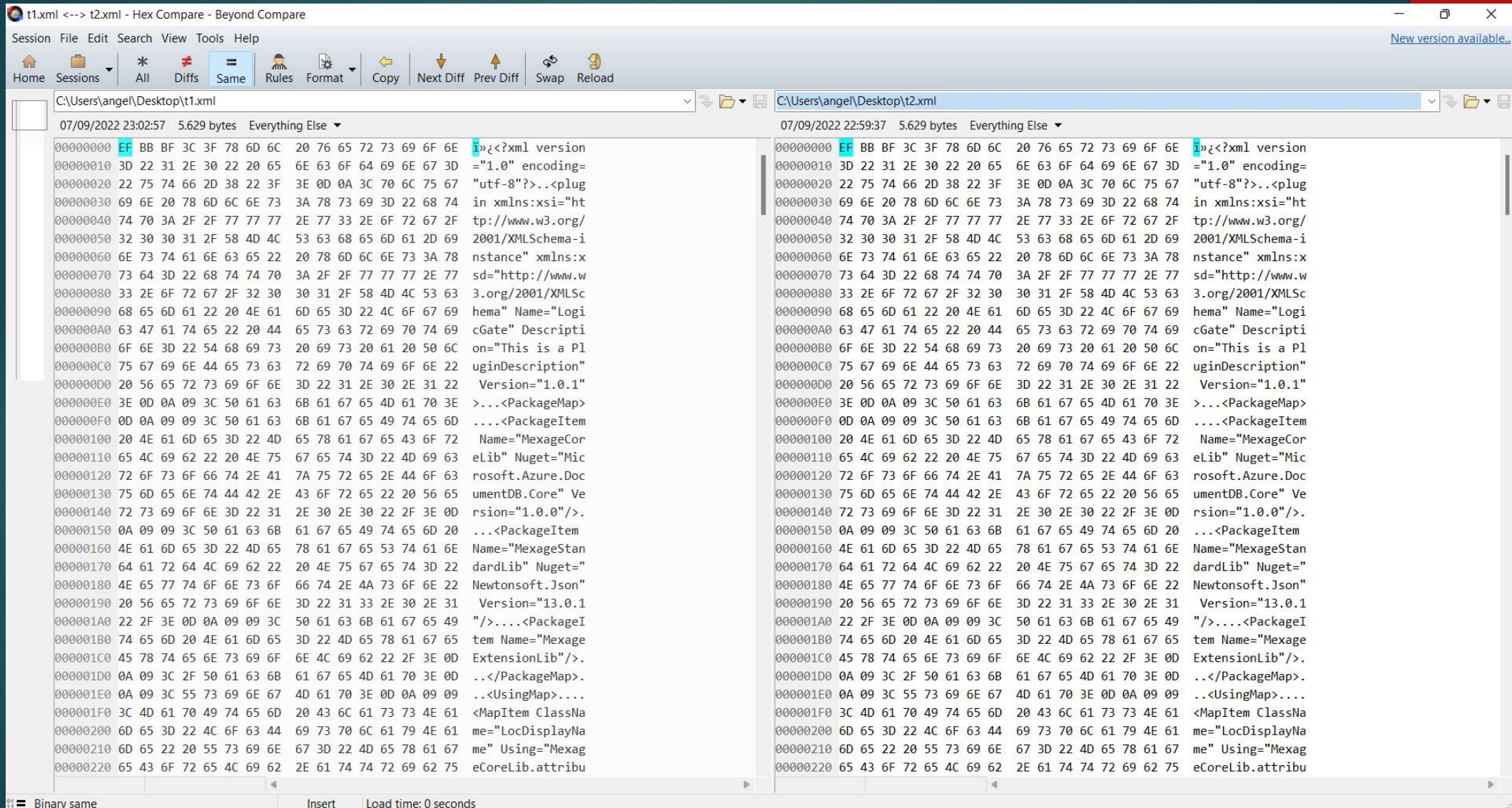
**SVG :**

```
sodipodi:nodetypes="cc" />
<path
  style="fill:none;fill-rule:evenodd;stroke:#000000;stroke-width:10;stroke-
linecap:butt;stroke-linejoin:round;stroke-opacity:1;stroke-miterlimit:4;stroke-
dashed:none"
  d="M 260.31542,21.350828 L 260.31542,261.97574 C 322.72437,260.30705
380.46099,211.2476 380.79473,141.16268 C 380.82603,78.419999 328.39791,21.684565
260.31542,21.350828 z "
  id="path3208"
  sodipodi:nodetypes="cccc" />
<path
  style="fill:none;fill-rule:evenodd;stroke:#000000;stroke-width:5;stroke-
linecap:round;stroke-linejoin:miter;stroke-opacity:1;stroke-miterlimit:4;stroke-
dashed:none"
  d="M 139.83611,81.423634 L 258.64673,81.423634"
  id="path3210"
  sodipodi:nodetypes="cc" />
<path
  style="fill:none;fill-rule:evenodd;stroke:#000000;stroke-width:5;stroke-
linecap:round;stroke-linejoin:miter;stroke-opacity:1;stroke-miterlimit:4;stroke-
dashed:none"
  d="M 140.50358,201.56921 L 257.97926,201.56921"
  id="path3212"
  sodipodi:nodetypes="cc" />
<path
  style="fill:none;fill-rule:evenodd;stroke:#000000;stroke-width:5;stroke-
linecap:round;stroke-linejoin:miter;stroke-opacity:1;stroke-miterlimit:4;stroke-
dashed:none"
  d="M 381.12847,141.49642 L 500.60657,141.49642"
  id="path3214"
  sodipodi:nodetypes="cc" />
</svg>
```



PropertyNameAND : string  
PropertyNameAND1 : string  
PropertyNameAND2 : string  
PropertyNameAND3 : string  
PropertyNameAND4 : string  
PropertyNameAND : string  
PropertyNameAND5 : string  
PropertyNameAND6 : string  
PropertyNameAND7 : string

# Testing



# Conclusioni

- ▶ Attenta fase di sviluppo degli algoritmi
- ▶ Profonda comprensione di 'CADdy'
- ▶ Genericità del plugin da adattare a software diversi



## Possibili sviluppi futuri?

- ▶ Sviluppo di un'applicazione mobile
- ▶ Perfezionamento del software per renderlo ancora più generico



**Grazie per l'attenzione!**