



# WEB ENABLING SIMCORP DIMENSION

DYALOG '19, ELSINORE

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# AGENDA

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- Why WEB/Cloud?

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- Why WEB/Cloud?
- The solution #1

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- Why WEB/Cloud?
- The solution #1
- The solution #2

# AGENDA

- Why WEB/Cloud?
- The solution #1
- The solution #2
- Model driven UI



# WHY WEB/CLOUD



# KEY DRIVERS FOR CLOUD ADOPTION

## COST SAVINGS

Capital expenses converted to operating expenses



## REDUCED RISK

Hedge risk by transferring data to the cloud



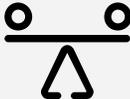
## SCALABILITY

Scale-up or down on-demand, as configured or scheduled



## BUSINESS CONTINUITY

Fault-tolerant approach to continuous delivery



## TIME TO MARKET

Shortened considerably, including time to provision/deploy



## COLLABORATION

Increased synergies for Business, IT & Operations



# AZURE SERVICES

## Compute

 Virtual Machines	 Virtual Machine Scale Sets
 Azure Container Service	 Azure Container Registry
 Functions	 Batch
 Service Fabric	 Cloud Services

## Networking

 Virtual Network	 Load Balancer
 Application Gateway	 VPN Gateway
 Azure DNS	 Traffic Manager
 ExpressRoute	 Network Watcher

## Storage

 Storage: Blobs, Tables, Queues, Files, Disks	 Data Lake Store
 StorSimple	 Azure Backup
 Site Recovery	

## Monitoring & Management

 Azure Portal	 Azure Resource Manager	 Azure Advisor	 Azure Monitor	 Log Analytics	 Automation	 Scheduler
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## Web & Mobile

 Web Apps	 Mobile Apps
 Logic Apps	 API Apps
 Content Delivery Network	 Media Services
 Search	

## Databases

 SQL Database	 SQL Data Warehouse
 SQL Server Stretch Database	 DocumentDB
 Redis Cache	 Data Factory

## Intelligence & Analytics

 HDInsight	 Machine Learning
 Cognitive Services	 Azure Bot Service*
 Data Lake Analytics	 Power BI Embedded
 Azure Analysis Services	

## Internet of Things & Enterprise Integration

 Azure IoT Hub	 Event Hubs
 Stream Analytics	 Notification Hubs
 BizTalk Services	 Service Bus
 Data Catalog	

## Security + Identity

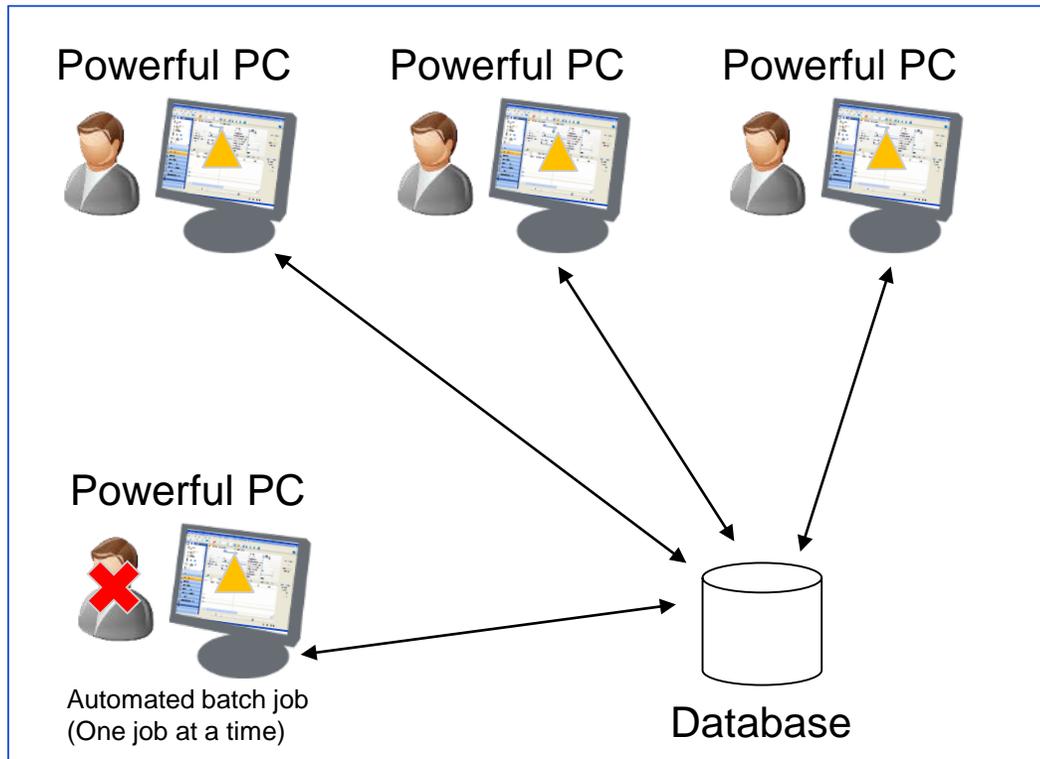
 Security Center	 Key Vault
 Azure Active Directory	 B2C
 Domain Services	 Multi-Factor Authentication

## Developer Services

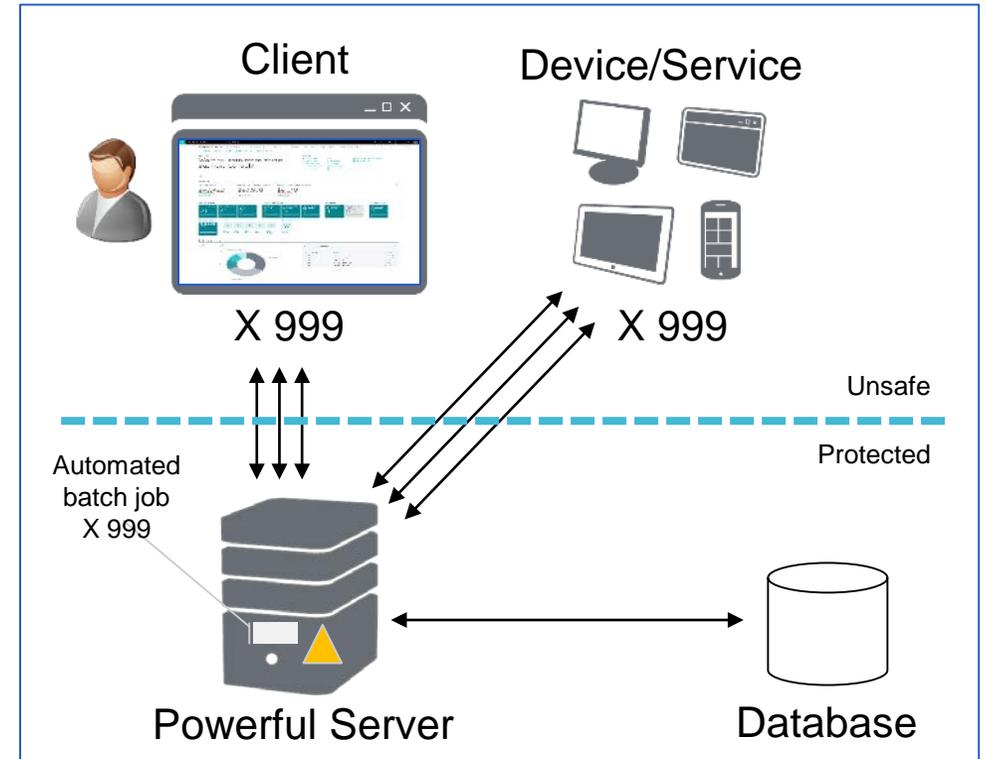
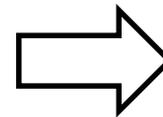
 Visual Studio Team Services	 Azure DevTest Labs
 VS Application Insights	 API Management
 HockeyApp	 Developer Tools
 Service Profiler*	

# TRANSFORMING FROM 2-TIER TO 3-TIER

Server/Service transformation    ▲ = Business Logic runs here



Typical 2-tier deployment.



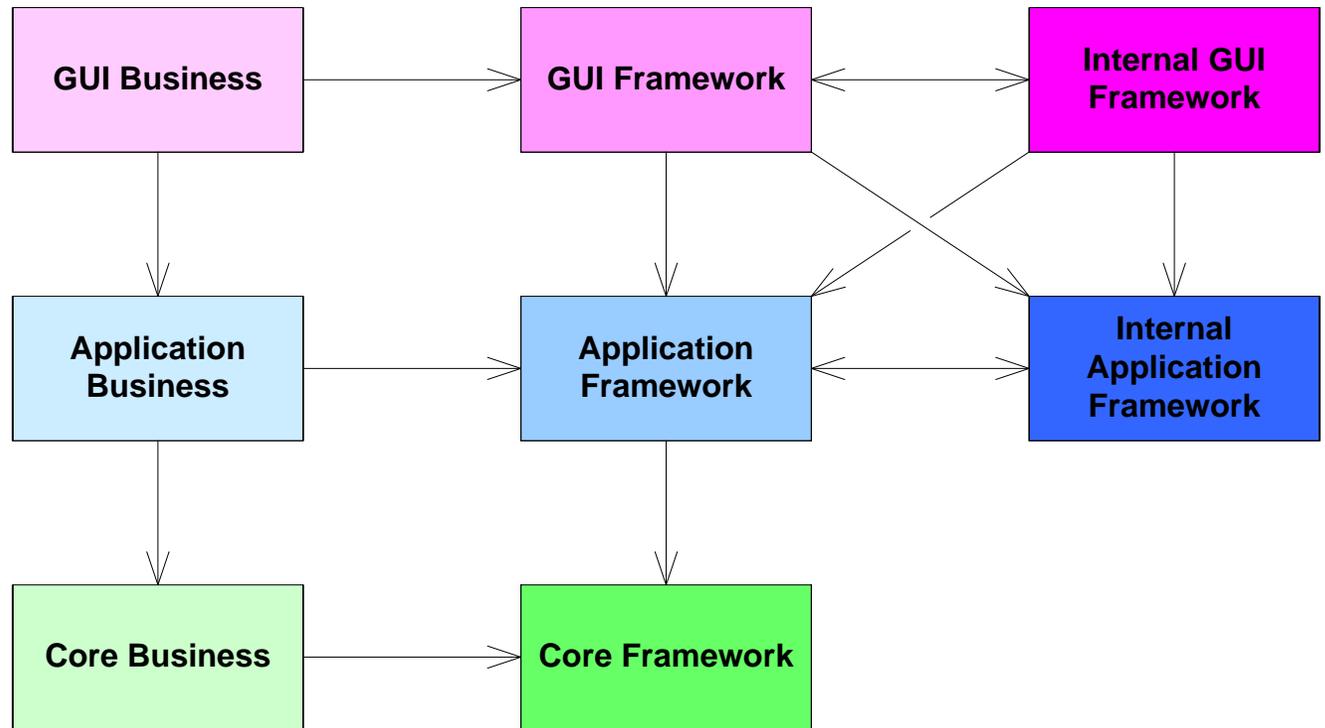
Typical 3-tier solution



# THE SOLUTION #1

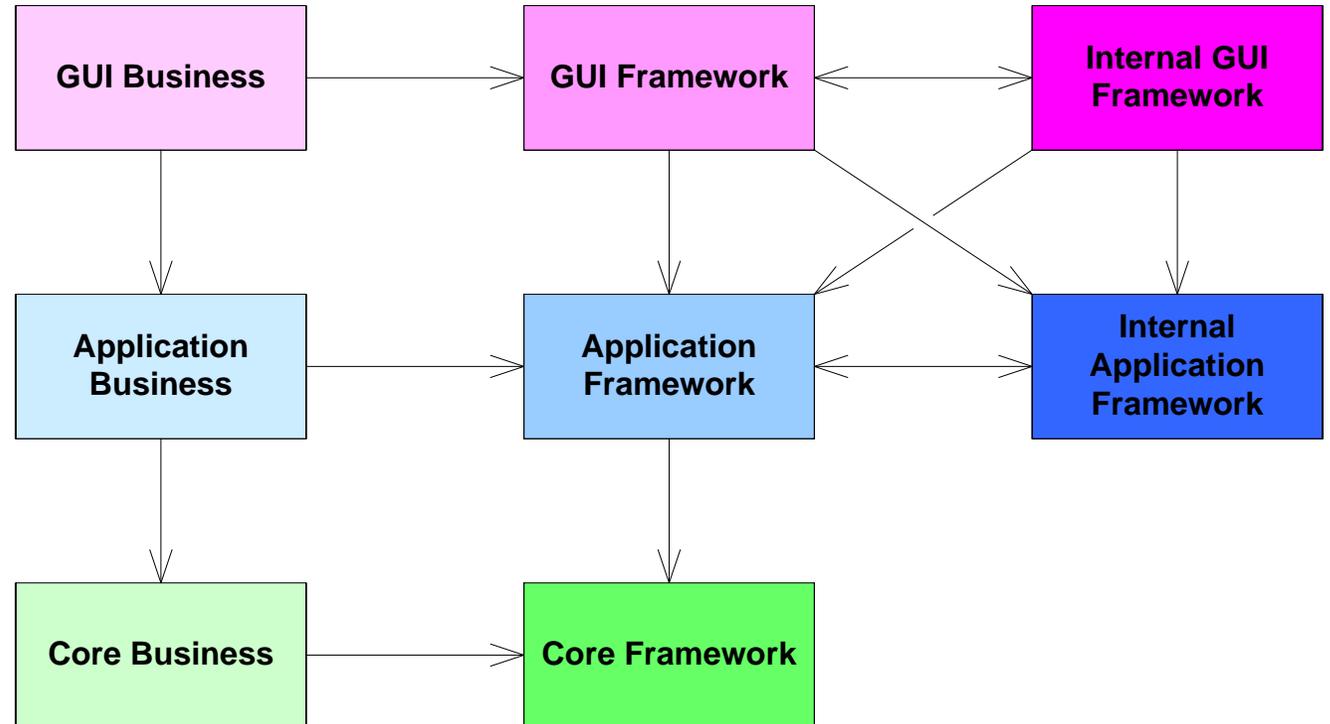
# LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

- APL functions nicely ordered in modules
- Enforced rules on how modules can call between each other



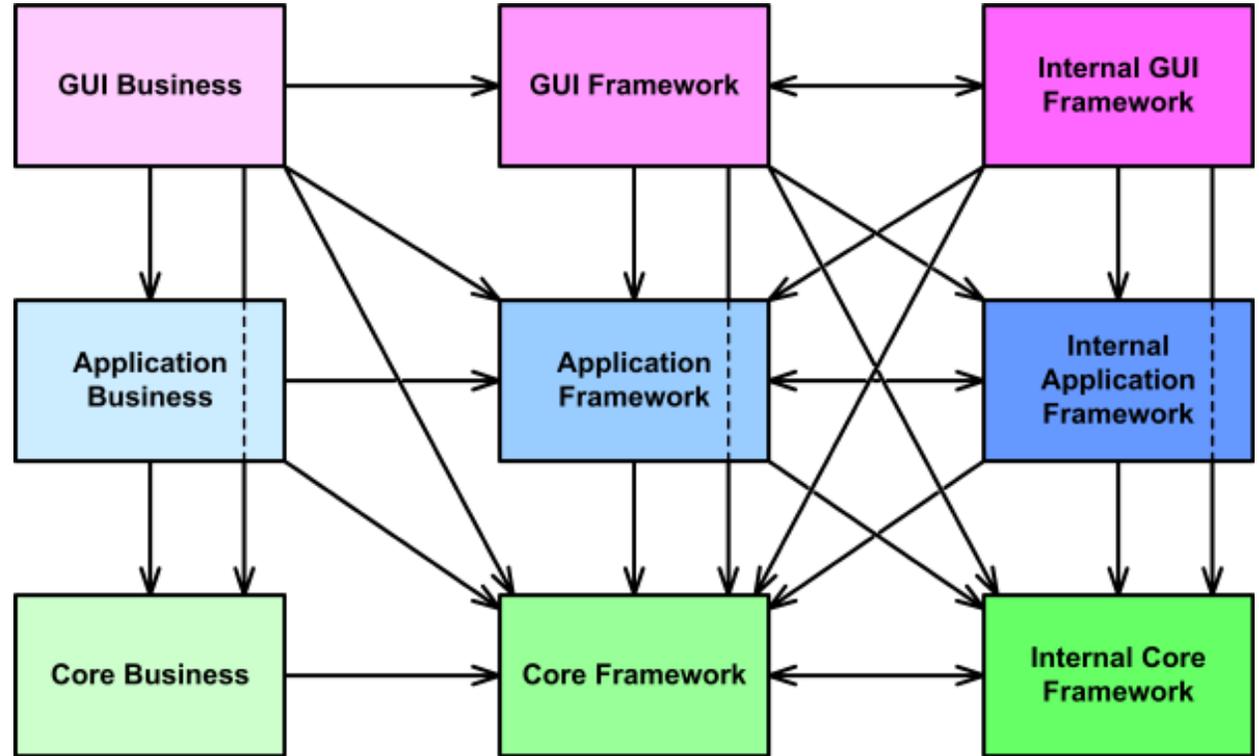
# LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

- APL functions nicely ordered in modules
- Enforced rules on how modules can call between each other
- Should be rather easy to turn groups of modules into micro services



# LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

- Well, a few more arrows have been added over time...



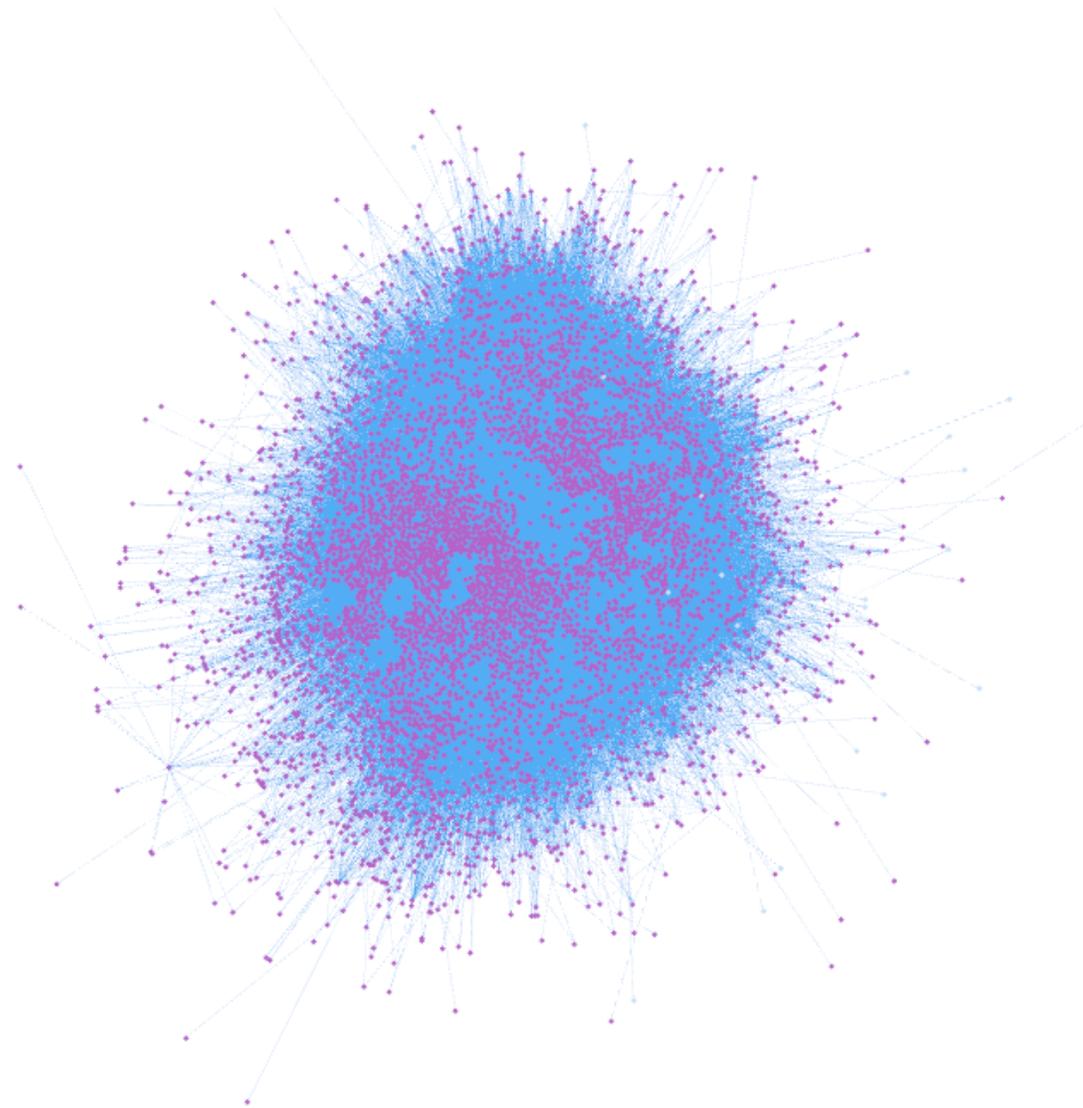


# SOME FIGURES

- 2,500,000 lines of APL code
- 86,800 (trad) functions
- Organised in 5,500 modules



# APL MODULES – DEPENDENCY GRAPH;-!



# THE SOLUTION #2

# THE SOLUTION #2

## WELCOME TO THE REAL WORLD

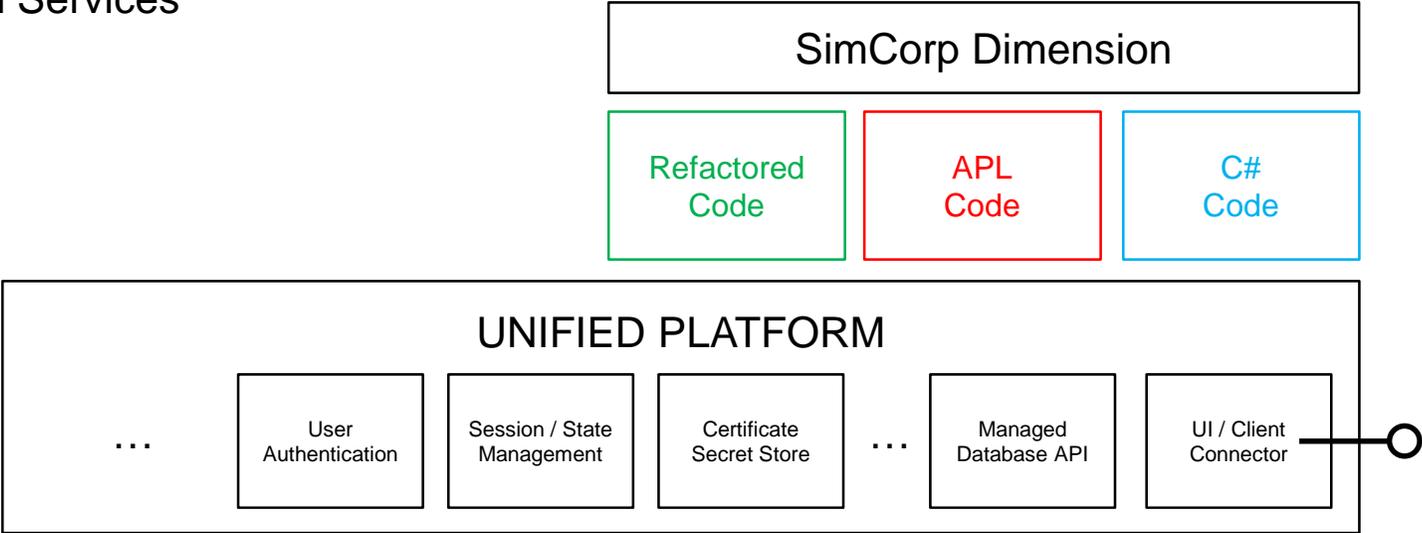


# SIMCORP DIMENSION - ENABLEMENT

## LIFT AND SHIFT - UNIFIED PLATFORM



- We will enable SimCorp Dimension (SCD) to become a 3-tier Cloud Service (SaaS), using a traditional Lift and Shift pattern.
- We will carry along **all** current business logic and current functionality
- We will enable new scenarios using Cloud Services





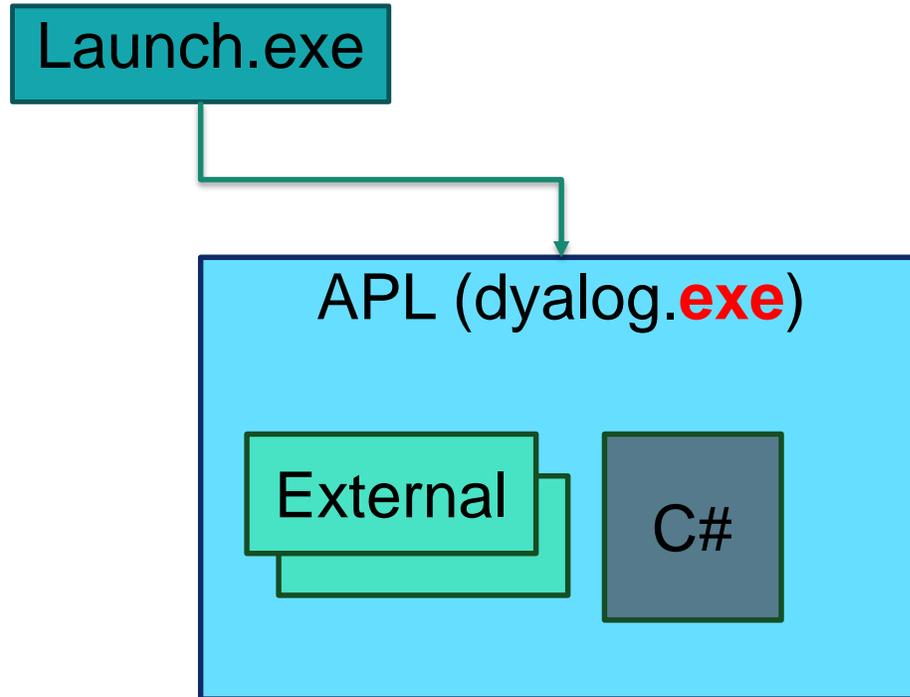
# THE APL PART OF THE SYSTEM AS OF TODAY

ONE PROCESS CONTROLLED FROM APL

Launch.exe

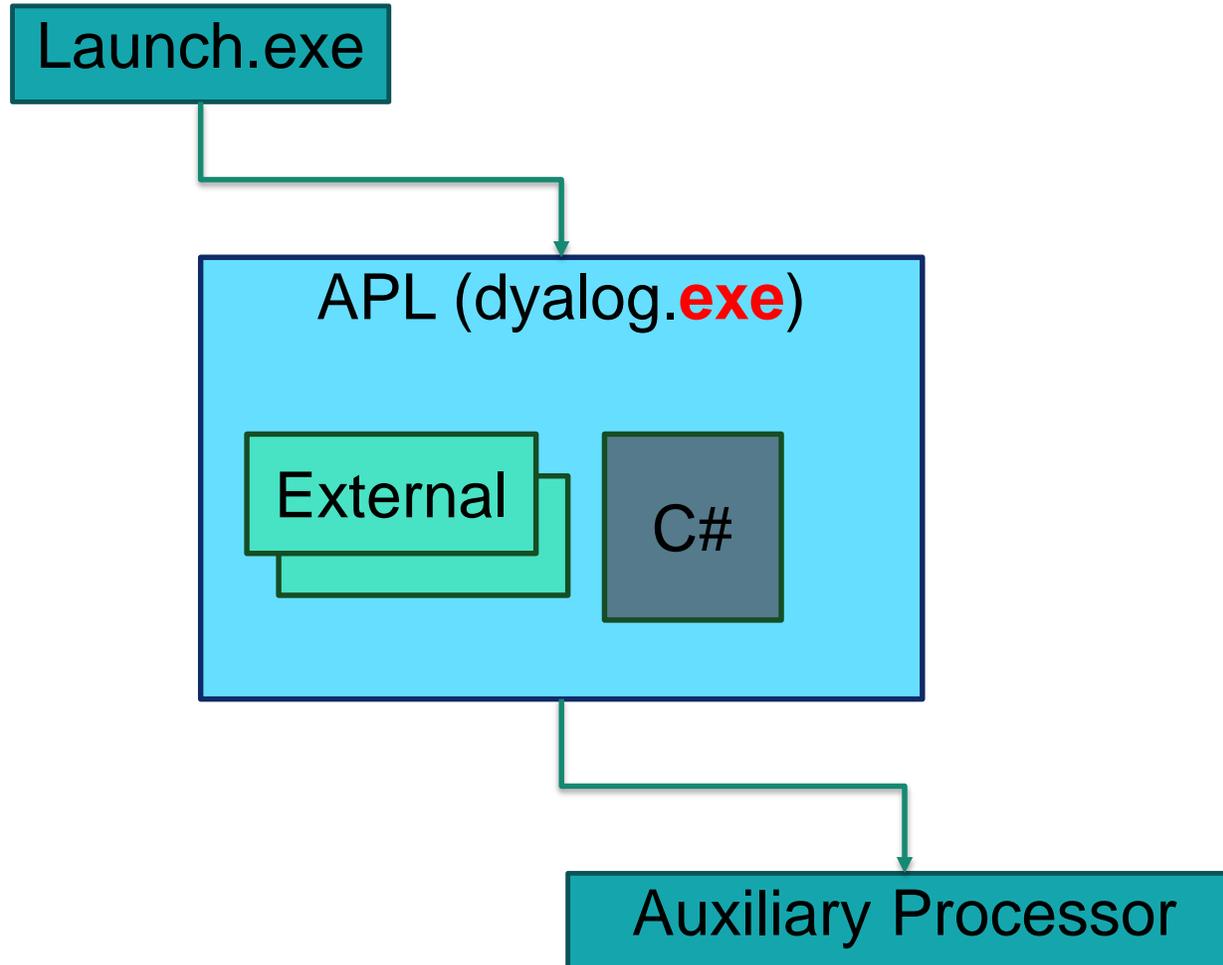
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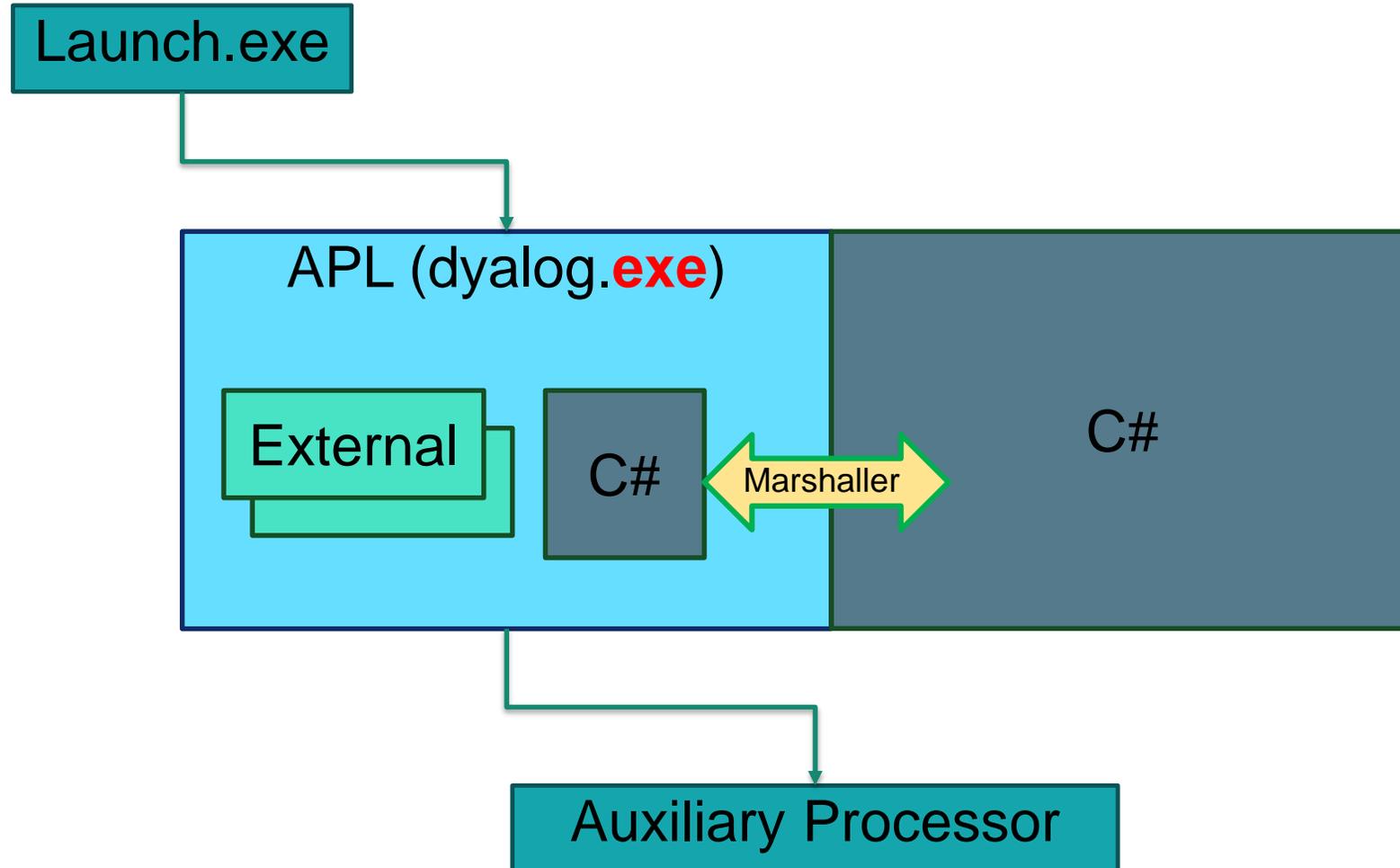
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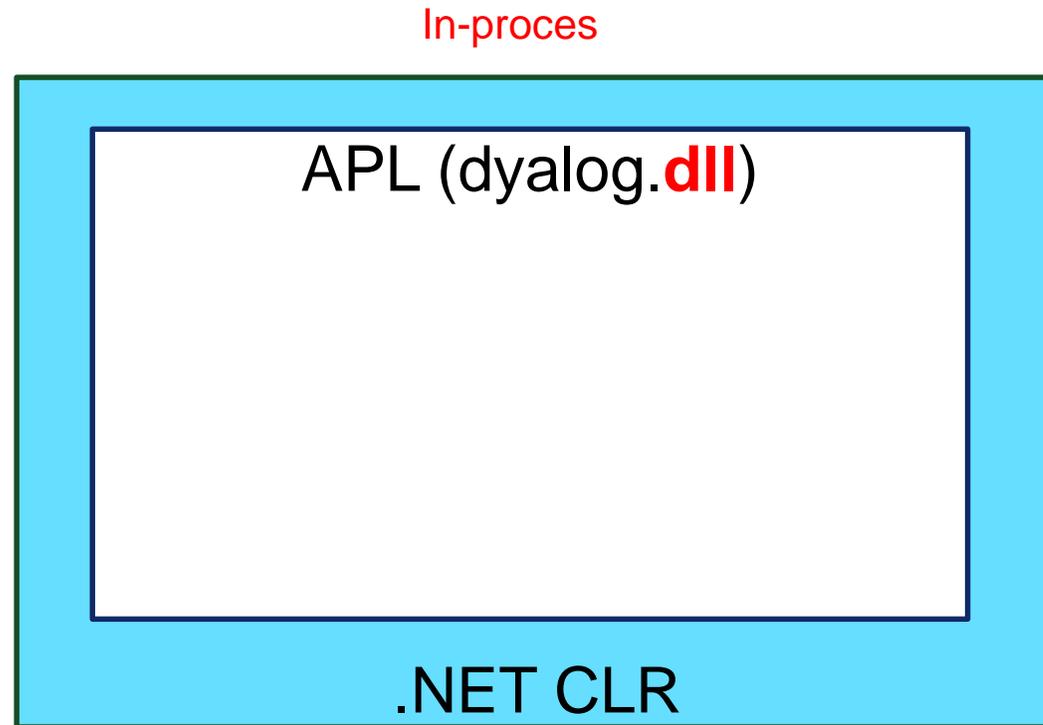
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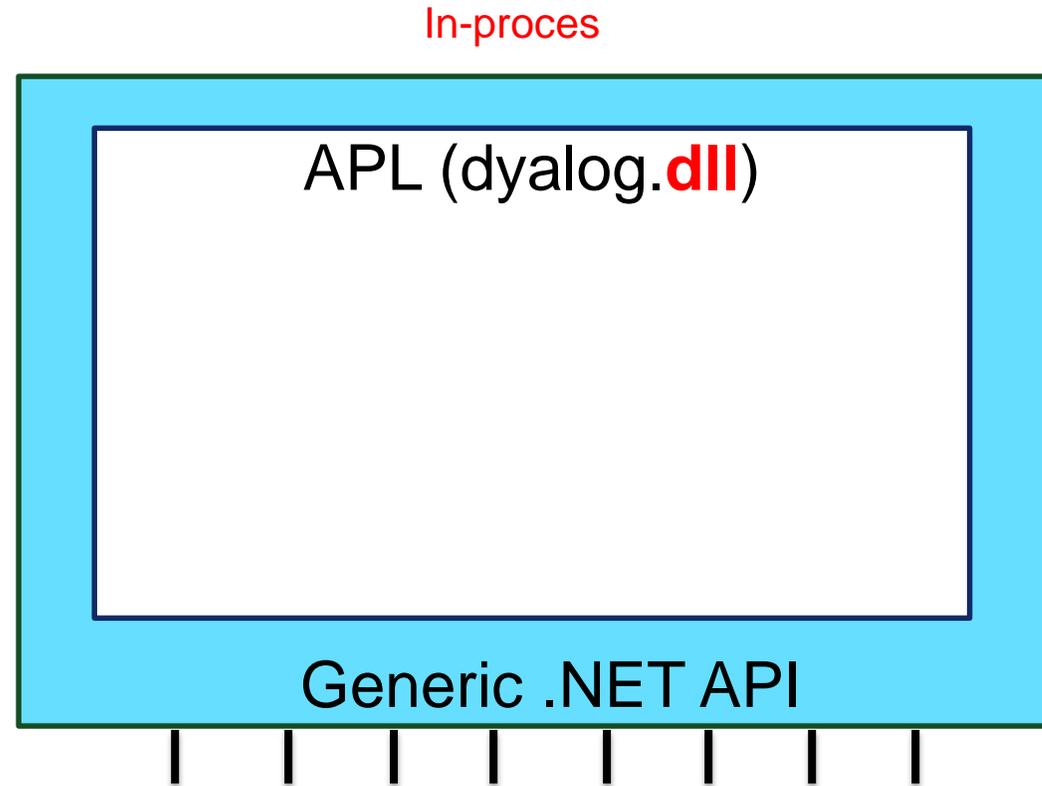
# THE SYSTEM AS OF TOMORROW

## 3-TIER APL STACK – APL HOSTED INSIDE .NET



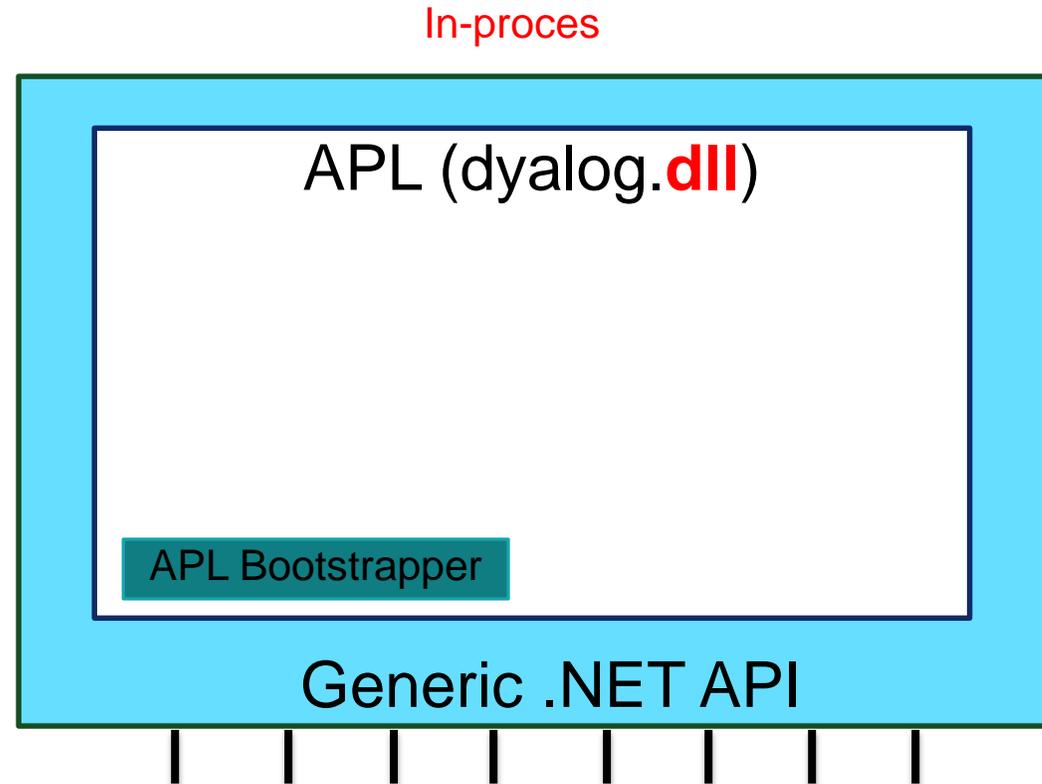
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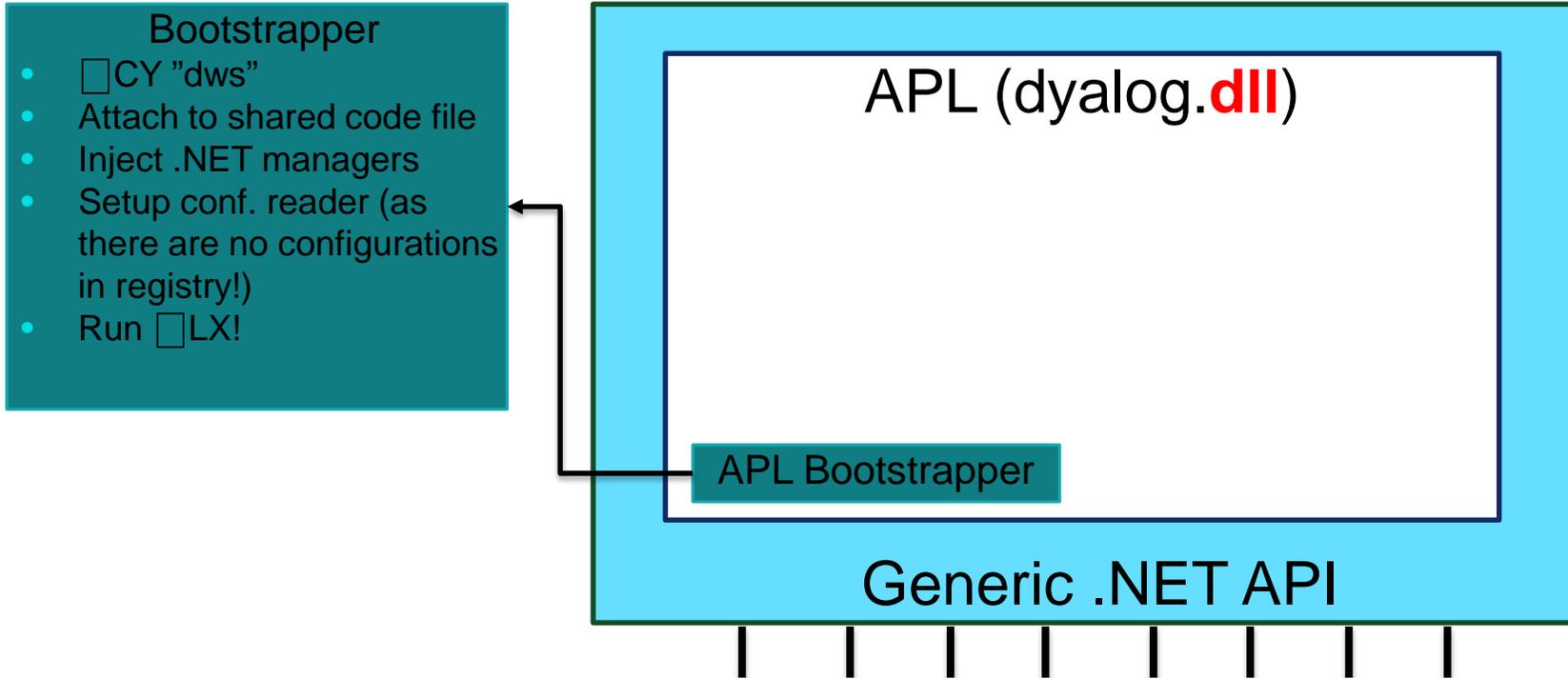
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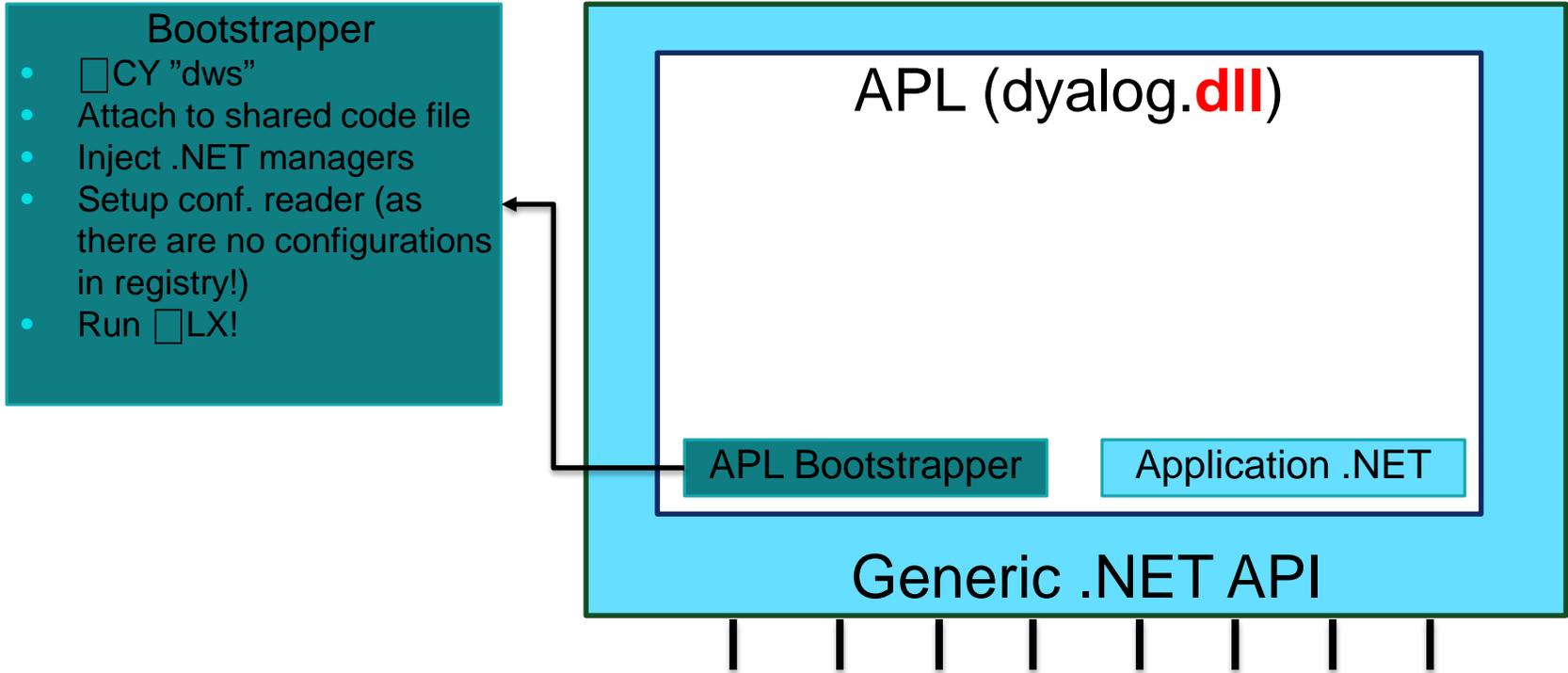
In-proces



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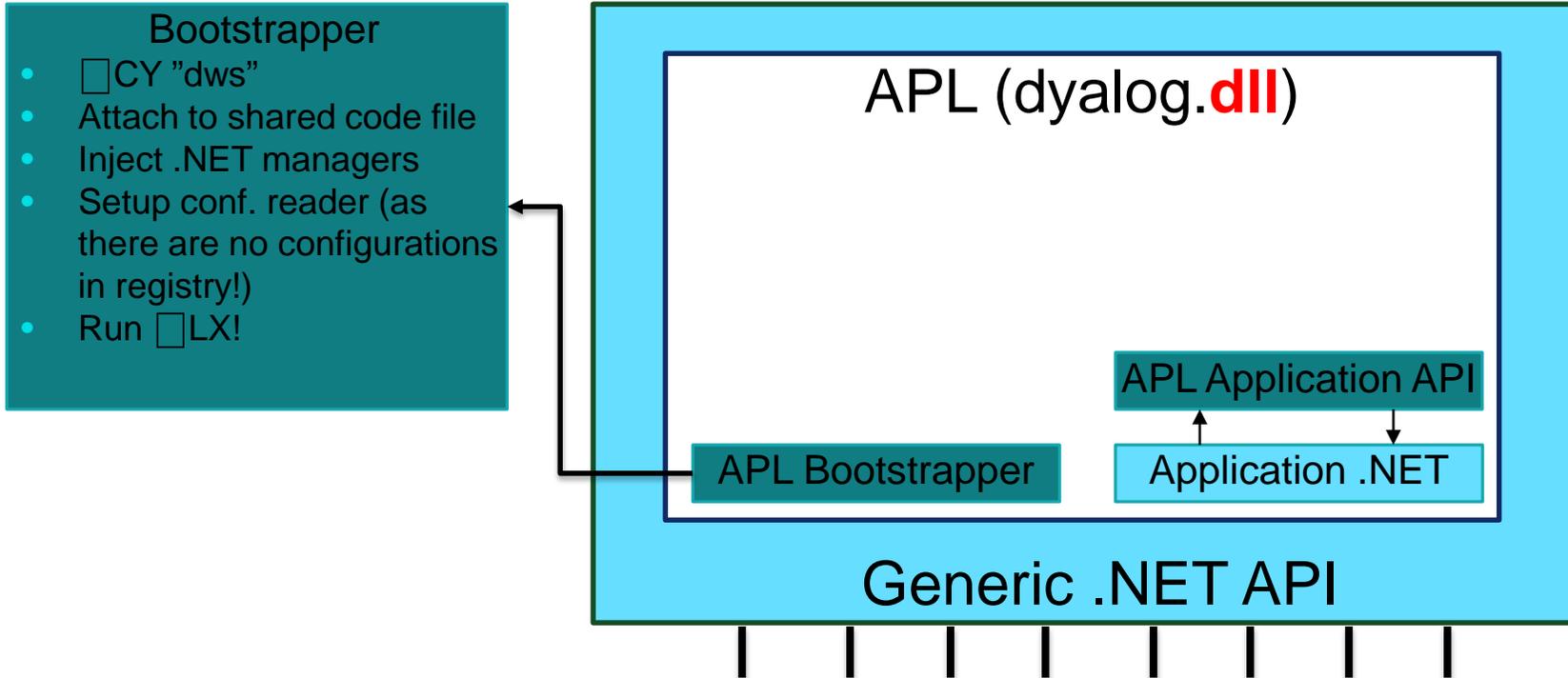
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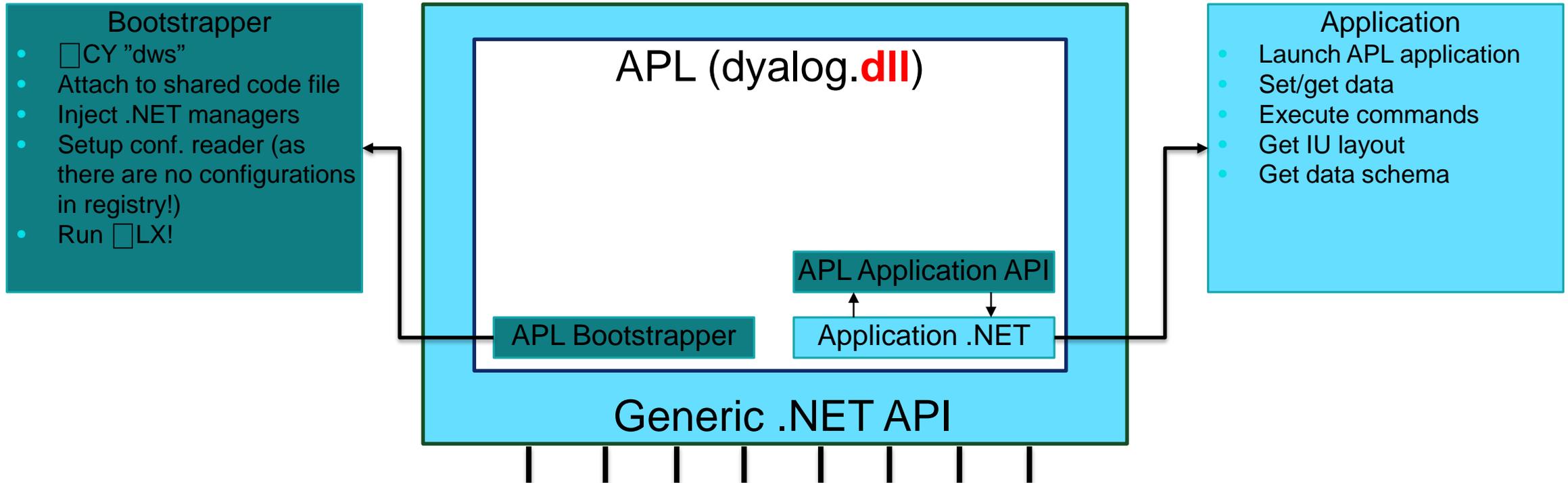
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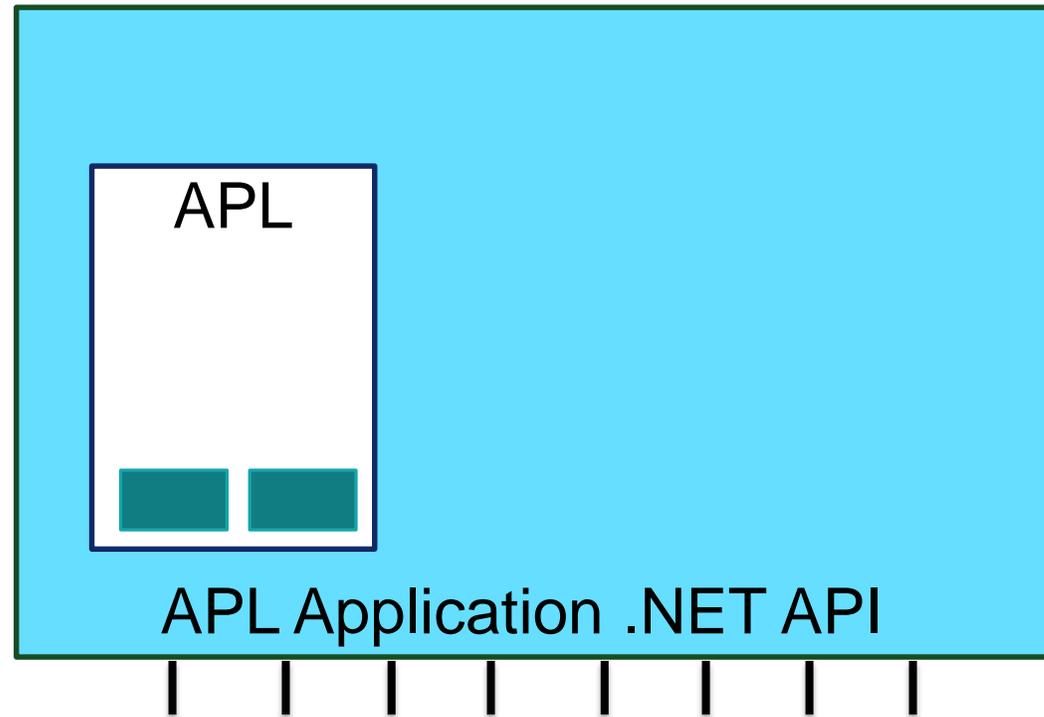
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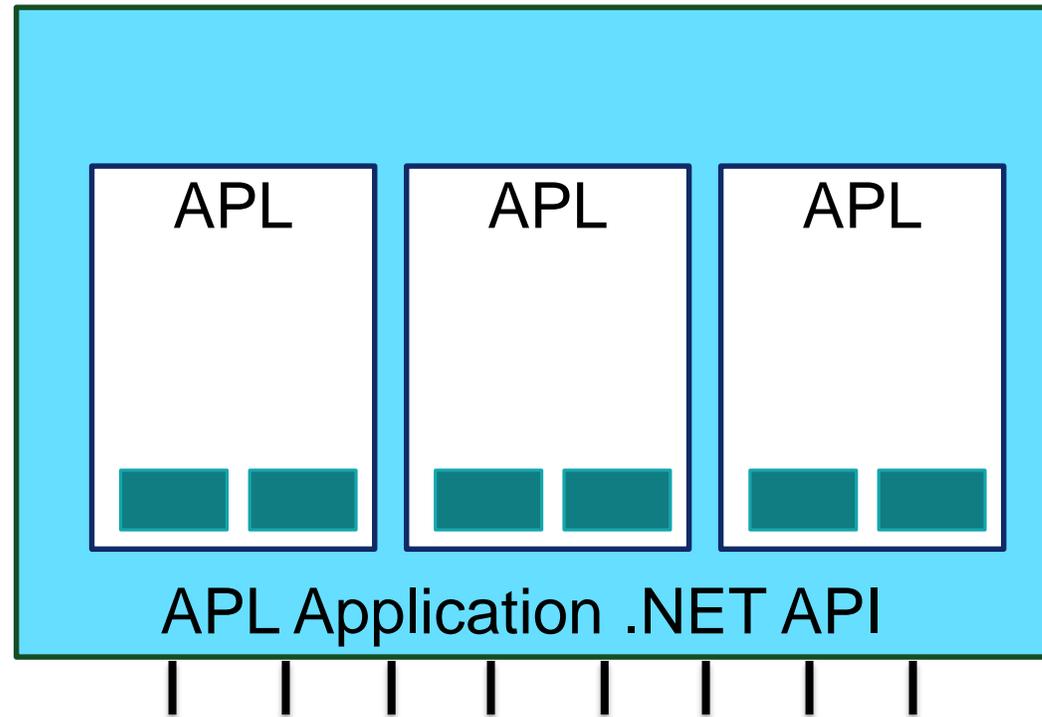
# THE SYSTEM AS OF TOMORROW

## 3-TIER APL STACK – MULTIPLE APL INSTANCES



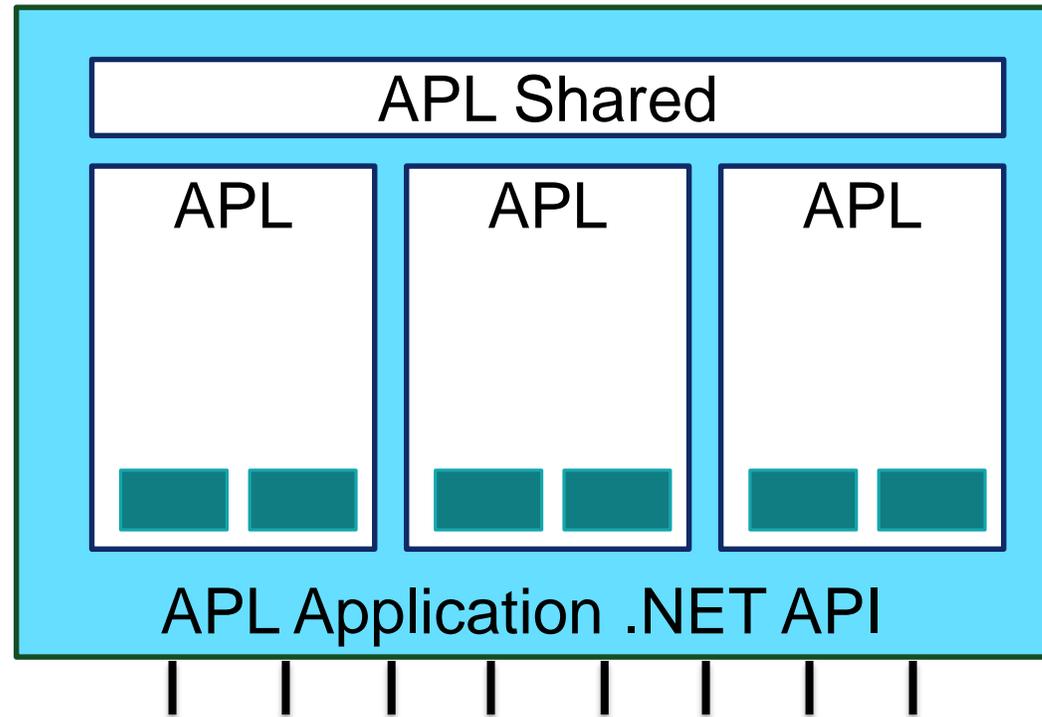
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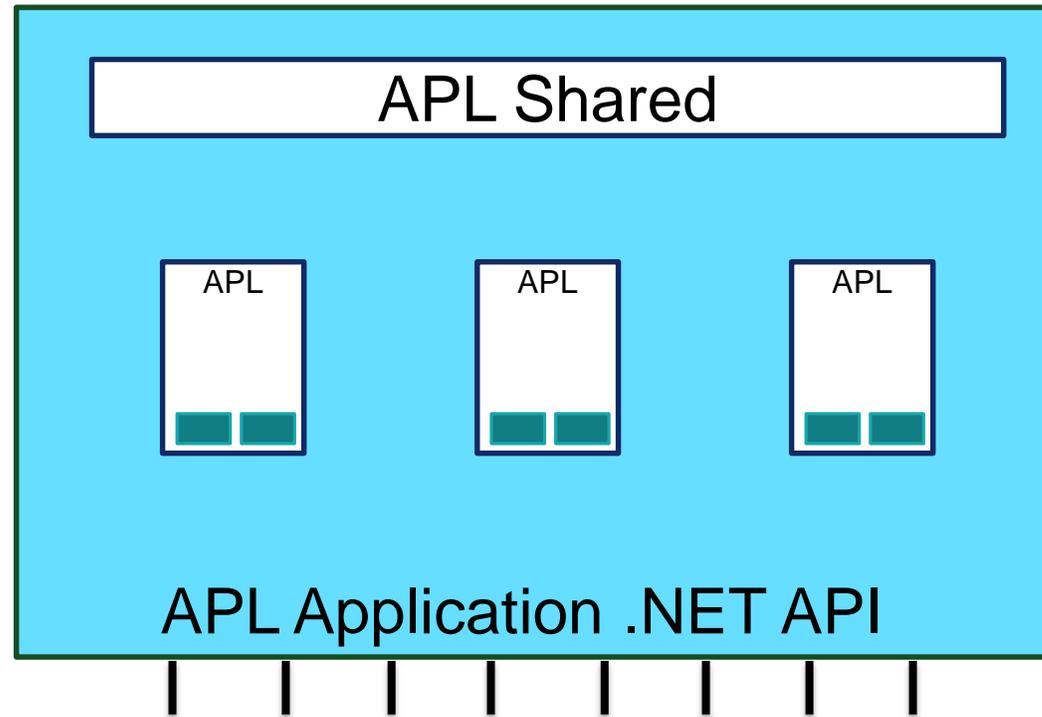
# THE SYSTEM AS OF TOMORROW

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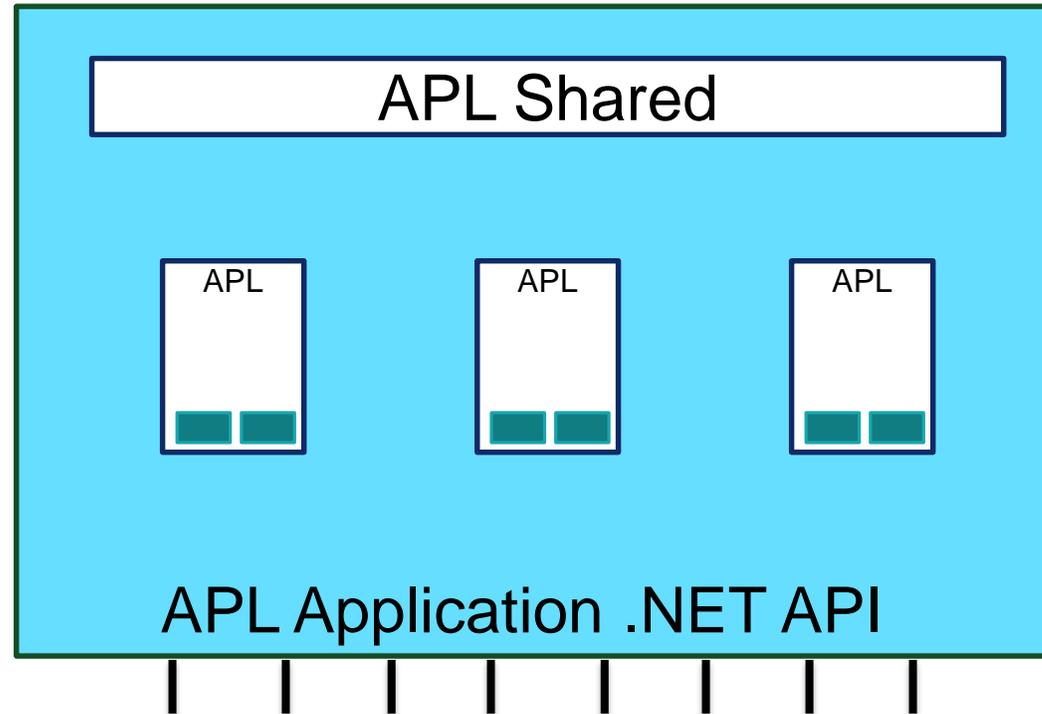
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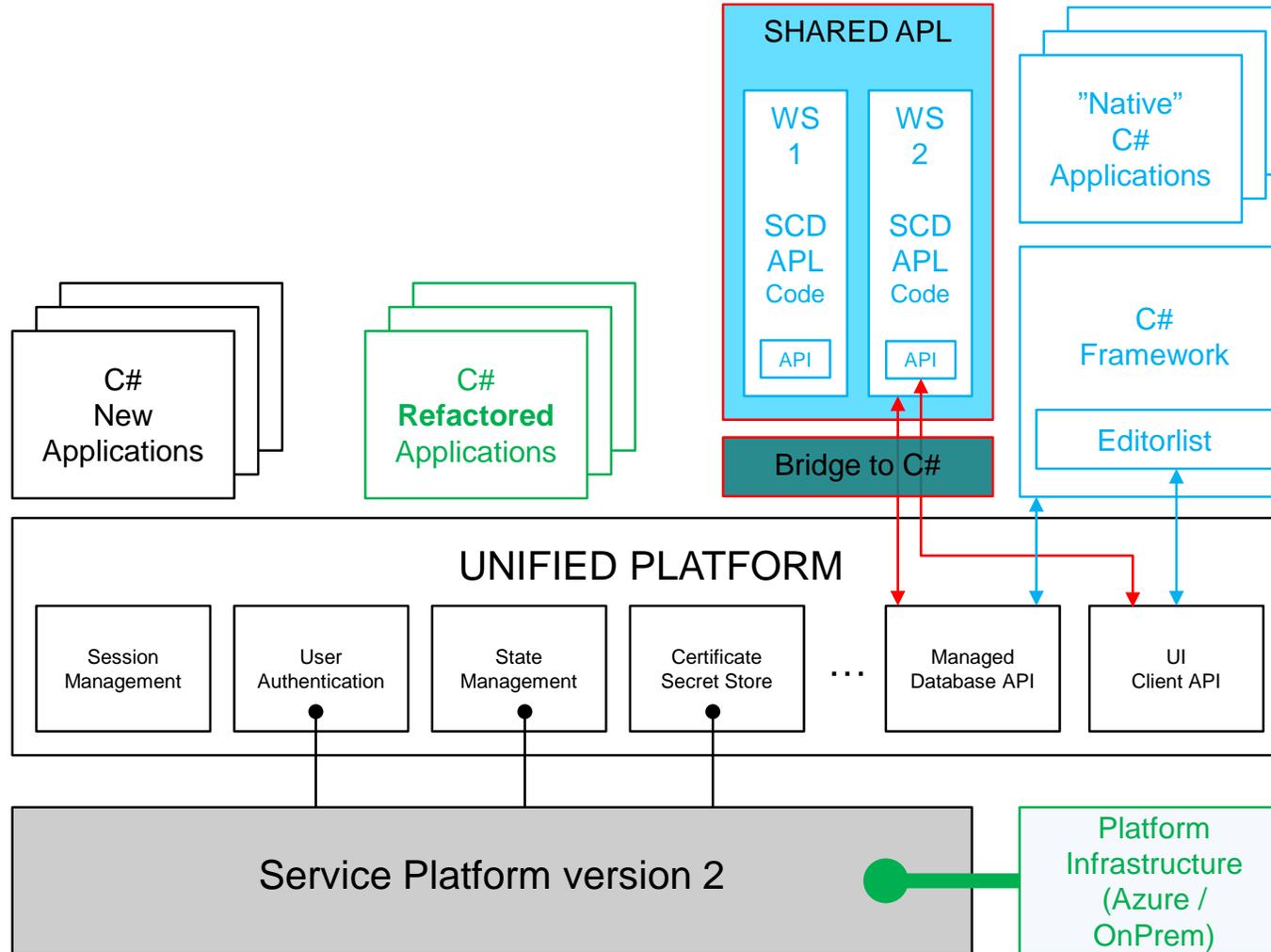
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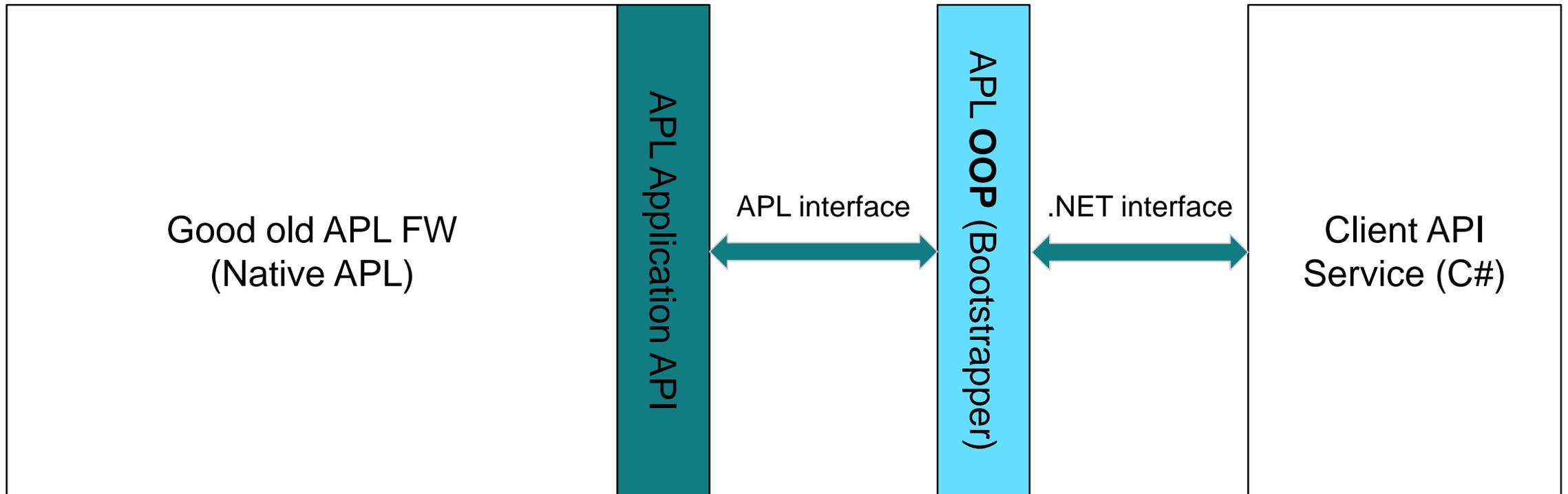
- Dyalog engaged in hosting multiple in-process APL instances.
- One user session per APL instance.
- We expect to do significant work on performance and memory footprint.
- Where possible, also share between APL and C# (e.g. data dictionary and other static information)



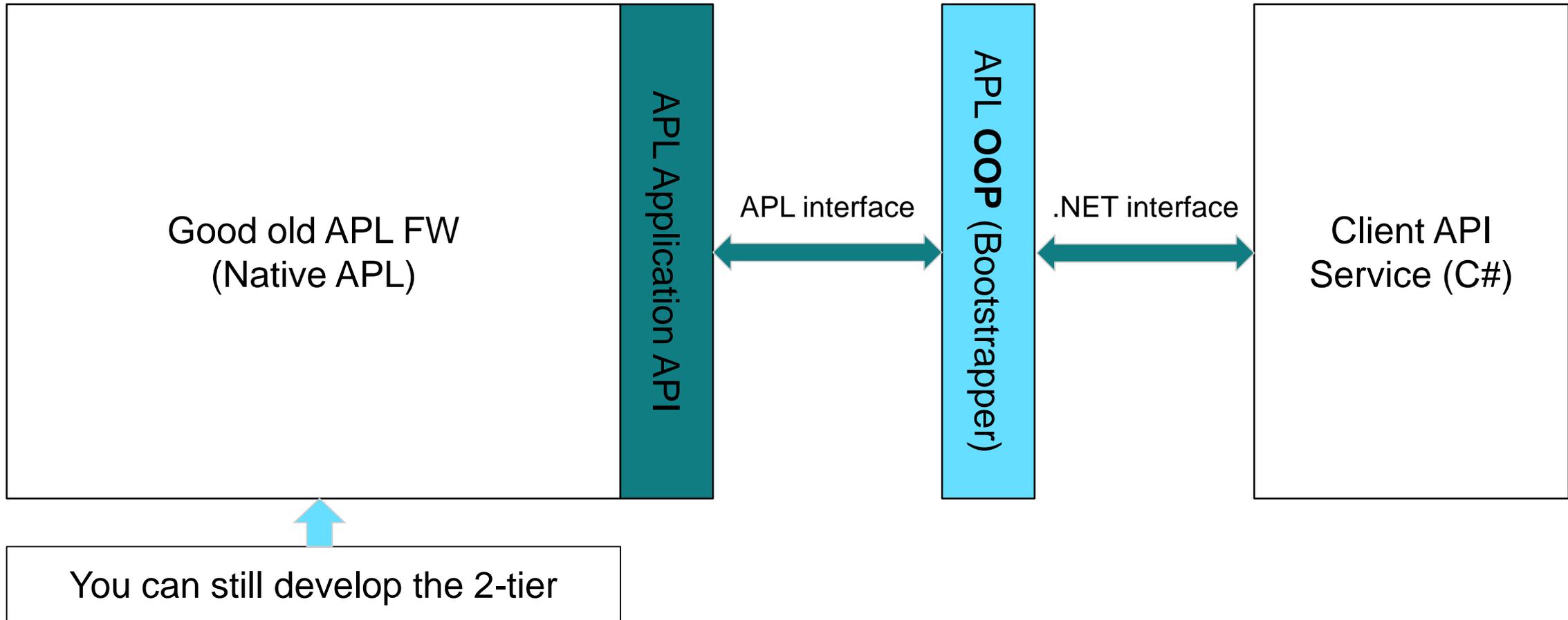
# TARGET SERVICE ARCHITECTURE



# 3-TIER ARCHITECTURE – APL PART



# 3-TIER ARCHITECTURE – APL PART





LET'S SEE SOME CODE!



# MODEL DRIVEN UI



# MODEL DRIVEN UI

- On the APL side, we are so lucky that all our forms are described in a descriptive “language”, or rather as a model
- So the transformation from APL UI to models is rather straight forward
- We have chosen JSONForms (<https://jsonforms.io/>) as our reference, but probably not our target platform



# LAYOUT

- Layout (called UI schema)
  - How the data schema elements are positioned on screen
  - Absolute positions on existing APL forms are transformed into relative positions on the fly
  - Each control refer to an element in the DataSchema
  - DataSchema holds further information, e.g. data type, max length, etc.

```
{
  "type": "VerticalLayout",
  "elements": [
    {
      "type": "Group",
      "label": "General",
      "elements": [
        {
          "type": "HorizontalLayout",
          "elements": [
            {
              "type": "Control",
              "label": "Watch list ID",
              "scope": "#/properties/watchlistid"
            },
            {
              "type": "Control",
              "label": "Owner",
              "scope": "#/properties/owner",
              "rule": {
                "effect": "DISABLE",
                "condition": true
              }
            }
          ]
        },
        {
          "type": "Control",
          "label": "Watch list name",
          "scope": "#/properties/watchlistname"
        }
      ]
    },
    {
      "type": "Control",
      "scope": "#/properties/watchsublist"
    }
  ]
}
```



LET'S SEE AN EXAMPLE!

# WANT TO KNOW MORE?



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