WEB ENABLING SIMCORP DIMENSION

DYALOG ’19, ELSINORE

STIG NIELSEN, LEAD DEVELOPER, SIMCORP

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AGENDA

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- Why WEB/Cloud?

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- Why WEB/Cloud?
- The solution #1

AGENDA

- 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

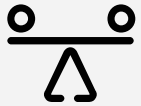
Hedge risk by transferring data to the cloud

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

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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

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

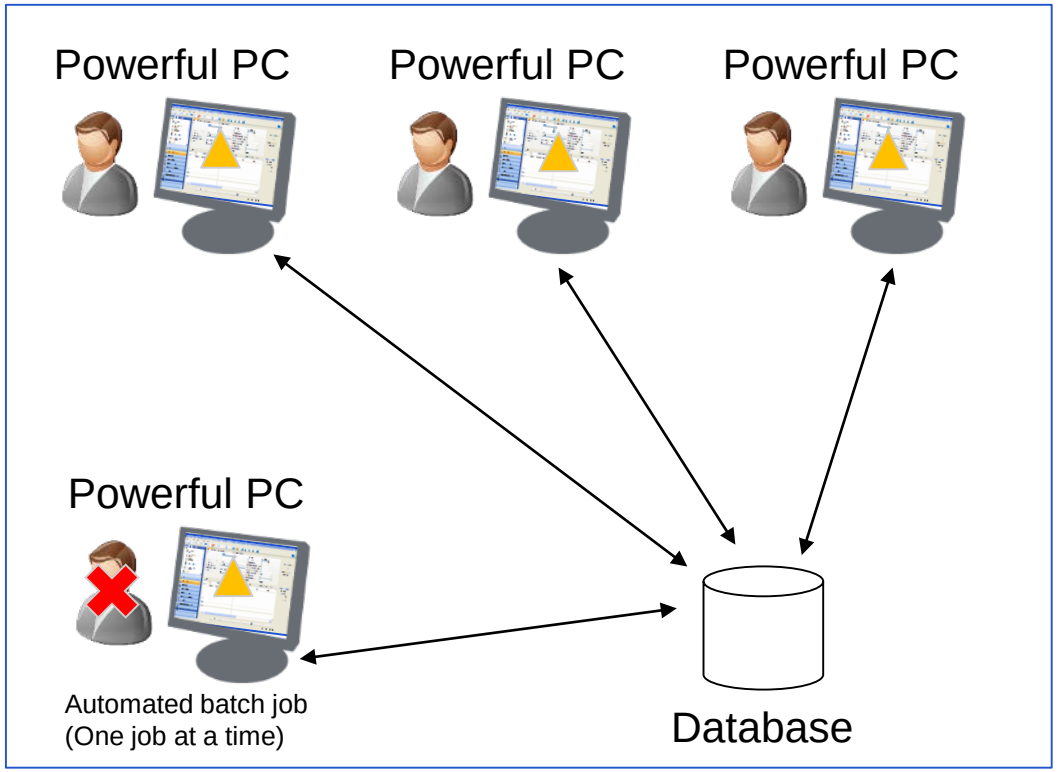
Developer Services
- Visual Studio Team Services
- Azure DevTest Labs
- VS Application Insights
- API Management
- HockeyApp
- Developer Tools
- Service Profiler*

Monitoring & Management
- Azure Portal
- Azure Resource Manager
- Azure Advisor
- Azure Monitor
- Log Analytics
- Automation
- Scheduler

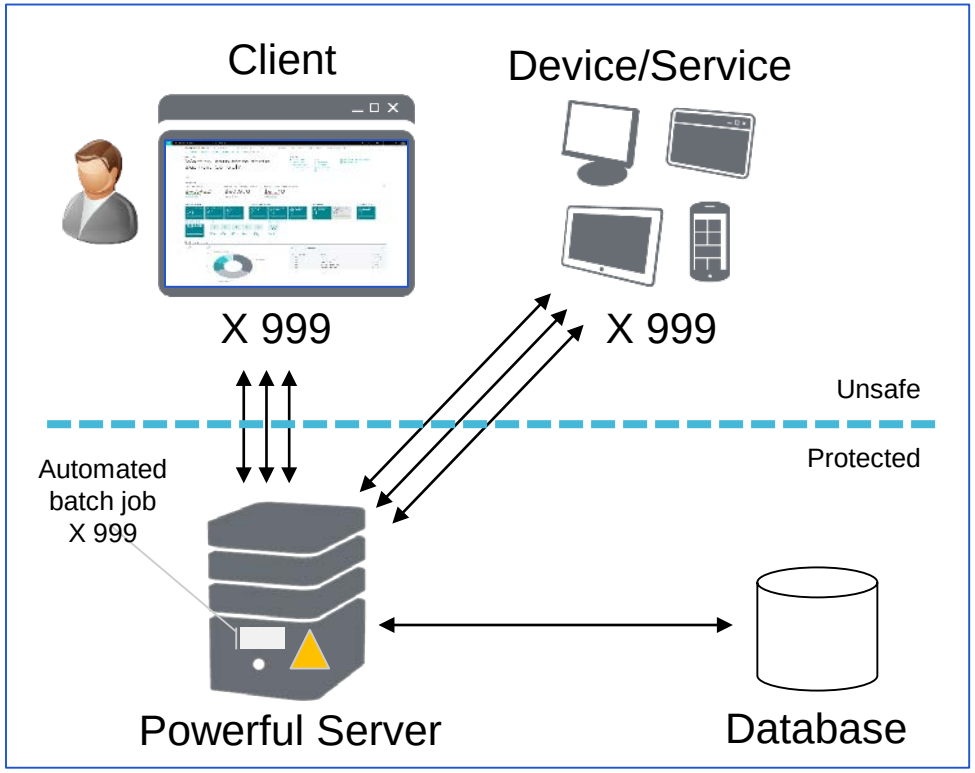
TRANSFORMING

FROM 2-TIER TO 3-TIER

Server/Service transformation ▲ = Business Logic runs here



Typical 2-tier deployment.



Typical 3-tier solution

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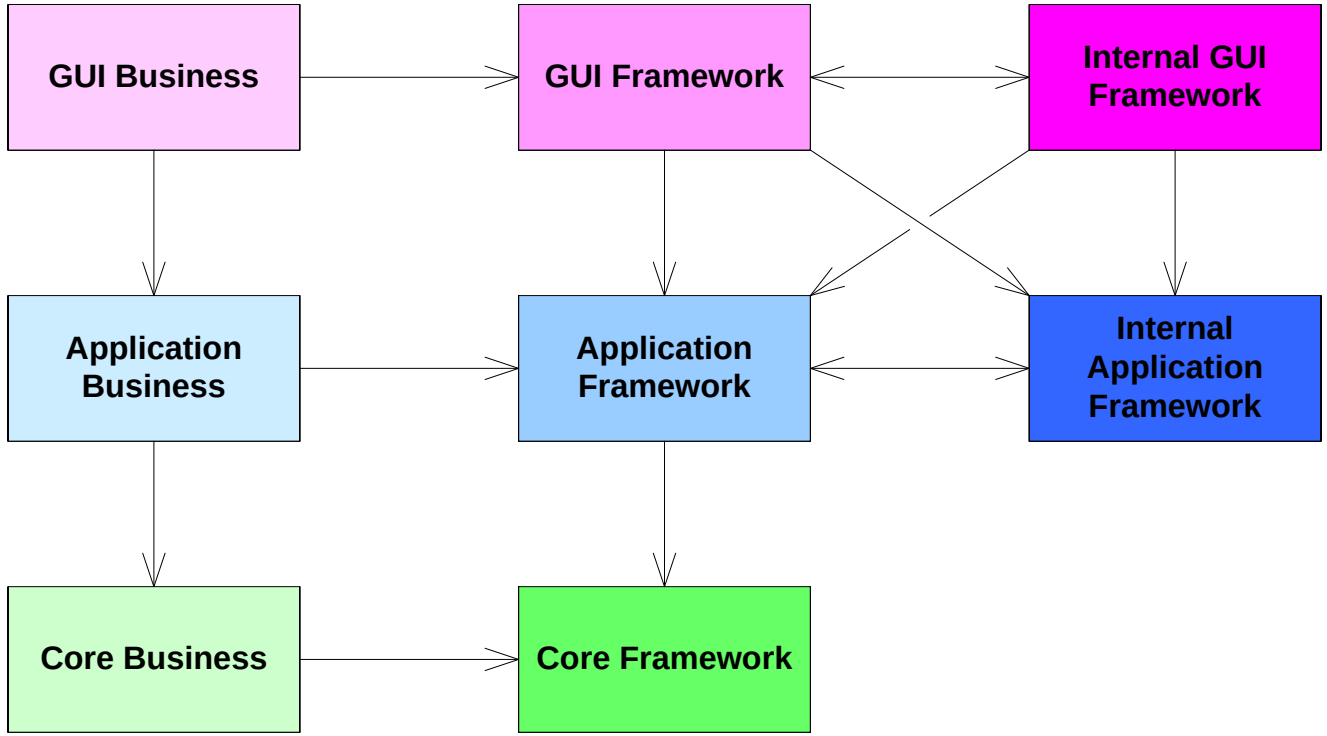
THE SOLUTION #1

LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

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



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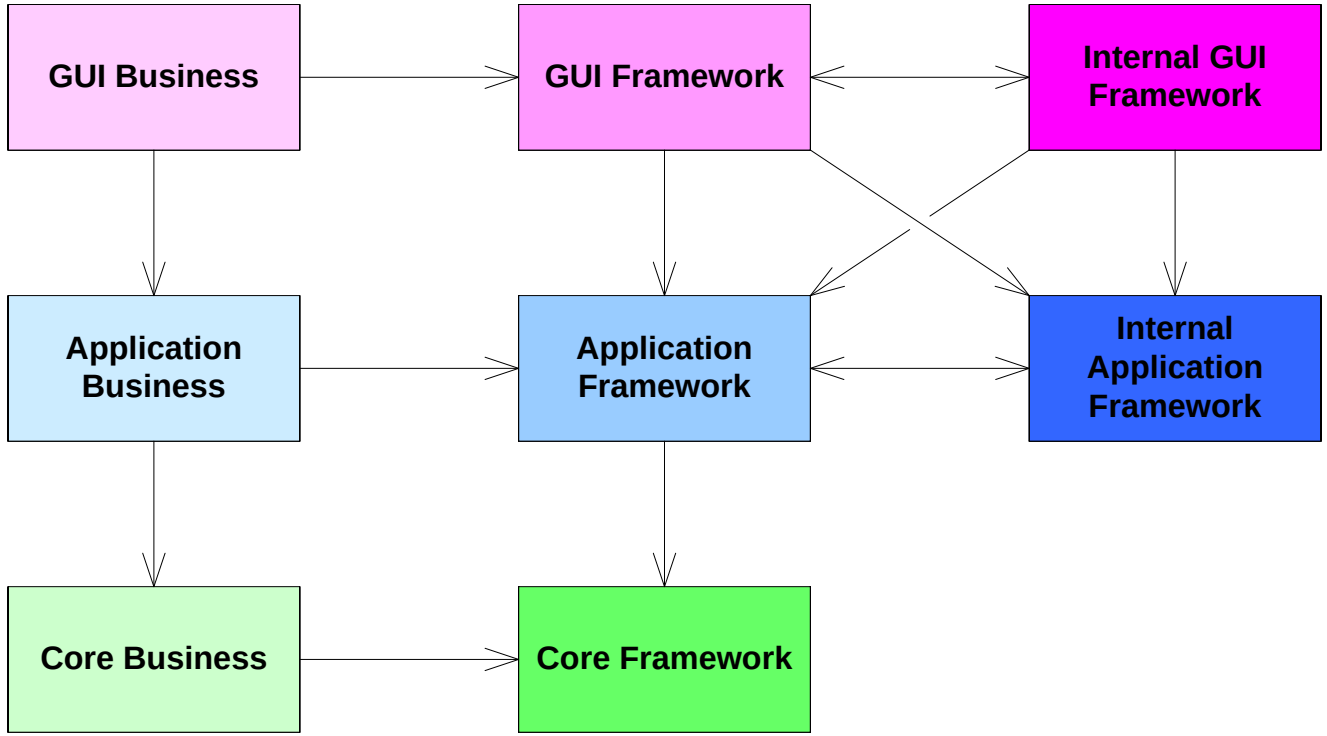
LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

- 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



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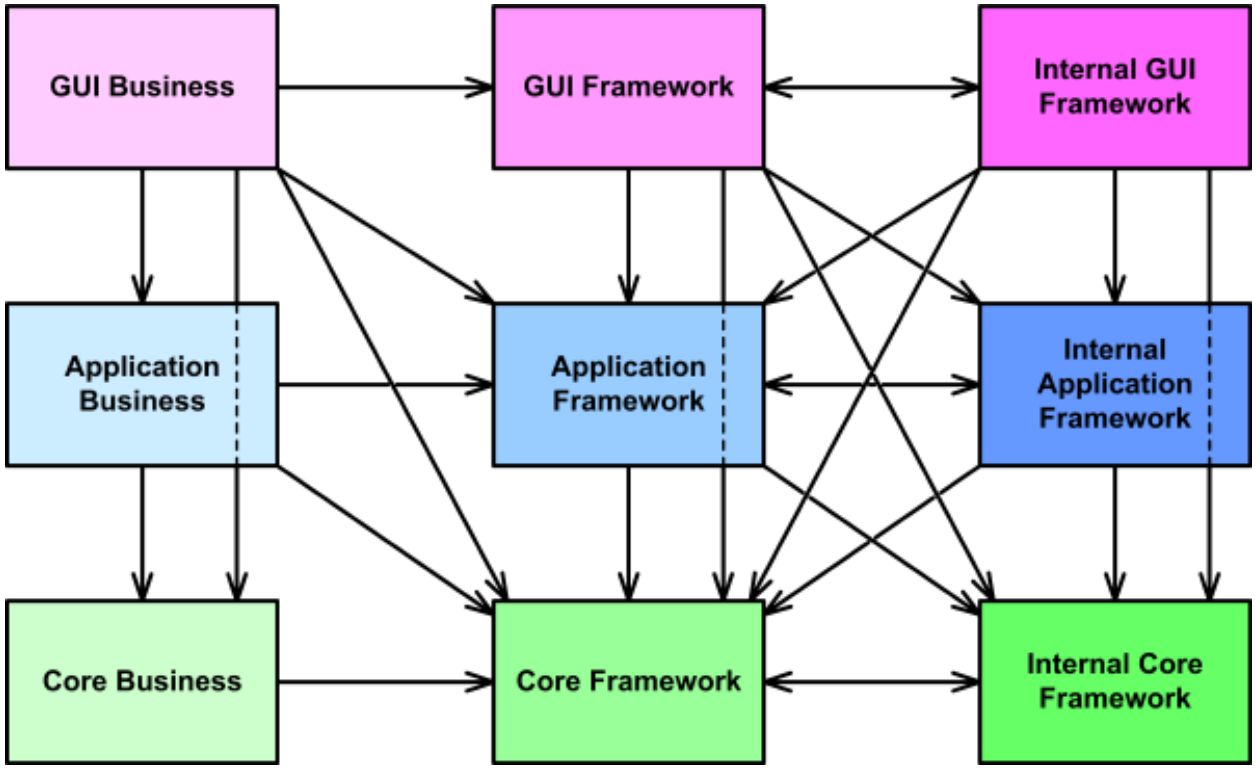
LAYERED APPLICATION ARCHITECTURE - APL COMPONENTS

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



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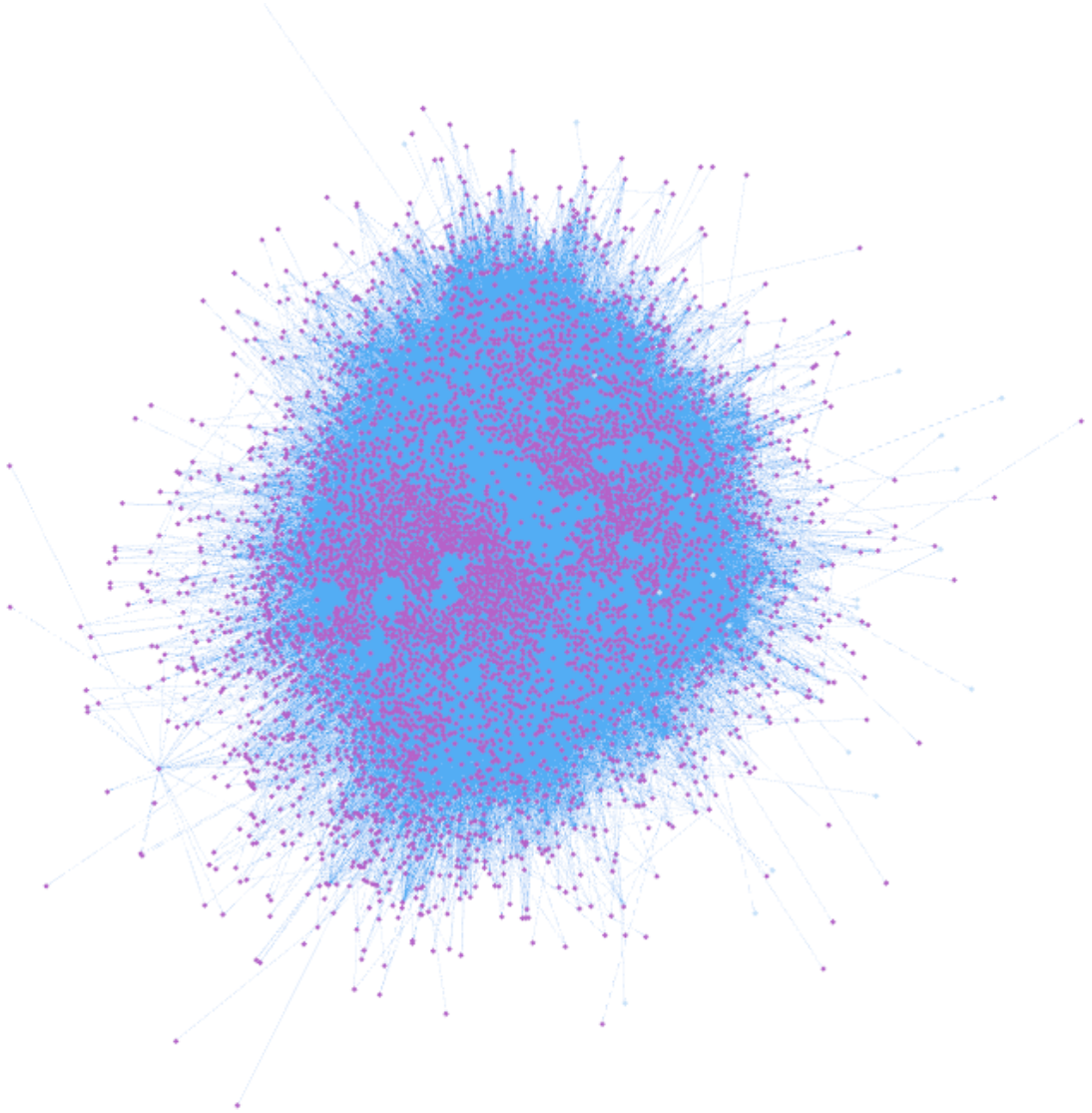
SOME FIGURES

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

APL MODULES – DEPENDENCY GRAPH;-!



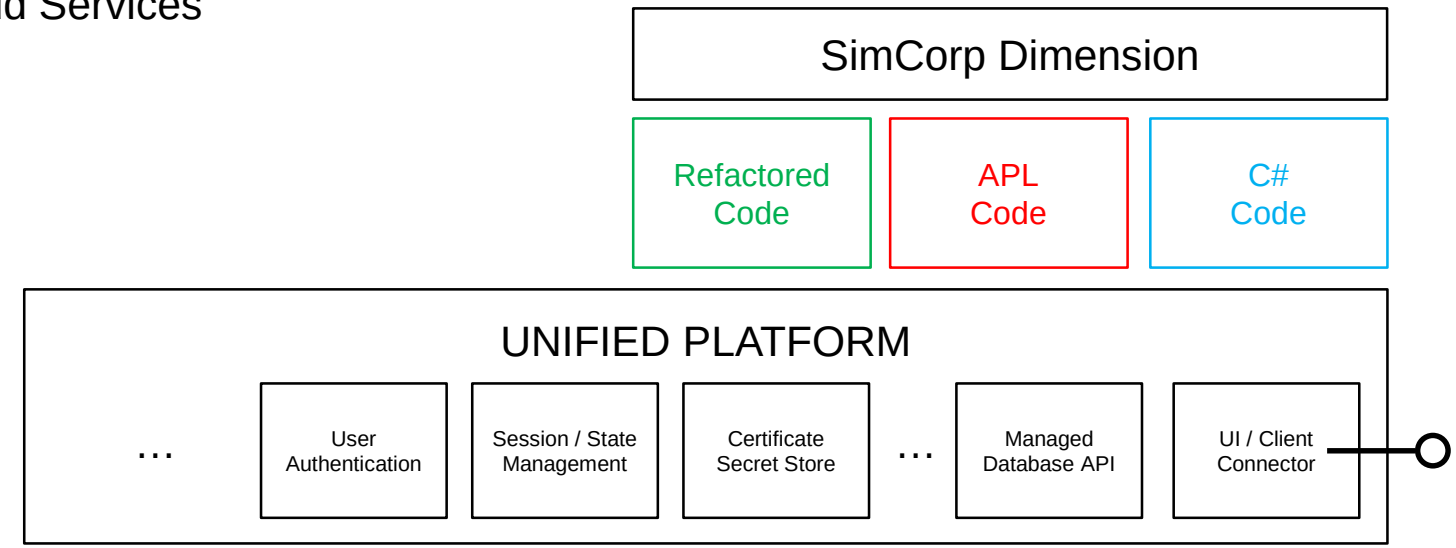
THE SOLUTION #2

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



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THE APL PART OF THE SYSTEM AS OF TODAY

ONE PROCESS CONTROLLED FROM APL

Launch.exe

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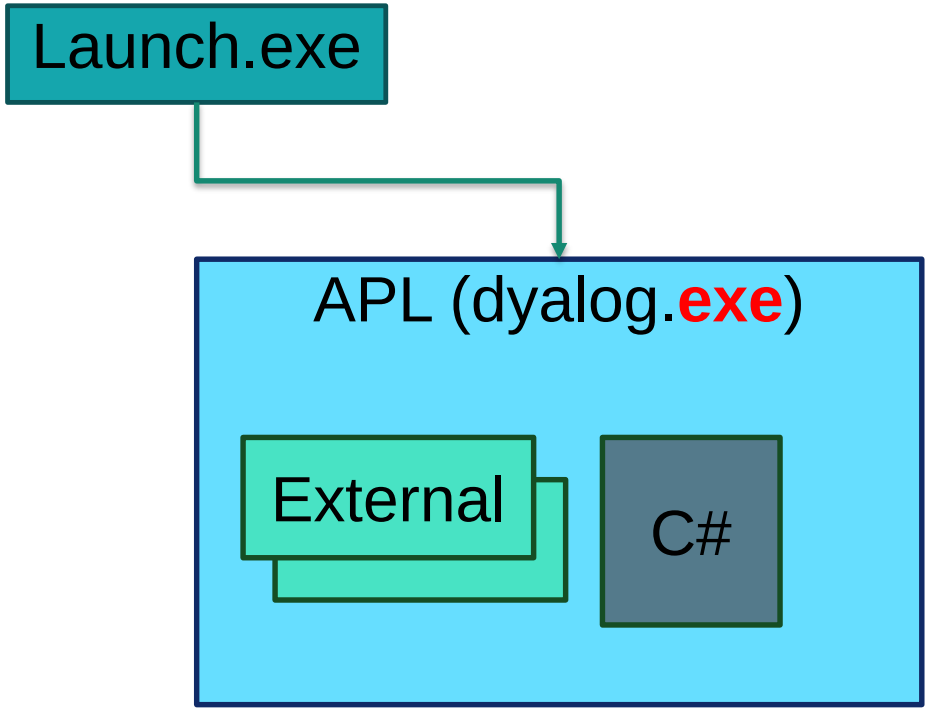

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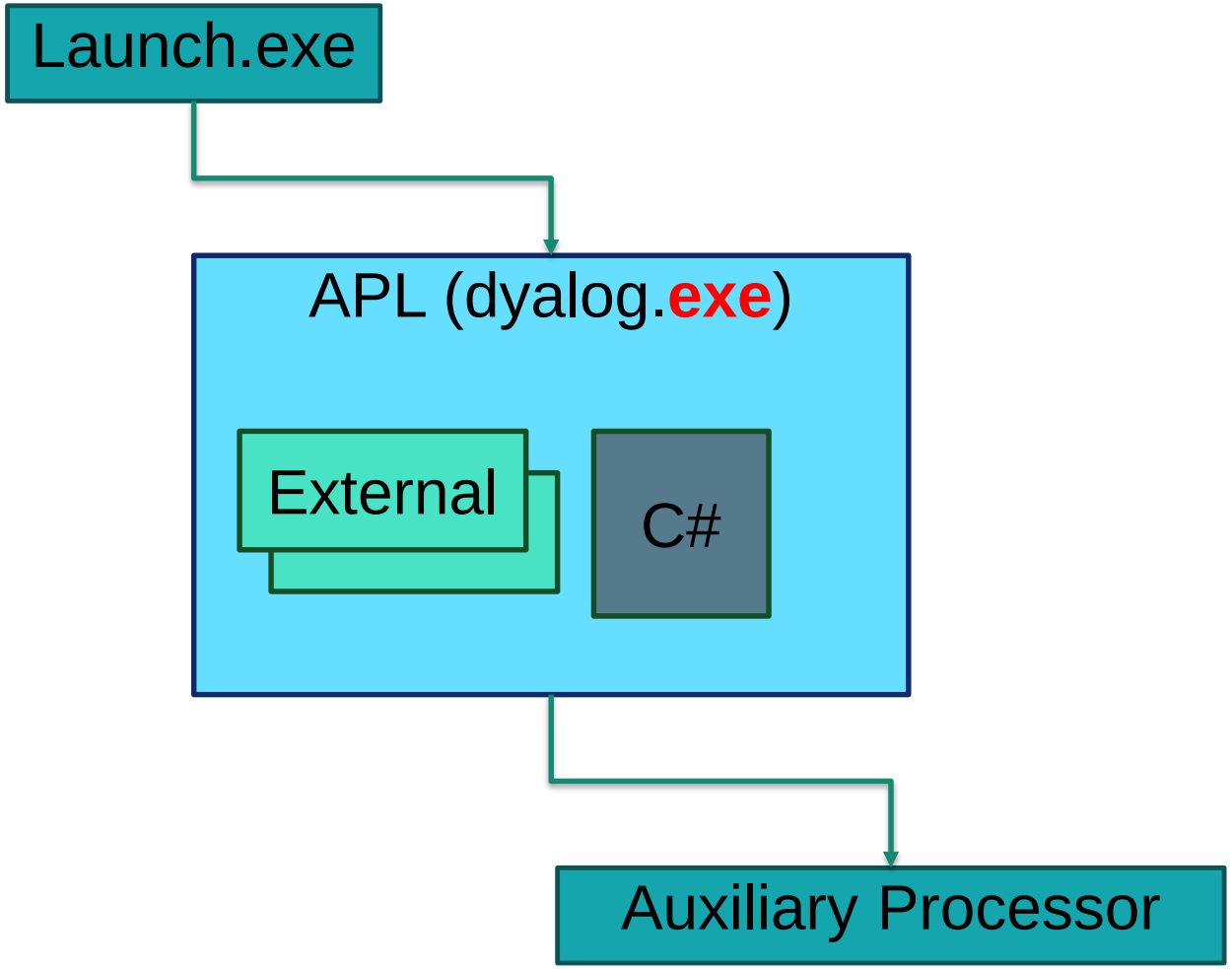

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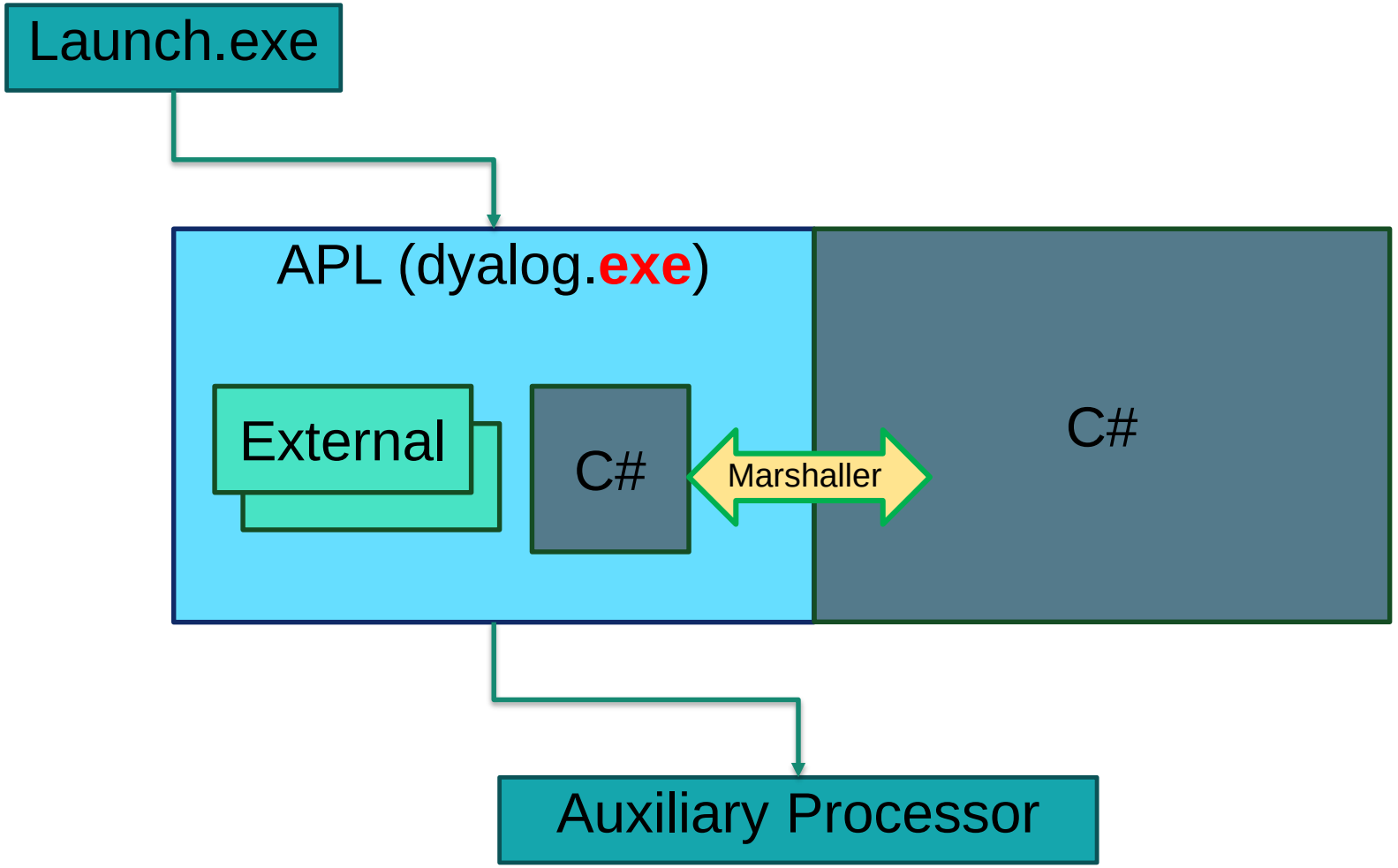

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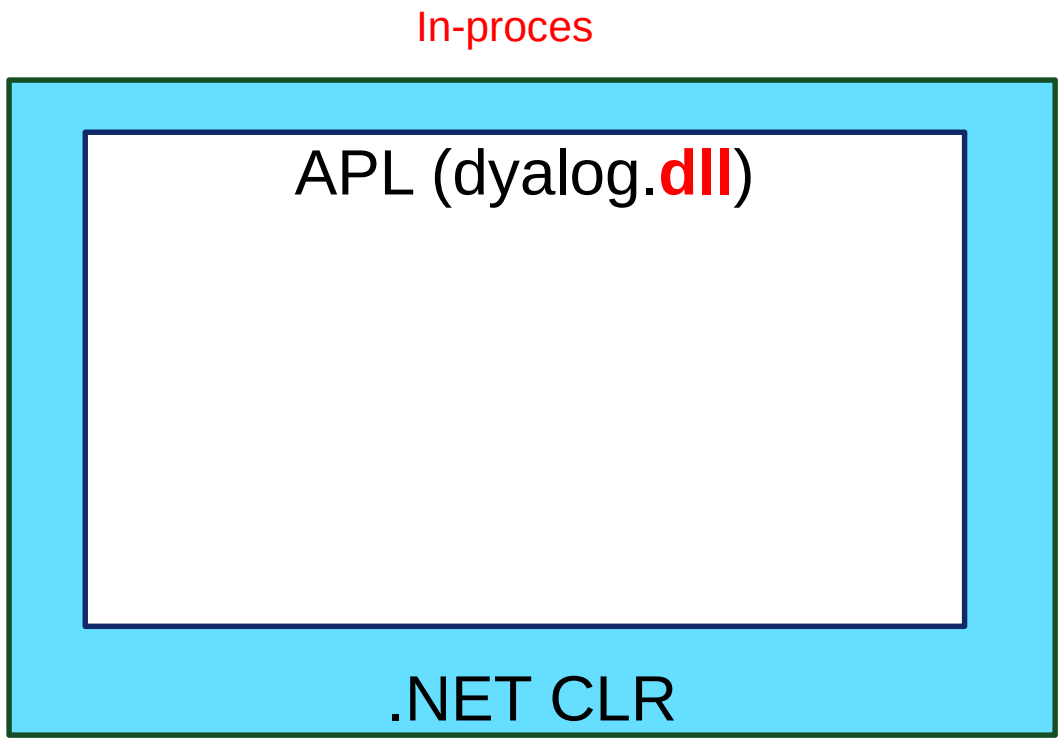
THE SYSTEM AS OF TOMORROW

3-TIER APL STACK – APL HOSTED INSIDE .NET



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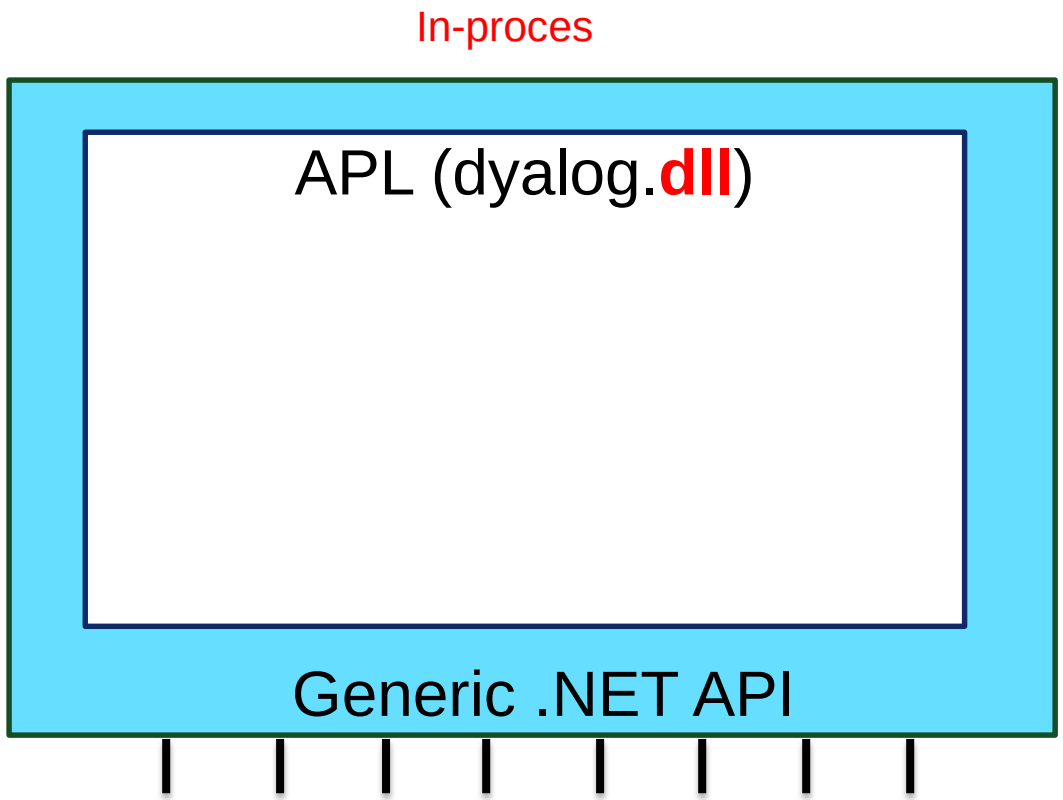

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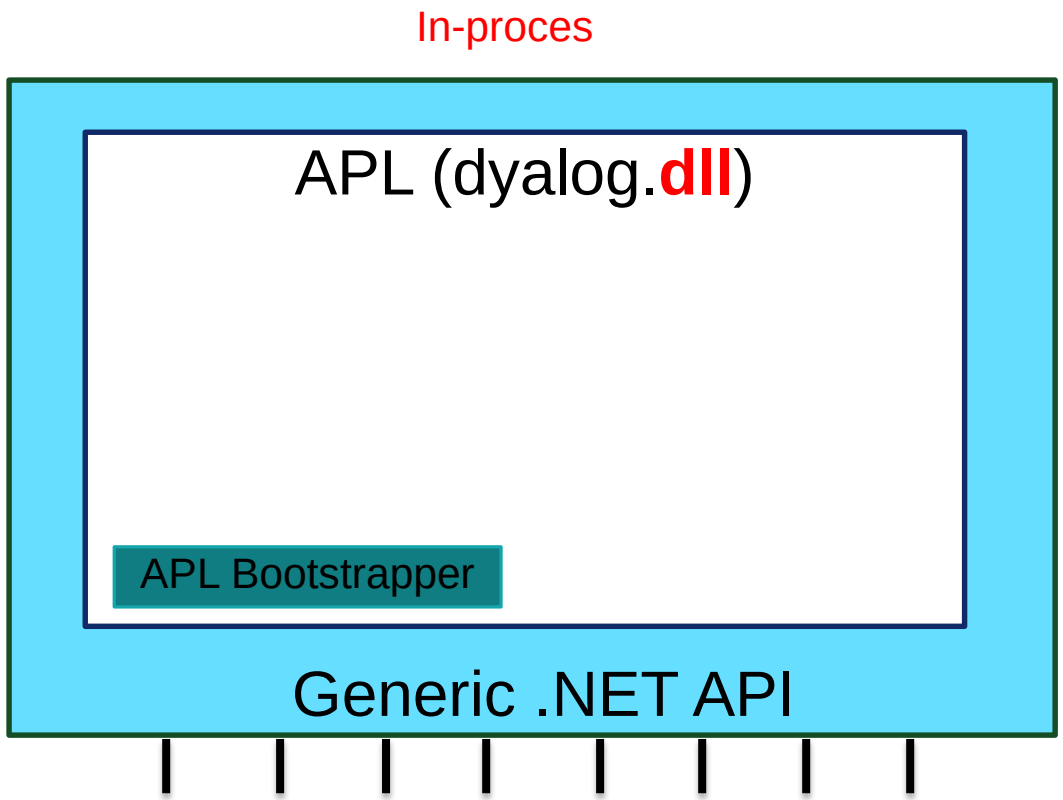

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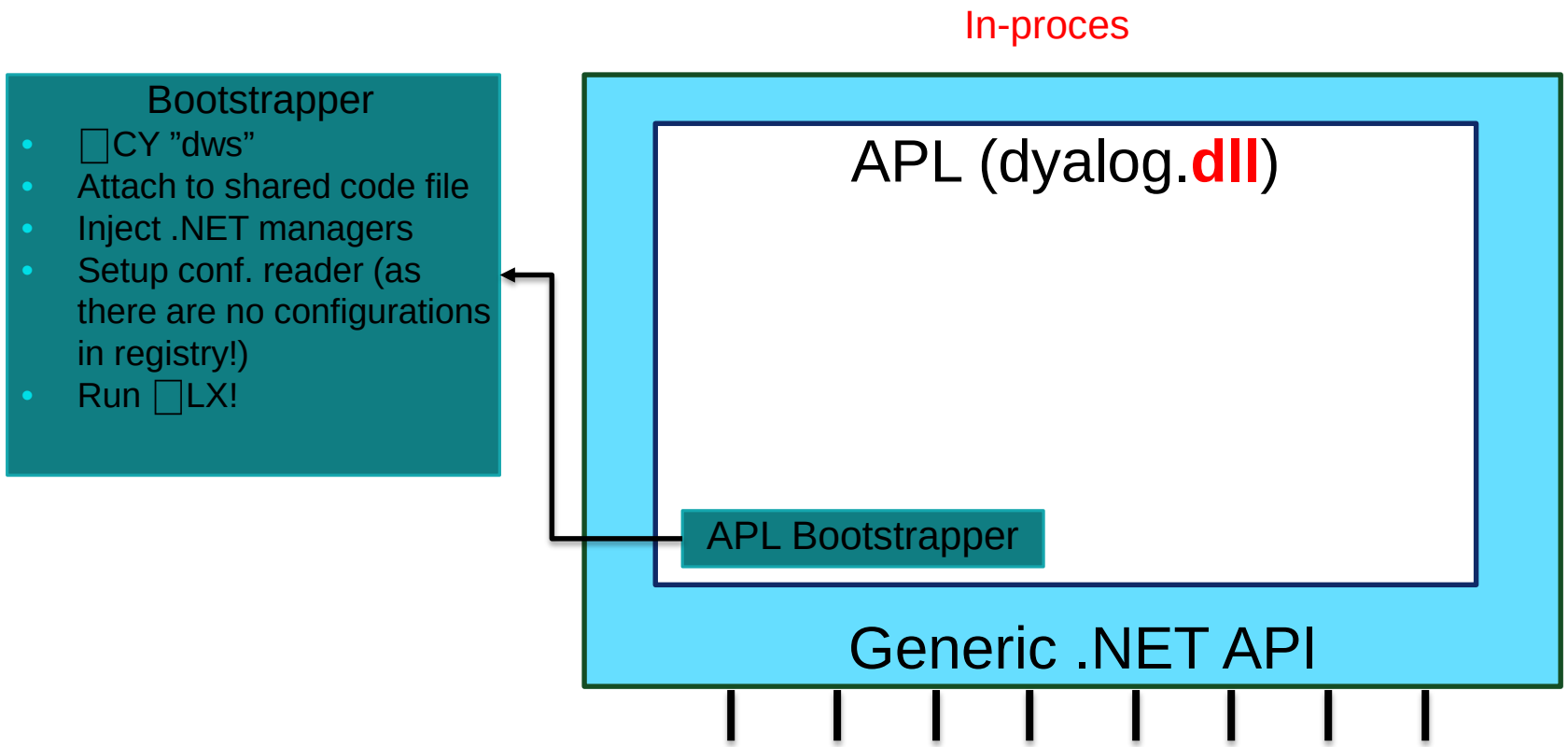

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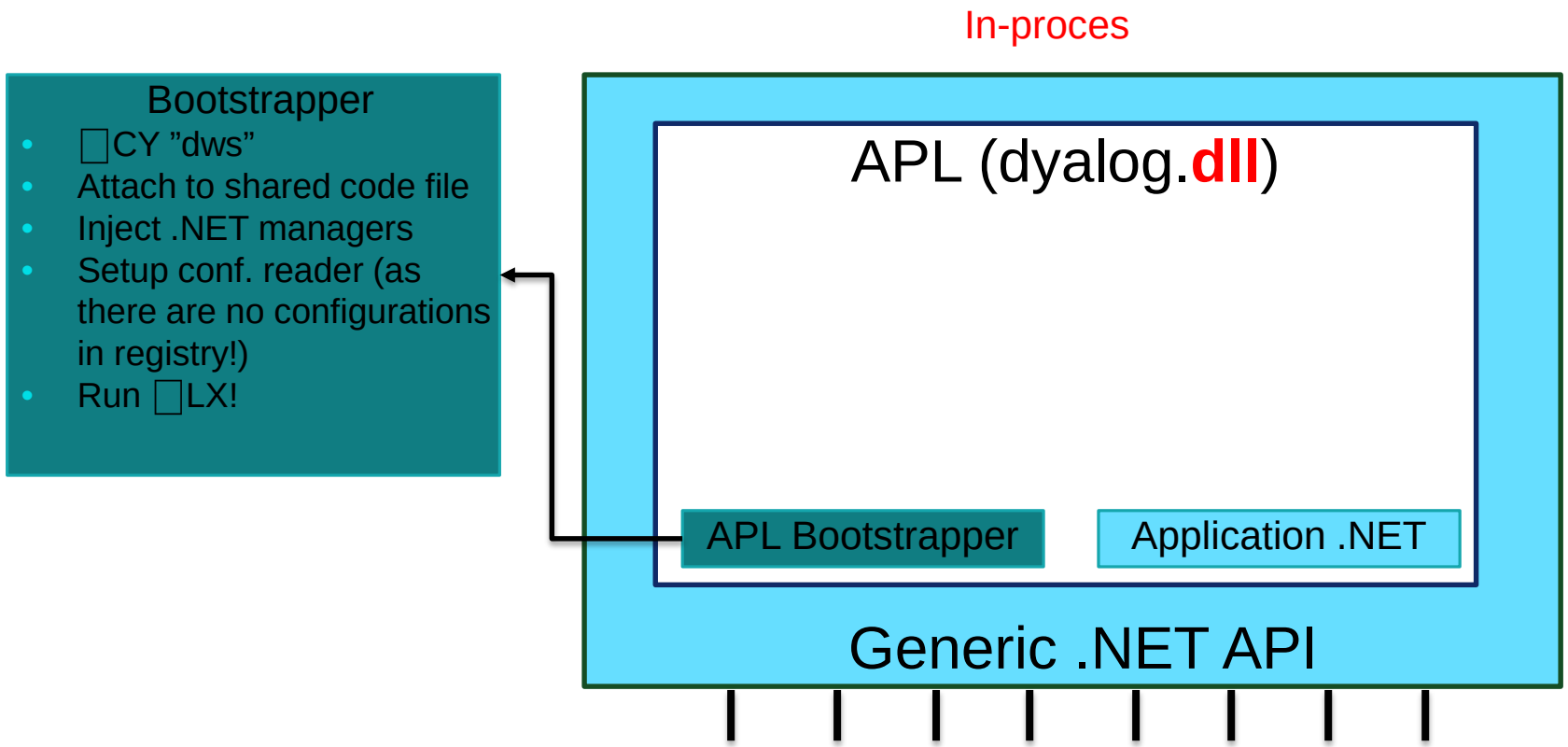

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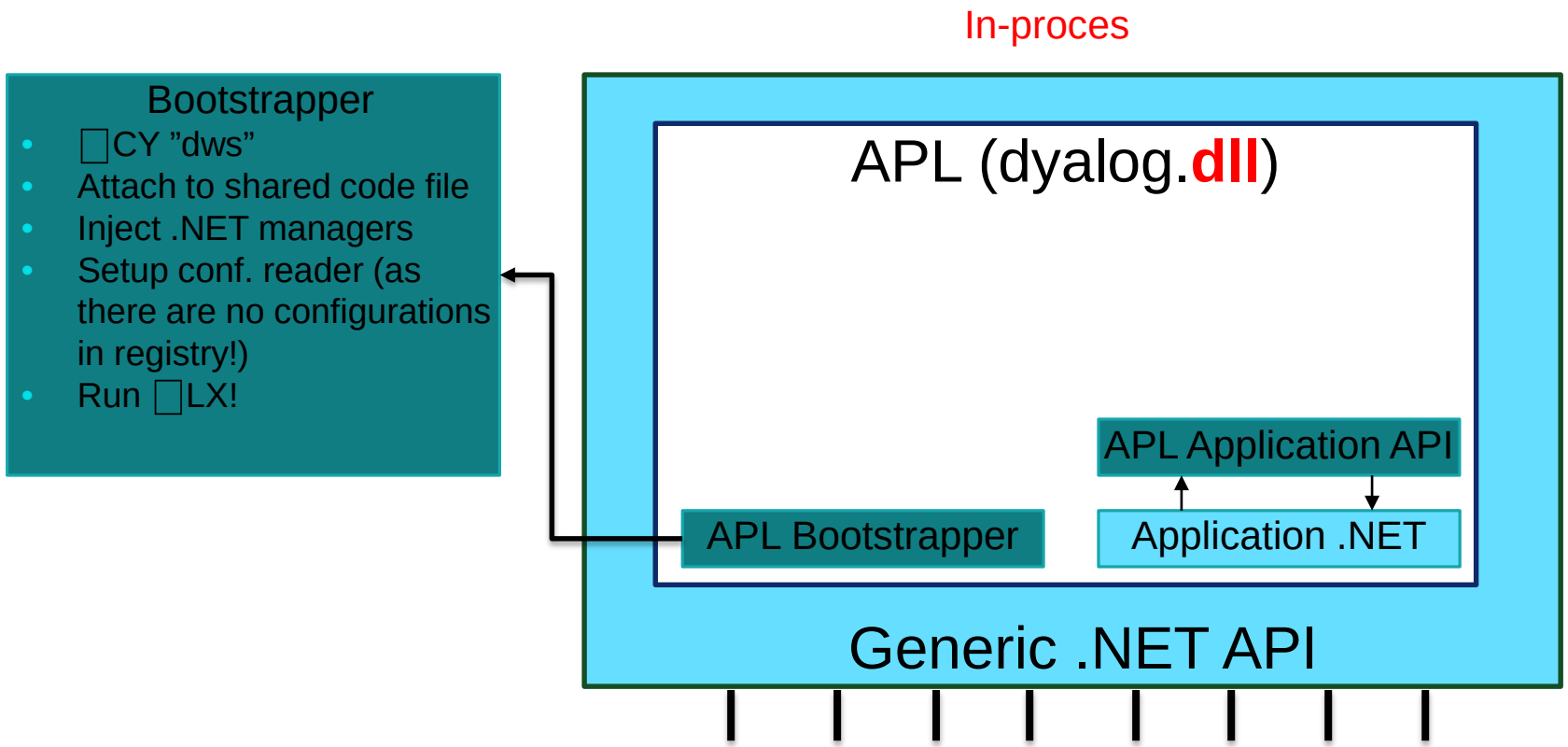

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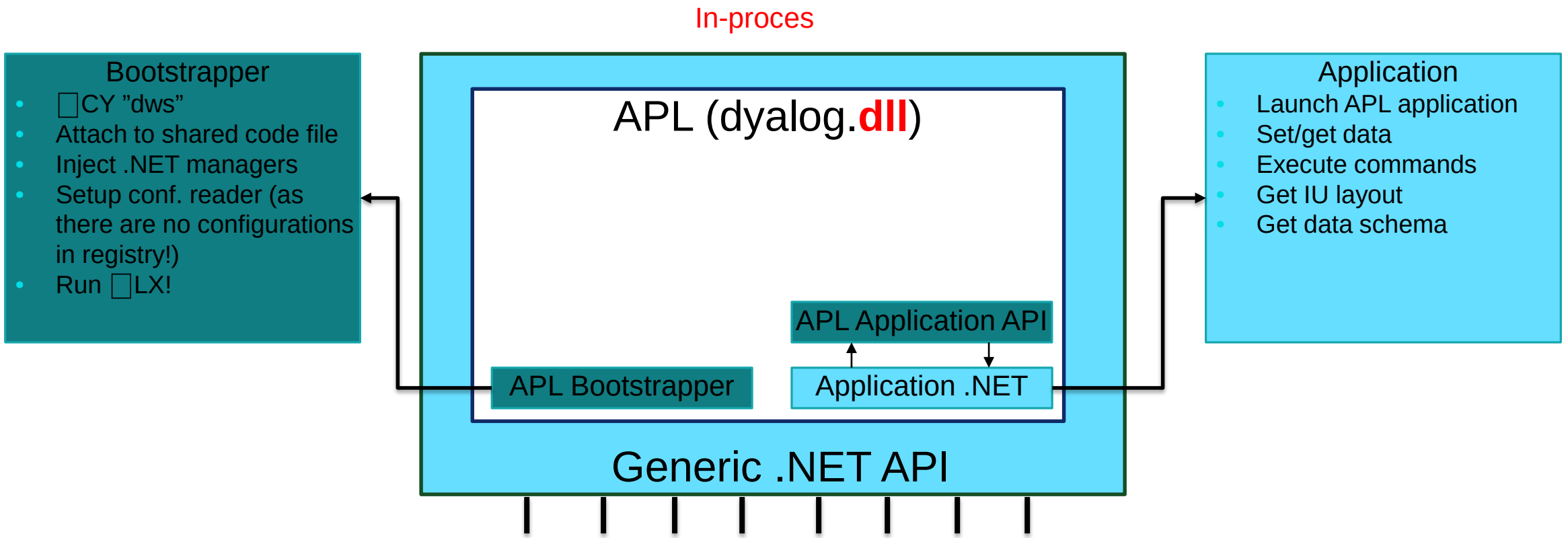

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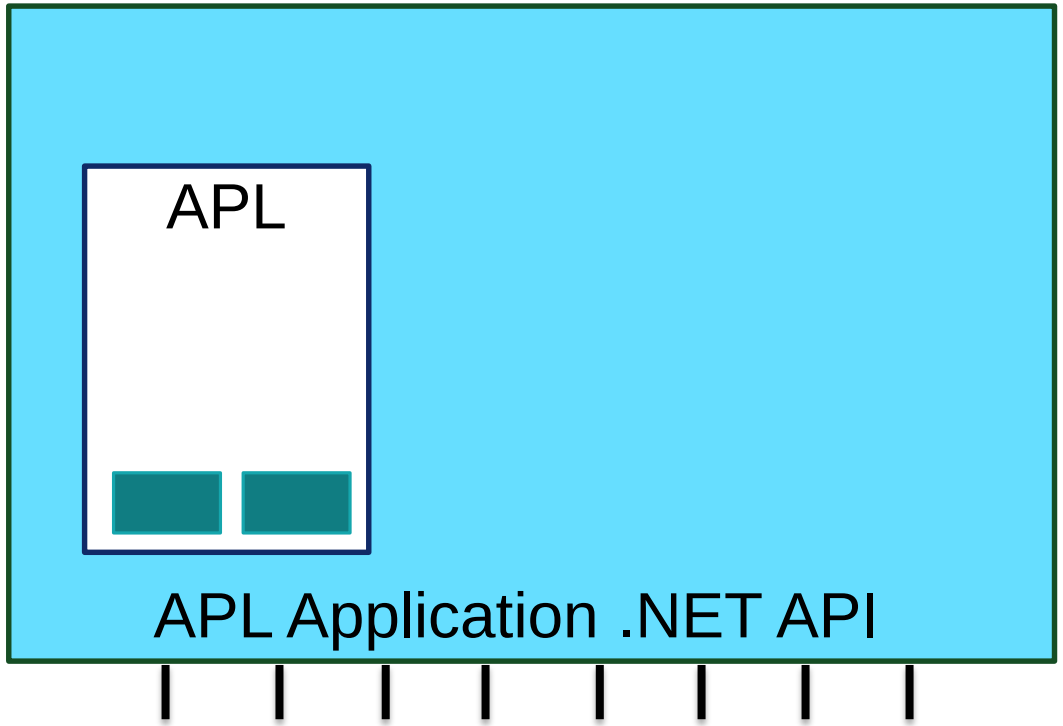
THE SYSTEM AS OF TOMORROW

3-TIER APL STACK – MULTIPLE APL INSTANCES



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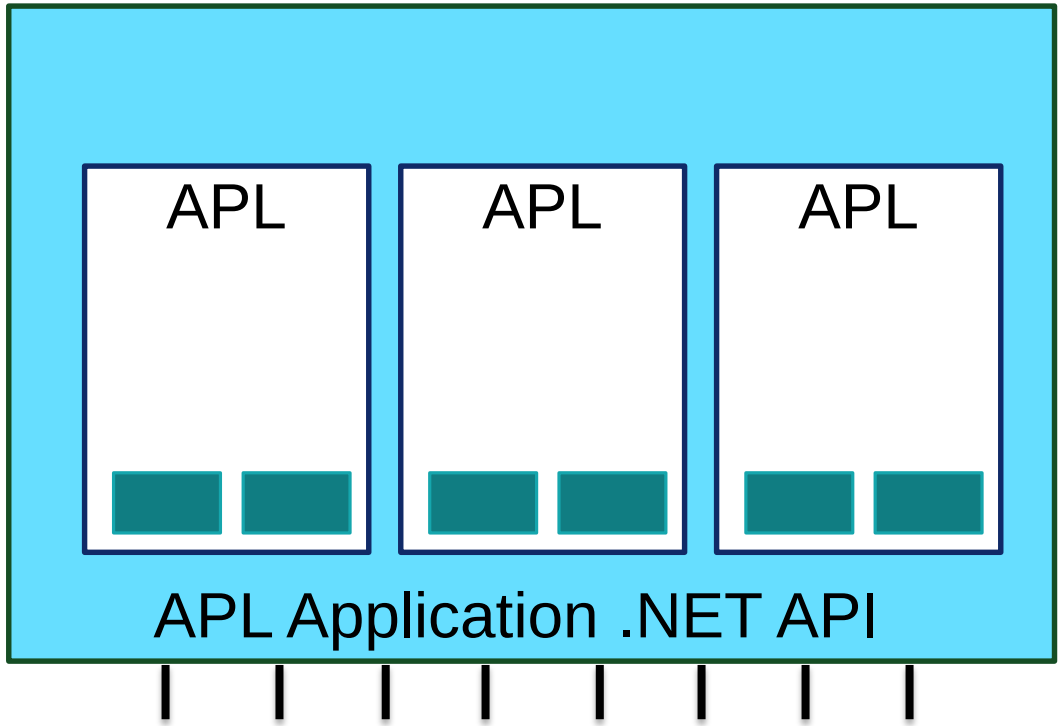

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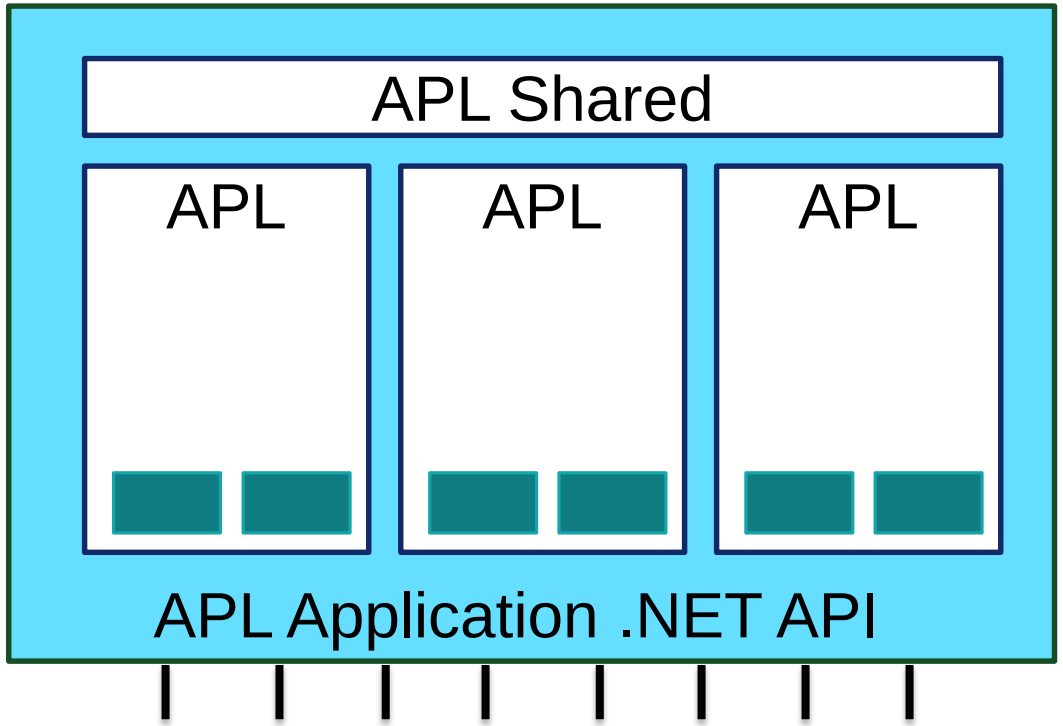

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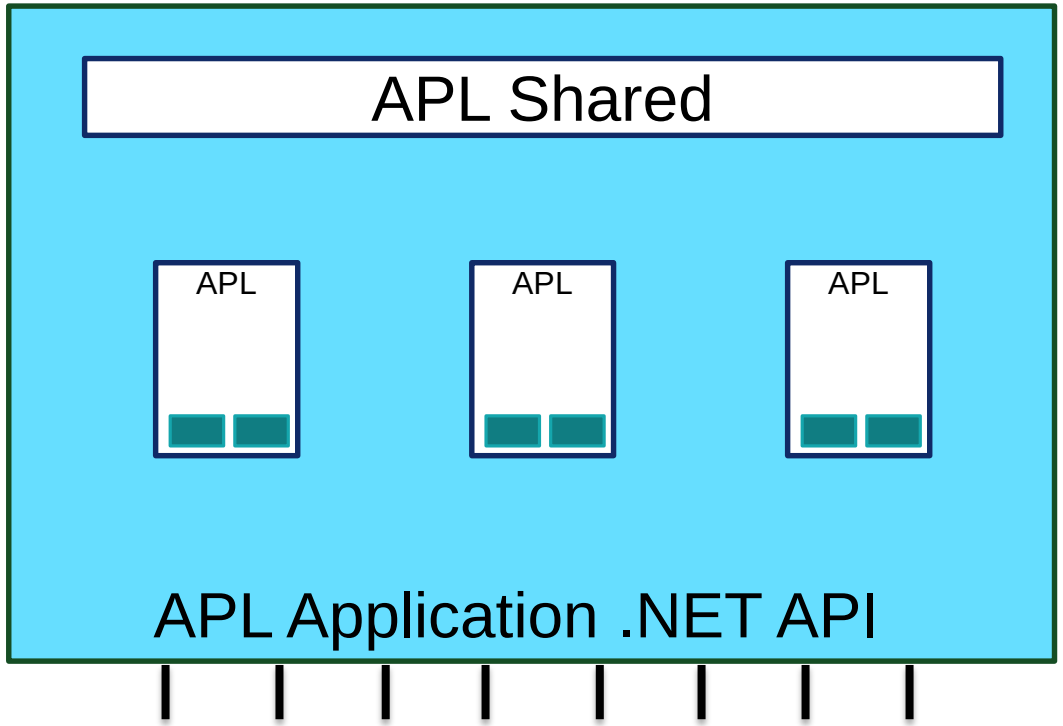
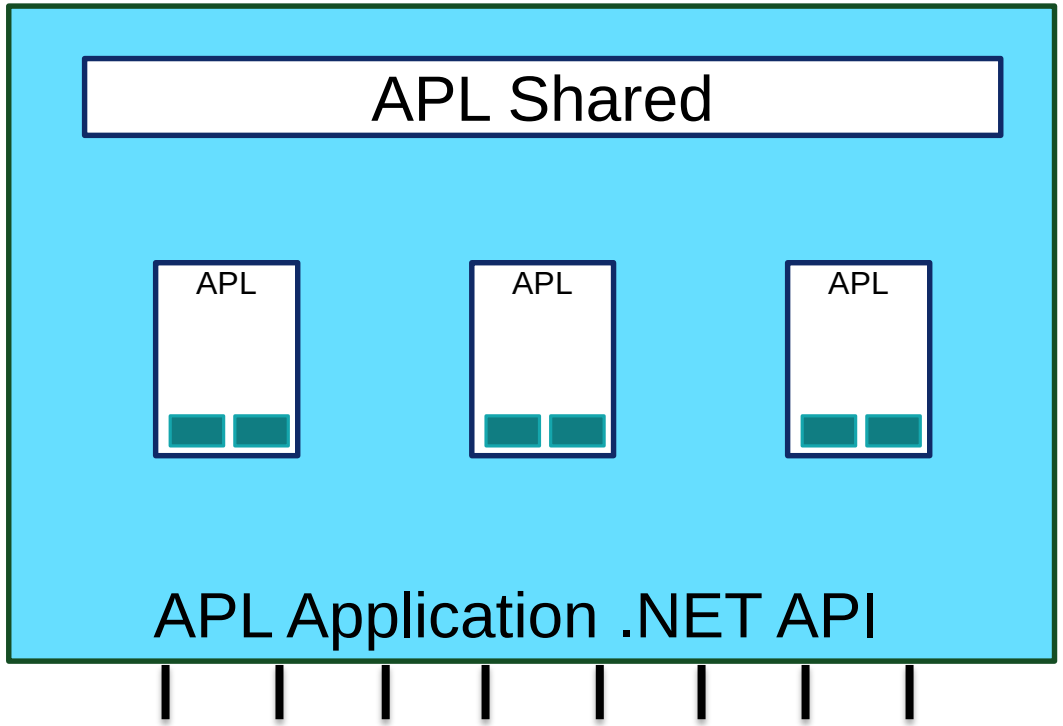


THE SYSTEM AS OF TOMORROW

3-TIER APL STACK – MULTIPLE APL INSTANCES

- Dyalog engaged in hosting multiple in-proces 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)



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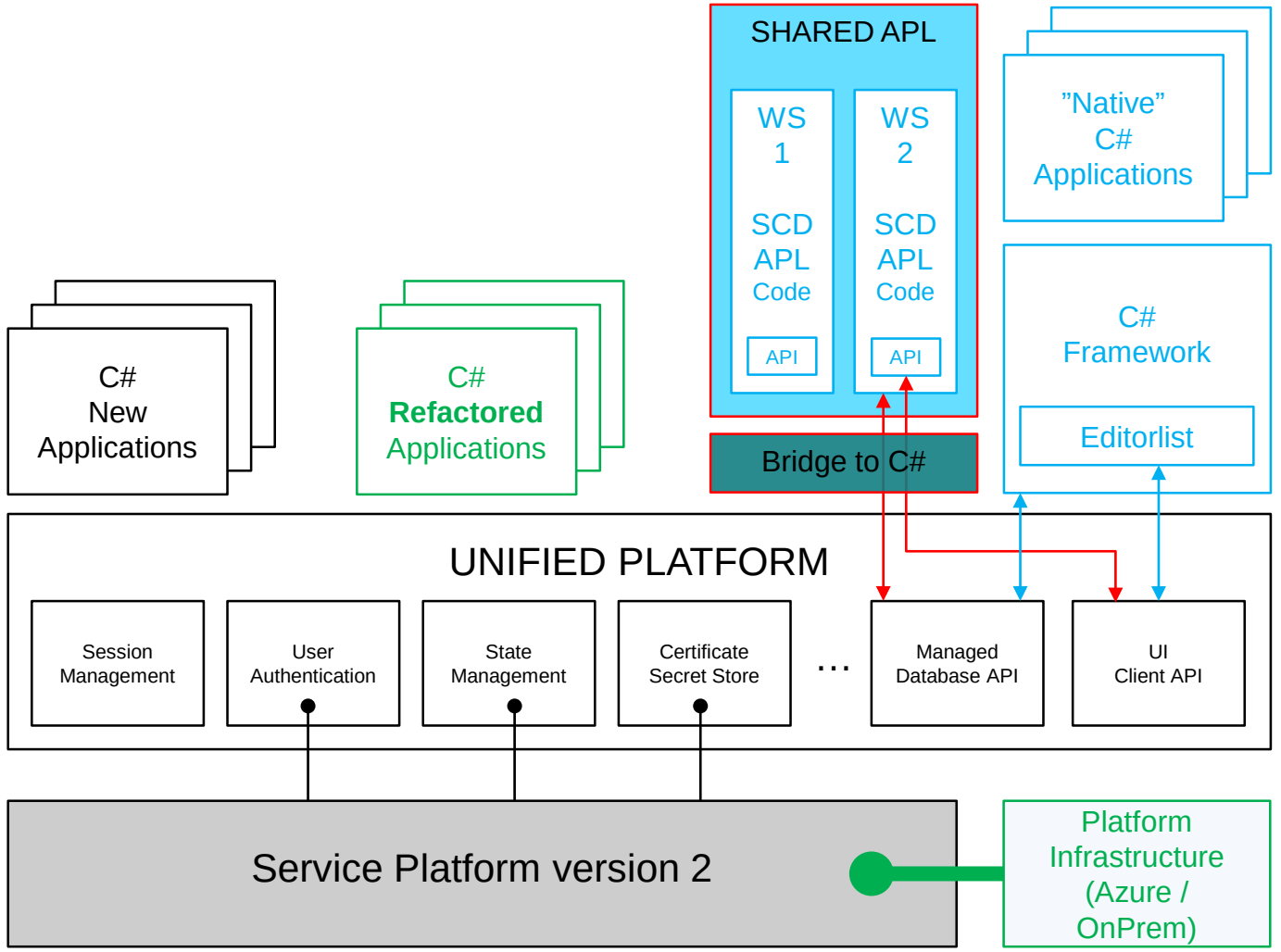
TARGET SERVICE ARCHITECTURE



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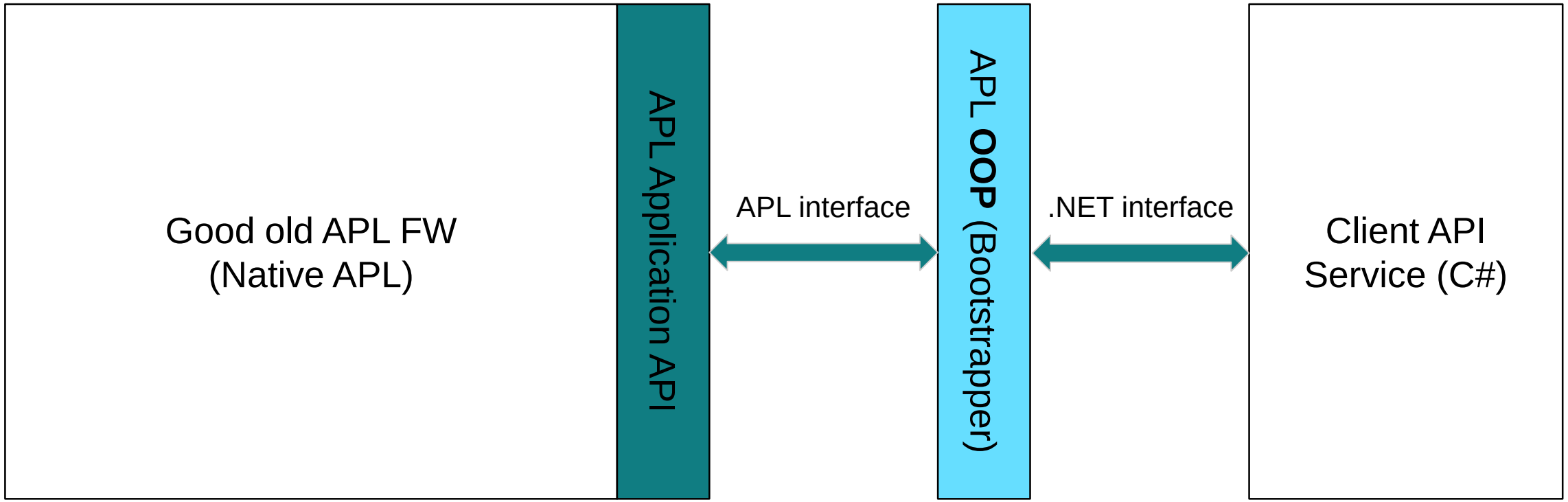
3-TIER ARCHITECTURE – APL PART



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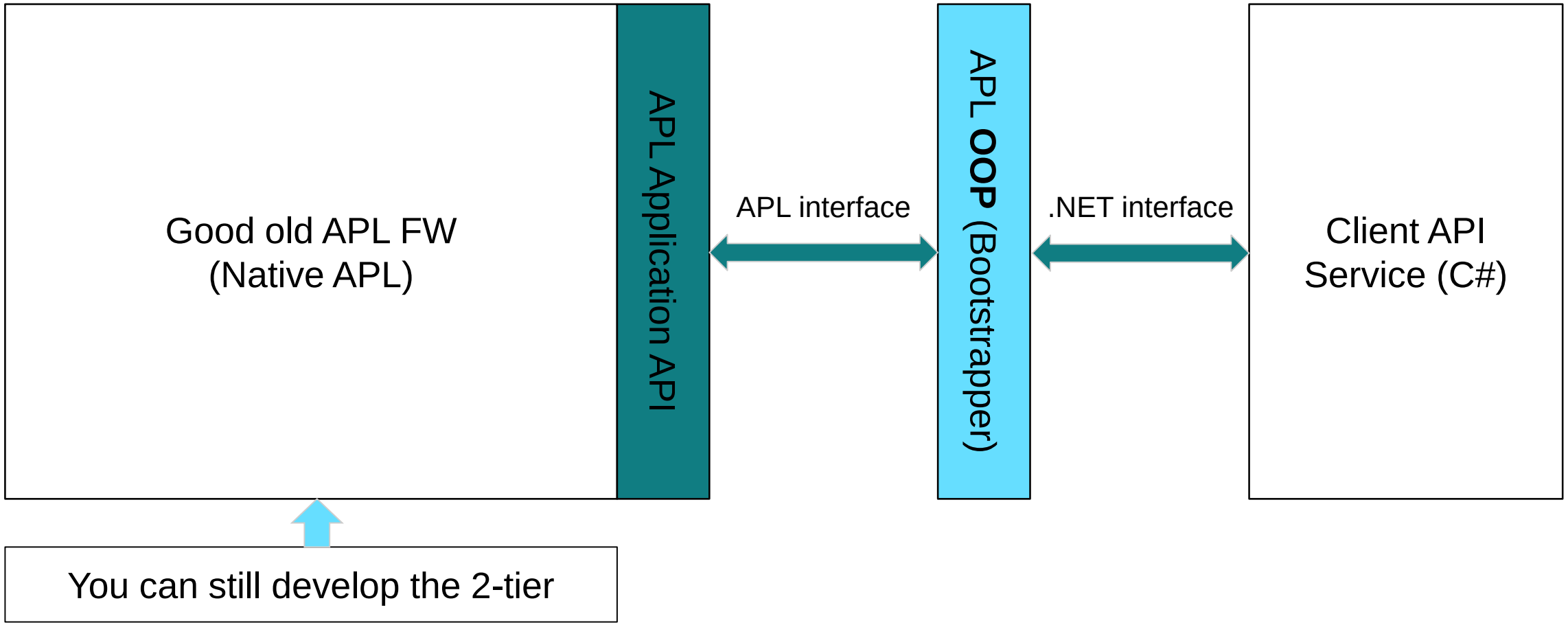

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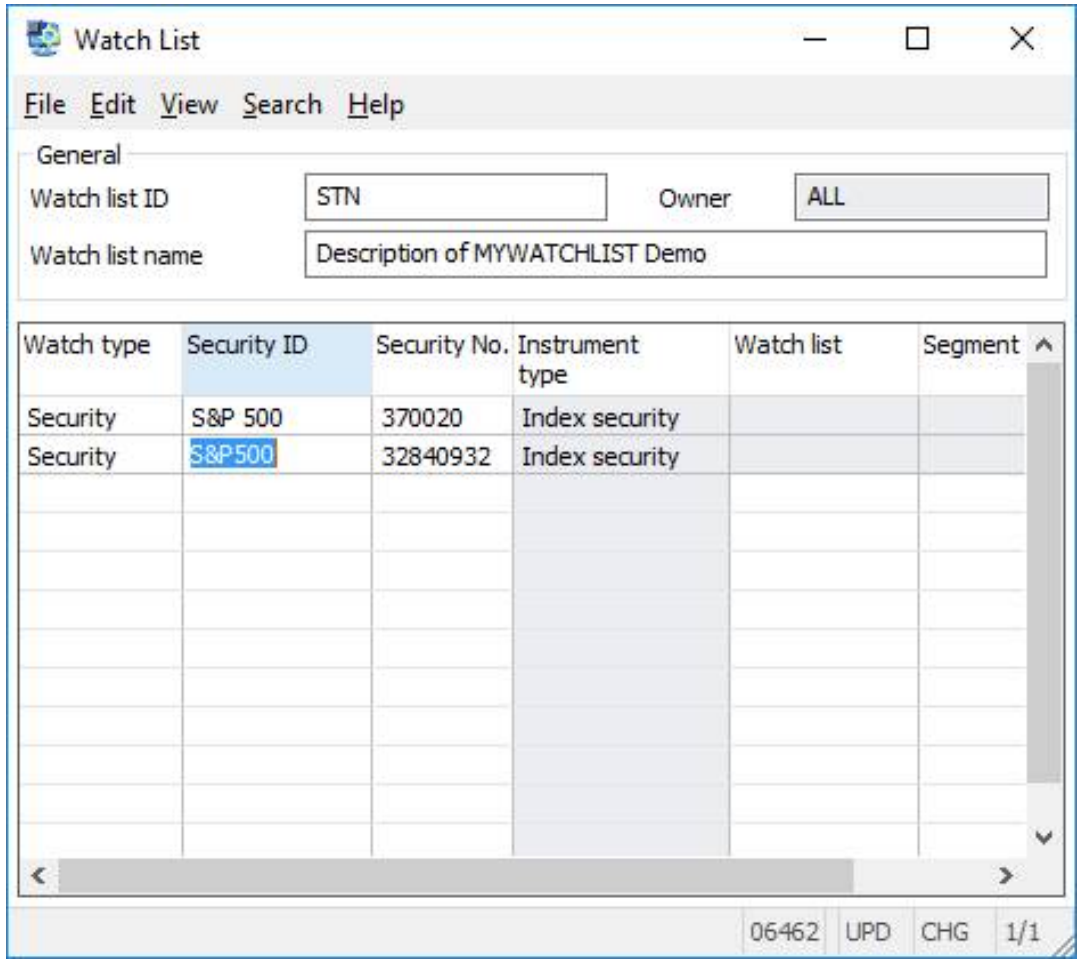
LET’S SEE SOME CODE!

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




```
{
    "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"
        }
    ]
}
```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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": {
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                                "condition": true
                            }
                        }
                    ]
                },
                {
                    "type": "Control",
                    "label": "Watch list name",
                    "scope": "#/properties/watchlistname"
                }
            ]
        },
        {
            "type": "Control",
            "scope": "#/properties/watchsublist"
        }
    ]
}
```


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LET’S SEE AN EXAMPLE!

WANT TO KNOW MORE?

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