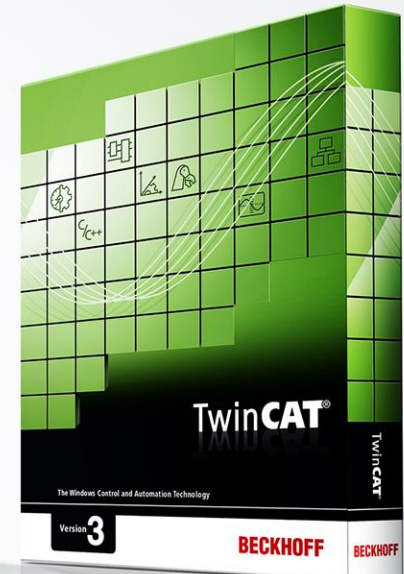
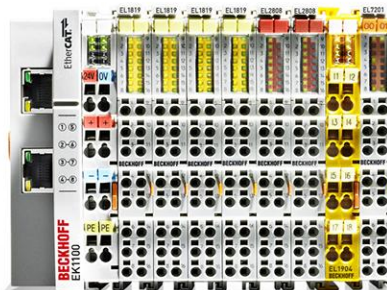


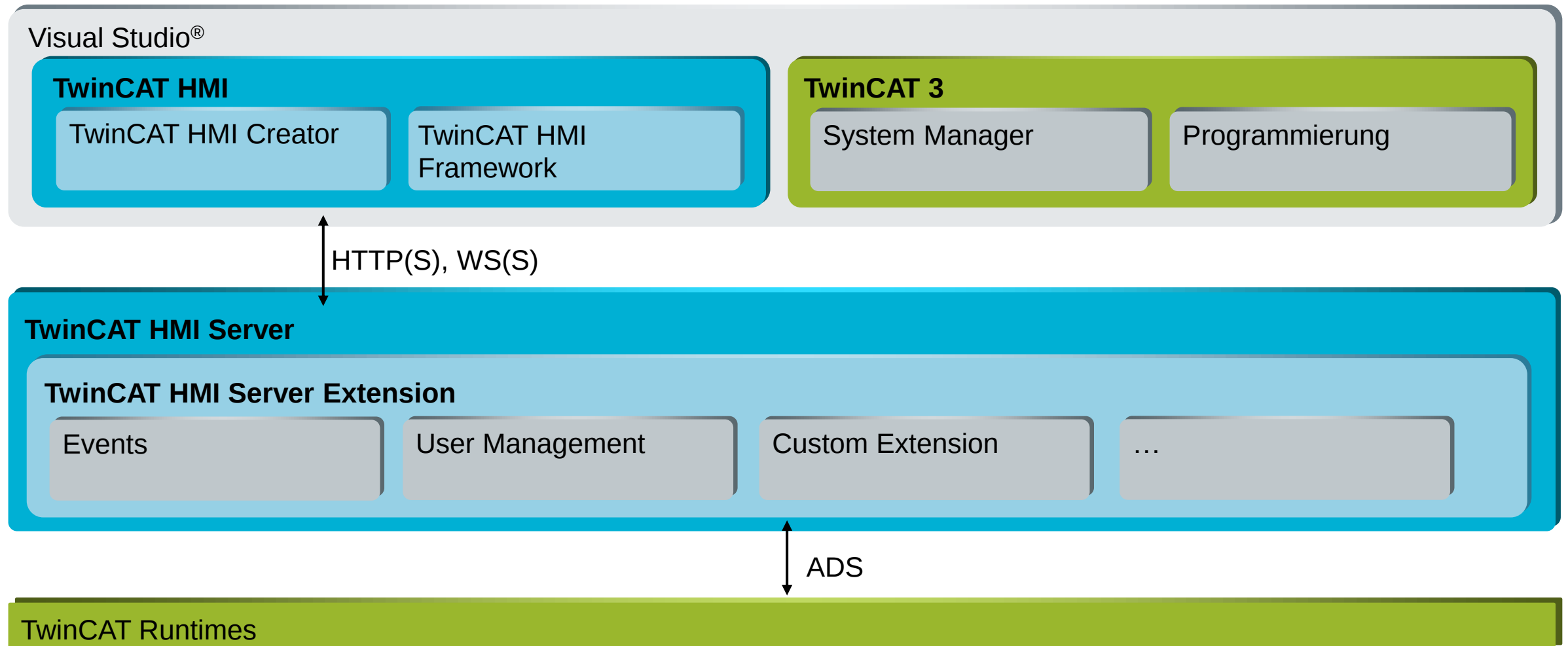
TwinCAT HMI – Server Overview

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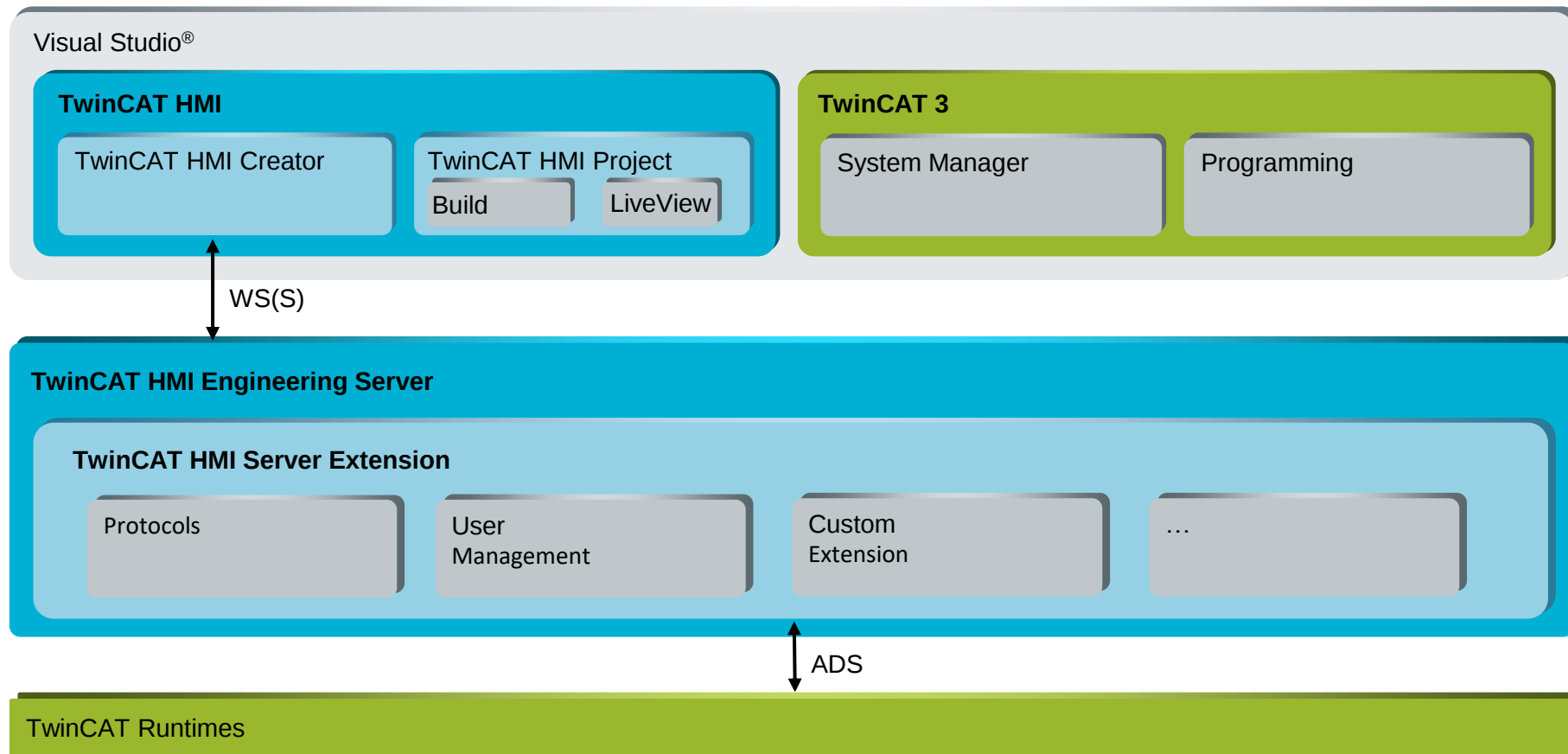
- Webserver developed by Beckhoff
- Central data acquisition point in HMI
- Provides the HMI project to clients
- Communication with Beckhoff PLCs over ADS

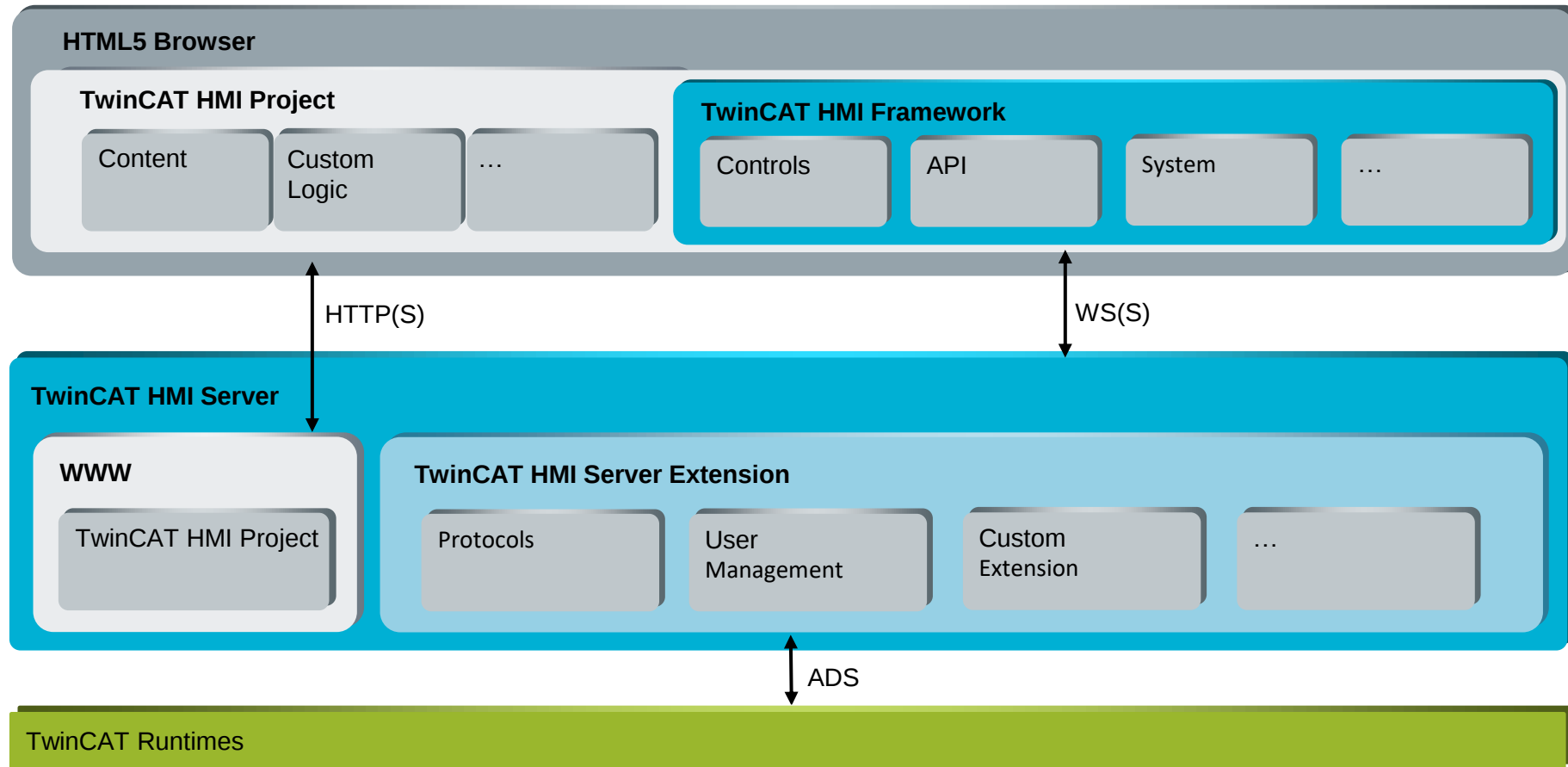




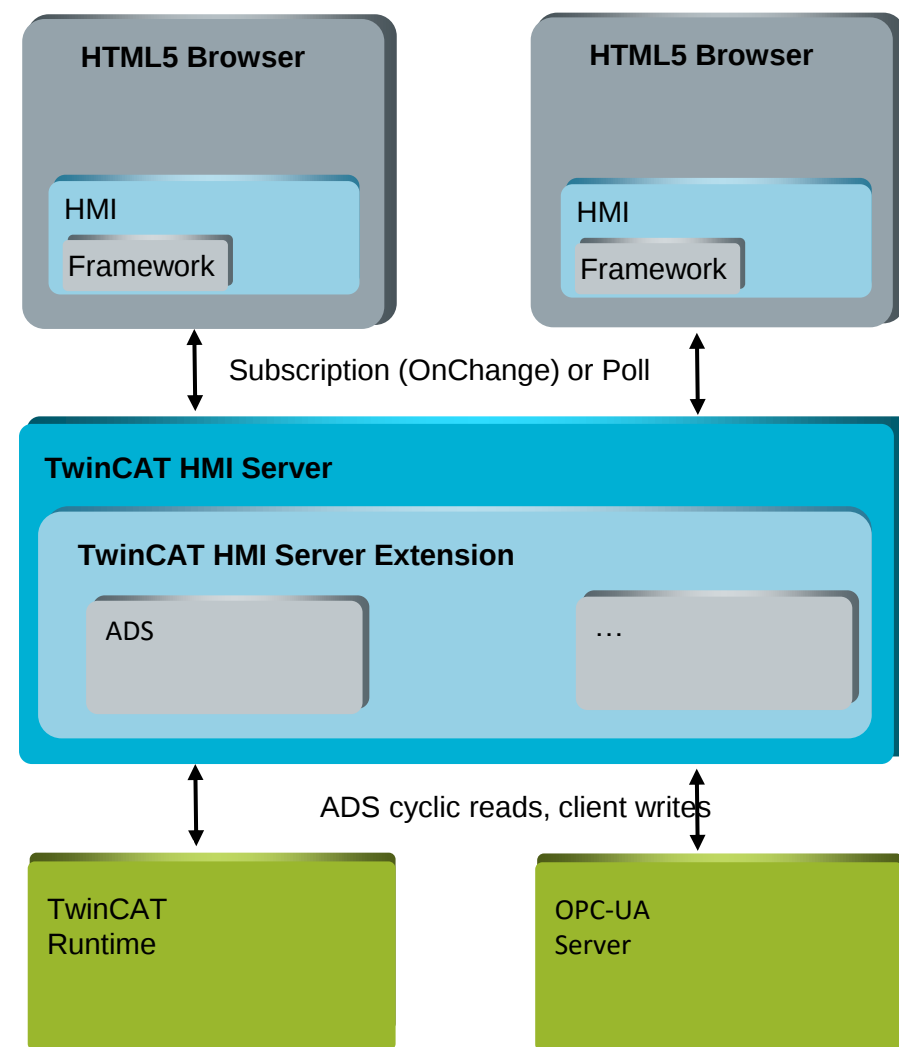
- HyperText Transport Protocol (HTTP/S)
 - provide project and HMI framework
- WebSockets (WS)
 - establish a connection between client and server
- Automation Device Specification (ADS)
 - communication with TwinCAT PLC

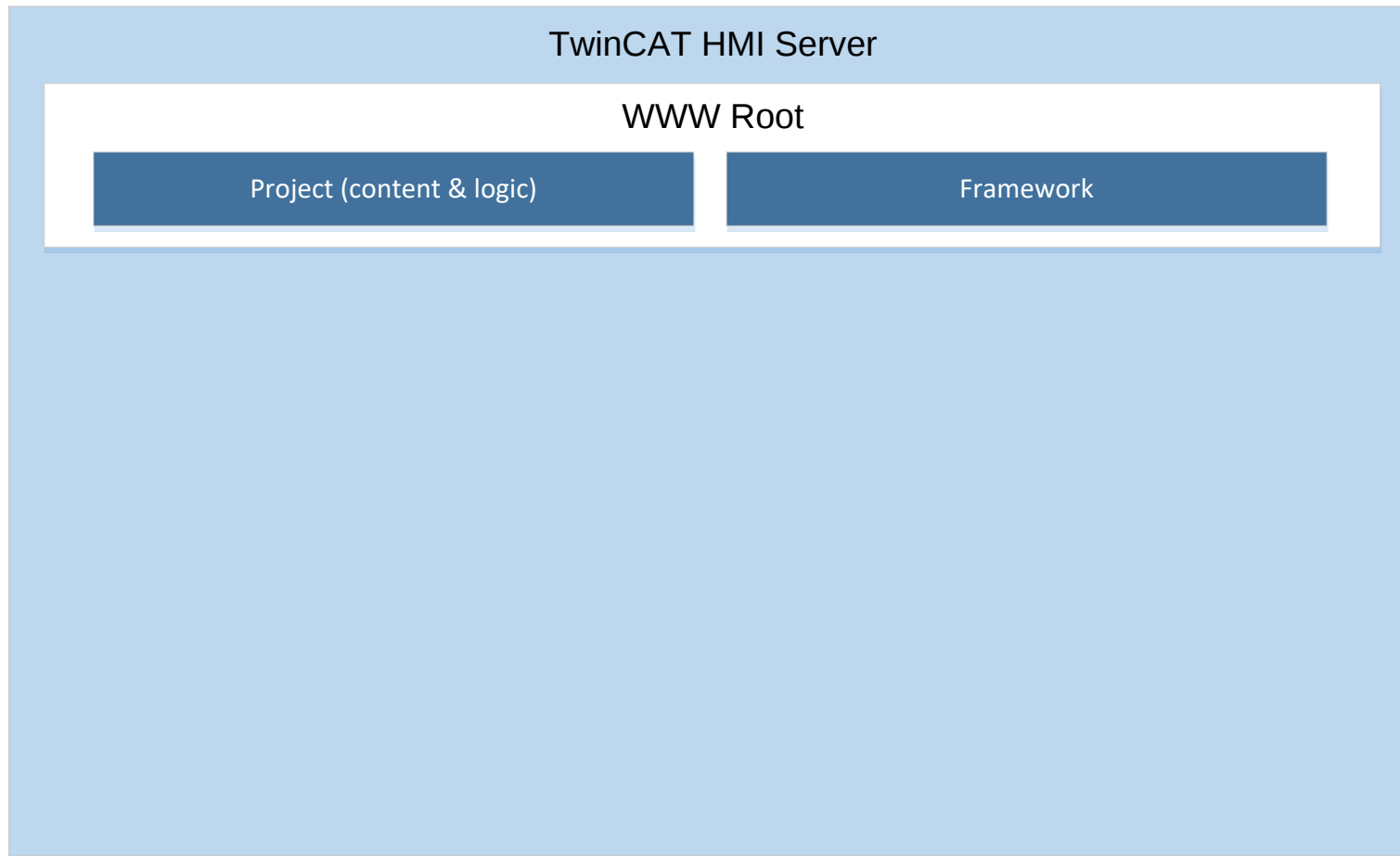




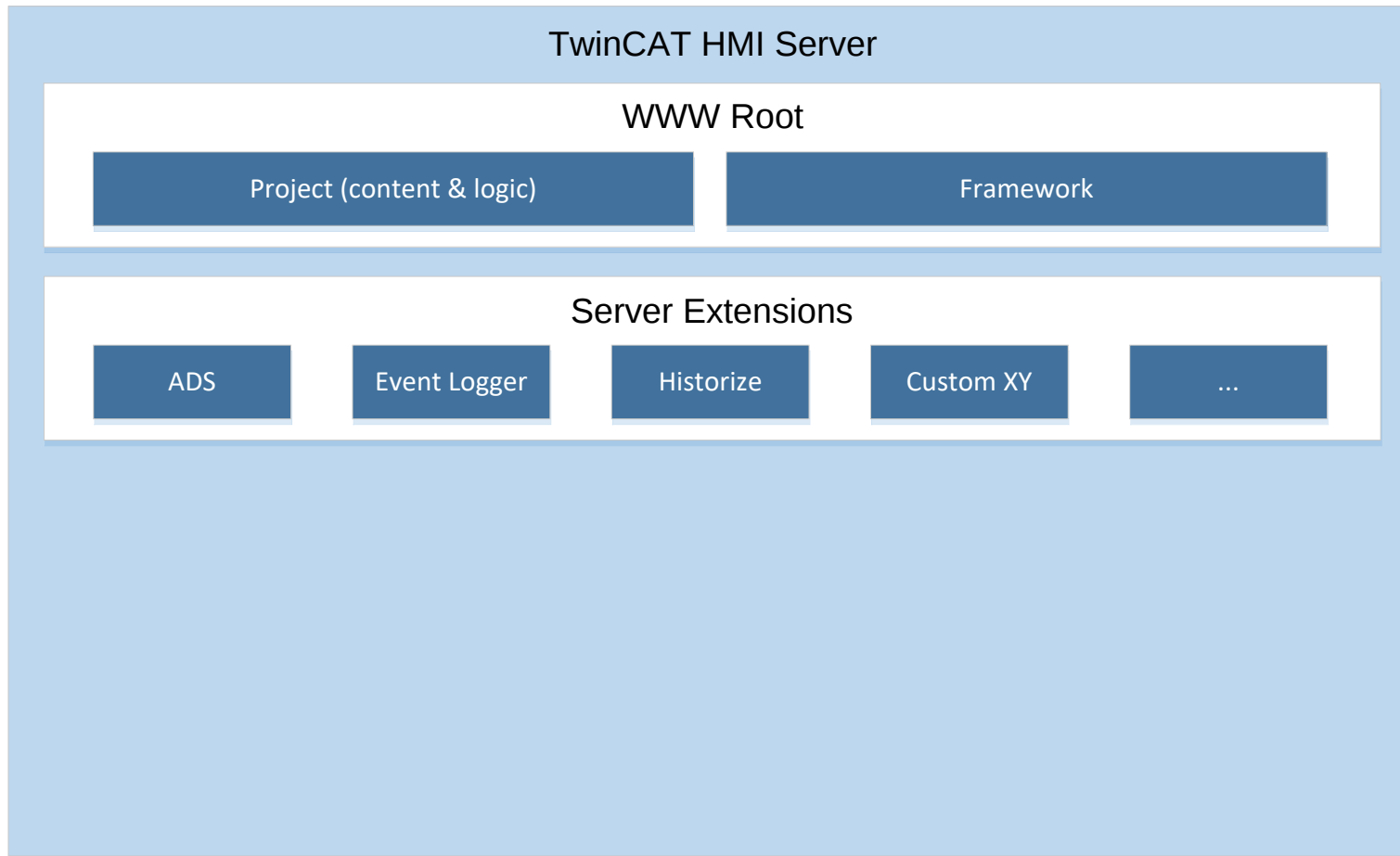


- HMI Server acts as client to all data points
- HMI Clients subscribe to the server for data
- HMI Project configures how data is read/written
 - Cyclic
 - Poll
 - Write to one data point
 - Write to many at once (sum command)
- Data points with the same cyclic interval are optimized automatically for single sum reads





- Document root provides the content for the client
- Contains the deployed HMI project
- Contains Beckhoff framework, and custom user deployed controls



- Server is built modularly
- Extensions for different kind of tasks
 - ADS for PLC communication
 - User Handling
 - Event Handling
 - ...
- Users can develop their own extensions in .NET C# or .NET CORE

- Server settings are stored in JSON files in the HMI project
- Configuration of this settings over web interface
- Configuration is divided into different profiles
 - Default: Settings for the engineering
 - Remote: Settings for the remote server (settings that will be published)
- Extensions can provide their own configuration page
 - Extension specific settings
 - Compare to ADS extension

Server Configuration with web interface (deployed)

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- Same config screen as in the development environment
- Access remote servers (headless devices, no RDP connection, ...)
- Default user: __SystemAdministrator
- <http://IP-Adress-of-Server:Port/Config/TcHmiSrv>
 - <http://127.0.0.1:3000/Config/TcHmiSrv>
 - Case sensitive
- Export settings
 - General server settings
 - Extension settings (recipes, etc.)
 - ...

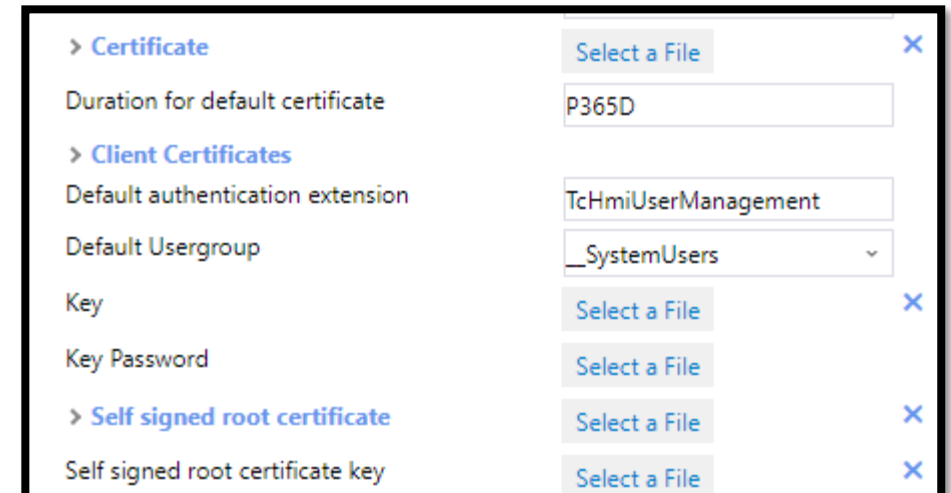
The screenshot displays the TcHmiSrv web configuration interface. The top navigation bar includes tabs for TcHmiSrv, ADS, TcHmiEventLogger, TcHmiLua, TcHmiRecipeManagement, TcHmiSqliteHistorize, TcHmiSqliteLogger, and TcHmiTextStorage. Below this, a sub-navigation bar shows 'General', 'Advanced', 'Security', 'Symbols', and 'Webserver'. The main content area is titled 'TcHmiSrv' and contains several expandable sections: 'Configurations' (with 'Default document' expanded), 'Extensions', 'Files', 'Usergroups', 'UsergroupUsers', and 'Virtual directories'. The 'Default document' section includes fields for 'Default Locale' (de-DE), 'Default Time Locale' (de-DE), 'Default timezone' (Europe/Berlin), 'Log Level' (Info), 'Project name' (TcHmi_Chat_Demo), 'Project version' (1.0.0.0), 'Authentication required' (None), and 'Publish timeout' (PT5S). A blue 'Accept' button is located at the bottom of the configuration area. On the right side, a 'Diagnostics' panel provides real-time system information: Accepted sockets (102), Active sessions (2), Active sockets (3), Architecture (win-x86), Memory usage (95.46 MB), Server time (2019-09-02T15:25:43Z), Inbound bytes (1099292.00 byte), Outbound bytes (15683937.00 byte), and Uptime (PT1H46M11S). The footer indicates the product version is 1.10.1336.352 and the config version is 1.0.0.47.

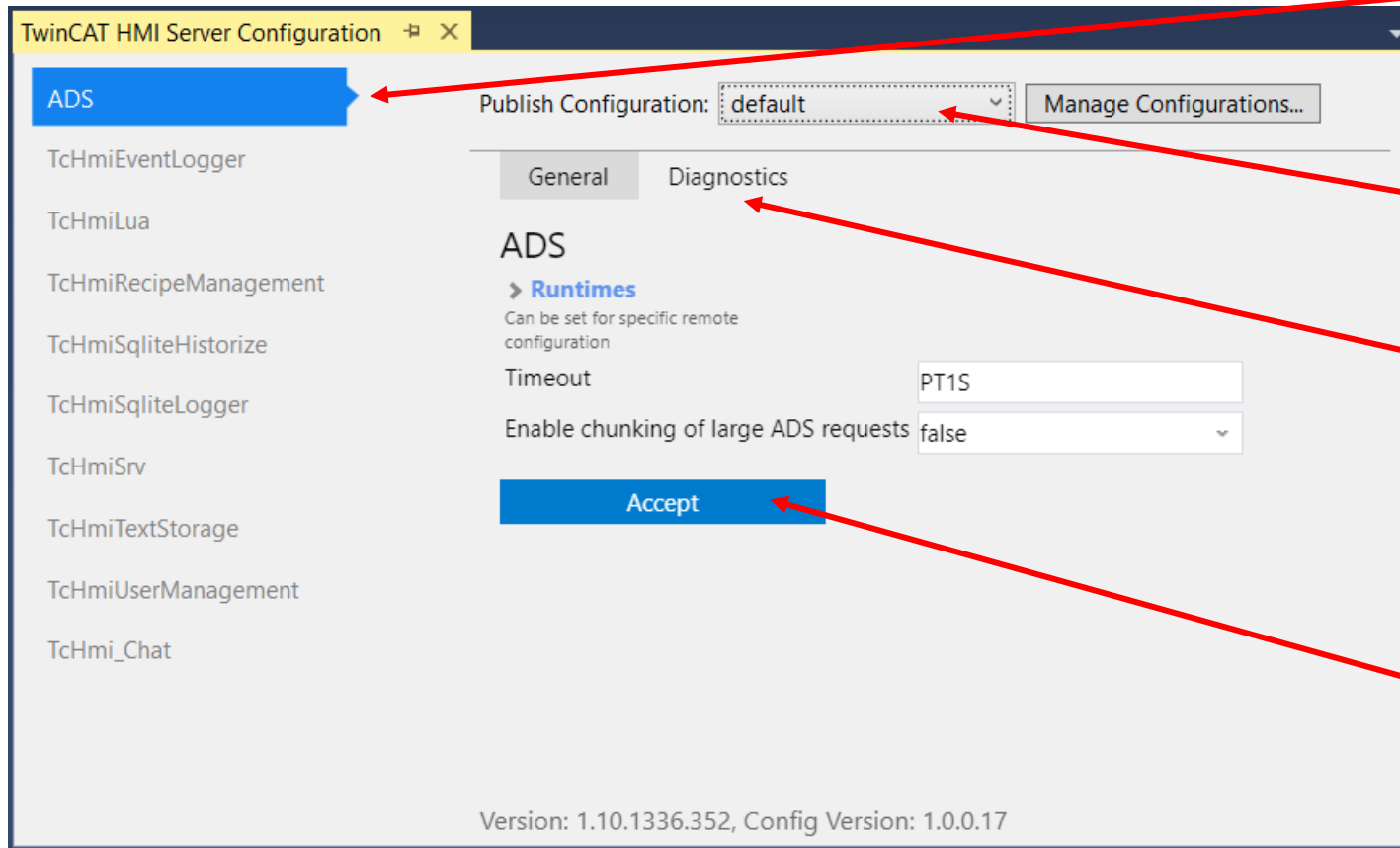
- Common server settings:
 - TcHmiSrv -> WebServer -> Endpoints
 - reachable network adapters, ports and protocols
 - 0.0.0.0 = Public access
 - 127.0.0.1 = Local access only
 - X.X.X.X = Adapter specific access only*

*Adapter specific endpoint = the IP address of the Network Adapter
Endpoint (10.199.218.50:1020) = Network Adapter IP address (10.199.218.50)



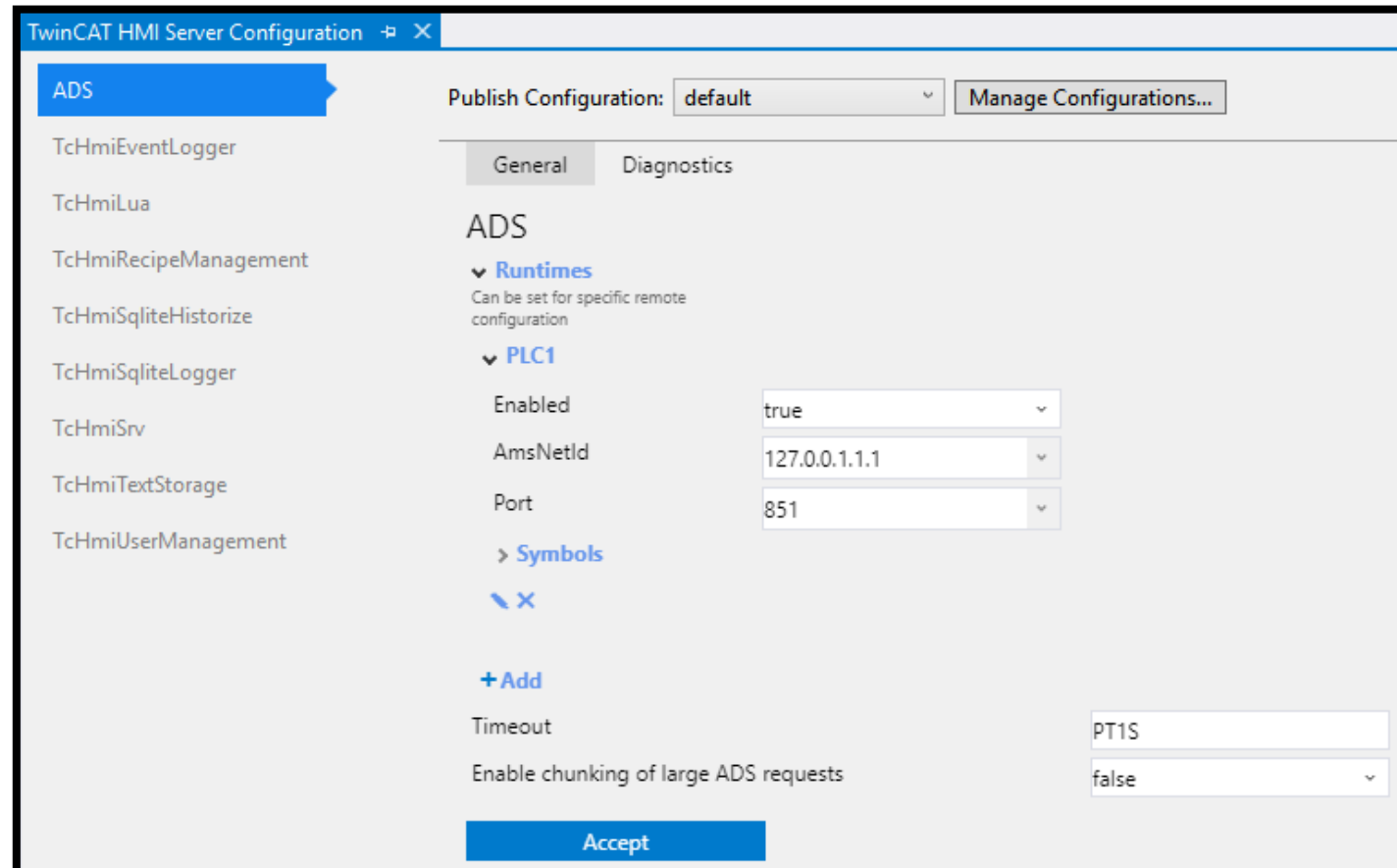
- TcHmiSrv -> Security
 - Auth settings, SSL





- Selection of extension
- Selection of profile
- Selection of subpages
- Confirm changes

- Relevant engineering settings:
 - ADS target runtimes for Engineering
 - Event Logger targets for Engineering
- Publish Configurations:
 - default = Engineering
 - remote = Stand Alone Deploy
 - NameYourOwn = Specific Deploy



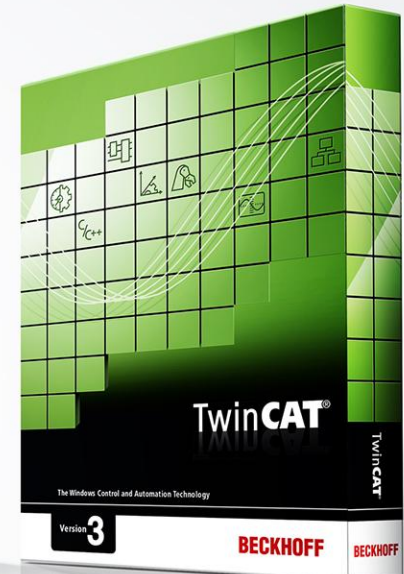
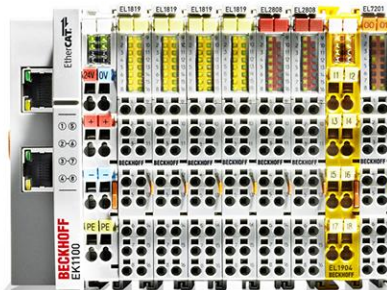
- Information about current state of the server
- First point of access in case of any connection issues
- Information about
 - Consumed licenses
 - Active sessions
 - PLC states
 - Memory usage
 - ...

Diagnostics	
▼ Runtimes	
▼ PLC1	
ADS state	Run
ADS version	3.1.4024
Device name	TwinCAT System
► TcSysService	

Diagnostics	
Accepted sockets	102
Active sessions	2
Active sockets	3
Architecture	win-x86
► .NET Core Versions	
► .NET Classic Versions	
▼ License	
Clients	100
Extensions	true
Servers	1
State	Engineering
Targets	100
Used clients	1
Used servers	0
Used targets	1
Memory usage	95.46 MB
► Remote Server	
Server time	2019-09-02T15:25:43Z
Inbound bytes	1099292.00 byte
Outbound bytes	15683937.00 byte
Uptime	PT1H46M11S

Thanks for your attention!

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