

# WPF Troubleshooting mit VS2015

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**DDC** .NET Developer  
Conference 2015

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# Troubleshooting?







## Call Stack



Name	Language
 App.DDC2015.Workshops()	C#
App.DDC2015.KeynotePromiseLikeAPro()	C#
App.WPFTroubleshootingInVS2015.TakeAways()	C#
App.WPFTroubleshootingInVS2015.ProfilingUndTimeline()	C#
App.WPFTroubleshootingInVS2015.WPFTools()	C#
App.WPFTroubleshootingInVS2015.VS2015Tools()	C#
App.WPFTroubleshootingInVS2015.DebuggingUndProfiling()	C#
App.DDC2015.KeynoteDasIstDieZukunft()	C#
App.DDC2015.DevSessions()	C#
App.Program.Main(string[] args)	C#
[External Code]	



# Debugging



# Profiling



# Debugging



# Profiling



# Debugging



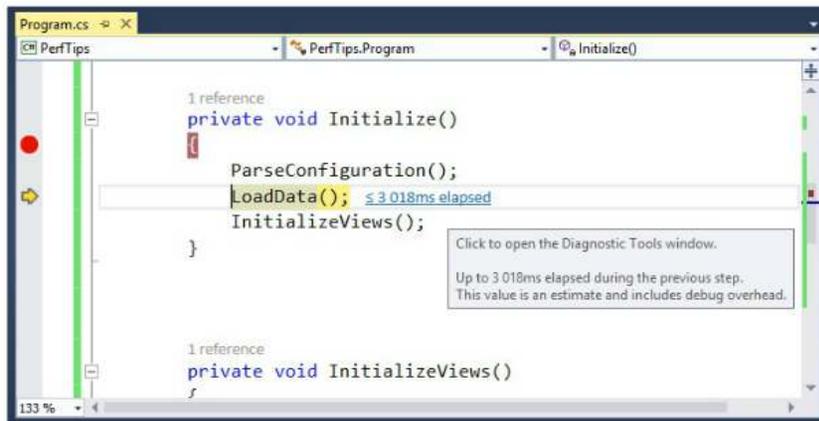
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# Debugging Tools in VS2015

## PerfTips



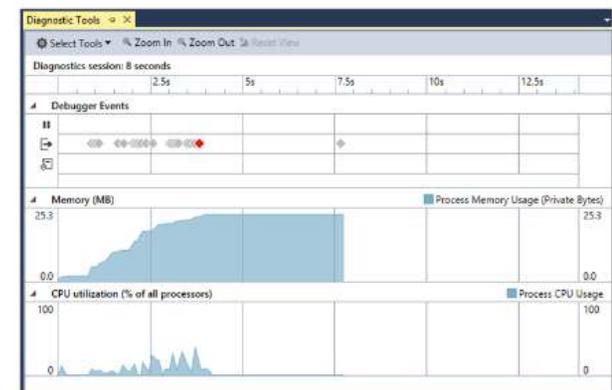
# "x64 Edit & Continue"

(needs .NET 4.5.1+)

## Lambda Watch



## Diag. Tools Window



# PerfTips

Program.cs [X]

C# PerfTips PerfTips.Program Initialize()

1 reference  
private void Initialize()  
{  
    ParseConfiguration();  
    LoadData(); ≤ 3 018ms elapsed  
    InitializeViews();  
}

1 reference  
private void InitializeViews()  
{

Click to open the Diagnostic Tools window.

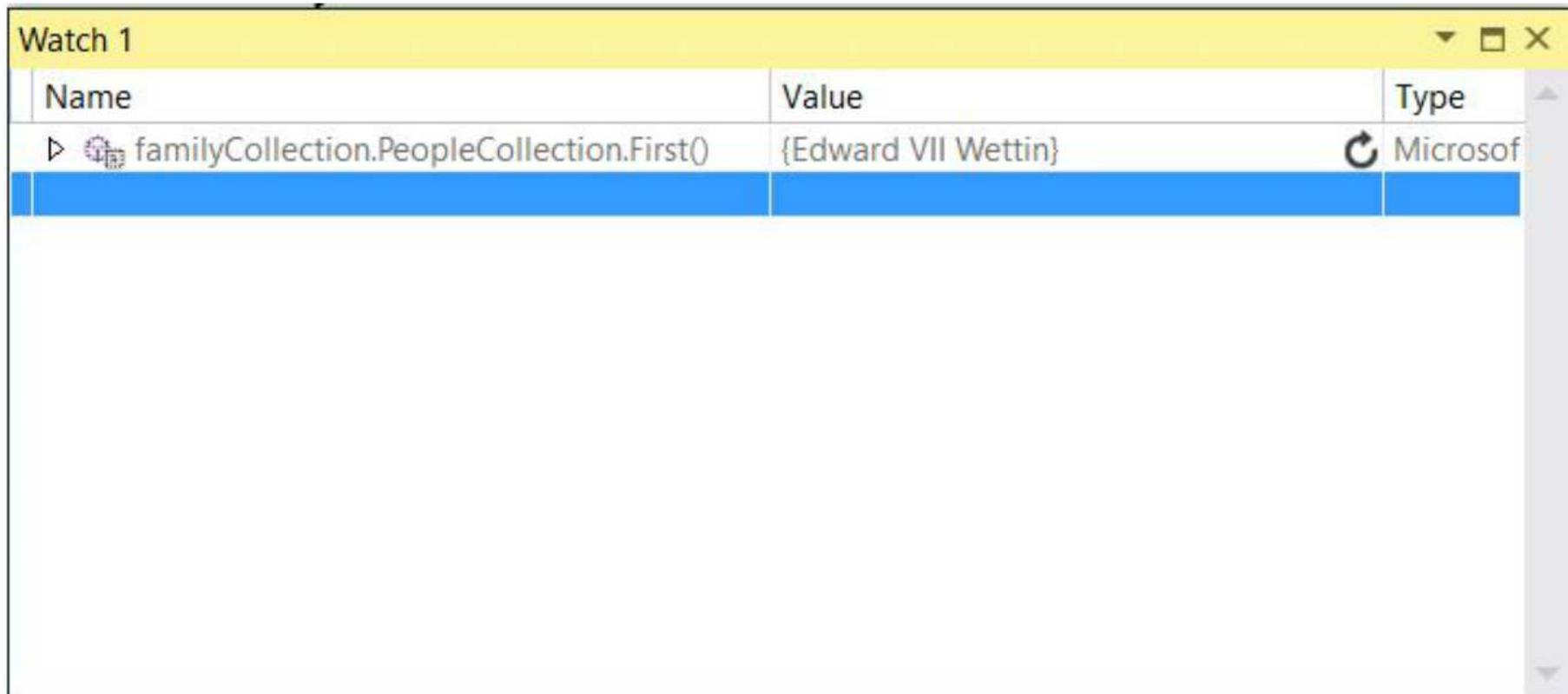
Up to 3 018ms elapsed during the previous step.  
This value is an estimate and includes debug overhead.

133 %

"x64 Edit &  
Continue"

(needs .NET 4.5.1+)

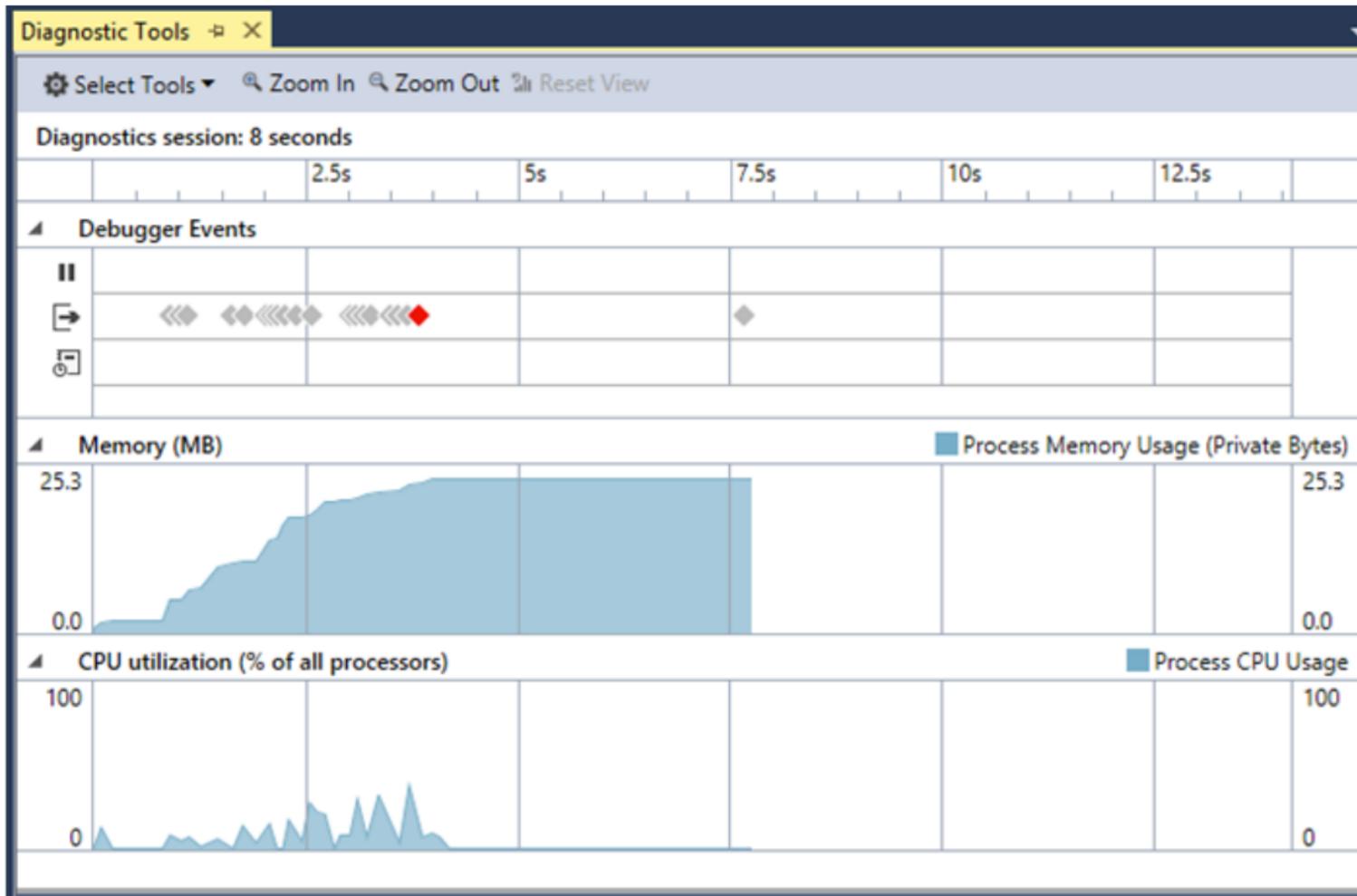
# Lambda Watch



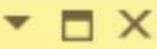
The image shows a screenshot of the 'Watch' window in Visual Studio. The window title is 'Watch 1'. It contains a table with three columns: 'Name', 'Value', and 'Type'. The first row shows a lambda expression 'familyCollection.PeopleCollection.First()' with a value of '{Edward VII Wettin}' and a type of 'Microsoft...'. A blue highlight is visible under the first row. The table is otherwise empty.

Name	Value	Type
▶ familyCollection.PeopleCollection.First()	{Edward VII Wettin}	Microsoft...

# Diag. Tools Window



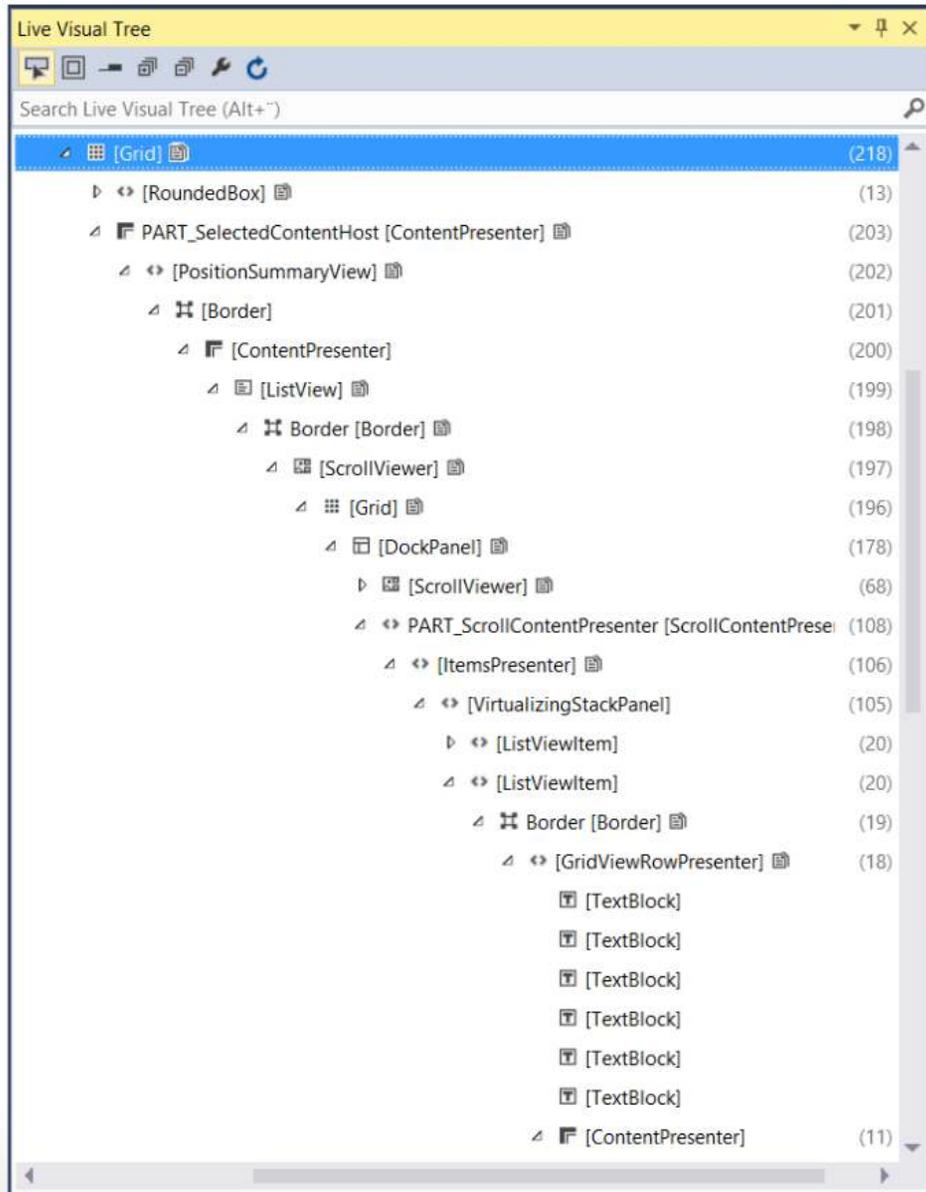
## Call Stack



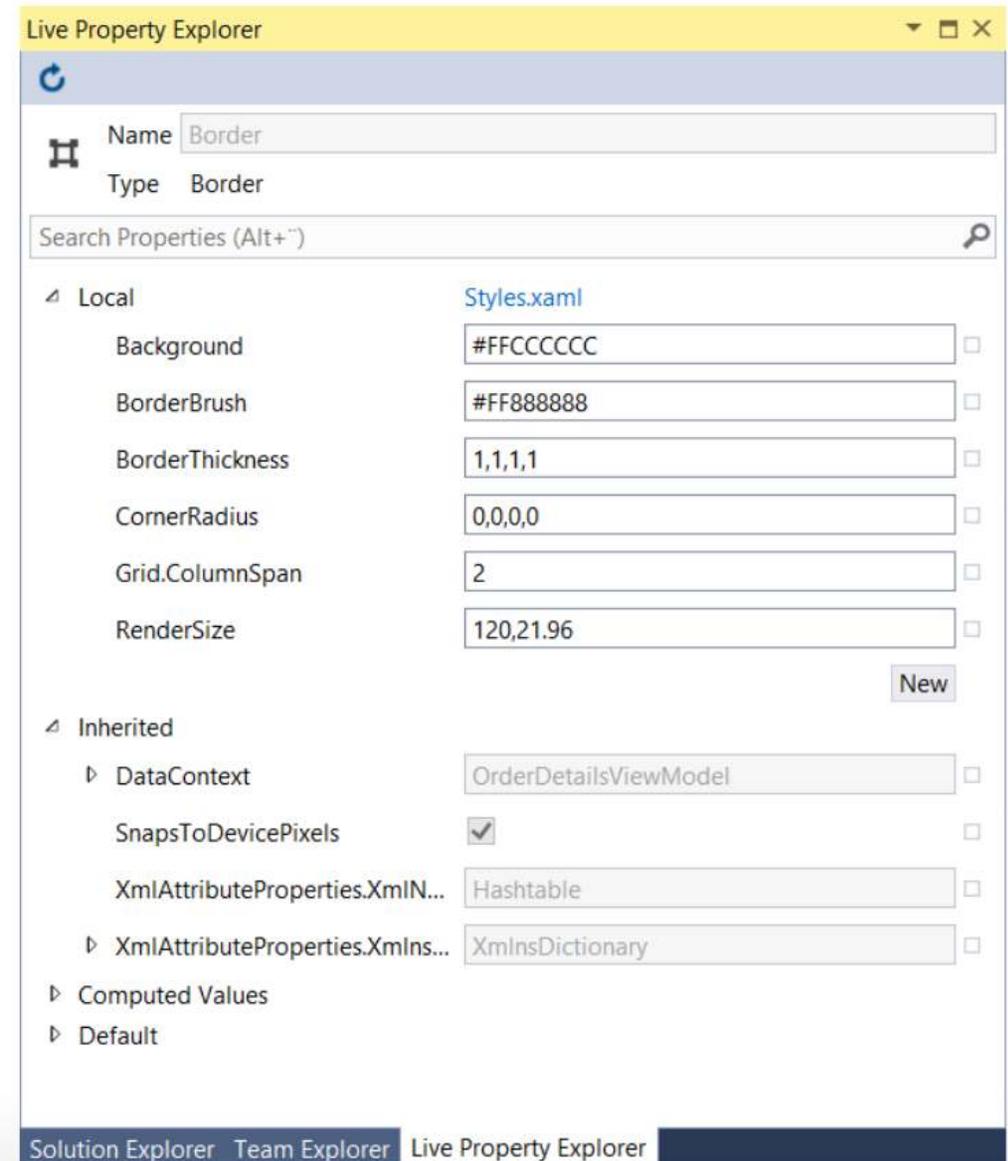
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# WPF Tools in VS2015

## Live Visual Tree



## Live Property Explorer



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# Debugging



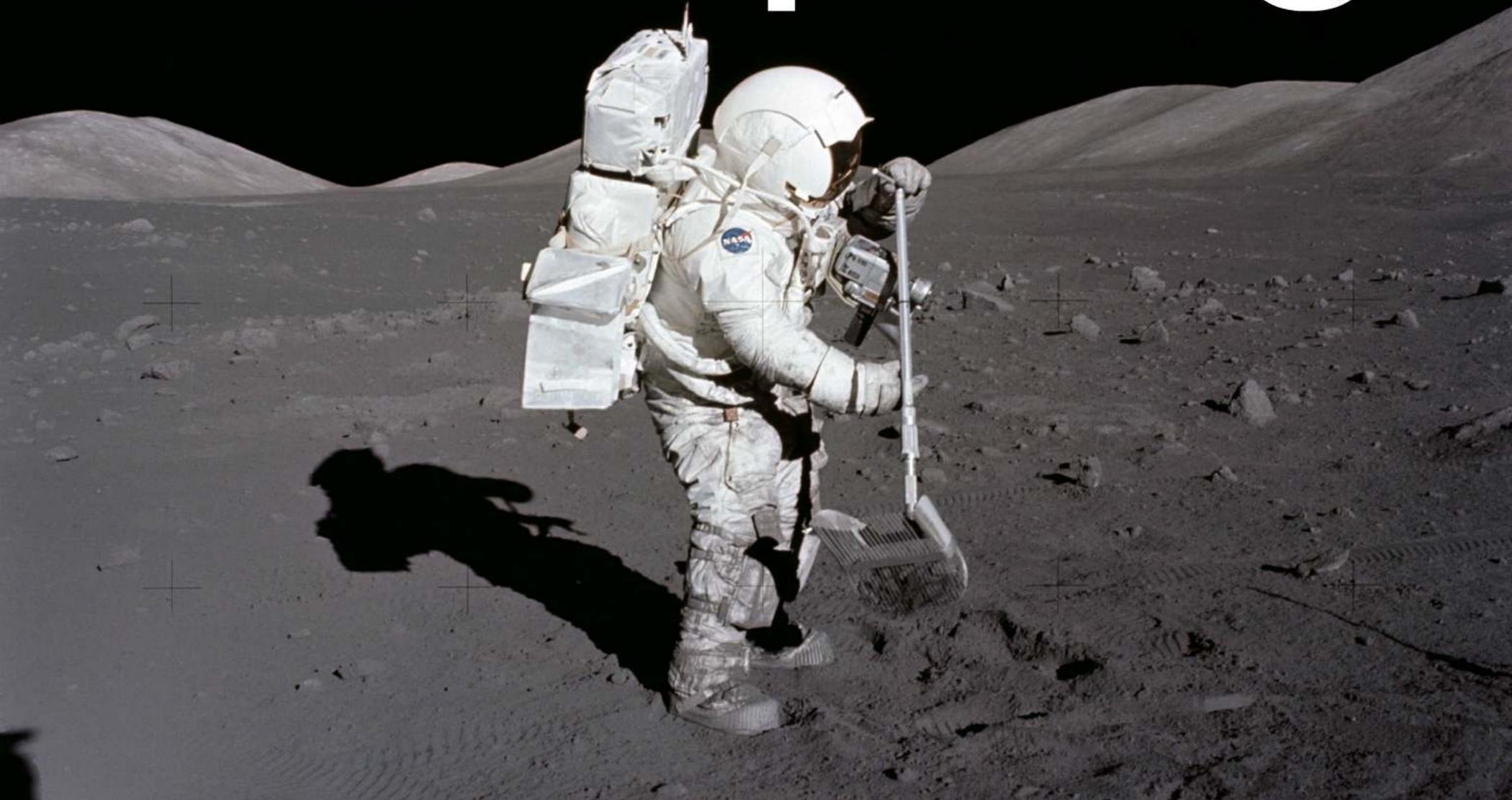
# Profiling



# Profiling Techniken

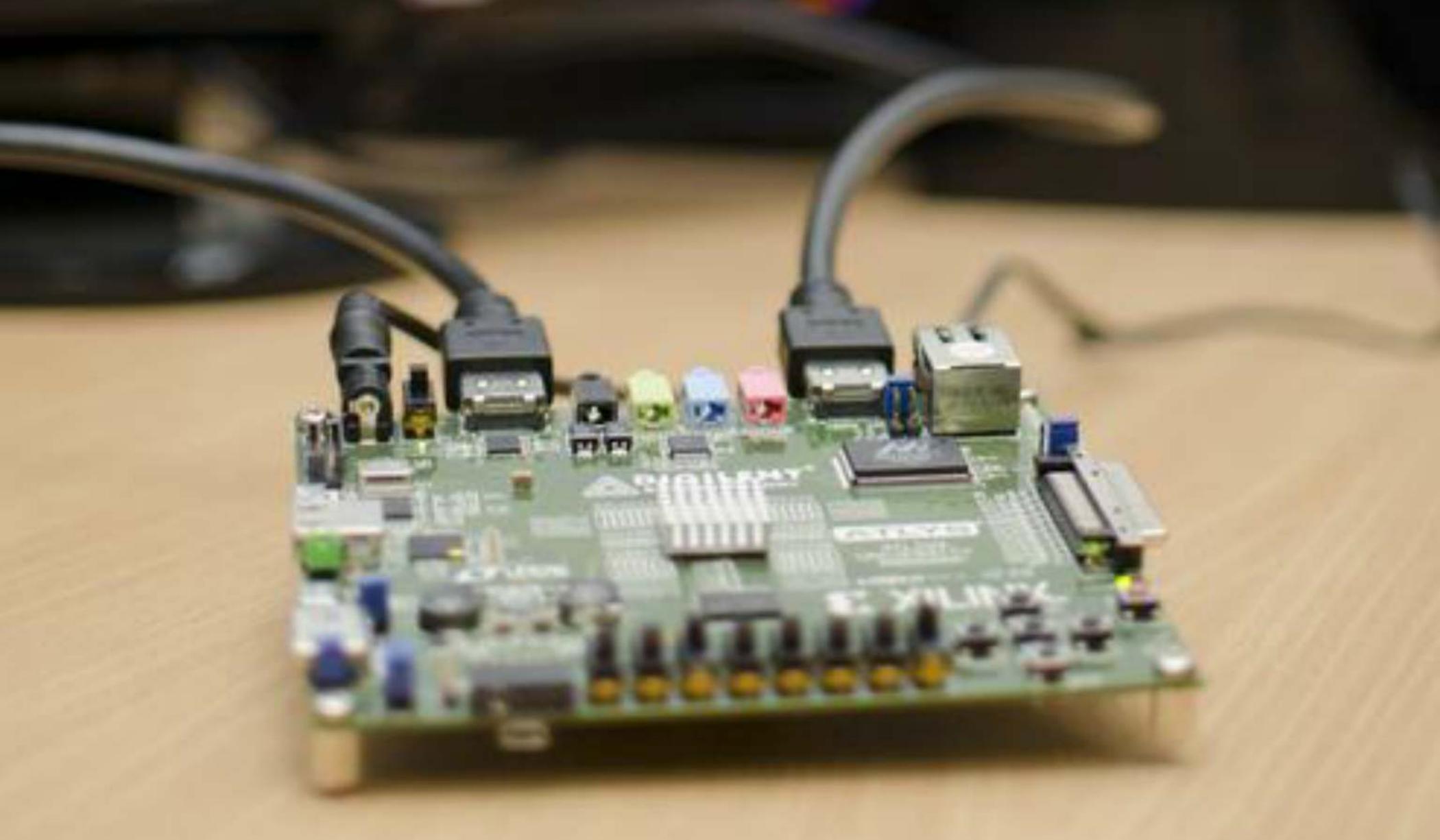


# Sampling





# Instrumentation



ETW



ETW Controller

Event Provider

Event Provider

Event Provider



Real time Consumer

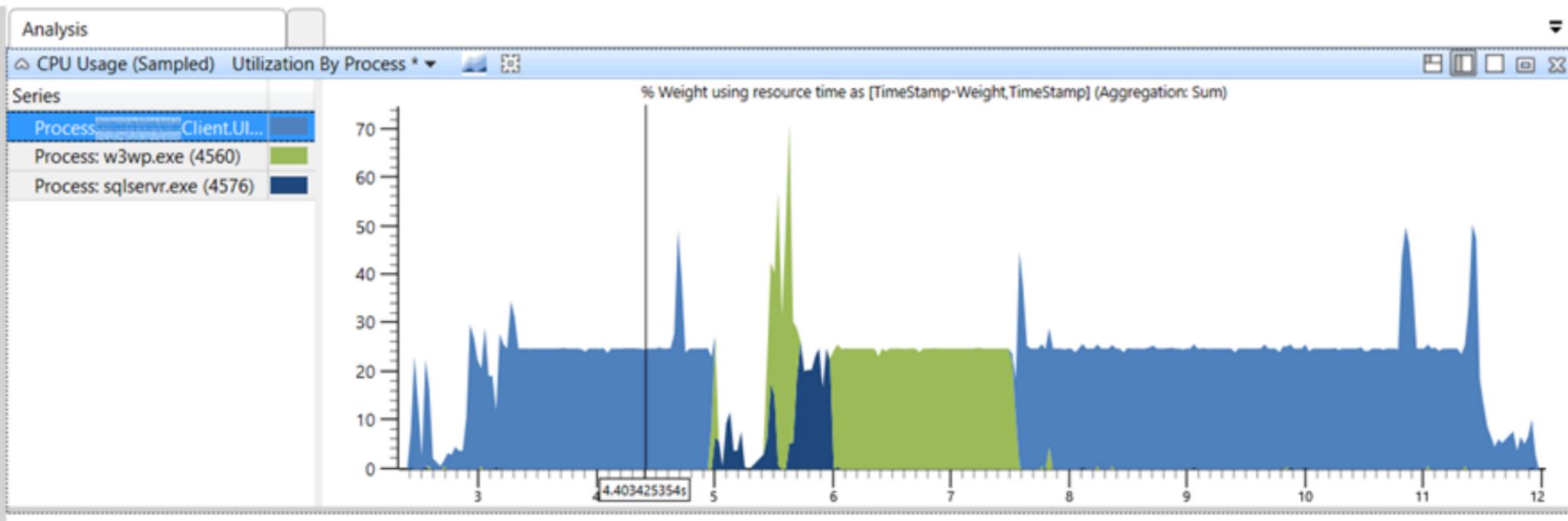
ETL File

EventName	EventTypeName	UserData
IISGeneral	GENERAL_REQUEST_START	...AppPoolId=DefaultAppPool...
IISGeneral	GENERAL_GET_URL_METADATA	PhysicalPath=... AccessPerms=Read...
IISISAPI	ISAPI_START	
IISGeneral	GENERAL_ISAPI_HANDLER	
AspNetReq	Start	Method=GET Path=... QueryString=
AspNetReq	RequestQueued	
AspNetReq	RequestDequeued	
AspNetReq	GetAppDomainEnter	
IISGeneral	GENERAL_GET_URL_METADATA	PhysicalPath=C:\... AccessPerms=...
AspNetReq	GetAppDomainLeave	
AspNetReq	AppDomainEnter	DomainId=/LM/W3SVC/1/Root/...
IISGeneral	GENERAL_GET_URL_METADATA	PhysicalPath=C:\... AccessPerms=...
AspNetReq	WebEventRaiseStart	EventClassName=... EventCode=...
AspNetReq	WebEventDeliverStart	ProviderName=... RuleName=myrule...
AspNetReq	WebEventDeliverEnd	
AspNetReq	WebEventRaiseEnd	
AspNetReq	StartHandler	HandlerName=HttpApplication...
AspNetReq	PipelineModuleEnter	ModuleName=WindowsAuthenticationModule
AspNetReq	PipelineModuleLeave	ModuleName=WindowsAuthenticationModule
AspNetReq	PipelineModuleEnter	ModuleName=FormsAuthenticationModule
AspNetReq	PipelineModuleLeave	ModuleName=FormsAuthenticationModule
AspNetReq	PipelineModuleEnter	ModuleName=PassportAuthenticationModule
AspNetReq	PipelineModuleLeave	ModuleName=PassportAuthenticationModule
AspNetReq	PipelineModuleEnter	ModuleName=DefaultAuthenticationModule
AspNetReq	PipelineModuleLeave	ModuleName=DefaultAuthenticationModule
AspNetReq	PipelineModuleEnter	ModuleName=RoleManagerModule
AspNetReq	PipelineModuleLeave	ModuleName=RoleManagerModule
AspNetReq	PipelineModuleEnter	ModuleName=AnonymousIdentificationModule
AspNetReq	PipelineModuleLeave	ModuleName=AnonymousIdentificationModule
AspNetReq	PipelineModuleEnter	ModuleName=UrlAuthorizationModule
AspNetReq	WebEventRaiseStart	EventClassName=... EventCode=4003...
AspNetReq	WebEventDeliverStart	ProviderName=... RuleName=myrule...

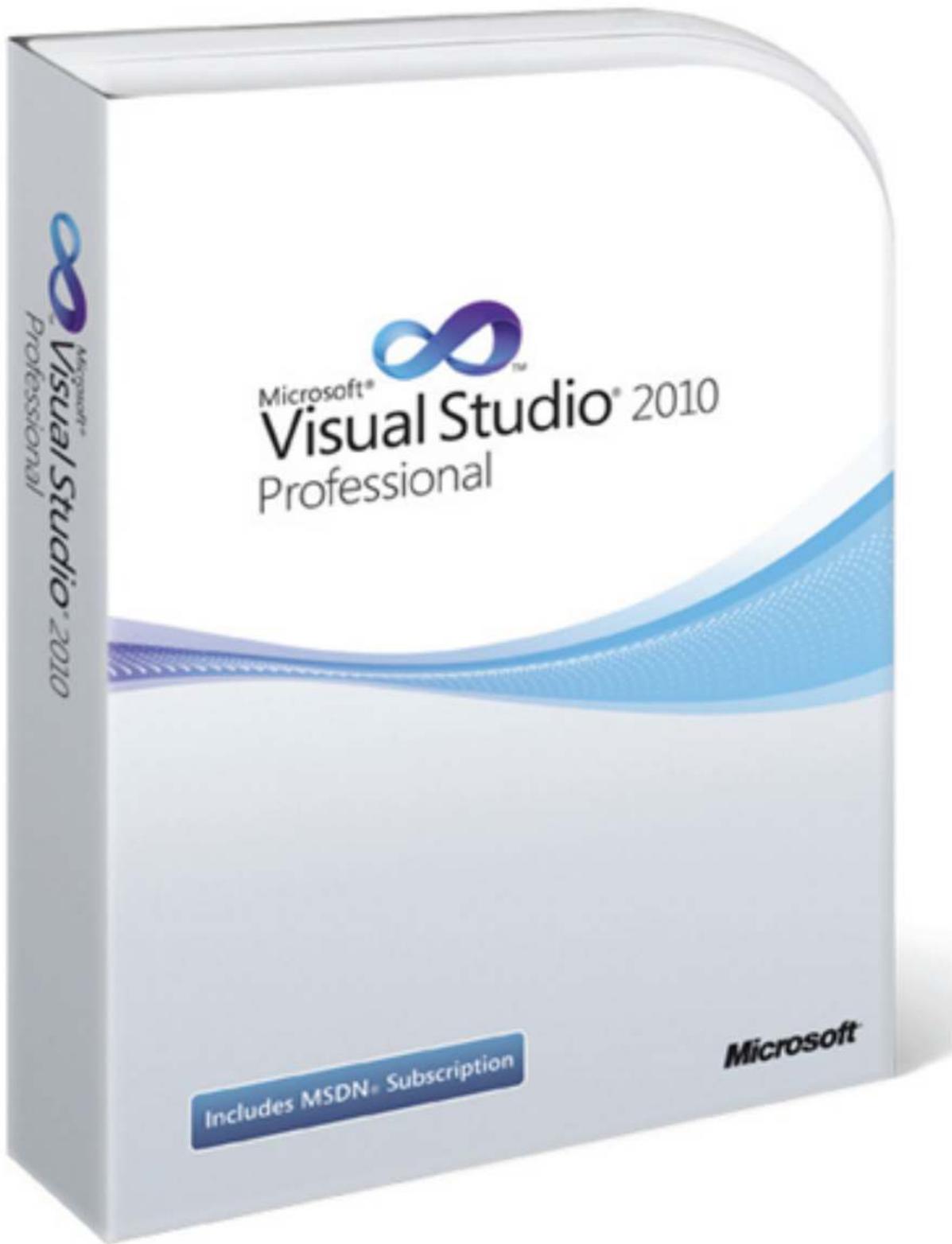
# Win Performance Toolkit

Record: PerfView.exe / Xperf.exe

Analyze: WPA.exe



- Often*
- Sometimes*
- Seldom*
- Never*

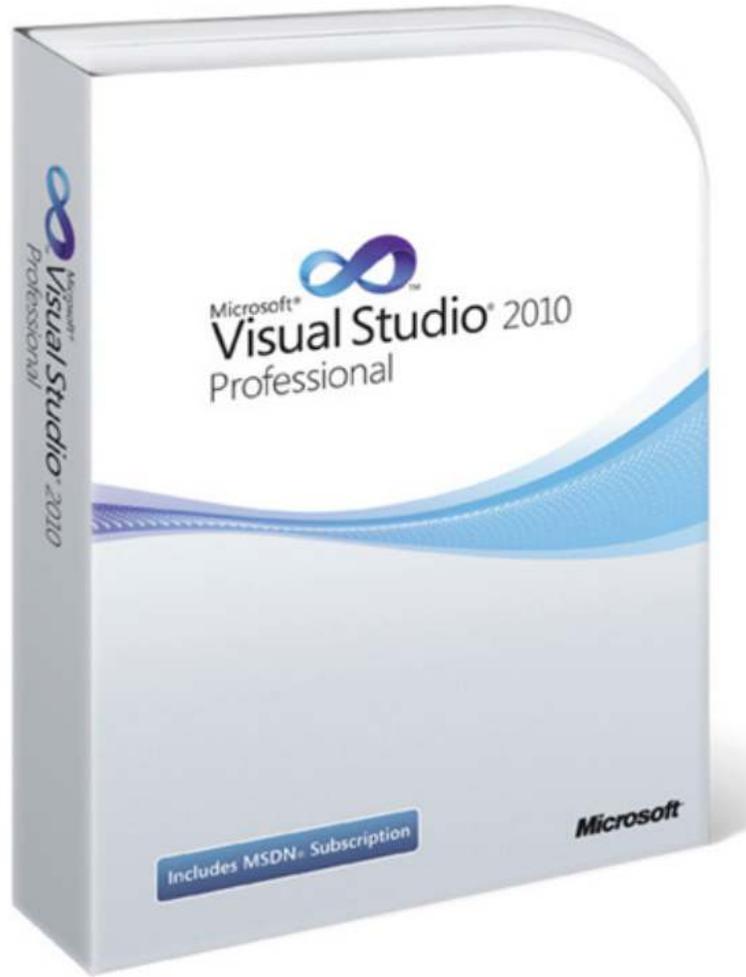


Microsoft  
Visual Studio 2010  
Professional

Microsoft  
Visual Studio 2010  
Professional

Includes MSDN Subscription

Microsoft



~~Profiler~~ ☹️

Professional 2012



Visual  
Studio

Microsoft

Profiler



Professional 2012



Visual  
Studio

Microsoft

Profiler



# Visual Studio Community 2013

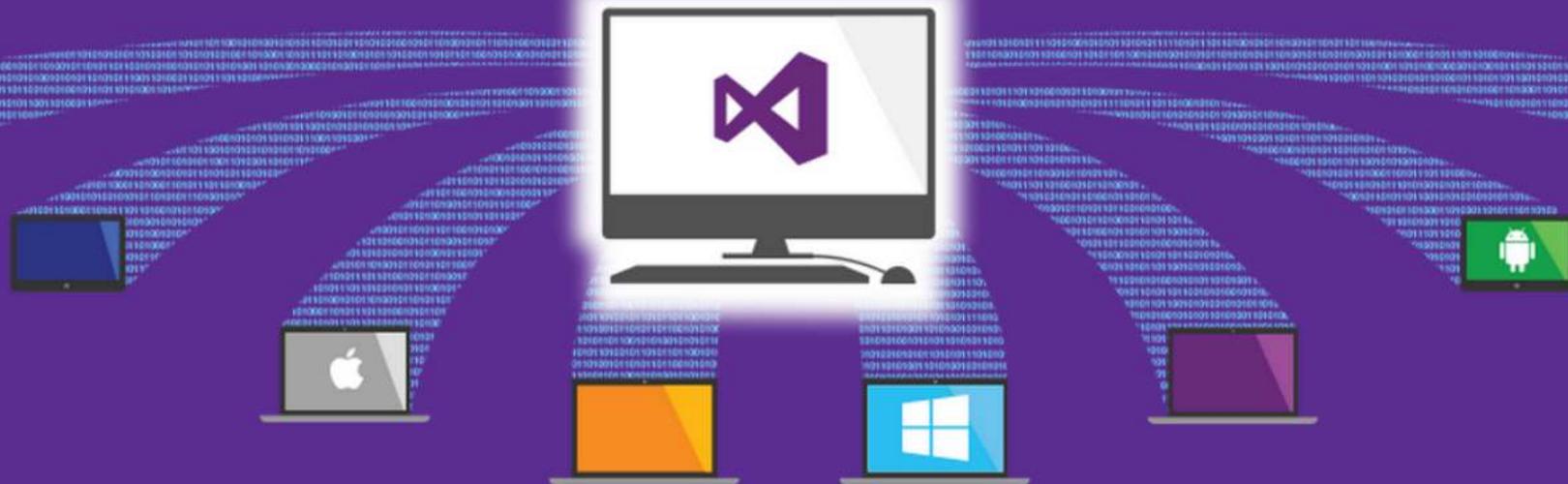


## Performance & Diagnostics Hub

# Visual Studio Community

A free, fully-featured, and extensible IDE for creating modern applications for Windows, Android, and iOS, as well as web applications and cloud services.

Download Community 2015



# Demos



Demo 1  
WPF Startup Time

Demo 2  
WPF UI Virtualization

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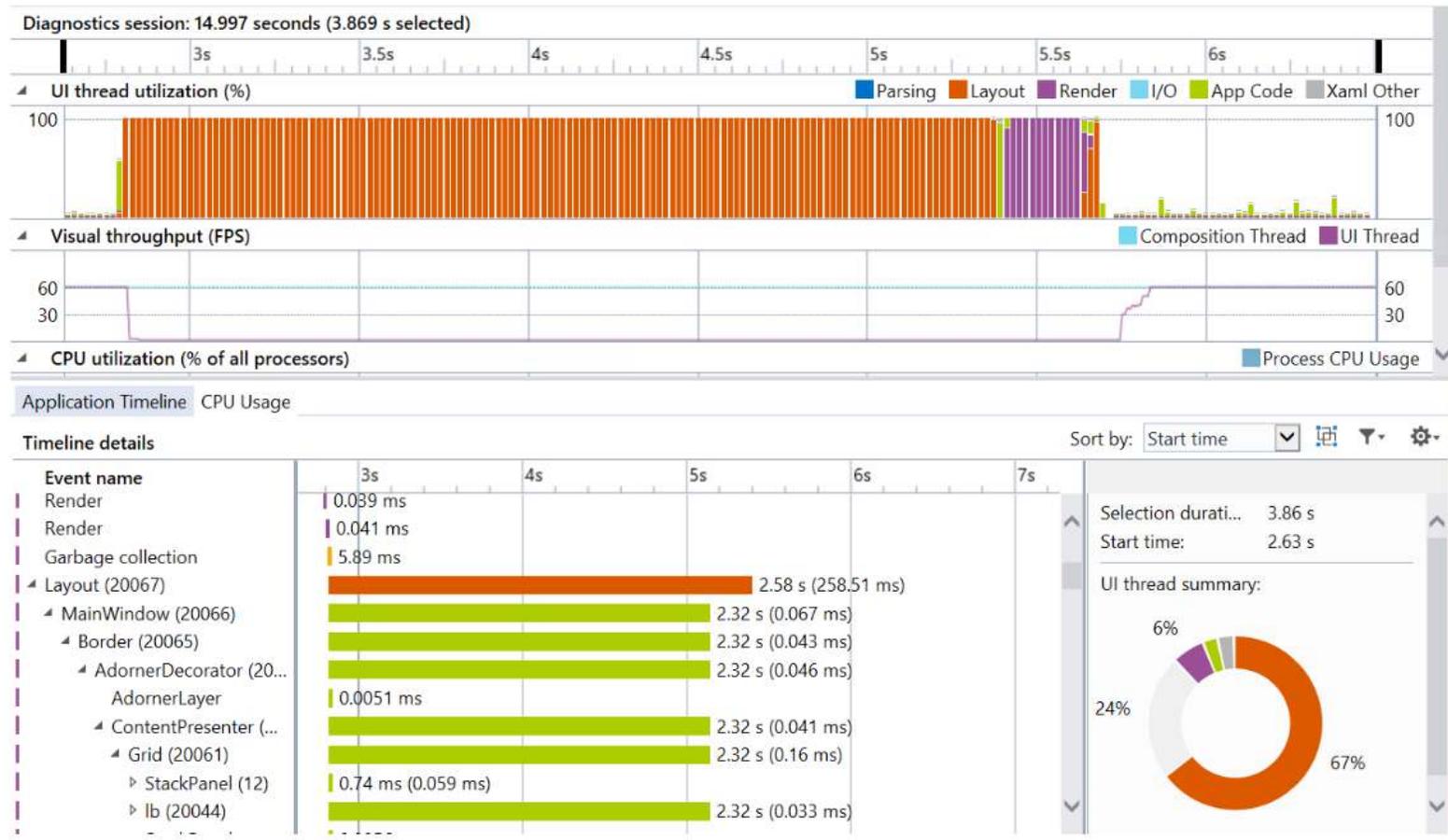


AZ

# Debugging in VS2015

- PerfTips
- Diag. Tools Window
- Live Visual Tree
- Live Property Explorer

# WPF Timeline Tool



## Was macht mein UI-Thread?

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# .NET Developer Conference 2015

## Vielen Dank!

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