

MEMBER SHOWCASE

Events & Extensions & Powershell, Oh My!!

What's it mean!?!

By: Daniel Rimmelzwaan, NAVUG Phoenix Chapter Meeting June 16, 2016

MEMBERSHIP HAS ITS BENEFITS

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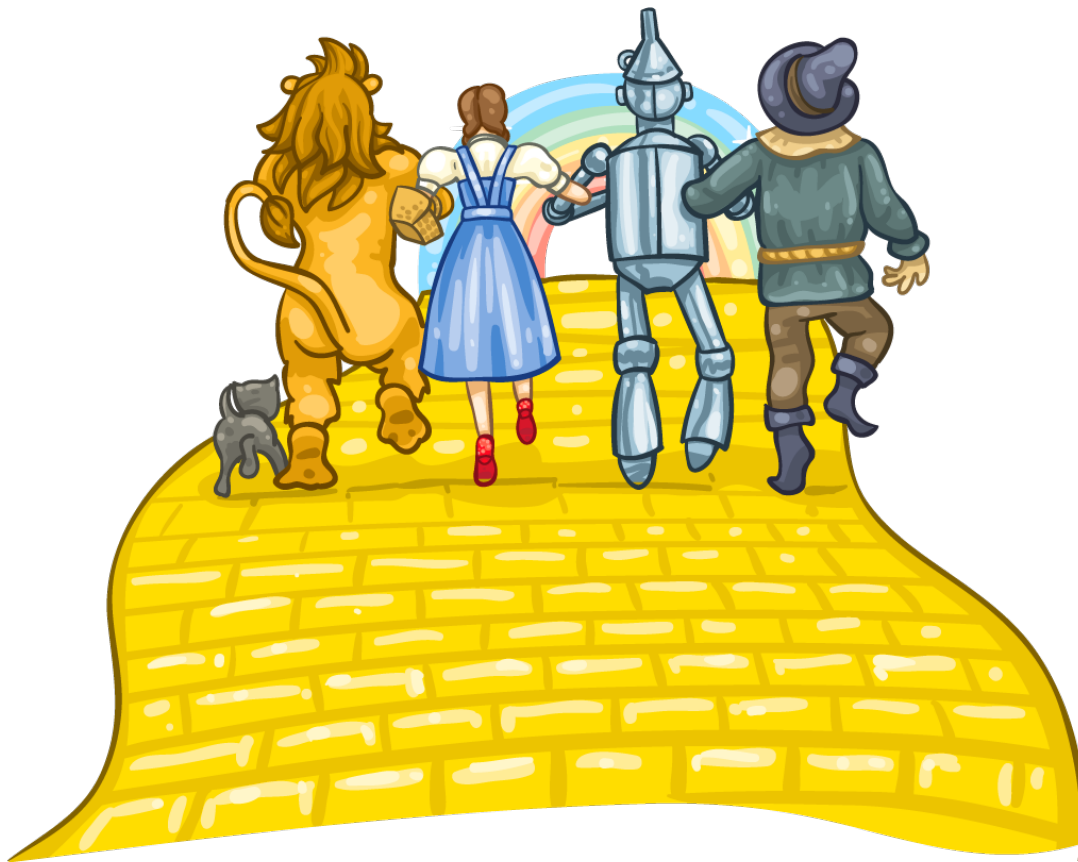
DenSter on the forums

Born in Holland

Flagstaff, AZ







Agenda

- Events
- Extensions
- Powershell

Not Too Technical PLEASE

EVENTS - TERMS

- Event
 - What, exactly, IS an event?
 - A “Thing” that “Happens”
- Publisher
 - Exposes the Event
 - Provides an Access Point
 - Is that the same as a ‘Hook’? No...
- Subscriber
 - Consumes the event
 - Adds to and/or handles the event
- Event Type
 - Trigger
 - Field Validation
 - Create, Modify and Delete records
 - Embedded in NAV runtime
 - Integration
 - Interaction between areas
 - Must be explicitly declared
 - Even in standard NAV
 - Business
 - Stricter “rules”
 - Not (yet) used in standard NAV

EVENTS – HOW DO THEY WORK?

- Publish
 - An announcement by the application
 - Function without Code
 - Exposes the event to the outside
- Raise
 - When exactly does the Event happen
 - Call to the Publisher Function
- Subscribe
 - React to the event
 - Must be in a Codeunit

Subscription Order Undefined

WHAT ARE EVENTS USED FOR?

- NAV 2016
 - Workflow
 - CRM Integration
- Custom Functionality
 - Generating notifications
 - Integration with external systems
 - Extensions
- Utilizing Events is preferred over modifying standard NAV Objects
 - Refactor code for upgrades
 - Consider re-implementing instead
 - Design patterns are **IMPORTANT**

SO WHAT'S THE BIG DEAL?

Table 38 Purc

Table 27 Item - C/AL Editor

```
13  
14 OnModify()  
15 "Last Date Modified" := TODAY;  
16  
17 PlanningAssignment.ItemChange(Rec,xRec);  
18  
19 OnDelete()  
20 CheckJournalsAndWorksheets(0);  
21 CheckDocuments(0);  
22  
23 MoveEntries.MoveItemEntries(Re  
24  
25 ServiceItem.RESET;  
26 ServiceItem.SETRANGE("Item No.  
27 IF ServiceItem.FIND('-') THEN  
28 REPEAT  
29 ServiceItem.VALIDATE("Item  
30 ServiceItem.MODIFY(TRUE);  
31 UNTIL ServiceItem.NEXT = 0;
```

No Changes here!

Codeunit 50000 Item Subscriptions - C/AL Editor

```
1 Documentation()  
2  
3 OnRun()  
4  
5 LOCAL [EventSubscriber] OnBeforeValidateItemDescription(VAR Rec : Record  
6 MESSAGE('You are going to change the description!');  
7  
8 LOCAL [EventSubscriber] OnBeforeModifyItem(VAR Rec : Record Item;VAR xRe  
9 MESSAGE('You are about to modify an Item!!');  
10
```

customization is here!

```
35 ItemBudgetEntry.DELETEALL(TRUE)
```

// E-84249

// E-84249 STOP

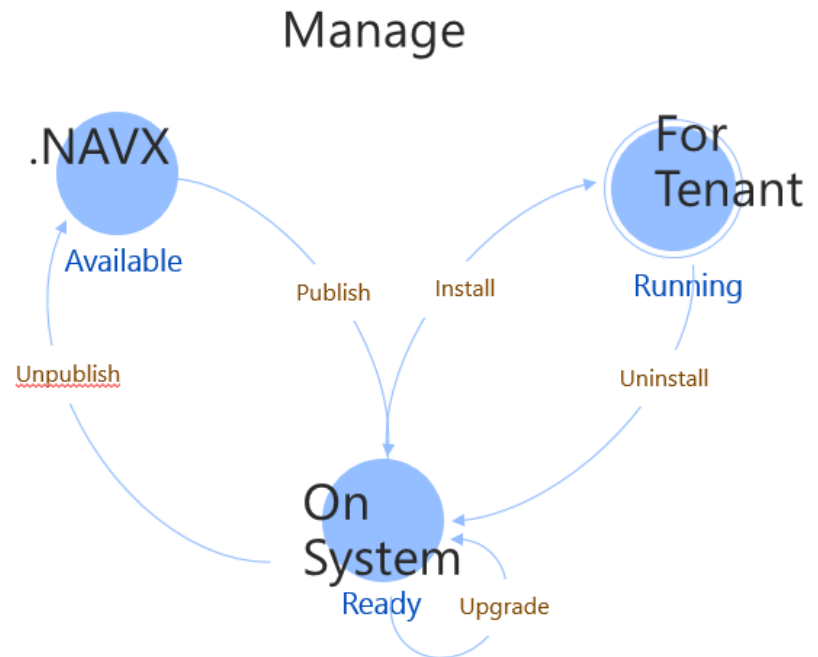
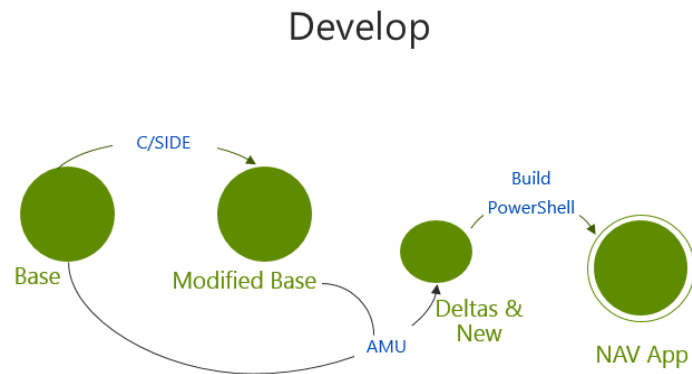
Contract) AND (Type = Type :: I

END;
UNTIL PurchaseLine.n

Document Type

“INTRODUCING EXTENSIONS” – SAY WHAT?!?

[MSDN Blog Link Here](#)



EXTENSIONS - EXPLAINED

- Intended for
 - Horizontal add-ons
 - Azure SaaS Implementations (Although also available on premises)
- Tenant specific
- “Kind of” like apps
- Deployment
 - Distribution package – NAVX file
 - Base code is not modified
 - Relies heavily on events
 - Mods are in *.DELTA files, not full object files
- Early stages – many improvements/enhancements in the works

EVENTS VS EXTENSIONS

Events

- Can be part of base objects
 - Custom events are possible
- Mods at design time
- Database wide
- Objects in full *.fob OR *.DELTA files
- Powershell Optional

Extensions

- Not part of base objects
 - relies on standard NAV events
- Mods at run time
- Tenant specific
- *.NAVX files (with *.DELTA files only)
- Powershell mandatory

WHAT IS POWERSHELL?

- Shell in IT
 - Command Line interface into systems
 - “DOS on steroids” -> replaced the old CMD shell
- Purpose
 - Task Automation
 - Configuration Management
- Two important UI's
 - Powershell Command Prompt
 - For NAV:
 - Development Shell
 - Administration Shell
 - Powershell ISE (Integrated Scripting Environment)
 - Create “Batch files” like in the DOS days

HOW DOES POWERSHELL WORK?

- Works with Objects
 - Most MSFT products have an object model with an API
- Integrates with the .NET Framework
- Based on a provider-based model
- Powerful Scripting Capabilities

WHY SHOULD WE USE POWERSHELL?

- Hooks into most MSFT Products
- Automating repeatable tasks
 - Directly from a command line tool
 - Using Powershell ISE for scripting
 - Eliminate (at least minimize) human error
- Improve Efficiency

WHAT DOES THAT HAVE TO DO WITH AZURE?

- Everything and Nothing
- Events and Extensions and Powershell all run on premises
- Intended for Azure Implementations
 - Multi-tenant
 - Extensions sold in App Store
- Project “Madeira”

RESOURCES

■ MSDN

- <https://blogs.msdn.microsoft.com/nav/2015/10/12/introducing-extensions-in-microsoft-dynamics-nav-2016/> - MSDN blog “Introducing” Extensions
- [https://msdn.microsoft.com/en-us/library/mt299505\(v=nav.90\).aspx](https://msdn.microsoft.com/en-us/library/mt299505(v=nav.90).aspx) - Events in NAV
- [https://msdn.microsoft.com/en-us/library/hh169423\(v=nav.90\).aspx](https://msdn.microsoft.com/en-us/library/hh169423(v=nav.90).aspx) - Extending NAV

■ Microsoft Dynamics How Do I Use Events in NAV 2016

- <https://youtu.be/Cjt8aQC2aC8>

■ Mark Brummel / NAV-Skills webinars

- Introduction to Events and Extensions: <https://youtu.be/djYR2toCqzE>
- Deep Dive into Events by Soren Klemmensen: <https://youtu.be/zQHVv7PV8u8>
- Extensions Explained by Gunnar Gestsson: <https://youtu.be/2P2aOsk6Wow>

■ NAV Techdays 2015

- Events in Workflow and CRM Integration: <https://youtu.be/84-tPdTVQ8>

POWERSHELL RESOURCES

- Videos to get started (Powered by Waldo)
 - <https://msdn.microsoft.com/en-us/dynamics/nav/dn833404>
 - NAV Techdays 2014
 - <https://youtu.be/W2jEwqgOmE0>
 - NAV Techdays 2015
 - <https://youtu.be/R4xfmbjiKOW>
- Powershell Modules
 - <http://www.waldo.be/2015/12/09/how-to-install-waldos-powershell-modules/>



Q&A

THANK YOU FOR LISTENING 😊

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