

**NAV  
TECH  
DAYS  
2017**

mibuso.com

# APPLICATION SAASIFICATION

HENRIK FROVST MADSEN, TOMMASO PIMPO  
MICROSOFT DEVELOPMENT CENTER COPENHAGEN

**WHEN YOU ARE PASSIONATE ABOUT MICROSOFT DYNAMICS NAV | [www.navtechdays.com](http://www.navtechdays.com)**

**NAV  
TECH  
DAYS  
2017**

mibuso.com

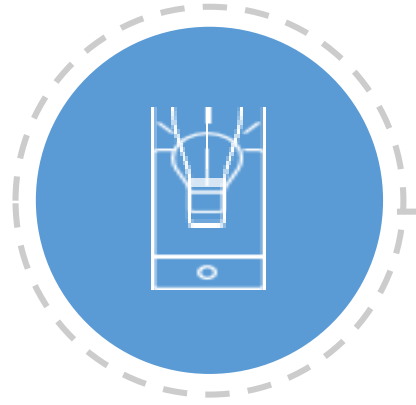
# Session objectives



What is Application SaaSification



Examples from the product



Demo: SaaSification using Extensions



Q & A

# What is Application SaaSification

## Improve user experience

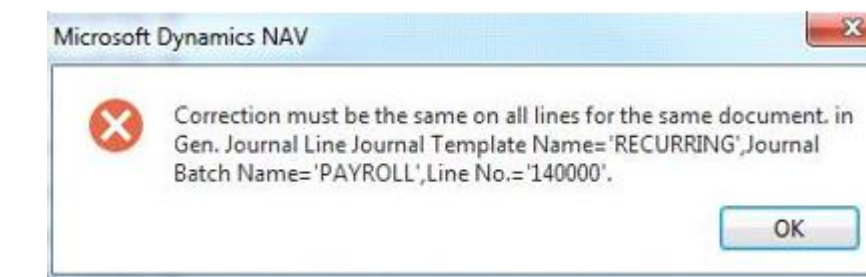
- Reduce number of controls
- Improve the learning curve for new users
- Introduce guidance
- Better quality in data entry
- Differentiated User experiences

### Fixed Asset Card

#### General

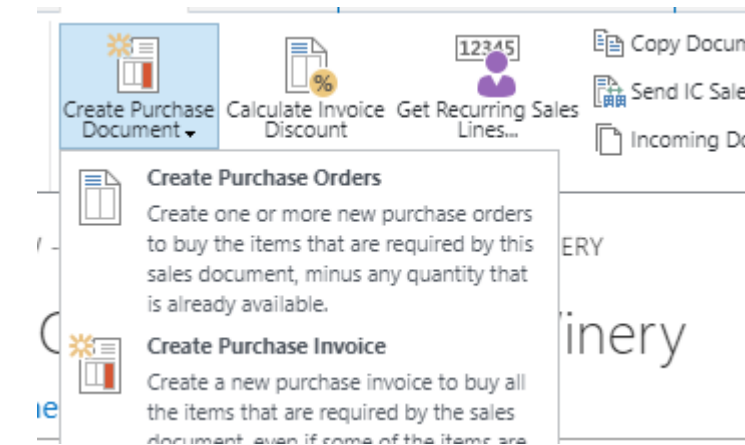
Show more

Description	*	<input type="text"/>	Serial No.	<input type="text"/>
Class Code		<input type="text"/>		
Subclass Code	*	<input type="text"/>		

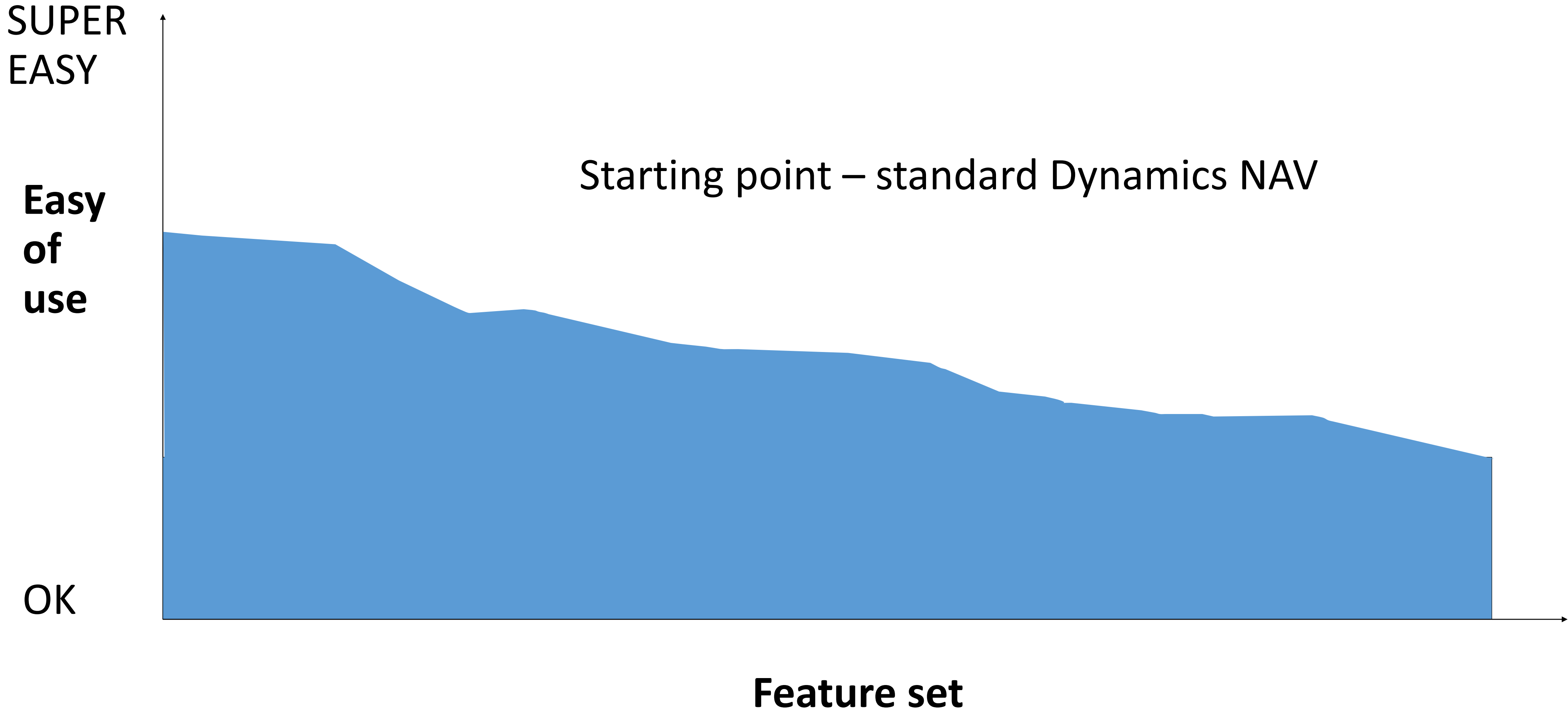


NEW - FIXED ASSET CARD - FA000100 - MERCEDES

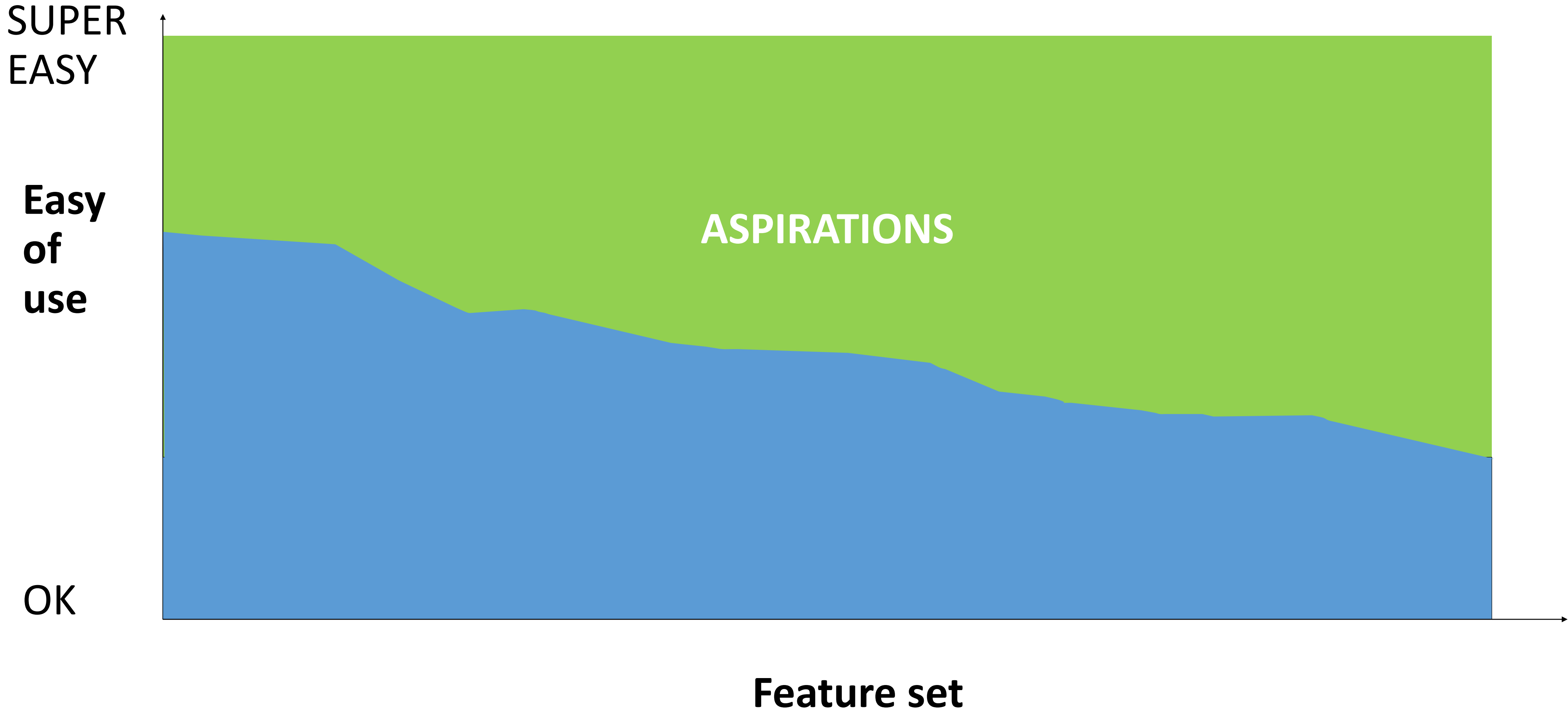
✕ You are ready to acquire the fixed asset. [Acquire](#) | [Don't ask again](#)



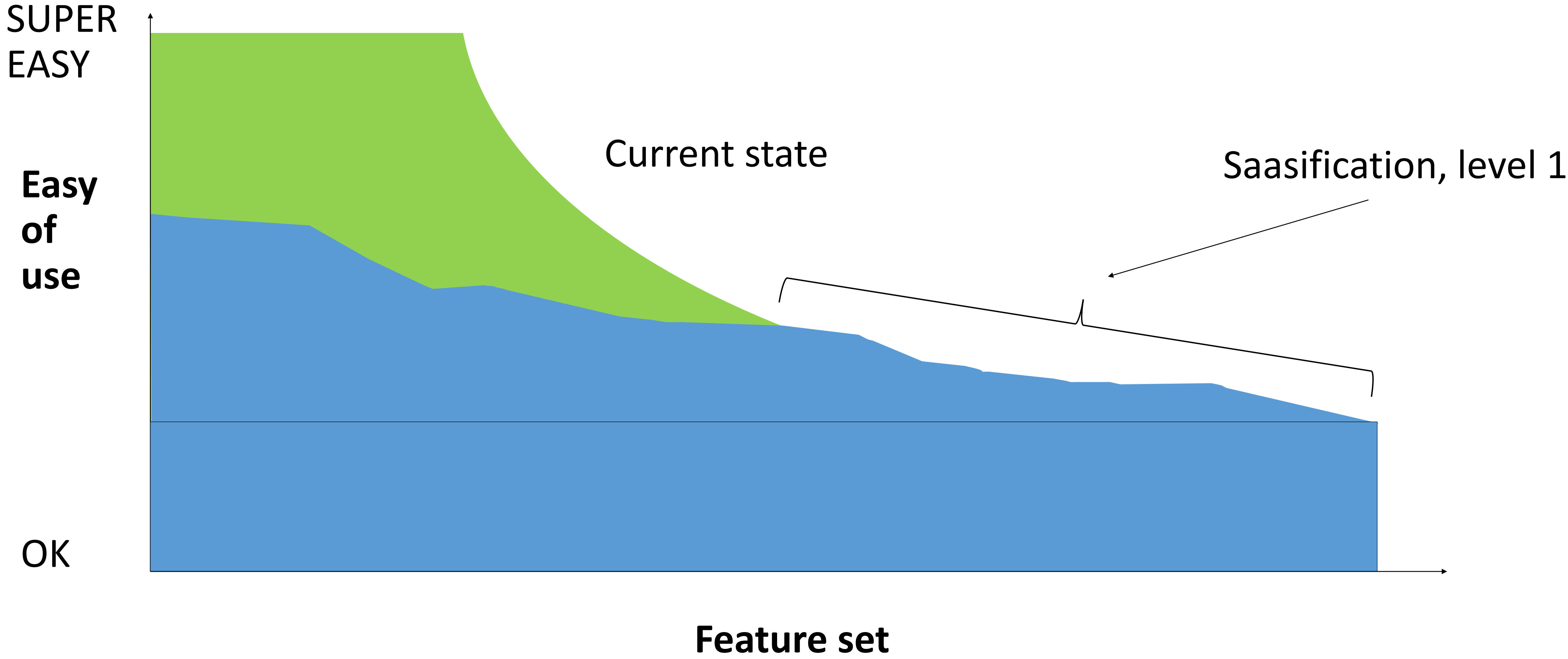
# Where are we now?



# Where are we now?



# Where are we now?





# Where are we now?

Financial Management	Supply Chain Management	Supply Chain Management	Other
Basic General Ledger (3010) Allocations (3020) Budgets (3030) Accounts Schedules (3040) Basic XBRL (3070) Change Log (3080) Cash Flow Forecast (3200) Reason Codes (4770) Bank Management (5010) Check Writing (5020) Bank Account Reconciliation (5030)* Electronic Payment / Direct Debit Reconciliation of Bank Transactions Deferrals	Basic Receivables (3260) Sales Invoicing (3270) Sales Order Management (3280) Sales Invoice Discounts (3290) Alternative Ship-To Addresses (3310) Shipping Agents (3340) Sales Return Order Management (3350) Sales Line Discounting (3370) Sales Line Pricing (3380) Sales Tax (3410) Basic Payables (3510) Purchase Invoicing (3520) Purchase Order Management (3530) Purchase Invoice Discounts (3540) Requisition Management (3550) Alternative Order Addresses (3560) Purchase Return Order Management (3570) Purchase Line Discounting (3580) Purchase Line Pricing (3590) Drop Shipments (3770) Salespeople/Purchasers (3780) Basic Inventory (4010) Stock keeping Units (4045) Multiple Locations (4040) Alternative Vendors (4050) Assembly Management (4060) Location Transfers (4100) Item Substitutions (4110) Item Cross References (4120) Nonstock Items (4130)	Item Tracking (4140) Item Charges (4150) Bin (4170) Pick (4200) Analysis Reports (4230) Item Budgets (4240) Workflow E-services Document Mgmt, Document Capture and OCR Opportunity Mgmt	Multiple Currencies (3760) Intrastat (3790) Extended Text (3800) Job Queue (3810) Basic Dimensions (4760) Dynamics NAV Server (9100) Word reporting/Document reporting
Fixed Assets			
Basic Fixed Assets (5260) Insurance (5270) Maintenance (5280) Fixed Assets – Allocations (5290) Reclassification (5300)			
Basic HR Management			
Basic Human Resources (5760)			
		Contact Management (5110) Task Management (5150) Outlook Client Integration (5195) Contact Classification (5120) Campaign Management (5130) Opportunity Management (5140) Interaction/Document Management (5160) Mail Logging for MS Exchange (5180) Dynamics CRM integration	
		Languages	
		Multiple Document Languages (4020) Multiple Languages (4801...4999)	
		Project Management	
		Basic Resources (4260) Jobs Suite (4540) <ul style="list-style-type: none"> <li>- Jobs (4510)</li> <li>- Capacity Management (4270)</li> <li>- Multiple Costs (4290)</li> </ul> Budgets / Estimates (4520) Phases / Tasks / Steps (4530)	

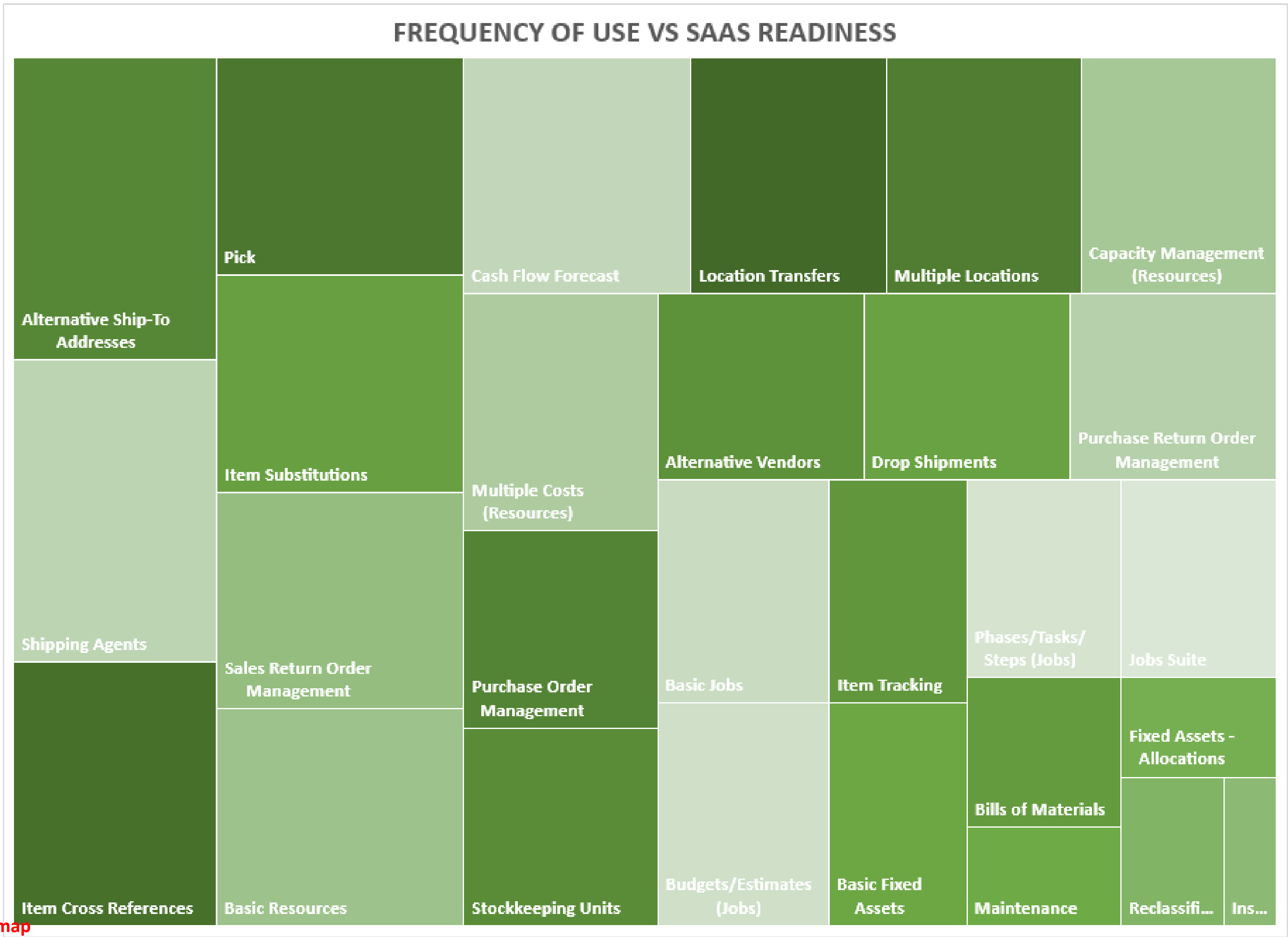
**NOTE: List does not represent actual product**

# What we did

- We use experience tiers, added more application areas.
- We went through about 70% of the entire application feature scope
- We're working on making the base code more extension friendly



# How we did it



Note: only example feature heatmap

# SaaSification 3 layers

- 1 Experience Tiers
- 2 Application Areas
- 3 A set of guidelines

## Experience Tiers

Basic

Suite

Custom

## Application Areas

#PrePayment

#ReturnOrder

## SaaSification

Level1

Level2

Level3

# Experience Tiers and Application Areas

Company Information page

Application Areas

Payments

Tax

User Experience

Experience

Details for NAV73661-5gqc: View - Application Area

xd365f01018500fiskuscs73661.financials.dynamics-tie.com/?aid=FIN&company=CRONUS%20USA%2C%20Inc.&profile=BUSINESS%20MANAGER&sk=sr1&bookmark=12%3d

Dynamics 365 Financials Application Area

ACTION HOME

VIEW - APPLICATION AREA

Application Area	Show in User Interface
Basic	<input checked="" type="checkbox"/>
Suite	<input checked="" type="checkbox"/>
Relationship Mgmt	<input checked="" type="checkbox"/>
Jobs	<input checked="" type="checkbox"/>
Fixed Assets	<input checked="" type="checkbox"/>
Location	<input checked="" type="checkbox"/>
BasicHR	<input checked="" type="checkbox"/>
Assembly	<input checked="" type="checkbox"/>
Item Charges	<input checked="" type="checkbox"/>
Advanced	<input type="checkbox"/>
Warehouse	<input type="checkbox"/>
Service	<input type="checkbox"/>
Manufacturing	<input type="checkbox"/>
Planning	<input type="checkbox"/>
Dimensions	<input type="checkbox"/>
Item Tracking	<input type="checkbox"/>
Intercompany	<input checked="" type="checkbox"/>
Sales Return Order	<input checked="" type="checkbox"/>
Purch Return Order	<input checked="" type="checkbox"/>
Prepayments	<input type="checkbox"/>

# Two experiences



## BASIC

Details for NAV73661-5gqc

Business Manager - Dyr

xd365f01018500fiskuscs73661.financials.dynamics-tie.com/?aid=FIN&page=9022&company=CRONUS%20USA%2C%20Inc.&dc=0

Dynamics 365

Financials

ACTIONS

HOME

Customers

Vendors

Items

Bank Accounts

Chart of Accounts

Business Manager

CRONUS USA, Inc.

Activities

Welcome

Ongoing Sales

Return to Getting Started

Quotes2

Orders4

Invoices7

Sales This Month\$1.906

Start

Product Videos

Sales Quote

Sales Order

Sales Invoice

Purchase Invoice

Product Videos

Favorite Accounts

Account No.	Name	Balance
10100	Checking account	1.638,40
10200	Saving account	0,00
10300	Petty Cash	96.549,23

Trial Balance

Description
Total Revenue
Total Cost
Gross Margin

## SUITE

Details for NAV73661-5gqc

Business Manager - Dyr

xd365f01018500fiskuscs73661.financials.dynamics-tie.com/?aid=FIN&company=CRONUS%20USA%2C%20Inc.&profile=BUSINESS%20MANAGER&sk=sr1&dc=0

Dynamics 365

Financials

ACTIONS

HOME

Customers

Vendors

Items

Bank Accounts

Chart of Accounts

Business Manager

CRONUS USA, Inc.

Activities

Ongoing Sales

Quotes2

Orders4

Invoices7

Sales This Month\$1.906

Purchases

Purchase Orders4

Ongoing Purchase Invoices3

Overdue Purch. Invoice Amount\$49.422

Purch. Invoices Due Next Week0

Payments

Overdue Sales Invoice Amount\$63.890

Unprocessed Payments1

Average Collection Days0,0

My Incoming Documents0

Start

Sales Quote

Sales Order

Sales Invoice

Purchase Invoice

Sales Return Order

Business Assistance

Top Five Customers by Sales Value

Litware, Inc.

Coho Winery

Relecloud

Alpine Ski House

Trey Research

All Other Customers

# Experience Tiers – quick recap

Predefined collection of Application Areas

- Basic for the demo-friendly experience
- Suite for the full set of features
- New experiences will be added.
- Application Areas map to experience tiers

# Second Layer - Application Areas





- Application Areas system offers developers, administrators, and users the ability to define differentiated user experiences
- Each feature included was tagged and at runtime shown or hidden.
- For Dynamics ‘Tenerife’ we tagged the functionality based on Basic and/or Suite
- Like Prepayments the controls relevant for Prepayment are tagged and mapped to Suite

	Field		"Exit Point"	<Exit Point>	<Exit Point>	#Advanced
	Field		Area	<Area>	<Area>	#Advanced
☰	Group	Group		<Control1900...	Prepayment	
	Field		"Prepayment %"	<Prepayment ...	<Prepayment %>	#Prepayments
	Field		"Compress Prepayment"	<Compress Pr...	<Compress Prepayment>	#Prepayments
	Field		"Prepmt. Payment Terms Code"	<Prepmt. Pay...	<Prepmt. Payment Terms ...	#Prepayments
	Field		"Prepayment Due Date"	<Prepayment ...	<Prepayment Due Date>	#Prepayments
	Field		"Prepmt. Payment Discount %"	<Prepmt. Pay...	<Prepmt. Payment Discou...	#Prepayments
	Field		"Prepmt. Pmt. Discount Date"	<Prepmt. Pmt....	<Prepmt. Pmt. Discount D...	#Prepayments








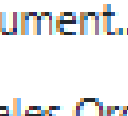



# Example of Sales Order “Prepayments”

## Basic

HOME	ACTIONS	NAVIGATE
 Create Purchase Document ▾	 Calculate Invoice Discount	 Incoming Document ▾
Functions		 Preview Posting
Posting		

[Shipping and Billing](#)

## Suite

HOME	ACTIONS	NAVIGATE
 Release	 Create Purchase Document ▾	 Calculate Invoice Discount
Release	 Get Recurring Sales Lines...	 Copy Document...
Functions		 Send IC Sales Order
		 Incoming Document ▾
		 Preview Posting
		 Prepayment ▾
Posting		

[Shipping and Billing >](#)

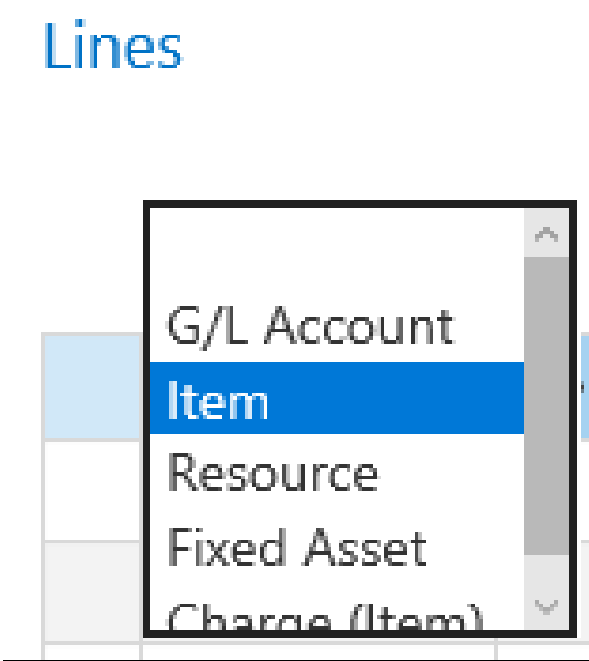
[Prepayment](#)

Prepayment %	<input type="text" value="0"/>
Compress Prepayment	<input checked="" type="checkbox"/>
Prepmt. Payment Terms Code	<input type="text" value="..."/>
Prepayment Due Date	<input type="text" value="..."/>

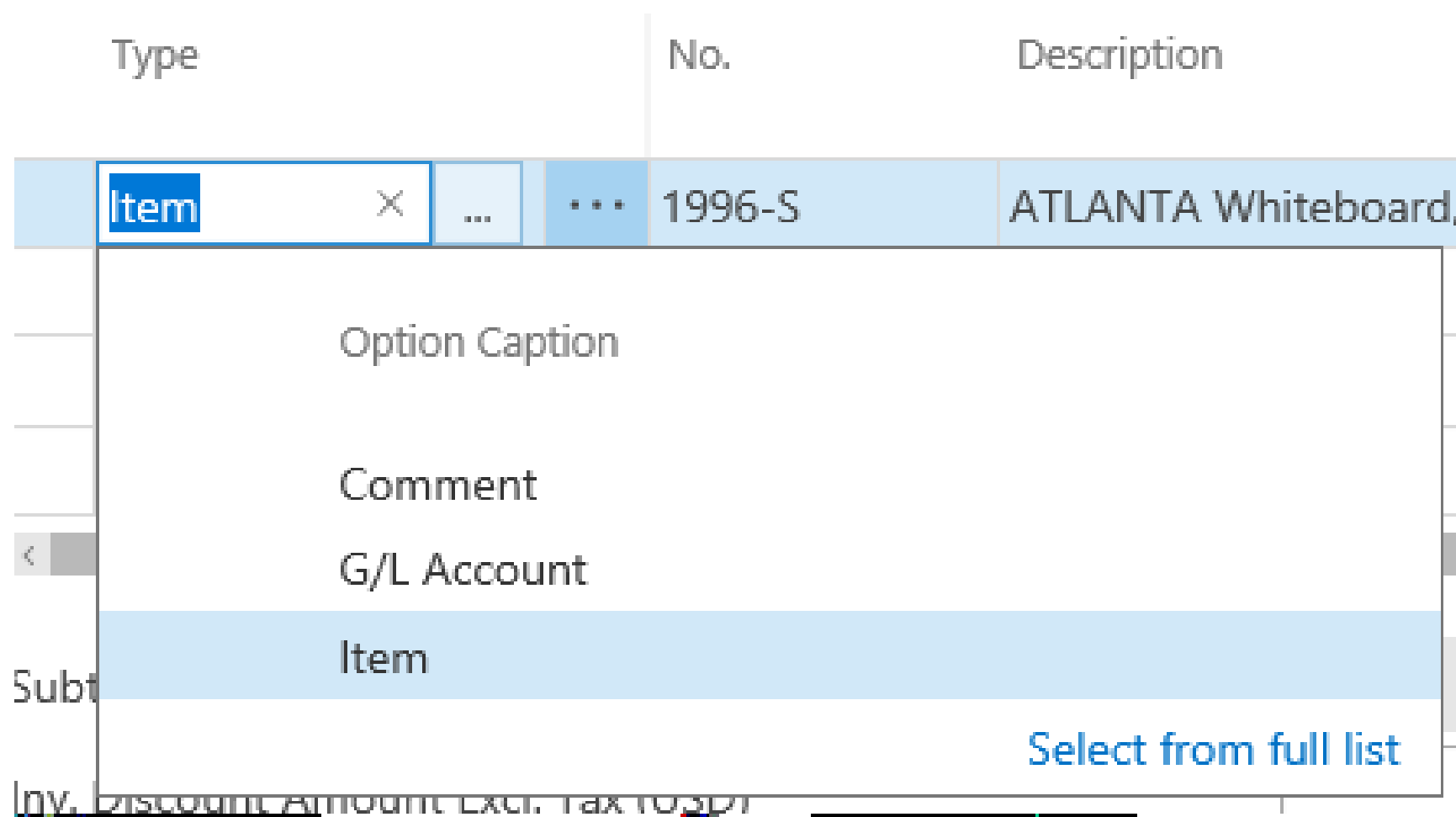
# Application Areas applied

Filtered type field on sales and purchase line pages

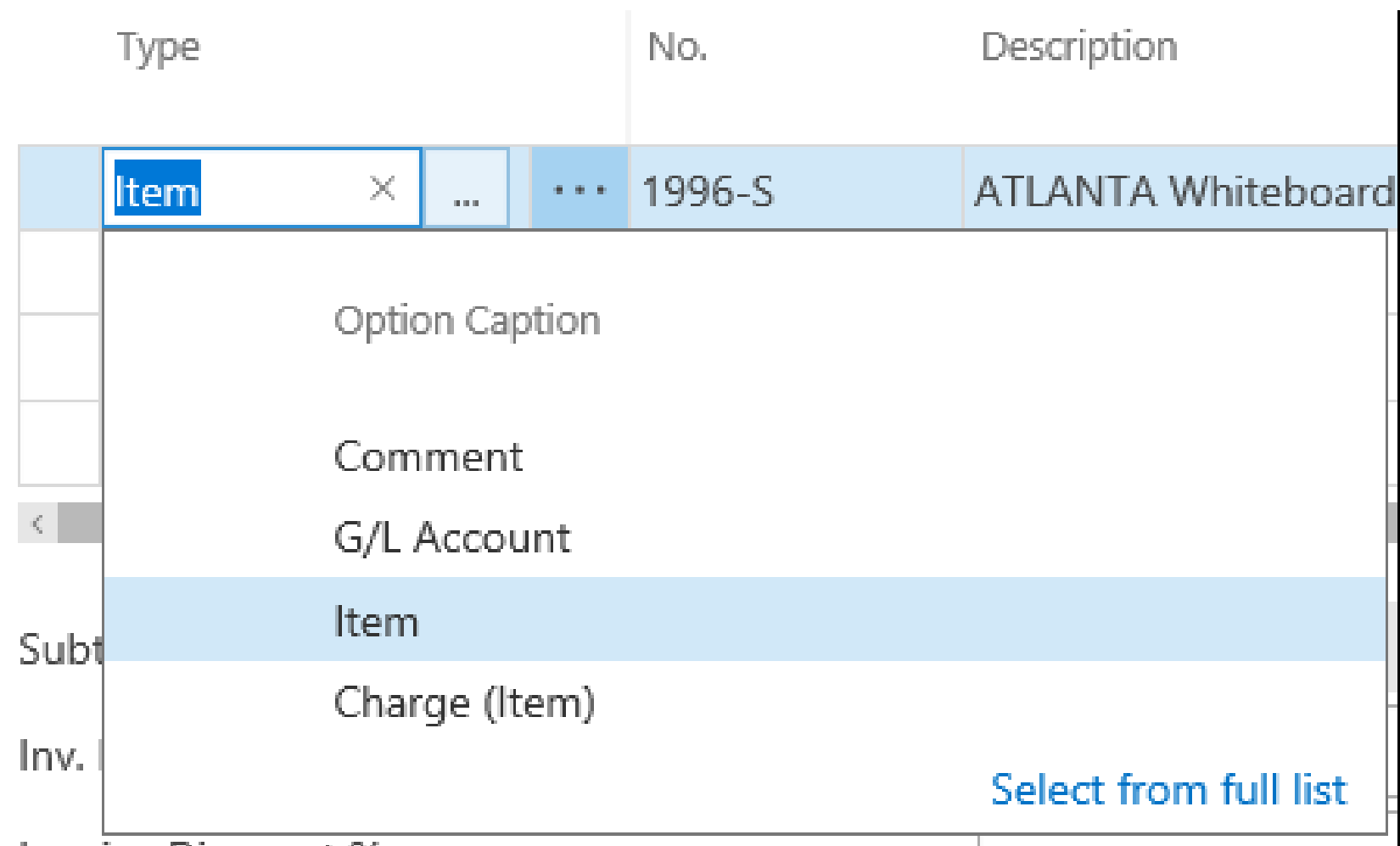
Before



Basic Experience



Suite Experience



# Demo



# SaaSification with Extension V2

⚠ The app code shown in this session is still under active development and might be subject to change in the future.

# Extending Application Area and Experience Tier

- Add and enable a new application area
- Extend the experience tier
- Validate application area

# Extending App Area and Experience Tier

Summing up:

- Add a new application area in Application Area Setup Table
- Enable Application Area in the OnInstallAppPerCompany
- Extend Experience Tier in the OnGetExperienceAppAreas
- [optional] Modify the Experience Tier
- Validate in OnValidateApplicationAreas
- Always tag your controls and actions appropriately



# Application Areas Pros & Cons

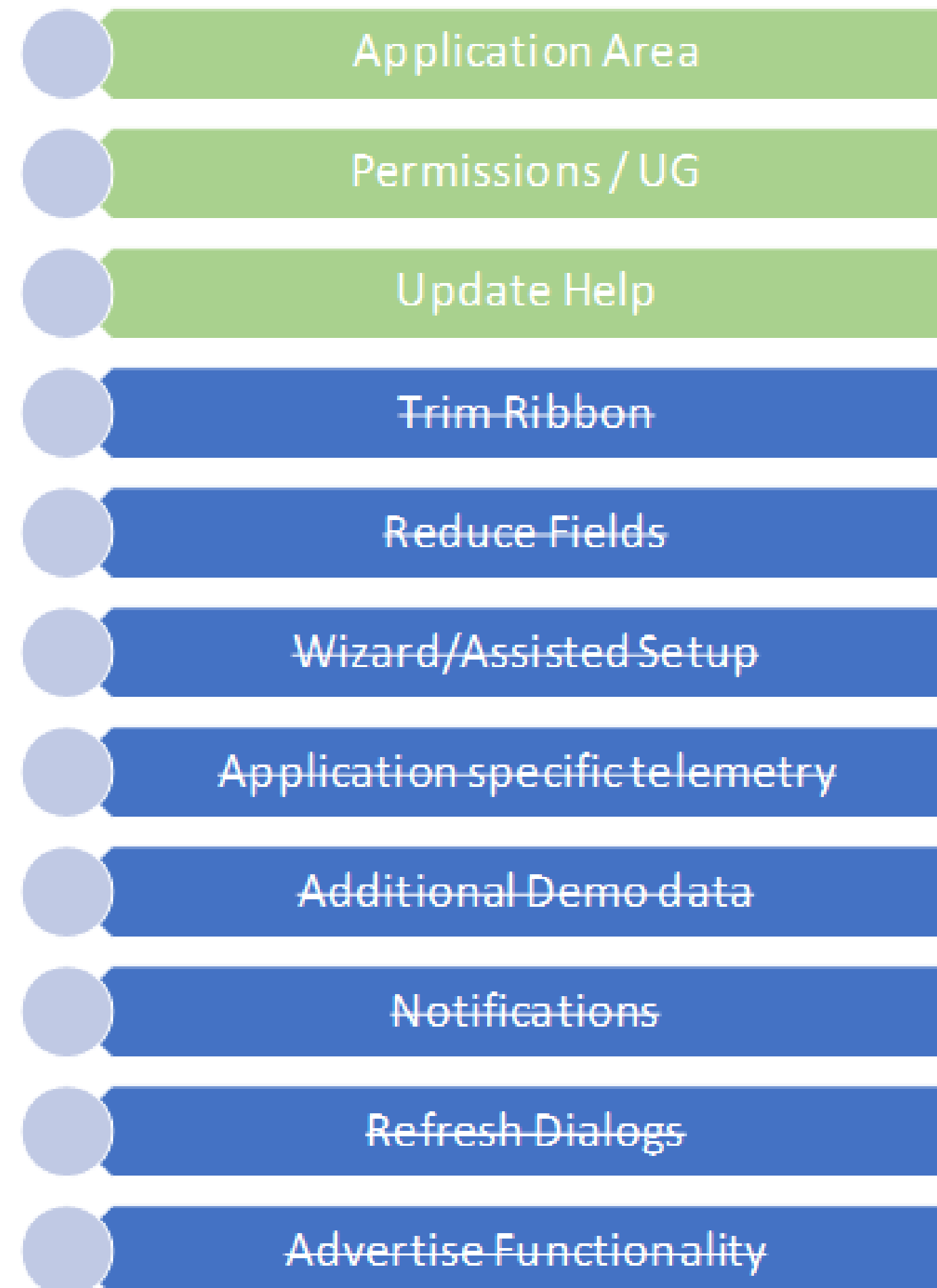
- Pros
  - Enables hiding entire business scenarios.
  - Same code base: quickly modify the UI for different business scenarios/audiences.
- Cons
  - Tagging errors will occur, (missing tags, incorrect tags)
  - Every single control must be tagged
- For more information on application areas please follow this link
- [https://mbspartner.microsoft.com/secure/whatsnew/NAV2017/EnhancingTheCoreApplicationAndPlatform/WhitePaper\\_Application\\_Areas.docx](https://mbspartner.microsoft.com/secure/whatsnew/NAV2017/EnhancingTheCoreApplicationAndPlatform/WhitePaper_Application_Areas.docx)

# The Application SaaSification last tier

We decided to go for a **SaaSification bar**



# Level 1



Experience Tier

Application Areas

Permissions added and mapped to user groups.

Help is updated if needed incl. tooltips

# Level 2

Application Area

Permissions / UG

Update Help

Trim Ribbon

Reduce Fields

Wizard/Assisted Setup

Application specific telemetry

Additional Demo data

Notifications

Refresh Dialogs

Advertise Functionality

Everything in Level 1 + Ribbon, fields and telemetry.

The screenshot shows the Microsoft Dynamics NAV ribbon interface with the 'MANAGE' tab selected. The ribbon is divided into several groups: 'Manage' (containing 'Edit' and 'Delete'), 'New Document' (containing 'New', 'Delete', 'Sales Quote', 'Sales Invoice', 'Sales Order', and 'Sales Credit Memo'), 'Request Approval' (containing 'Send Approval Request', 'Cancel Approval Request', 'Create a Flow', and 'See my Flows'), 'Customer' (containing 'Bank Accounts', 'Ship-to Addresses', 'Contact', 'Account Detail', and 'Open Entries'), and 'Page' (containing 'Previous' and 'Next' buttons).

The screenshot shows the 'General' card in Microsoft Dynamics NAV. The card displays the following information:

General		Show more	
Name	Coho Winery	Total Sales	71.710,30
Balance (\$)	0,00	Costs (\$)	40.255,70
Balance Due (\$)	0,00	CFDI Purpose	...
Credit Limit (\$)	0,00	CFDI Relation	...
Blocked	...		

# Level 3

Application Area

Permissions / UG

Update Help

Trim Ribbon

Reduce Fields

Wizard/Assisted Setup

Application specific telemetry

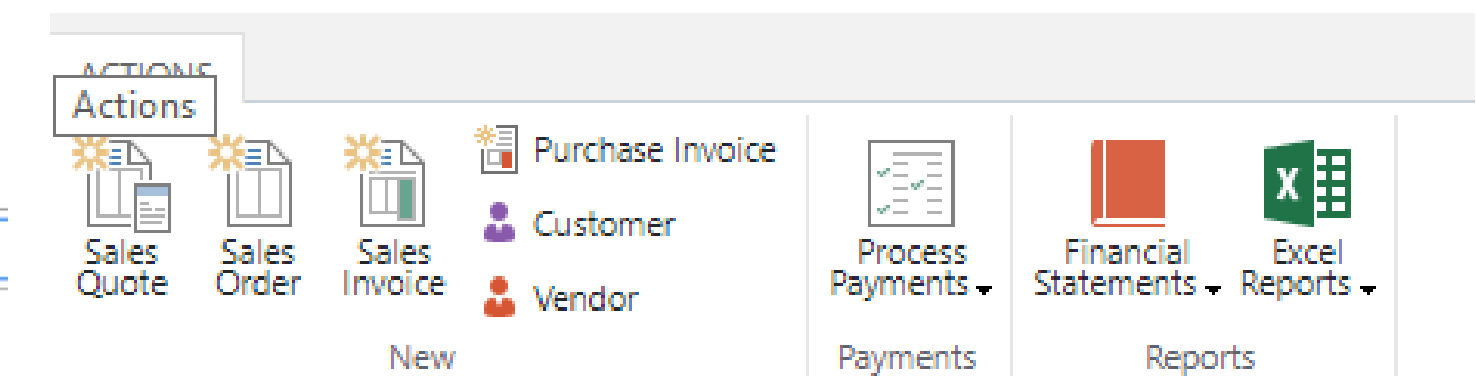
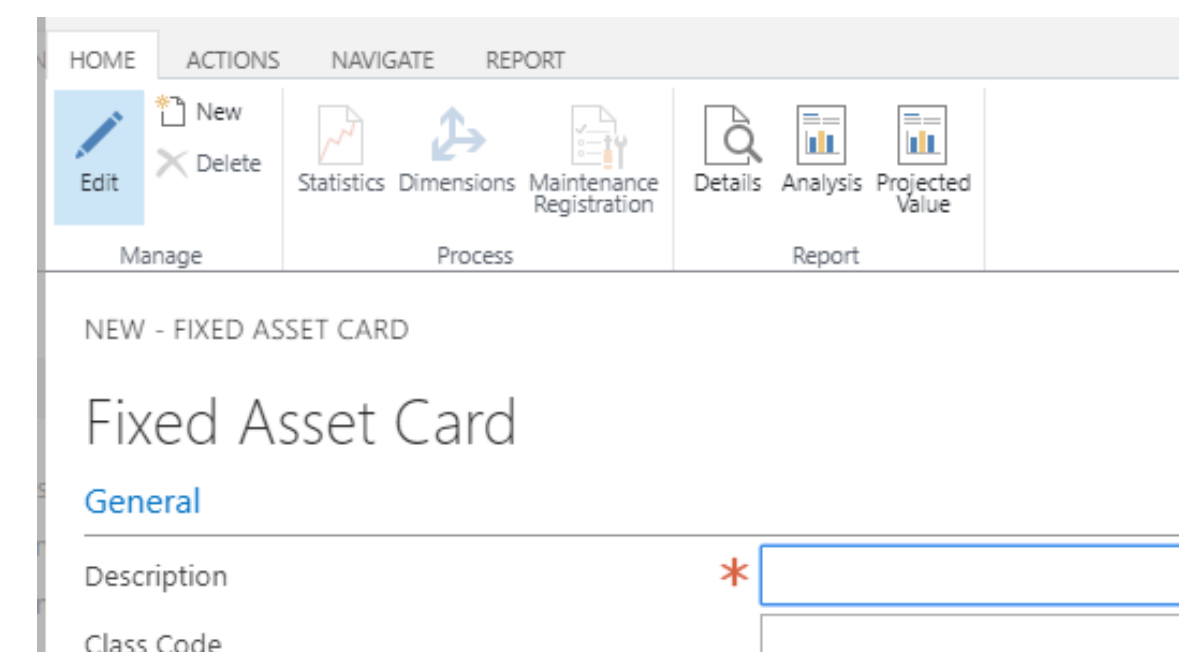
Additional Demo data

Notifications

Refresh Dialogs

Advertise Functionality

## Some examples

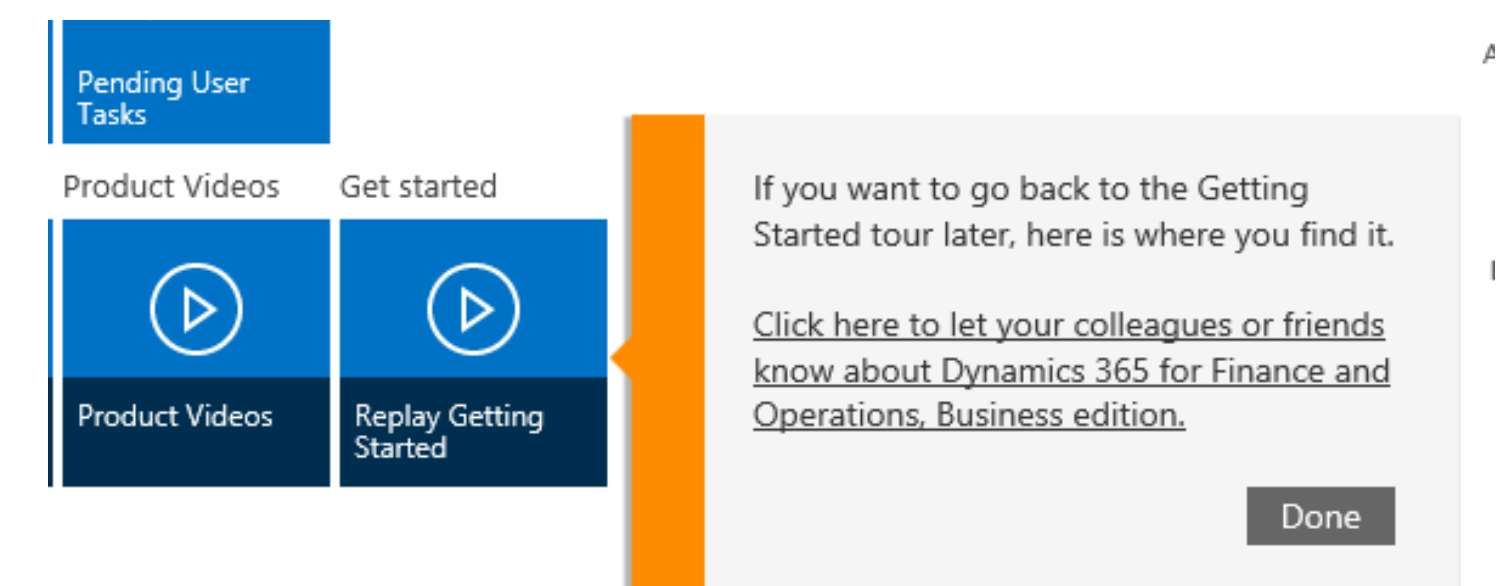


Power BI Reports ▾

You do not have a Power BI account. You can get a Power BI account at the following location:

<https://powerbi.microsoft.com>

Top Five Customers by Sales Valu



# Some examples of Wizards

# Data migration wizard

# Sales Tax Wizard

# Fixed Asset Acquisition

SALES TAX SETUP

Welcome to S

You can create a

is automatically c

Let's go!

Choose Next to c

SALES TAX SETUP

Enter the tax information for your area; then click next.

Enter your city tax information

City

City Rate

Enter your county tax information

County

County Rate

Enter your state tax information

State

Back Next Finish

The screenshot displays a software window titled "DATA MIGRATION" with a gear icon in the top-left corner. The main content area is titled "Data Migrators" and contains a section for "DATA MIGRATION" with a gear icon. Below this, the "Instructions" section lists four steps: 1) Download the Excel template, 2) Fill in the template with your data, 3) Optional, but important: Specify import settings. These help ensure that you can use your data right away, and 4) Choose Next to upload your data file. The "Settings" section follows, stating that users can change import settings by choosing "Settings" in the actions below.

DATA MIGRATION

Let's Choose

HOME

Data Migrators

DATA MIGRATION

Instructions

To prepare the data for migration, follow these steps:

- 1) Download the Excel template.
- 2) Fill in the template with your data.
- 3) Optional, but important: Specify import settings. These help ensure that you can use your data right away.
- 4) Choose Next to upload your data file.

Settings

You can change the import settings for this data source by choosing Settings in the actions below.



# Sales Order to Purchase Order

NEW - SALES ORDER - S-ORD101005 - COHO WINERY

✕ The available inventory for item 1896-S is lower than the entered quantity at this location. [Show details](#)

HOME


ACTIONS

NAVIGATE


MANAGE

LINE


ORDER




Create Purchase Document ▾




Calculate Invoice Discount




Get Recurring Sales Lines...




Copy Document...




Send IC Sales Order



Incoming Document ▾



Create Purchase Orders



Create Purchase Invoice

Create one or more new purchase orders to buy the items that are required by this sales document, minus any quantity that is already available.


Create a new purchase invoice to buy all the items that are required by the sales document, even if some of the items are already available.

COHO WINERY


COHO Winery

Customer Name


HOME




Show All




Show Unavailable




Event



Period



Location



BOM Level

Process

Item Availability

^

Create Purchase Orders

↗

No.	Description	Sales Order Quantity	Vendor	Quantity to Purchase
1896-S	... ATHENS Desk	20	Graphic Design Institute	16

# Card Pages

## FastTab

VIEW - CUSTOMER CARD

30000 · Litware, Inc.

**General** Show more

No.	30000	Credit Limit (\$)	0.00
Name	Litware, Inc.	Blocked	<input type="checkbox"/>
Balance (\$)	53,833.52	Total Sales	61,635.70
Balance Due (\$)	53,833.52	Costs (\$)	40,992.80

**Address & Contact** 37125 Meagan Bond

**Invoicing** Show more

Tax Liable	<input checked="" type="checkbox"/>	Tax Exemption No.	
Tax Area Code	MIAMI, FL	Gen. Bus. Posting Group	DOMESTIC
Tax Identification Type	Legal Entity	Customer Posting Group	DOMESTIC

**Payments** CM

**Shipping**

**Statistics** Show more

BALANCE SALES THIS YEAR

Customer Picture

Sell-to Customer Sales History

0	1	2
Ongoing Sales Quotes	Ongoing Sales Orders	Ongoing Sales Invoices
0	0	57
Ongoing Sales Credit Memos	Posted Sales Shipments	Posted Sales Invoices
0		
Posted Sales Credit Memos		

## Design 101

- ✓ Use 'Card' pages for master/reference data, not for transactions
- ✓ In first FastTab, have fields to identify record, and key statistics
- ✓ Mark rarely used fields as 'Additional'
- ✓ Mark essential fields as 'Promoted'
- ✓ Have max. 12 fields in 'Show Less' mode

# Demo

# SaaSification with Extension V2

- Extending Experience tier & Application area
- Notifications creation and life cycle management
- Video and Assisted Setup pages

# User Notifications

- Initialize notification
- Show and disable a notification
- Add a notification to MyNotification page

# User Notifications and JIT setup

Summing up:

- Always subscribe to *OnInitializingNotificationWithDeafultState*
- *SetNotificationDefaultStateForCurrentUser* adds an entry to *my notification*
- Use helper and factory methods from *NotificationLifeCycleMgt*.

# The Video list and Assisted setup

- Add entries to *Assisted Setup Page*
- Add entries to *Product Video Page*

# The Video list and Assisted setup

Summing up:

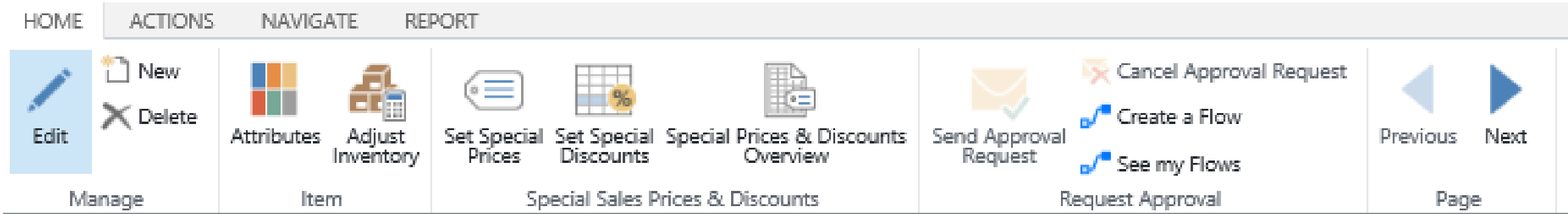
- Assisted Setup Page
  - OnRegisterAssistedSetup in Aggregated Assisted Setup
  - Use AddExtensionAssistedSetup
- Product Videos
  - OnInitBuffer in Product Video Buffer
  - Use AddCategory and AddVideoToCategory



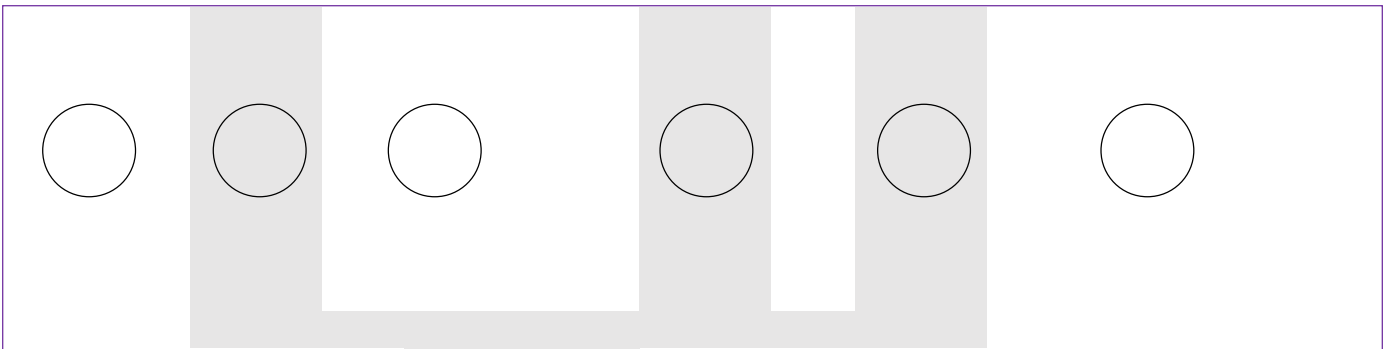
# Ribbon Simplifications

- Hide redundant actions between the Home tab and other tabs
- Reduce perceived complexity
- Improve consistency

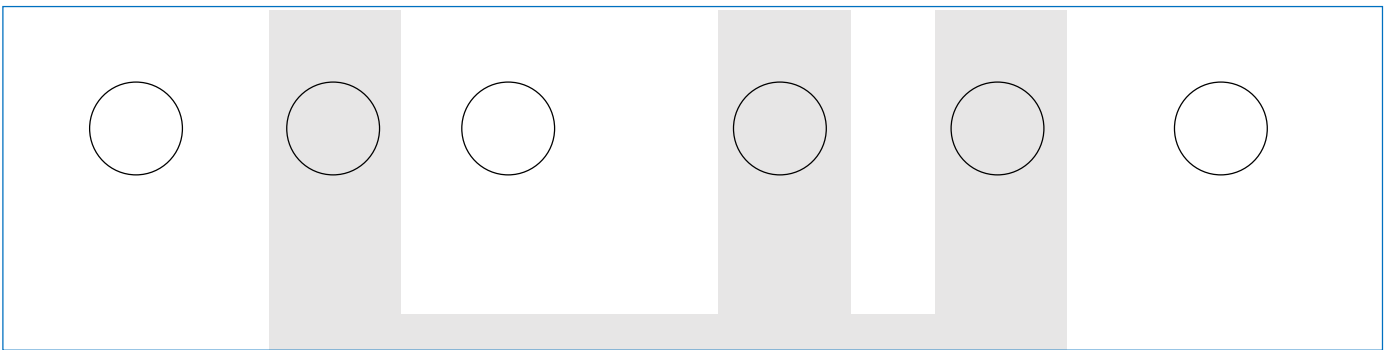
# Ribbon build-up basics



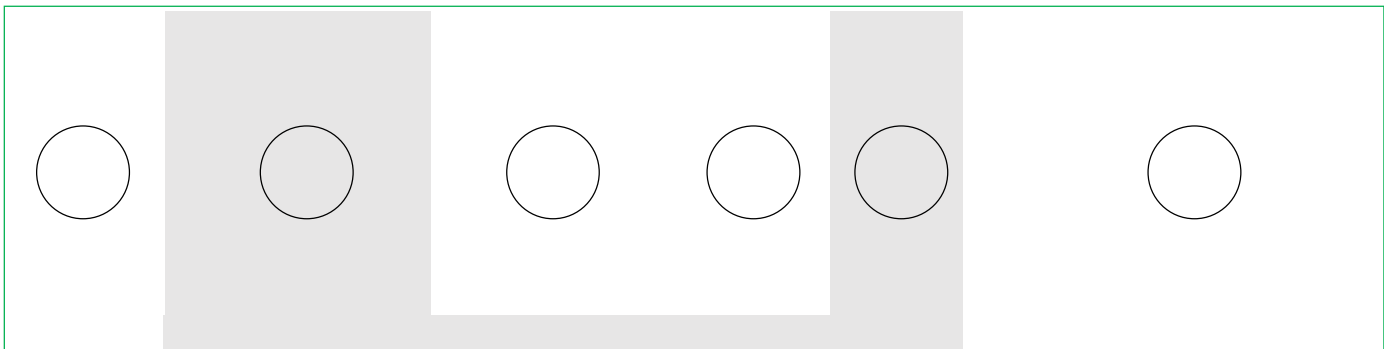
“Navigate” Tab



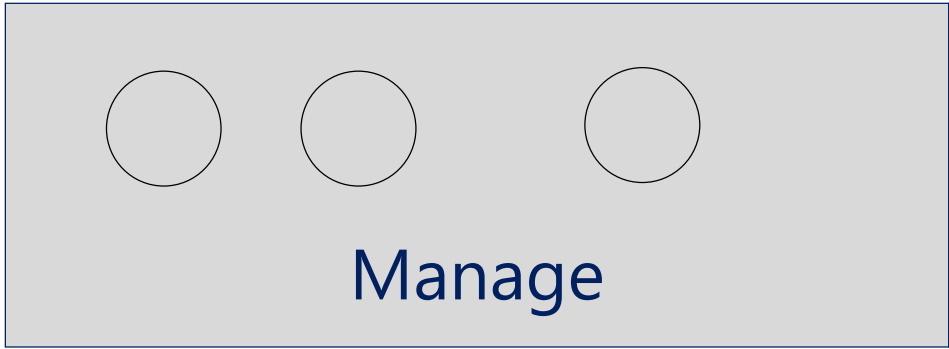
“Actions” Tab



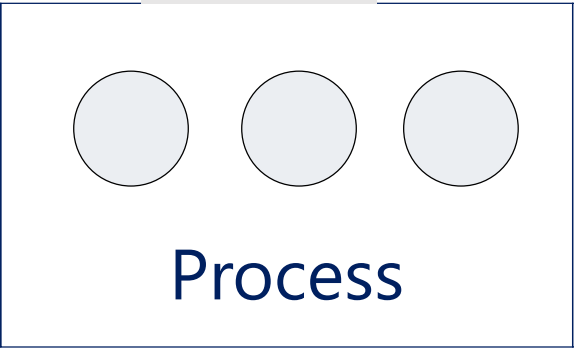
“Report” Tab



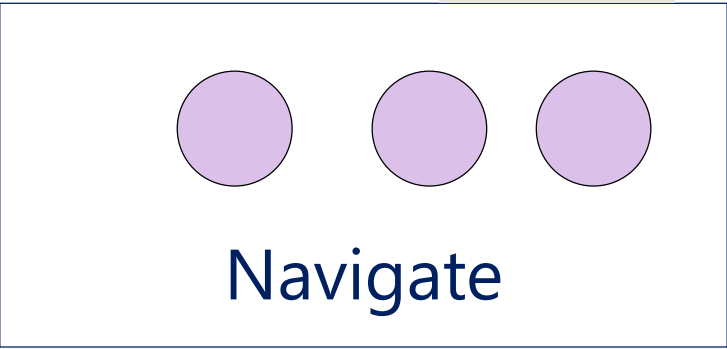
“Home” Tab



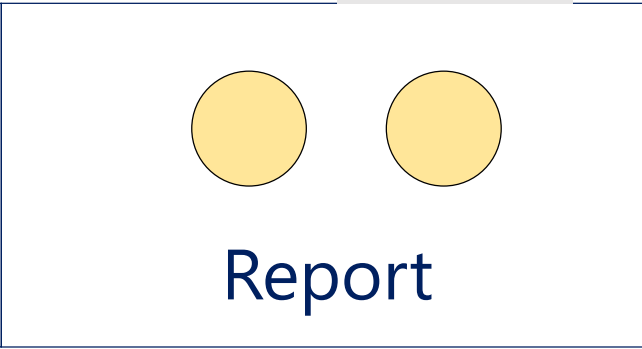
“Promotion”



“Promotion”

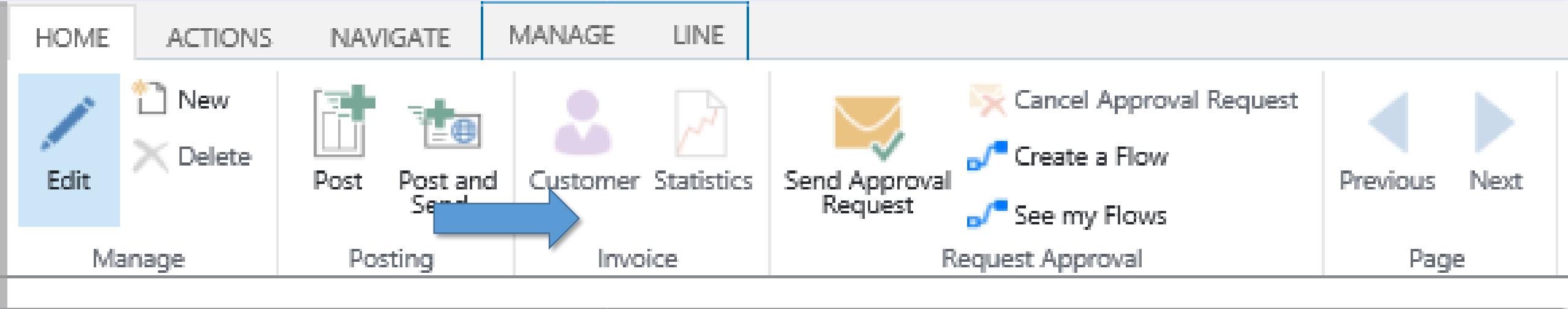
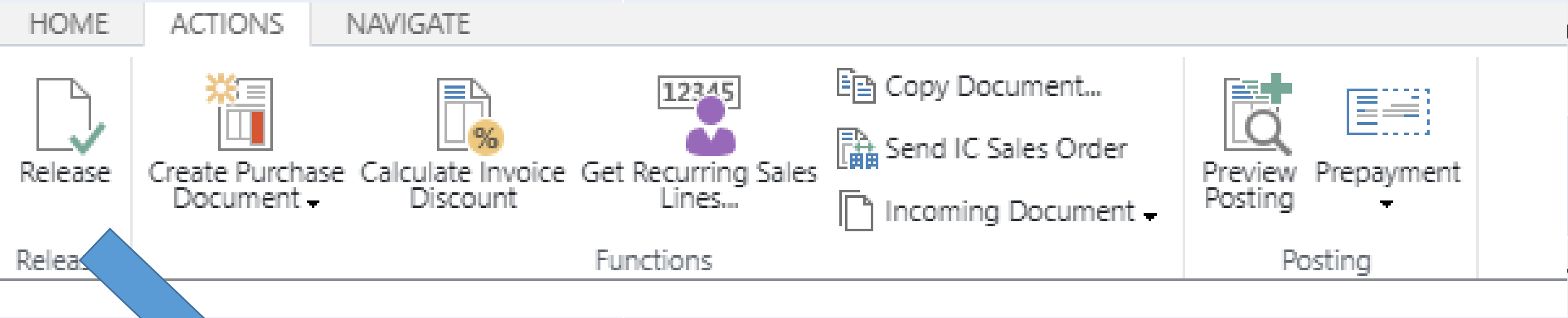
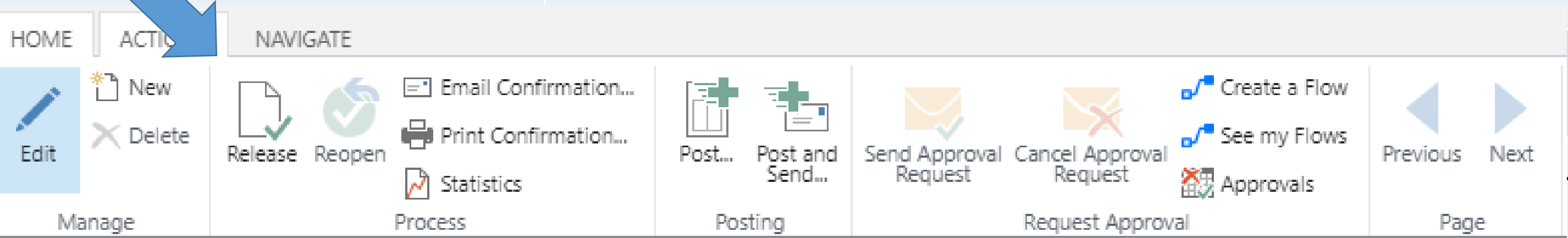


“Promotion”

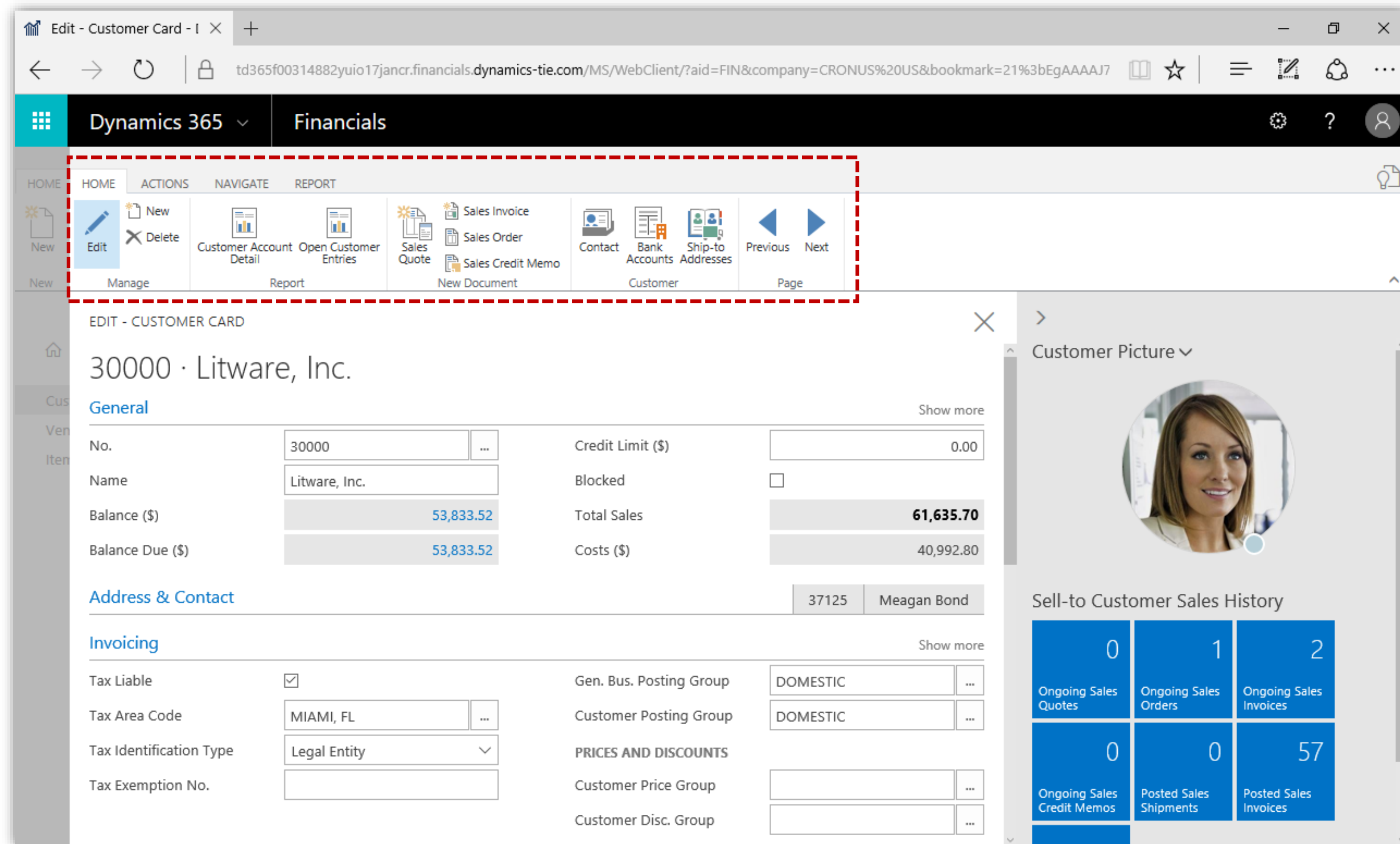


Property	Value
ID	
Name	Reopen
Visible	<TRUE>
Enabled	Status <> Status::Op
RunPageMode	<Edit>
Caption	Re&open
CaptionML	ENU=Re&open
ToolTip	Reopen the document to
ToolTipML	ENU=Reopen the doc
Description	<>
AccessByPermission	<Undefined>
ApplicationArea	#Basic,#Suite
Image	ReOpen
Promoted	Yes
PromotedCategory	Process
PromotedIsBig	<No>
PromotedOnly	Yes
Scope	<Page>
Ellipsis	<No>

# “Rewriting” the Action Tree

Operation	Description	Example
Re-categorize action	If an action is in the wrong action container—relative to its behavior—it must be moved to the proper Ribbon tab: A, N, R	The ‘Customer’ action on Invoice is placed in the ActionItems, should be in RelatedInfoItems.
Move into a dropdown menu	By grouping multiple (>2) actions into a dropdown menu, there are fewer actions at the top level	The ‘Document’ and ‘Service’ ribbon groups on Customer can be placed
Split ribbon group in two	Large ribbon groups look complicated and lead several groups to increase	
Remove tags (#Basic or #Suite and #Basic)	If an action isn’t needed for Suite or Basic, remove the tag	
Make action PromotedOnly	Promoted actions appear in the Home tab, and in their base tab. This is rarely needed, so use PromotedOnly generously	‘Send/Cancel Approval Request’ actions in customer card should be ‘PromotedOnly’
Demote actions	With too many actions promoted, Home tab gets cluttered. Demote the least important.	
Rename action to include verb	Actions that appear in the Actions Tab should include a verb	
Drop action from list to card-only	If an action can reasonably be “pushed out” to a card, drop it from the list ribbon.	
Elevate action from card to list-only	Occasionally, an action conceptually belongs to the list, elevate it to the list ribbon.	
Shuffle actions/groups	The sequence of actions/groups must follow the most important first.	

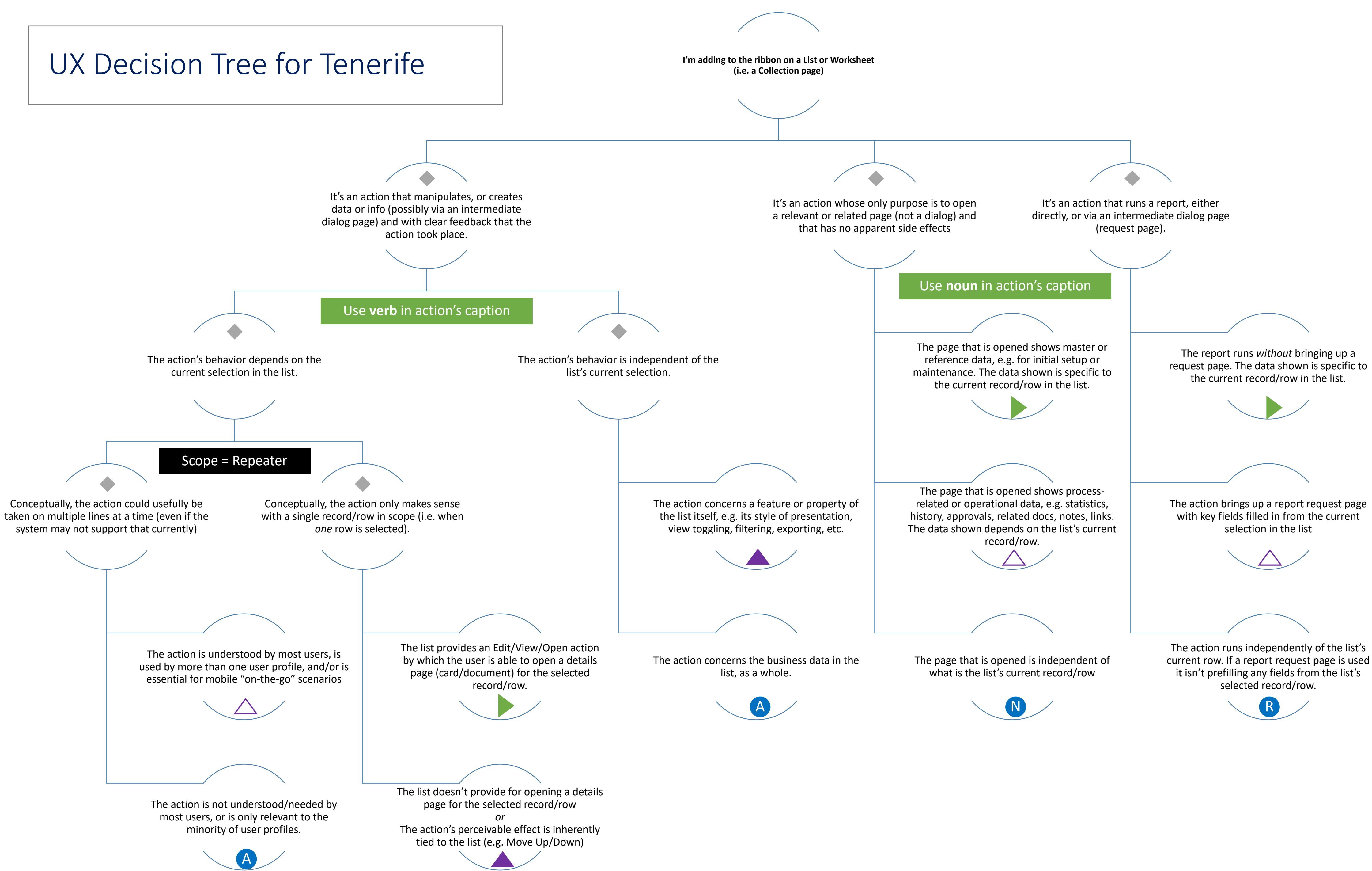
# Ribbon on Card Pages



## Card Ribbon Design

- ✓ Promote important 'New' & setup actions
- ✓ Promote important operational/report actions
- ✓ *Don't* have actions navigating to pages not specific to card
- ✓ When promoting, use PromotedOnly liberally
- ✓ Avoid 'orphans' (i.e. single unpromoted actions) in tabs & groups

# UX Decision Tree for Tenerife



Promote to Home tab if among the Top 10 important actions for the page. (▲ is prio 1)

Use *PromotedOnly* if:

- Caption is a verb, or
- All actions in its group are promoted

Make action available in the Card/Document page only, and not in the list.

*Exception:* Consider keeping action in list if the scope of its effect is first order

Make action available in respective ribbon tab, **not** promoted. *Exception:* if most peer actions are promoted, promote too.

Organize actions into groups based on topic.

Avoid mixing business and system concepts in same group.

Use subgroup (dropdown menus) whenever possible.



# Key take-away

Keep focusing\* on simplicity

- It's an iterative process
- We applied a consistent bar
- We realized the cost is high
- It's fun to simplify features

\*) ..and discussing, reviewing, prototyping, evaluating, user testing,...

# Demos using Extensions

# SaaSification with Extension V2

- Extending Experience tier & Application area
- Notifications creation and life cycle management
- Video and Assisted Setup pages
- Extending Wizards



# Extending wizards

- Adding new steps
- Steps initialization and order
- Controls validation

# Extending wizards

Summing up:

- Add the new steps as new groups or modify existing ones
- Update visibility of your steps with `GetCurrentStep`
- Register your steps using `OnInitStep`
- Validate your changes through `OnValidateCurrentStep`

# Summary

- Application SaaSification, simplifying using 3 different layers.
- Add Wizards, notifications and user guidance
- Update the Ribbon
- Doing SaaSification using extensions

# Thank you!

## Q & A

Contact us:

Tommaso Pimpo

[topimpo@microsoft.com](mailto:topimpo@microsoft.com)

Henrik Frovst Madsen

[hmadson@microsoft.com](mailto:hmadson@microsoft.com)

# BACKUP