



Unobtrusive Extensions: Customizing Windchill Without the Customization

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Unobtrusive Extensions

- Why use custom tools?
- Definition of “Unobtrusive Extension”
- Examples of SRAM extensions
- Unobtrusive Extensions – the technical approach
- Benefits of the approach
- Implementation details
- Wrap-up and Questions

“Software should assist people in the process of getting work done – it should be an inconspicuous part of, not a hindrance, or addition to, the process of getting the real work done.”

Todd Baltes
PLM Architect, SRAM

- **Windchill is great for PLM**
 - Natively supports many PLM concepts
 - Configurable, flexible
 - Workflows, attributes, object types
 - Roles, lifecycles
 - Preferences

- **Challenges with upgrades?**
 - One bad apple...

- **So...why customize?**

- **Windchill is great for PLM, but...**
 - Built for PLM in general
 - Good for all
 - Not necessarily great (for you)

- **Custom tools make Windchill great for you**
 - Maximize user efficiency
 - Automate your process
 - Consistency of data and process

- **Results of a custom Windchill solution**
 - Time savings
 - Consistent, reliable data
 - User acceptance

un·ob·tru·sive (adj.)

“not noticeable or conspicuous.”

ex·ten·sion (n.)

“An addition that increases the area, influence, operation, or contents of something.”

www.thefreedictionary.com

■ Searching and Reporting

- The right information to the right people at the right time
- Concise and consolidated
- Easy to access
- Easy to understand

■ Part data management

- SRAM has more than 144,000 SKUs to manage this year
- Wizards and Worksheets that support business functions
 - Create
 - Carry-over
 - Discontinue

■ Approval Group Process

- New PLM concept to “describe” parts (vs. “design”)
- Built using OOTB configuration + extensions

Examples of SRAM Extensions

Searching and Reporting

The screenshot shows the Windchill SRAM Report Builder interface. The browser address bar displays the URL: `pdm-qd.sram.com/Windchill/netmarkets/jsp/sramReports/sramReportBuilder.jsp?criteria=factoryAGCr`. The page title is "AG Cross Reference by Project Report".

Search Filters:

- ECR: [Text Input]
- ECR Type: **ECR - NPI** (Dropdown)
- AGs Submitted From: [Text Input]
- Factory: **Shenkang** (Dropdown)
- Product Container: **ALL** (Dropdown)
- AGs Submitted To: [Text Input]
- Only AGs with Not Released FGs?

Results Grid:

Export to Excel

ECR Number	ECR Name	ECR Type	Product Container	AG Number	AG Name	Factory	QCD	BFD	LQ Date	AG Owner	AG State	Current To
205273	U1A1CreateUpdateFGAG	ECR - NPI	SUSPENSION FORKS	AGP0200018	UC1A18A	Shenkang	15-Feb-2012	05-Jul-0006			Implementation	AGP21
205273	U1A1CreateUpdateFGAG	ECR - NPI	SUSPENSION FORKS	AGP0200019	UC1A18B	Shenkang	15-Feb-2012	05-Jul-0007			Canceled	AGP21
205273	U1A1CreateUpdateFGAG	ECR - NPI	SUSPENSION FORKS	AGP0200020	UC1A18C	Shenkang	15-Feb-2012	03-Jun-0037			Implementation	AGP21
205107	Qwin	ECR - NPI	PC IDH	AGP0200232	G8 Ride	Shenkang	01-Feb-2012	15-Feb-2012		Carlos Martinez	Implementation	AGP21
2052198	MY12 ReCrunch 08 LPD	ECR - NPI	BRAKES - DISC	AGP0200243	AKP20...	Shenkang	15-Feb-2013			T-DesignEng...	Planning	AGP11
205202	UC2A1A	ECR - NPI	SUSPENSION FORKS	AGP0200023	UC2A1A	Shenkang	15-Feb-2012	01-Jul-2012	30-D...		Implementation	AGP21
205299	BLH20111226A	ECR - NPI	SUSPENSION FORKS	AGP0200050	BLH201...	Shenkang	31-Mar-2012	31-Mar-2012	31-J...	T-DesignEng...	Implementation	AGP21
205308	BLH20120103C	ECR - NPI	BRAKES - DISC	AGP0200066	BLH20...	Shenkang	15-Feb-2012			T-SRAMProd...	Planning	
205334	AT2012 02 09_ECR_NPL...	ECR - NPI	SUSPENSION FORKS	AGP0200231	AGP R...	Shenkang	15-Feb-2012	01-May-3...	15-M...	Angel Trinath	Implementation	AGP21
205309	AG UL ML_1	ECR - NPI	BRAKES - DISC	AGP0200114	AGI_T...	Shenkang	16-Feb-2012	28-Jan-2012		Miranda Lin	Implementation	AGP21

Details Grid:

Close

Examples of SRAM Extensions

Part Data Management (Wizard)

SRAM FG Part Creation Wizard - Mozilla Firefox

pdms-qa0.sram.com/Windchill/netmarkets/jsp/sramWizards/sramFGPartCreation.jsp?ContainerDid=OR%3Awt.pdml

Create FG Part

Selected model: **FS-SID-WC-A2 (FS-SID WC-A2)**

Create Finished Good Part(s) with existing base number:
004018073

Or, create Finished Good Part(s) with a new base number:
[Dropdown] [Dropdown] [Fetch]

Enter a P/N above and click "Fetch" to query P/N availability.

Part Description (one part per line):

```
FS SID WC 26QRSA 90 KNT T CRN
FS SID WC 26QRSA 90 KNT T CRN
```

Required Information

ECR: [Text Box]

Brand: ROCKSHOX [Dropdown]

Model Years: [Text Box]

General Information

Pricelet: [Dropdown]

Save Cancel

Examples of SRAM Extensions

Part Data Management (Worksheet)

SRAM Model Year FG Carry Over / Discontinue Worksheet - Mozilla Firefox

pdm-qa@sram.com/Windchill/externalmarkets/pp/sram/Worksheets/sramFGCarryoverDiscontinue.pp?ContainerOid=OR%3Aurl.pdmlink_PDMLinkProduct%3A57843&u8=1&component

Model Year FG Carry Over / Discontinue

Carry Over / Discontinue Criteria

Planning Year: MY13 Not Decided Carryover Discontinue

PriceList: OEM Product: SUSPENSION FORKS Part/Model:

Search

Results

Model	Model Description	Part	Description	Status	Long Description	Product Type	Context
<input checked="" type="checkbox"/>	RM-PUSH-A1	RM-Pushbc-A1	11-4015-173-000	ST PS PUSH,OCMATCHM...	Not Decided	PUSH,OCMATCHMAKER...	SUSPENSIO...

Results: 1

Actions

Discontinue Information

Last Ship Date: 30-06-2012

Replaced By: 00.5315.006.000, A.3

Carryover Information

OK Cancel

Examples of SRAM Extensions

Approval Group Process

Approval Groups for ECR: 206290 - AG Dependency Test ECR 1 - Mozilla Firefox

pdm-128.sram.com/Windchill/netui/sets/jsp/sramApplications/sramApprovalGroups.jsp?unique_page_number=005&jsEnabled=component&tableID=table_recent_updates.html

Create Approval Groups

Parts to be Grouped

Add selected parts to:

Description	Model Code	Type	Atr1	Atr2	Atr3	Atr4
00.4018.192.006. A.2 - AG DEPENDENCY TEST FG 1	FS-RVL-300VC-A2					

This group depends on:

Group -

Name: Factory: OCD: BFD: Exclusively Trading Goods? Create

Manage Approval Groups

Existing Approval Groups

- AGP000045 - ENStestAG1 (Dell, Planning)
- AGP000249 - Test AGP 100 Template (Dell, Planning)

Approval Group Details

Name: Factory: OCD: BFD: Exclusively Trading Goods? Reason for Rework: L0 Date: Save

Approval Group Dependencies

Group -

Rework Selected Groups Move Selected Parts

Close

Unobtrusive Extensions

The Approach...



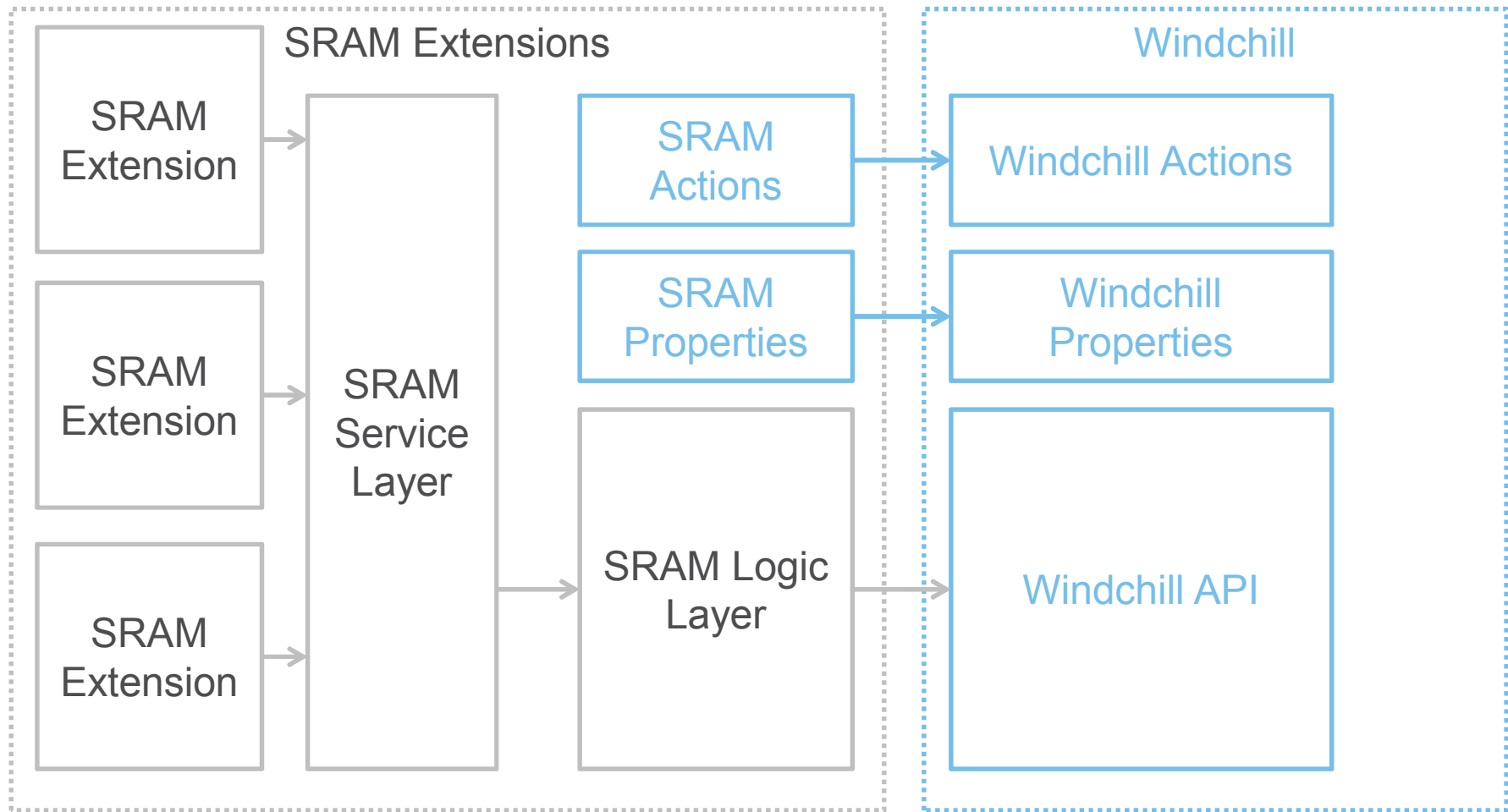
Extension Configuration in Windchill

- **Actions and Action models**
 - Use standard action extension points
 - custom-actions.xml
 - custom-actionmodels.xml
 - Action filters and validators
 - Access and Visibility

- **Property configuration**
 - XCONF properties to extend and override Windchill

- **Deployment**
 - Deploy custom artifacts
 - Additions to Windchill
 - Does not replace Windchill artifacts

Unobtrusive Extensions – The Approach



- **Lower Development Costs**
 - Use skills you have or can get

- **Flexibility**
 - Design
 - Technology

- **Less Upgrade Risk**
 - Compared to traditional customization

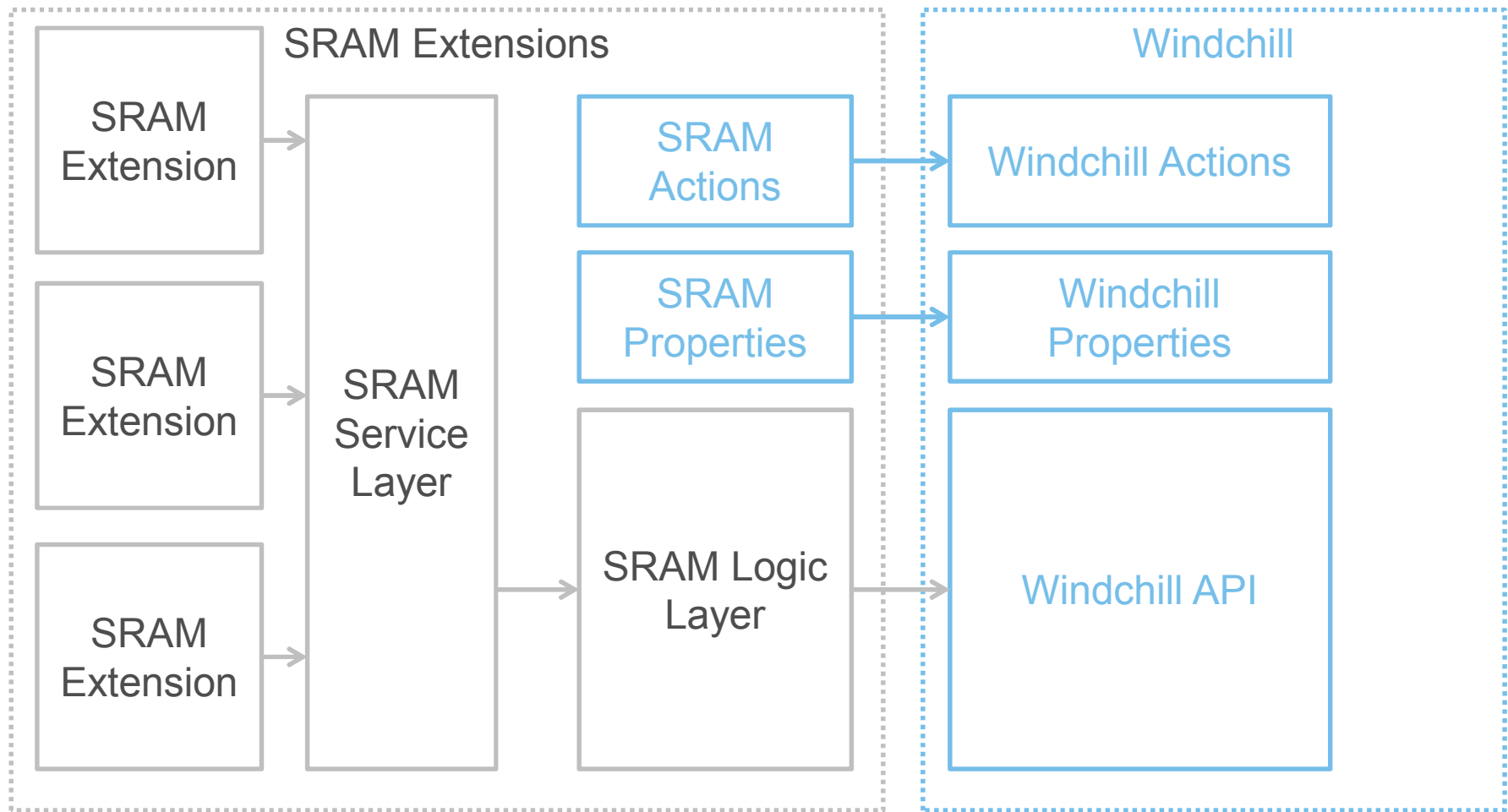
Unobtrusive Extensions

The Implementation Details...



Unobtrusive Extensions – The Implementation

Actions and Properties



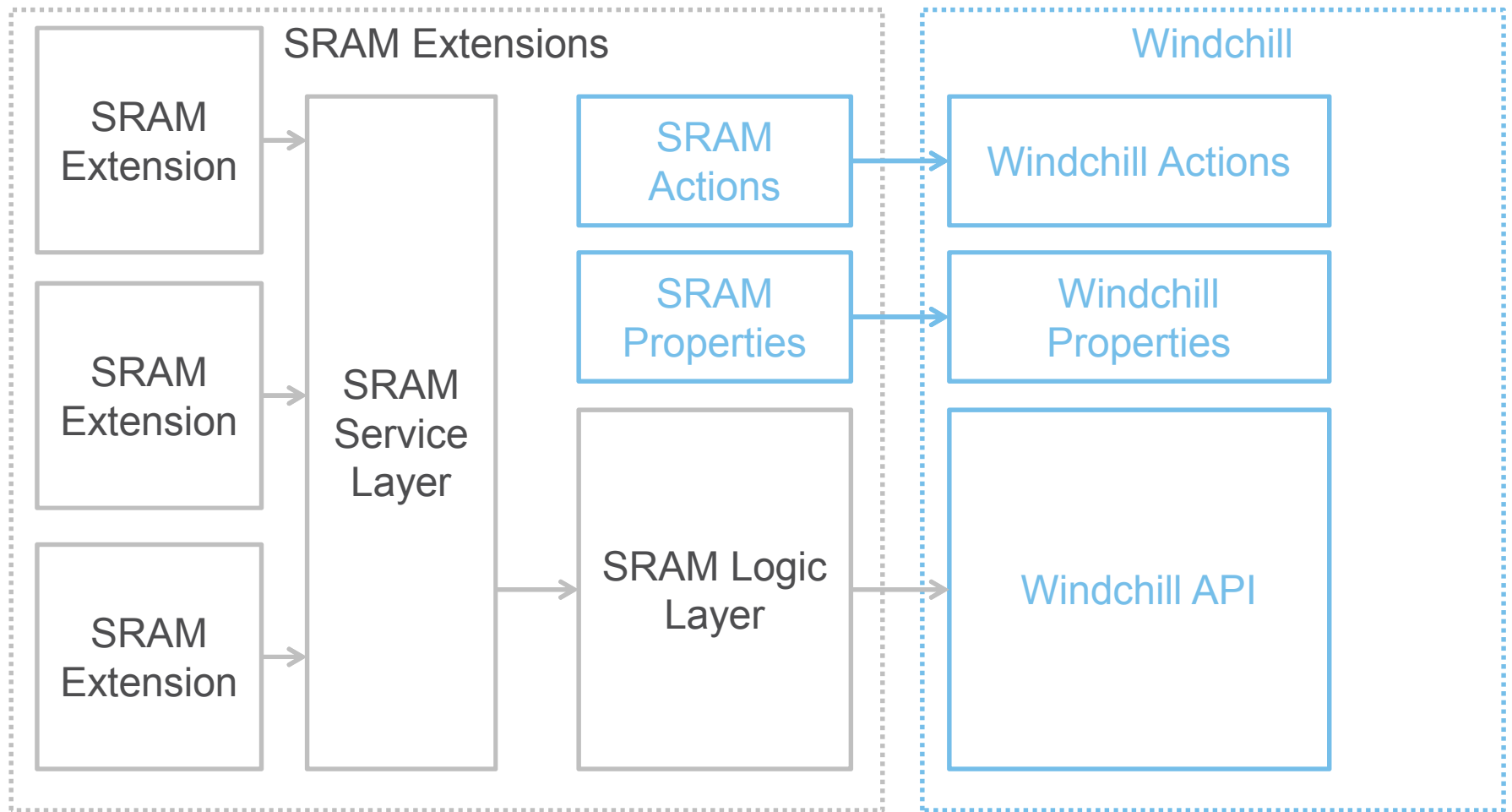
Actions and Properties

- **PTC Supported Extension points**
 - Custom actions supported through configuration
 - Custom properties supported through “xconf” manager
 - Well documented, easily supported

- **Main configuration point for extensions**
 - Enable custom tools for Windchill users
 - Disable Windchill functionality (where extensions apply)
 - Configure some extension components
 - Primarily action filters and validators

Unobtrusive Extensions – The Implementation

Logic Layer



Logic Layer

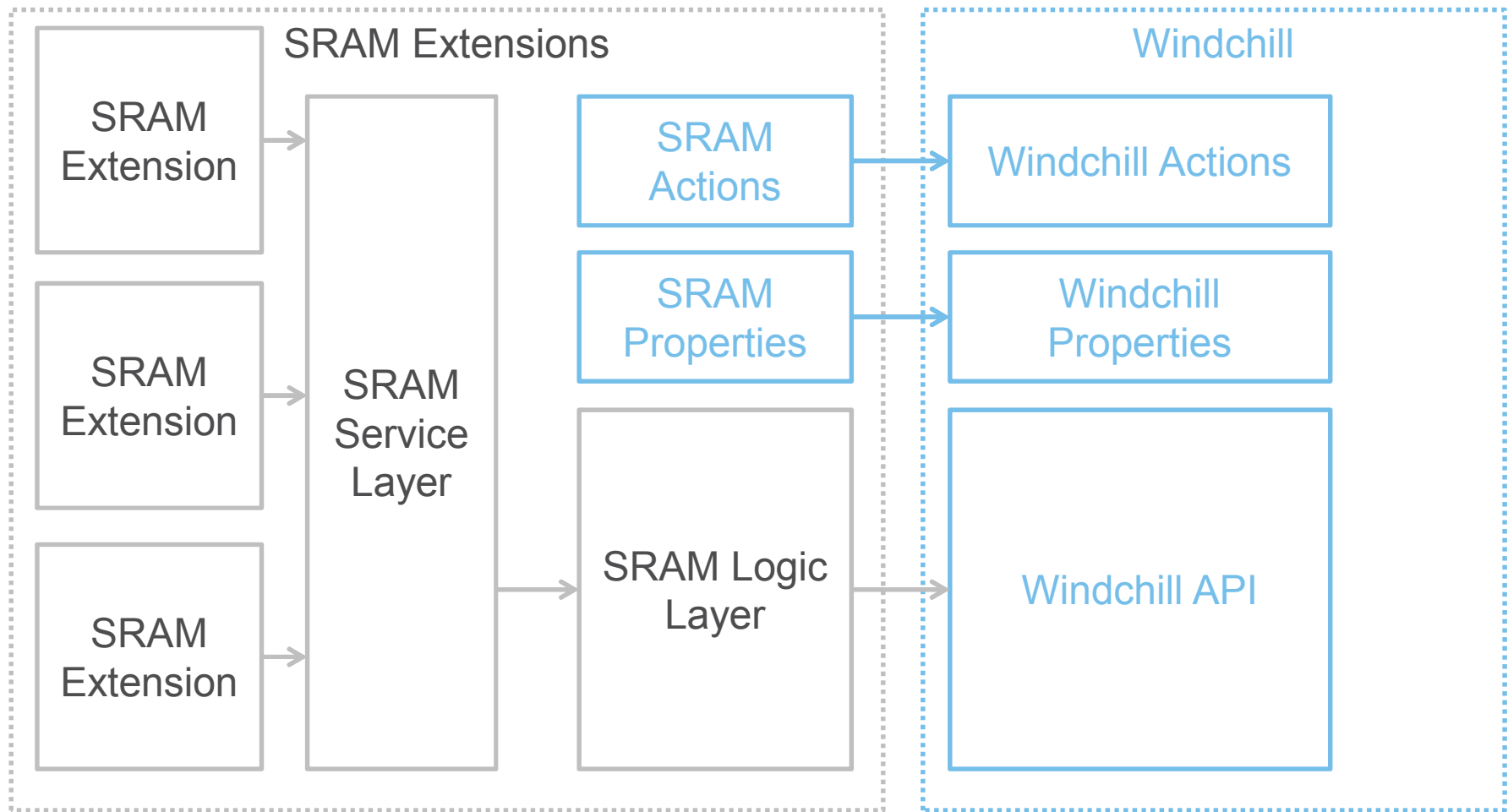
- **“Scripting” of Windchill APIs for extensions**
 - Leverage Windchill specific to your process
 - Create transactions

- **Decouple and Transform**
 - Create lightweight, targeted objects

- **Uses “low level” APIs**
 - Some risk, but not likely to change significantly
 - Core functionality that Windchill depends on
 - Changes to APIs more likely to be additive in nature

Unobtrusive Extensions – The Implementation

Service Layer



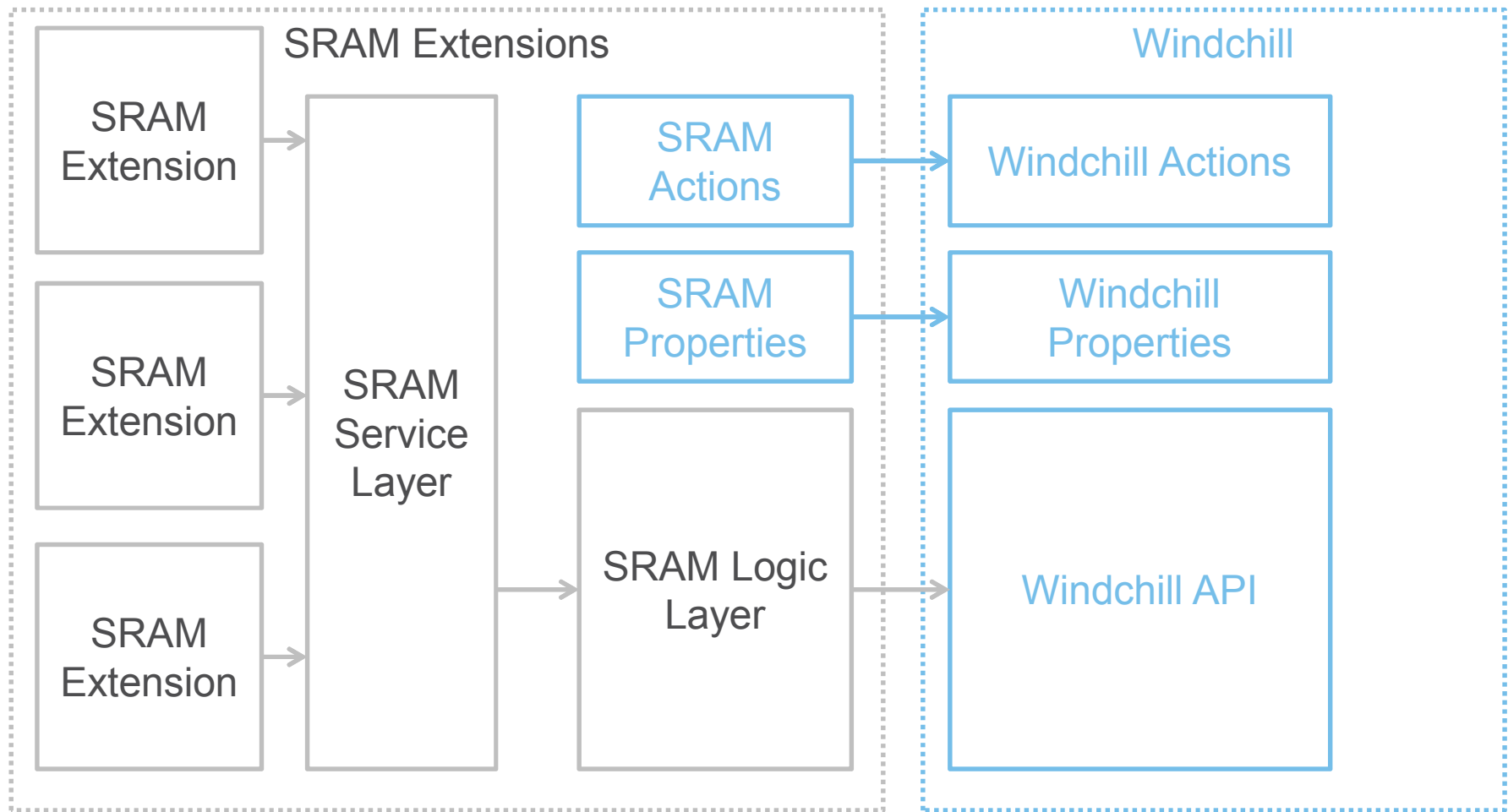
Service Layer

- **Define the transactions available for extensions**
 - Typically one service call for each “screen interaction”
 - Facilitates reuse of logic layer

- **Totally Decouple from Windchill**
 - No Windchill objects returned from a service
 - Extensions have no dependency on Windchill

Unobtrusive Extensions – The Implementation

Extension/Application Layer



Extension/Application Layer

- **Your tools, your way**
 - Complete control of design and implementation
 - What can I build for you today?

- **Totally Decoupled from Windchill**
 - Integrated only at the browser
 - Extensions only use services and lightweight custom objects

- **Upgrade Ready**
 - Extensions only have knowledge of
 - Service transactions
 - Transformed (non-Windchill) data

Wrap Up

Unobtrusive Extensions: Real value, lower cost.



Questions?

