Unobtrusive Extensions: Customizing Windchill Without the Customization

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Agenda

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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

Why Custom Windchill Tools?

- **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?**

Why Custom Windchill Tools?

- **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.*"*

Examples of SRAM Extensions

- **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

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Searching and Reporting

Examples of SRAM Extensions

Part Data Management (Wizard)

Examples of SRAM Extensions

Part Data Management (Worksheet)

Examples of SRAM Extensions

Approval Group Process

Unobtrusive Extensions

The Approach…

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

Benefits
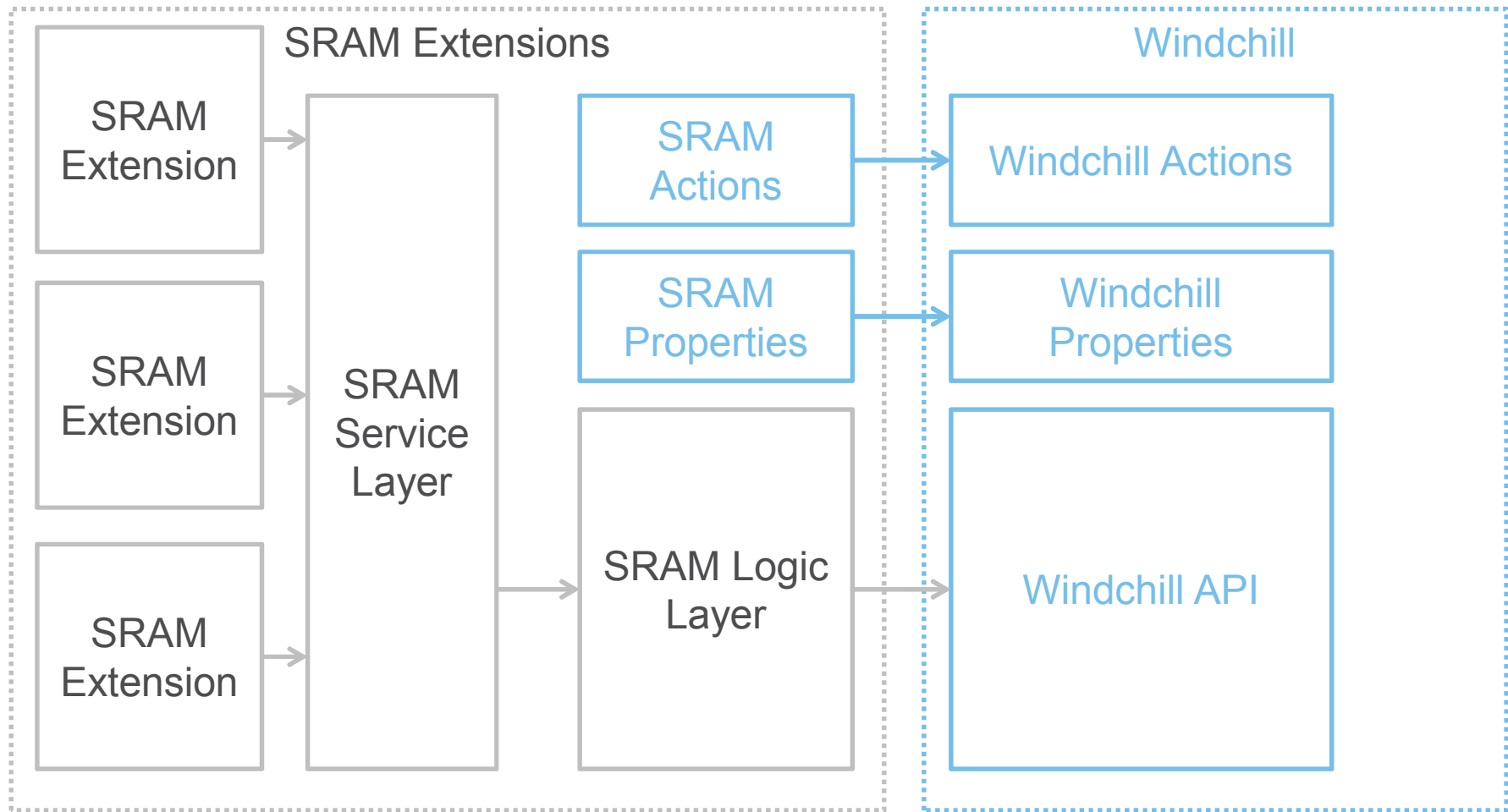
- ## Lower Development Costs
  - Use skills you have or can get

- ## Flexibility
  - Design
  - Technology

- ## Less Upgrade Risk
  - Compared to traditional customization

Unobtrusive Extensions

The Implementation Details…

Unobtrusive Extensions – The Implementation

Actions and Properties

Unobtrusive Extensions – The Implementation
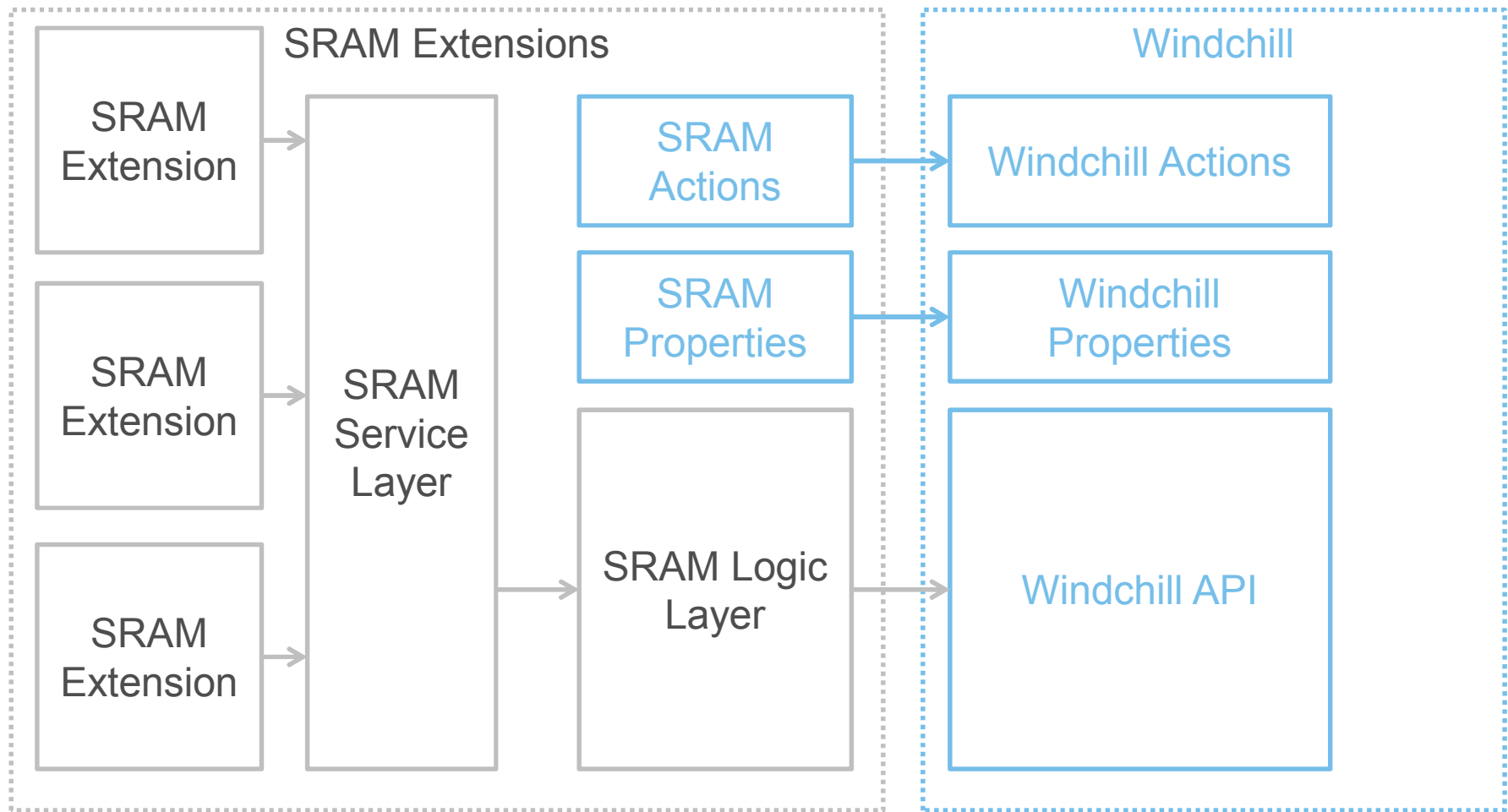
Actions and Properties

- **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

Unobtrusive Extensions – The Implementation
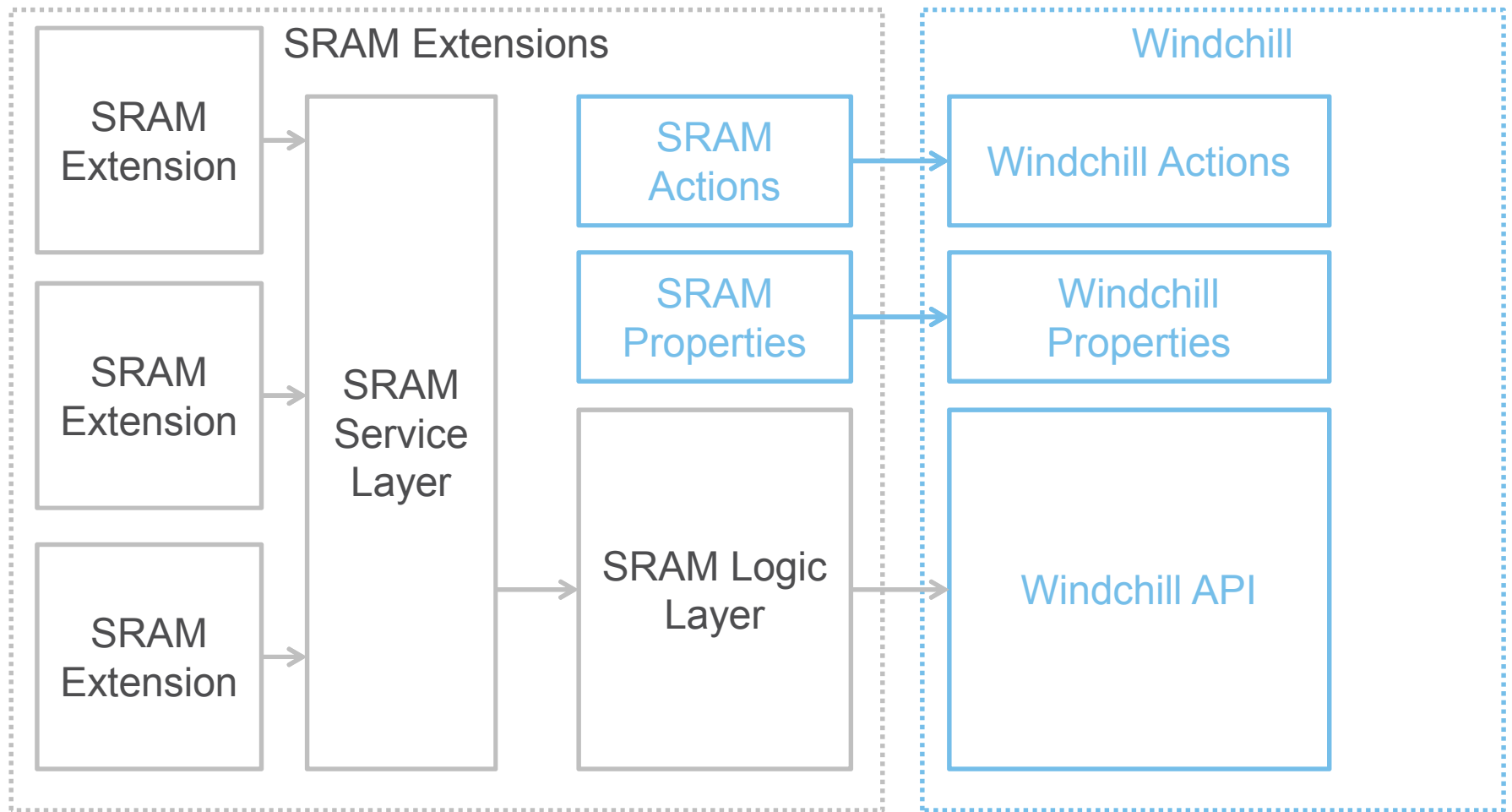
Logic Layer

- **"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

Unobtrusive Extensions – The Implementation
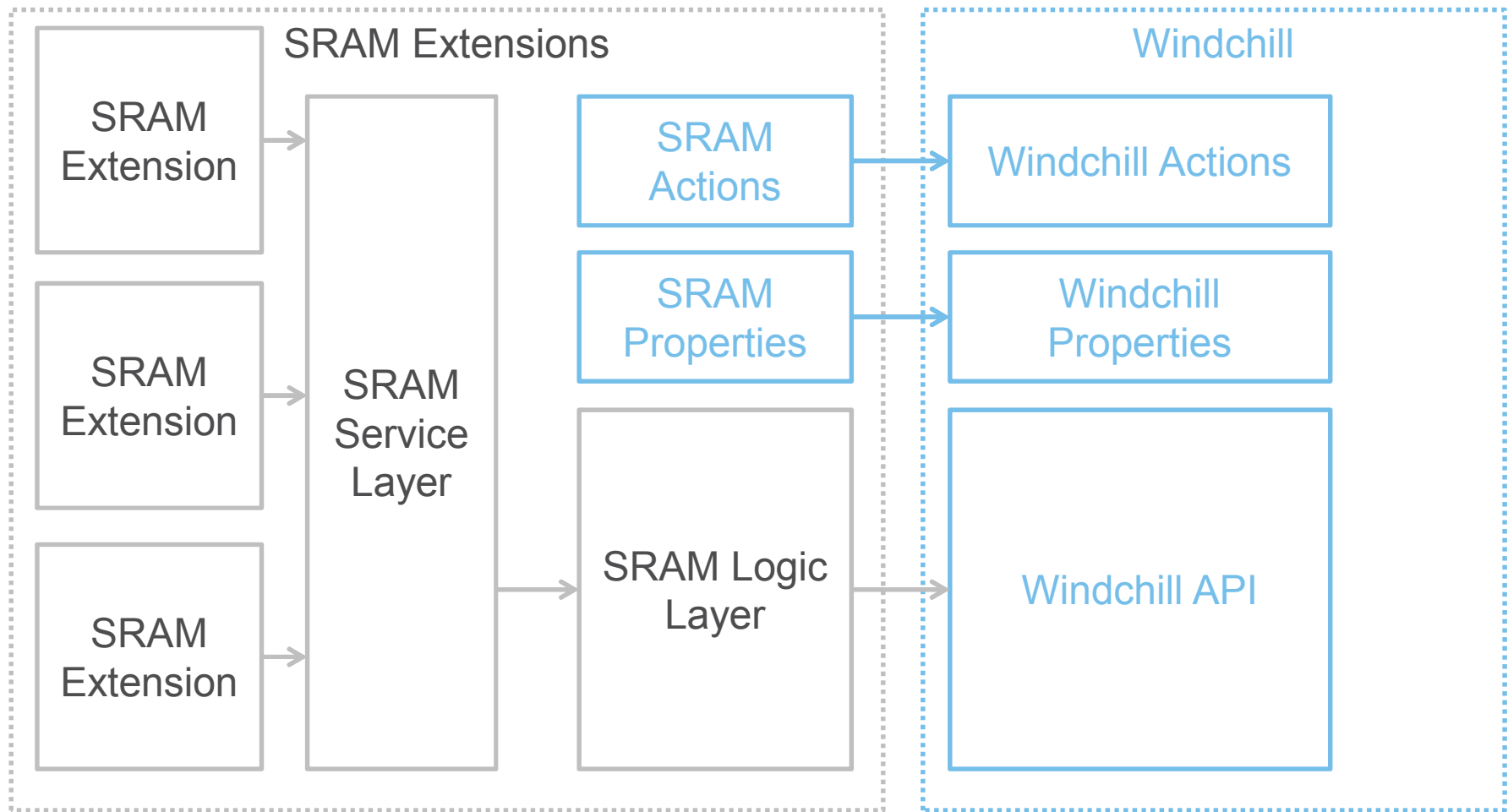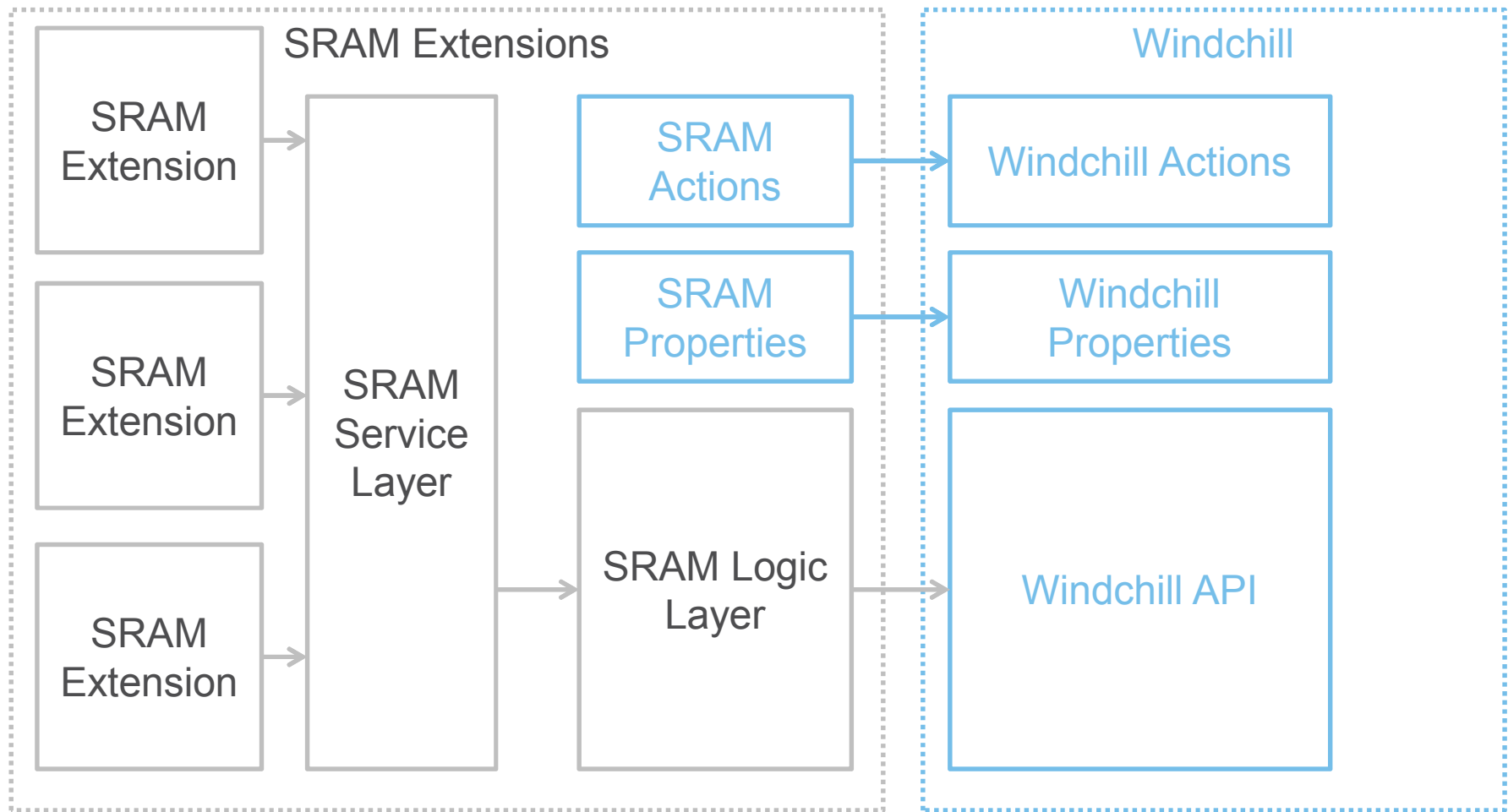
Service Layer

- **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

Unobtrusive Extensions – The Implementation

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

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Unobtrusive Extensions: Real value, lower cost.

Questions?