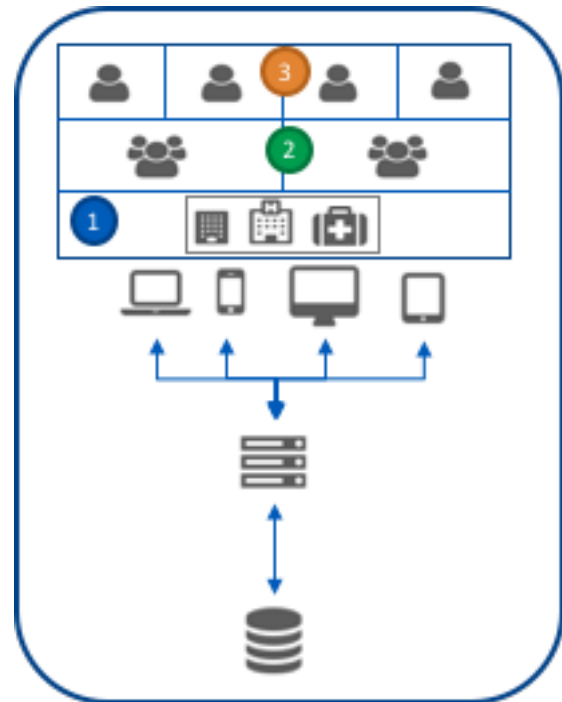


The terms “Configuration,” “Customization” and “Personalization” are often used in discussions about the design, build and maintenance of clinical information systems (CIS). The manner, degree and frequency with which a product is modified from the form provided by the software vendor (“foundation”) can have profound effects on build maintenance. Challenges include managing upgrades; maintaining security, role and competency-based access; re-validating clinical decision support rules; ensuring consistency of terminologies, taxonomies and pick-lists; and protecting the data dependencies of forms, templates and shortcuts.

Bottom Line: Configuration – Customization - Personalization

1. **Configuration:**
Vendor foundation build, optimized for the client organization.
2. **Customization:**
Modifications or additions to address business rules or workflows for a defined group.
3. **Personalization**
Ability to select, create or share user interface adjustments, automations, shortcuts, favorites or displays to improve usability, convenience or efficiency for a specific context or workflow; without affecting shared standards, data definitions, or the integrity of configuration or customizations.



It is important that all stakeholders have a clear understanding about how far the organization will go to modify a CIS prior to and during use; and about what types of modifications are supported. The following terms can help frame conversations about CIS design & build:

Term	Simple Definition	CIS Definition	CIS Implications
Foundation	Default configuration provided by a system vendor for typical use. <i>Synonyms: Base Build, Foundation Build</i>	A CIS vendor may produce an offering optimized for a particular country, customer type, standards-mix or context. This common foundation should work for all customers of that type in that context but would not be adapted to any specific client needs. However, a foundation offering may include multiple	The foundation is the starting point for AHS. Configuration must occur before the CIS is AHS-ready. Further customization may add value for particular programs. Degrees of personalization may be supported by the foundation, and limited by the configuration and customizations, to add value

Term	Simple Definition	CIS Definition	CIS Implications
		<p>modules that address the needs of specific contexts or users.</p> <p><i>Accountability: vendor.</i></p>	<p>for individuals.</p>
<p>Configuration</p>	<p>Manner in which a software system is prepared for a particular implementation or use.</p> <p><i>Synonyms: Core Configuration</i></p>	<p>Modification of currently available foundation features, functions or properties to prepare the CIS for use throughout a particular jurisdiction; resulting in a useable platform on which further changes, in the form of customizations or personalizations, may be applied. When subsequent changes, additions or enhancements affect the system for all users, they are configuration changes.</p> <p><i>Accountability: core design team, including robust clinical and business input.</i></p>	<p>CIS configurations may include component or suggested workflow adaptations for compliance with Canadian units, standards and conventions; adjustment for common workflows and norms; and local assurance of functional capabilities required by AHS and committed by the vendor. The CIS configuration expresses common design principles and includes defined data, interfaces, forms and elements that are not altered by customization or personalization. The CIS configuration will include the default state of all modules and will persist across upgrades and updates.</p>
<p>Customization</p>	<p>Changes or adaptations to the features of a software system required when the standard configuration will not meet the needs of a particular domain, group or activity.</p>	<p>Creation of one or more alternative implementations of a clinical information system – modifications affecting the user interface, information management, inputs or outputs – to address the business rules and workflow needs of a defined group, area or business activity.</p> <p><i>Accountability: clinical design team, leveraged by clinical and business leadership.</i></p>	<p>CIS customizations are anticipated for different clinical and operational domains that have internally consistent workflows and needs that differ significantly from the workflows and needs of others. The informational and interface challenges of a transplant service, for example, may be different enough from those of a medical inpatient service to merit customized information capture, organization, presentation, validation and analytics. CIS customizations must be governed, managed and designed such that they persist safely across system upgrades or configuration</p>

Term	Simple Definition	CIS Definition	CIS Implications
Personalization	Changes or adaptations to the features of a software system to fit the needs of a particular person or group of persons.	<p>Adaptation or adjustment of base configuration or customized interfaces and activities to improve usability, convenience, efficiency and safety for a particular user. One user may share helpful personalizations with other users. Constraints on what can be personalized, to what degree, and how personalizations might be shared, can be set at the foundation, configuration or customization level.</p> <p><i>Accountability: domain superusers, clinician builders, peer supports and clinical user groups; overseen by Professional Practice Informatics Councils.</i></p>	<p>changes.</p> <p>Personalizations are essential for adapting a CIS to the specific needs of end-users; without endangering data, function, content or standards. Personalizations might involve saved frequently-used documentation blocks, particulars of commonly administered medications, or lists of favorite functions. Support for personalization must not affect configuration or customization settings and must be capable of persisting across system upgrades. This may mean that elements like order-sets and other decision supports cannot be personalized; for lack of safe means to update them when CIS content or decision supports are modified.</p>

Setting limits to configuration, customization and/or personalization is key to effective CIS design, build, operation and optimization. Tension between end-user demand for local (idiosyncratic) preferences and organizational demand for system-wide simplicity is inevitable. An optimal mix of configuration, customization and personalization must be negotiated. The resulting adaptation strategy should be clearly explained and communicated to better manage user and organizational expectations. The strategy should also be consistent with human factors considerations, an eSafety framework and analytics needs for consistent data definitions.

A rock-solid base configuration, with few domain customizations applied to a limited number of modules can maximize sustainability. A well-designed personalization capacity, with accountable peer-support, could permit variability where it improves acceptability without endangering stability.

Different proportions of configuration, customization and personalization may be required for different CIS modules or functions. For example, personalization of favorite diagnoses and billing codes may be more acceptable than personalization of order sets or medication alerts. Function-specific adaptation strategies should be debated and decided before CIS design and build, and revisited during optimization.