





Paths	
Nested element	<i>element.subelement.subelement</i>
Array element	<i>array-element</i> [<i>index</i>] ([0] optional)
Choice [x] element	value <i>DataType</i>
Reference choices	<i>reference-element</i> [<i>Resource or Profile</i>]
Extensions	extension[<i>extension-name or id or url</i>] modifierExtension[<i>ext-name or id or url</i>]
Sliced arrays	<i>slice-path</i> [<i>slice-name</i>] <i>slice-path</i> [<i>slice-name</i>][<i>reslice-name</i>]
StructureDefinition escape caret syntax	<i>^structure-definition-path</i> <i>element-path</i> <i>^element-definition-path</i>

Notations and Special Values	
code	<i>#code</i> "optional-display-text"
Coding and CodeableConcept	<i>system#code</i> "optional-display-text" <i>system version#code</i> "optional-display"
Cardinality	<i>min..max</i> (<i>min</i> integer, <i>max</i> integer or *)
UCUM unit	<i>number</i> 'ucum-unit'
Comments	// <i>single line</i> /* <i>multi-line</i> */
Flags	MS (must support) TU (trial use) SU (summary, Σ) N (normative) ?! (modifier) D (draft)
Binding strengths	required, extensible, preferred, example
Multi-line string	""" <i>string or markdown</i> with new line """

Slicing Rubric	
* <i>array-path</i> ^slicing.discriminator.type = #pattern, #value, #type, #profile, #exists	
* <i>array-path</i> ^slicing.discriminator.path = <i>FHIRPath string</i>	
* <i>array-path</i> ^slicing.rules = #open, #closed, #openAtEnd (optional)	
* <i>array-path</i> ^slicing.ordered = true, false (optional)	
* <i>array-path</i> ^slicing.description = <i>string</i> (optional)	

More Information

FSH Spec & Doc FSH Chat Sushi Open Source HL7 FSH

Item	Keywords (<i>italics</i> ↔ <i>optional</i>)
Alias	Alias: <i>alias-name</i> = <i>url, uri, or urn:oid</i> (<i>alias-name</i> optionally can begin with \$)
Profile and Extension	Profile: <i>name</i> or Extension: <i>name</i> Parent: <i>profile or resource name or url</i> Mixins: <i>ruleSet1, ruleSet2 ...</i> Id: <i>id</i> Title: <i>string</i> Description: <i>markdown</i>
Instance	Instance: <i>id</i> InstanceOf: <i>profile or resource reference</i> Mixins: <i>ruleSet1, ruleSet2 ...</i> Usage: Example, Definition or Inline Title: <i>string</i> Description: <i>markdown</i>
Value set and Code System	ValueSet: <i>name</i> or CodeSystem: <i>name</i> Id: <i>id</i> Title: <i>string</i> Description: <i>markdown</i>
Invariant	Invariant: <i>key</i> Severity: #error, #warning Description: <i>string</i> Expression: <i>FHIRPath string</i> XPath: <i>XPath expression string</i>
RuleSet	RuleSet: <i>name</i>
Mapping	Mapping: <i>name</i> Source: <i>profile name</i> Target: <i>uri</i> Id: <i>id</i> Description: <i>string</i>

SUSHI and IG Publisher	
File extension	.fsh
Install/update SUSHI	\$ npm install -g fsh-sushi
Run SUSHI	\$ sushi <i>input-dir</i> -o <i>output-dir</i>
Update IG Publisher (in output directory)	\$ _updatePublisher (Windows) \$./_updatePublisher.sh (Mac)
Run IG Publisher (in output directory)	\$ _genonce (Windows) \$./_genonce.sh (Mac)

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Rules	
Fixed Value	* <i>path</i> = <i>value</i> * <i>path</i> = <i>value</i> (exactly) (profiles, extensions only) * <i>Quantity-path</i> units = <i>coding</i>
Binding	* <i>path</i> from <i>valueset</i> (<i>binding strength</i>) * <i>Quantity-path</i> units from <i>valueset</i> (<i>bind. strength</i>)
Cardinality	* <i>path min..max</i> * <i>path min..</i> (constrain lower bound only) * <i>path ..max</i> (constrain upper bound only)
Data type[x] restriction	* <i>path</i> only <i>type</i> * <i>path</i> only <i>type1</i> or <i>type2</i> or <i>type3 ...</i>
Reference restriction	* <i>path</i> only Reference(<i>Resource or Profile</i>) * <i>path</i> only Reference(<i>Resource1</i> <i>Profile2</i> ...)
Flags	* <i>path flag1 flag2 ...</i> * <i>path1, path2, path3... flag1 flag2 ...</i>
Extensions, Standalone	* <i>extension-path</i> contains <i>extension-reference1</i> named <i>local-name1 card1 flags1</i> and <i>extension-reference2</i> named <i>local-name2 card2 flags2 ...</i> (<i>extension-reference</i> is name, id, or url)
Extensions, Inline	* <i>extension-path</i> contains <i>local-name1 card1 flags1</i> and <i>local-name2 card2 flags2 ...</i>
Slices	* <i>array-element-path</i> contains <i>slice-name1 card1 flags1</i> and <i>slice-name2 card2 flags2 ...</i>
Invariants	* obeys <i>invariant1, invariant2, ...</i> * <i>path</i> obeys <i>invariant1, invariant2, ...</i>
Mapping	* -> <i>map-string comment-string language-code</i> * <i>path</i> -> <i>map-string comment-string language-code</i>

Value Set Rules	
Include single code	* <i>system#code</i> "display"
Exclude single code	* exclude <i>system#code</i> "display"
Include entire code system	* codes from system <i>codesystem</i>
Include from value set	* codes from valueset <i>valueset</i>
Exclude from value set	* exclude codes from valueset <i>valueset</i>
Filter syntax: <i>property operator string-code-boolean-regex</i>	
Filter Operators: (not all apply to every code system) is-a, descendent-of, =, is-not-a, regex, in, not-in, generalizes, exists	
Include codes with filtering	* codes from system <i>codesystem</i> where <i>filter1</i> and <i>filter2</i> and ...
Exclude codes with filtering	* exclude codes from system <i>codesystem</i> where <i>filter</i>

Code System Rules	
Define local code	* <i>code</i> "display text" "definition text"



FHIR Shorthand 1.0 Quick Reference: Examples



Paths	
Nested element	stage.assessment
Array element	name[0].given[1]
Choice [x] element	valueQuantity, valueReference
Reference choices	performer[Organization]
Extensions	extension[terminationReason]
	extension[http://hl7.org/fhir/StructureDefinition/location-distance] (Instance only; otherwise use slice name)
Sliced arrays	component[DiastolicPressure]
Resliced arrays	component[RespiratoryScore][OneMinute]
StructureDefinition escape (caret syntax)	^abstract component[VariationCode] ^short

Notations and Special Values	
code	#confirmed
Coding and CodeableConcept	http://snomed.info/sct#363346000 "Malignant neoplastic disease (disorder)"
	ICD10CM#C004
Cardinality	0..1 1..1 2..* (two-sided) ..1 1.. 2.. (one-sided)
Comments	// end of line or single line
	/* This comment continues over multiple lines */

Slicing Rubric	
* component ^slicing.discriminator.type = #pattern * component ^slicing.discriminator.path = "code" * component ^slicing.rules = #open * component ^slicing.ordered = false * component ^slicing.description = "Slice on component.code"	

SUSHI and IG Publisher	
FSH file	MyFile.fsh
Install/update SUSHI	\$ npm install -g fsh-sushi
Run SUSHI from FSH directory	\$ sushi .
Update IG Publisher (from ./build directory)	\$ _updatePublisher (Windows) \$./_updatePublisher.sh (Mac)
Run IG Publisher (from ./build directory)	\$ _genonce (Windows) \$./_genonce.sh (Mac)

Item	Keywords
Alias	Alias: UCUM = http://unitsofmeasure.org
	Alias: race = urn:oid:2.16.840.1.113883.6.238
Profile	Alias: \$GenderIdentity = http://hl7.org/fhir/StructureDefinition/patient-genderIdentity
	Profile: CancerPatient Parent: \$USCorePatient Id: mcode-cancer-patient Title: "Cancer Patient" Description: "A patient diagnosed with cancer"
Instance	Instance: mCODETumorMarkerExample01 InstanceOf: TumorMarker Usage: Example Description: "Epidermal growth factor example."
Extension	Extension: TerminationReason Id: mcode-termination-reason Title: "Termination Reason" Description: "Reason for stopping a treatment."
Value set	ValueSet: AnatomicalOrientationVS Title: "Anatomical Orientation Value Set" Description: "Values for anatomical orientation."
Code system	CodeSystem: AJCC_FairUse Title: "AJCC Fair Use" Description: "A small subset of AJCC staging codes used for IG examples."
Invariant	Invariant: us-core-8 Description: "Patient.name.given or Patient.name.family or both SHALL be present" Expression: "family.exists() or given.exists()" Severity: #error XPath: "f:given or f:family"
RuleSet	RuleSet: USCoreTerminologyRuleSet
Mapping	Mapping: USCorePatientToArgonaut Source: USCorePatient Target: "http://unknown.org/Argonaut-DQ-DSTU2" Id: argonaut-dq-dstu2

Code System Rule	
Local code definition	* #NED "No Evidence of Disease" "No physical evidence of disease on exam or imaging tests."

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Rules	
Fixed Value	* status = #arrived * code = SCT#18165001 "Jaundice (finding)" * onsetDateTime = "2019-04-02" * subject = Reference(EveAnyperson) * valueQuantity = 2.5 'mm' * valueQuantity units = UCUM#mm "millimeters"
Binding	* bodySite from CancerBodyLocationVS (preferred) * valueCodeableConcept from http://loinc.org/vs/LL1971-2 (required) * valueQuantity units from LengthUnitsVS (extensible)
Cardinality	* severity 0..0 * subject 1..
Datatype[x] restriction	* value[x] only CodeableConcept * effective[x] only dateTime or Period
Reference restriction	* subject only Reference(CancerPatient) * asserter only Reference(Practitioner Patient)
Flags	* deceased[x] MS ?! SU * reasonCode, extension[terminationReason] MS
Extension, Standalone	* extension contains \$GenderIdentity named genderIdentity 0..1 MS and http://hl7.org/fhir/StructureDefinition/patient-disability named disability 0..1 MS
Extension, Inline	* extension contains treatmentIntent 0..1 MS and terminationReason 0..* MS
Slicing	* component contains GeneStudied 0..* MS and VariationCode 0..* and GenomicDNAChange 0..1
Invariants	* obeys us-core-9 * name obeys us-core-8
Mapping	* -> Patient * identifier.system -> "Patient.identifier.system"

Value Set Rules	
Single code	* SCT#54102005 "G1 grade (finding)"
Exclude single code	* exclude SCT#12619005
All codes in system	* codes from system HGVS
Filter Rules for SNOMED-CT (assumes code system aliased as 'SCT')	
Subsumption	* codes from system SCT where concept is-a #123037004 "Body Structure"
Exclude subsumptions	* exclude codes from system SCT where concept is-a #128462008 "Secondary malignant neoplastic disease (disorder)"