

# **QT4CG Update**

**1 Aug 2024**

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**Balisage, 2024**

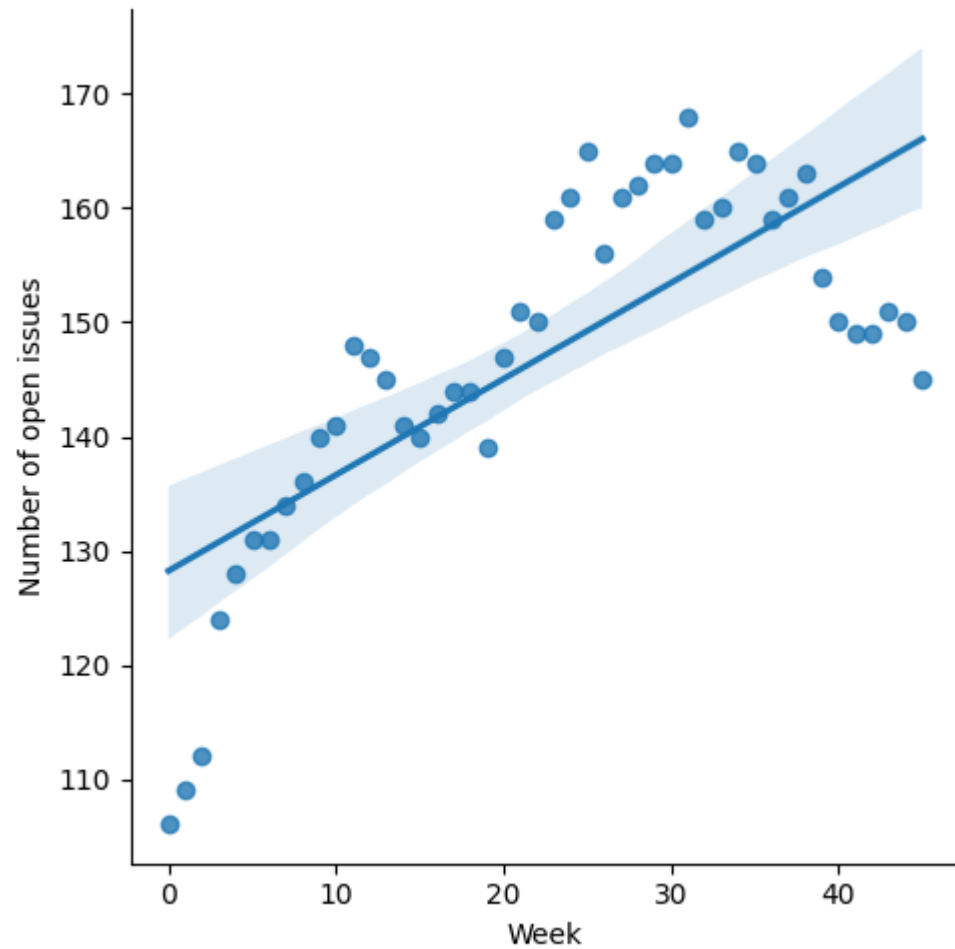
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# What is the QT4CG?

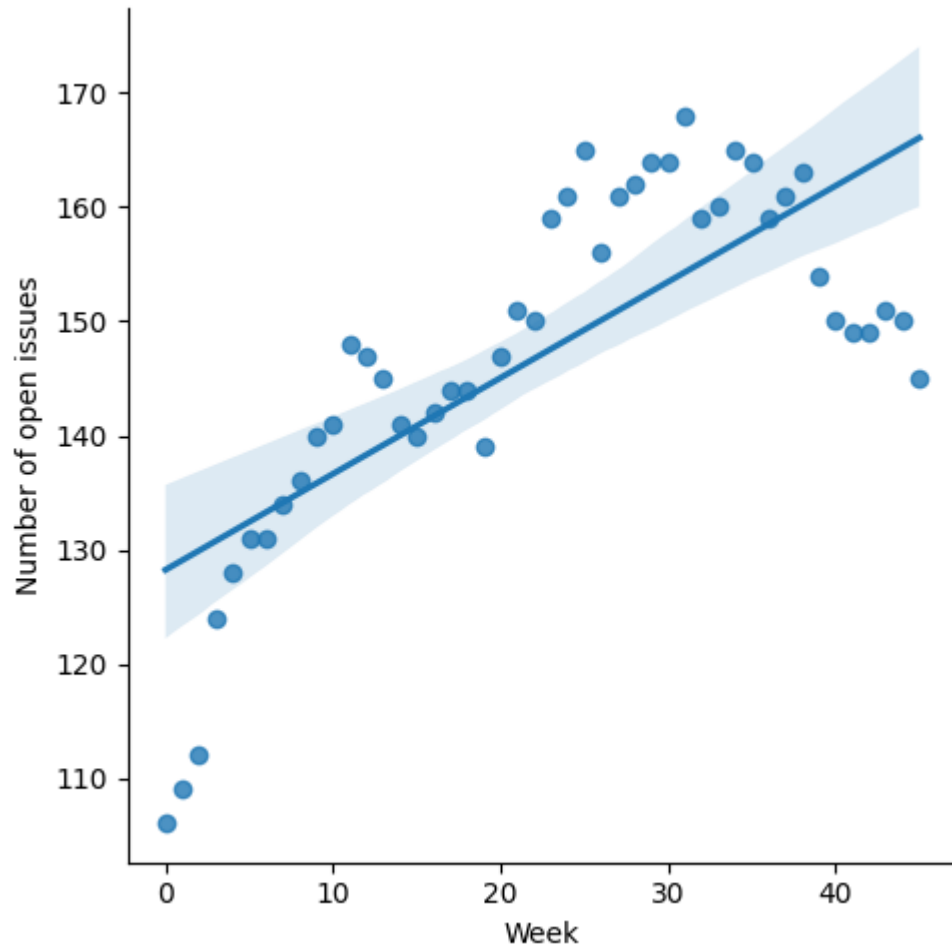
- We are the XQuery and XSLT Extensions Community Group at the W3C.
- Our more practical home page is <https://qt4cg.org/> and on GitHub, <https://qt4cg.org/qtspecs>.
- Regular members at our weekly teleconferences: Reece Dunn, Sasha Firsov, Christian Grün, Joel Kalvesmaki, Michael Kay, Juri Leino, John Lumley, Dimitre Novatchev, Wendell Piez, Ed Porter, C. M. Sperberg-McQueen (co-chair), and Norm Tovey-Walsh (co-chair).
- A community of folks who subscribe to the mailing list and/or create and comment on issues.

# QT4CG by the numbers (2023)

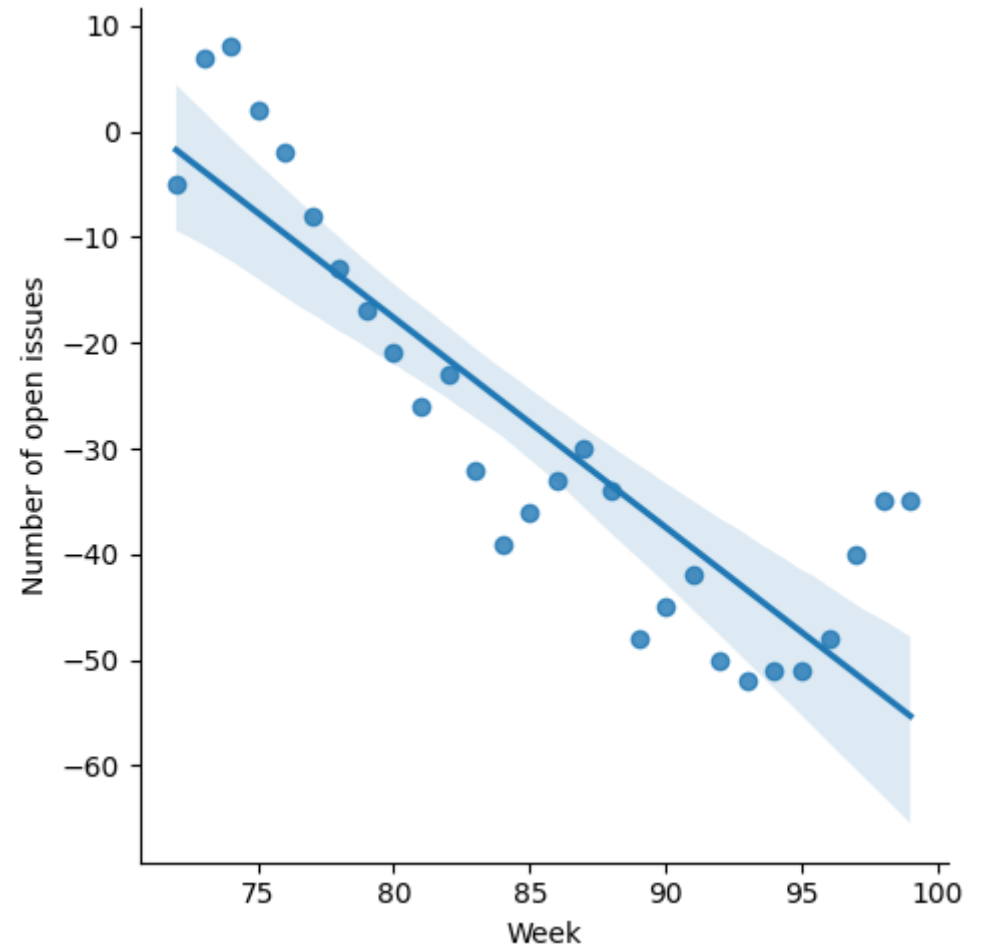


“Burn down” chart, 25 July 2023

# QT4CG by the numbers (2024)

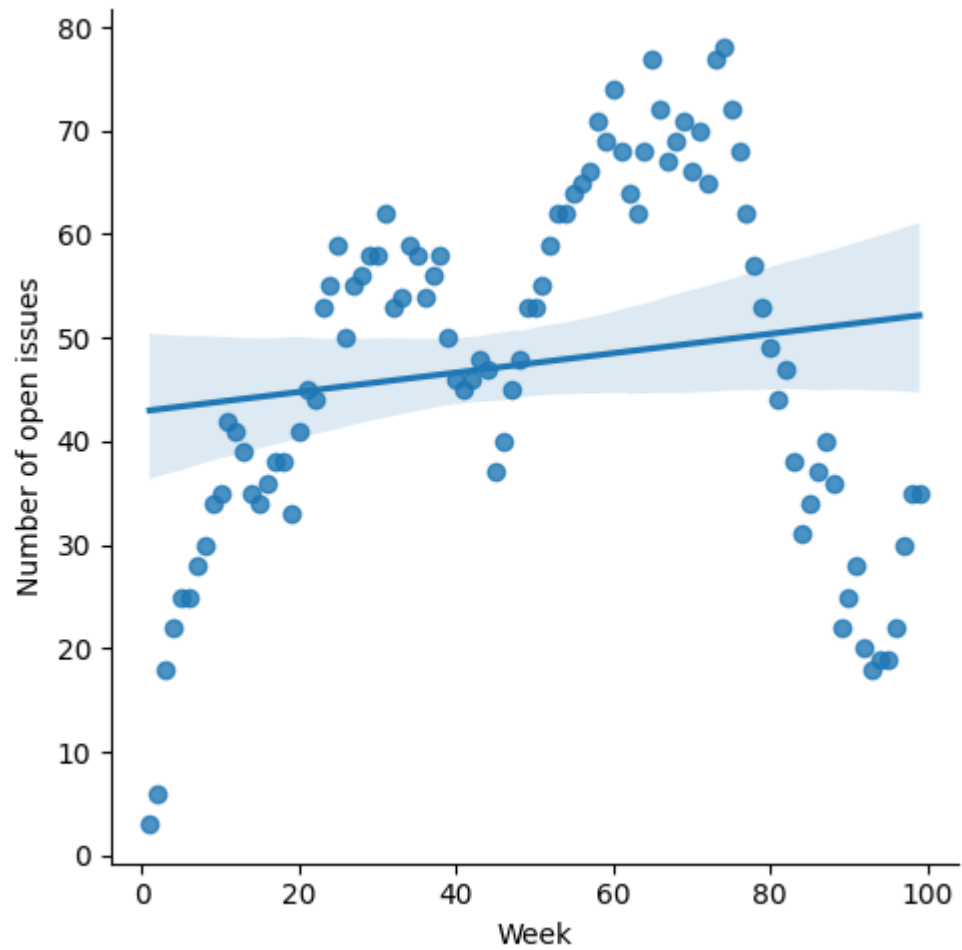


“Burn down” chart, 25 July 2023



“Burn down” chart, 31 July 2024

# QT4CG by the numbers



“Burn down” chart, 31 July 2024 (all)

# Issues by the numbers

In the past year, we've opened 179 substantive issues and closed 111.

#	Description	Labels
1329	load-xquery-module supplying content	Enhancement, PR Pending, XQFO
1317	Record Test Subtype Relationship	Bug, PR Pending, XPath
1309	Dangling else syntax ambiguity	Enhancement, PR Pending, XPath
1278	Line endings in unparsed-text-lines()	PR Pending, XQFO
1274	Further refinement of fn:round()	PR Pending, XQFO
1272	Add xsl:value-of/@as attribute	XSLT
1267	fn:apply() - contradiction in spec	Bug, PR Pending, XQFO
1253	XSLT: add xsl:switch to list of instructions within which whitespace is ignored	Bug, PR Pending, XSLT
1248	for member allowing empty	Bug, Enhancement, PR Pending, XQuery
1246	fn:json-to-xml: `number-parser` option	Bug, Enhancement, PR Pending, PRG-easy, PRG-required, XQFO
1241	Node constructor vs. otherwise/map constructor	Discussion, PR Pending, PRG-easy, PRG-required, XQuery

#	Description	Labels
1221	new function - fn:tail-recurse a function to allow users to hand roll their recursion and guarentee tail recursion.	Feature, XQFO
1210	An edge case with coercion in 1.0 compatibility mode	
1207	Array filter: Positional access	Enhancement, PR Pending, XPath
1196	Math Functions: <code>`math:e`</code> , <code>`math:sinh`</code> , <code>`math:cosh`</code> , <code>`math:tanh`</code>	Feature, PR Pending, XQFO
1195	Hash Function: CRC-32	Enhancement, PR Pending, XQFO
1189	Function: distinct document order	Enhancement, PR Pending, XQFO
1187	Decimal rounding	Enhancement, PR Pending, PRG-easy, PRG-required, XQFO
1180	fn:unparsed-text: <code>`cache`</code> option	Enhancement, XQFO
1173	array:build, map:build: Positional access	Enhancement, XQFO
1172	Iterating maps: Positional access	Enhancement, XPath, XQFO
1167	Merge \$collation into \$options parameter of fn:deep-equal()	Enhancement, PR Pending, XQFO
1160	fn:is-collation-available	Feature, PR Pending, PRG-easy, PRG-optional, XQFO
1159	Filter operator for arrays	Feature, PR Pending, XPath
1158	Simple mapping operator for arrays	Feature, PR Pending, PRG-easy, PRG-required, XPath



#	Description	Labels
1154	[xsl:item-type] error in sample	Bug, PR Pending, XSLT
1145	Array Decomposition	Enhancement, XPath
1144	Sequence Decomposition	Enhancement, XPath
1143	Coercion Rules for Choice Item Types	Enhancement, PR Pending, XPath
1138	format-number arguments	Enhancement, PR Pending, XQFO
1119	Declare namespace bindings in XPath	Enhancement, XPath
1116	unparsed-text() end-of-line normalization	Bug, Discussion, PR Pending, XQFO
1115	XSLT - ability to call a function from xslt (not just xpath)	Discussion, XSLT
1110	New error codes	Discussion, XQFO
1105	Casting to numerical type from strings with underscores	Discussion, XPath
1094	Axis steps in lookup expressions	Enhancement, PR Pending, XPath
1091	Convenience function to construct a collation URI	Feature, PR Pending, XQFO
1089	Rounding when casting string to date/time or duration types	Enhancement, XQFO
1082	Inconsistency in underscore in numeric literal grammar	Bug, XPath, XQuery
1070	Concise syntax for map construction	Enhancement, XPath
1063	deep-equal() - option to compare functions liberally	Feature, PR Pending, XQFO
1061	discussion - language pragmas	Discussion, XPath
1056	Simplifying match templates	Discussion, XSLT
1055	xsl:variable/@as - simplifying the language - attempt 2	Discussion, XSLT

#	Description	Labels
1048	fn:format-number: relax restrictions on exponent-separator (possibly minus-sign, percent, per-mille)	Enhancement, XQFO
1039	Allow dynamic collations in XQuery "order by" and "group by"	Enhancement, PR Pending, XQuery
1030	allow pattern matches in axis expression	Enhancement, XPath
1029	Make argument of fn:void optional	Enhancement, XQFO
1024	Precedence of `otherwise` operator	Discussion, XPath
1007	How to invert a predicate function	Discussion, Feature, XQFO
1002	Reinstate subsequence-before	Enhancement, XQFO
999	regular expression addition - comments	Enhancement, XQFO
994	Invoking maps & arrays: allow sequences?	Enhancement, XPath
990	Transitive closure on non-nodes	Enhancement, XQFO
989	character sequence constructor 'a' to 'z'	Enhancement, XQFO
983	fn:reduce (or fn:fold without initial value)	Enhancement, XQFO
974	Rules for context-dependent function references in XSLT (e.g. regex-group#1)	
973	fn:parse-json, fn:json-to-xml: `number-parser`, `fallback`	Enhancement, XQFO
964	fn:has-attributes	Feature, XQFO
961	Simulating Objects: Performance	Discussion, XPath

#	Description	Labels
948	fn:scan-left and fn:scan-right - produce accumulation of results	Feature, XQUF
946	fn:iterate-while → fn:while-do, fn:do-until	Enhancement, XQFO
944	Coercion rules: implicit types	Enhancement, XPath
929	map:values() - Would it be better to return an array?	Enhancement, XQFO
919	Should predicate callbacks use EBV?	Enhancement, XQFO
911	Type "Promotion" in the coercion rules	Enhancement, XPath
898	Drop the requirement for document-uri() uniqueness	Enhancement, XQFO
893	fn:compare: Support for arbitrary atomic types	Enhancement, XQFO
886	Binary map keys	Bug, XQFO
878	Proposed extension to subsequence	Enhancement, XQFO
867	Signature notation in F+O: default values	
866	fn:sort, and XSLT and XQuery sorting, should use transitive comparisons	Enhancement, XQFO
858	fn:identity: accept 2 arguments, ignore second	Enhancement, XQFO
843	Standard, array & map functions: Equivalencies	XQFO
836	Add support for CSV 'dialect' features covered by the OKFN's Frictionless Data CSV spec in `fn:parse-csv` and related functions	Enhancement, XQFO

#	Description	Labels
834	Add creation function for `csv-row-record` type	Enhancement, XQFO
829	fn:boolean: EBV support for more item types	Enhancement, Propose for V4.0, XPath, XQFO
827	map:empty, map:exists ← array:empty, array:exists	Feature, XQFO
825	array:members-at	Feature, XQFO
820	FLWOR: Variable Bindings, coercion	Enhancement, Propose for V4.0, XQuery
818	Foxpath integration	Feature, XPath
817	EBV 4.0	Enhancement, XPath, XQFO
816	Predicates: Support for numeric sequences	Enhancement, XPath
796	allow explicit type expressions in XPath variable bindings	Enhancement, PR Pending, XPath
788	New function fn:annotate()	Discussion, XQFO
779	Hash/checksum function	Feature, XQFO
777	new replace() parameter \$action	Enhancement, XQFO
774	What should be percent-encoded in a URI?	Discussion, XQFO
764	XQuery: Simplify module imports	Enhancement, XQuery
759	Serialization: JSON Parameters	Enhancement, Serialization, XQFO
757	Function families	Discussion, XQFO
756	JSON serialization - number formatting	Enhancement, Serialization, XQFO

#	Description	Labels
750	xsl:mode/@as and built-in template rules	Bug, XSLT
745	Support for inline (anonymous) xslt functions	Enhancement, XSLT
742	xsl:function-library: keep, drop, or refine?	Requires confirmation, XSLT
730	Equivalence of map and function types	Bug, XPath
720	From Records to Objects	Discussion, Feature, XPath, XQuery
711	Using annotations for navigation of JSON trees	Discussion, Enhancement
709	(Un)Checked Evaluation	Discussion, Feature, XPath
707	Dynamic Function Calls: Processing Empty Sequences	Enhancement, XPath
706	FLWOR: for member \$m1 in \$a1, member \$m2 in \$a2	Bug, XQuery
701	fn:concat: Support for 0 or more arguments	Enhancement, XQFO
700	Operators for array mapping and filtering	Feature, XPath
688	Coercion rules for union types and enumeration types	
671	Switch expression without operand (analogous to XSLT choose)	Enhancement, XQuery
668	Definition of HTML case-insensitive collation	Enhancement, XQFO
666	Polyfill function implementations	Discussion, XQFO
663	Calling xsl:original() with keywords	Bug, XSLT
655	fn:sort-with: Comparators	Enhancement, XQFO

#	Description	Labels
652	Defining a common function library for XPath, XSLT, and XQuery applications	Feature, XPath, XQuery, XSLT
649	xsl:fallback	Bug, XSLT

# Pull-requests by the numbers

In the past year, we've opened 212 substantive pull-requests and closed 200.

#	Description	Labels
1333	1329 Add content option to load-xquery-module	Enhancement, XQFO
1332	1317 Fix the record subtyping rules	Bug, XPath, XQuery
1327	1309 bare brace ambiguities	
1306	46 Add @as attribute to xsl:sequence	Enhancement, XSLT
1304	Fixed typo in the example of scan-right	
1300	Commit the updated tests to the tests repository	
1299	Attempt to rework how the test repository is updated	
1297	Minor correction to fn:scan-right - typo	Blocked
1295	1096 Redefine array:index-of to use deep-equal for comparisons	Bug, XQFO
1293	1289 Delete XQuery Appendix J	
1280	1267 fn:apply contradictions	Bug, XQFO
1279	1278 - line endings in unparsed-text-lines	Reversion, XQFO
1275	1274 Further rounding modes	Enhancement, XQFO
1262	1160 Add collation-available() function	Feature, XQFO
1260	1187 Add midpoint-rounding option to fn:round()	Enhancement, XQFO

#	Description	Labels
1259	1241 Add constraint to resolve node constructor ambiguity	Bug, XPath, XQuery
1258	1246 Revert incompatibility in json-to-xml number formatting	Reversion, XQFO
1257	305 Add options parameter for parse-xml and parse-xml-fragment	Enhancement, XQFO
1250	1048 Extended decimal format properties	Enhancement, XQFO
1249	31 Introduce "for key \$k value \$v in \$map"	Feature, XPath, XQuery
1244	566-partial Rewrite parse-uri	
1243	Change required result of system-property(...version)	XSLT
1217	1207 Allow numeric predicates when filtering arrays	Enhancement, XPath, XQuery
1206	1195 Hash Function: CRC-32	
1205	1196 Math Functions: math:e, math:sinh, math:cosh, math:tanh	
1198	1189 distinct document order	Enhancement, XQFO
1197	1192 Allow fn as abbreviation for function	Enhancement
1191	1167, 934 deep equal merge collations param	Enhancement, XQFO
1182	1171 Change predicate callbacks to allow empty return value	Enhancement, XQFO
1181	296 Allow default-namespace=##any	Feature, XPath, XQuery, XSLT
1177	1162 Positional variables are xs:integer not xs:positiveInteger	Reversion



#	Description	Labels
1174	1173 array:build, map:build: Positional access	
1163	1159 Add filter expressions for maps and arrays	Feature
1156	Fix error in XSLT example	Bug, XSLT
1151	1138 Merge format and format-name params of format-number	XQFO
1150	1142 Drop restriction disallowing items-equal with unordered	Enhancement, XQFO
1148	1143 Coercion rules: handle choice types before atomization	XPath, XQuery
1137	161 Variadic functions	Feature
1134	1133 Correct map:filter callback signature	Bug
1132	122 Choice item types (generalizing local union types)	Feature
1131	796,231 - Extend XPath for and let expressions	Enhancement, XPath
1130	Fix xspecref to production	
1126	1060 Minor fixes	
1125	1094 Enhanced lookup expressions	Enhancement, XPath
1123	1118 Drop the "map" keyword in adaptive serialization output	Enhancement, Serialization
1121	1060 Formatting	
1120	99v2 deep equal with callback	Enhancement, XQFO
1117	1116 Add options param to unparsed-text	Enhancement, XQFO
1112	1110-partial New error codes	

#	Description	Labels
1108	566-partial Describe a less aggressive %-encoding for fn:build-uri	
1106	859 lookup syntax problems	Bug, Reversion
1102	Fix broken idref to escaped-crlf in test generation	
1098	566-partial Editorial improvements for parse-uri	
1097	566-partial Fix colon issue in URI parsing	
1093	1091 Add fn:collation function	Feature, XQFO
1090	1089 Add rounding rules for casting string to duration etc	Enhancement, XQFO
1088	1082 Fix numeric literal grammar	Bug
1078	1060 Formatting XPath/XQuery	
1076	1075 Drop 'with' expressions	Reversion
1071	1070 Bare Brace map constructor syntax	Enhancement, XPath, XQuery
1068	73 fn:graphemes	Feature, XQFO
1066	1052 Simplify the results of parse-csv	Feature, XQFO
1064	340-editorial fn:format-number	
1059	1019 XQFO: Unknown option parameters	XQFO
1058	1037 fn:json-to-xml: 'number-parser' option	
1057	1054 Spec fn:message #id using old name fn:log	
1053	1047 Default predicate for some#1 and every#1	

#	Description	Labels
1051	1043 Clarification of CSV edge cases	Overtaken
1049	340-partial fn:format-number: Specifying decimal format	Enhancement, XQFO
1046	1038 take-while predicate no longer uses EBV	XQFO
1041	236 map:build: sequence of keys	
1040	485 Predeclared namespaces in XQuery: output	
1034	QT4CG-066-xx Add note regarding absence of drop-while / skip-while	
1033	QT4CG-066-01 Add note that whitespace and comments in regexen are lexical constructs	
1032	1029 Make argument of fn:void optional	XQFO
1031	1024 Change precedence of 'otherwise' operator	
1028	960(partial) Recognize alternative representation of JSON null	
1027	150 fn:ranks	
1025	1001 Fix incorrect operator precedence in subsequence-where	Bug, XQFO
1023	1020 explain consequences of function coercion	
1022	999 Allow comments in regular expressions	
1015	1013 [XSLT] Clarify effect of accumulator capture on non-element nodes	XSLT
1010	1009 Examples, Return type of parse-json:fallback	
1008	1002 Add fn:take-while function (replacing subsequence-before)	
1004	fn:char updated as agreed 2024-02-06: drop the form char('#x20')	Reversion

#	Description	Labels
996	816 Allow a predicate in a filter expression to be a sequence of numbers	XPath, XQuery
995	937 (fn:hash) revised in light of CG feedback	XQFO
993	989 (partial) Allow char() to take integer argument	XQFO
992	888, 963: Error handling for unsatisfied context dependencies	
988	960 Pinned and labeled values	Feature, XDM, XPath
987	628 Define result order for distinct-values and duplicate-values	XQFO
985	720 Add lookup arrow expressions (method invocations)	Feature
984	959-partial Add fn:seconds function	XQFO
980	911 Coercion to allow double to decimal etc	
979	966 Minor fixes to deep lookup	
978	948 Reflected the comments of the CG on the specification of scan-left and scan-right	
975	973 fn:parse-json, fn:json-to-xml: number-parser, fallback	
972	949 Partial Function Applications: Allow return of function name	Enhancement, XQFO
969	843-partial Standard, array & map functions: Equivalencies	
968	260 array:index-of	XQFO
962	946 fn:iterate-while → fn:while-do, fn:do-until	
958	951 Parameters with default values: fn:lang, fn:id, fn:idref, fn:element-id	Reversion
957	948 Added fn:scan-left and fn:scan-right	

#	Description	Labels
953	617 Define record constructors	
952	945 module import contradiction	
950	Minor edits (examples, rules)	
943	187 Add FLWOR expression while clause	Feature, XQuery
941	939 Remove fn:numeric-compare	Reversion
940	878 Add subsequence-where function	XQFO
937	779 hash function	Feature, XQFO
933	930 drop obsolete note about comments and PIs	
932	931 Add rules for duration precision	
927	861 Rewrite spec of deep lookup operator	
925	780 Document incompatibility in format-number etc	
924	648 Disallow user modifications to schema for FN namespace	
921	920 Allow xsl:break and xsl:next-iteration within branch of xsl:switch	XSLT
916	720 Allow methods in maps with access to \$this	Feature, XPath, XQuery
912	XQFO: Minor edits	
909	893 fn:compare: Support for arbitrary atomic types	
907	906 fn:deep-equal: unordered → ordered	
904	821 Annotations: Make default namespace explicit	

#	Description	Labels
901	895 Parameters with default values: allow empty sequences	
897	894 - errors in forming function items	
881	866 Introduce and exploit new numeric-compare() function	Overtaken
874	878 Proposed extension to subsequence	
873	865 Improve explanation of equality comparisons	
871	Action qt4 cg 027 01 next match	Blocked, XSLT
870	867 Explain defaults in function signatures	
863	742 Drop xsl:function-library declaration	Reversion, XSLT
851	822: XQuery, XQFO: Edits (pool)	
849	847 Allow uri-structure-record keys to have empty sequence values	
839	838 Fix collation variable references	
837	297 Deep Lookup Operator "??" and wildcard qualifier "::-"	
828	516 Add position argument to HOF callbacks	
824	799 errors in examples; 738 section heading for fn:op	
823	712 Extend array:sort to align with fn:sort	Enhancement
819	Fix markup error in example	
815	130,480 Binary Promotion	
806	566 A few minor fixes for parse-uri	Bug
800	660: Static functions, default parameters, XPST0017	

#	Description	Labels
798	479: fn:deep-equal: Input order	
795	655 fn:sort-with	Feature, XQFO
794	216: fn:unparsed-text: End-of-line characters	
793	704: Context Value Expression → Context Value Reference	
791	238: First draft of an fn:invisible-xml function	
790	129 XSLT40 and SER40 changes for context item -&gt; value	
782	469: array:of-members, map:of-pairs: Signatures, Examples	
775	517: Reflected Christian Gruen's remarks	
773	QT4CG-051-04/05: Reflected today's meeting editorial suggestions	
772	Revise the fn:parse-html rules to make them clearer to follow.	
770	566: Use fn:decode-from-uri in fn:parse-uri	
769	768: details about decode-from-uri	
766	765 Update version references etc to 4.0 status	
761	554/754 Simplify the new transitive-closure function	Enhancement, XQFO
753	65: Allow xmlns="xxx" to NOT change the default namespace for NameTests	
752	706: Fix "for member" grammar problems	
751	QT4CG-048-01: xsl:mode/@as with built-in templates	
744	XQFO Examples: minor fixes, formatting	

#	Description	Labels
741	QT4CG-048-03: Fix copy and paste errors in describing type patterns	
740	QT4CG-047-01: Rename break-when to split-when, plus minor editorial cleanup	
739	Apply review comment changes to the HTML DOM XDM mapping.	
737	295: Boost the capability of recursive record types	
736	730: Clarify (and correct) rules for maps as instances of function types	
734	517: fn:chain	
732	731 Capturing accumulators: Add error conditions, revise streaming rules	
728	52 Allow record(*)	Feature, XPath, XQuery
727	725 Add clarification note for load-xquery-module	
726	PR 723 with merge conflicts resolved	
724	PR 717 with merge conflicts resolved	
723	Updated PR for capturing accumulators	
721	Attempt to fix the problem with PRE elements in autodiffs	
719	413: Spec for CSV-related functions	Overtaken
718	Add on-no-match="shallow-copy-all"	
717	211: add capturing accumulators to XSLT	XSLT
715	372 Rollback the default namespace changes	



#	Description	Labels
710	36: fn:function-annotations	
703	129 (1): XPath and XQuery changes for introduction of context value	
702	701: fn:concat: Support for 0 or more arguments	
697	645: Use instead of in XML documents	
696	566: Rework query parameters on build-uri/parse-uri	
692	Use sequences instead of arrays in fn:parse-uri output	
691	688 Semantics of local union types, enumeration types, etc	
690	687 Clarify constructor functions for user-defined types	
685	Style fixes	
684	Ignore this PR	
682	637: allow true() and false() as function annotation values	Enhancement, XQuery
681	665: Fix typos in fn:items-XX functions	
680	668 define case insensitive collation normatively	
679	669 - fix typo "appearing appearing"	
678	671 switch sans operand	
674	663: Describe how calls to xsl:original with keywords work	
673	HTML namespace changes	
667	XPath minor edits, 4.16 through end	
664	663 xsl:original keywords	

#	Description	Labels
662	658b: changes to constructor functions	
661	658: constructor functions	
659	647: schema location hints	
656	Better return type for map pair	
654	Add covers-40 attribute to generated tests	
650	649: fix an xsl:fallback problem	

# A few highlights (F&O)

- The constraints on the result of the `fn:document-uri` function have been relaxed
- `fn:collation-available`, `fn:collation`, `fn:decode-from-uri`, `fn:deep-equal` (changes including a callback function), `fn:distinct-ordered-nodes`, `fn:graphemes`, `fn:hash`, `fn:identity`, `fn:invisible-xml`, `fn:load-xquery-module`, `fn:message`, `fn:parse-csv` (and friends), `fn:round` (adjustments to control rounding modes), `fn:scan-left`, `fn:scan-right`, `fn:seconds`, `fn:slice`, `fn:sort-with`, `fn:stack-trace`, `fn:subsequence-where`, `fn:take-while`, `fn:transitive-closure`, `fn:void`, `fn:while-do`
- `math:e`, `math:sinh`, `math:cosh`, `math:tanh`
- More map and array functions

# A few highlights (XPath/XQuery)

- Enumeration types
- Variadic functions
- Added `##any` to default element and type namespaces
- Enhancements to decimal formats
- Enhancements to `for` expressions
- The keywords “map” and “array” are (sometimes) optional
- Added `??` (deep lookup) and `otherwise` operators
- Added `while` clause to FLWOR expressions
- Enhancements to `switch` expressions
- Allow `true()` and `false()` in function annotations

# A few highlights (XSLT)

- Added `fixed-namespaces` to stylesheets and packages
- Allow `##any` in `xpath-default-namespace`
- Enhancements to decimal formats
- Enclosing modes
- Variadic functions
- Added `as` attribute on `xsl:sequence`
- Added `split-when` attribute to `xsl:for-each-group`
- Capturing accumulators
- Added `on-duplicates` attribute to `xsl:map`

**Thank you**

# See also:

Volunteers welcome!

- <https://www.w3.org/community/xslt-40/>
- <https://qt4cg.org/>
- <https://qt4cg.org/qtspecs>