| | MediaWiki server | on-wiki JavaScript | | on-wiki templates | | external clients (community and 3rd party) | |
|---|---|---|---|---|---|---|---|
| | **Extension PHP** | **Gadget** | **User script** | **Lua module** | **Wikitext template** | **Toolforge** (webbot/jupyter) | **External app/bot** |
| **Purpose** | Extending capabilities of MediaWiki to provide optional components that can be enabled per-wiki. | Adding or changing interface and output for users, available to others | Adding or changing interface and output for oneself | Structured modeling and automated formatting of content (scripted) | Structured modeling and automated formatting of content (markup) | Automated editing, content extraction and analysis, especially based directly on a database replica. | Automated editing, content extraction and analysis, etc |
| **Capability** — Read application state and invoke services | Full access, via DAO and PHP service objects | via public Web API | via public Web API | limited, via Lua library | minimal, via parser functions | SQL queries on sanitized replica, public Web API | via public Web API |
| Change application state (page edits, user ...) | Full access, via DAO and PHP service objects | via public Web API | via public Web API | - | - | via public Web API | via public Web API |
| Custom data storage | SQL, strict requirements, update framework support | JSON wiki pages | JSON wiki pages | - | - | few restrictions, manual updates | no restrictions, manual updates |
| Receive events | API call from internal service (changeprop) | - | - | - | - | via public Web API stream | via public Web API stream |
| Modify user interactions | JS API and DOM | JS API and DOM | JS API and DOM | infoboxes, etc | infoboxes, etc | only through Gadget | - |
| Generate or modify visible content | Parser hooks | modify DOM | modify DOM | generate wikitext | generate wikitext | only through Gadget | - |
| Process wikitext dumps | - | - | - | - | - | toolforge hosting | download |
| **Language** | PHP + SQL | CSS / JavaScript | CSS / JavaScript | Lua | wikitext | anything (Python, PHP, Node, etc.) | anything (Python, PHP, Node, etc.) |
| **Framework support** | Strong (MediaWiki) | Limited but flexible (JS API) | Limited but flexible (JS API) | Strong but restrictive (Lua libraries) | Limited and restrictive (parser functions) | Weak (except for pywikibot) | Weak (except for pywikibot) |
| **Execution** | Server (PHP) | Web Browser | Web Browser (limited audience) | Server (LuaSandbox) | Server (Parser) | Toolforge | anywhere |
| **Trigger** | Server-side callbacks (hooks and handlers) | JavaScript events (UI actions) | JavaScript events (UI actions) | Page rendering (on edit) | Page rendering (on edit) | Manual/periodic | Manual/periodic |
| **Version control** | public git | public wiki page | public wiki page | public wiki page | public wiki page | public git (usually) | anywhere (may be private) |
| **Deployment** | automatic weekly & self-service backports | automatic instantly | automatic instantly | automatic instantly | automatic instantly | self-service | self-service |
| **Code Review** | Gerrit +2 | Peer admins | none | Peer editors | Peer editors | none | none |
| **Audience impact** | everyone by default | opt-in users | personal or shared peer-to-peer | everyone by default | everyone by default | opt-in users | personal |
| **Risk summary** | Very High (database integrity) | High (readers' browsers) | Medium (limited audience) | Low (community oversight) | Low (community oversight) | Low (edits-only, community oversight) | Low (edits-only, community oversight) |
| **Difficulty summary** | High | Medium (JS) | Low (simple JS) | Medium (Lua) | Low (wikitext) | Medium (complex environment) | Low (e.g. pywikibot) |

Legend:

| |
|---|
| very high or very strong or very hard |
| high or strong or hard |
| intermediate |
| low or weak or easy |
| only indirectly |
| none or not applicable |

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| maintained by | wmf deployed git | toolforge | on-wiki |
|---|---|---|---|
| access to | | | |
| primary DB | extension | no! | no! |
| sanitized replica DB | extension | bots | no! |
| PHP API | extension | no! | no! |
| Web API | JS resource | bots | Gadgets/Scripts |
| Lua API | | no! | Lua Modules |
| Js API | JS resource | no! | Gadgets/Scripts |
| UI DOM, in the browser | JS resource | no! | Gadgets/Scripts |
| modify parser output | extension | no! | Templates, Lua Modules |
| Dumps | | bots | no! |