

CSPro WASM Interface Functions Report

Overview

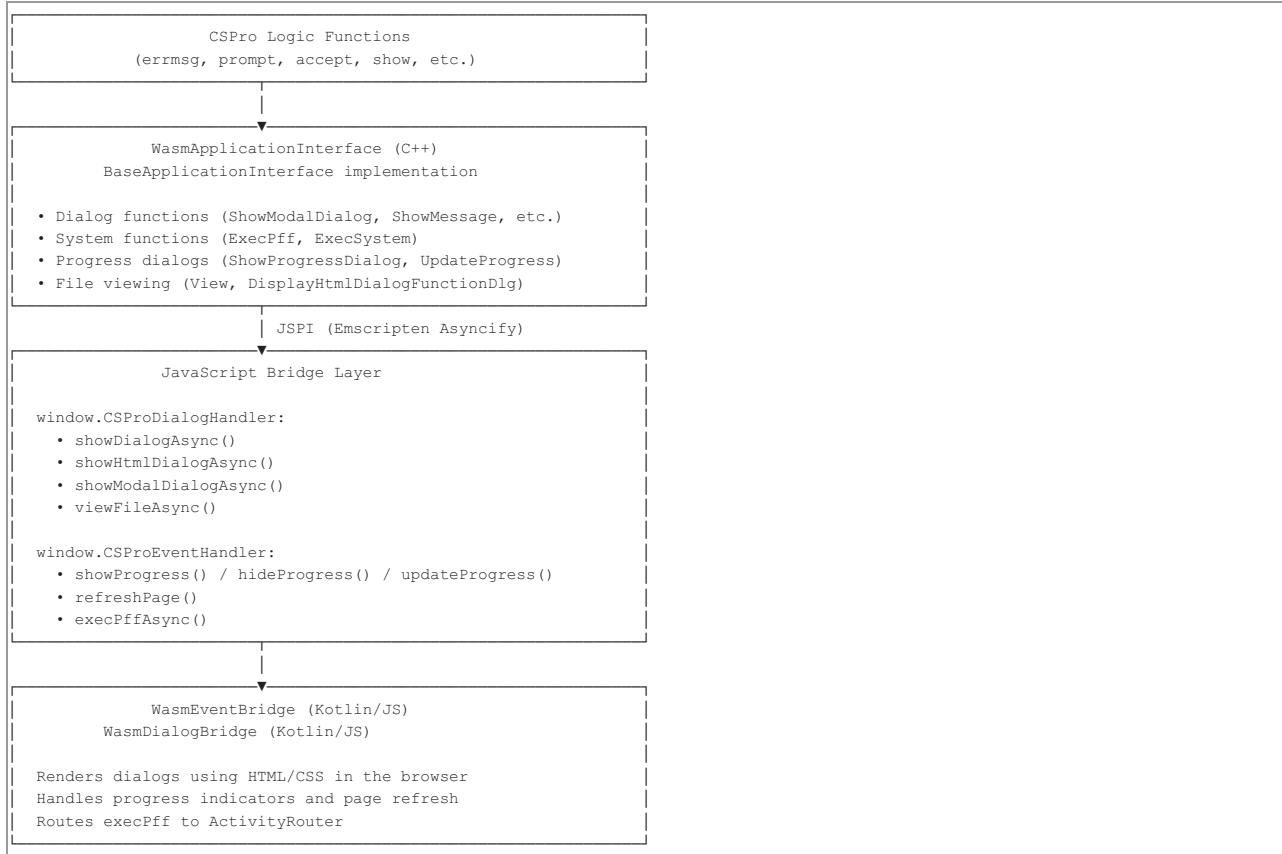
This document provides a comprehensive reference of all CSPro logic functions, Action Invoker methods, and UI interactions implemented in the WebAssembly (WASM) interface layer. The implementation bridges the C++ CSPro engine with the Kotlin/JS web frontend.

Date: January 14, 2026

Files Covered:

- wasm-engine/src/WASM/WasmApplicationInterface.cpp - C++ WASM implementation
- src/wasmJsMain/kotlin/gov/census/cspro/engine/events/WasmEventBridge.kt - Kotlin/JS event bridge

Architecture



JSPI Async Functions (C++ → JavaScript)

These functions use Emscripten's `EM_ASYNC_JS` macro with Asyncify to enable async C++/JavaScript interop.

Dialog Functions

Function	Purpose	Parameters	Returns
jspi_showDialog	Shows a named dialog (errmsg, choice, etc.)	dialogName, inputDataJson	char* (result JSON) or 0
jspi_showHtmlDialog	Shows an HTML-based dialog	dialogPath, inputDataJson, displayOptionsJson	char* (result JSON) or 0
jspi_showModalDialog	Shows a modal message box	title, message, mbType	int (button ID: IDOK=1, IDCANCEL=2, etc.)
jspi_getInputData	Gets input data for a dialog	dialogId	char* (JSON data) or 0
jspi_showMessage	Shows message with custom buttons	title, message, buttonsJson	int (button index)
jspi_showChoiceDialog	Shows choice/select dialog	title, dataJson	int (selected index, -1 if cancelled)
jspi_showShowDialog	Shows data display dialog	heading, columnsJson, dataJson	int (0)
jspi_showSelcaseDialog	Shows case selection dialog	heading, columnsJson, dataJson	int (selected index, -1 if cancelled)
jspi_editNote	Shows note edit dialog	note, title, caseNote	char* (edited note)
jspi_viewFile	Displays file in viewer	content, contentType, title, accessToken	int (1=success, 0=failure)
jspi_execPff	Executes/launches another PFF file	pffPath	int (1=success, 0=failure)

WasmApplicationInterface Methods

Dialog & UI Methods

Method	CSPro Logic Function	Description	Status
DisplayCSHtmlDlg	Internal dialog system	Shows CSPro HTML dialogs (errmsg, accept, etc.)	<input checked="" type="checkbox"/> Implemented
DisplayHtmlDialogFunctionDlg	htmldialog()	Shows custom HTML dialogs	<input checked="" type="checkbox"/> Implemented
ShowModalDialog	errmsg(), warnings	Shows modal OK/Cancel dialogs	<input checked="" type="checkbox"/> Implemented
ShowMessage	errmsg() with buttons	Shows message with custom buttons	<input checked="" type="checkbox"/> Implemented
ShowChoiceDialog	accept()	Shows choice selection dialog	<input checked="" type="checkbox"/> Implemented
ShowShowDialog	show()	Displays tabular data	<input checked="" type="checkbox"/> Implemented
ShowSelcaseDialog	selcase()	Case selection dialog	<input checked="" type="checkbox"/> Implemented
EditNote	editnote()	Note editing dialog	<input checked="" type="checkbox"/> Implemented
DisplayErrorMessage	Error handling	Displays error messages	<input checked="" type="checkbox"/> Implemented

Progress Dialog Methods

Method	Description	Status
ShowProgressDialog	Shows progress overlay with message	<input checked="" type="checkbox"/> Implemented
HideProgressDialog	Hides progress overlay	<input checked="" type="checkbox"/> Implemented
UpdateProgressDialog	Updates progress percentage and message	<input checked="" type="checkbox"/> Implemented

System & Execution Methods

Method	CSPro Logic Function	Description	Status
ExecPff	execpff()	Launches another PFF application	<input checked="" type="checkbox"/> Implemented
ExecSystem	execsystem()	Executes system commands	<input type="checkbox"/> Not available in browser
ExecSystemApp	System app launch	Launches system applications	<input type="checkbox"/> Not available in browser
RunPffExecutor	PFF execution	Runs PFF executor	<input type="checkbox"/> Not available in browser

File & View Methods

Method	CSPro Logic Function	Description	Status
View	view()	Views files (HTML, text, images)	<input checked="" type="checkbox"/> Implemented
GetHtmlDialogsDirectory	Internal	Returns HTML dialogs path	<input checked="" type="checkbox"/> Implemented

GPS & Location Methods

Method	CSPro Logic Function	Description	Status
GpsOpen	gps(open)	Opens GPS connection	<input type="checkbox"/> Stub (could use Web Geolocation API)
GpsClose	gps(close)	Closes GPS connection	<input type="checkbox"/> Stub
GpsRead	gps(read)	Reads GPS coordinates	<input type="checkbox"/> Stub
GpsReadLast	gps(readlast)	Reads last GPS reading	<input type="checkbox"/> Stub
GpsReadInteractive	gps() interactive	Interactive GPS reading	<input type="checkbox"/> Stub

Authentication & Credentials

Method	CSPro Logic Function	Description	Status
ShowLoginDialog	Login UI	Shows login dialog	<input type="checkbox"/> Stub
AuthorizeDropbox	Dropbox OAuth	Dropbox authorization	<input type="checkbox"/> Stub
StoreCredential	setProperty()	Stores credentials (in memory)	<input checked="" type="checkbox"/> Implemented (memory only)
RetrieveCredential	getProperty()	Retrieves credentials	<input checked="" type="checkbox"/> Implemented (memory only)
GetPassword	Password input	Password input dialog	<input type="checkbox"/> Stub

Bluetooth Methods

Method	Description	Status
ChooseBluetoothDevice	Bluetooth device selection	<input type="checkbox"/> Not available (limited Web Bluetooth support)
CreateAndroidBluetoothAdapter	Bluetooth adapter	<input type="checkbox"/> Not available

Network Methods

Method	Description	Status
CreateAndroidHttpConnection	HTTP connection	<input type="checkbox"/> Stub (use fetch API)
CreateAndroidFtpConnection	FTP connection	<input type="checkbox"/> Not available
IsNetworkConnected	Network status	<input checked="" type="checkbox"/> Implemented (assumes online)

Device & System Info Methods

Method	CSPro Logic Function	Description	Status
GetProperty	getProperty()	Gets system properties	<input checked="" type="checkbox"/> Implemented
SetProperty	setProperty()	Sets system properties	<input checked="" type="checkbox"/> Implemented
GetMaxDisplaySize	Display info	Returns screen dimensions	<input checked="" type="checkbox"/> Implemented (default values)
GetMediaFilenames	Media access	Gets media file list	<input type="checkbox"/> Stub
GetUsername	username()	Returns username	<input checked="" type="checkbox"/> Implemented ("WebUser")
GetDeviceId	getdeviceid()	Returns unique device ID	<input checked="" type="checkbox"/> Implemented (random UUID)
GetLocaleLanguage	getlanguage()	Returns locale language	<input checked="" type="checkbox"/> Implemented ("en")
GetUpTime	System uptime	Returns system uptime	<input type="checkbox"/> Stub

Multimedia Methods

Method	CSPro Logic Function	Description	Status
BarcodeRead	barcode()	Reads barcode	<input type="checkbox"/> Stub (could use BarcodeDetector API)

AudioPlay	audio(play)	Plays audio file	Stub (could use Web Audio API)
AudioStartRecording	audio(record)	Starts audio recording	Stub (could use MediaRecorder API)
AudioStopRecording	audio(stop)	Stops audio recording	Stub
AudioRecordInteractive	audio() interactive	Interactive audio recording	Stub
CaptureImage	image()	Captures image	Stub (could use getUserMedia)

Geometry Methods

Method	Description	Status
CapturePolygonTrace	Polygon tracing	Stub
CapturePolygonWalk	Polygon walking	Stub

Paradata Methods

Method	Description	Status
ParadataDriverManager	Paradata management	Stub
ParadataDeviceInfoQuery	Device info for paradata	Implemented (browser values)
ParadataDeviceStateQuery	Device state for paradata	Stub

Other Methods

Method	Description	Status
GetObjectTransporter	ActionInvoker support	Implemented (WasmObjectTransporter)
RefreshPage	Page refresh trigger	Implemented
EngineAbort	Engine abort	Stub
PartialSave	Partial case save	Implemented (returns true)
RunEngineUIProcessor	Engine UI processing	Implemented
CreateMapUI	Map UI creation	Stub
CreateUserbar	Userbar creation	Stub

WasmEventBridge (Kotlin/JS)

Registered JavaScript Handlers

The WasmEventBridge registers handlers on `window.CSProEventHandler`:

Handler	Purpose	Called By
<code>execPffAsync(pffPath)</code>	Stores pending PFF path for later execution <code>jspi_execPff</code> in C++	
<code>getPendingPff()</code>	Returns and clears pending PFF path	Kotlin <code>EntryActivity</code>
<code>hasPendingPff()</code>	Checks if a pending PFF exists	Kotlin <code>EntryActivity</code>
<code>showProgress(message)</code>	Shows progress dialog (via EM_ASM)	C++ <code>ShowProgressDialog</code>
<code>hideProgress()</code>	Hides progress dialog (via EM_ASM)	C++ <code>HideProgressDialog</code>
<code>updateProgress(percent, message)</code>	Updates progress (via EM_ASM)	C++ <code>UpdateProgressDialog</code>
<code>refreshPage(contents)</code>	Triggers page refresh (via EM_ASM)	C++ <code>RefreshPage</code>

Kotlin API

```
object WasmEventBridge {
    // Registration
    fun register()           // Register handlers with window.CSProEventHandler
    fun unregister()         // Unregister handlers

    // ExecPff Support
    fun hasPendingPff(): Boolean // Check for pending PFF
    fun getPendingPff(): String? // Get and clear pending PFF path

    // Progress Dialog
    fun handleShowProgress(message: String)
    fun handleHideProgress()
    fun handleUpdateProgress(percent: Int, message: String): Boolean // Returns cancelled
    fun cancelProgress()
    fun isProgressCancelled(): Boolean

    // Page Refresh
    fun handleRefreshPage(contents: Int)

    // Listeners
    fun addRefreshListener(listener: (Int) -> Unit)
    fun removeRefreshListener(listener: (Int) -> Unit)
    fun addProgressListener(listener: ProgressListener)
    fun removeProgressListener(listener: ProgressListener)
}

interface ProgressListener {
    fun onShowProgress(message: String)
    fun onHideProgress()
    fun onUpdateProgress(percent: Int, message: String?): Boolean
}
```

ActionInvoker Support

WasmObjectTransporter

The `WasmObjectTransporter` class provides ActionInvoker runtime support:

```
class WasmObjectTransporter : public CommonObjectTransporter {
    // Disables access token checks for external callers
    bool DisableAccessTokenCheckForExternalCallers() const override { return true; }

    // Provides InterpreterAccessor for Logic.eval support
    std::shared_ptr<InterpreterAccessor> OnGetInterpreterAccessor() override;

    // Set engine driver after initialization
    void SetEngineDriver(CEngineDriver* engineDriver);

};
```

Supported ActionInvoker Actions

Action	Description
UI_getInputData	Gets input data for dialogs
Logic evaluation	Via InterpreterAccessor from engine driver

Implementation Status Summary

Category	Implemented	Stub/Partial	Not Available
Dialogs	10	0	0
Progress	3	0	0
System/Exec	1	0	3
File/View	2	0	0
GPS	0	5	0
Auth/Creds	2	3	0
Bluetooth	0	0	2
Network	1	1	1
Device Info	6	2	0
Multimedia	0	5	0
Paradata	1	2	0
Other	5	3	0

Legend:

- Implemented - Fully functional in browser environment
- Stub/Partial - Returns default values or could be implemented with Web APIs
- Not Available - Cannot be implemented in browser due to platform limitations

Browser API Opportunities

Several stub methods could potentially be implemented using modern Web APIs:

Feature	Web API	Browser Support
GPS	navigator.geolocation	All modern browsers
Barcode	BarcodeDetector	Chrome 83+, Edge 83+
Audio Recording	MediaRecorder	All modern browsers
Audio Playback	HTMLAudioElement, Web Audio API	All modern browsers
Camera/Image	navigator.mediaDevices.getUserMedia()	All modern browsers
Bluetooth	Web Bluetooth API	Chrome, Edge (HTTPS required)

Version History

Date	Changes
2026-01-14	Added ExecPff support (<code>jspi_execPff</code> , <code>WasmEventBridge.execPffAsync</code>)
2026-01-14	Initial documentation