

CSPro WASM Interface Functions Report

Overview

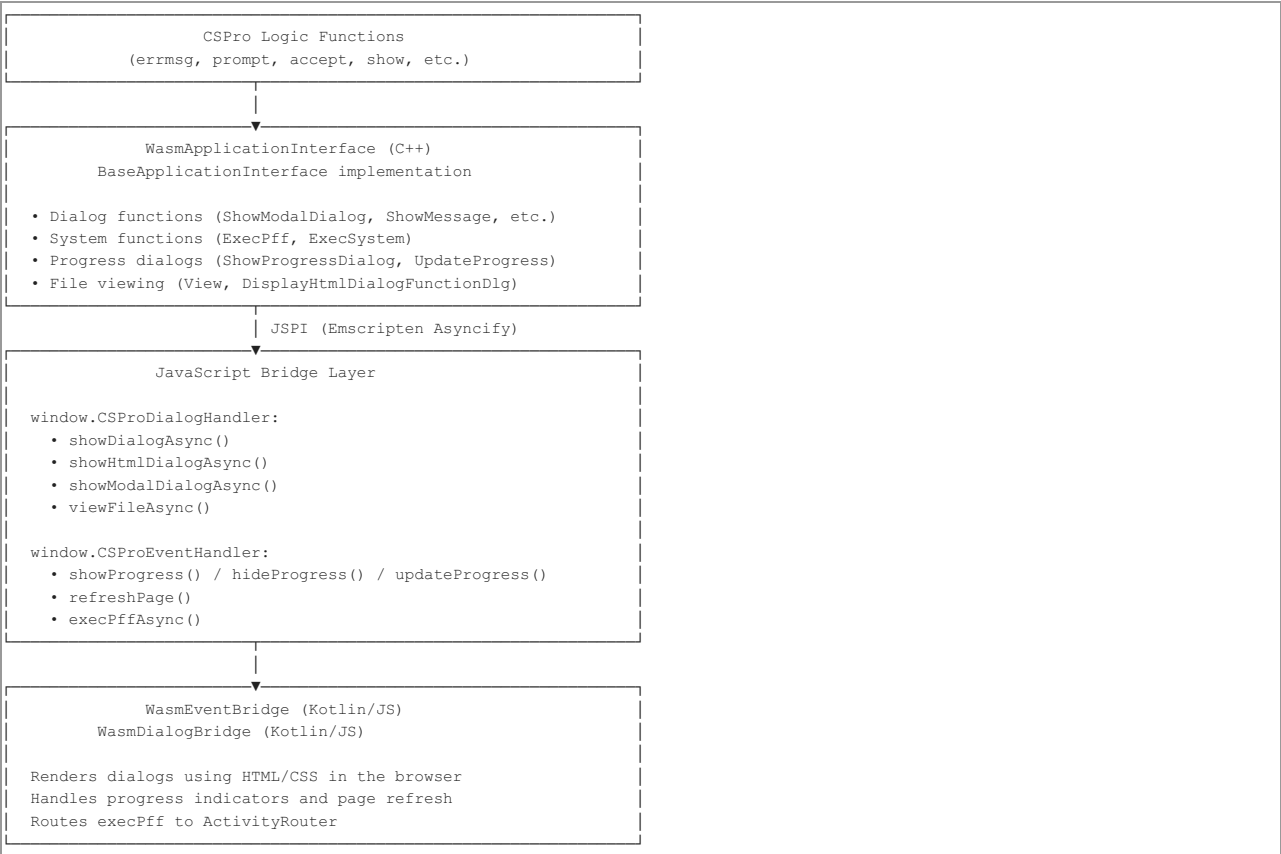
This document provides a comprehensive reference of all CSPro logic functions, Action Invoker methods, and UI interactions implemented in the WebAssembly (WASM) interface layer. The implementation bridges the C++ CSPro engine with the Kotlin/JS web frontend.

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
<code>jspi_showDialog</code>	Shows a named dialog (errmsg, choice, etc.)	<code>dialogName</code> , <code>inputDataJson</code>	<code>char*</code> (result JSON) or 0
<code>jspi_showHtmlDialog</code>	Shows an HTML-based dialog	<code>dialogPath</code> , <code>inputDataJson</code> , <code>displayOptionsJson</code>	<code>char*</code> (result JSON) or 0
<code>jspi_showModalDialog</code>	Shows a modal message box	<code>title</code> , <code>message</code> , <code>mbType</code>	<code>int</code> (button ID: <code>IDOK=1</code> , <code>IDCANCEL=2</code> , etc.)
<code>jspi_getInputData</code>	Gets input data for a dialog	<code>dialogId</code>	<code>char*</code> (JSON data) or 0
<code>jspi_showMessage</code>	Shows message with custom buttons	<code>title</code> , <code>message</code> , <code>buttonsJson</code>	<code>int</code> (button index)
<code>jspi_showChoiceDialog</code>	Shows choice/select dialog	<code>title</code> , <code>dataJson</code>	<code>int</code> (selected index, -1 if cancelled)
<code>jspi_showShowDialog</code>	Shows data display dialog	<code>heading</code> , <code>columnsJson</code> , <code>dataJson</code>	<code>int</code> (0)
<code>jspi_showSelcaseDialog</code>	Shows case selection dialog	<code>heading</code> , <code>columnsJson</code> , <code>dataJson</code>	<code>int</code> (selected index, -1 if cancelled)
<code>jspi_editNote</code>	Shows note edit dialog	<code>note</code> , <code>title</code> , <code>caseNote</code>	<code>char*</code> (edited note)
<code>jspi_viewFile</code>	Displays file in viewer	<code>content</code> , <code>contentType</code> , <code>title</code> , <code>accessToken</code>	<code>int</code> (1=success, 0=failure)
<code>jspi_execPff</code>	Executes/launches another PFF file	<code>pffPath</code>	<code>int</code> (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.)	☑ Implemented
DisplayHtmlDialogFunctionDlg	htmldialog()	Shows custom HTML dialogs	☑ Implemented
ShowModalDialog	errmsg(), warnings	Shows modal OK/Cancel dialogs	☑ Implemented
ShowMessage	errmsg() with buttons	Shows message with custom buttons	☑ Implemented
ShowChoiceDialog	accept()	Shows choice selection dialog	☑ Implemented
ShowShowDialog	show()	Displays tabular data	☑ Implemented
ShowSelcaseDialog	selcase()	Case selection dialog	☑ Implemented
EditNote	editnote()	Note editing dialog	☑ Implemented
DisplayErrorMessage	Error handling	Displays error messages	☑ Implemented

Progress Dialog Methods

Method	Description	Status
ShowProgressDialog	Shows progress overlay with message	☑ Implemented
HideProgressDialog	Hides progress overlay	☑ Implemented
UpdateProgressDialog	Updates progress percentage and message	☑ Implemented

System & Execution Methods

Method	CSPro Logic Function	Description	Status
ExecPff	execpff()	Launches another PFF application	☑ Implemented
ExecSystem	execsystem()	Executes system commands	✗ Not available in browser
ExecSystemApp	System app launch	Launches system applications	✗ Not available in browser
RunPffExecutor	PFF execution	Runs PFF executor	✗ Not available in browser

File & View Methods

Method	CSPro Logic Function	Description	Status
View	view()	Views files (HTML, text, images)	☑ Implemented
GetHtmlDialogsDirectory	Internal	Returns HTML dialogs path	☑ Implemented

GPS & Location Methods

Method	CSPro Logic Function	Description	Status
GpsOpen	gps(open)	Opens GPS connection	⚠ Stub (could use Web Geolocation API)
GpsClose	gps(close)	Closes GPS connection	⚠ Stub
GpsRead	gps(read)	Reads GPS coordinates	⚠ Stub
GpsReadLast	gps(readlast)	Reads last GPS reading	⚠ Stub
GpsReadInteractive	gps() interactive	Interactive GPS reading	⚠ Stub

Authentication & Credentials

Method	CSPro Logic Function	Description	Status
ShowLoginDialog	Login UI	Shows login dialog	⚠ Stub
AuthorizeDropbox	Dropbox OAuth	Dropbox authorization	⚠ Stub
StoreCredential	setproperty()	Stores credentials (in memory)	☑ Implemented (memory only)
RetrieveCredential	getproperty()	Retrieves credentials	☑ Implemented (memory only)
GetPassword	Password input	Password input dialog	⚠ Stub

Bluetooth Methods

Method	Description	Status
ChooseBluetoothDevice	Bluetooth device selection	✗ Not available (limited Web Bluetooth support)
CreateAndroidBluetoothAdapter	Bluetooth adapter	✗ Not available

Network Methods

Method	Description	Status
CreateAndroidHttpConnection	HTTP connection	⚠ Stub (use fetch API)
CreateAndroidFtpConnection	FTP connection	✗ Not available
IsNetworkConnected	Network status	☑ Implemented (assumes online)

Device & System Info Methods

Method	CSPro Logic Function	Description	Status
GetProperty	getproperty()	Gets system properties	☑ Implemented
SetProperty	setproperty()	Sets system properties	☑ Implemented
GetMaxDisplaySize	Display info	Returns screen dimensions	☑ Implemented (default values)
GetMediaFileNames	Media access	Gets media file list	⚠ Stub
GetUsername	username()	Returns username	☑ Implemented ("WebUser")
GetDeviceId	getdeviceid()	Returns unique device ID	☑ Implemented (random UUID)
GetLocaleLanguage	getlanguage()	Returns locale language	☑ Implemented ("en")
GetUpTime	System uptime	Returns system uptime	⚠ Stub

Multimedia Methods

Method	CSPro Logic Function	Description	Status
BarcodeRead	barcode()	Reads barcode	⚠ 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
execPffAsync(pffPath)	Stores pending PFF path for later execution	jsapi_execPff in C++
getPendingPff()	Returns and clears pending PFF path	Kotlin EntryActivity
hasPendingPff()	Checks if a pending PFF exists	Kotlin EntryActivity
showProgress(message)	Shows progress dialog (via EM_ASM)	C++ ShowProgressDialog
hideProgress()	Hides progress dialog (via EM_ASM)	C++ HideProgressDialog
updateProgress(percent, message)	Updates progress (via EM_ASM)	C++ UpdateProgressDialog
refreshPage(contents)	Triggers page refresh (via EM_ASM)	C++ RefreshPage

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 (jspi_execPff, WasmEventBridge.execPffAsync)
2026-01-14	Initial documentation