



**Response to Solicitation SN 2012-12 Request For Information for Computer Aided Dispatch System**

<b>Company Name:</b>	Selkirk Systems Inc.
<b>Mailing Address:</b>	Suite 4 – 415 Dunedin Street, Victoria, British Columbia, Canada V8T 5G8
<b>Point of Contact:</b>	Martin Torn Office: 250.360.1366 (v): 604.307.4415 Email: mtorn@selkirksystems.com
<b>References:</b>	State of Alaska – Department of Natural Resources Marsha Henderson, Strategic Planner / Project Lead (v): (907) 356-5858 Email: marsha.henderson@alaska.gov  Province of Saskatchewan – Saskatchewan Environment Steve Roberts, Executive Director, Wildfire Management (v): (306) 953-2206 Email: Steve.Roberts@gov.sk.ca
<b>Role in Procurement:</b>	To be determined. Currently, Selkirk is a Prime Solution Provider. Selkirk is investigating options to partner to most effectively deliver this type of project.



# 1 Introduction

Selkirk Systems is pleased to provide the following information as a part of Fire and Aviation Management (FAM) Operations Branch market research process for a Computer Aided Dispatch (CAD). The information contained refers to the Fire Control Application developed by Selkirk in operational use by a number of major North American fire control agencies. This application is referred to as Dispatch, Integrated Fire Management (IFM), and Wildfire Integrated Information Network (WIIN) depending on the specific agency. For the purposes of this RFI, the application is described as the Selkirk CAD. It should be noted that while the application provides CAD functionality on an agency-wide basis, it also has a broad range of other capabilities.

The approach taken to this RFI is to provide succinct information regarding our application, it's fit with the system requirements and any changes potentially necessary to meet the requirements, and to highlight any other relevant items as concisely as possible. More detailed information is available and will be gladly forwarded. We also invite FAM Operations Branch and other interested individuals to contact any of the other agencies currently using our applications to see the system in use. References from two agencies that have just completed agency wide implementations of the Selkirk CAD are provided on the front cover, and others from long term customers such as Alberta and British Columbia are available.

# 2 System Requirements

Please find below the systems requirements, with an X indicating which are fully met. Any items that are not fully met have a corresponding note with appropriate discussion below this table.

System Requirement	
	X
1. The System should support web based technologies, such as mobile and cloud computing.	X
2. The System must support the ability to merge an instance of the database with another instance, as in the case where data is created and stored in a standalone database that then must be combined with another database to consolidate the data. Note: For example, when two dispatch centers are becoming one.	X
3. The System must have disaster recovery processes that include data redundancy.	X
4. The System must have robust interoperability with established systems with the ability to share data easily and efficiently.	X
5. The System must be available (24/7) at the local dispatch center without interruption for any reason so as to maintain operational continuance at the local level at all times.	X
6. The System must support a multi-user platform with real-time access.	X
7. The System must meet all Federal and Agency requirements for security.	Note 1
8. The System must have on-going technical and user support.	X
9. The System must be based on an interactive Graphical User Interface (GUI) environment.	X
10. The System must support real time, read-only access to data by local and remote fire managers and GACC personnel.	X



11. The System must meet the needs of an all-risk dispatch center.	Note 2
12. The System must be scalable and flexible to accommodate individual dispatch center data, policy and business practices while complying with national agency requirements for standardized data elements and reporting requirements.	X
13. The System must be able to create an Incident from any computer via the internet.	X
14. The System must include a variety of robust mapping features that allow the dispatch center to determine the location of a potential incident quickly and easily.	X
15. The System must be able to produce standard and ad hoc reports.	X
16. The System must allow for local management to pre-determine the resource response by incident type, response area, and response level.	Note 3
17. Daily log and entries may be retained as part of the official record of an incident.	X
18. When multiple incidents are created but should be tracked as one incident, the multiple incidents are merged, (i.e. A reported smoke incident and a reported vehicle collision, are the same incident.) When incidents are merged, all documentation and resource data is tracked in one incident.	Note 4
19. The System must provide multiple ways to create an incident, such as using a function key or typing in an address or designating a map location through lat/long or GIS, etc.	X
20. The System maintains an incident log that records activity on an incident, such as radio communications, phone communications, dispatcher activity, notifications, etc.	X
21. The dispatcher must be able use a timer to track status, and position checks of resources. For example, if it is a law enforcement incident the timer will notify the dispatcher when a safety check is required. For aircraft, Automated Flight Following may want a verbal check back every 15 minutes to track the location in case of loss of contact.	X
22. Standard land-based geospatial data layers should be available within the System.	X
23. Response area data includes: response levels, associated Fire Danger Rating Area, response areas.	X
24. Dispatch (run cards) data includes: response types, incident types with incident subtypes, response types, response levels, dispatch strategy, copying and reporting dispatch strategies, dispatch action required.	Note 5
25. Interfaces with radio console over a serial data connection to select frequencies and tones (repeaters). Dispatcher can click the [SELECT] button on the CAD screen to select dispatch frequencies and tones on the radio console screen.	Note 6
26. Provides an application administrator with the ability to add a common place name to the geographic data file with only a latitude/longitude location (location is off-road).	X
27. Provides an application administrator with the ability to configure response areas for fixed (run order) or dynamic (road network calculation) unit recommendation.	Note 7
28. Provides a dispatcher with the ability to assign a weather-based dispatch level to response areas that have been organized into dispatch zones.	X
29. Recommends units based on the current weather conditions (dispatch level) in the response area associated with incident location. The dispatch level influences the selection of a response plan.	Note 7
30. Calculates a bearing and distance for recommended units that travel through the air.	X
31. Provides an application administrator with the ability to assign air-to-air and air-to-ground frequencies to individual response areas.	X



32. Generates a fire number in addition to an incident number from a federal or local fire number counter as specified in the response area record associated with the incident location.	X
33. Provides an application administrator with the ability to create a hazard record at a latitude/longitude location.	X
34. Alerts the dispatcher when a call is entered at a latitude/longitude associated with a hazard record.	X
35. Provides a dispatcher with the ability to set the dispatch priority of units in a fire station where there is more than one unit of the same type.	X
36. Displays an automatically-updated fire coverage window with the dispatch coverage status in green, yellow, or red.	Note 8
37. Provides the dispatcher with the ability to assign the person responsible for completing the fire or investigation report by entering a command.	X
38. Replicates live CAD incident and unit information to a backup device.	X
39. Provides a dispatcher with the ability to select an alternate tactical and/or air to air frequency when the primary tactical frequency is in use.	Note 6

**Notes:**

1. Item 7 - Federal and Agency security. The application is currently running in State of Alaska DNR data center, as well as a number of Canadian Provincial government facilities, and has met all required security standards for these agencies. It is also architected using current, best practices for enterprise security. It has not had a formal Federal Government security audit.
2. Item 11 - All risk dispatch center. Our application is being used by fire control agency dispatch centers to support operations other than fire (flood support, search and rescue, etc). The application has the ability to add other incident types, reports, procedures, and security provisions to support all hazards responses. However, it is not currently operational in all hazard designated dispatch center. In particular, additional incident types will need to be integrated into some of the other functionality, as noted below. The application architecture readily supports this addition.
3. Item 16 - Pre-determined resource response by incident type. Partially implemented. Incident type needs to be added. Resource response, response area, and response level are currently implemented.
4. Item 18 - Merging multiple incidents – Partially implemented. Our underlying architecture supports identification of incidents by unique identifiers (UUID’s) rather than fire numbers or other data elements that may change in a merge. It also supports merging incidents, for example into a complex, or associating incidents, for example related all hazard incidents. However, an end user UI is requires development to fully meet this requirement.



5. Item 24 – Dispatch (run card) data – Partially implemented. The application currently includes dispatch run cards. Incident type and sub-type need to be added.
6. Item 25 and Item 39 – Radio console interface – Not currently implemented. Application has a standard API on the client that can allow this functionality to be added.
7. Item 27 and Item 29 – Dispatch resource recommendations – In development. The application currently includes the ability to recommend resource types, and look-up resource dispatch levels based on geographic location and run cards. The Selkirk CAD also includes the capability to recommend closest resources by type. Selkirk is currently developing the capability to include resource recommendations based on criteria other than closest available resource, including via an API to routing calculations or based on run order.
8. Item 36 – Dispatch coverage status by color – In development. Preparedness (pre-positioning) / Sitrep module is currently in development, which in conjunction with the recommended resource functionality from Note 7, will meet this requirement.

### 3 Technical Information Being Requested

1. **How many staff months (project management, analysis, design, coding, documenting, and testing) and calendar months do you estimate it would take to modify your CAD system to meet all of the requirements listed above?**

Staff Months – 72 to 90 months of effort, based on assumptions regarding requirements and changes to best meet FAM needs. Changes and further details regarding the requirements could considerably lower that estimate. More notes are included in item 7 below.

Calendar Months - 9 to 12 months, depending on customer availability and test cycles

2. **How many multi-site CAD customers does your company currently have?**

The following agencies use the Selkirk CAD application on an agency-wide basis (i.e. it is used at all levels of coordination in the agency, zones and fire bases, air tanker bases, dispatch centers, regional coordination centers, agency coordination centers, air desks).

- State of Alaska – Department of Natural Resources
- Yukon Territory - Wildfire Management Branch
- Province of British Columbia - Ministry of Forest, Lands, Natural Resource Operations
- Province of Alberta – Sustainable Resource Development
- Province of Saskatchewan – Ministry of Environment



- Province of Ontario – Ministry of Natural Resources

Note that USAFF (Webtracker) was developed by Selkirk on behalf of Province of British Columbia. While now very out of date compared with our current product, it is a great example of the longevity of Selkirk applications, and their functioning within the Federal Government IT regime.

**3. How many physical servers are required to run your full CAD system with ROSS and other interfaces including testing and training instances of the system?**

Our current deployments have hundreds of users, and are typically deployed as 1 application server and 1 database server per instance (where production is an instance, testing is a separate instance, training may be a separate instance, etc). Each is provided with appropriate backups to meet individual agency standards.

The application architecture has been developed to minimize load on servers and networks to ensure performance on government IT infrastructure, and has been successfully implemented in a number of different agency IT infrastructures. The application has been stress tested to over 1000 users per instance without server loading issues.

Redundancy can be provided via database clusters or hot backups depending on the agency IT organization preference, and the application architecture supports use of load balanced application servers. The application middleware can also be deployed across multiple servers to provide horizontal scaling / hot fail over.

Selkirk is increasingly providing a hosted solution for agency customers. The application architecture supports cloud deployment. Cloud Foundry is the preferred implementation at this time.

**4. What is your company's estimated annual revenue from CAD system sales, consulting services, and maintenance fees?**

Selkirk Systems is a small/medium sized enterprise (SME) with revenues less than \$5M annually.

**5. How many procurements for a CAD project exceeding \$2 million has your company responded to in the 24 months prior to the release of this RFI?**

None. However, Selkirk has completed two agency wide implementations in that timeframe, both of which are in operational use this fire season, as well as a number of upgrades for existing customers (which are in operational use today).



6. **What is the probability 0 – 10 (10 being the highest) that your company would participate in a best value Request for Proposal process for the CAD described above where all requirements must be met in order to qualify?**

10.

7. **What is your estimated cost to provide a CAD system that would meet all of the requirements listed in the request for information?**

The Selkirk CAD is currently offered to fire control agencies on a zero cost license model – agency's do not pay a license fee to use the software as is. Agencies only need to fund installation and provisioning charges, changes to existing functionality, integration costs to other systems, and support and training.

The cost estimate to implement all potential changes necessary to meet all system requirements listed in the RFI is \$700k to \$900k. Allocations in this estimate have been made for changes relating to the items below. Further more detailed definition of the requirements could modify, and potentially reduce, the estimate – for example, no changes may be necessary to meet security requirements, and that allocation could be dropped from the estimate. Current allocations include:

- Potential changes to meet Federal or agency security requirements that arise from a Federal security audit
- Completion of changes to support operations in an all risk center.
- Interfacing to radio consoles
- Further changes to the run card and dispatch resource recommendation capabilities beyond the capability currently under development.
- UI changes to support merging of incidents
- Further changes that may be required for dispatch coverage status by color beyond the capability currently under development
- Allowance for changes that may be required depending on what data center and model of scalability is selected (ie cloud vs physical servers) and degree of localization per dispatch center desired.

## 4 Additional Information

- 1) **Provide any additional information not requested above but which you deem important and relevant to this RFI.**

a) Automated Flight Following and Flight Watch



The CAD application is currently being used for federally approved flight watch purposes with a number of our agency customers. The application includes all functionality currently provided within USAFF, such as automated tracking of resources, alarming and visual indicators for overdue resources, historical replay of resource positions, full data center functionality including archiving for resource information, gathering of AFF positions from AFF providers etc. The application also has considerable additional functionality related to the automated flight following (ability to transfer resources from zone to zone, ramp lists, automated and user entered agency-wide radio log notes, etc). By adopting Selkirk CAD for dispatch purposes, Dispatch centers could make use of the application for their flight following needs, and it could provide a replacement for the current Webtracker version of AFF agency-wide.

b) Interface to WFDSS

The application, as deployed in Alaska, includes an electronic interface to WFDSS. This function is being used operationally this season.

c) Other Resource Tracking Interfaces (ex SPOT, iPhones)

In addition to AFF, the Selkirk CAD has a large number of other interfaces to resource tracking devices available, including cellular units, SPOT, iPhones, etc available to provide real time tracking of resources other than AFF equipped aircraft.

d) Agency-wide COP

This application provides an agency wide common operating picture as a fundamental part of its functionality. This includes both spatial and tabular displays of all incidents, resource, hazard, and other related information, maintained in real time. It leverages the dispatching process to ensure that the COP is accurately maintained without additional or duplicated effort from dispatchers or situation unit / intelligence staff. As an agency wide application, it provides real-time information to all levels of coordination, from GACC and National levels down to individual units.

e) Integration with weather, lightning, and fire weather products.

Deployments of this CAD have been interfaced with agency wide weather, fire weather, and real-time lightning feeds to provide this information as an integrated part of incidents, as well as in input to the overall situational awareness picture. This appears as point data, map layers, and as a part of the decision support tool.

f) Web standard data interfaces and API's.

The application has data interfaces for bi-directional information exchange with other systems. It has established API's, using common web service standards, and provides an easy path for integration with other systems.



g) Map Engines and Map Data

The spatial display in the Selkirk CAD is provided by interfacing to map engines and overlaying the dispatch functionality over the spatial display. This means that map data does not have to be imported into and maintained in the CAD – existing data sources and map engines can be delivered. By using standard interfaces such as WMS to interface to map engines, the application can be used with a wide range of different map technologies, including ESRI, GeoServer, Google, etc. This leverages the investment to date made by agencies in map engines and spatial data warehouses, allows multiple different map engines to be used, and does not tie the application to only one vendors mapping solution.

h) Collaborative Development Process

Over the past 10 years Selkirk Systems has been actively organizing and participating in a collaborative development process between wildfire agencies. This process facilitates sharing innovations, budgets, and software development costs to increase the utility of the software and its ability to enable improved operations at the least cost to the user group. This includes changes and updates made by one agency being available to other agencies at no cost. Provision of the CAD for FAM would be completed within the collaborative development process is FAM so desires.

i) Selkirk's core focus – Wildfire Management and Related Emergency Management Applications

Selkirk System's core focus and market niche is providing wildfire agencies and other emergency management organizations proven, tested, applications. Selkirk has an in-depth knowledge of applying enabling technologies to wildfire management, the business needs of wildfire users, and a core understanding of the domain. Our solutions are for and specific to the wildfire community.

**2) Provide any lessons learned from other similar projects.**

a) Integration of automated resource tracking

The integration of automated resource tracking with dispatching to create a single, integrated process has considerable operational benefits, including reduced dispatcher workload, more accurate updating of the COP, and greatly improved situational awareness throughout the operational organization. These benefits also extend to financial and logistic functions, assisting in automating processes such as fire cost estimates, etc.

b) Multi-site Operations

The Selkirk CAD has been developed since inception to support multi-site use, and has been used by a number of agencies over many fire seasons in this configuration. Functionality exists to support many users in different locations accessing and working with common incidents and resources. Operationally, agencies have found this provides a high degree of



flexibility to dynamically re-allocate dispatching responsibilities within and between dispatch centers as workload and staffing levels change.

c) Dispatch driven, Agency wide COP / SA

By combining the dispatching and COP elements in one application, the information and situational awareness gathered as a part of the dispatching function can be utilized agency wide. Users throughout all levels of coordination get access. Security roles ensure that only dispatchers can perform the dispatch functions, but all levels of coordination share a COP. This distributes real time information outside the dispatch room to land managers, FMO's, coordination and logistics staff, etc without additional effort by the dispatchers.

**3) Ongoing annual maintenance and technical support.**

Ongoing annual maintenance is provided by Selkirk. This includes maintenance releases and change requests. Through the collaborative development effort, changes, improvements, and bug fixes made by other agencies are available to other agencies at no charge other than deployment or integration costs.

Selkirk currently provides first, second, and third line support directly to customers who require it, as well as training and support for agencies to take on their own support processes. Typically Selkirk provides more support in the initial period of implementation, and then assists in transitioning these functions to the user agency over time.

Selkirk is currently reviewing strategic partnerships with US based companies to deliver larger projects, those potentially involving greater end user support and training, and potentially overall service provision. For this scope of implementation, a strategic partner would potentially take on elements the support and training roles deemed necessary to success, and potentially provision of cloud hosting and other related services if of interest to FAM.