

## Job Description



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<b>Job Title:</b>	Director, Climate and Environment Information Systems
<b>Department:</b>	Interdisciplinary Centre on Climate Change
<b>Reports To:</b>	Managing Director, Interdisciplinary Centre on Climate Change
<b>Jobs Reporting:</b>	Data Manager, Systems Administrator, Information Systems Specialist, Web/Database Developer, Co-Op Students
<b>Salary Grade:</b>	USG 12
<b>Effective Date:</b>	November 2020

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### **Primary Purpose**

The Director, Climate and Environment Information Systems, provides organizational leadership for the technical, scientific, financial, and administrative operations of the research data platforms of the Interdisciplinary Centre on Climate Change (IC3), including the Canadian Cryospheric Information Network (CCIN) and Polar Data Catalogue (PDC). These information systems are comprised of custom-built applications, combined with open source community implementations, which are functionally robust and technically complex, and serve users within and outside of the University of Waterloo. The Director leads the ongoing strategic development of Climate and Environment Information Systems at IC3, develops and maintains partnerships for data management and exchange, and secures financial resources to ensure the sustainability of the research data platforms. The Director also represents and promotes the organization, both nationally and internationally, through conferences, presentations, and other activities, such as codeathons.

### **Key Accountabilities**

#### **Operational**

- Assume responsibility for all aspects of the daily operations of Climate and Environment Information Systems platforms
- Manage the robustness, reliability, security, and integrity of platform computing infrastructure
- Interview and select new staff within budgetary constraints to ensure the required expertise is available to complete contracted deliverables
- Train, guide, and supervise staff to ensure completion of contracted deliverables
- Seek and acquire funding to develop new procedures and support structures for user communities and to ensure financial stability of the research data platforms
- Perform required administrative duties, including budgeting, forecasting, financial management, and reporting
- Manage relationships with advisory groups, funders, partners, users, and the general public, relating to the organization, its activities, and its goals

#### **Technical**

- Plan, budget, and acquire new hardware and computational resources required for systems and staff
- Plan and lead largescale organizational initiatives, such as major hardware migrations and software framework updates
- Plan, revise, and maintain the underlying data architecture for the core system, as well as for ancillary applications
- Plan and lead the development of data and metadata sharing and interoperability with international partners, using international standards of interoperability

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- Design software specifications and oversee development through code reviews and collaborative implementation
- Carry out specialized technical work where necessary, such as data integration and data visualization activities

### **Strategic**

- Plan and lead the strategic development of IC3 research data platforms, ensuring alignment to IC3 strategy, and in response to changing user community needs for data and information archiving, access, visualization, and analytics
- Manage platform advisory groups, and incorporate expert and user input and guidance into strategic and operational planning.
- Identify and implement new technologies in order to maintain industry standards and maximize the use of technological advancements
- Plan and lead organizational evolution, with respect to FAIR data principles and data-centric topics, such as data integration, data interoperability, data warehousing, data governance, data science, and data visualization
- Promote awareness of the research data platforms in science, policy development, and user communities and ensure continued support for users and their requirements, through developing operational partnerships with similar organizations worldwide
- Present technical papers and develop partnerships and networks through attendance at scientific conferences, as well as institutional, local, national, and international meetings and events
- With support from the IC3 Communications team, develop communications strategies and outreach plans for existing and new users
- Identify opportunities for new partnerships and new usage domains for the organizational infrastructure and data management capabilities of the systems

*\*All employees of the University are expected to follow University and departmental health and safety policy, procedures and work practices at all times. Employees are also responsible for the completion of all health and safety training, as assigned. Employees with staff supervision and/or management responsibilities will ensure that assigned staff abide by the above, and actively identify, assess and correct health and safety hazards, as required.*

### **Required Qualifications**

#### **Education**

- PhD is required in order to receive adjunct faculty status necessary for holding funding and academic resources such as SHARCNET

#### **Experience**

- Experience supervising diverse technical staff in a computational and data-centric environment
- Experience writing successful funding proposals and collaborating with funding partners
- Experience with budgeting, forecasting, financial management, and reporting
- Experience communicating and collaborating with scientific and/or policy developers through professional meetings and/or conferences
- Experience with peer review publication and/or technical writing in a scientific domain
- Experience mentoring junior technical personnel and training domain-specific highly qualified personnel
- Experience with release management, project management, and software development life cycle
- Experience with full stack software development using standard design patterns and frameworks
- Experience with FAIR data principles and data-centric topics, such as data integration, data interoperability, data warehousing, data governance, data science, and data visualization
- Experience with various technologies and methodologies related to information systems

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- Proven problem-solving skills, with demonstrated ability to analyze and understand complex situations
- Demonstrated level of competence, discretion, and professionalism appropriate for interacting articulately and persuasively with a wide range of stakeholders
- Strong organizational skills coupled with the ability to handle multiple tasks and excel in a fast-paced environment with changing priorities
- Specialization in physical geography, geomatics, informatics, or data science would be beneficial

### **Knowledge/Skills/Abilities**

- Familiarity with metadata standards, particularly ISO 19115
- Strong understanding of OOP principles and design patterns, such as MVC
- Strong Java development skills using the Spring Framework and related technologies, such as Maven, GIT, Eclipse, etc.
- Strong understanding of REST API design, data integration, data interoperability, and the OPeNDAP framework
- Strong understanding of SQL and open source object-relational database systems, such as PostgreSQL
- Familiarity with NoSQL storage paradigms, such as MongoDB
- Familiarity with Web technologies and standards, such as JSON, JavaScript, AJAX, XML, HTML, CSS, Drupal
- Familiarity with common operating systems, including Windows and Linux
- Familiarity with cloud platforms like Google Compute Engine and MongoDB Atlas
- Familiarity with data mining and statistical methods using statistical software, such as R
- Familiarity with issue tracking software, such as Jira
- Competence with general office software, including Word, Outlook, and Excel, as well as meeting apps, such as Teams and Zoom
- Familiarity with university systems, such as HR, finance, and reporting, would be beneficial
- Excellent written and oral communication skills

### **Nature and Scope**

- **Contacts:** Interacts with a broad spectrum of organizations, academic units, and stakeholders. Presents organizational overviews, project proposals, and strategic initiatives. Initiates action, reaches agreement, and negotiates collaborative and contractual instruments with partners and sponsors, in order to achieve the goals of the CCIN/PDC. Communicates with a wide range of audiences through institutional, local, national, and international events and correspondence.
- **Level of Responsibility:** Involves specialized tasks, both routine and ad hoc, with minimal supervision and requires the direct supervision of others, including permanent, casual, or temporary staff. Granular financial management and reporting are required, as well as financial accountability to the university and funders. Overall accountability for system uptime and data preservation are also key responsibilities.
- **Decision-Making Authority:** Makes decisions on timelines, budget allocation, staffing resources to meet stated objectives. Hires and manages staff answering to this position. Responsible for implementing the overall program of the CCIN/PDC within the confines of the strategic plan and budgetary constraints. Makes decisions relating to the adoption of technological standards and data management practices, as they relate to organizational trajectory.
- **Physical and Sensory Demands:** Minimal demands typical of a position operating within an office environment; strain resulting from extended periods of sitting, concentrated use of visual senses, repetitive motion, and prolonged close attention to detail. Some physical activity may be required to move or setup equipment. Ideally able to lift 30 lbs.

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- **Working Environment:** Travel: Extensive travel required, including international travel. Working Hours: Regular working hours, frequent evening/weekend work required. Physical risks: Physical risks typical of those associated with a business traveler. Psychological risks: Disruption in lifestyle due to travel requirements and/or unusual schedules. Minimal exposure to disagreeable conditions typical of a supervisory position.