



CISTER

Research Center in
Real-Time & Embedded
Computing Systems

Technical Report

Parallelism in Ada: General Model and Ravenscar

Brad Moore

Stephen Michell

Luis Miguel Pinho

CISTER-TR-130405

Version:

Date: 4/12/2013

Parallelism in Ada: General Model and Ravenscar

Brad Moore, Stephen Michell, Luis Miguel Pinho

CISTER Research Unit

Polytechnic Institute of Porto (ISEP-IPP)

Rua Dr. António Bernardino de Almeida, 431

4200-072 Porto

Portugal

Tel.: +351.22.8340509, Fax: +351.22.8340509

E-mail: Imp@isep.ipp.pt

<http://www.cister.isep.ipp.pt>

Abstract

Parallel programming is expected to become more the norm as multi-core and many-core processors gain more widespread use. Ada has always had excellent concurrency support, but could be improved in the area of parallel programming. Specifically, divide and conquer parallelism via parallel loops and subprograms are difficult to write without some sort of library support. In this paper we describe a proposal that combines the use of task pools and parallelism managers to provide parallelism capabilities to real-time Ada applications, including Ravenscar applications. This work complements the syntax enhancements that we previously proposed, so that together they facilitate the writing of parallel applications.