

The Distributed and Unified Numerics Environment (DUNE)

Tutorial on Implementing New Grid Managers

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<http://www.dune-project.org/>

This document explains how new grid managers for the **DUNE** grid interface can be implemented and how existing grid codes can be made to work with **DUNE**. Unfortunately, it is in a very early stage :-)

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1 Introduction

2 IdentityGrid

3 Structure of a Dune Grid

3.1 Classes

FooGrid

FooGridFamily

3.1.1 Entities and Geometries

FooGridEntity

FooGridEntityPointer

Geometry

3.1.2 Entity Iterator Classes

FooGridLevelIterator

FooGridLeafIterator

FooGridHierarchicalIterator

3.1.3 Intersection-related Classes

FooGridLevelIntersection

FooGridLeafIntersection

FooGridLevelIntersectionIterator

FooGridLeafIntersectionIterator

3.1.4 IndexSets and IdSets

3.1.5 Miscellaneous

MakeableInterfaceObject

3.2 Capabilities

4 The Grid Unit Tests

5 Generic Geometries

6 How to Implement Parallel DUNE Grids

6.1 Communication

6.2 Load Balancing

6.3 The Distributed IndexSets

7 Design Patterns

I you have spent some time writing **DUNE** grids you will notice that some general patterns appear over and over again. Maybe this chapter will document some of these one day.