Computing Section of DTDR

F. Bianchi

Pisa, September 21 2012

14 Software and Computing 339
14.1 Computing Overview F.Bianchi 2 pages . . . 339
14.2 Tools to support detector studies F.Bianchi 1 pages . . . 339
14.2.1 Full Simulation A. Di Simone - E. Paoloni - A. Perez 4 pages . . . 339
14.2.1.1 Bruno: the SuperB full simulation software . . . 340
14.2.1.2 Geometry description . . . 340
14.2.1.3 Simulation input: Event generators . . . 340
14.2.1.4 Simulation output: Hits and MonteCarlo Truth . . . 341
14.2.1.5 Simulation optimization . . . 341
14.2.1.6 Staged simulation . . . 341
14.2.1.7 Interplay with fast simulation . . . 342
14.2.1.8 Long term evolution of the full simulation software . . . 342
14.2.2 Fast Simulation M. Rama 4 pages . . . 343
14.2.2.1 Event generation . . . 343
14.2.2.2 Detector description . . . 344
14.2.2.3 Interaction of particles with matter . . . 344
14.2.2.4 Detector response . . . 344
14.2.2.5 Reconstruction . . . 345
14.2.2.6 Machine backgrounds . . . 345
14.2.2.7 Analysis tools . . . 346
14.2.2.8 Simulation validation and detector studies . . . 347

14.2.2.6 Simulation validation and detector studies 347
14.2.3 Distributed computing tools G. Donvito - A. Fella - E. Luppi - S. Pardi L. Tomassetti 10 pages 347
14.2.3.1 Distributed resources 348
14.2.3.2 Distributed systems design: a bird's-eye view 349
14.2.3.3 The production system 349
14.2.3.4 The data analysis system prototype 351
14.2.3.5 The bookkeepieng and data placement database 352
14.2.4 Collaborative tools M. Corvo - A. Gianoli - S. Longo - R. Stroili 2 pages . 353
14.2.4.1 Overview 353
14.2.4.2 Authorization 353
14.2.4.3 Portal System 353
14.2.4.4 Document repository 353
14.2.4.5 Documentation 354
14.2.4.6 Code repository 354
14.2.4.7 Code packaging and distribution 355

14.3 Computing model outline F. Bianchi - A. Fella - C. Grandi - S. Luitz - E. Luppi - S. Pardi - L. Tomassetti 6 pages . . . 356
14.3.1 Data processing . . . 356
14.3.2 Resource estimate F.Bianchi - S. Luitz 4 pages . . . 357
14.3.3 Computing Infrastructure F.Bianchi - S. Luitz - S. Pardi 4 pages . . . 357
14.4 R & D program M. Corvo - G. Donvito - A. Fella - F. Giacomini - S. Longo - S. Pardi 8 pages . . . 358
14.4.1 R& D on parallelization . . . 358
14.4.2 GPU R& D . . . 359
14.4.3 Framework R & D . . . 360
14.4.4 DIRAC framework evaluation . . . 362
14.4.4.1 Pilot jobs model . . . 363
14.4.4.2 Dirac data management . . . 363
14.4.4.3 DIRAC API . . . 364
14.4.4.4 User Management . . . 364
14.4.4.5 Tested Use Cases . . . 364
14.4.4.6 SuperBDIRAC module . . . 364
14.4.4.7 Building up a DIRAC Infrastructure for SuperB . . . 364
14.4.4.8 Future Works . . . 365
14.4.5 Data management and distributed storage R&D . . . 365
14.4.5.1 WAN data access . . . 365
14.4.5.2 Data access library . . . 366
14.4.5.3 File Transfer Service evolution . . . 366
14.4.5.4 Dynamic file catalogue technology . . . 366
14.4.5.5 Storage system evaluation . . . 367
14.5 Summary F.Bianchi 1 pages . . . 367