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Nota di contenuto	Section Intro, Ian Grout -- Online Laboratory Architectures and Technical Considerations, Zutin, Danilo -- The WebLab-Deusto Remote Laboratory Management System architecture: achieving scalability, interoperability, and federation of remote experimentation, Orduna, Pablo; Garcia-Zubia, Javier; Rodriguez-Gil, Luis; Angulo, Ignacio; Hernández-Jayo, Unai; Dziabenko, Olga; Lopez-de-Ipina, Diego -- Deploying Large Scale Online Labs with Smart Devices Salzman, Christophe; Halimi, Wissam; Gillet, Denis; Govaerts, Sten -- Augmented Reality and Natural User Interface Applications for Remote Laboratories, Maiti, Ananda; Smith, Mark; Maxwell, Andrew; Kist, Alexander A -- Designing Cyber-Physical Systems with Evolutionary Algorithms, Schranz, Melanie; Elmenreich, Wilfried; Rappaport, Micha -- Section 2: Pedagogy of Cyber-Physical Experimentation -- Section Intro, C. Zacharia, Zacharias; de Jong, Ton -- Advances in PhET Interactive Simulations: Interoperable and accessible, Moore, Emily B; Perkins, Katherine K -- Designing Virtual Laboratories to Foster Knowledge

Integration: Buoyancy and Density, Vitale, Jonathan Michael; Linn, Marcia C -- Real Time Scaffolding of Students' On-line Data Interpretation During Inquiry with Inq-ITS Using Educational Data-mining, Gobert, Janice D.; Moussavi, Raha; Li, Haiying; Pedro, Michael Sao; Dickler, Rachel -- Providing Pedagogical Support for Collaborative Development of Virtual and Remote Labs: Amrita VLCAP, Nedungadi, Prema; Ramesh, Maneesha; Pradeep, Preeja; Raman, Raghu -- Model-based inquiry in computer-supported learning environments: The case of Go-Lab -- Hovardas, Tasos; Pedaste, Margus; Zacharia, Zacharias; De Jong, Ton -- Section 3: Cyber-Physical Laboratories: Best Practices and Case Studies -- Section Intro, Azad, Abul K. M -- Life-science Experiments Online: Technological Frameworks and Educational Use Cases, Riedel-Kruse, Ingmar -- A CPS Integration platform as a Framework for Generic Remote Labs in Automation Engineering, Langmann, Reinhard -- The Development and Implementation of Instruction and Remote-access Components of Additive Manufacturing, Fidan, Ismail; Elliott, Amy; Cossette, Mel; Singer, Thomas; Tackett, Ed -- Design and Implementation of a Remote Laboratory for Heat Transfer Experiments, Ennetta, Ridha; Nasri, Ibrahim; Bouallègue, Sofiene; Tsiatsos, Thrasyvoulos -- Collaborative Virtual Laboratory Environments with Hardware in the Loop, Aziz, El-Sayed; Zhang, Zhou; Zhang, Mingshao; Chang, Yizhe; Esche, Sven K.; Chassapis, Constantin -- Mobile Cyber-Physical Labs: On the Integration of Mobile Devices with Laboratory Test-beds to Teach Dynamic Systems and Control Concepts, Frank, Jared; Brill, Anthony; Kapila, Vikram.

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#### Sommario/riassunto

This volume investigates a number of issues needed to develop a modular, effective, versatile, cost effective, pedagogically-embedded, user-friendly, and sustainable online laboratory system that can deliver its true potential in the national and global arenas. This allows individual researchers to develop their own modular systems with a level of creativity and innovation while at the same time ensuring continuing growth by separating the responsibility for creating online laboratories from the responsibility for overseeing the students who use them. The volume first introduces the reader to several system architectures that have proven successful in many online laboratory settings. The following chapters then describe real-life experiences in the area of online laboratories from both technological and educational points of view. The volume further collects experiences and evidence on the effective use of online labs in the context of a diversity of pedagogical issues. It also illustrates successful online laboratories to highlight best practices as case studies and describes the technological design strategies, implementation details, and classroom activities as well as learning from these developments. Finally the volume describes the creation and deployment of commercial products, tools and services for online laboratory development. It also provides an idea about the developments that are on the horizon to support this area.

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