

## Enabling Dependable Communication in Cyber-Physical Systems with a Wireless Bus (Paperback)



Federico Ferrari

Enabling Dependable Communication  
in Cyber-Physical Systems  
with a Wireless Bus

Diss. ETH No. 21528



Filesize: 6.01 MB

### Reviews

*Completely among the best pdf We have at any time study. We have study and i am sure that i am going to likely to read yet again once again in the foreseeable future. Once you begin to read the book, it is extremely difficult to leave it before concluding.*

*(Penelope O'Conner DDS)*

## **ENABLING DEPENDABLE COMMUNICATION IN CYBER-PHYSICAL SYSTEMS WITH A WIRELESS BUS (PAPERBACK)**

**DOWNLOAD**



Createspace, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. Cyber-physical systems (CPSs) are physical and engineered systems believed to radically transform how we interact with the physical world. By tightly integrating computation, low-power wireless communication, and physical processes, these systems realize safety-critical control loops—with physical processes affecting computation and vice versa—in scenarios where traditional systems are hardly applicable. Potential CPS applications include healthcare, factory automation, and smart structures. The safety-critical nature of most CPS applications demands highly dependable system operation. However, it is currently not possible to apply to cyber-physical systems established concepts for the design and validation of dependable distributed systems. These concepts require guarantees (e.g., on message delivery orderings) that existing CPS communication protocols do not provide. It is indeed extremely challenging to guarantee message delivery in low-power wireless networks, due to, for example, severe computation and memory constraints of typical CPS embedded devices, multi-hop wireless communication, and the need of satisfying also requirements on energy efficiency. State-of-the-art solutions try to overcome these challenges by involving in the exchange of messages as few nodes as possible, but they typically operate only in a best-effort manner. By contrast, we conjecture in this thesis that it is possible to enable dependable yet efficient communication in cyber-physical systems by employing a wireless bus—a time-triggered communication infrastructure where, similar to protocols for (wired) safety-critical embedded systems, nodes are time-synchronized and communicate as if they were connected by a shared bus. In particular, we implement three main building blocks contributing towards a dependable wireless bus: We design Glossy, a flooding architecture that provides fast and highly reliable one-to-all communication in multi-hop low-power wireless networks, while also accurately time-synchronizing all devices. Glossy exploits synchronous transmissions of the same packet, and does...



[Read Enabling Dependable Communication in Cyber-Physical Systems with a Wireless Bus \(Paperback\) Online](#)



[Download PDF Enabling Dependable Communication in Cyber-Physical Systems with a Wireless Bus \(Paperback\)](#)

## Other eBooks

---



### **History of the Town of Sutton Massachusetts from 1704 to 1876 (Paperback)**

Createspace, United States, 2015. Paperback. Book Condition: New. annotated edition. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.This version of the History of the Town of Sutton Massachusetts...

[Download Book »](#)

---



### **The Voyagers Series - Europe: A New Multi-Media Adventure Book 1 (Paperback)**

Strength Through Communications, United States, 2011. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The Voyagers Series is a new multi-media, multi-disciplinary approach to teaching...

[Download Book »](#)

---



### **No Friends?: How to Make Friends Fast and Keep Them (Paperback)**

Createspace, United States, 2014. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Do You Have NO Friends ? Are you tired of not having any...

[Download Book »](#)

---



### **Fart Book African Bean Fart Adventures in the Jungle: Short Stories with Moral (Paperback)**

Createspace, United States, 2013. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Black White Illustration Version! BONUS - Includes FREE Dog Fart Audio Book for...

[Download Book »](#)

---



### **Learn em Good: Improve Your Child s Math Skills: Simple and Effective Ways to Become Your Child s Free Tutor Without Opening a Textbook (Paperback)**

Createspace, United States, 2010. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.From a certified teacher and founder of an online tutoring website-a simple and...

[Download Book »](#)



**Children s Educational Book: Junior Leonardo Da Vinci: An Introduction to the Art, Science and Inventions of This Great Genius. Age 7 8 9 10 Year-Olds. [Us English] (Paperback)**

Createspace, United States, 2013. Paperback. Book Condition: New. 254 x 178 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.ABOUT SMART READS for Kids . Love Art, Love Learning Welcome. Designed to

[Save eBook »](#)

---



**Never Invite an Alligator to Lunch! (Paperback)**

Lucky Me Publishing, LLC, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*. NEVER Invite an Alligator to Lunch! delivers a fun,

[Save eBook »](#)

---



**Two Treatises: The Pearle of the Gospell, and the Pilgrims Profession to Which Is Added a Glasse for Gentlewomen to Dresse Themselves By. by Thomas Taylor Preacher of Gods Word to the Towne of Reding. (1624-1625) (Paperback)**

Proquest, Eebo Editions, United States, 2010. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.EARLY HISTORY OF RELIGION. Imagine holding history in your hands. Now

[Save eBook »](#)

---



**Rose O the River (Illustrated Edition) (Dodo Press) (Paperback)**

Dodo Press, United Kingdom, 2007. Paperback. Book Condition: New. George Wright (illustrator). Illustrated. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.Kate Douglas Wiggin, nee Smith (1856-1923) was an

[Save eBook »](#)

---



**The Clever Detective Boxed Set (a Fairy Tale Romance): Stories 1, 2 and 3 (Paperback)**

Createspace, United States, 2012. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.After six years as a private investigator, Stacey Alexander has the strangest day

[Save eBook »](#)