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## I. Introduction

The usual solution, still considered nowadays, for industrial control and instrumentation systems is based on distributed control systems (DCS). However, after the development of smart sensing and actuating (SSA) devices<sup>[1]–[2]</sup>, new solutions based on instrumentation and control systems interconnected by industrial area networks (IAN)[3]-[4] became a promising alternative to implement new and to update present instrumentation and DCS. In which concerns systems' operation and maintenance, these networks, and associated devices, have a large number of advantages that are well-known and described in the literature [3]. One of the main advantages that is always referred is device interoperability of field bus devices. However, this is a very ambitious objective and the interconnect ambitious objective and the interconnect fieldbus devices from different manufacturers. This circumstance creates additional problems in which concerns instrumentation and control engineering education. There are some commercial solutions for teaching purposes but they are usually very expensive and don't provide an easy integration with conventional instrumentation and control devices that are available in present instrumentation and control laboratories. According to our experience, it is always very important, particularly in this area, to access real data and to simulate and test real system's performance using laboratory prototypes. According to this objective, this paper presents a Foundation Fieldbus (FF) prototype that was developed in our laboratory for teaching purposes.

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