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Automatic Control

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M U L T I C A M P U S

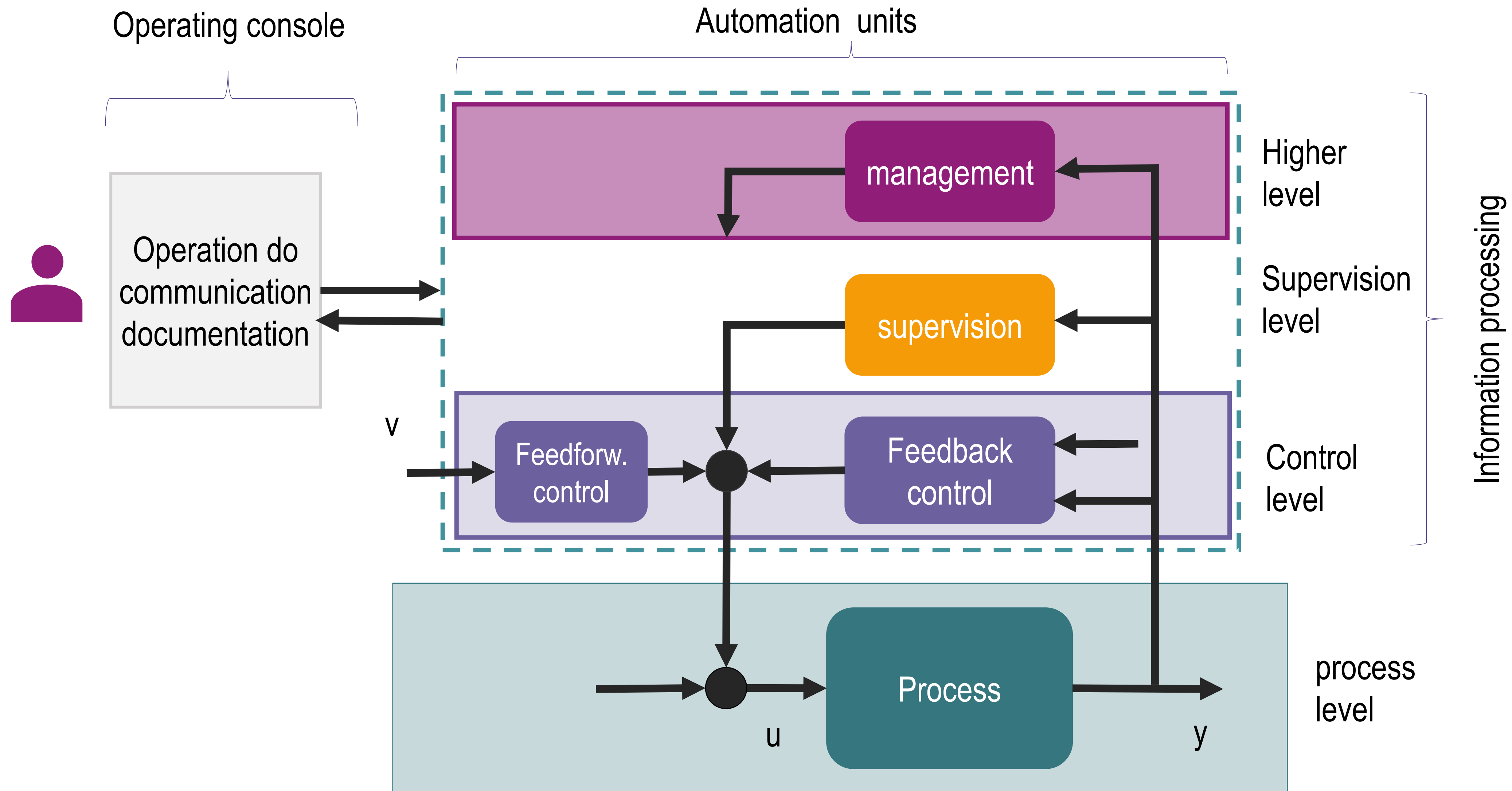
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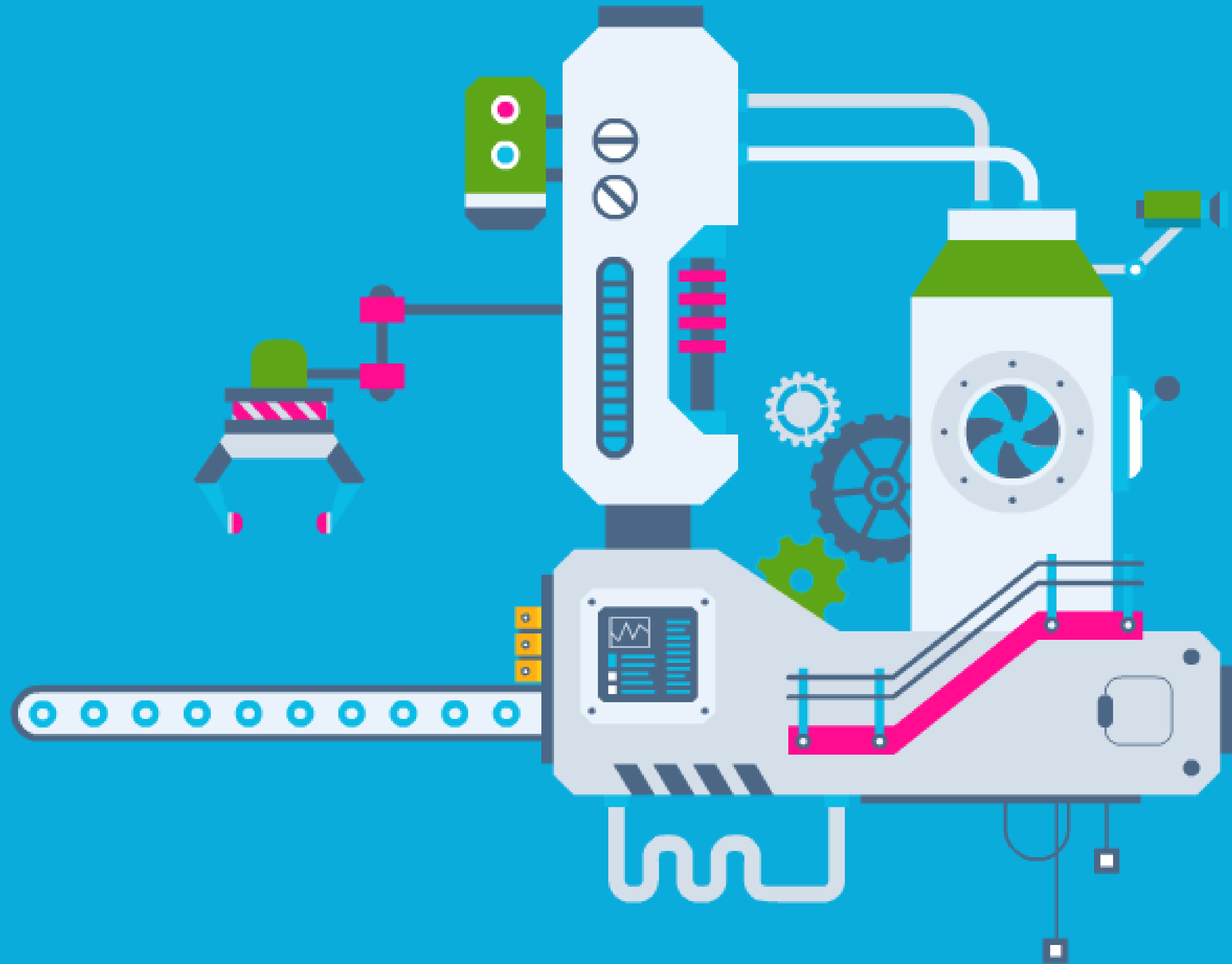
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Liliana Fernández Samacá

INTRODUCTION TO CONTROL SYSTEMS

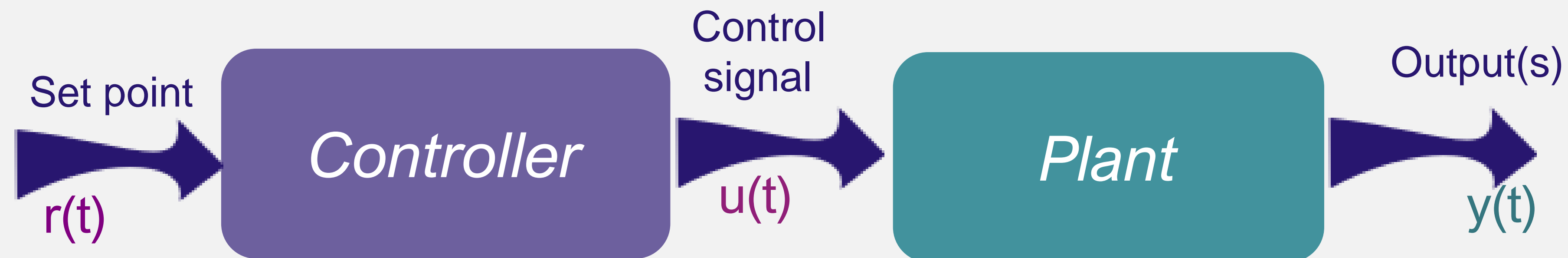
AUTOMATION SCHEME





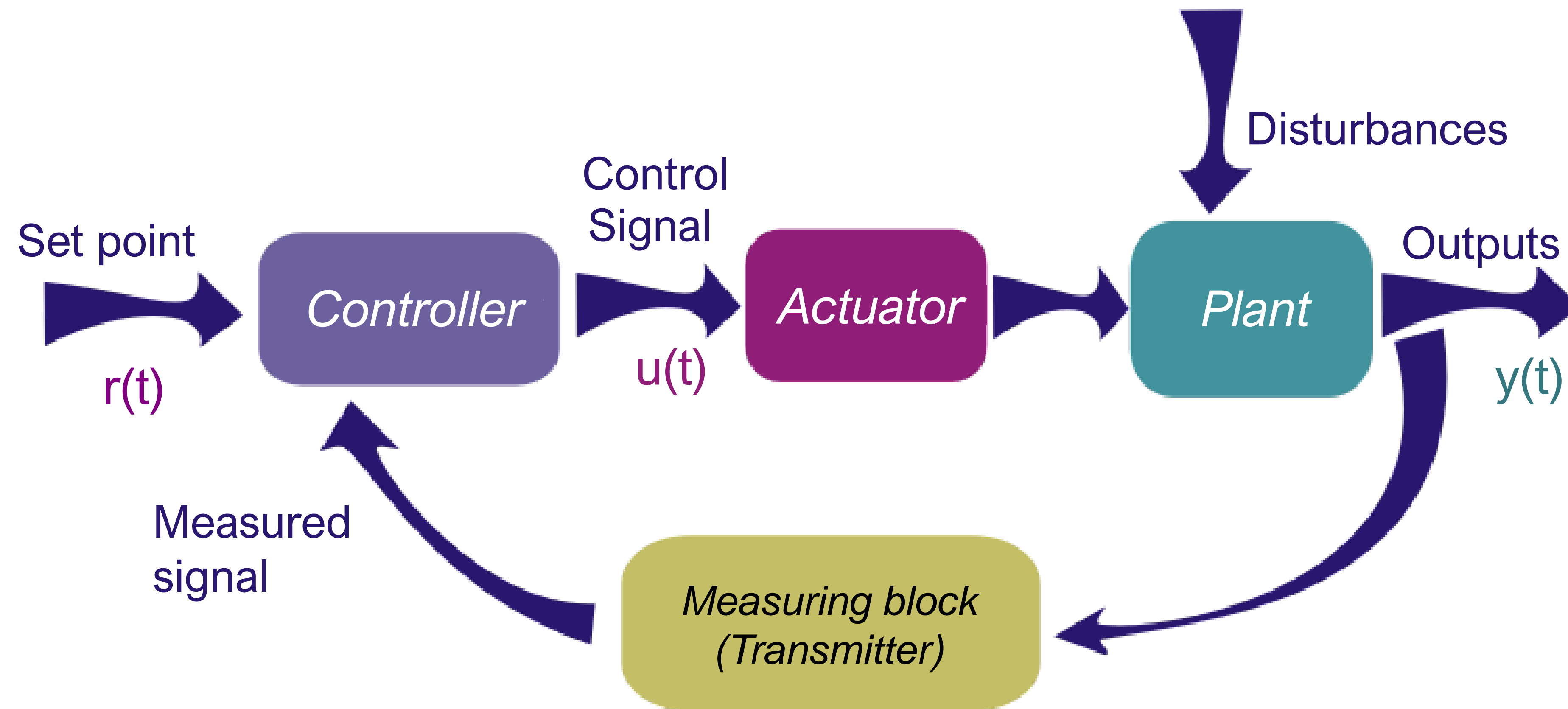
CONTROL SYSTEMS

Control systems are considered in engineering as an interdisciplinary and multidisciplinary area entrusted of modeling and analyzing plants and designing controllers. Controllers act on the input variables of the plant so that the output variables behave according to a pre-established reference

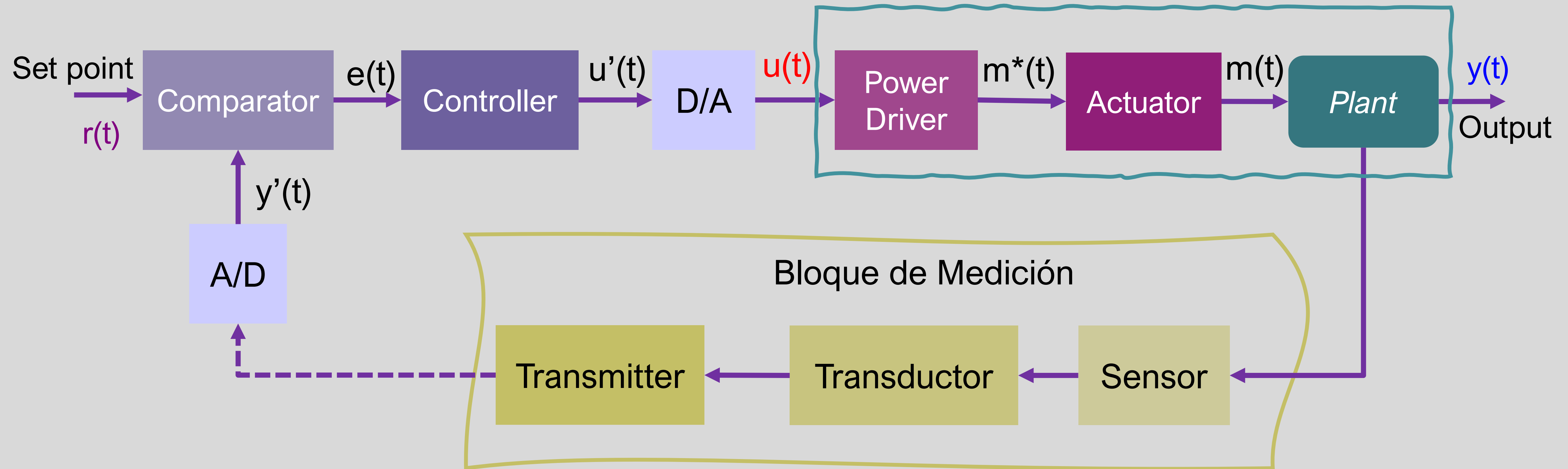


An open-loop system does not use information from the output





A **closed-loop system** uses the output information to correct it through manipulation of the input signals (this operation performed by the controller). Closed-loop control systems are the foundation of automatic control.



Control loop with discrete controller

The Impact of Control Technology — 2nd Edition

This report reviews a number of control technology accomplishments and presents prospects for future opportunities for the field. The material is in the form of 68 two-page full-color flyers, categorized in two sections:

- *Success stories* of deployed products and solutions that have been enabled by advanced control.
- *Research challenges* that outline new opportunities for control technology toward future impact.



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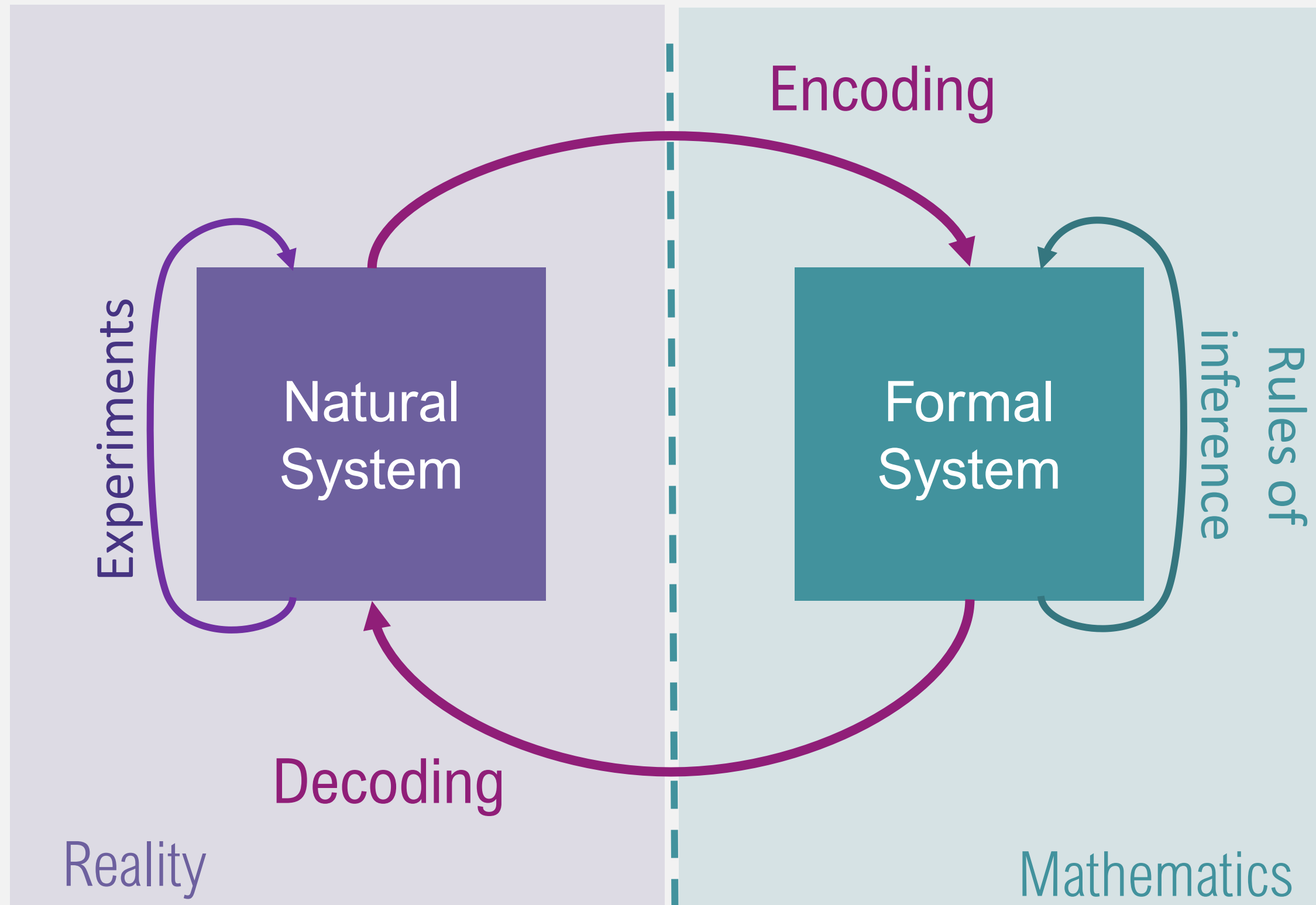
Anuradha Annaswamy
Massachusetts Institute of Technology
United States

<http://ieeecss.org/impact-control-technology-2nd-edition>



System Modelling

It is the process by which a mathematical representation of a system is obtained in order to analyze its behavior



Differential equations

Transfer functions

Block and flow diagrams

State-space representation

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