

## " MVVM design pattern for asynchronous events in information systems "

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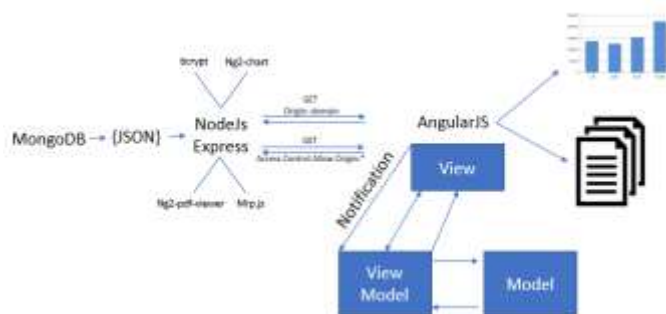
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### Graphical Abstract



### Abstract.

The technological integration of software development components and languages allows the creation of business management platforms that include metrics and standards in data processing[1]. In this work we propose the generation of a scalable and integrable web management application, through the asynchronous use of events and the MVVM development pattern[2,3].

### Introduction

The development of business management software and data management is subject to constant maintenance stages depending on internal or legislative requirements[1], therefore, it is important to consider the scalability property of the web applications[4], the degree of cohesion and coupling of their components, as well as the interoperability methods of their modules and programming languages. The MVVM design pattern[2,3] is adopted for its operational advantages measured through performance and productivity tests. For storage of information, a document-oriented database is used whose queries and use of JSON objects[5-8]. In addition, a component for radial transmission was used.[9,10]

### Materials and Methods

An ApiREST application was developed that combines development languages such as NodeJS, AngularJS, with Mongoose components, ng2-charts[11,12], ng2-pdf-viewer, bcrypt-nodejs, mrp.js[10], adminLTE II, MongoDB with resource exchange through CORS, under the MVVM design pattern, with asynchronous programming events programming model.

## Results and Discussion

SGMD is a Web System of Administrative Management and Data Processing, developed under the design pattern MVVM, of asynchronous events that increases the throughput supported, and integrates, interacts and reuses several JavaScript components of third parties to create a robust software solution that counts with a connection interface for Internet radio broadcasting.

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