

NATIONAL SCHOOL OF GEOGRAPHIC  
SCIENCES



ÉCOLE NATIONALE  
DES SCIENCES  
GÉOGRAPHIQUES

GEOMATICS AND INFORMATION SYSTEMS  
TECHNOLOGY

---

# Architectural Patterns

ex MapReduce

---

*Author:*

Mohamed Amjad  
LASRI

*Supervisor:*

Emmanuel BARDIERE

November 23, 2014

## Abstract

Architectural patterns provide reusable solutions for common architectural problems. Patterns usually don't contain code that you can cut and paste; instead, they contain architectural and design information that you build into your solution. Nowadays we define architectural patterns sub-domains adapted, more or less, to each type of situations. In this documentary research project we present what architectural patterns are, How are they integrated into an information system project? We also provide

## Acknowledgements

Thanks Mum!

## License

Copyright (C) 2014 Mohamed Amjad LASRI. Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.3 or any later version published by the Free Software Foundation; with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts. A copy of the license is included in the section entitled "GNU Free Documentation License".

# 1 Introduction

Your introduction goes here! Some examples of commonly used commands and features are listed below, to help you get started.

If you have a question, please use the support box in the bottom right of the screen to get in touch.

# 2 Some L<sup>A</sup>T<sub>E</sub>X Examples

## 2.1 Sections

Use section and subsection commands to organize your document. L<sup>A</sup>T<sub>E</sub>X handles all the formatting and numbering automatically. Use ref and label commands for cross-references.



ÉCOLE NATIONALE  
DES SCIENCES  
GÉOGRAPHIQUES

Figure 1: This is a figure caption.

Item	Quantity
Widgets	42
Gadgets	13

Table 1: An example table.

## 2.2 Comments

Comments can be added to the margins of the document using the `todo` command, as shown in the example on the right. You can also add inline comments too:

This is an inline comment.

Here's  
a com-  
ment  
in the  
mar-  
gin!

## 2.3 Tables and Figures

Use the `table` and `tabular` commands for basic tables — see Table 1, for example. You can upload a figure (JPEG, PNG or PDF) using the files menu. To include it in your document, use the `includegraphics` command as in the code for Figure 1 below.

## 2.4 Mathematics

L<sup>A</sup>T<sub>E</sub>X is great at typesetting mathematics. Let  $X_1, X_2, \dots, X_n$  be a sequence of independent and identically distributed random variables with  $E[X_i] = \mu$  and  $\text{Var}[X_i] = \sigma^2 < \infty$ , and let

$$S_n = \frac{X_1 + X_2 + \dots + X_n}{n} = \frac{1}{n} \sum_i^n X_i$$

denote their mean. Then as  $n$  approaches infinity, the random variables  $\sqrt{n}(S_n - \mu)$  converge in distribution to a normal  $\mathcal{N}(0, \sigma^2)$ .

## 2.5 Lists

You can make lists with automatic numbering ...

1. Like this,
2. and like this.

...or bullet points ...

- Like this,
- and like this.

We hope you find writeL<sup>A</sup>T<sub>E</sub>X useful, and please let us know if you have any feedback using the help menu above.