Etude pour la mise en place d'un système d'information routier au Cameroun : Enjeux et perspective

Cahier Des Charges

République du Cameroun
Paix - Travail - Patrie
Ministère de l'enseignement supérieur
Université de Yaoundé I
Faculté des Sciences
Département d'Informatique
Master Système d'Information et Génie Logiciel
Niveau 5

Republic of Cameroon
Peace - Work - Fatherland
Ministry of high school
University of Yaounde I
Faculty of Sciences
Department of Computer Sciences
Master Information System and Software Engineering
Level 5

MOKEM MOKEM TAMO Harold, NOLABIA KIASSAMBA William

Supervisé par: Prof. ATSA ETOUNDI Roger

Faculté des sciences
Université de Yaoundé I

Master Systèmes d'Information et Génie Logiciel

May 2016

Nous dédions ce travail à... ...

Declaration

Je déclare que, sauf lorsqu'il est fait référence spécifique au travail des autres, le contenu de cette thèse sont originaux et ne sont pas soumis, en tout ou en partie à l'examen de tout autre diplôme ou une qualification dans ce domaine, ou toute autre université. Cette thèse est mon propre travail et ne contient rien qui est le résultat du travail effectué en collaboration avec d'autres, sauf comme indiqué dans le texte et remerciements. Cette Thèse mémoire contient moins de 65.000 mots, y compris les annexes, bibliographie, notes, tableaux et équations et a moins de 150 chiffres.

<div align="right">

MOKEM MOKEM TAMO Harold, NOLABIA KIASSAMBA William

May 2016

</div>

Remerciements

Abstract

Table of contents

List of figures

List of tables

1

I. Présentation du projet

Le projet sur la mise en place d'un système d'information routier au Cameroun consiste à regrouper dans sa gestion, les structures et services ci-après :

1. Ministère des transports public

2. Ministère des travaux public

3. CONAROUTE

4. Le péage routier

5. Pesage routier

6. Le fonds routier

7. Contrôle et surveillance routier

8. Cartographie routière

9. Etc...

A la fin de ce projet il sera question d'avoir des données de manière unique, exploitable par tous, pour une bonne gestion du patrimoine routier.

2

Etude de l'existant

Dans cette rubrique il est question de faire un état des lieux en matière de gestion d'éléments constitutifs du système routier en ce moment, De voire les différents travaux déjà réalisé, les différents organes publics et privé interagissant pour la gestion globale du patrimoine routier en matière de normalisation et de production de données. Comme structure recensé et agissant dans la gestion du patrimoine routier nous avons :

1. Ministère des transports

2. Ministères des finances

3. Ministère des travaux publics

4. Ministère de la Planification, de la Programmation du développement et de l'Aménagement du Territoire

5. ministère du Développement Urbain et de l'Habitat

6. La gendarmerie

7. La police

8. L'institut de la cartographie

9. CONAROUTE

10. Fonds routier

11. Etc...

Toutes ces entités participent à la mise en place des solutions de gestion, de l'ensemble du patrimoine routier sur le plan de la normalisation, de l'amélioration et de la sécurité.

2.1 Présentation des différents acteurs du secteur routier au Cameroun

Le dispositif institutionnel de l'Etat du Cameroun prévoit, outre le Premier Ministère, sept départements ministériels charges de la planification, la programmation, la construction, l'entretien et le financement des infrastructures routières nationales. Il s'agit des ministères en charge des Transports (MINT), de la Planification, de la Programmation du développement et de l'Aménagement du Territoire (MINPLADAT), des Travaux Publics (MINTP), de l'Administration Territoriale et de la Décentralisation (MINATD), du Développement Urbain et de l'Habitat (MINDUH), et des Finances (MINFI).

- Le Ministère des Transports.

Il est responsable du développement, coordonne tous les modes de transports. Il assume les missions suivantes relatives au secteur routier : L'organisation et le fonctionnement des transports routiers ; La coordination des transports routiers ; Le suivi de la mise en œuvre et l'exécution du plan sectoriel des transports ;

- Le Ministère des Travaux Publics (MINTP)

L'organisation du Ministère des Travaux Publics est chargée de l'entretien et de la protection du patrimoine routier. A ce titre, il assume les missions suivantes relatives au secteur routier :

- il effectue toutes études nécessaires à l'adaptation aux écosystèmes locaux de Ces infrastructures en liaison avec le Ministère charge de la Recherche Scientifique, les Institutions de recherche ou d'enseigne ment et de tout autre Organisme compétent ;
- il apporte son concours à la construction et à l'entretien des routes, y compris les voiries urbaines, en liaison avec les départements ministériels et organismes compétents, du Parc National de Matériel de Génie Civil (MATGENIE) et du Laboratoire National de Génie Civil (LABOGENIE).

Les objectifs généraux qui découlent de ces missions sont :

- Développer et maitriser la gestion du réseau routier national ;
- Renforcer la protection du patrimoine routier national ;
- Assurer la maitrise d'œuvre des voiries urbaines ;
- Assurer le désenclavement de tout le territoire national.

Pour l'activité routière, le Ministère des Travaux Publics est organisé autour de trois Directions : une Direction des Routes devenue Direction des Investissements et de l'Entretien Routier (en charge des activités de programmation, de préparation et de suivi de la réalisation des opérations de création, d'aménagement, de réhabilitation et d'entretien des routes), une Direction des routes rurales et une Direction des Affaires Générales (en charge de la préparation et de l'exécution du budget). La Direction des Routes comporte les 8 sous directions et cellules suivantes :

- – Une Cellule de la Programmation
- – une Sous-Direction des Investissements Routiers
- – 3 Sous Directions de l'Entretien Routier (réseaux Nord, Sud et Ouest)
- – Une Cellule des Projets de la Banque Africaine de Développement
- – Une Cellule des Normes et de la Protection du Patrimoine Routier

- Le Ministère des Finances (MINFI)

Il assume les responsabilités suivantes relatives au secteur routier :

- – Il assure la tutelle du Fonds Routier. Le Fonds Routier a été institué par la Loi n°96/07 du 08 avril 1996 portant protection du patri moine routier national, modifiée et complétée par la Loi n°004/02 du 22 juillet 2004. Un décret présidentiel du 26 aout 1998 fixe ses modalités de fonctionne ment et lui attribue les missions essentielles de suivre les opérations de collecte des ressources, sécuriser les fonds mobilises, contrôler la régularité des contrats et l'éligibilité des dépenses, exécuter rapide ment les paiements. Il s'assure aussi de l'effectivité des travaux d'entretien routier, des prestations de prévention et de sécurité routières, ainsi que la protection du patri moine routier national. Dès l'application de la Loi des Finances de l'exercice 1998/1999, les principales ressources du Fonds Routier Proviennent de la redevance d'usage de la route (RUR), du péage routier, du pesage routier, des produits des amendes liées à l'usage de la route, des dons et subventions divers.

- Le Plan Directeur Routier Camerounais

Dans le cadre de la pérennisation de ces actions, le Gouvernement a entrepris avec l'appui des partenaires au développement notamment l'Union Européenne, de mars 2003 à février 2006, la réalisation d'une étude du Plan Directeur Routier (PDR). Le PDR, qui apparait

Table 2.1 Base de la nouvelle classification des routes

	FONCTIONS DU RESEAU NAT1ONAL
F1	Liaison internationale
F2	Liaison CEMAC, transafricaine ou retenue au Plan Consensuel CEA-AC
F3	Liaison entre la capitale et les chefs-lieux de province ou entre deux chefs-lieux de province ou desservant un centre inter modal
F4	Autre route d'importance nationale ou stratégique ou de contourne ment d'agglomération urbaine
F5	Liaison a une grande pale d'internat national (industriel, touristique etc.)
	FONCTIONS DU RESEAU PROVINCIAL
F6	Liaison transfrontalière d'intérêt provincial
F7	Liaison entre chefs-lieux de province et chefs-lieux de départe ment ou à une route nationale
F8	Liaison entre deux chefs-lieux de départe ment ou interprovinciale
F9	Liaison a une pale d'intérêt provincial
	FONCTIONS DU RESEAU DEPARTEMENTAL
F10	Liaison entre chefs-lieux de départe ment, chefs-lieux d'arrondisse ment a autres unités administratives ou à une route nationale ou assurant la continuité du réseau
F11	Liaison entre deux chefs-lieux d'arrondisse ment ou interdépartementales
F12	Liaison a une pale d'intérêt départe mental
	FONCTIONS DU RESEAU RURAL
F13	Desserte des villages, communautés locales, unités de productions, plantations

comme un outil moderne d'aide à la décision pour une gestion toujours plus efficace des ressources affectées au réseau routier. Suivant les termes de référence, les résultats obtenus portent sur :

(a) une nouvelle classification et hiérarchisation du réseau routier ;

(b) une projection de ressources financières à affecter aux routes pour les 20 ans à venir, selon trois scenarii de développement et ;

(c) la préparation, en fonction des prévisions de la demande de transport et des ressources financières, d'un Programme d'intervention sur 20 ans (2006-2025) sur le réseau routier, pour chaque scenario.

Le Plan Directeur Routier, avec la stratégie sectorielle du Bâtiment et Travaux Publics (BTP) élaborée en juin 2005, apporte au Ministère des Travaux Publics un ensemble articule et homogène d'instruments pour orienter le développement à moyen et long termes du secteur du BTP. Les bases de la nouvelle classification faites en tenant compte du contexte actuel du pays, sont les suivantes :

3

My third chapter

3.1 First section of the third chapter

And now I begin my third chapter here . . .

And now to cite some more people **? ?**]

3.1.1 First subsection in the first section

. . . and some more

3.1.2 Second subsection in the first section

. . . and some more . . .

First subsub section in the second subsection

. . . and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it . . .

3.1.3 Third subsection in the first section

. . . and some more . . .

First subsub section in the third subsection

. . . and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it and some more and some more and some more and some more and some more and some more and some more . . .

Second subsub section in the third subsection

...and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it ...

3.2 Second section of the third chapter

and here I write more ...

3.3 The layout of formal tables

This section has been modified from "Publication quality tables in LaTeX*" by Simon Fear.

The layout of a table has been established over centuries of experience and should only be altered in extraordinary circumstances.

When formatting a table, remember two simple guidelines at all times:

1. Never, ever use vertical rules (lines).

2. Never use double rules.

These guidelines may seem extreme but I have never found a good argument in favour of breaking them. For example, if you feel that the information in the left half of a table is so different from that on the right that it needs to be separated by a vertical line, then you should use two tables instead. Not everyone follows the second guideline:

There are three further guidelines worth mentioning here as they are generally not known outside the circle of professional typesetters and subeditors:

3. Put the units in the column heading (not in the body of the table).

4. Always precede a decimal point by a digit; thus 0.1 *not* just .1.

5. Do not use 'ditto' signs or any other such convention to repeat a previous value. In many circumstances a blank will serve just as well. If it won't, then repeat the value.

A frequently seen mistake is to use '\begin{center}' ... '\end{center}' inside a figure or table environment. This center environment can cause additional vertical space. If you want to avoid that just use '\centering'

Table 3.1 A badly formatted table

	Species I		Species II	
Dental measurement	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 3.2 A nice looking table

	Species I		Species II	
Dental measurement	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 3.3 Even better looking table using booktabs

	Species I		Species II	
Dental measurement	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

4

I. Présentation du projet

Le projet sur la mise en place d'un système d'information routier au Cameroun consiste à regrouper dans sa gestion, les structures et services ci-après :

1. Ministère des transports public

2. Ministère des travaux public

3. CONAROUTE

4. Le péage routier

5. Pesage routier

6. Le fonds routier

7. Contrôle et surveillance routier

8. Cartographie routière

9. Etc...

A la fin de ce projet il sera question d'avoir des données de manière unique, exploitable par tous, pour une bonne gestion du patrimoine routier.

A *LaTeX class file* is a file, which holds style information for a particular LaTeX.

$$CIF: \quad F_0^j(a) = \frac{1}{2\pi\iota} \oint_\gamma \frac{F_0^j(z)}{z-a} dz \tag{4.1}$$

****

4.1 Why do we use loren ipsum?

It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content here', making it look like readable English. Many desktop publishing packages and web page editors now use Lorem Ipsum as their default model text, and a search for 'lorem ipsum' will uncover many web sites still in their infancy. Various versions have evolved over the years, sometimes by accident, sometimes on purpose (injected humour and the like).

****

4.2 Where does it come from?

Contrary to popular belief, Lorem Ipsum is not simply random text. It has roots in a piece of classical Latin literature from 45 BC, making it over 2000 years old. Richard McClintock, a Latin professor at Hampden-Sydney College in Virginia, looked up one of the more obscure Latin words, consectetur, from a Lorem Ipsum passage, and going through the cites of the word in classical literature, discovered the undoubtable source. Lorem Ipsum comes from sections 1.10.32 and 1.10.33 of "de Finibus Bonorum et Malorum" (The Extremes of Good and Evil) by Cicero, written in 45 BC. This book is a treatise on the theory of ethics, very popular during the Renaissance. The first line of Lorem Ipsum, "Lorem ipsum dolor sit amet..", comes from a line in section 1.10.32.

The standard chunk of Lorem Ipsum used since the 1500s is reproduced below for those interested. Sections 1.10.32 and 1.10.33 from "de Finibus Bonorum et Malorum" by Cicero are also reproduced in their exact original form, accompanied by English versions from the 1914 translation by H. Rackham

"Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum."

Section 1.10.32 of "de Finibus Bonorum et Malorum", written by Cicero in 45 BC: "Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo. Nemo enim ipsam voluptatem quia voluptas sit aspernatur aut odit aut fugit, sed quia consequuntur magni dolores eos qui ratione voluptatem sequi

nesciunt. Neque porro quisquam est, qui dolorem ipsum quia dolor sit amet, consectetur, adipisci velit, sed quia non numquam eius modi tempora incidunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim ad minima veniam, quis nostrum exercitationem ullam corporis suscipit laboriosam, nisi ut aliquid ex ea commodi consequatur? Quis autem vel eum iure reprehenderit qui in ea voluptate velit esse quam nihil molestiae consequatur, vel illum qui dolorem eum fugiat quo voluptas nulla pariatur?"

1914 translation by H. Rackham: "But I must explain to you how all this mistaken idea of denouncing pleasure and praising pain was born and I will give you a complete account of the system, and expound the actual teachings of the great explorer of the truth, the master-builder of human happiness. No one rejects, dislikes, or avoids pleasure itself, because it is pleasure, but because those who do not know how to pursue pleasure rationally encounter consequences that are extremely painful. Nor again is there anyone who loves or pursues or desires to obtain pain of itself, because it is pain, but because occasionally circumstances occur in which toil and pain can procure him some great pleasure. To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it? But who has any right to find fault with a man who chooses to enjoy a pleasure that has no annoying consequences, or one who avoids a pain that produces no resultant pleasure?"

Section 1.10.33 of "de Finibus Bonorum et Malorum", written by Cicero in 45 BC: "At vero eos et accusamus et iusto odio dignissimos ducimus qui blanditiis praesentium voluptatum deleniti atque corrupti quos dolores et quas molestias excepturi sint occaecati cupiditate non provident, similique sunt in culpa qui officia deserunt mollitia animi, id est laborum et dolorum fuga. Et harum quidem rerum facilis est et expedita distinctio. Nam libero tempore, cum soluta nobis est eligendi optio cumque nihil impedit quo minus id quod maxime placeat facere possimus, omnis voluptas assumenda est, omnis dolor repellendus. Temporibus autem quibusdam et aut officiis debitis aut rerum necessitatibus saepe eveniet ut et voluptates repudiandae sint et molestiae non recusandae. Itaque earum rerum hic tenetur a sapiente delectus, ut aut reiciendis voluptatibus maiores alias consequatur aut perferendis doloribus asperiores repellat."

1914 translation by H. Rackham: "On the other hand, we denounce with righteous indignation and dislike men who are so beguiled and demoralized by the charms of pleasure of the moment, so blinded by desire, that they cannot foresee the pain and trouble that are bound to ensue; and equal blame belongs to those who fail in their duty through weakness of will, which is the same as saying through shrinking from toil and pain. These cases are perfectly simple and easy to distinguish. In a free hour, when our power of choice is untrammelled and when nothing prevents our being able to do what we like best, every

pleasure is to be welcomed and every pain avoided. But in certain circumstances and owing to the claims of duty or the obligations of business it will frequently occur that pleasures have to be repudiated and annoyances accepted. The wise man therefore always holds in these matters to this principle of selection: he rejects pleasures to secure other greater pleasures, or else he endures pains to avoid worse pains."

5

My second chapter

5.1 Reasonably long section title

I'm going to randomly include a picture Figure 5.1.

If you have trouble viewing this document contact Krishna at: kks32@cam.ac.uk or raise an issue at https://github.com/kks32/phd-thesis-template/

Enumeration

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed vitae laoreet lectus. Donec lacus quam, malesuada ut erat vel, consectetur eleifend tellus. Aliquam non feugiat lacus. Interdum et malesuada fames ac ante ipsum primis in faucibus. Quisque a dolor sit amet dui malesuada malesuada id ac metus. Phasellus posuere egestas mauris, sed porta arcu vulputate ut. Donec arcu erat, ultrices et nisl ut, ultricies facilisis urna. Quisque iaculis, lorem non maximus pretium, dui eros auctor quam, sed sodales libero felis vel orci. Aliquam neque nunc, elementum id accumsan eu, varius eu enim. Aliquam blandit ante et ligula tempor pharetra. Donec molestie porttitor commodo. Integer rutrum turpis ac erat tristique cursus. Sed venenatis urna vel tempus venenatis. Nam eu rhoncus eros, et condimentum elit. Quisque risus turpis, aliquam eget euismod id, gravida in odio. Nunc elementum nibh risus, ut faucibus mauris molestie eu. Vivamus quis nunc nec nisl vulputate fringilla. Duis tempus libero ac justo laoreet tincidunt. Fusce sagittis gravida magna, pharetra venenatis mauris semper at. Nullam eleifend felis a elementum sagittis. In vel turpis eu metus euismod tempus eget sit amet tortor. Donec eu rhoncus libero, quis iaculis lectus. Aliquam erat volutpat. Proin id ullamcorper tortor. Fusce vestibulum a enim non volutpat. Nam ut interdum nulla. Proin lacinia felis malesuada arcu aliquet fringilla. Aliquam condimentum, tellus eget maximus
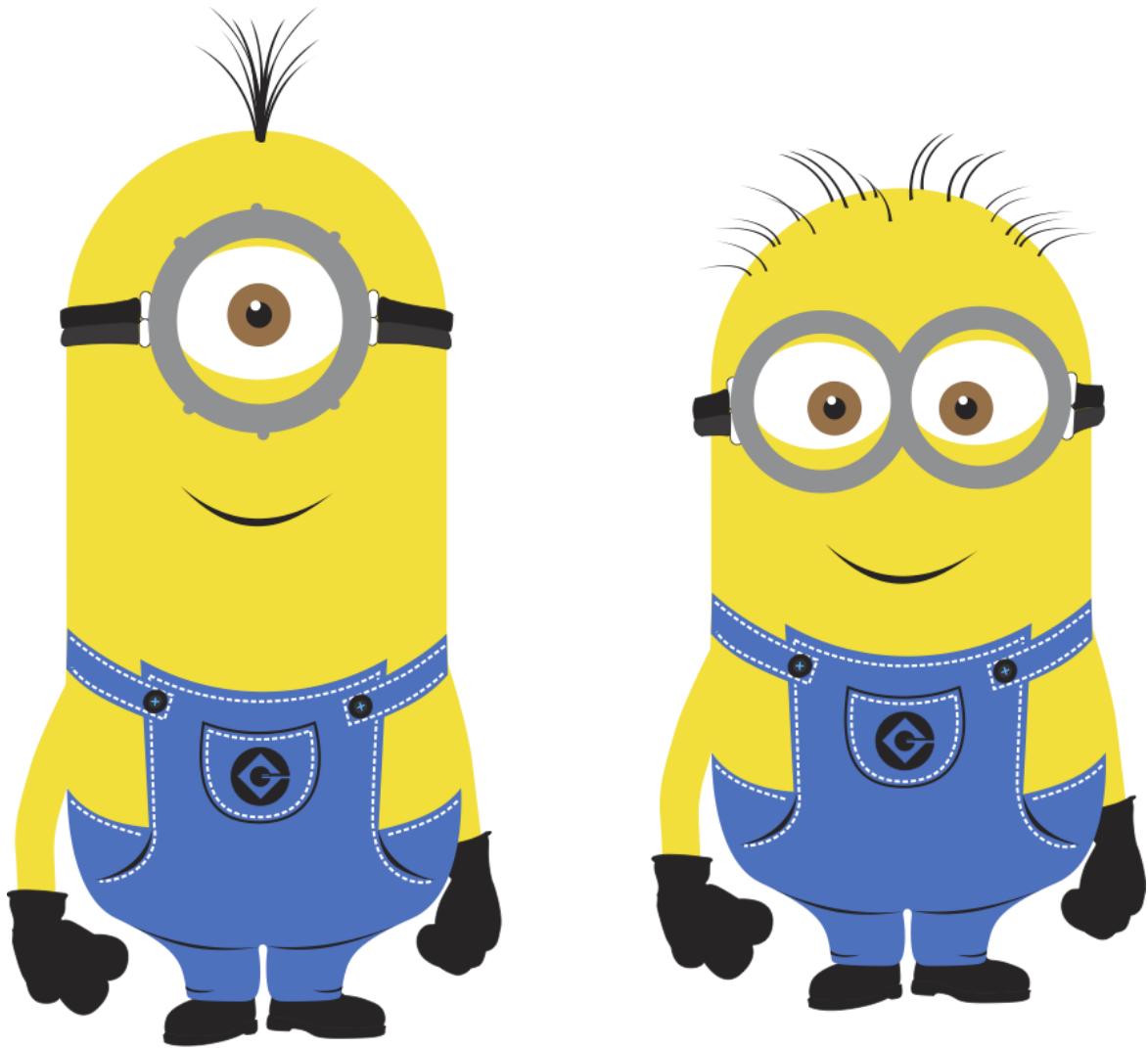
Fig. 5.1 This is just a long figure caption for the minion in Despicable Me from Pixar

porttitor, quam sem luctus massa, eu fermentum arcu diam ac massa. Praesent ut quam id leo molestie rhoncus. Praesent nec odio eget turpis bibendum eleifend non sit amet mi. Curabitur placerat finibus velit, eu ultricies risus imperdiet ut. Suspendisse lorem orci, luctus porta eros a, commodo maximus nisi.

Nunc et dolor diam. Phasellus eu justo vitae diam vehicula tristique. Vestibulum vulputate cursus turpis nec commodo. Etiam elementum sit amet erat et pellentesque. In eu augue sed tortor mollis tincidunt. Mauris eros dui, sagittis vestibulum vestibulum vitae, molestie a velit. Donec non felis ut velit aliquam convallis sit amet sit amet velit. Aliquam vulputate, elit in lacinia lacinia, odio lacus consectetur quam, sit amet facilisis mi justo id magna. Curabitur aliquet pulvinar eros. Cras metus enim, tristique ut magna a, interdum egestas nibh. Aenean lorem odio, varius a sollicitudin non, cursus a odio. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia Curae;

1. The first topic is dull

2. The second topic is duller

    (a) The first subtopic is silly

    (b) The second subtopic is stupid

3. The third topic is the dullest

Morbi bibendum est aliquam, hendrerit dolor ac, pretium sem. Nunc molestie, dui in euismod finibus, nunc enim viverra enim, eu mattis mi metus id libero. Cras sed accumsan justo, ut volutpat ipsum. Nam faucibus auctor molestie. Morbi sit amet eros a justo pretium aliquet. Maecenas tempor risus sit amet tincidunt tincidunt. Curabitur dapibus gravida gravida. Vivamus porta ullamcorper nisi eu molestie. Ut pretium nisl eu facilisis tempor. Nulla rutrum tincidunt justo, id placerat lacus laoreet et. Sed cursus lobortis vehicula. Donec sed tortor et est cursus pellentesque sit amet sed velit. Proin efficitur posuere felis, porta auctor nunc. Etiam non porta risus. Pellentesque lacinia eros at ante iaculis, sed aliquet ipsum volutpat. Suspendisse potenti.

Ut ultrices lectus sed sagittis varius. Nulla facilisi. Nullam tortor sem, placerat nec condimentum eu, tristique eget ex. Nullam pretium tellus ut nibh accumsan elementum. Aliquam posuere gravida tellus, id imperdiet nulla rutrum imperdiet. Nulla pretium ullamcorper quam, non iaculis orci consectetur eget. Curabitur non laoreet nisl. Maecenas lacinia, lorem vel tincidunt cursus, odio lorem aliquet est, gravida auctor arcu urna id enim. Morbi accumsan bibendum ipsum, ut maximus dui placerat vitae. Nullam pretium ac tortor nec venenatis. Nunc non aliquet neque.

Itemize

- The first topic is dull

- The second topic is duller

    - The first subtopic is silly

    - The second subtopic is stupid

- The third topic is the dullest

Description

The first topic is dull

The second topic is duller

    The first subtopic is silly

    The second subtopic is stupid

The third topic is the dullest

5.2   Hidden section

Lorem ipsum dolor sit amet, *consectetur adipiscing elit*. In magna nisi, aliquam id blandit id, congue ac est. Fusce porta consequat leo. Proin feugiat at felis vel consectetur. Ut tempus ipsum sit amet congue posuere. Nulla varius rutrum quam. Donec sed purus luctus, faucibus velit id, ultrices sapien. Cras diam purus, tincidunt eget tristique ut, egestas quis nulla. Curabitur vel iaculis lectus. Nunc nulla urna, ultrices et eleifend in, accumsan ut erat. In ut ante leo. Aenean a lacinia nisl, sit amet ullamcorper dolor. Maecenas blandit, tortor ut scelerisque congue, velit diam volutpat metus, sed vestibulum eros justo ut nulla. Etiam nec ipsum non enim luctus porta in in massa. Cras arcu urna, malesuada ut tellus ut, pellentesque mollis risus.Morbi vel tortor imperdiet arcu auctor mattis sit amet eu nisi. Nulla gravida urna vel nisl egestas varius. Aliquam posuere ante quis malesuada dignissim. Mauris ultrices tristique eros, a dignissim nisl iaculis nec. Praesent dapibus tincidunt mauris nec tempor. Curabitur et consequat nisi. Quisque viverra egestas risus, ut sodales enim blandit at. Mauris quis odio nulla. Cras euismod turpis magna, in facilisis diam congue non. Mauris faucibus nisl a orci dictum, et tempus mi cursus.

Etiam elementum tristique lacus, sit amet eleifend nibh eleifend sed [1]. Maecenas dapibu augue ut urna malesuada, non tempor nibh mollis. Donec sed sem sollicitudin, convallis velit aliquam, tincidunt diam. In eu venenatis lorem. Aliquam non augue porttitor tellus faucibus porta et nec ante. Proin sodales, libero vitae commodo sodales, dolor nisi cursus magna, non tincidunt ipsum nibh eget purus. Nam rutrum tincidunt arcu, tincidunt vulputate mi sagittis id. Proin et nisi nec orci tincidunt auctor et porta elit. Praesent eu dolor ac magna cursus euismod. Integer non dictum nunc.

---

[1]My footnote goes blah blah blah! . . .

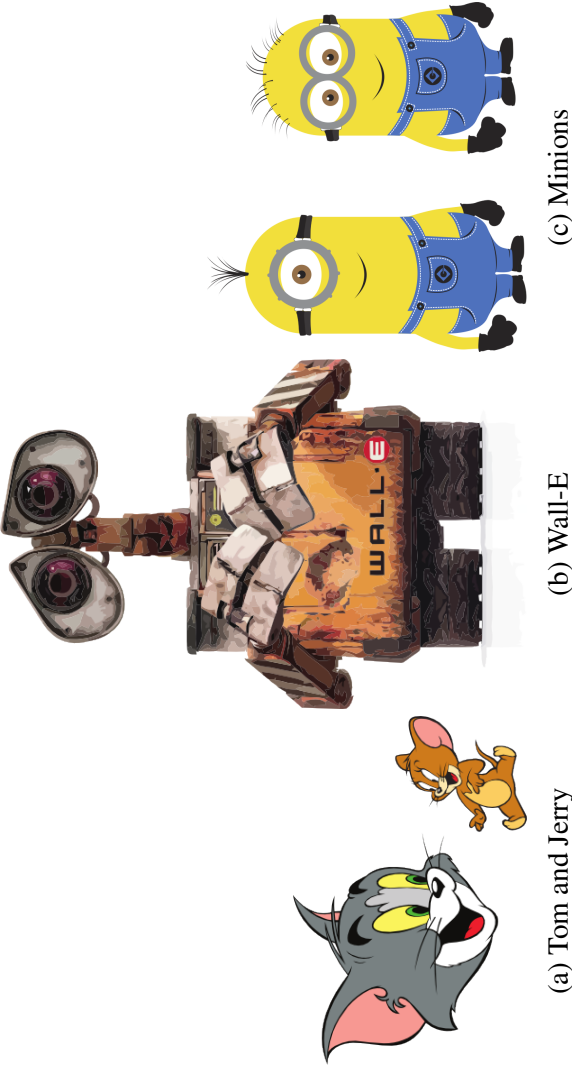(a) Tom and Jerry   (b) Wall-E   (c) Minions

Fig. 5.2 Best Animations

Subplots

I can cite Wall-E (see Fig. 5.2b) and Minions in despicable me (Fig. 5.2c) or I can cite the whole figure as Fig. 5.2

6

My third chapter

6.1 First section of the third chapter

And now I begin my third chapter here . . .

And now to cite some more people **? ?**]

6.1.1 First subsection in the first section

. . . and some more

6.1.2 Second subsection in the first section

. . . and some more . . .

First subsub section in the second subsection

. . . and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it . . .

6.1.3 Third subsection in the first section

. . . and some more . . .

First subsub section in the third subsection

. . . and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it and some more and some more and some more and some more and some more and some more and some more . . .

Second subsub section in the third subsection

. . . and some more in the first subsub section otherwise it all looks the same doesn't it? well we can add some text to it . . .

6.2 Second section of the third chapter

and here I write more . . .

6.3 The layout of formal tables

This section has been modified from "Publication quality tables in LATEX*" by Simon Fear.

The layout of a table has been established over centuries of experience and should only be altered in extraordinary circumstances.

When formatting a table, remember two simple guidelines at all times:

1. Never, ever use vertical rules (lines).

2. Never use double rules.

These guidelines may seem extreme but I have never found a good argument in favour of breaking them. For example, if you feel that the information in the left half of a table is so different from that on the right that it needs to be separated by a vertical line, then you should use two tables instead. Not everyone follows the second guideline:

There are three further guidelines worth mentioning here as they are generally not known outside the circle of professional typesetters and subeditors:

3. Put the units in the column heading (not in the body of the table).

4. Always precede a decimal point by a digit; thus 0.1 *not* just .1.

5. Do not use 'ditto' signs or any other such convention to repeat a previous value. In many circumstances a blank will serve just as well. If it won't, then repeat the value.

A frequently seen mistake is to use '\begin{center}' . . . '\end{center}' inside a figure or table environment. This center environment can cause additional vertical space. If you want to avoid that just use '\centering'

Table 6.1 A badly formatted table

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 6.2 A nice looking table

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Table 6.3 Even better looking table using booktabs

Dental measurement	Species I		Species II	
	mean	SD	mean	SD
I1MD	6.23	0.91	5.2	0.7
I1LL	7.48	0.56	8.7	0.71
I2MD	3.99	0.63	4.22	0.54
I2LL	6.81	0.02	6.66	0.01
CMD	13.47	0.09	10.55	0.05
CBL	11.88	0.05	13.11	0.04

Appendix A

How to install LATEX

Windows OS

TeXLive package - full version

1. Download the TeXLive ISO (2.2GB) from
   https://www.tug.org/texlive/

2. Download WinCDEmu (if you don't have a virtual drive) from
   http://wincdemu.sysprogs.org/download/

3. To install Windows CD Emulator follow the instructions at
   http://wincdemu.sysprogs.org/tutorials/install/

4. Right click the iso and mount it using the WinCDEmu as shown in
   http://wincdemu.sysprogs.org/tutorials/mount/

5. Open your virtual drive and run setup.pl

or

Basic MikTeX - TeX distribution

1. Download Basic-MiKTeX(32bit or 64bit) from
   http://miktex.org/download

2. Run the installer

3. To add a new package go to Start » All Programs » MikTex » Maintenance (Admin)
   and choose Package Manager

4. Select or search for packages to install

TexStudio - T_EX editor

1. Download TexStudio from
   http://texstudio.sourceforge.net/#downloads

2. Run the installer

Mac OS X

MacTeX - T_EX distribution

1. Download the file from
   https://www.tug.org/mactex/

2. Extract and double click to run the installer. It does the entire configuration, sit back
   and relax.

TexStudio - T_EX editor

1. Download TexStudio from
   http://texstudio.sourceforge.net/#downloads

2. Extract and Start

Unix/Linux

TeXLive - T_EX distribution

Getting the distribution:

1. TexLive can be downloaded from
   http://www.tug.org/texlive/acquire-netinstall.html.

2. TexLive is provided by most operating system you can use (rpm,apt-get or yum) to get
   TexLive distributions

Installation

1. Mount the ISO file in the mnt directory

   ```
   mount -t iso9660 -o ro,loop,noauto /your/texlive####.iso /mnt
   ```

2. Install wget on your OS (use rpm, apt-get or yum install)

3. Run the installer script install-tl.

   ```
   cd /your/download/directory
   ./install-tl
   ```

4. Enter command 'i' for installation

5. Post-Installation configuration:
   http://www.tug.org/texlive/doc/texlive-en/texlive-en.html#x1-320003.4.1

6. Set the path for the directory of TexLive binaries in your .bashrc file

For 32bit OS

For Bourne-compatible shells such as bash, and using Intel x86 GNU/Linux and a default
directory setup as an example, the file to edit might be

```
edit $~/.bashrc file and add following lines
PATH=/usr/local/texlive/2011/bin/i386-linux:$PATH;
export PATH
MANPATH=/usr/local/texlive/2011/texmf/doc/man:$MANPATH;
export MANPATH
INFOPATH=/usr/local/texlive/2011/texmf/doc/info:$INFOPATH;
export INFOPATH
```

For 64bit OS

```
edit $~/.bashrc file and add following lines
PATH=/usr/local/texlive/2011/bin/x86_64-linux:$PATH;
export PATH
MANPATH=/usr/local/texlive/2011/texmf/doc/man:$MANPATH;
export MANPATH
```

```
INFOPATH=/usr/local/texlive/2011/texmf/doc/info:$INFOPATH;
export INFOPATH
```

Fedora/RedHat/CentOS:

```
sudo yum install texlive
sudo yum install psutils
```

SUSE:

```
sudo zypper install texlive
```

Debian/Ubuntu:

```
sudo apt-get install texlive texlive-latex-extra
sudo apt-get install psutils
```

Appendix B

Installing the CUED class file

LaTeX.cls files can be accessed system-wide when they are placed in the <texmf>/tex/latex directory, where <texmf> is the root directory of the user's TeXinstallation. On systems that have a local texmf tree (<texmflocal>), which may be named "texmf-local" or "localtexmf", it may be advisable to install packages in <texmflocal>, rather than <texmf> as the contents of the former, unlike that of the latter, are preserved after the LaTeXsystem is reinstalled and/or upgraded.

It is recommended that the user create a subdirectory <texmf>/tex/latex/CUED for all CUED related LaTeXclass and package files. On some LaTeXsystems, the directory look-up tables will need to be refreshed after making additions or deletions to the system files. For TeXLive systems this is accomplished via executing "texhash" as root. MIKTeXusers can run "initexmf -u" to accomplish the same thing.

Users not willing or able to install the files system-wide can install them in their personal directories, but will then have to provide the path (full or relative) in addition to the filename when referring to them in LaTeX.