Information Session
Seminar – Introduction Latex

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What is Latex and why should I use it?

What is it?

- Latex is a free text layout program which is available on every common OS.

What is it not?

- Its not a WhatYouSeeIsWhatYouGet(WYSIWYG) editor.
- (Usually) no immediate preview of your text.

What is Latex and why should I use it?

Why should I use it?

- I am happy with WYSIWYG tools like OpenOffice or MS Word, so why should I switch to another program?
- Have you ever written a long document (>40 pages) with lots of high quality figures and tables?
- Latex allows writing documents
  - with many pages and high quality figures even on computers with low computational power and memory.
  - which look the same on every computer.
  - which strictly follow a given template.
  - together in a team since paragraphs/sections/chapters can be edited at the same time.

What is Latex and why should I use it?

- In the near future you are going to write your BA or MA thesis.
  => Latex will save you a lot of time!

- Last but not least, there are some reasons why almost all researchers and also a growing number of companies stick to Latex.
  - Its free.
  - Its reliable. (Latex files usually do not get corrupted even during a crash of the OS due to there small sizes.)
  - The generated documents look the same on every computer.
  - Multiple people can work on the same document simultaneously.
  - You do not have to take care about the layout once it is defined!
  - Very good free tools for references available. (e.g. JabRef)

Ok, you convinced me! But where do I start?

- Get all necessary programs first.

- TeX-Distribution
  MiKTex recommended for Windows users – www.miktex.org

- **Ghostscript**
  View and convert functionality for PostScript(PS) and Portable Document Format(PDF) files.

- Ghostview/**GSview**
  GUI for Ghostscript.

- Text editor with additional functionality
 **TEXnicCenter** recommended for Windows users – www.texniccenter.org

Getting things started…

- Installation (following order recommended)
  - Tex-Distribution
  - Ghostscript
  - Ghostview/Gsview
  - TEXnic Center

  Note: You may also use a different program for viewing the generated PDFs. (e.g. Adobe Acrobat Reader)
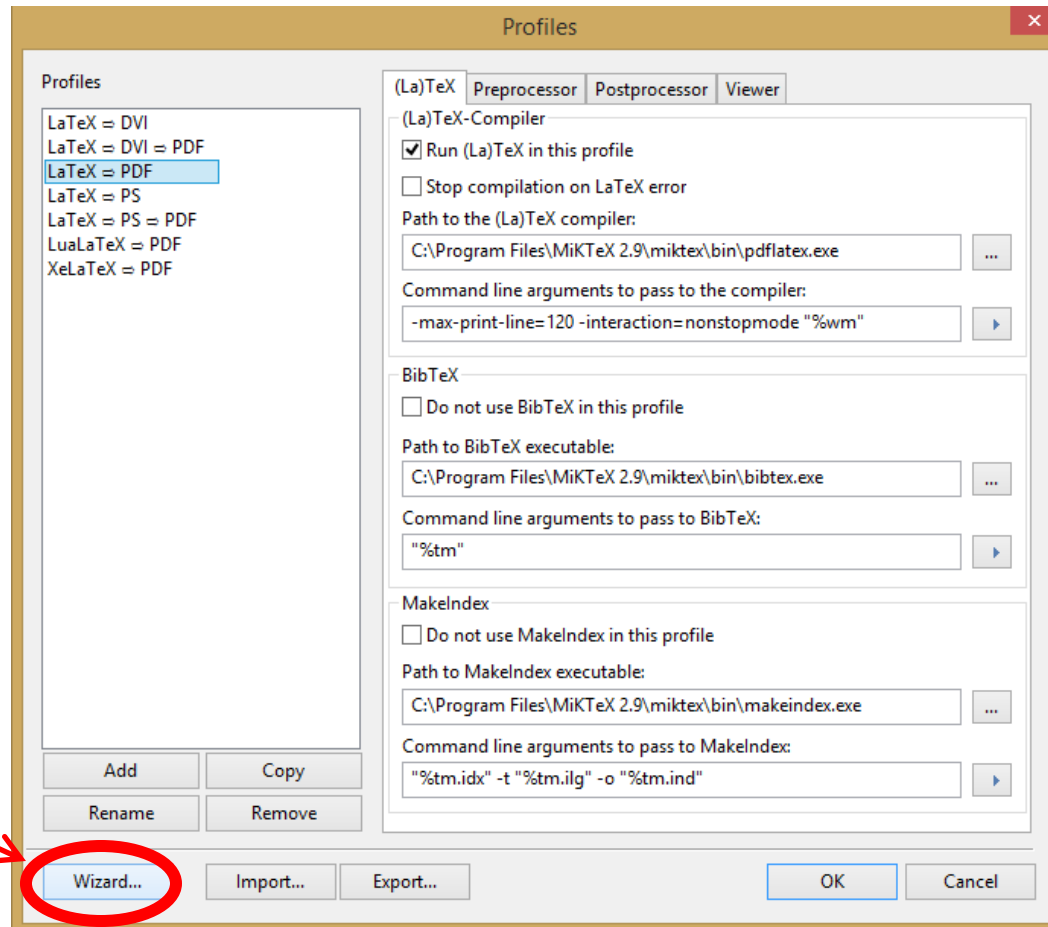
Getting things started...

1) Start TeXnicCenter
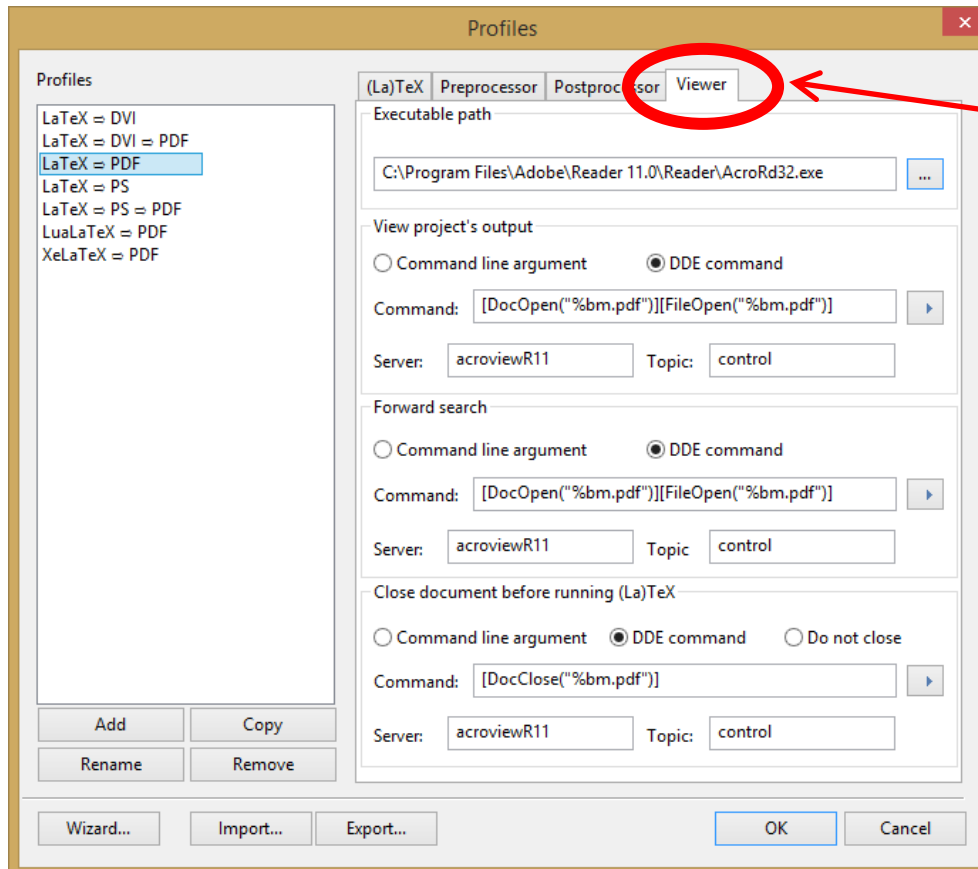2) Define Output Profile
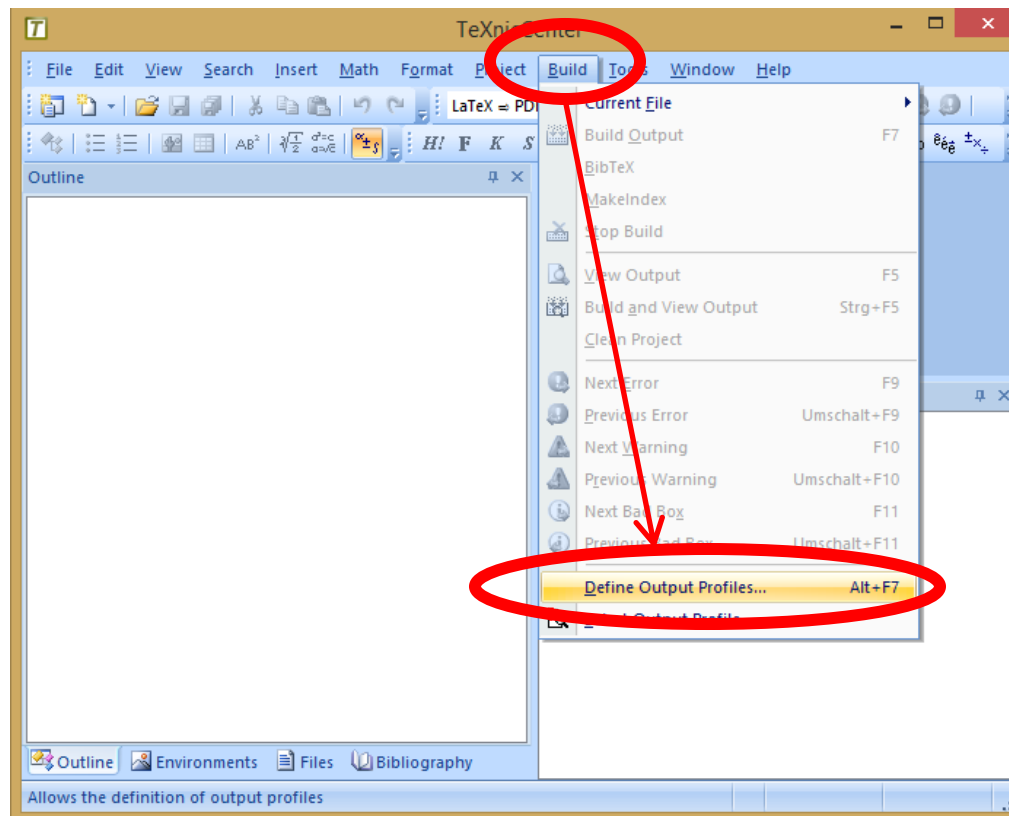
Getting things started...

- Use the "Wizard" to generate the profile entries

Confirm that you want to use MikTEX or the distribution which you have installed.

Getting things started...

Change the viewer if necessary

Usually no changes necessary.
=> Sometimes an older version of the Acrobat Reader is chosen in case multiple versions are installed.

Ready to open the first .tex files

- Download and unzip the template provided on the teaching website.
- In the Latex folder you will see several files.
- Only the files with the ".tex" extension are of interest.
- The folder contains a file name

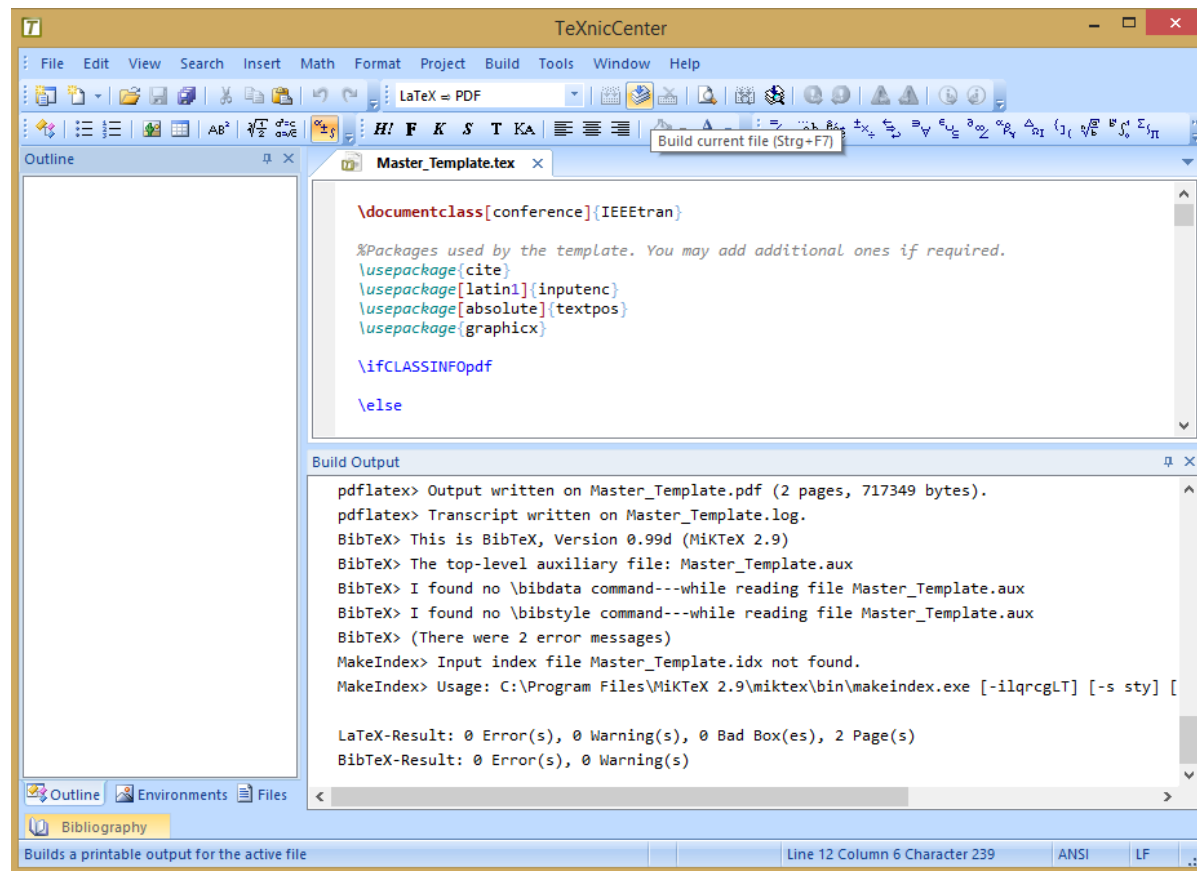   **DVA_Template.tex**   or   **Master_Template.tex**

To Do:

- Replace the term template with your last name (e.g. DVA_Bodisco.tex or Master_Bodisco.tex)

Note: The name of this file will be the name of the generated PDF.
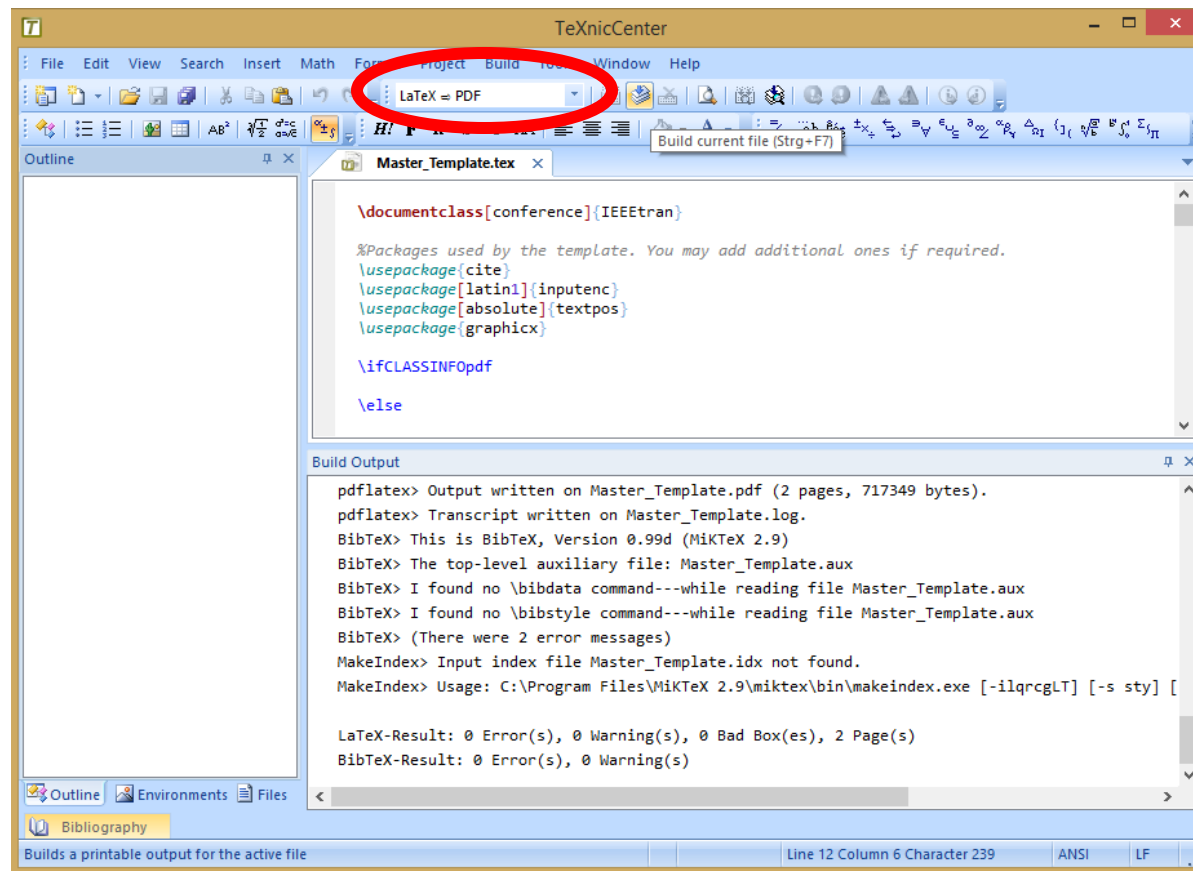
Ready to open the first .tex files

○ Open the renamed file with TEXNicCenter.

Ready to open the first .tex files

- Select LaTex=>PDF as output profile

Ready to open the first .tex files

○ Build the current file by clicking the appropriate icon
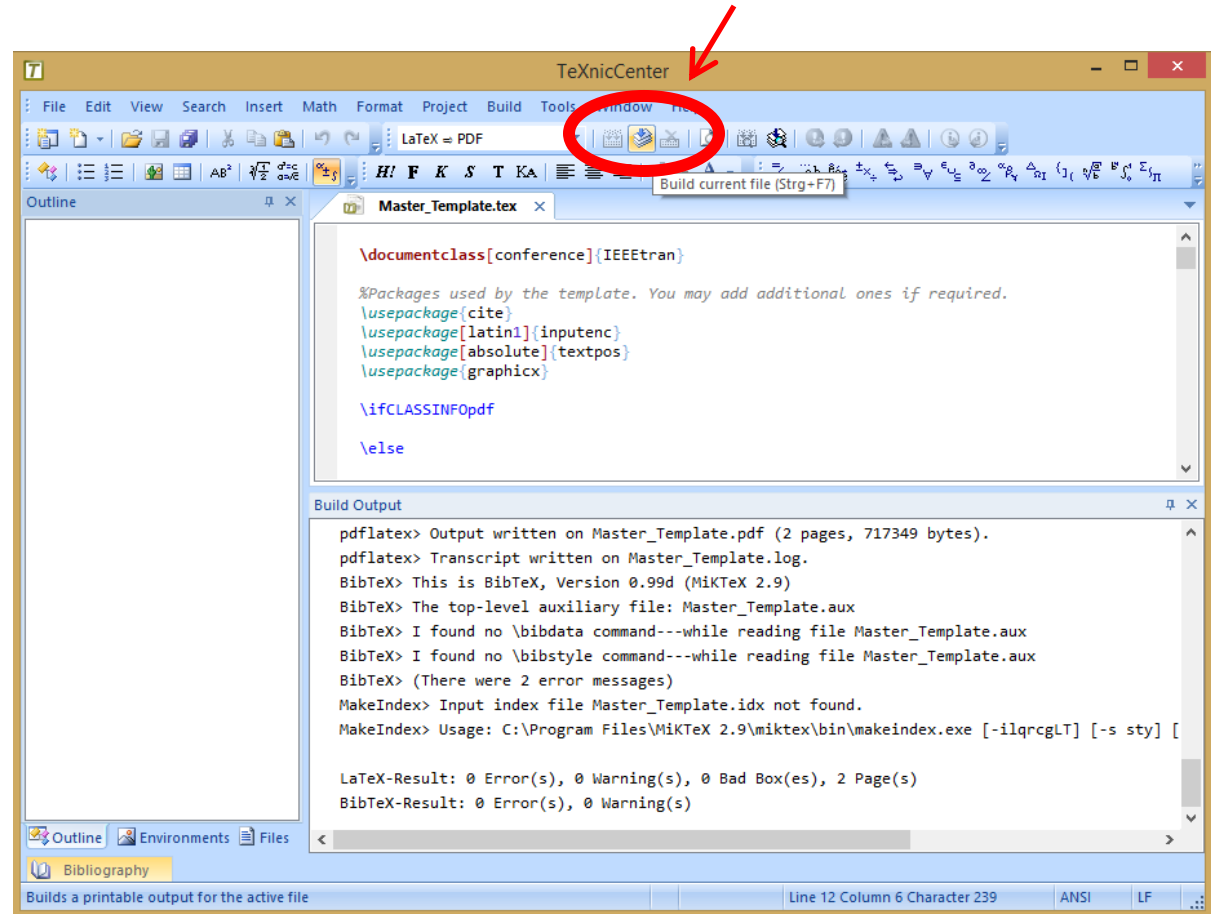
Note that the first generation might take longer depending on your installation since missing packages will be automatically loaded from the Internet!

Ready to open the first .tex files

- Open the generated file by clicking the appropriate icon
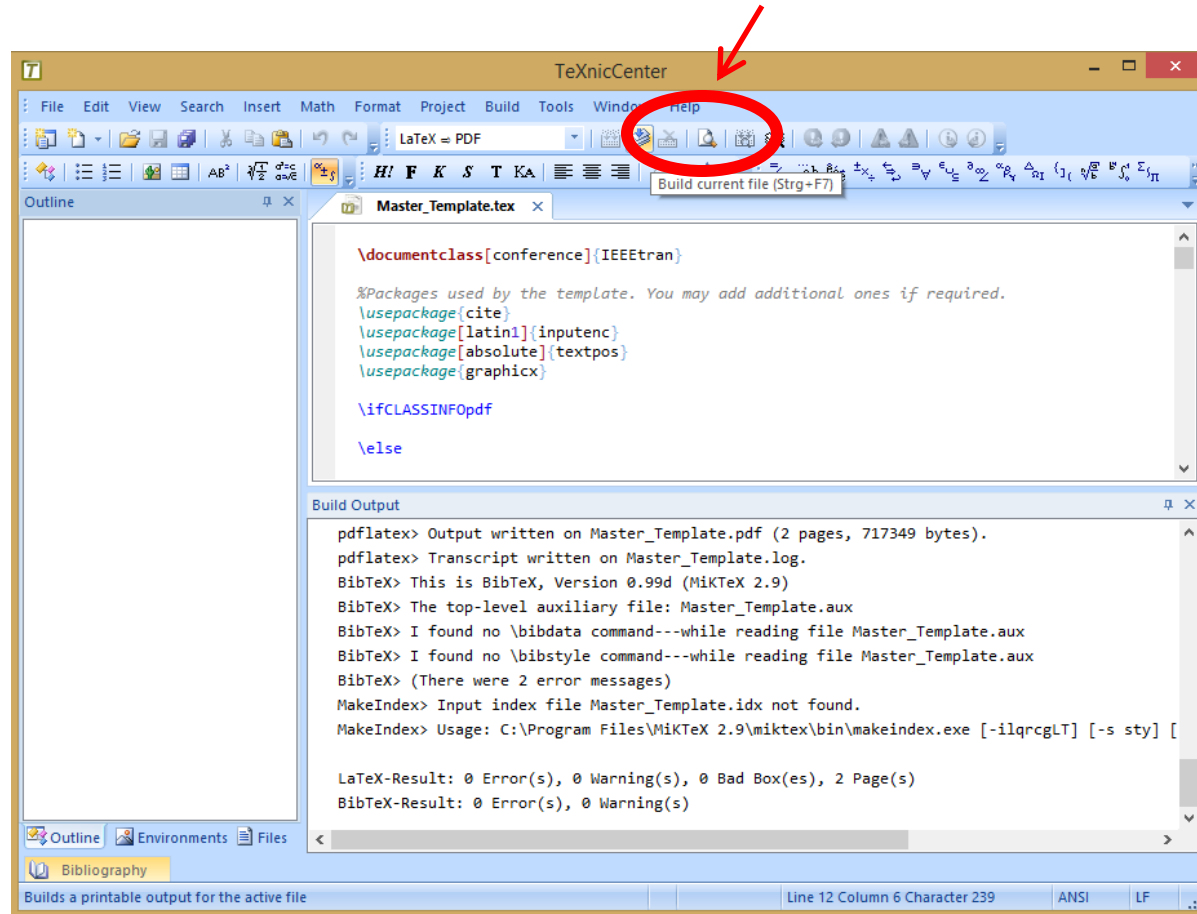
Ready to open the first .tex files

- Both tasks can also be done in a single step
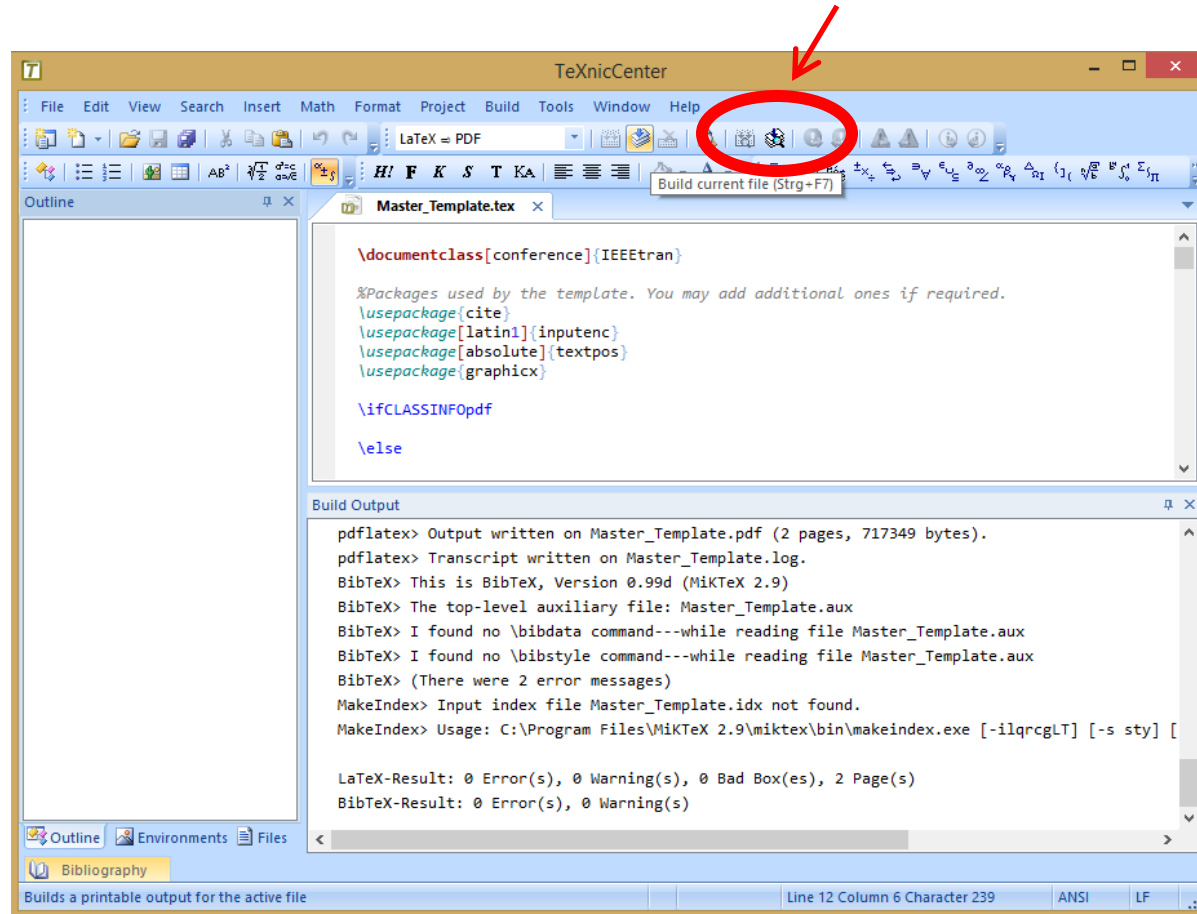
Ready to open the first .tex files

○ The result of the generation is listed below
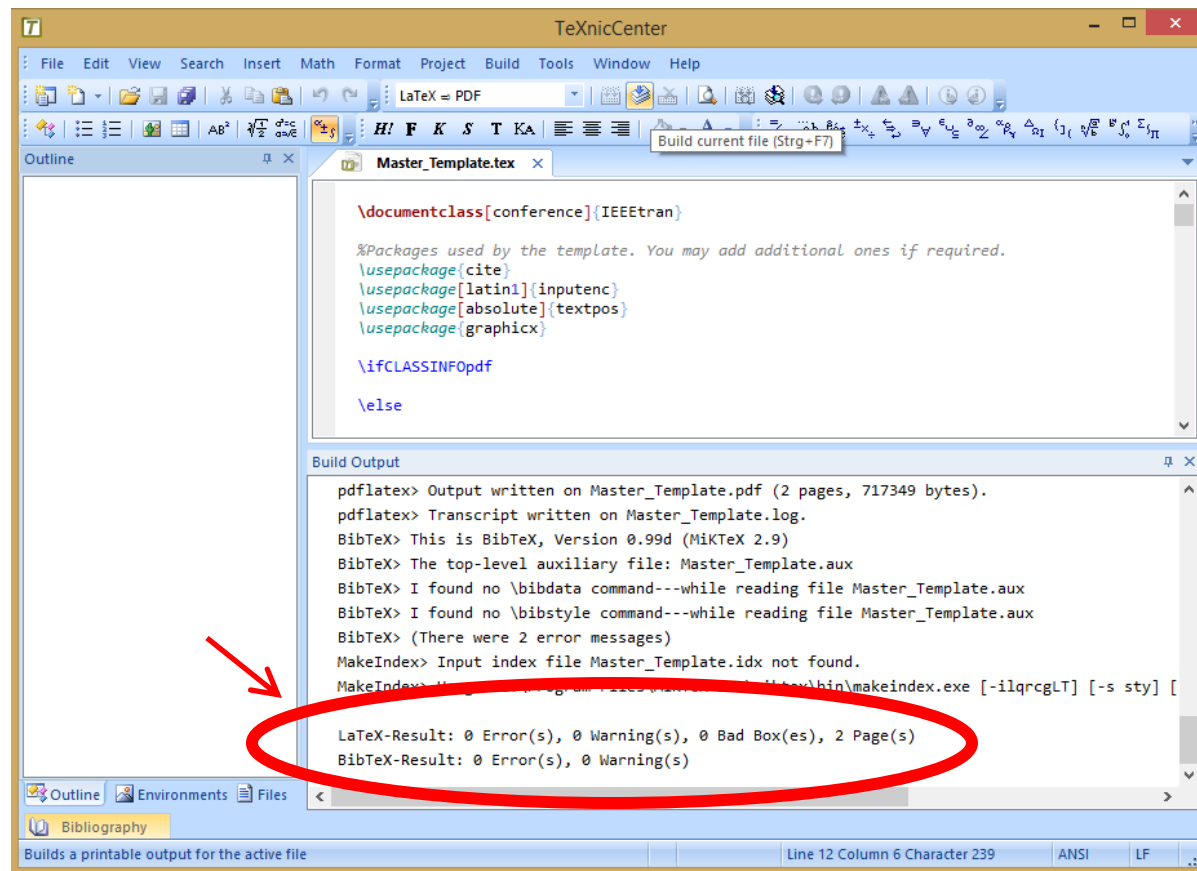
Ready to open the first .tex files

- Errors, warnings and bad boxes

An output file is only generated if there are zero LaTeX errors.

Take warnings and bad boxes seriously since they often indicate reference and layout errors!
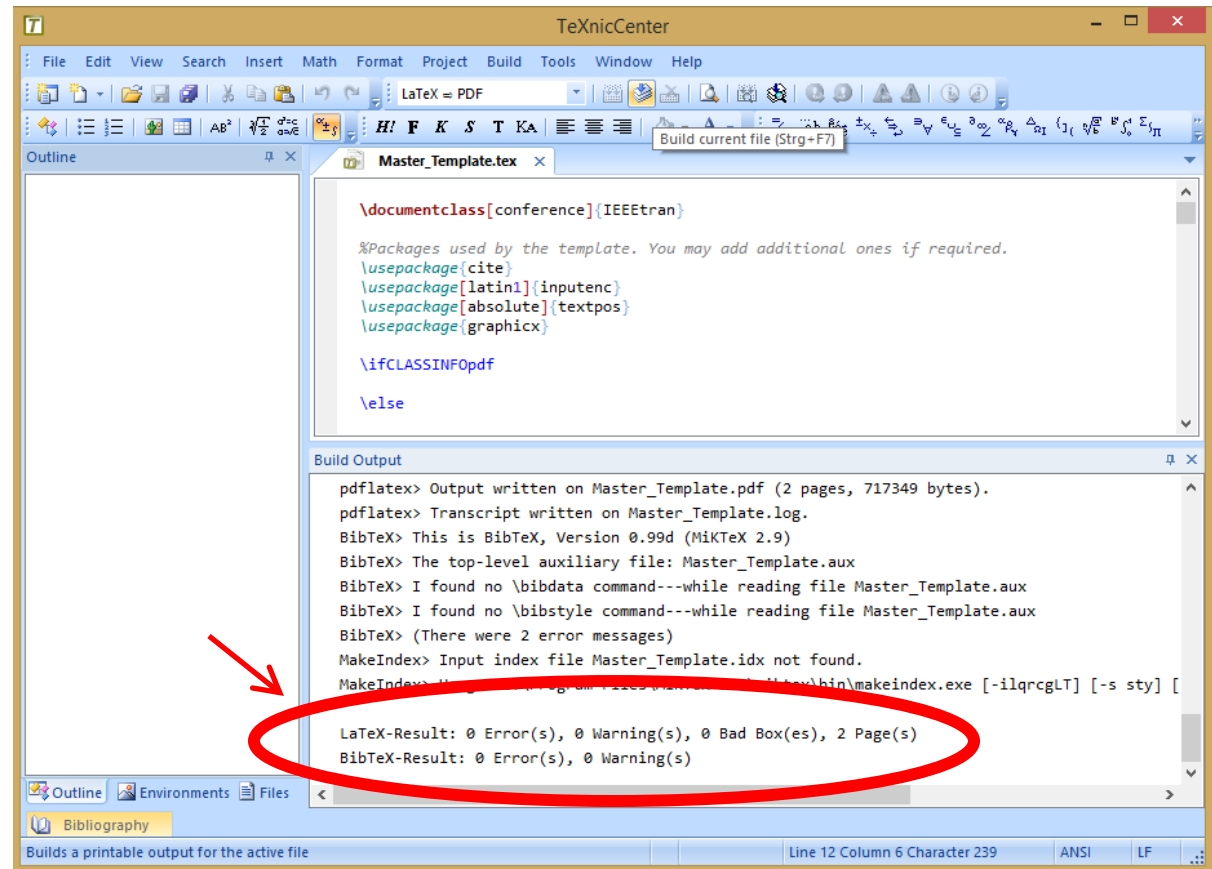
Ready to open the first .tex files

- You have generated your first output file (PDF) using LaTeX (Miktex-Dsitribution) and the TeXNicCenter editor.

Now let us take a closer look at the template and its usage.

Template

As outlined at the beginning of the presentation, the template style sheet takes care of everything. You only have to add/modify the content!

Template – Introduction - Style

```latex
1   \documentclass[conference]{IEEEtran}
2
3   %Packages used by the template. You may add additional ones if required.
4   \usepackage{cite}
5   \usepackage[latin1]{inputenc}
6   \usepackage[absolute]{textpos}
7   \usepackage{graphicx}
8
9   \ifCLASSINFOpdf
10
11  \else
12
13  \fi
14
15
16  %You may add hyphenation recommendations here if you encounter any
    problems.
17  \hyphenation{tren-nung}
18
19  %Content of the paper starts here
20  \begin{document}
21
22  \vspace{50mm}
23
24  %Modify the title according to your assigned topic
25  \title{Paper Title}
26
```

Defines the type used from the style sheet. In this case it is IEEE two columns format.

No changes required.

Template – Introduction - Packages

Packages required by the template. You may add additional ones if required (e.g. Listings package for including program code directly).

Changes optional.

```
1   \documentclass[conference]{IEEEtran}
2
3   %Packages used by the template. You may add additional ones if required.
4   \usepackage{cite}
5   \usepackage[latin1]{inputenc}
6   \usepackage[absolute]{textpos}
7   \usepackage{graphicx}
8
9   \ifCLASSINFOpdf
10
11  \else
12
13  \fi
14
15
16  %You may add hyphenation recommendations here if you encounter any
    problems.
17  \hyphenation{tren-nung}
18
19  %Content of the paper starts here
20  \begin{document}
21
22  \vspace{50mm}
23
24  %Modify the title according to your assigned topic
25  \title{Paper Title}
26
```

Template – Introduction - Hyphenation

If you encounter problems with hyphenation, add the correct hyphenation here.

Changes optional.

```latex
1  \documentclass[conference]{IEEEtran}
2
3  %Packages used by the template. You may add additional ones if required.
4  \usepackage{cite}
5  \usepackage[latin1]{inputenc}
6  \usepackage[absolute]{textpos}
7  \usepackage{graphicx}
8
9  \ifCLASSINFOpdf
10
11  \else
12
13  \fi
14
15
16  %You may add hyphenation recommendations here if you encounter any
   problems.
17  \hyphenation{tren-nung}
18
19  %Content of the paper starts here
20  \begin{document}
21
22  \vspace{50mm}
23
24  %Modify the title according to your assigned topic
25  \title{Paper Title}
26
```

Template – Introduction - Document

Modification of the original template.

No changes!

```latex
1  \documentclass[conference]{IEEEtran}
2
3  %Packages used by the template. You may add additional ones if required.
4  \usepackage{cite}
5  \usepackage[latin1]{inputenc}
6  \usepackage[absolute]{textpos}
7  \usepackage{graphicx}
8
9  \ifCLASSINFOpdf
10
11 \else
12
13 \fi
14
15
16 %You may add hyphenation recommendations here if you encounter any
   problems.
17 \hyphenation{tren nung}
18
19 %Content of the paper starts here
20 \begin{document}
21
22 \vspace{50mm}
23
24 %Modify the title according to your assigned topic
25 \title{Paper Title}
26
```

Template – Introduction - Title

Enter the title of your topic here.

```latex
1  \documentclass[conference]{IEEEtran}
2
3  %Packages used by the template. You may add additional ones if required.
4  \usepackage{cite}
5  \usepackage[latin1]{inputenc}
6  \usepackage[absolute]{textpos}
7  \usepackage{graphicx}
8
9  \ifCLASSINFOpdf
10
11 \else
12
13 \fi
14
15
16 %You may add hyphenation recommendations here if you encounter any
    problems.
17 \hyphenation{tren-nung}
18
19 %Content of the paper starts here
20 \begin{document}
21
22 \vspace{50mm}
23
24 %Modify the title according to your assigned topic
25 \title{Paper Title}
26
```

Changes necessary!

Template – Introduction – Author Information

Insert your name and Email address.

Changes necessary!

```
26
27   %Insert your name and Email address
28   \author{\IEEEauthorblockN{Author Name}
29   \IEEEauthorblockA{Dept. of Computer Science\\
30   University of Applied Sciences Augsburg\\
31   Augsburg, Germany\\
32   name@xyz.com
33   }
34   }
35
36   \maketitle
37
38   %Logo hack
39   \begin{textblock*}{188mm}(55mm,11mm)
40   \includegraphics[width=0.55\textwidth]{informatik_Logo.jpg}
41   \end{textblock*}
42
43
44   %Lets start with the abstract (either modify the abstract file or add
     your text directly here
45   \input{abstract}
46
47   \IEEEpeerreviewmaketitle
48
49   %Example input in external files. It is recommended to create a seperate
     file for each chapter.
50   \input{introduction}
51
```

Template – Introduction – Logo/Style

Bad hack to insert our logo.

```
26
27   %Insert your name and Email address
28   \author{\IEEEauthorblockN{Author Name}
29   \IEEEauthorblockA{Dept. of Computer Science\\
30   University of Applied Sciences Augsburg\\
31   Augsburg, Germany\\
32   name@xyz.com
33   }
34   }
35
36   \maketitle
37
38   %Logo hack
39   \begin{textblock*}{188mm}(55mm,11mm)
40   \includegraphics[width=0.55\textwidth]{informatik_Logo.jpg}
41   \end{textblock*}
42
43
44   %Lets start with the abstract (either modify the abstract file or add
     your text directly here
45   \input{abstract}
46
47   \IEEEpeerreviewmaketitle
48
49   %Example input in external files. It is recommended to create a seperate
     file for each chapter.
50   \input{introduction}
51
```

DO NOT CHANGE!

Template – Introduction - Abstract

This command includes the file abstract.tex located in the same directory. Open and edit this file to modify the abstract section.

DO NOT CHANGE!

```
26
27   %Insert your name and Email address
28   \author{\IEEEauthorblockN{Author Name}
29   \IEEEauthorblockA{Dept. of Computer Science\\
30   University of Applied Sciences Augsburg\\
31   Augsburg, Germany\\
32   name@xyz.com
33   }
34   }
35
36   \maketitle
37
38   %Logo hack
39   \begin{textblock*}{188mm}(55mm,11mm)
40   \includegraphics[width=0.55\textwidth]{informatik_Logo.jpg}
41   \end{textblock*}
42
43
44   %Lets start with the abstract (either modify the abstract file or add
     your text directly here
45   \input{abstract}
46
47   \IEEEpeerreviewmaketitle
48
49   %Example input in external files. It is recommended to create a seperate
     file for each chapter.
50   \input{introduction}
51
```

Template – Introduction - Introduction

This command includes the file introduction.tex located in the same directory. Open and edit this file to modify the introduction section.
It is a good idea to create separate files for each section.

DO NOT CHANGE since the introduction is a must!

```
26
27   %Insert your name and Email address
28   \author{\IEEEauthorblockN{Author Name}
29   \IEEEauthorblockA{Dept. of Computer Science\\
30   University of Applied Sciences Augsburg\\
31   Augsburg, Germany\\
32   name@xyz.com
33   }
34   }
35
36   \maketitle
37
38   %Logo hack
39   \begin{textblock*}{188mm}(55mm,11mm)
40   \includegraphics[width=0.55\textwidth]{informatik_Logo.jpg}
41   \end{textblock*}
42
43
44   %Lets start with the abstract (either modify the abstract file or add
     your text directly here
45   \input{abstract}
46
47   \IEEEpeerreviewmaketitle
48
49   %Example input in external files. It is recommended to create a seperate
     file for each chapter.
50   \input{introduction}
51
```

Template – Introduction - Sections

These commands include example sections. Create files for your own sections and use the input command to include them. Note that this is only the filename and not the name of the section!

Changes necessary!

```
51
52   \input{usecases}
53
54   \input{solutions}
55
56   \input{conclusion}
57
58
59   %Example Bib - You may insert your references here or put them in an
     external bib-file.
60   \begin{thebibliography}{1}
61
62   \bibitem{Tay2004} \label{Tay2004}
63   Y.C.~Tay, K.~Jamieson, and H.~Balakrishnan, \emph{Collision-minimizing
     CSMA and its Applications to Wireless Sensor Networks}, IEEE Journal on
     Selected Areas in Communications, 22(6):1048-1057, August 2004.
64
65   \bibitem{Bertocco2007} \label{Bertocco2007}
66   M.~Bertocco, G.~Gamba, and A.~Sona, \emph{Experimental Optimization of
     CCA Thresholds in Wireles Sensor Networks in Presence of Interference},
     In Proc. of IEEE EMC Europe 2007 Workshop on Electromagnetic
     Compatibility, June 2007.
67
68   \bibitem{Muneb2006} \label{Muneb2006}
69   A.~Muneb, U.~Saif, A.~Dunkels, T.~Voigt, K.~Römer, K.~Langendoen, J.~
     Polastre, and Z.A.~Uzmi, \emph{Medium Access Control Issues in Sensor
     Networks}, SIGCOMM Comput. Commun. Rev., 36(2):33-36, 2006.
70
```

Template – Introduction - Sections

Includes the conclusion file. Leave this line as it is since the conclusion is mandatory. Just open and edit the conclusion.tex file.

No changes required.

```latex
51
52    \input{usecases}
53
54    \input{solutions}
55
56    \input{conclusion}
57
58
59    %Example Bib - You may insert your references here or put them in an
      external bib-file.
60    \begin{thebibliography}{1}
61
62    \bibitem{Tay2004} \label{Tay2004}
63    Y.C.~Tay, K.~Jamieson, and H.~Balakrishnan, \emph{Collision-minimizing
      CSMA and its Applications to Wireless Sensor Networks}, IEEE Journal on
      Selected Areas in Communications, 22(6):1048-1057, August 2004.
64
65    \bibitem{Bertocco2007} \label{Bertocco2007}
66    M.~Bertocco, G.~Gamba, and A.~Sona, \emph{Experimental Optimization of
      CCA Thresholds in Wireles Sensor Networks in Presence of Interference},
      In Proc. of IEEE EMC Europe 2007 Workshop on Electromagnetic
      Compatibility, June 2007.
67
68    \bibitem{Muneb2006} \label{Muneb2006}
69    A.~Muneb, U.~Saif, A.~Dunkels, T.~Voigt, K.~Römer, K.~Langendoen, J.~
      Polastre, and Z.A.~Uzmi, \emph{Medium Access Control Issues in Sensor
      Networks}, SIGCOMM Comput. Commun. Rev., 36(2):33-36, 2006.
70
```

References are located in the bibliography. You can generate a separate file or include them in the main file. It is highly recommended to use a tool like JabRef to create/get/manage the bib entries.

Changes required.

```latex
51
52  \input{usecases}
53
54  \input{solutions}
55
56  \input{conclusion}
57
58
59  %Example Bib - You may insert your references here or put them in an
    external bib-file.
60  \begin{thebibliography}{1}
61
62  \bibitem{Tay2004} \label{Tay2004}
63  Y.C.~Tay, K.~Jamieson, and H.~Balakrishnan, \emph{Collision-minimizing
    CSMA and its Applications to Wireless Sensor Networks}, IEEE Journal on
    Selected Areas in Communications, 22(6):1048-1057, August 2004.
64
65  \bibitem{Bertocco2007} \label{Bertocco2007}
66  M.~Bertocco, G.~Gamba, and A.~Sona, \emph{Experimental Optimization of
    CCA Thresholds in Wireles Sensor Networks in Presence of Interference},
    In Proc. of IEEE EMC Europe 2007 Workshop on Electromagnetic
    Compatibility, June 2007.
67
68  \bibitem{Muneb2006} \label{Muneb2006}
69  A.~Muneb, U.~Saif, A.~Dunkels, T.~Voigt, K.~Römer, K.~Langendoen, J.~
    Polastre, and Z.A.~Uzmi, \emph{Medium Access Control Issues in Sensor
    Networks}, SIGCOMM Comput. Commun. Rev., 36(2):33-36, 2006.
70
```

Information (Online)

- Introduction of all basic commands (highly recommended)

  http://latex.mschroeder.net/index.php

- Another tutorial:

  http://www.kubieziel.de/computer/latex-tutorial.html

- Latex – Introduction – YouTube (highly recommended)

  http://www.youtube.com/user/LaTeXTutorial/videos

LaTeX - Tips

- Check out the .tex files included in the template. They contain very simple examples that you can use.
- TEXnicCenter provides a GUI for almost everything:
  - Enumeration
  - Itemization
  - Figures (1 column or 2 columns)
  - Tables (1 column or 2 columns)
  - Equations
  - Font size, style, alignment
  - ...

  If you do not find an appropriate solution – search the web!