



open
source
P R E S S

Certified TYPO3 CMS Integrator

Official Exam Study Guide

3rd edition

Patrick Lobacher



professional reference

Patrick Lobacher

Certified TYPO3 CMS Integrator

Official Exam Study Guide

3rd Edition

Open Source Press

The information in this book is distributed on an as-is basis, without warranty. While every precaution has been taken in the preparation of this work, neither the authors nor the editors nor Open Source Press GmbH shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in it.

Open Source Press and the Open Source Press logo are registered trademarks of Open Source Press GmbH. Other product or company names mentioned herein may be the trademarks of their respective owners. Rather than use a trademark symbol with every occurrence of a trademarked name, we are using the names only in an editorial fashion and to the benefit of the trademark owner, with no intention of infringement of the trademark.

Original German edition © 2014 Open Source Press, Munich

Patrick Lobacher: Certified TYPO3 CMS Integrator - Vorbereitung auf die Prüfung der TYPO3 Association

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.dnb.de>.

Copyright © 2014 Open Source Press GmbH

Editor: Markus Wirtz

Translator: Katherine Salter

Typesetting: textovia web application (<http://textovia.com>)

Graphic Designer: Olga Saborov

ISBN: 9783955391300 (E-Book PDF)

ISBN: 9783955391294 (printed edition)

<http://www.opensourcepress.de>

Table of Contents

Introduction	9
1 General Information	25
1.1 The TYPO3 project	26
1.2 The TYPO3 Association.....	39
1.3 Versions.....	46
2 Installation	55
2.1 Software and license.....	55
2.2 General notes.....	68
2.3 Database	81
2.4 Install Tool	88
3 Performance	103
3.1 Caching	104

4	Getting help	117
4.1	Documentation	118
5	Extensions	137
5.1	General notes	138
5.2	Update.....	154
5.3	Configuration	160
6	Backend Administration	167
6.1	General notes	168
6.2	Modules.....	185
6.3	User administration	195
6.4	Workspaces	214
6.5	User TSconfig and Page TSconfig	222
6.6	Multilingual websites.....	230
6.7	Admin Panel and frontend editing	241
6.8	Page and content entry.....	247
7	Templating	261
7.1	General notes	262
7.2	Markers and subparts	280
7.3	FLUIDTEMPLATE.....	294

8	TypoScript	301
8.1	General notes	302
8.2	TypoScript setup and constants	307
8.3	Operators.	312
8.4	Conditions	321
8.5	Images.	338
8.6	Content objects (cObj).	343
8.7	Content Rendering	357
8.8	Menu creation	368
8.9	optionSplit.	382
8.10	TS Object Browser, Template Analyzer, Constant Editor	392
8.11	getText	396
8.12	stdWrap	405
8.13	userFunc.	425
	Index	431

Introduction

TYPO3 was presented to the public in 1997 by the Danish developer Kasper Skårhøj, and it has been experiencing a constant boom ever since. This open-source enterprise content management system has long become the market leader in its field, and an increasing number of websites of all sizes are implemented with it around the world. As well as mid-size companies, an increasing number of global players with complex internet pages now rely on this system, including businesses such as Philips, Lufthansa, Aida, Rewe, Volkswagen, ThyssenKrupp AG, Sixt, Cisco WebEx, Epson, Konica Minolta, General Electric and many others.

This steady increase in success and the associated media coverage have led to a growing number of publications about TYPO3 that teach you how to use it from scratch, which is fine as long as you are using it for private or semi-private purposes. You can increase your knowledge over time, try different approaches, or even go without the feature or adaptation you were attempting to implement.

But it is an entirely different matter if you want to earn a living creating TYPO3 websites. Reading a text book or two will not provide you with the deeper understanding and practical experience of the system that you will need. Customers usually know what they expect from their websites, and their needs can rarely be met by simply implementing standard templates. Only a TYPO3 service provider with the required expertise can implement a project to the satisfaction of everyone involved.

In the professional arena there needs to be an objective way of assessing the quality of TYPO3 service providers, so that potential customers

can assess whether a service provider will be able to do state-of-the-art work, handle any problems that may occur, and quickly implement additional or special requests – in short, whether the service provider will be able to complete the project quickly, reliably and successfully.

Assessing the quality of TYPO3 services

Assessing the quality of TYPO3 services objectively (or as objectively as possible) raises a number of problems, especially if you rely on the statements made by service providers.

Misjudging your own abilities

Understandably enough, service providers are prone to overestimate their knowledge; after all, they are courting customers. If the project throws up problems that the service provider has never encountered in his own experiments, he will lack the expertise to resolve them. Even if no problems occur, the methods and solutions applied by the inexperienced are often open to a number of criticisms: solutions are patched and tricks are used to present the required result. Of course, this is not necessarily intentional – often, the service provider simply lacks the knowledge and experience to recognize potential bugs that have an effect only under specific circumstances, or to recognize that it will not be possible to expand the system sufficiently in future. At first glance, the website will seem to work, but it may be slow, difficult to maintain or contain safety risks.

Almost every week, the author of this book is offered projects that have been messed up by other service providers. This is because people

sometimes overestimate their skills or push their luck because they need the job, and because they do not recognize how complex a project will be. When the inevitable point arrives and the service provider's expertise proves insufficient, he either has to acquire specialist knowledge quickly or ask the community for support. Both options produce solutions that are only rarely professional. In the worst case, the service provider realizes – much too late – that he is not up to the project. An assessment of your own abilities in the form of a standardized classification as provided by certification is therefore also a useful way of identifying (and proving) your strengths and weaknesses.

Quality of references

References are one of the usual criteria that customers use to assess their service providers, but they are of limited use: customers are rarely able to determine from the outside how well their websites have been implemented. To give just one example: it may be almost impossible to add new menu items if the service provider has hard-coded the menu instead of utilizing the options offered by TYPO3. A customer can usually only evaluate the design and quality of the source code (assuming he has the requisite experience) and possibly the functionality – but none of this provides reliable information on the service provider's actual TYPO3 skills. Certification represents an objective factor awarded by an official body, the *TYPO3 Association*, and allows an assessment beyond the simple examination of references (i. e. websites).

Profitability

In addition to the functional quality of a project, there is another criterion relevant to the competence of service providers: there are different ways to achieve a defined result in TYPO3. Some approaches allow you to work quickly, with a resulting code and structure that are easy to maintain, but this requires a lot of knowledge and experience, without which the same task will consume far more time. In some situations, this increases the costs to the customer; in projects with a fixed fee, the hourly rate for the service provider decreases, which does not affect the customer at first.

But when it comes to maintenance and a speedy reaction to additional inquiries, the customer needs to know that the service provider, as well as being proficient in the original project variant, is also able to react to new requests. In addition, the service provider must keep the project in such a state that it can be maintained, extended or handed over to another party. This is simply “good practice”; these standards are not mandatory in a technical sense, but they have proven good and sensible in the past.

Like many IT certifications, the certification as *TYPO3 CMS Integrator* is therefore designed to assess knowledge as well as experience (even if this is a difficult undertaking in psychometric terms).

TYPO3 certification as a quality benchmark

The *Certified TYPO3 CMS Integrator* certification was launched to solve the aforementioned problems. The exam assesses the knowledge and experience of the service provider as exhaustively as possible and thereby achieves an objective judgment on the ability of the examinee to implement a TYPO3 customer project according to specified condi-

tions professionally and with high quality. Customers should be able to rely on this benchmark, even and especially if they have no knowledge of TYPO3. In summary, one can say that TYPO3 certification helps to improve the quality of TYPO3 services. Professional service providers can distinguish themselves from those who are less accomplished, and customers have an objective criterion that allows them to identify proficient service providers.

Certified TYPO3 CMS Integrator

The first certificate is the *Certified TYPO3 CMS Integrator*. It would be difficult to cover all aspects of TYPO3 in one single exam, so the Association created a role that could be equipped with a defined profile. The role created is probably the most relevant one in practice. A further certificate specifically for developers is currently being created, and should be ready by the end of 2014.

Definition

The profile of a TYPO3 CMS Integrator is defined as follows:

A “Certified TYPO3 CMS Integrator” develops the template for a website, configures all the necessary extensions and assigns the access rights for backend users. A “Certified TYPO3 CMS Integrator” does not install TYPO3 on the web server and does not program extensions. A “Certified TYPO3 CMS

Integrator” controls the configuration of the pre-installed TYPO3 system with the installer.¹

We now have a clear definition and demarcation of the knowledge an integrator needs. While an administrator ensures that TYPO3 is set up on a server, the integrator creates and configures the website. When a custom extension is required, however, the TYPO3 programmer comes into play.

Objectives

The certification team has defined *objectives* in order to specify the exam topics in more detail. The questions in this book are closely aligned with these objectives as the chapter structure shows:

General notes on TYPO3 (Chapter 1)

A history of TYPO3, general notes, official events etc.

Installation (Chapter 2)

Settings, configuration, handling, passwords etc.

Performance (Chapter 3)

Caching etc.

Documentation (Chapter 4)

Structure of the TSref, documentation formats, important manuals etc.

¹ <http://typo3.org/certification/about-the-certification/definition-certified-typo3-cms-integrator/>

Extensions (Chapter 5)

Extension manager, installation and configuration of extensions etc.

Backend Administration (Chapter 6)

TYPO3 modules, user management and workspaces, TSconfig, RTE etc.

Templating (Chapter 7)

Markers, subparts, error notifications etc.

TypoScript (Chapter 8)

Objects, logic, menus, stdWrap, optionSplit etc.

The weighting in this book is similar to the one used in the exam. Chapters 6 and 8 contain far more questions than the other chapters, demonstrating the importance of these topics in the exam.

Certification

Certification was initiated by the *TYPO3 Association*. A TYPO3 Certification team was specifically brought together, drawing from experts in certification and TYPO3. The author is also a member. This team is responsible for designing, implementing and constantly improving certification.

General information on the exam

The exam is always and exclusively held in English. TYPO3 collaborates with “Pearson VUE”, a provider that facilitates electronic exams in one

of their 3,700 test centers distributed across the world in 145 countries. The questions were devised by TYPO3 experts (including some core developers) and revised according to strict guidelines. A separate group of experts evaluates the questions to ensure they are of high quality, and to determine the weight that each question should be given in the exam (the weight corresponds to the likelihood that a question will be solved).

If you do not pass the exam, you can retake it as many times as you like; however, your next attempt must take place at least two months after the date of the failed exam. Before you register for the exam, you should read the FAQ on the certification website.²

Registration

The standard price of the exam is 200 EUR. If you or your company are a member of the TYPO3 Association, you will receive a 50 EUR discount. To enable this discount, please send an email quoting your membership number and the examinee's name to certification@typo3.org before registering. You will then receive a voucher code.

If the firm you work for is an Association Member with a status of Silver or higher, it will have a certain number of vouchers for the 50 EUR reduction.

- Silver: 3 vouchers per year
- Gold: 10 vouchers per year

² <http://typo3.org/certification/faq/>

- Platinum: 20 vouchers per year

Find a suitable training center on the Pearson VUE website³. Select Information Technology (IT) on the left side, and TYPO3 on the right.

PEARSON ALWAYS LEARNING

PEARSON VUE About Us | Careers | Contact Us | FAQs Search

Home Test Taker Services Test Program Solutions Become a Test Center

Home > Locate a Test Center

Locate a Test Center

Pearson VUE delivers certification and licensure tests through the world's largest network of test centers in 175 countries across the world.

If you need to reschedule or cancel your exam appointment, please [sign into your web account](#) or call [customer service](#).

What type of test are you planning to take?

1) Choose category

- View All
- Academic/Admissions
- Construction Trades, UST & Inspectors
- Employment, HR, Management & Safety
- Financial Services
- Government / State Regulated / Federal Government
- Health, Medicine, Nursing & Pharmacy
- Information Technology (IT)**
- Insurance

2) Choose testing program

- Ruckus Wireless
- Ruijie Networks
- SAP
- SAS
- SensioLabs
- Software Certifications (Administered by QAI)
- SpringSource
- Syantec
- TYPO3**
- UMTP

Figure 1: Selecting the category and testing program

You will then be redirected to the log-in page where you can either log in on the left if you already have an account, or create a new account on the right.

³ <http://www.pearsonvue.com/vtclocator/>

TYPO3

Sign in

All fields are required.

Returning users, please sign in:

Username:

Password:

[I forgot my username.](#)
[I forgot my password.](#)

Sign In

New users, please sign up:

[Create a web account.](#)

Our secure website encrypts your personal information so that it cannot be read by unauthorized Internet users.

This website is best experienced using Microsoft Internet Explorer (IE) version 9 and above, Google Chrome version 30 and above, Safari version 7 and above or Mozilla Firefox version 26 and above. Please do not use the back button to navigate the site.

For your security, please remember to sign out of your account and close your browser when you finish your session.

Figure 2: Logging in or creating an account

Should the search mask appear at this point, you will need to click on Login in the top right corner.

Now enter your full details. Your registration will be checked personally, and you will be notified that you will receive your login details and password within one working day.

Once you receive the confirmation email, you will be able to search for a suitable testing center, choose a date, and then pay by credit card (the only method of payment).

Please remember you will be charged the full fee for the exam even if you are unable to attend, unless you notify us via the website with 48 hours notice.

Exam procedure

You should arrive at the testing center 15 to 30 minutes before the start of the exam. That gives you plenty of time to register and find out where the exam is taking place. Your details, including your ID card or passport, will be checked during registration. No other documents are accepted.

You will also be asked to sign a so called NDA, a non-disclosure agreement, which you can read through in advance on the website⁴. By signing it you agree not to disclose the questions outside of the exam.

Once the registration formalities have been completed, you will be shown to a computer at which you will complete the exam online, under supervision.

You have 90 minutes to complete the exam, which is comprised of 75 questions. No aids are allowed during this exam. Should you attempt to use any aids, the exam will be terminated and marked as failed. You are also not permitted to leave the exam room before you sign off or the official exam time has elapsed.

Exam content

You have to answer 75 questions in 90 minutes. The questions are in English. Unless otherwise specified, at the time this book goes to print the questions refer to Version CMS 6.2 LTS (and no other) of TYPO3 (as of August 2014). Before the exam, you should check the official website

⁴ http://typo3.org/fileadmin/t3org/documents/certification/NDA_-_TYPO3_Certification.pdf

to see which TYPO3 version the current exam refers to⁵. Most of the questions discussed in this book are of course still valid even after a version change, so reading it will mean you are very well prepared.

Questions on backend names (module names, options etc.) are always based on the English backend. For example, the module for entering page elements will always be called Page in the questions.

You do not need to learn exact values for options or similar off by heart, as the questions are usually designed to check whether you have understood the logical situation. Read the questions very carefully; in some cases, one single word decides which of the answers is correct.

All of the questions are typical multiple-choice questions, so several (at least four) possible answers are provided for each question. It may be the case that one answer is correct, or a number of answers are correct. The number of correct answers will be noted next to the question to help. Your answer will be marked as wrong unless you select all correct answers and nothing else.

Grading and certificate

After the exam, the test papers are graded electronically, and the percentage of correct answers will be determined. This number is compared to a previously specified cut-off score to determine whether the candidate has passed the certification exam.

If the candidate has passed, he or she will be notified immediately on the screen; the certificate will be sent by post within a few weeks. The candidate can then refer to him or herself as a *Certified TYPO3 CMS Integrator* from then on. You can use this title when advertising your

⁵ <http://typo3.org/certification/faq/>

services: you can use a banner (available for download from the certification website) or add your title to your website or business card. You can also have your full name listed on the certification website, as the majority of successful candidates have chosen to do.

The certificate is valid for 3 years (36 months), and will need to be renewed after this period.

How to use this book

This section contains a few important notes and clarifications on the questions in this book:

- It makes no sense to learn these questions off by heart. The important thing is to remember, understand and apply the underlying relationships and information. An explicit warning in this context: the questions discussed here are not original exam questions!
- For didactic reasons, the questions are sorted into chapters by subject, and also build upon other questions; this means that some answers can be guessed from the context in the chapter. Naturally, this will not happen during the exam. Each section in this book also contains an introduction that may provide the odd hint, a luxury you will not have during the exam, so you should take as little advantage of it as possible.
- Try to understand all the material. If you realize that your knowledge is incomplete while you are working through this book, you should close these gaps and then work through the appropriate chapter again. Do not gamble on passing the exam because the in-

correct questions may not cost enough points to jeopardize your success.

- Many of the following questions were developed to display, examine and explain a specific situation. Even though I have always tried to avoid being academic or out of touch with reality, some of these questions may make you think: “I would never have used this method anyway.” You should still think about the question and answer it.
- Some questions relate to the opportunities provided by the basic TY-PO3 system to implement certain functionalities that you would, in practice, implement using extensions. Please note that while the certification exam deals with the installation and configuration of extensions, it does not deal with knowledge of the extensions themselves (with the exception of system extensions). You should therefore be aware of the functions of the basic system, even if you would usually use an extension for specific functionalities in your daily work.
- Questions are followed by the possible answers and then by an explanation of the situation. The correct answers are given after the explanation. This should ensure that you do not see the correct answer first and thereby lose the opportunity to answer the question as you would otherwise have done.
- Even if you know the correct answer immediately, it can make sense to read the explanation carefully. The question in the exam could deal with a different aspect of the same topic, which may have been discussed in the explanation.
- Examples occasionally mention an example domain *http://mytypo3domain.de*. This of course refers to your own domain, or to the

domain of a project you are working on, and not to an actual domain.

- At the end of each question, the number of correct answers will be noted in brackets.
- In order to improve the quality of this book, I would be delighted to hear from you how your exam went, and which questions and explanations were especially helpful or less helpful. Write to me: <patrick@lobacher.de>

I look forward to your feedback.

Acknowledgments and thanks

The second edition was published over two years ago, and a lot has changed in regards to certification, so it is time again to update the edition, correct mistakes and touch upon new topics. The TYPO3 project has now reached Version 6.2 LTS, while the second edition dealt with Version 4.6.

Thank you for all the positive feedback you have emailed me or given me in person at various events – it has encouraged me to continue this work. I am pleased that the book has obviously achieved its aim of giving readers an understanding of TYPO3 and helping them prepare for the exam.

I hope I have succeeded in selecting exciting topics for this updated and expanded new edition, and that I have managed to provide an insight into the exciting world of TYPO3.

My thanks go to my wife Marina, who once again had to forgo my company while I wrote these lines. It must be true love. :-)

Patrick Lobacher

Munich, September 2014

General Information

You may be surprised by some questions in this chapter, dealing as they do with the “social” aspects of the project rather than the technical ones. Why is this?

A future TYPO3 integrator needs more than just specialist knowledge – he or she must also have a basic understanding of the social and organizational environment of TYPO3. TYPO3 is a product developed by the community, and it is informed by this concept. Open source software projects sometimes follow a different logic than those where software companies develop proprietary software. The organizational structure is also relevant when it comes to help and support. In addition, the certification exam is intended to also assess a candidate’s experience, and anyone who has worked with TYPO3 for a few years will be familiar with the methods of the community and the Association, even if this information is only registered in passing.

1.1 The TYPO3 project

This section deals with the history of TYPO3 and persons who have rendered services to the project, and explains what you may and may not do with TYPO3. Some questions are about what to do when you discover a security hole or a bug.

1.1.1 Who invented TYPO3? (1)

- a) The TYPO3 Association
- b) Robert Lemke
- c) Kasper Skårhøj
- d) The TYPOlight company
- e) Michael Stucki

The answer to this question should be obvious; however, conversations with people new to the world of TYPO3 repeatedly show that this is not the case. There is a widespread belief that this CMS was invented by the TYPO3 Association, but this is a misconception. The Association was only founded in 2004, while the TYPO3 CMS has existed since 1997.

The name Robert Lemke has been cropping up frequently in relation to TYPO3 in recent years, and may do so even more frequently in the future. He is the head of development for TYPO3 Flow and TYPO3 Neos. For around 8 years, he and his team have been programming this new version of TYPO3, which is groundbreaking and has an entirely new code, but he has nothing to do with the creation of TYPO3.

The introduction of TYPOLight caused some confusion in the world of TYPO3 when it was first introduced. This was partly due to the similarity of the names, and partly because a number of features were given the same names. Examples include *Typolinks*, *Hooks* and *Extensions*, to name just a few. However, these two products are not connected in any way. In order to avoid this confusion, the team around Leo Feyer, the inventor of TYPOLight, renamed the project *Contao* on 6th June 2010.

Another name you come across quite often is Michael Stucki; after all, he is the chief developer of the 4. branch of TYPO3.

In point of fact, Kasper Skårhøj invented, i. e. first developed, TYPO3 in 1997. This means that only answer c) is correct.

1.1.2 Where was the inventor of TYPO3 born? (1)

- a) Sweden
- b) Norway
- c) Finland
- d) Denmark
- e) Germany

This is an introductory question that should be easy to answer, as the name of the inventor indicates his Nordic background. Kasper Skårhøj was born in Denmark.

In 1997, while he was still a student, he developed a CMS in Copenhagen that was to be named TYPO3 shortly afterwards.

This means that answer d) is correct.



Figure 1.1: Kasper Skårhøj at LinuxDay 2005

1.1.3 How may you spell TYPO3? (1)

- a) TYPO3
- b) Typo3

- c) typo3
- d) TyPo3
- e) TYPO 3
- f) TYP 03

Communication relating to TYPO3 has increased as the CMS has become more successful. It is mentioned in web pages, press releases, posters, blog entries, tweets and many more.

In mid-2006, the TYPO3 design team decided to create a *style guide*¹ to define a corporate design for the TYPO3 project. The team specified the possible uses of the logo, and specified the fonts, colors and the spelling of TYPO3, in order to preserve a homogeneous appearance in public and to establish TYPO3 as a brand.

It also determined that TYPO3 must be uppercase without a space before the number. There is only one exception: when specifying a URL containing “typo3”, so for example `typo3.org`, only lowercase letters are used. This means that the correct answer is a).

¹ <http://typo3.org/about/the-brand/style-guide/>



Figure 1.2: The official logo

1.1.4 TYPO3 is an open source project. Does this mean that anyone may use or modify the TYPO3 logo? (1)

- a) Yes, that is correct. This is regulated by the GPL.
- b) Yes, that is correct. Open source projects do not have rights to a name.
- c) Yes, that is correct. Licenses are available on typo3.org.
- d) No, the logo may neither be used nor modified.
- e) No, the logo may not be modified under any circumstances.

The beliefs surrounding open source software can be pretty strange. Some people believe that they can do what they like when it comes to open source projects. In fact, the situation, and the use of the logo, is unambiguously defined by law: First, the logo is under license – in this