

Report on the 15th and 16th European Board Exam for Young Neurologists. May-June 2023 and 2024

Preamble

The European Board Exam for Young Neurologists is an initiative of the UEMS Section of Neurology (also the European Board of Neurology, EBN), in cooperation with the European Academy of Neurology (EAN). The first exam took place in 2009 under the supervision of Professor Wolfgang Grisold. Professor Jan Kuks chaired the exam from 2014 to 2023, and Professor David Garcia Azorin assumed the role in 2023.

The EBN Exam is one of many European board exams endorsed by the Union Européenne des Médecins Spécialistes (UEMS). These exams aim to contribute to the establishment of European standards for the training of medical specialists.

So far, there is no legal status for European board exams, but in many countries, these exams are mandatory for the completion of specialist training. Additionally, many young specialists from outside Europe also take European board exams.

The UEMS supports the conferment of the title 'Fellow of the European Board' to candidates who successfully pass the examination. For this reason, our successful candidates become Fellows of the European Board of Neurology (FEBN). Although the European Board of Neurology cooperates closely with the EAN, passing the board exam does not entitle candidates to use the title FEAN.

In 2016, the EBN Exam was accredited by the UEMS Examination Board (CESMA). A new audit took place in 2023.

General principles

- The exam is based on the European Training Requirements for Neurology (ETRN, <https://www.uems-neuroboard.org/web/index.php/european-training-requirements>).
- Candidates who have nearly completed their training in Neurology should be able to take the exam. We do not require credentials.
- Because we aim to test the capabilities and competencies a candidate has acquired during specialist training, we do not offer preparatory courses.
- English is the official language, but participants are allowed to use their own dictionary and will not be explicitly assessed on their English language skills.
- The exam is based on European standards, but non-European candidates are welcome and are given the opportunity to share their experiences from their home countries during the oral examination.
- Candidates must submit original work, which will be checked for plagiarism and/or the use of artificial intelligence software.

- Candidates have to send in original submissions. These will be checked on unlooked-for plagiarism and/or the use of Artificial Intelligence software.

Preparing the EBN exam

The EBN Exam does not primarily aim to test the ability to recall knowledge, but rather to assess the ability to use knowledge and apply competencies. Professional roles, as defined by the CANMEDS model, cannot all easily be tested in a written exam without dialogue due to cultural differences across countries. Therefore, the exam consists of a combination of written tests and oral examinations. The written portion consists of questions that can be solved using reference materials ('open book,' approx. 60%) and questions that must be answered without reference materials ('closed book,' approx. 40%). To prepare for the written exam, we recommend using a textbook from clinical practice for the open-book section and specific scientific papers provided on the website for the closed-book section. Questions are set by EAN members and are selected based on the content of the EBN core curriculum (European Training Requirements Chapter 8A). The examination committee conducts a final review of the questions.

For the oral examination, candidates are required to write an essay on public/global health or ethics in the field of neurology. In addition, a critical scientific appraisal of a clinical topic (CAT) and a clinical case presentation are required. The essay and CAT work should be prepared at home and submitted before the examination. Candidates may ask the examination staff for assistance in completing these tasks. All submissions are scanned for plagiarism, and candidates may be requested to revise their CAT or essay.

Candidates also need to present a clinical case from their own practice and demonstrate their clinical reasoning process to solve the diagnostic and therapeutic problem. This clinical presentation does not need to be submitted before the examination and will not be checked for plagiarism before the exam session.

Course of the exams 2023 and 2024

Oral Exams

The oral exams were conducted online and hosted by the Portuguese provider iCognitus (www.icognitus.com). This meant that the exam was taken from the candidates' homes or offices, using their own computers or laptops, with continuous video and audio streaming of the examinees.

In 2023, the online oral examinations were held on Friday, May 12, and Saturday, May 13.

In 2024, the oral exams were scheduled for Friday, May 31, and Saturday, June 1. Due to a shortage of examiners caused by last-minute cancellations, three virtual exam rooms had to be closed, and additional oral exams took place on July 4, 10, and 11.

Examiners were recruited from the EAN and EBN and are listed in the appendix and on the EBN website.

The examination committee established a set of standards for conducting the online test to prevent fraud. These standards can be found on the website (www.uems-neuroboard.org).

Each candidate was examined by two examiners, who were responsible for all three presentations. Although it would be preferable from an educational perspective to have different examiners for each submission, this was not feasible in the online setting.

The online exams were conducted smoothly, and both candidates and examiners expressed general satisfaction with the process, as indicated by the surveys conducted after the exams.

Written Exam

The written exam also took place online at the candidates' desks, in environments with reliable Wi-Fi, as facilitated by iCognitus. It was conducted on May 19, 2023, and June 7, 2024. The rules for this exam were the same as those for the online oral exams.

The written exam consisted of three sections in 2023 (one closed book, two open book). Following feedback from candidates in the post-exam survey, we combined the two open-book sections into one in 2024.

Examinees were grouped in clusters of 20 students, each supervised by a technical host who checked their identity and provided invigilation or technical assistance during the exam. Two members of the exam committee were continuously available for content-related assistance via chat or, in rare cases, direct personal contact on screen.

Both in 2023 and 2024, the written exams proceeded as expected and without major issues. A few candidates were warned for speaking loudly (which they claimed was a habit of talking to themselves) during the exam. In post-exam surveys, examinees expressed satisfaction with the written exams, though some critical remarks regarding content and wording will require attention.

Data-processing

Data from the written tests were analyzed using a data-analysis program. For each question, the percentage of candidates who answered correctly, adjusted for the level of guessing (P_c -value, $P_c = 0$ at the level of guessing, which is 20% for best-of-five questions), and the discriminative value across the whole test ([RIT-value](#)) were calculated.

Questions with both low P -values and RIT-values were removed from the test before final grading: questions with a significantly negative RIT-value were eliminated if $P_c < 0.85$, those without significant discriminating value if $P_c < 0.50$, and those with a significant discriminating value only if $P_c < -0.50$. The Kuder-Richardson formula was used to check the internal consistency of the written exam ([Kuder-Richardson Coefficient](#)).

The passing limit for the written exam was set using the post-test Cohen procedure. The mean score of the five best-performing students was used as the maximum obtainable score, with a real knowledge percentage of 55% (see below). Students who performed at the passing threshold level received 55 out of 100 points.

Oral examinations were graded using standard forms (2/3 weight) and the overall impression of the examiner (1/3 weight). Examiners independently awarded marks, and the results of all three presentations judged by two examiners were combined and converted to a score between 0 and 100 points to make them comparable with the written exam results. The passing threshold for the oral examination was set at 55 out of 100 points.

The final mark was calculated by combining the results of the written exam (weighted 0.7) and the oral exam (weighted 0.3). Candidates who scored 55 or more out of 100 were deemed successful.

¹Cohen-Schotanus J, Van der Vleuten CPM. A standard setting method with the best performing students as point of reference: Practical and affordable. *Med teacher* 2010; 32: 154-160.

Candidates

In 2023, 99 candidates participated in the exam, while in 2024, this number increased to 149. The proportion of participants from outside Europe continues to grow, as candidates benefit from not having to travel for the exam.

Exam fees

All candidates are required to pay a fee of 600 Euros if they register before the early-bird deadline and 700 Euros thereafter (www.uems-neuroboard.org). The EAN offers incentives to encourage participation by its young members.

Candidates who withdraw from the exam do not receive a refund due to bank transfer fees and administrative costs, but they are allowed to renew their application the following year at a reduced fee. This same policy applies to candidates who fail the exam and retake it the following year.

Exam-results

Written exam

In both 2023 and 2024, two out of 100 questions were removed because they had a $P_c < 0.25$ (i.e., fewer than 40% of the candidates provided the correct answer, with a guessing level set at 20% for best-of-five questions) and a low RIT value (i.e., no discrimination between "good" and "bad" candidates).

The internal consistency of the exam, after removing two questions, was quite high: KR20 = 0.91 in 2023 and 0.83 in 2024 (values above 0.70 are generally considered acceptable).

The mean score of the top five candidates was considered the best achievable score for setting the passing limit. Using the Cohen Method, where 55% actual knowledge is considered marginal (with adjustments for guessing, approx. 20%), the passing threshold was set at 58 correct answers in both years. A student with 59 correct answers was awarded 55 marks, and so on, up to a maximum of 100 points.

Orals

Oral exams were scored by the examiners using standard forms (see the EBN website). Each candidate's score was calculated from the mean of their CAT, essay, and clinical case presentation. The maximum achievable score was set at 100, and a passing score was set at 55 points (this threshold is arbitrary).

Combining Oral and Written Exam Results

Combining the results of the written and oral exams, 8 out of 99 candidates (8%) failed the overall exam in 2023, while 12 out of 149 candidates (8%) failed in 2024. In previous years, the failure rates were 12% in 2022, 7% in 2021, 12% in 2019, and 14% in 2018.

Quality control and feedback

The validity of the questions and the internal consistency of the exam were checked using psychometric statistics (as described above).

A survey was conducted among the examinees at the end of the written exam, and examiners were also asked to provide feedback. All data collected will be analyzed by the examination committee to improve future procedures.

Candidates were given the opportunity to receive personalized feedback on their performance. Score sheets from the oral exams were made available, and we provided analysis of the candidates' results in the different fields of neurology, as defined by the ETRN. For logistical reasons, candidates were not able to review the questions or their responses. An example of individual feedback is included in the appendix.

We are awaiting the results of an analysis by the EAN Ethics and Quality Task Force in 2025.

In 2023, an observer from the UEMS Examination Board (CESMA) attended the exams, interviewed examiners, and reviewed the data. Unfortunately, an interview with candidates was canceled, and we are still awaiting CESMA's final accreditation report.

Conclusion

The 15th and 16th exams of the European Board of Neurology can be considered multi-competency exams with reliable results and favorable outcomes for 90% and 92% of candidates in 2023 and 2024, respectively. Overall satisfaction among candidates and examiners was high, but there is room for improvement, particularly in addressing some of the candidates' feedback.

Please, visit our website www.uems-neuroboard.org for further information

Members of the Examination Committee as of the end of the 2024 exam

Dr Tim Counihan, EBN, Galway (IRL)
Dr Francesco Di Lorenzo, EAN-EQTF, Roma (I)
Prof David Garcia Azorin, EBN, Valladolid (E) – chairperson
Prof Massimiliano Filosto, EAN, Brescia (I)
Prof Pablo Irimia Sieira, EAN, Pamplona (E)
Prof Jan Kuks, EBN, Groningen (NL) – past chairperson
Dr Deborah McIntyre, EBN, Luxembourg (L)
Mag Gabrielle Lohner, chief executive, Vienna (A) until September 2023
Dr Jasenko Selimovic, chief executive, Vienna (A)

For this Report: JBM Kuks, September 2024

Appendices

1. Examiners in the oral board exams

2023

Dr. Ramy Abdelnaby, Germany
Prof. Manuel Alegre, Spain
Dr. Magnus Andersson, Sweden
Prof. Angelo Antonini, Italy
Dr. Josanne Aquilina, Malta
Dr. Daniella Belvisi, Italy
Dr. Alex Bisdorff, Luxemburg
Dr. Tim Counihan, Ireland
Prof. Antonella Conte, Italy
Prof. Patrick Cras, Belgium
Prof. Marianne De Visser, The Netherlands
Dr. Francesco Di Lorenzo, Italy
Prof. Gilles Edan, France
Prof. Massimiliano Filosto, Italy
Prof. Sten Fredrikson, Sweden
Prof. Tobias Freilinger, Germany
Dr. David Garcia Azorin, Spain
Prof. Wolfgang Grisold, Austria
Prof. Pablo Irimia Sieira, Spain
Prof. Jera Kruja, Albania
Prof. Jan Kuks, The Netherlands
Prof. Helmar Lehmann, Germany
Dr. Deborah McIntyre, Luxemburg
Prof. Serefnur Öztürk, Turkey
Prof. Lacramioara Perju-Dumbrava, Romania
Dr. Jochen Schäfer, Germany
Prof. Vincenzo Silani, Italy
Dr. Walter Struhal, Austria
Dr. Christine Tranchant, France
Dr. Olivier Vandhuick, France

2024

Prof. Manuel Alegre, Spain
Prof. Angelo Antonini, Italy
Dr. Josanne Aquilina, Malta
Dr. Michael Bär, Czech Republic
Dr. Daniella Belvisi, Italy
Prof. Maia Beridze, Georgia
Dr. Alex Bisdorff, Luxemburg
Dr. Elisabeth Gulowsen Celius
Prof. George Chakhava, Georgia
Dr. Tim Counihan, Ireland
Prof. Patrick Cras, Belgium
Prof. Luc Defevre, France
Prof. Marianne De Visser, The Netherlands
Dr. Francesco Di Lorenzo, Italy
Dr. Laurens Dobbels, Belgium
Prof. Gilles Edan, France
Dr. Julia Ferrari, Austria
Prof. Massimiliano Filosto, Italy
Prof. Tobias Freilinger, Germany
Prof. David Garcia Azorin, Spain
Dr. Niokolaos Grigoriadis, Greece
Prof. Miguel D'Haeseleer, Belgium
Prof. Pablo Irimia Sieira, Spain
Dr. Matthiew Jones, UK
Dr. Rua Kaladyte Lokominiene, Lithuania
Prof. Anita Kamondi, Hungary
Dr. Georgios Kaponides, Greece
Prof. Michael Khalil, Austria
Prof. Jera Kruja, Albania
Prof. Jan Kuks, The Netherlands
Dr. Deborah McIntyre, Luxemburg
Prof. Serefnur Öztürk, Turkey
Prof. Lacramioara Perju-Dumbrava, Romania
Prof. Benedikt Schoser, Germany
Dr. Olivier Vandhuick, France
Dr. Johan Zelano, Sweden

2. Personal feedback to examinees

Report feedback EBN-Exam 2024, your number = 045

11/8/2024

OVERVIEW OVER ALL CANDIDATES

Legenda

Column 1. Number of candidate

Column 2. Marks for the total written test, scores ranging between 0 and 100.

These Marks reflect the number of correct answers. The total test consisted of 100 questions. Two questions were skipped because of marginal statistics so 98 remained. We calculated the mark with help of Cohen's method calculating a maximum score as the mean of the 5 best scores (86-90), a guessing rate of 20.15 and a 60% real knowledge rate. This resulted in a cut-off at 58. The mark can range between 0-100.

Column 3. Marks for the oral test

The oral test consisted of an essay, a CAT and a clinical presentation, each was scored with a standard list and finally the examiners provided a global impression on a 10-point scale. All candidates got two examiners.

Scores from the

- * Essay (0-12 standard weight 2/3, 0-10 global impression weight 1/3)
- * CAT (0-15 standard weight 2/3, 0-10 global impression weight 1/3)
- * Clinical case (0-20 standard weight 2/3, 0-10 global impression weight 1/3)

were added up and transformed to a mark ranging from 0-100.

Column 4. Combined final mark.

Marks from the written test (weight 7/10) were merged with the marks from the oral test, resulting in a final combined mark.

$$0.7 * [\text{Column 2}] + 0.3 * [\text{Column 3}] = [\text{Column 4}]$$

80-100 = Excellent, 70-79 = Good, 60-69 = Fair, 55-59 = Marginal, <55 = No pass

1	2	3	4	
004	91	99	93	best score
034	90	81	87	
112	82	99	87	
148	83	99	87	
029	83	93	86	
046	82	96	86	

140	80	100	86
143	81	98	86
164	83	94	86
057	82	94	85
096	80	98	85
069	82	89	84
146	81	94	84
171	79	96	84
031	80	91	83
086	78	95	83
091	82	86	83
105	80	93	83
106	76	100	83
189	80	93	83
073	78	93	82
118	79	92	82
121	78	94	82
176	79	91	82

045	74	98	81
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054	79	87	81
059	78	90	81
061	75	95	81
075	80	85	81
010	73	97	80
033	76	91	80
070	75	92	80
081	79	85	80
100	78	87	80
134	78	87	80
173	76	91	80
016	70	100	79
027	79	80	79
030	74	91	79
032	78	82	79
037	75	90	79
043	72	98	79
123	73	96	79
127	74	93	79
139	71	99	79
152	74	92	79
158	72	98	79
178	73	95	79
179	74	91	79
041	73	92	78
064	76	84	78
065	74	89	78
071	73	91	78
079	76	83	78
129	73	90	78
132	72	94	78

015	68	100	77
020	70	95	77
104	71	94	77
120	75	84	77
038	72	86	76
133	76	78	76
137	68	97	76
169	68	95	76
011	70	87	75
024	73	82	75
025	71	87	75
077	72	82	75
084	66	97	75
145	66	96	75
149	71	86	75
157	68	93	75
182	66	96	75
076	73	77	74
125	67	91	74
150	68	88	74
163	71	81	74
172	66	93	74
080	70	83	73
160	64	95	73
165	66	90	73
168	65	93	73
185	66	90	73
197	67	90	73
099	68	83	72
102	66	89	72
130	64	92	72
131	74	69	72
151	65	90	72
052	75	64	71
066	63	92	71
083	63	90	71
090	74	67	71
103	63	90	71
119	61	96	71
124	67	83	71
142	63	89	70
161	64	87	70
018	66	79	69
111	61	89	69
138	64	83	69
155	60	92	69
074	59	90	68
088	57	96	68
141	74	56	68
147	67	71	68
170	61	85	68
181	68	70	68

186	61	86	68
087	58	90	67
136	59	86	67
159	67	70	67
014	60	83	66
051	72	55	66
067	59	80	65
128	57	85	65
007	60	76	64
115	59	77	64
144	58	80	64
040	63	62	62
097	57	74	62
098	64	60	62
167	50	93	62
072	58	70	61
116	59	67	61
135	64	55	61
012	50	85	60
055	52	81	60
047	58	64	59
089	45	93	59
126	57	64	59
177	58	62	59
021	59	56	58
056	63	48	58
092	53	67	57
122	55	60	56
060	45	80	55
----- passing rate			
048	44	80	54
082	52	59	54
193	38	90	53
044	43	76	52
049	52	52	52
194	45	70	52
008	33	91	50
085	44	65	50
162	44	67	50
050	52	37	47
028	49	34	44
117	38	22	33

For further general information about the 2024 Exam: see www.uems-neuroboard.org

If you failed the exam you get a new chance for next year 2025 against a reduced fee, please contact the secretary.

The following data are your personal detailed results on the orals and the written tests.

PERSONAL DATA

O R A L E X A M

These are your scores given for the several items from the scoring list as provided by your examiners 1 and 2, the maximum score obtainable is given in the utmost right column.

----- Oral Examination CAT	Ex 1	Ex 2	Maximum

C01. There is a clear concise and focused question -----	1	1	1
C02. The question is original and relevant for clinical practice -	2	2	2
C03. The search strategy is adequate -----	1	1	1
C04. The table with results is correct -----	1	1	1
C05. The comments described are adequate -----	2	2	2
C06. The comments described are adequate -----	3	2	2
C07. The final conclusion is sound -----	1	1	1
C08. The references are really the current key-references -----	1	1	1
C09. The answers to the questions on the exam are adequate	2	2	2
C10. Handling ignorance during the exam is adequate -----	1	1	1

C99. Global impression CAT on a 10 points scale -----	10	9	10

----- Examiner 1: E07
 ----- Examiner 2: E08

----- Oral Examination Essay	Ex 1	Ex 2	Maximum

E01. The topic is relevant for clinical practice -----	1	1	1
E02. There is a sound introduction -----	2	2	2
E03. The elaboration of the problem is adequate -----	2	2	2
E04. The own vision of the candidate is clear -----	1	1	1
E05. The presentations is clear and to the point -----	2	2	2
E06. The answers tot the questions are adequate -----	2	2	2
E07. Handling ignorance is adequate -----	1	1	1
E08. Time management is adequate -----	1	1	1

E99. Global impression Essay on a 10 points scale -----	10	9	10

----- Examiner 1: E07
 ----- Examiner 2: E08

----- Oral Examination Clinical Presentation	Ex 1	Ex 2	Maximum

K01. Pace and clarity of presentation history-----	2	2	2
K02. Systematic approach history-----	2	2	2
K03. Establishment of case facts history -----	2	2	2
K04. Systematic approach physical examination -----	2	2	2
K05. Establishment of relevant physical findings -----	2	2	2
K06. Logical sequence of anxillary investigations-----	2	2	2
K07. Appropriate management of anxillary test -----	2	2	2
K08. Ability to identify and solve problems -----	2	2	2
K09. Putting the case in a broader context -----	2	2	2

K10. Originality and contribution to clinical practice ----- 2 2 2

K99. Global impression Clinical presentation on a 10 points scale

10 10 10

----- Examiner 1: E07

----- Examiner 2: E08

E07

CAT

Important topic for daily practice clear presentation relevant analysis - conclusion and outlook for the future

Essay

Great presentation; you master your topic. I agree that SUDEP public information will also change neurologist behaviour- and practice

Clinical case

Great presentation - an original topic - very important for new practices in neurology - global approach - rigorous investigation and appropriate management

E08

CAT

Great presentation- important topic- good discussion- good background knowledge. Very well researched- literature up to date

Essay

Great topic- highly relevant- the own vision was clear presented- the presentation and the slides were very well designed and structured

Clinical case

Interesting case- well presented- fluent speaking

WRITTEN EXAM

Neuro-categories

Your number of correct answers per neuro-category as defined in the European Training Requirements Neurology. Some questions were related to several categories, therefore the total number exceeds the total number of questions.

Vascular	11 out of 19 correct answers	57%
Cortex - Cognition - Dementia	8 out of 12 correct answers	66%
Epilepsy	4 out of 5 correct answers	80%
Headache	6 out of 6 correct answers	100%
Immunology including MS	8 out of 8 correct answers	100%
Infections	6 out of 7 correct answers	85%
Movement disorders	11 out of 14 correct answers	78%

Intensive care neurology	3 outof 3 correct answers	100%
Trauma	7 outof 8 correct answers	87%
Complications of internal disease	2 outof 2 correct answers	100%
Neuromuscular disorders	7 outof 10 correct answers	70%
Oncology	3 outof 3 correct answers	100%
Cranial nerves	4 outof 6 correct answers	66%
Neuropsychiatry	5 outof 5 correct answers	100%
Neurorehabilitation	3 outof 4 correct answers	75%
Pain	1 outof 1 correct answers	100%
CSF	1 outof 3 correct answers	33%
Sleep	4 outof 5 correct answers	80%
Spinal cord - Brainstem (ALS)	6 outof 6 correct answers	100%
Autonomic nervous system	1 outof 1 correct answers	100%

Competencies

Your number of correct answers per competency

Some questions were related to several competencies, therefore the total number exceeds the total number of questions.

Pharmacotherapy	19 outof 23 correct answers	82%
Nonpharmacological therapy	10 outof 11 correct answers	90%
Clinical examination	12 outof 17 correct answers	70%
Making a diagnosis	29 outof 36 correct answers	80%
Neuro-imaging	8 outof 10 correct answers	80%
Clinical Neurophysiology	1 outof 2 correct answers	50%
Diagnostics others	3 outof 6 correct answers	50%
Knowledge about a disease	4 outof 5 correct answers	80%
Linking with basic science	1 outof 2 correct answers	50%
Public Health - Epidemiology	0 outof 2 correct answers	0%
Neuropathology	1 outof 1 correct answers	100%
Genetics	1 outof 2 correct answers	50%

3. Papers for study to prepare for the closed book exam

1. [2017 ESO guideline cerebral venous thrombosis](#)
2. [Guidelines on Mechanical Thrombectomy in Acute Ischaemic Stroke](#)
3. [Advances in dementia with Lewy bodies](#)
4. [Emerging Trends in Neuromodulation for Treatment of Drug-Resistant Epilepsy](#)
5. [EAN guideline cluster headache 2023](#)
6. [Post-Traumatic Headache](#)
7. [2020 EAN guideline on pall care in MS](#)
8. [Advances Neurosyphilis](#)
9. [The neuropsychiatry of Parkinson disease](#)
10. [2020 EAN guideline coma](#)
11. [Management TBI in the first posttraumatic hours](#)
12. [Recent advances in traumatic brain injury](#)
13. [Neurol complications vasculitis](#)
14. [Guideline CIDP 2021](#)
15. [Treatment and diagnosis of chemotherapy-induced peripheral neuropathy](#)
16. [Bedside Testing in Acute Vestibular Syndrome](#)
17. [Psychiatric features of traumatic encephalopathy syndrome](#)
18. [Advances in Stroke Neurorehabilitation](#)
19. [Peripheral nerve blocks for headache disorders](#)
20. [Current Updates on Idiopathic Normal Pressure Hydrocephalus](#)
21. [2020 EAN statement on sleep and stroke](#)
22. [European guideline and expert statements on the management of narcolepsy](#)
23. [EAN guideline neurogenic supinate hypertension](#)