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Robustness of Cross-Domain Anonymisation of Court Decisions

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Project AnGer

Quick facts

- very few German **court decisions** (< 3%) are currently made publicly available
 - key reason: reliable **manual anonymisation** too expensive
- deep text anonymisation** using fine-tuned LLMs to detect different identifiers
- realistic surrogates** for critical text spans (vs. redaction or randomised initials)
- AnGer focuses on **German court decisions**
- specialisation on court type and legal domain + high-quality gold standard
 - results in > **99% recall** on high-risk spans → fully automatic anonymisation
- thorough **evaluation** is essential: “high-risk” application according to **EU AI Act**

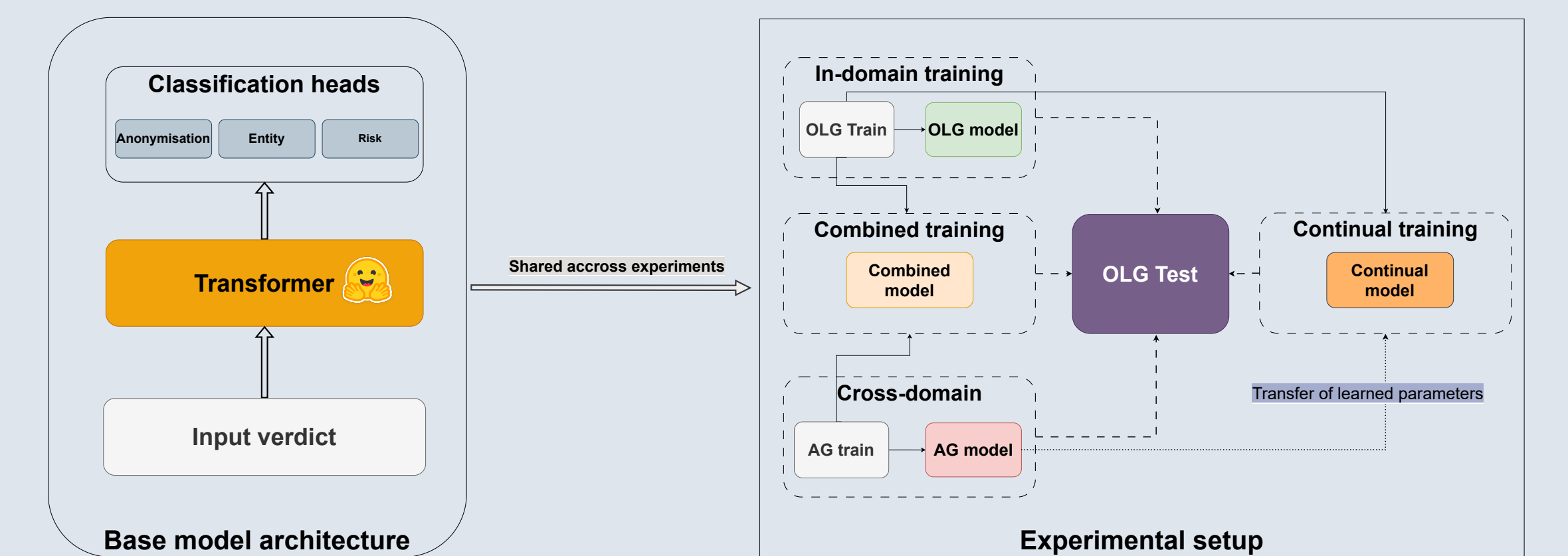
However

- most NLP systems still struggle with perturbations, esp. **distribution shift**
- domain robustness**: the ability to generalise across multiple domains
 - here: from district court (AG) to higher court (OLG) + across legal domains
- evaluation of robustness and domain transfer
 - cross-domain** transfer (AG → OLG) vs. **in-domain training** (OLG → OLG)
 - domain adaptation** via combined training or **continual learning**
 - from two legal domains (AG) to 11 legal domains (OLG)

Span type vs. risk assessment

	address-idx	address-name	car-idx	car-name	car-number	code-idx	contact-idx	court-docket	court-name	date-fact	date-process	date-world	imm-idx	imm-name	jur-idx	jur-name	misc-idx	nat-idx	nat-jur	nat-misc	nat-name
Risk																					
hoch	35	5189	12	73	341	68	301	18	18	137	3	4	50	453	11	108	1	44	9859	1	11379
mittel	65	2642	31	0	0	32	233	0	3	8	3	3	210	2278	361	8487	1	241	706	0	10
niedrig	680	2165	565	0	2	4087	57	6489	8858	12948	20303	743	428	537	627	111	57	734	27	19	59
	Entity																				

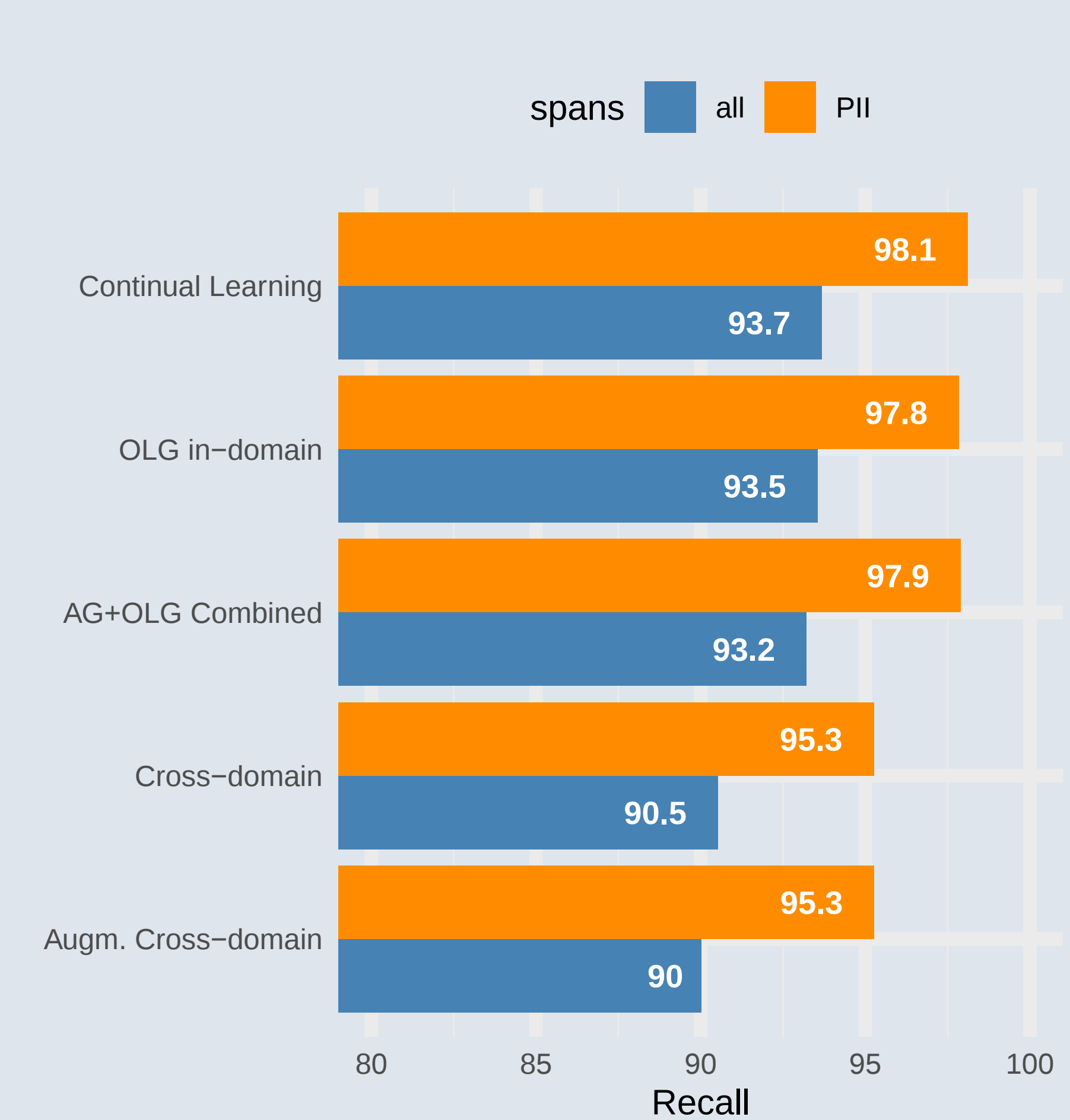
Model and experimental design



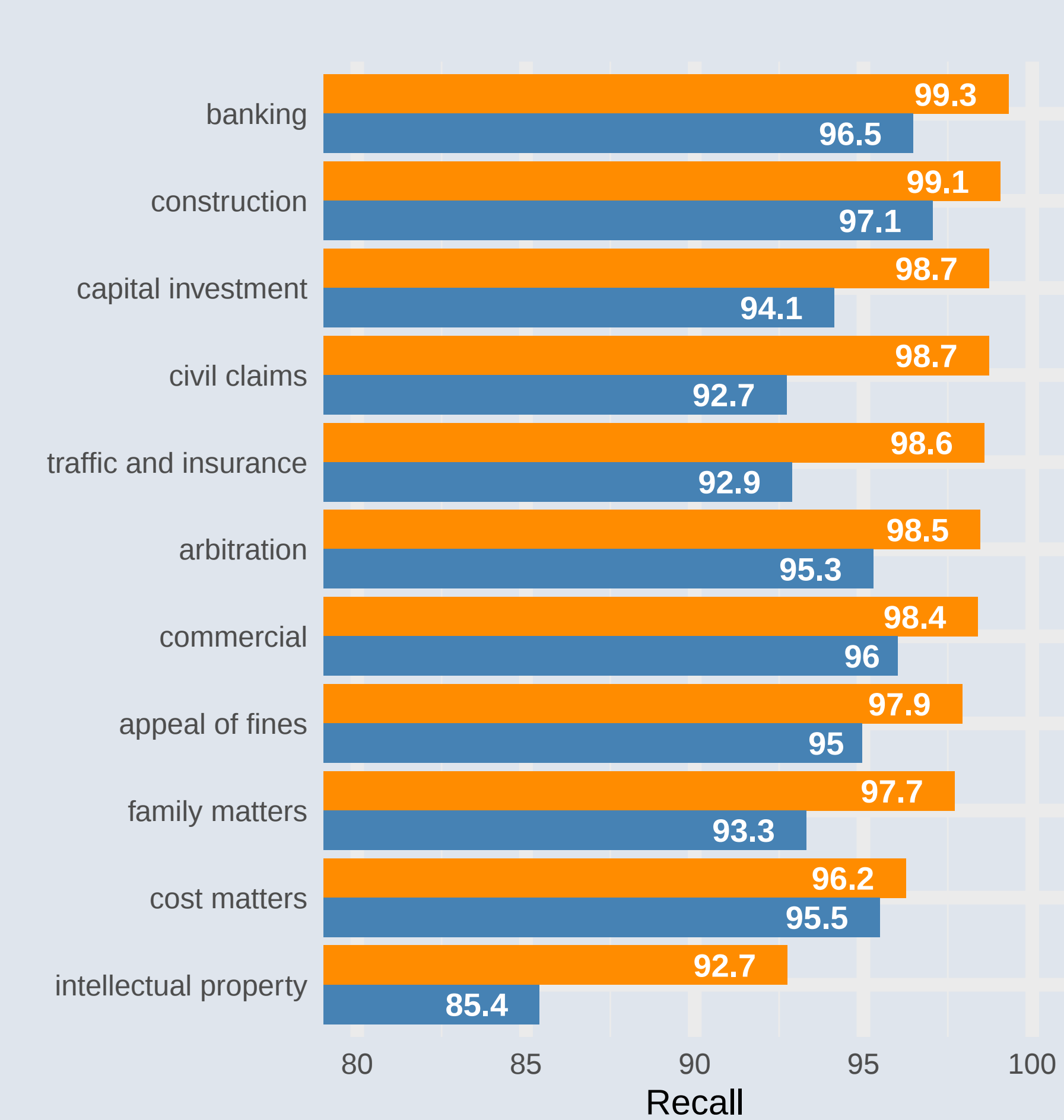
Confusion matrix for span types

	FN	address-idx	address-name	car-idx	car-name	car-number	code-idx	contact-idx	court-docket	court-name	date-fact	date-process	date-world	imm-idx	imm-name	jur-idx	jur-name	misc-idx	nat-idx	nat-jur	nat-name
FP	0	221	405	191	3	13	138	28	456	249	516	456	268	236	352	283	520	1	302	84	124
address-idx	278	327	101	0	0	0	43	1	0	0	0	1	2	0	1	9	11	0	5	0	1
address-name	223	98	514	0	0	0	41	0	1	26	0	0	0	0	9	9	98	0	15	3	12
car-idx	213	0	2	96	0	0	2	0	0	0	8	0	0	28	256	0	1	0	2	0	0
car-name	0	0	0	1	60	0	10	0	0	0	0	0	0	0	2	0	0	0	0	0	0
car-number	0	0	0	8	327	3	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0
code-idx	168	42	10	0	0	5	3791	32	66	0	34	1	0	7	24	0	3	0	0	2	2
contact-idx	59	0	0	0	0	0	71	448	0	0	0	0	0	1	3	2	10	0	0	0	5
court-docket	392	0	0	0	0	0	35	0	6073	6	0	0	0	0	0	0	1	0	0	0	0
court-name	322	2	39	0	0	0	0	0	26	948	0	0	0	0	1	0	6	0	0	0	0
date-fact	215	1	0	5	0	0	1	0	0	0	1054	1784	121	1	3	0	0	0	8	0	0
date-process	342	0	0	0	0	0	0	0	0	0	1097	1804	20	0	0	0	0	0	0	0	1
date-world	274	0	1	0	0	0	1	0	0	0	85	53	336	0	0	0	0	0	0	0	0
imm-idx	442	1	6	17	0	0	32	5	0	0	2	0	0	58	90	14	16	0	3	0	2
imm-name	566	2	10	116	0	1	47	8	0	0	1	0	0	81	2213	42	168	0	2	0	11
jur-idx	637	4	27	4	0	0	1	1	0	0	0	0	0	2	30	227	61	0	2	2	1
jur-name	475	2	117	0	0	0	1	19	0	7	0	0	0	5	293	46	7654	0	1	21	63
misc-idx	31	0	0	0	0	0	12	1	1	0	0	1	0	1	4	1	0	1	2	0	4
nat-idx	614	8	14	0	0	0	2	0	0	2	35	1	0	0	9	3	7	0	314	2	8
nat-jur	50	0	1	0	0	0	0	0	0	3	0	0	0	0	1	0	26	0	2	1029	150
nat-misc	5	0	0	0	0	0	0	0	0	0	1	0	0	0	9	0	0	0	3	0	2
nat-name	119	2	18	0	0	0	3	2	0	0	1	0	0	0	38	0	56	0	2	204	1005
	Prediction																				

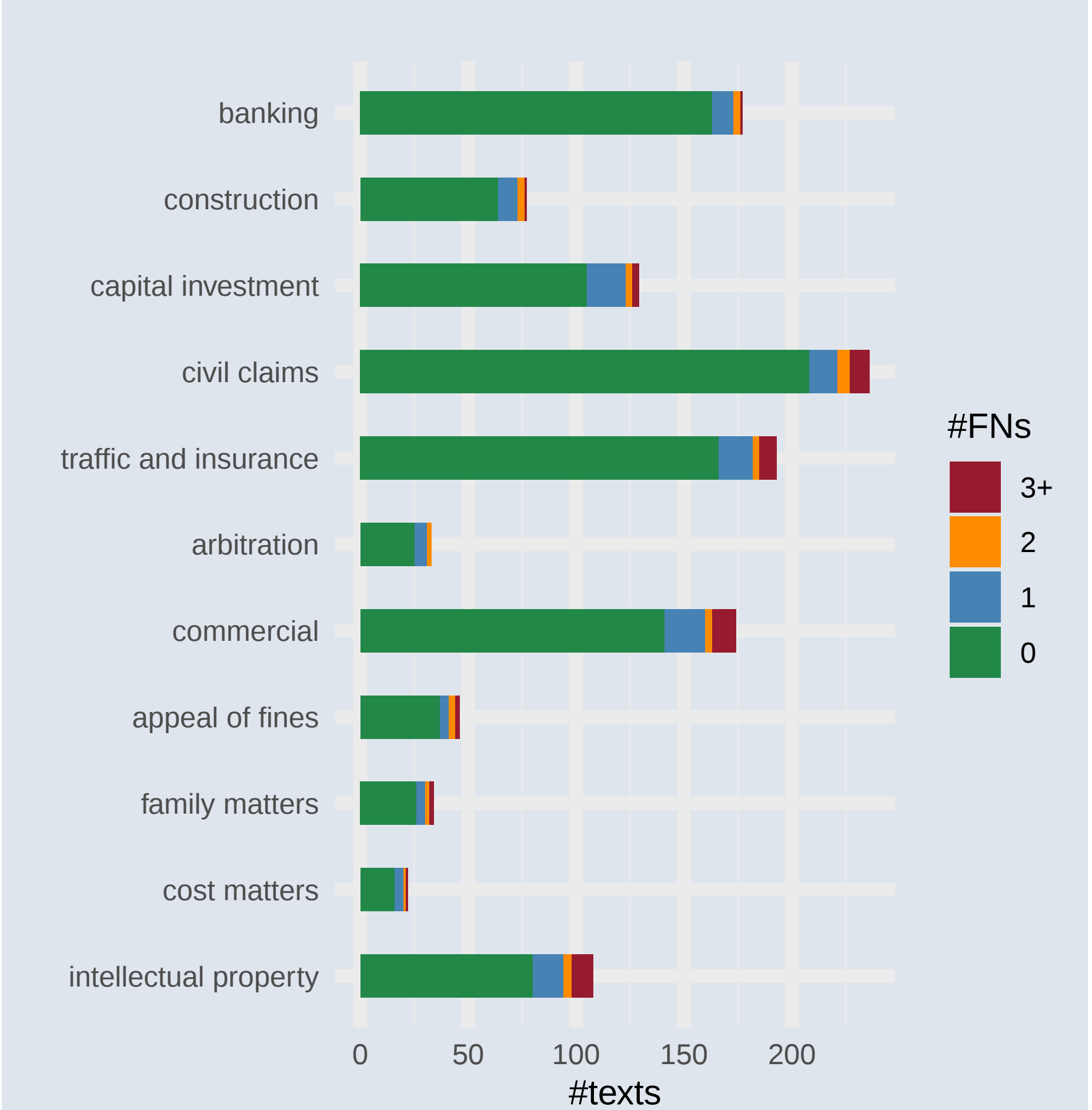
Recall comparison of models



Recall across domains (Continual)



FNs of PII per text (Continual)



Comparing gold with predicted annotations

- Hartwig, F et al. : Mitophagy in Intestinal Epithelial Cells ([Biolo](#) 174 , pages 1 - 14 , 2017) ,
- Esser, Dieter, E. T. A. Hoffmann-Straße 31d , 82496 Oberau
- Superfone Deutschland GmbH, vertreten durch d. Geschäftsführer Dr. Juergen Ritter, Noel Kühnel, Steffen Fricke, Okko Heimann und Dr. Herwig Marx, ...
- Bagik GmbH, vertreten durch d. Geschäftsführer, Robert-Bosch-Straße 78 , 47138 Duisburg
- ... konnte der von der Klägerin im Termin vom 27. 07. 2018 mitgebrachte Sachverständige KfZ-Meister Friedhelm Schreiber nicht erschüttern .