



UN Cyber Security Project

– PICASSO

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Outline

☐ **Transition from Phase I to Phase II**

Tagging Applied to a Specific Country - UK

☐ **Keywords Expansion**

Methodologies

Category & Subcategory Expansions

☐ **Phase II Progress**

Updated Tagging Procedure & Tagging Results

Comparison and Summary Charts

☐ **Phase II Achievements**

Improvements and Calculation, and Improvement Plan



Transition: From Phase I to Phase II

□ Tagging to UK Text Data

We applied the methodologies and codes from Phase I to a specific country – United Kingdom to check the tagging performance.



UK Files Used

□ Tagging Results

	Category	Reason	Sentence	SentenceID	Subcategory
0	technical measures	Unknown For Now	Establish a new operational partnership with t...	0d6be37f8c	standards
1	organization measures	Unknown For Now	... balancing security with freedom and privac...	5b9988bc85	policy
2	technical measures	Unknown For Now	We will model best practice on cyber security ...	47818b8c05	standards
3	technical measures	Unknown For Now	We will work with industry to develop rigorous...	7352b33524	standards
4	technical measures	Unknown For Now	In particular we will raise the standard of cy...	1f69eae1de	standards
5	technical measures	Unknown For Now	BIS will work with domestic, European and glob...	e050e96516	standards
6	technical measures	Unknown For Now	So BIS will work to stimulate the development ...	2973af12ae	standards
7	technical measures	Unknown For Now	BIS is also exploring ways in which industry-l...	1b4d15d03a	standards
8	technical measures	Unknown For Now	BIS will work with users, industry and appropri...	1fc96236fb	standards
9	technical measures	Unknown For Now	4.51 As we have said, we plan to require highe...	397498e67e	standards
10	technical measures	Unknown For Now	4.52 We are also raising the standard of cyber...	54e6fa64db	standards
11	technical measures	Unknown For Now	But the Government hopes these rising standard...	2afca8f86d	standards
12	cooperation	Unknown For Now	Promote greater levels of international cooper...	01485d64cf	international cooperation
13	technical measures	Unknown For Now	Working with domestic, European, global and co...	0261d67d51	standards
14	technical measures	Unknown For Now	Encourage industry-led standards and guidance ...	21c8c739f2	standards
15	organization measures	Unknown For Now	Work with allies to ensure implementation of N...	5ef3ef7649	policy
16	technical measures	Unknown For Now	Encourage international and regional organisat...	d9519a2878	standards
17	organization measures	Unknown For Now	To view this licence, visit www.nationalarchiv...	155445a825	policy



Transition: From Phase I to Phase II

☐ Tagging Results

- ☐ Out of 523 sentences contained in the UK text, there were 18 sentences tagged by the category and subcategory selected.
- ☐ The tagging rate was only 3.44%, which was considered relatively low.
- ☐ However, this only applied to UK case. We could also check this rate using other countries' text data.

We figured there were only a few key words captured. With the supervised model, we proceeded to expand the category/subcategory selections.



Phase II Progress: Keywords Expansion

☐ Methodologies: Supervised Model

After reading the UK files, we expanded and specified keywords in category/subcategory in order to improve the model accuracy.



Old Keywords in Phase I

Legal Measures	Criminal Legislation, Regulation And Compliance
Technical Measures	CIRT, Standards, Certification
Organization Measures	Policy, Roadmap For Governance, Responsible Agency, National Benchmarking
Capacity Building	Standardisation development, manpower development, professional certification, agency certification
Cooperation	Intra-State Cooperation, Intra-Agency Cooperation, Public Sector Partnership, International Cooperation
Child Online Protection	National Legislation, Un Convention And Protocol, Institutional Support, Reporting Mechanism



Old Keywords in Phase I

❑ Tagging Results

Only 18 sentences in the UK file were tagged using the Phase I keywords.

	Category	Reason	Sentence	SentenceID	Subcategory
0	technical measures	Unknown For Now	Establish a new operational partnership with t...	0d6be37f8c	standards
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17	organization measures	Unknown For Now	To view this <u>licence</u> , visit www.nationalarchiv...	155445a825	policy



Phase II Progress: Keywords Expansion

Category	Subcategory
Legal Measures:	Criminal Legislation, Regulation and Compliance, government action, international action, democracy, the rule of law, rule, law, institution, human rights, freedom, privacy, secure, protection, minister, safeguard, national resilience, administration, government, data protection regulation
Technical Measures:	CIRT, Standards, Certification Security skills, systemic issues, computing, strategy, specialist, effective, technology, digital, talent, device, system, software, assessment, technology, IT upgrade, strategic approach



Phase II Progress: Keywords Expansion

Capacity Building:	behavioral change, infrastructure development, fundraising, training centers, exposure visit, office and documentation support, job training, learning center, consultant, enhance, education, stan, Standardisation development, manpower development, professional certification, agency certification.
Organization Measures:	structure, strategy, monitor, evaluate, Policy, Roadmap For Governance, Responsible Agency, National Benchmarking.
cooperation:	intra-state cooperation, intra-agency cooperation, public sector partnership, international cooperation, business partnership, private sector partnership, government partnership, education partnership, GCHQ and business partnership, organization partnership, department partnership, national infrastructure partnership, cyber security hub, funding partners, national cyber crime capability, partnership between public and private sectors, partnership between government and private sector,



Phase II Progress: Keywords Expansion

Child online protection:

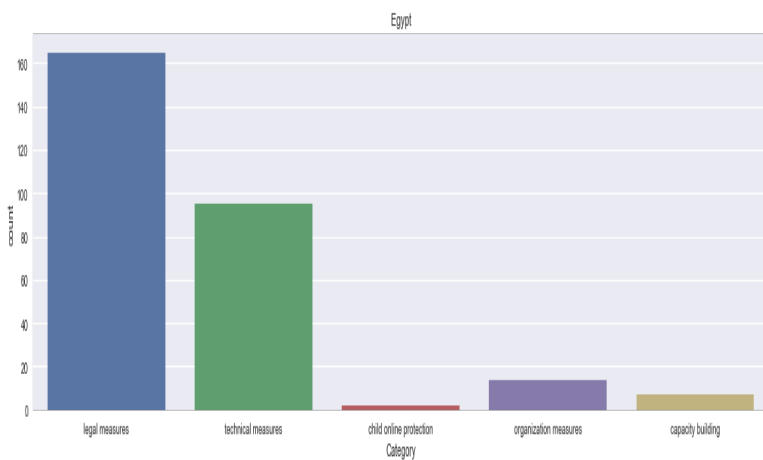
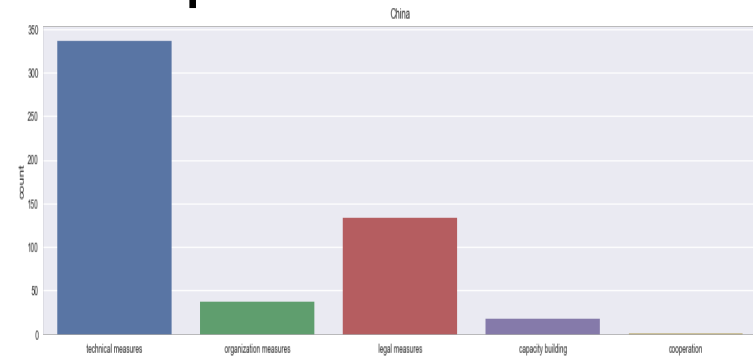
national legislation, UN convention and protocol, Institutional support,
reporting mechanism, UK council for child internet safety, National crime agency,
shaping mainstream law, training mainstream law, government interface, police force,
NCA, resilience to cyber attacks, government support, education, technical capabilities, public service,

Summary

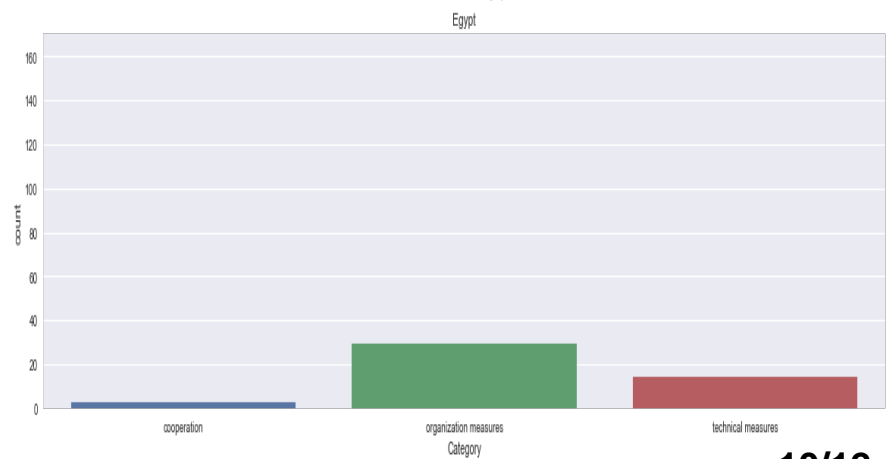
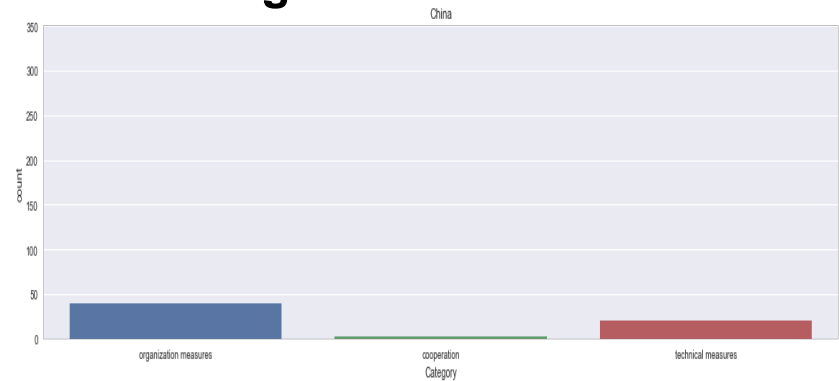
- We added new keywords and the number of sentences tagged was increased resulting from the updated model. The tagging rate was approximately 50%, which was acceptable.
- However, certain keywords may not be applicable. In the next stage, we will further improve the words selection in the categories.

Distribution Comparison - Phase II vs. I

Updated Model



Original Model





Accuracy of the Updated Model

Problems:

Sentences with keywords of mixed categories.

e.g. Establishing *a regulatory framework MCIT will work together with the Ministry of Justice (MoJ) to develop legal framework and conduct for addressing cybersecurity issues.....*

Organization Measure or Technical Measure or Legal Measure?



Phase II Achievements & Improvement Plan

- From the above conclusions, we could observe that the results of distribution were only for informative purpose although we improved the results from Phase I.
- According to the tagging results, the categories/keywords may not be accurate enough to provide solid evidence to support the next research stage.
- Our future plan includes updating the model with more restrictive categorizing/clustering criteria to optimize the results. We will also calculate the tentative accuracy rates in terms of measurement.



Q & A



Thank You