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Deepening Tax Administration Cooperation for  
High-Quality Belt and Road Development

Hong Kong, China 24-26 / 9 / 2024



# Artificial Intelligence: Challenges and Opportunities for BRI Tax administrations

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# Tax administration use of AI: “Inside vs. Outside”





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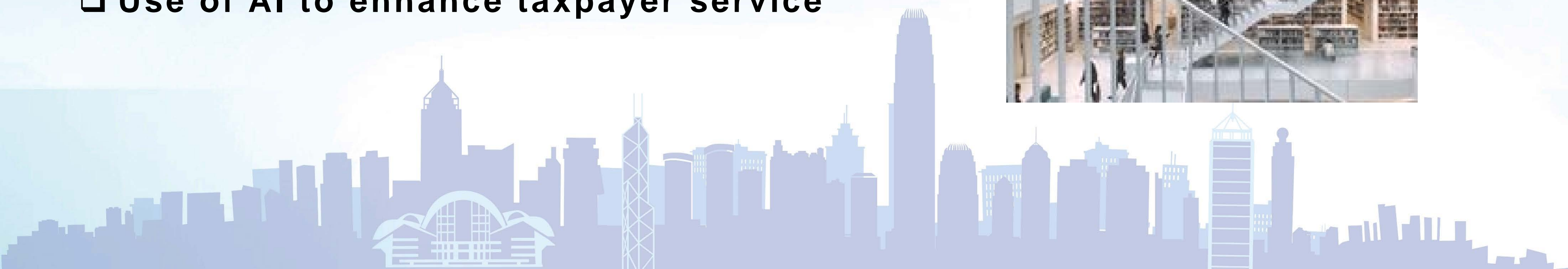
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# Use of AI for “Internal” Purposes

- Use of AI for internal procedures (e.g., research, correspondence)
- Use of AI to enhance taxpayer service





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# Use of AI for “External” Purposes

- Use of AI to build taxpayer profiles
- Use of AI to assess risk





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# Common uses of AI in tax administration





## Repetitive activities

- Assistance systems, e.g. for the treatment of series transactions, withholding tax deduction or incentives § Support in tax determination in the area of VAT
- Assistance in the determination of tariff proposals in the customs area
- Automatic accounting machines or accounting detectors for the validation of accounting records.
- Recognition and analysis of tax assessments, such as in the area of business tax or real estate tax

## Research activities or knowledge acquisition activities

Finding the appropriate case law, administrative instruction or literature opinion based on the context by means of an artificially created understanding of the search query.

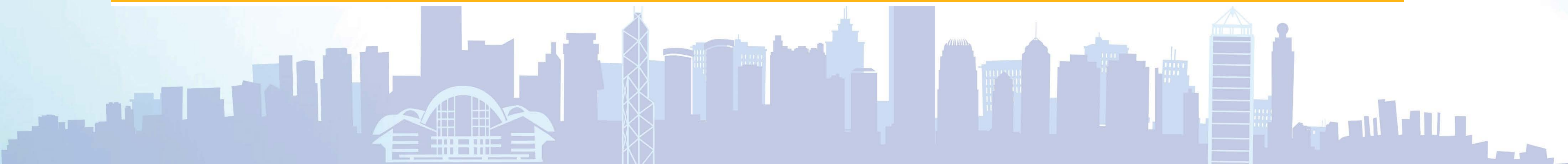
Intelligent briefs with alert function, which indicate the need for tax action (=> **NLP – Natural Language Processing**)

Contract analyses

Generative AI (e.g., Chat GBT)

## Data analysis

- Use of machine learning to enrich or combine with BI solutions (=> **BI – Business Intelligence**) and Tax CMS instances
- Continuous auditing via predefined pattern recognition in the area of sales tax or payroll tax
- Detection of high risk sectors and taxpayers
- Predictive Analytics



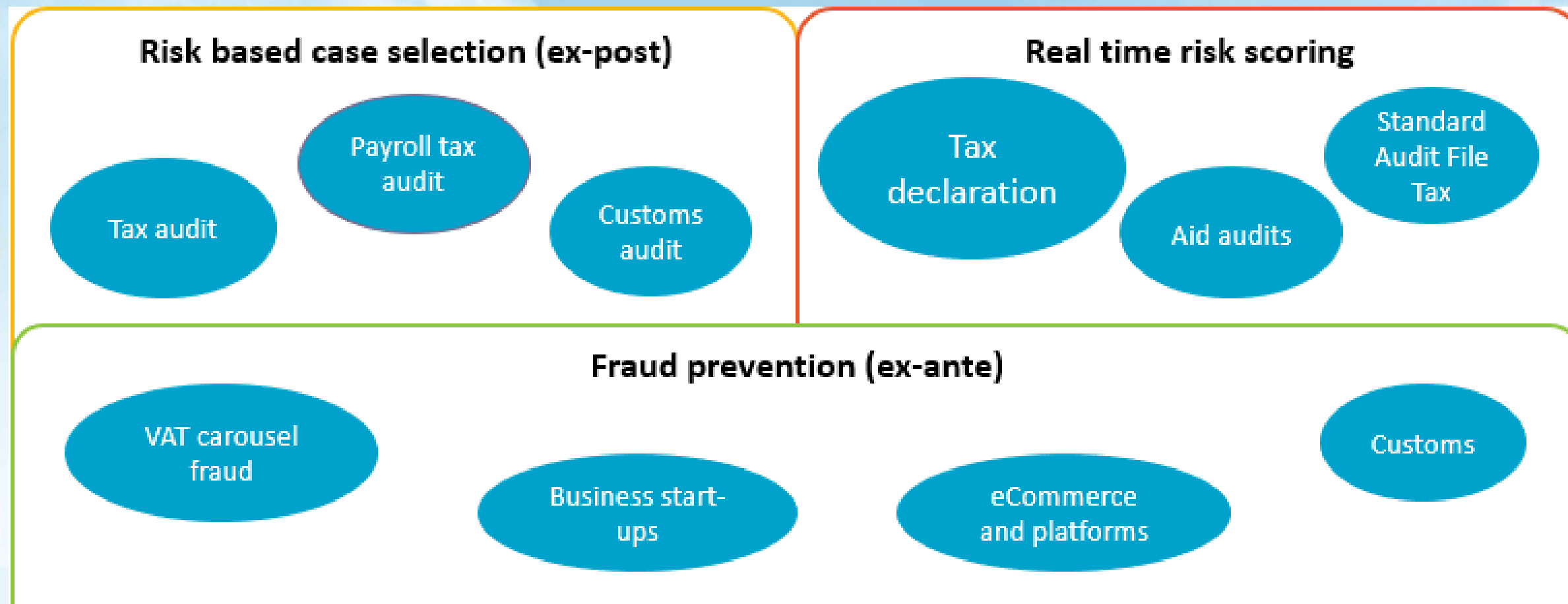


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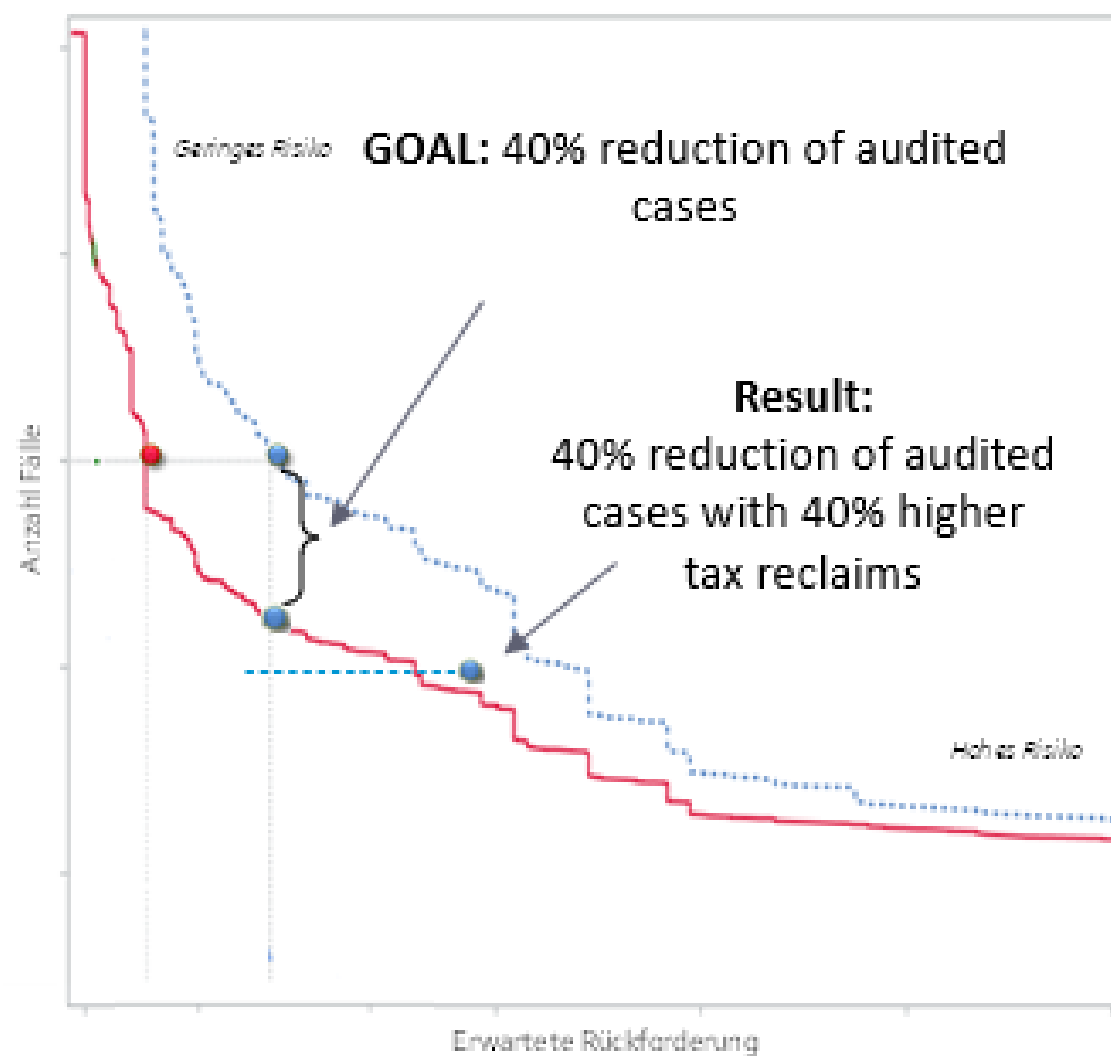


# When AI went right: Tax administration in Austria





# When AI went right: Austria real-time risk scoring (live scoring) - private tax declaration



- Development of a model for each risk area
- Implementing a „Live Scoring as a Service“
  - Ø 5-6 models per case (max. 20)
  - Ø 30.000 cases/h in realtime
  - Calculation of model < 1 sec (ca. 750 millisecs)



# When AI in tax administration went wrong: Three examples

## EKasa (Slovakia)

- Mandatory use of electronic cash registers.
- Data remitted on buyers and sellers in-real time to central data warehouse of the Slovak TA.
- Data further processed by tax risk-scoring algorithms.
- The ML algorithm ('AIS-R') processes data to predict risk of VAT fraud.
- The ML algorithm was not regulated by law but only based on a managerial decision of the TA.

## Toeslagenaffaire (Dutch childcare allowance scandal)

- Automated the assessment of childcare allowance fraud using a predictive model.
- Model would discontinue allowances of welfare recipients and seek reimbursement of all aids ever received.
- Input data used in the model consisted of historical biases and data inaccuracies.
- Risk model processed data based on nationality and ethnicity
- "Nederlander/niet-Nederlander" (Dutch/non-Dutch) – predicted risk of fraud of non-Dutch individuals was systematically increased.
- Model predictions were erroneous in 94% of cases.

## Systeem Risico Indicatie (SyRI) (Netherlands)

- Legal instrument to prevent and combat fraud in social security & income dependent schemes, taxes, social security and labour laws.
- Infrastructure enables, data exchange between government bodies, linking of data, analysis and generation of risk reports.
- Failure to disclose the risk model and indicators (fear that citizenry will adjust their position).
- Applied to "problem districts" and SyRI inadvertently created links based on bias e.g. Lower socio economic status.
- Large amounts of data qualified for processing.



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# Identifying Trustworthy AI: some internationally accepted principles





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# Five core principles:

- **Promotes inclusive and sustainable growth**
- **Is Human centered and Fair**
- **Are Transparent and explainable**
- **And Robust and Secure**
- **Are accountable**



# Applying these principles to taxation

|                       |  |
|-----------------------|--|
| <b>Accountability</b> | AI systems should incorporate mechanisms for clear assignment of responsibility. This involves ensuring that developers and users understand the limitations and potential risks associated with the technology.                                   |
| <b>Transparency</b>   | AI systems should be designed to provide explainability, allowing users to understand the basis for their decisions and actions. This entails avoiding black-box models and strategies that are difficult to interpret.                            |
| <b>Fairness</b>       | AI systems should not discriminate or exhibit bias based on protected characteristics such as race, gender, or nationality. Developers should strive to mitigate biases in data, algorithms, and decision-making processes.                        |
| <b>Robustness</b>     | AI systems should be resilient and able to handle unforeseen circumstances, adversarial attacks, or anomalous data inputs. They should be rigorously tested and regularly updated to ensure reliability and performance across varying conditions. |
| <b>Privacy</b>        | AI systems should respect user privacy and handle personal data appropriately. Developers should implement privacy-by-design practices, ensuring the minimization and protection of sensitive information.   |



# Applying these principles to taxation (continued)

|   |  |
|---|--|
| <b>Security</b>                                     | AI systems must be designed with security considerations in mind. This includes protecting against unauthorized access, data breaches, and ensuring the integrity and confidentiality of data processed by the AI system.  |
| <b>Human control</b>                                | AI systems should be designed to enhance human capabilities rather than replacing them entirely. Humans should have the ability to intervene, question, and override AI decisions when necessary.  |
| <b>Ethical considerations and taxpayers' rights</b> | AI systems should abide by ethical standards, reflecting society's values and respecting legal norms. Addressing ethical questions related to AI, such as data usage, system purpose, and potential social impact, is crucial.   |
| <b>Governance - assessment and reporting</b>        | There should be adequate governance frameworks and regulatory mechanisms in place to ensure compliance with trustworthy AI principles. These frameworks often involve multidisciplinary collaboration and input from various stakeholders.<br>Overall, the elements of trustworthy AI aim to foster public trust, mitigate risks, and promote the responsible development and deployment of AI technologies in a manner that benefits society. |



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# Putting in place a governance structure





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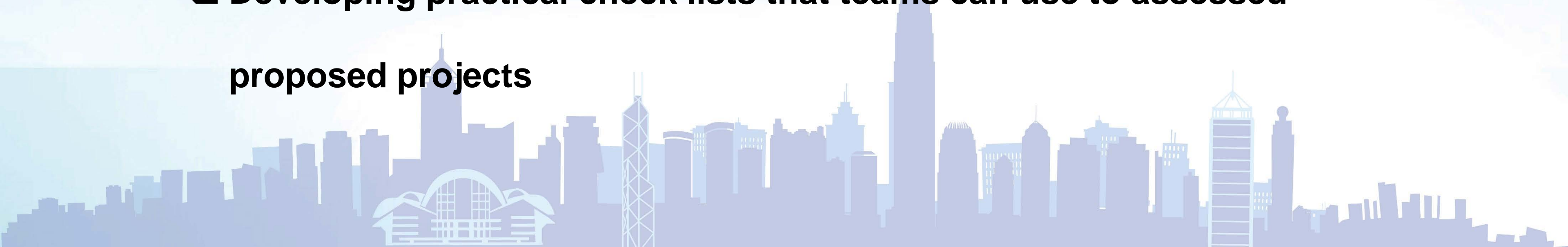
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# How?

- Appointing a deputy commissioner to oversee the use of AI**
- Establishing a body of technicians as an internal consulting group**
- Developing practical check lists that teams can use to assessed  
proposed projects**







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# What Role for BRITACOM?





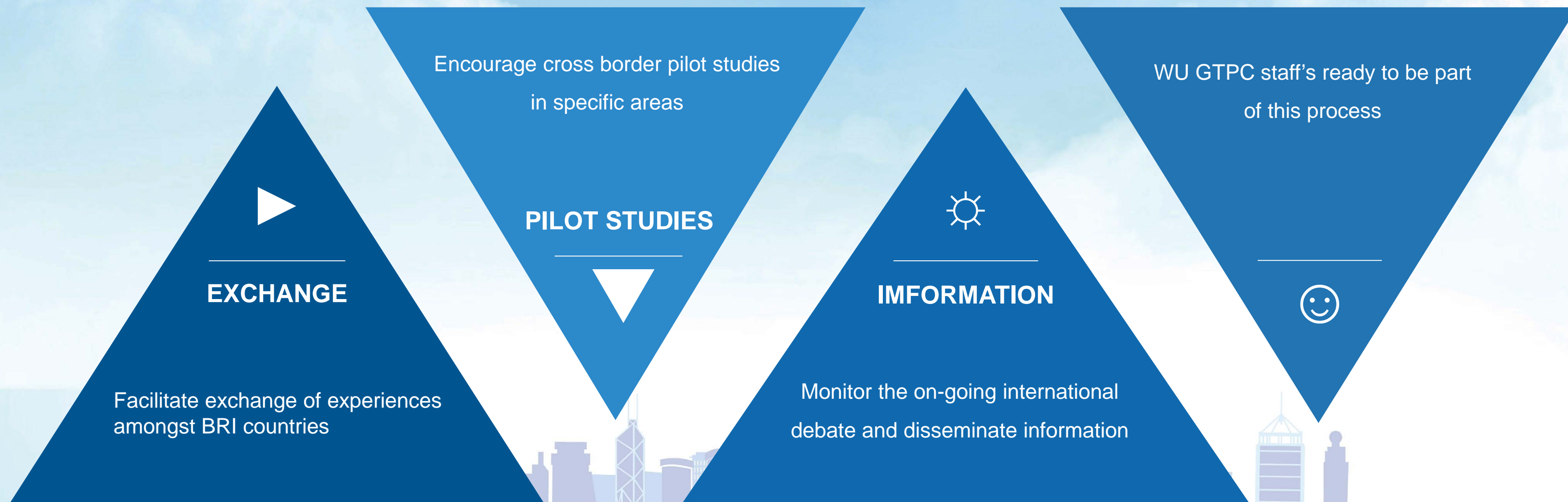
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# What Role for BRITACOM?





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# Thank you

