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BRidging Information and Data Generation for Evidence-based Health Policy and Research

Data quality assurance in healthcare performance assessment projects using administrative data

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www.bridge-health.eu

This project is funded by the Health Programme of the European Union

WP10 context (i)

This work package has sought to provide insight on **how to build a health data infrastructure** (HDI), on routinely collected data with a view to assessing Healthcare Performance. Specifically,

1. In different countries, **mapping out and describing those information systems** that, using patient-level data could be reused for health care performance assessment;
2. Out of those information systems, **eliciting a common meaningful information dataset** that would enable cross-national health care performance assessment; and,
3. Using original datasets from the participant countries**, building a pilot data infrastructure, assessing its quality, and exploring its ability to report health care performance**.

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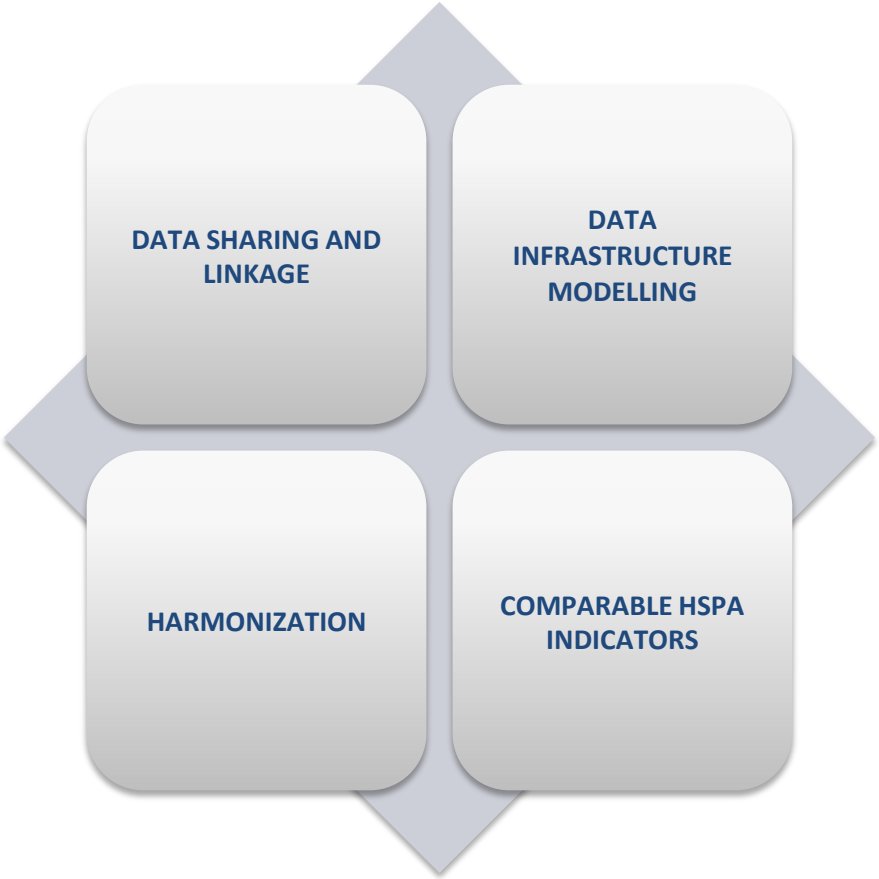
WP 10 context (ii)



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Using administrative data in comparative health systems performance assessment requires:

a) defining the minimum common dataset required to assess HSP dimensions and indicators;

b) analysing the data origins, as well as the linkage mechanisms and developing the logic data model that will allow the production of comparable performance indicators;

c) getting access to original data sources, curated and maintained by data authorities under a predefined legal frame;

d) transforming raw data formats and categories into a common standard;

e) building extensive catalogues (i.e. dictionaries) aimed to allocate data to units of analysis while considering over time modifications;

f) building a common language (i.e., semantic interoperability) from different ontologies (e.g., different classification systems for diagnoses and procedures);

g) releasing resulting datasets that allow HSP analyses and reporting; and

h) analysing the quality of those resulting datasets and, accordingly, decide on the accuracy and reliability of HSP results.

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Aim and Methods

- **AIM**: Exhibiting different approaches to assess data quality in HSPA
- **METHODS:**
  - empirical exercise on hospital administrative datasets
  - from Denmark, Slovenia and Spain -80 million hospital episodes, covering hospitalizations from 2002 to 2014.
  - collated in a single centralized relational data infrastructure
  - analysing different dimensions of data quality assurance; as: coherence, coverage, relevance, internal reliability, and accuracy.

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Dimensions of quality assurance

- **Coherence as** Are data reliably linked across the elements in the DWH?
- **Coverage** It measures to which extent the sample stored in the DWH is able to describe the actual performance.
- **Relevance** the number of performance dimensions and indicators covered by the DWH
- **Internal reliability,** aims at measuring whether the information stored in the DWH is consistent over the years, within each country. Is the basis for accurate estimates
- **Accuracy, d**enotes how close to facts are estimations expected to be. It allows an estimation of the potential classification biases.

NB. for the purpose of this presentation, just examples on accuracy are shown

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Indicators for **accuracy**

- CORE variables affected by inconsistencies
- Percentage of episodes without diagnoses or procedures, by country and year
- Coding precision (digits recorded as average)
- Episodes not allocated to the unit of analysis
- Stability over time of perfomance indicators
- Over time consistency of risk adjusters

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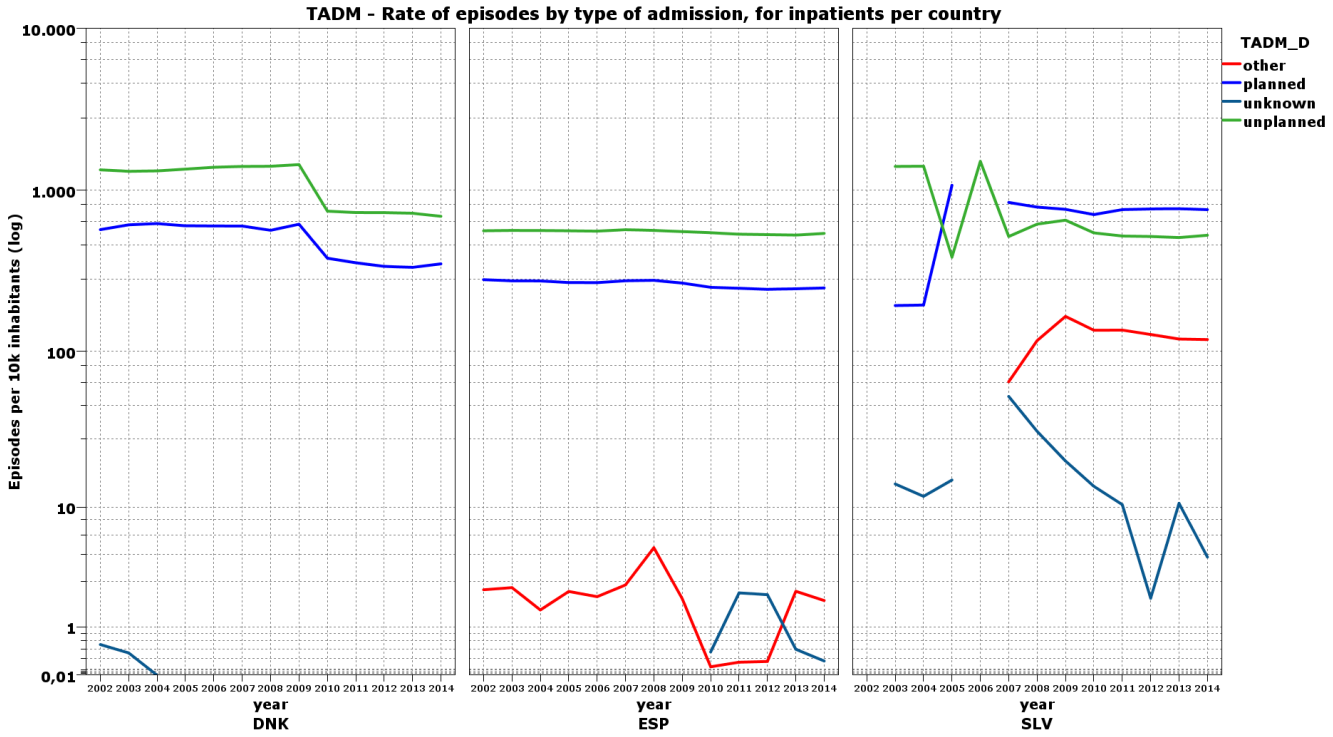
Missing values in _CORE variables [Type of admission]



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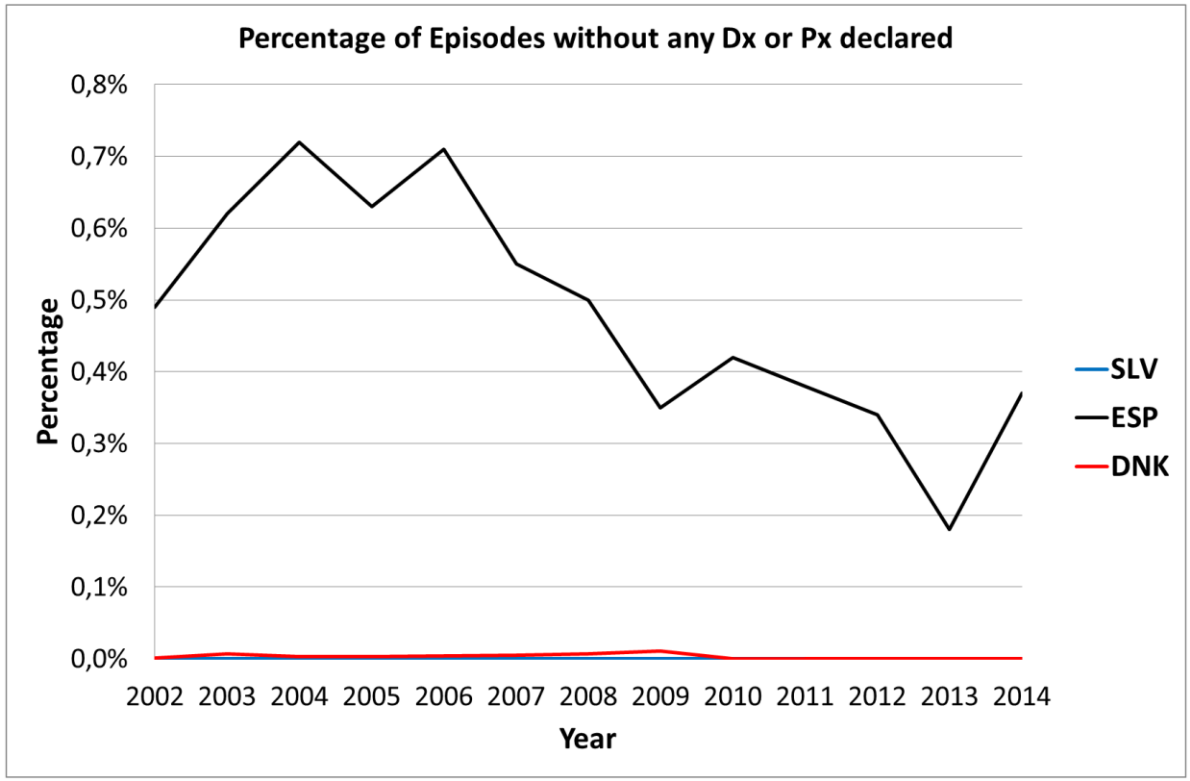
Episodes without diagnoses or procedures [Percentage]



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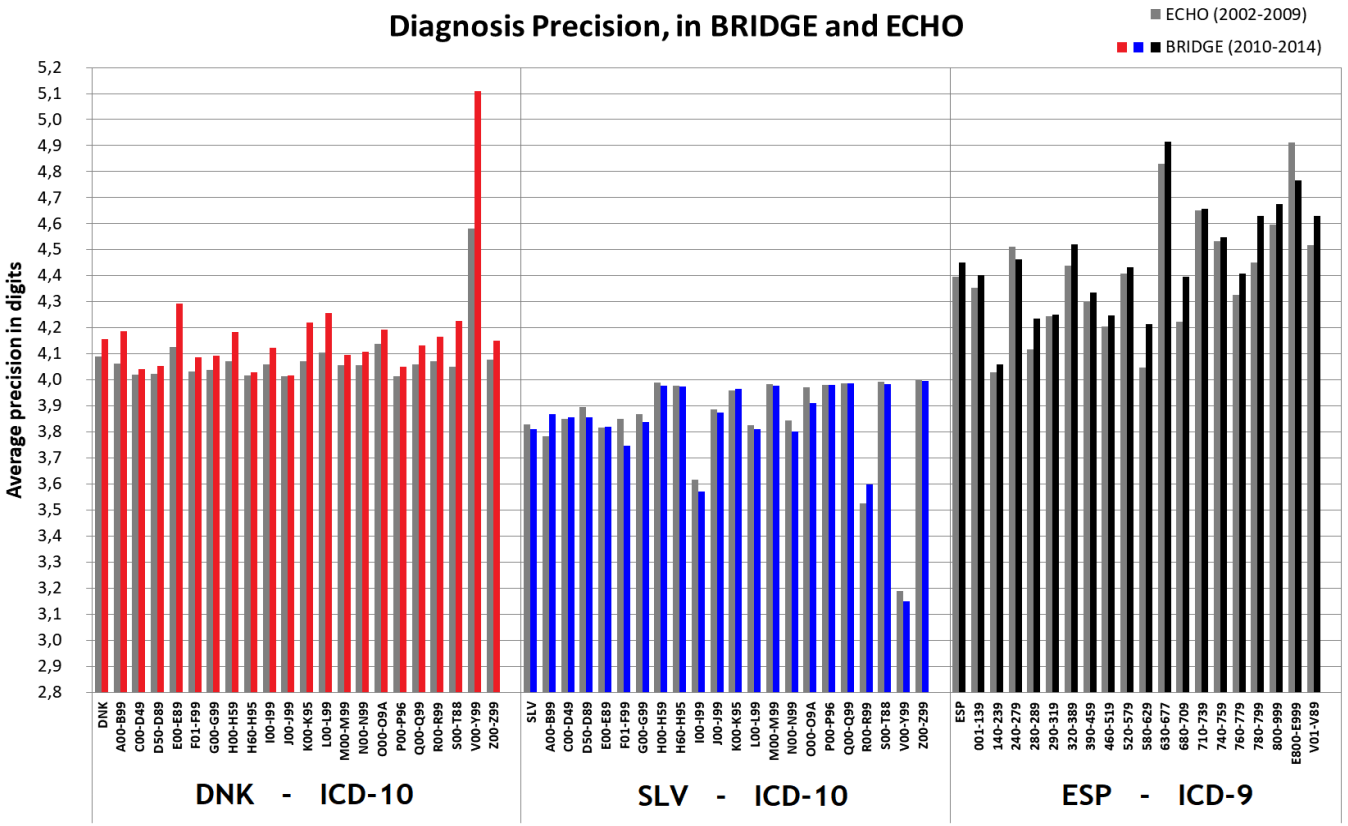
Coding precision [2002-2009 to 2010-2014]



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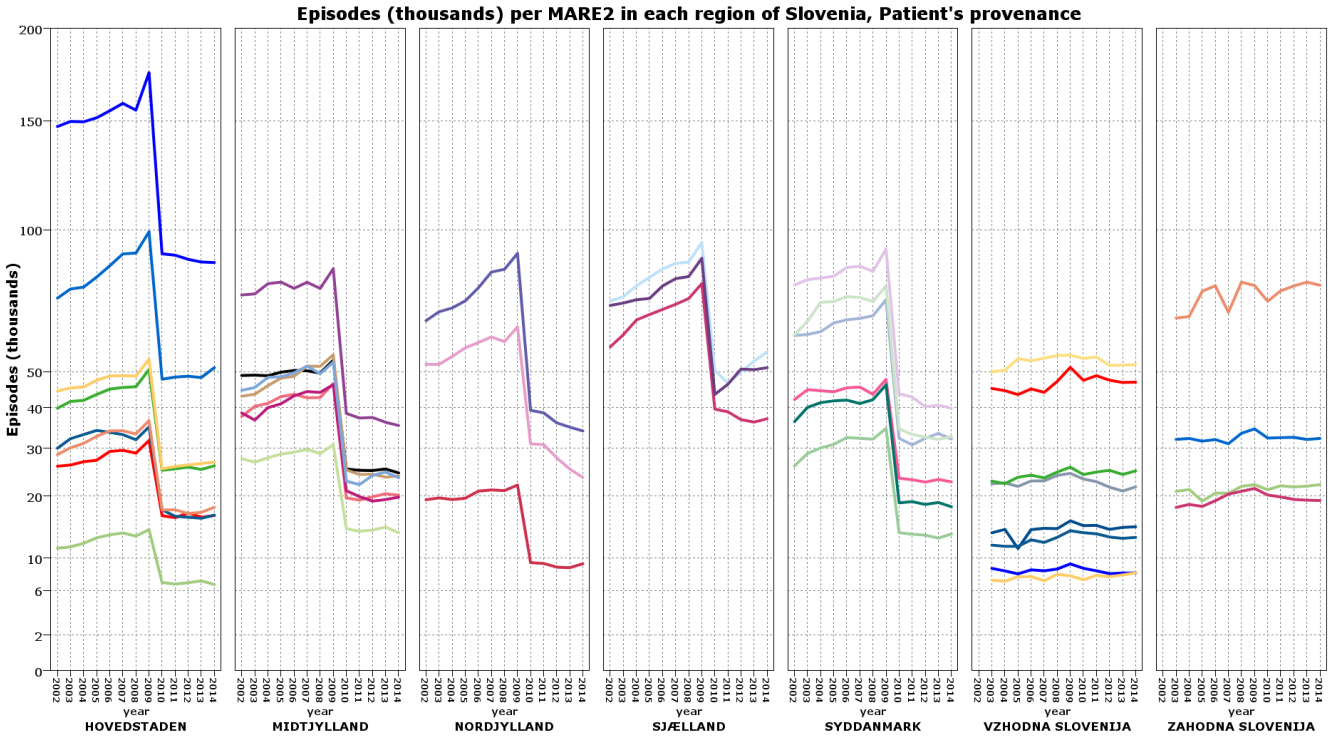
Episodes not allocated to the unit of analysis [DNK vs SLV]



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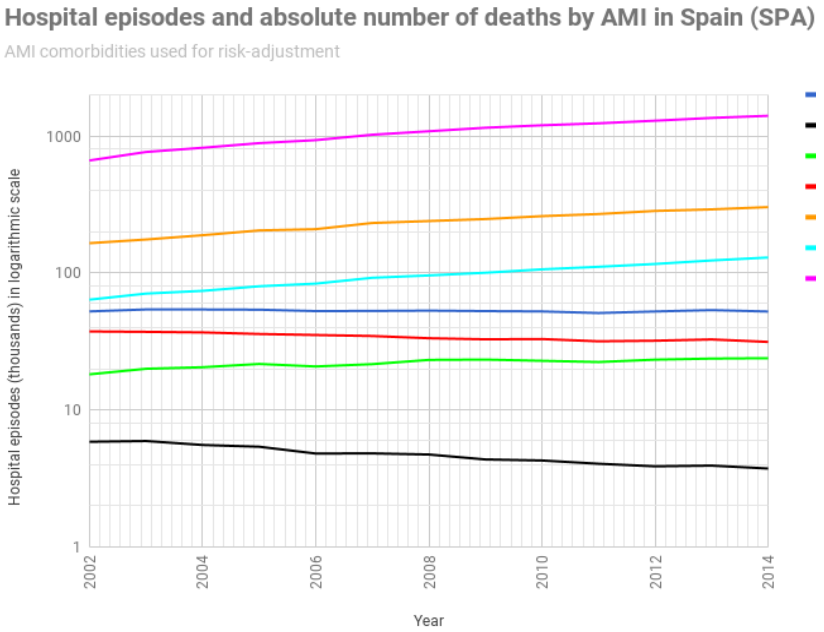
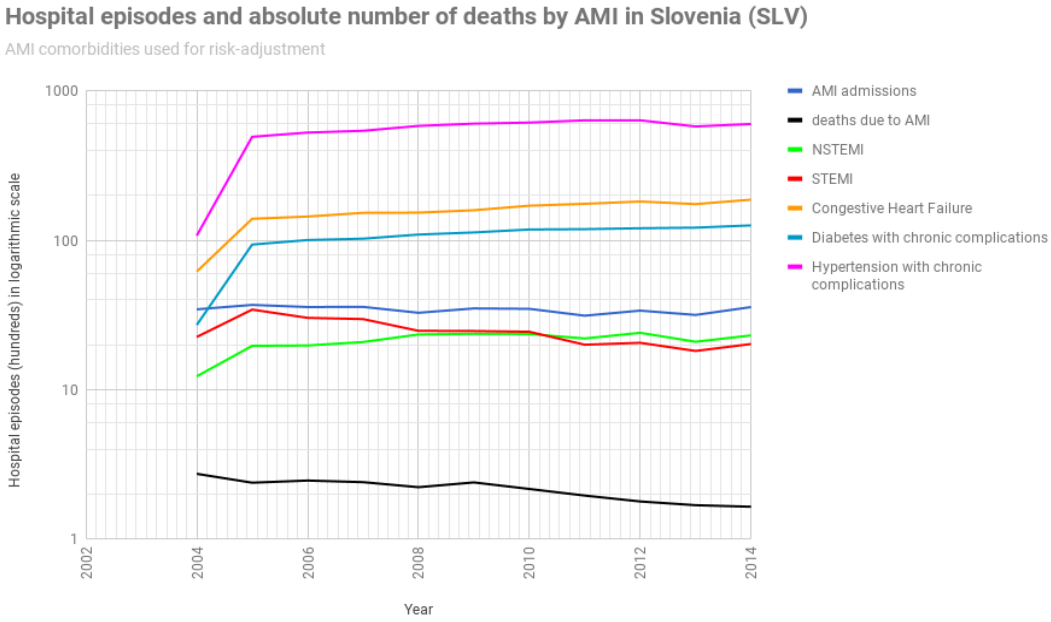
Indicators and risk adjusters stability [AMI 30 day mortality]





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Summing up

- WP10 has developed a **central relational data infrastructure that stores administrative data from different data sources from various countries**, with a view to carry out health systems performance research and monitoring.
- WP10 has proven the plausibility of **creating a central repository populated with anonymised and de-identified individual information**, transferred from different countries with limited administrative costs, while attaining the various legal requirements in data access, management, curation and reporting.
- WP10 has revealed that **it is possible to find a minimum common dataset that eventually allows a sound comparison of health systems performance** at meaningful units of analysis.
- A method has been developed to **assure semantic interoperability in the development of performance indicators** addressing different HSP domains: utilization, equity, quality and safety, and efficiency.
- The **quality analysis reveals strengths and weaknesses** that should take into account when conducting performance comparisons

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… but

- Although the method developed to build comparable performance indicators has been shown valid, **there is a need of continuous in-country expert panels contributing to the face and empirical validation of existing or new indicators.**
- Although, the central relational dataset has been proven qualified to compare HSP across different countries, and efficient enough to deal with hundred of millions of episodes, **the logic data model might no be responsive to future requirements.**
- Indeed, according to the current developments in health systems performance assessment, beyond classical monitoring, **a state-of-the-art infrastructure should aim the reuse of electronic health and medical records and conduct more complex comparative effectiveness research which requires a different logic model**
- Given the data transfer restrictions, limitations, or merely administrative barriers, as well as the legal implications associated to data protection, a **growingly accepted solution is the design and development of a distributed infrastructure.**

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Please contact me for additional questions in

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