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Exploration of Ubiquitous Mapping in Engineering Practice Curriculum System of Universities in the Intelligent Age

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Keywords: Intelligence age; ubiquitous mapping; engineering practice courses; platform design; pandemic application

- **Highlights:**

- (1) The proposal of **ubiquitous surveying and mapping** has brought many opportunities and challenges to college **engineering course teaching**.
- (2) The research aims to integrate the development of ubiquitous surveying and mapping into the teaching of engineering practice courses in colleges, including promoting the use of Android, Browser/Server (B/S), and Client/Server (C/S) to build a platform for practical courses.
- (3) It can also provide new ideas for the opening of surveying and mapping practice courses under the background of the pandemic.





Fig.1 A record of the current situation of measurement practice courses in colleges.



Tab.1 Problems in professional courses

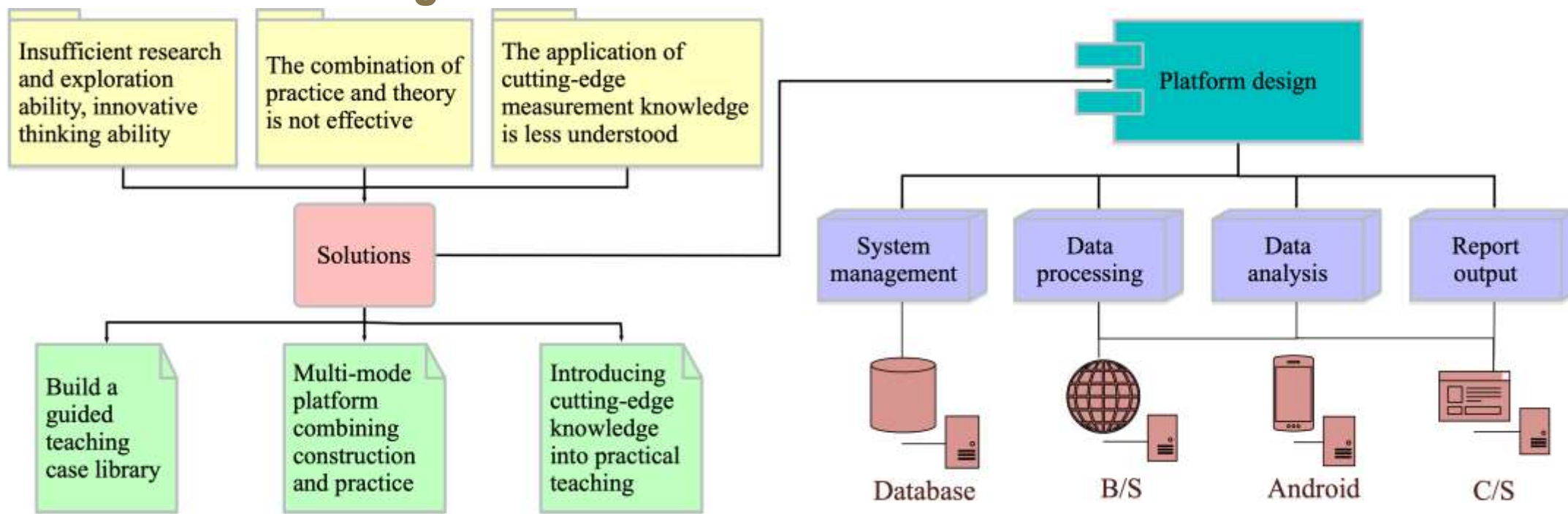
Serial number	Problems	Effects
1	The hardening of repetitive work is serious.	Insufficient research, exploration, and innovation ability.
2	The combination of theory and practice is not effective.	Lost the guiding role of theory class for students.
3	No matching tools and platforms in practice.	The vast of students stay at the calculator stage.
4	Single practice content.	Insufficient understanding of cutting-edge measurement knowledge.
5	The traditional teaching model is nearly paralyzed in the pandemic.	Practice classes were canceled during the pandemic.

2 Exploration and application

2.1 Demand analysis

2.2 Platform design

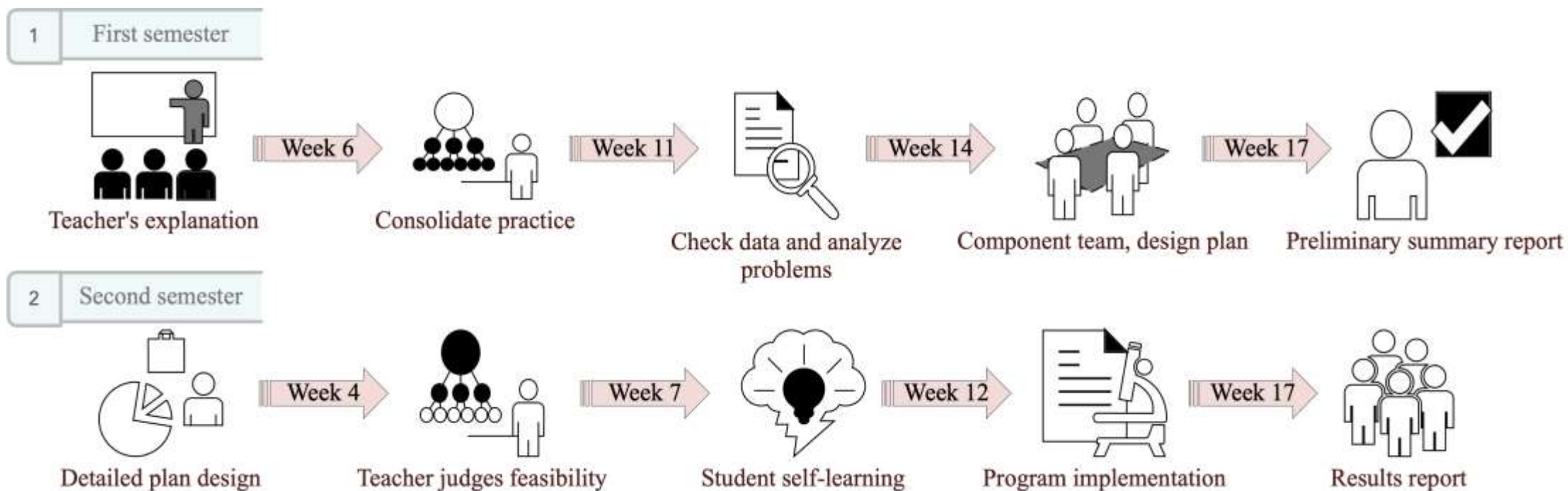
Fig.2 The idea of platform design of practical courses under the background of ubiquitous mapping.



2 Exploration and application

2.3 Results of exploration

Fig.3 Schematic diagram of the whole teaching process.



2 Exploration and application

2.3 Results of exploration

2.3.1 Android mode

Fig.4 Android model designed by students.

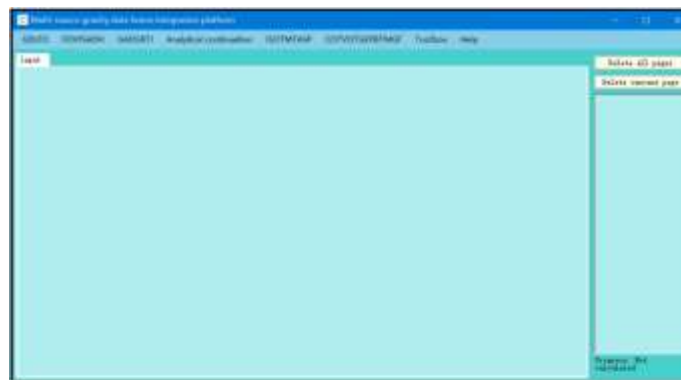


2 Exploration and application

2.3 Results of exploration

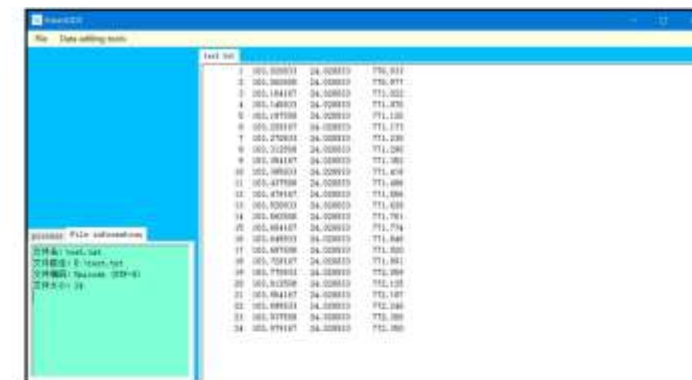
2.3.2 C/S mode

Fig.5 C/S model designed by students.



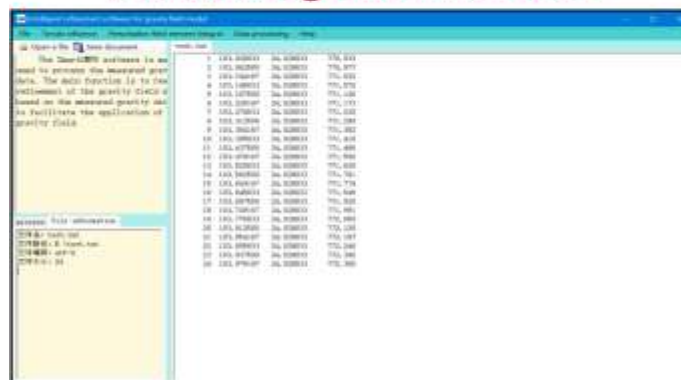
(a) SmartGDI

Multi-source gravity data intelligent fusion integration software



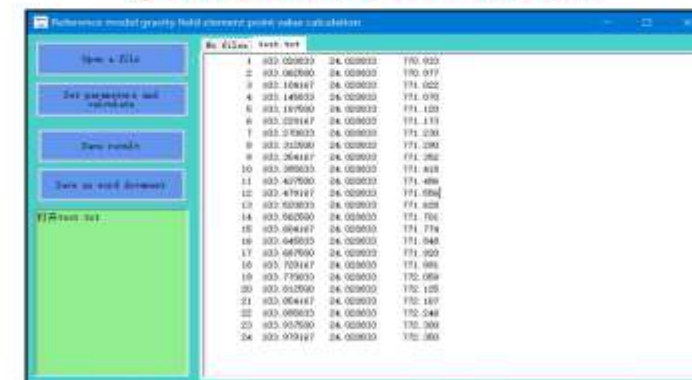
(b) SmartGDP

Intelligent processing software for gravity measurement data



(c) SmartGMR

Intelligent refinement software for gravity field model



(d) SmartGP

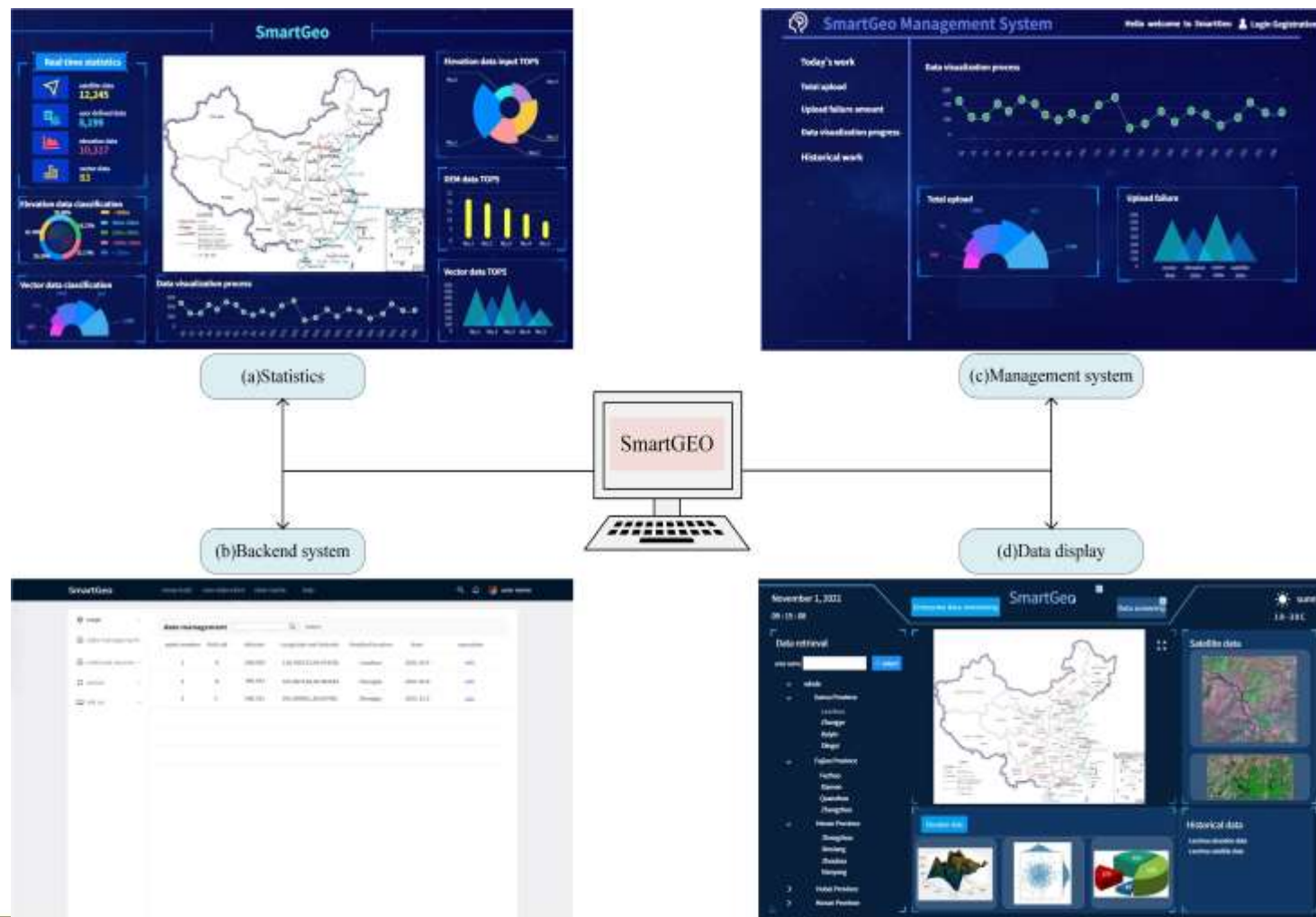
Intelligent processing software for gravity field parameters

2 Exploration and application

2.3 Results of exploration

2.3.3 B/S mode

Fig.6 B/S model designed by students.



3 Conclusion and outlook

- Built a relevant multi-modal platform by taking the route of consolidation first and innovation
- Incorporating cutting-edge surveying and mapping knowledge into students' practical courses not only improves the quality of engineering practical courses but also plays a positive role in the comprehensive development of students
- Not only enables the practice course to be carried out in a new way, but also improves the quality of the course compared to the previous course model



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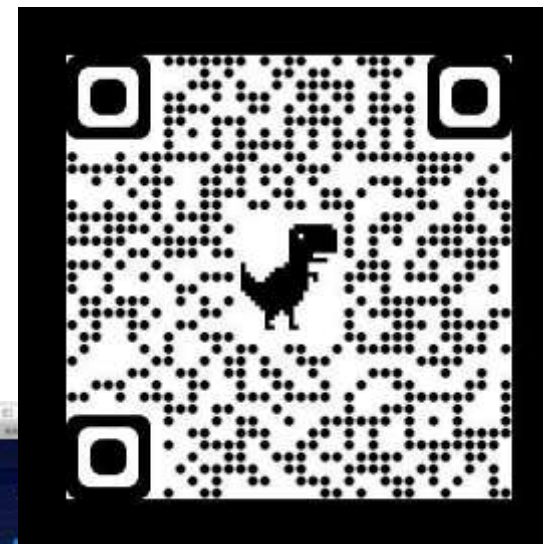
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Thanks



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SmartGeo

