



FIG Working Week
— Bridging the Gap Between Cultures
Marrakech, Morocco
May 18-22 2011



Assessing LARSI-integrated Procedure in Urban Adjudication in China

a case study in Luochuan County

Ying Jing, Jaap Zevenbergen, Zhimin Ma



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Outline

The Social Need of Adjudication

- Large coverage
- Efficiency
- Cost

← Dilemma →

↑ Promising Solution ↓

Current Adjudication Procedure

Legal Boundary
Physical Boundary

Research Problem

LARSI-Integrated Participation Adjudication Procedure

- ❖ LARSI images (5 cm)
- ❖ Participation

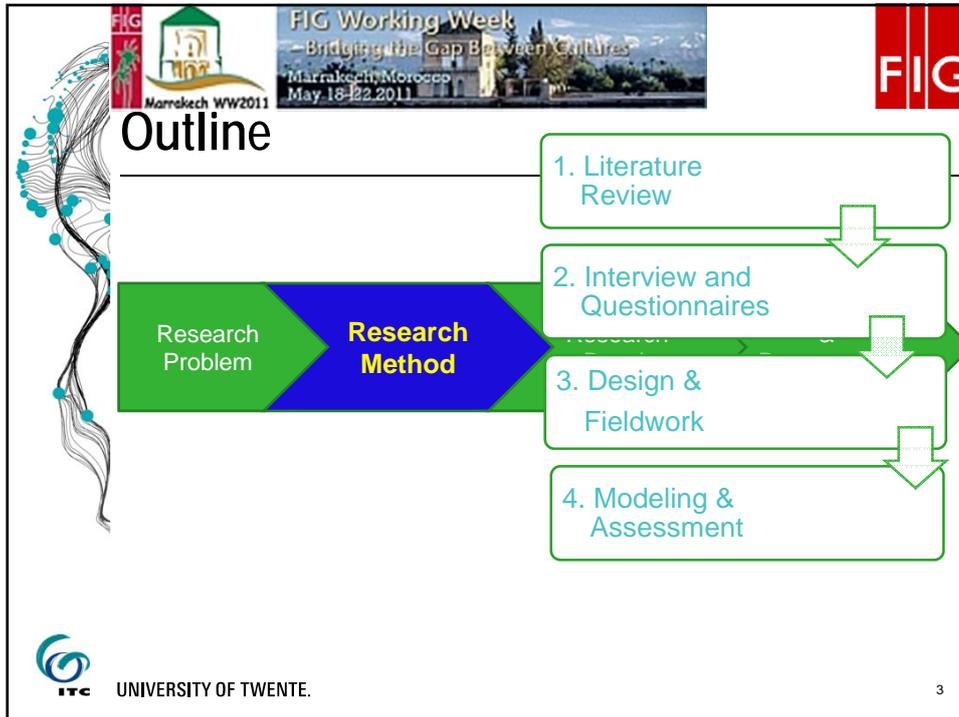
Main objective:

- ✓ To assess the new LARSI-integrated procedure's suitability in urban adjudication



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1 - Literature Review

1. Concepts

Cadastral, registration, adjudication, parcel, boundary

2. Adjudication techniques

- ◆ Ground survey
 - Theodolite, plane-tablet, total station, GPS etc.*
- ◆ Survey with remote sensing imagery/ aerial photographs

(David Siriba, 2009)

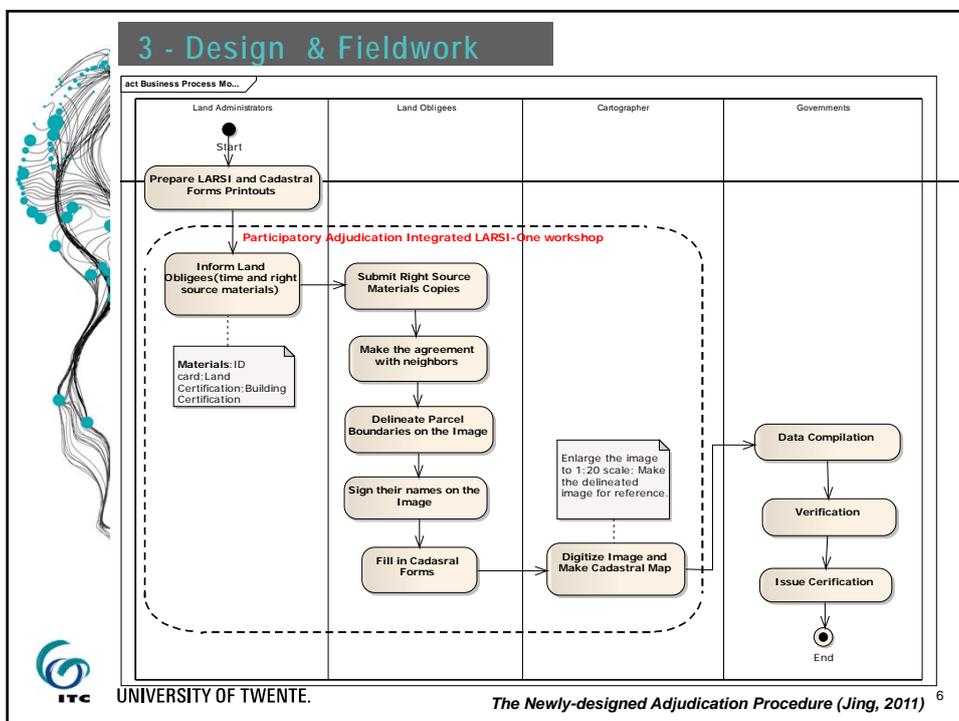
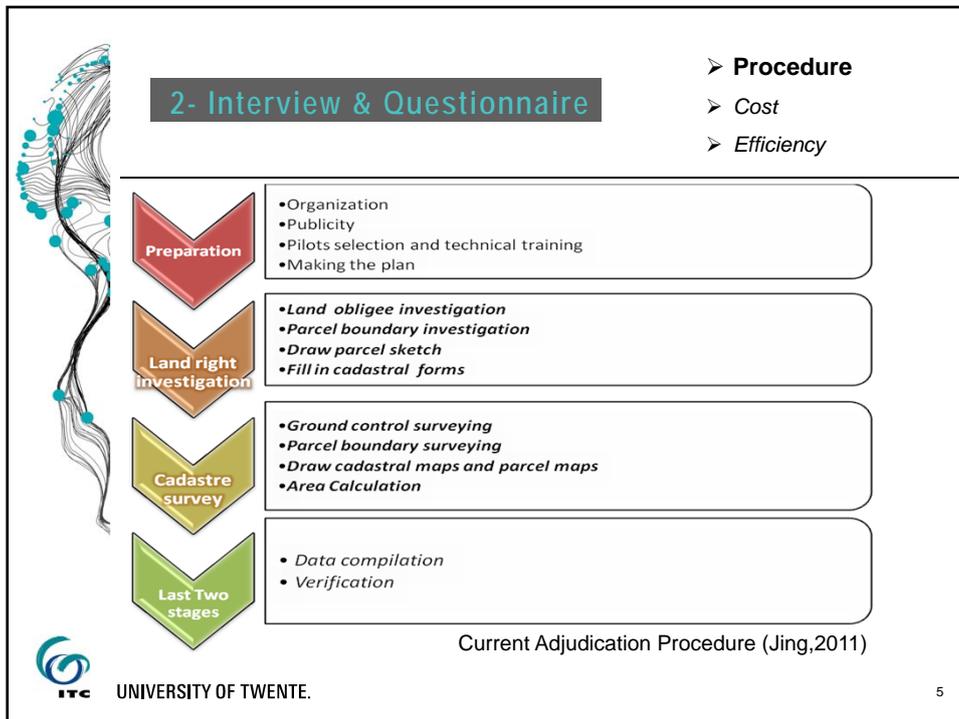
Potential utility of applying HRI (High Resolution Imagery) into cadastral mapping (Pvs.p. Prasada Raju, 2003)

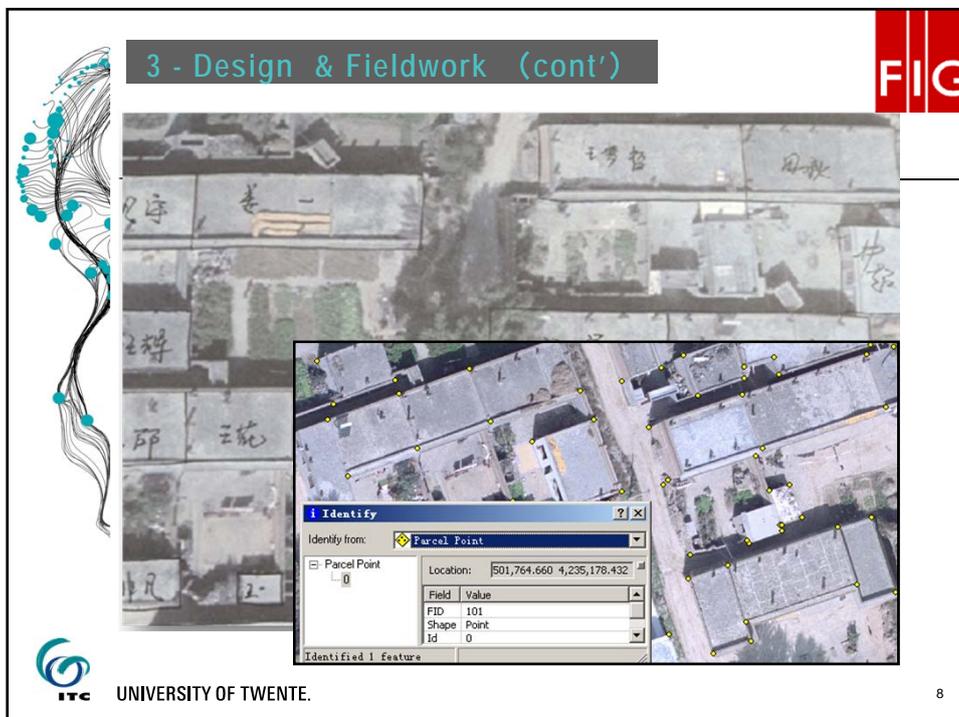
 - *Simply enlarged. (Kenya)*
 - *Rectified and enlarged. (Thailand, Botswana, Ethiopia, Turkey)*
 - *Ortho-rectified and enlarged. (Palestine, Australia, Canada, Namibia)*

3. LARSI

- ◆ Platforms– UAV & Airship
- ◆ **Characteristics** (Siriba, 2009)
 - Easier to interpret and distinguish boundaries of features;
 - Potential to meet high precision specifications of cadastral surveying and mapping;
 - Less fieldwork is required to supplement the photo-interpreted information

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FIG

4 - Modeling & Assessment (cont')

Data Quality

- Time/Efficiency
- Cost
- Law compliance

● Accuracy

- Completeness
- Validity
- Consistency
- Timeliness

Assessment Model to the New Procedure (Jing, 2011)



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FIG

4 (1). Assessment - Accuracy

UAV Imagery with 5 cm Resolution



(1) Pilot Overview - 1:500



(2) One Parcel - 1:100



(4) One Parcel Point - 1:20



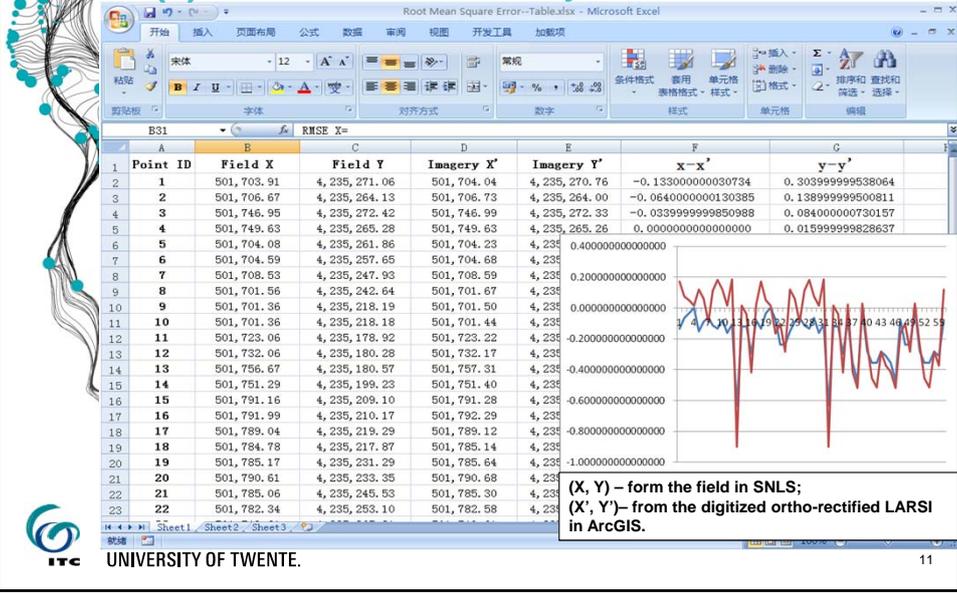
(3) One Parcel Point - 1:50



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4 (1). Assessment - Accuracy



4 (2). Assessment – Time/Efficiency

Efficiency/Time Comparison	Field (Current procedure)	Workshop (Test procedure)
Land right investigation	Two days--Inform & delineate	Two hours (Two staff)
Cadastral surveying	One day (Two surveyors)	One hours (One Cartographer)






4 (3). Assessment - Cost

Process	Number of Staff	Duration	Salary	Office Rent	Food Subsidy	Tele-bill	Total	
<u>Land right investigation</u>	2*14=28 (2 persons per team & 14 teams)	3 days	¥50 (per capita each day)	¥40 (each day)	¥50 (per capita each day)	¥5 (per capita each day)	¥28*3*(50+50+5)+40*3=¥8940	
<u>Cadastral Surveying</u>	1*6=6 (1 person per team & 6 teams)	4 days	¥100 (per capita each day)				¥6*4*(100+50+5)+40*4=¥3880	
Total	34	7 days	¥50*28*3+100*6*4=¥6600	¥40*(3+4)=¥280	¥50*28*3+50*6*4=¥5400	¥5*28*3+5*6*4=¥540	UAV flight fee-¥80000	¥92820
							Airship flight fee-¥50000	¥62820



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4 (3). Assessment - Cost

Comparison	The current procedure	The newly-designed procedure	The ratio
Cost	¥388040	¥6280 (Airship) ¥9280 (UAV)	Around 40:1
Time	5 months	7 days	Around 22:1
Labor amount	60 persons	34 persons	Around 2:1



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4 (4). Assessment – Law Compliance



- Not unified for land adjudication accuracy requirement
- Outdated in regulations for adjudication procedure and technical tools



Research Result

Indicator	Result
Data quality (Accuracy)	21 cm
Efficiency/Time	4.5% of the current procedure time
Cost	2.5% of the current one
Law compliance	Non-compliance with the specific rules and specifications




Outline




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Conclusion

<i>Indicator</i>	<i>Result</i>	<i>Conclusion</i>
<i>Data quality (Accuracy)</i>	21 cm	<input type="checkbox"/> Not suitable but promising <input type="checkbox"/> large areas have not yet been registered (e.g. China)
<i>Efficiency/Time</i>	4.5%	<input type="checkbox"/> Greatly enhancing the efficiency <input type="checkbox"/> Savor Labor <input type="checkbox"/> Simplify the adjudication procedure
<i>Cost</i>	2.5 %	<input type="checkbox"/> achieve pro-poor adjudication (e.g. Africa)
<i>Law compliance</i>	Non-compliance	<input type="checkbox"/> Outdated and redundant <input type="checkbox"/> To be re-organized and synthesized <input type="checkbox"/> To be unified and up-to-date



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Recommendation

- ❑ The suitability of the new procedure for other countries
- ❑ What is the new procedure development in future
- ❑ How to apply the newly-designed adjudication procedure to build a dynamic cadastral system with time series



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Thank you !