ALIS Program

Development of New Area Survey System
Using Area Mesh Frame

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Logic for area estimation using PC

Formula

$$Y = \frac{\sum_{i=1}^{n} xi}{\sum_{i=1}^{n} yi} y$$

Area estimated

Y = Estimated area of this year
y = Total area of last year
x_i = Area in "i" number sample of this year
y_i = Area in "i" number sample of last year
n = Number of survey sample

Logic for area estimation using PC

There is no statistical framework

There is no data this year of each survey sample

$$Y = \frac{\sum_{i=1}^{n} x_i}{\sum_{i=1}^{n} y_i} y$$

There is no data last year based on statistical method

There is no statistical framework

There is no data last year of each survey sample

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Logic for area estimation using PC

Replacing of formula sign concept

There is no data this year of each survey sample

$$Y = \frac{\sum_{i=1}^{n} x_i}{\sum_{i=1}^{n} y_i} y$$

at this time

$$y = \frac{\sum_{i=1}^{n} y_i}{n} N$$

Y = Estimated area of this year

x_i = Area in "i" number sample of this year

y = Tentative Agricultural land area made on the PC

N = Number of framework population made on the PC

y_i = Agricultural land area made on the PC in "i" number sample

n = Number of sample selected by PC

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Logic for area estimation using PC (Conclusion)

The prior condition to estimate agricultural land area by using PC

		The PC
Can make	**"N"**	Make the statistical framework and count the number
Can calculate	**"yi"**	Calculate the area of sample on the PC
Can select	**"n"**	Select the indicated sample randomly
And		
Can support	**"xi"**	Support the field survey

The development of Agricultural Land Information System

The system is called "ALIS"

ALIS main functions

Make	**“N”**	Make the area framework and count the number
Calculate	**“ y_i ”**	Calculate the area of sample on the PC
Select	**“n”**	Select the indicated sample randomly
Support	**“x_i”**	Support the field survey
Estimate	**“Y”**	Estimate the area

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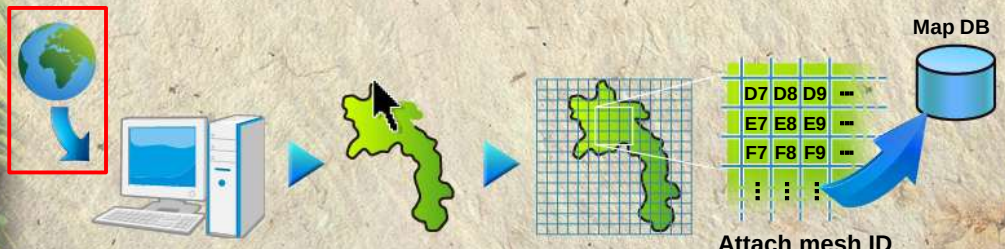
Function for the development of area mesh framework (making "N")



Scan the picture map

Trace of province border

Make area meshes

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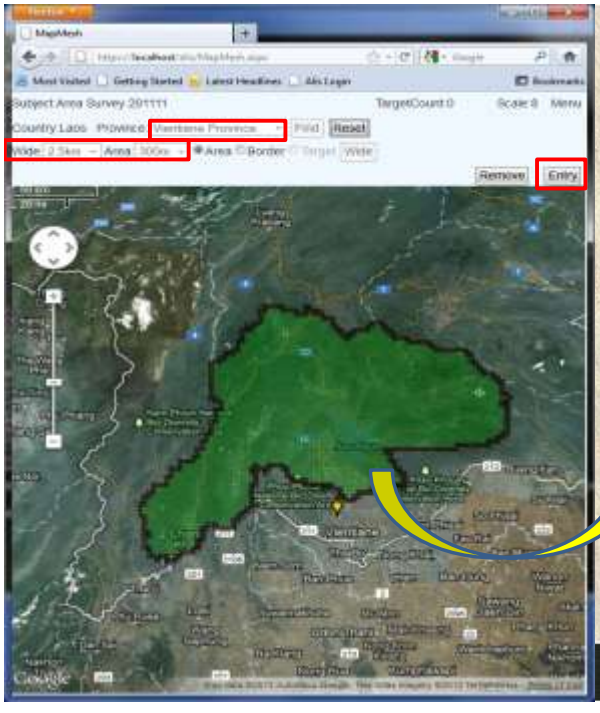

Function for the development of area mesh framework as "N"

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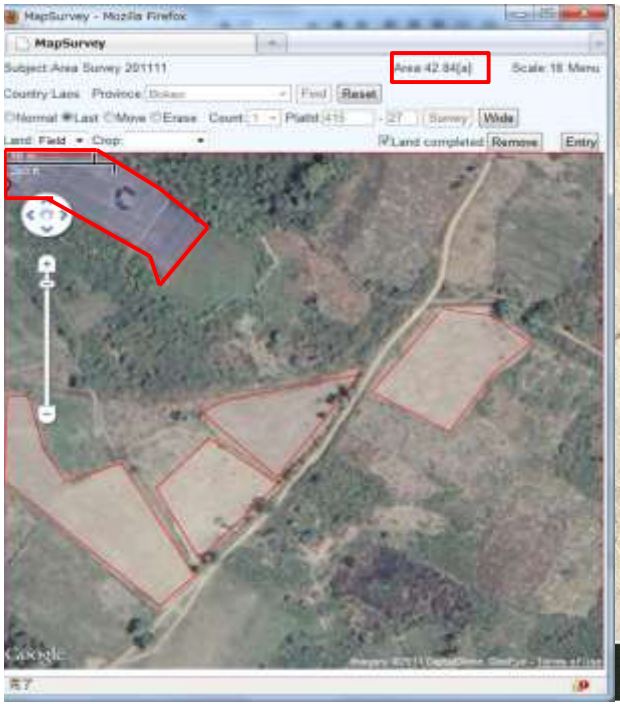

Function for area calculation (making "yi")

ALIS can calculate the agricultural land area by tracing its border line on the PC monitor

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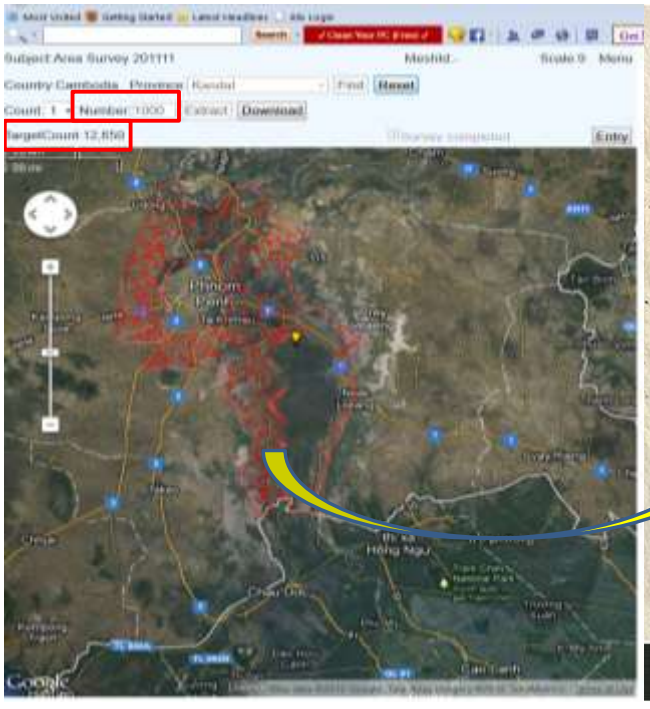
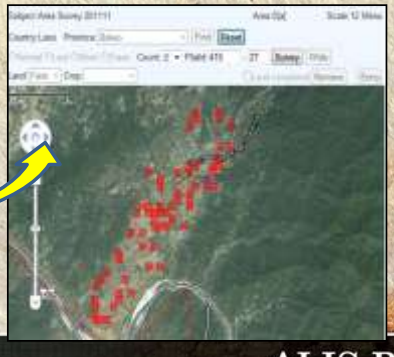


Function for Selecting sample

ALIS conducts mesh sampling randomly



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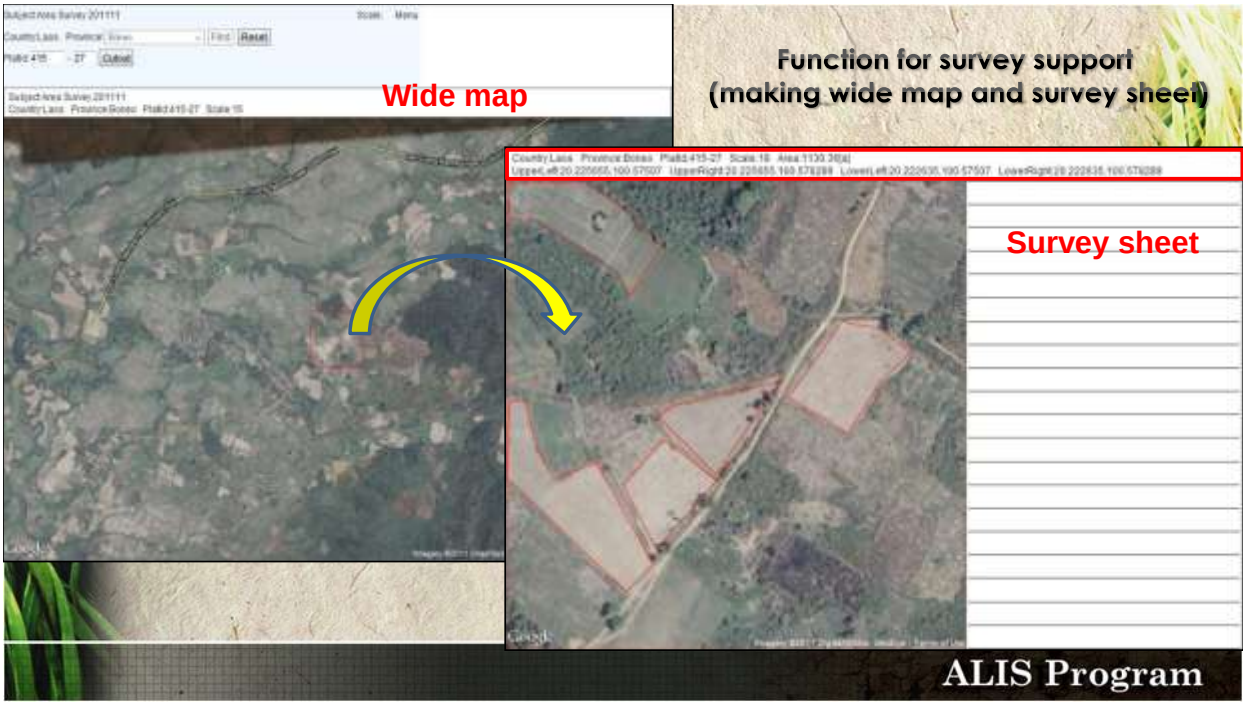
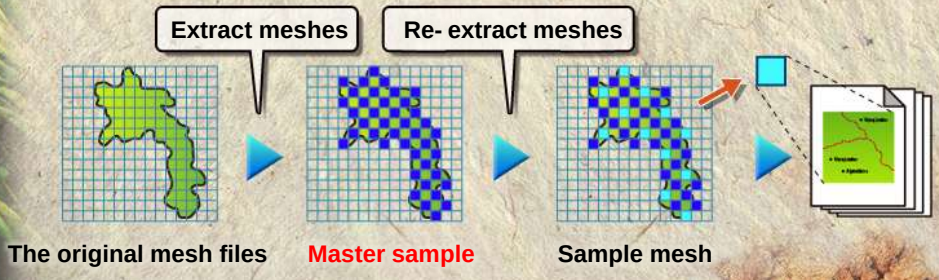
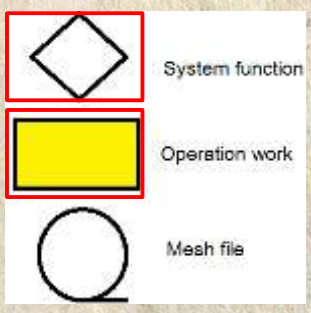


Master Sample Method

The master sample meshes are extracted from framework mesh file and gives population information to these extracted master sample meshes, and then extracts survey sample meshes from these master sample meshes.

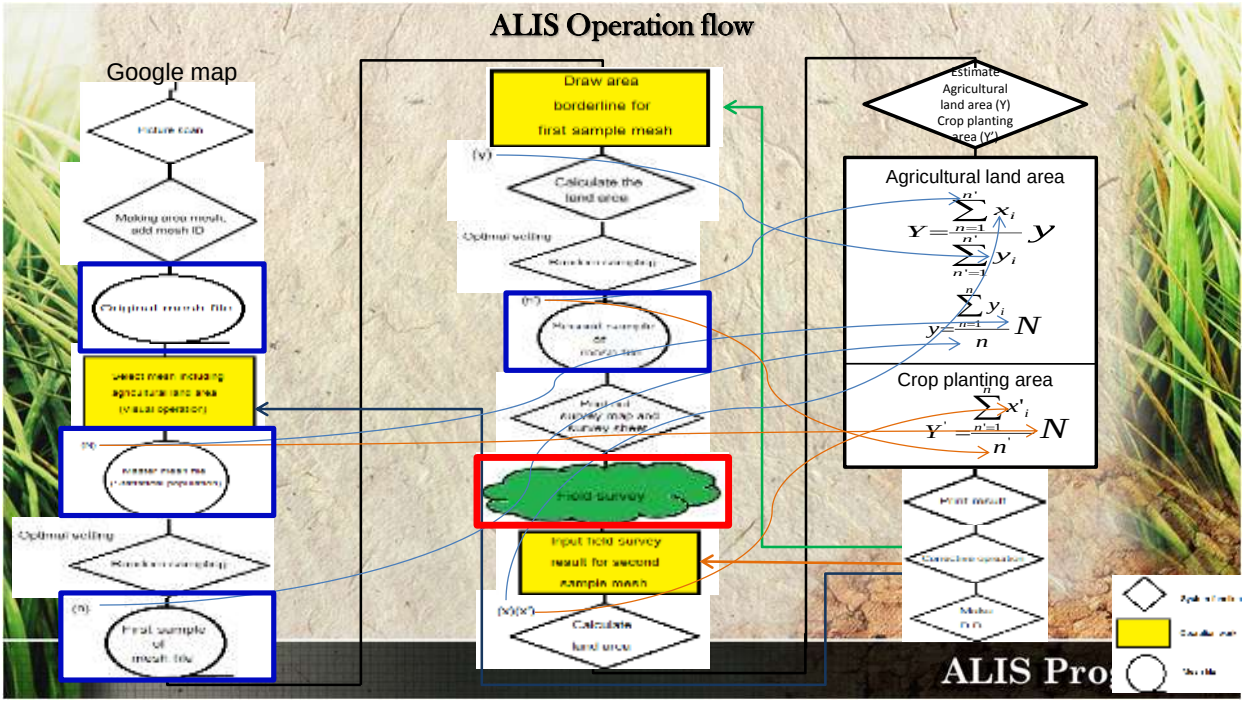


ALIS Operation flow



ALIS Program

ALIS Operation flow



The Area Estimation Formula by using ALIS

Agricultural land area

$$Y = \frac{\sum_{i=1}^{n'} x_i}{\sum_{i=1}^{n'} y_i} y$$

at this time $y = \frac{\sum_{i=1}^{n} y_i}{n} N'$

Y	=	Estimated agricultural land area
n	=	Number of the 1st sampling
n'	=	Number of the 2nd sampling
x_i	=	Agriculture land area on field survey in “i” number sample of 2nd sampling
y_i	=	Agricultural land area on the monitor in “i” number sample of 1st sampling
y	=	Total Agricultural land area by estimation from the first sampling
N'	=	Number of area mesh including Agricultural land

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The Area Estimation Formula by using ALIS

Each crop planted area

$$Y' = \frac{\sum_{i=1}^{n'} x_i}{n'} N'$$

Y'	=	Estimated planted area of each crop
n'	=	Number of the 2nd sampling
xi	=	Planted area of each crop on field survey in “i” number sample of the 2nd sampling
N'	=	Number of area mesh including Agricultural land

Initial setting: Rice, Soybean, Maize, Sugarcane, and Cassava + 2 crops

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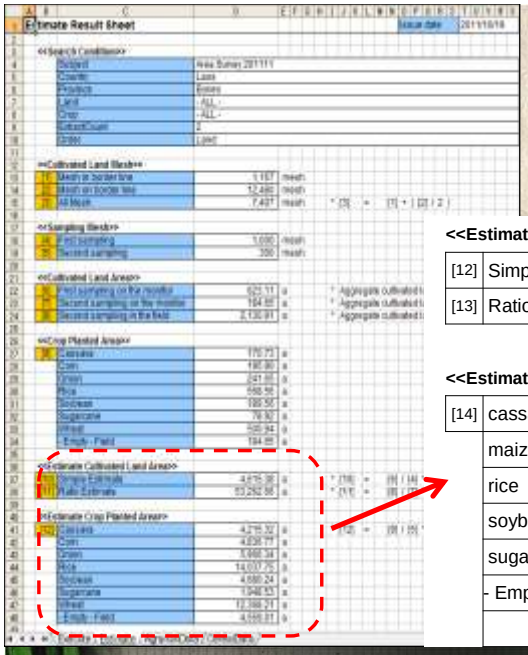

Estimation of area data and print out of estimate result sheet

<<Estimate Cultivated Land Area>>

[12]	Simple Estimate	3,332,052.85	a	*[12]	=	[8] / [6] * [5]
[13]	Ratio Estimate	4,357,456.55	a	*[13]	=	[10] / [9] * [12]

<<Estimate Crop Planted Area>>

[14]	cassava	146,174.33	a	*[14]	=	[11] / [7] * [5]
	maize	306,652.78	a			
	rice	3,630,305.25	a			
	soybean	8,265.40	a			
	sugarcane	26,655.75	a			
	- Empty - cultivated land	7,895.80	a			
		0.00	a			

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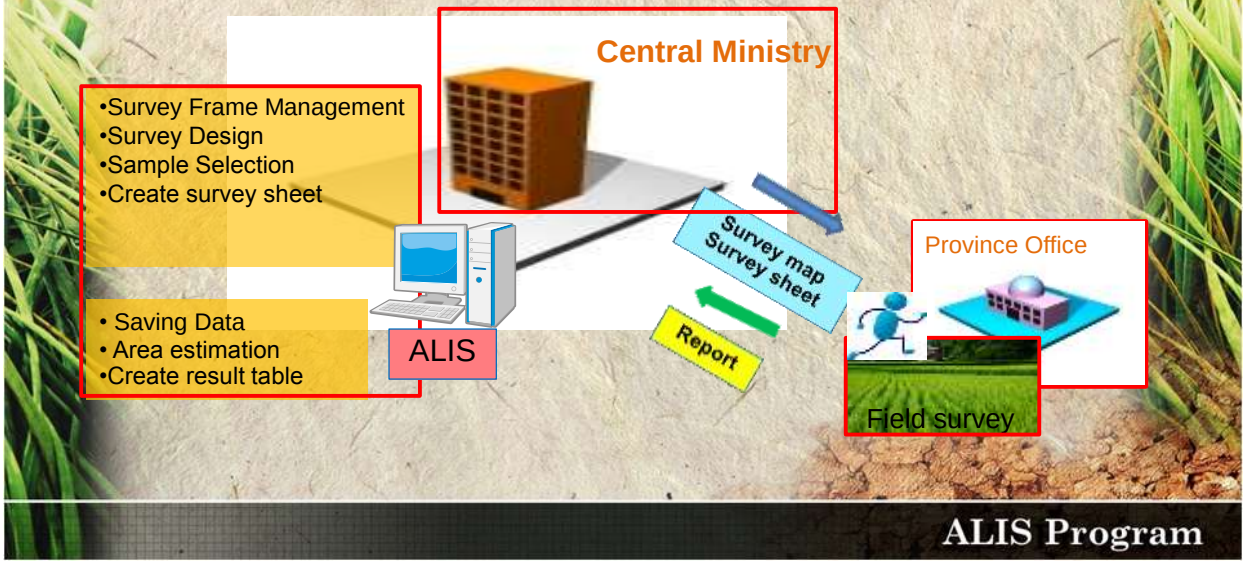
Conclusion of ALIS Function
ALIS is a Centralized Management Survey System



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Implementation of ALIS

Researcher meeting in Laos
March 19-22 2012

Laos
2012 Vientiane province
2013 Khammouan province

Cambodia
2012 Kandal province

Philippines
2013 Nueva Eeija province
ADB cooperative project

Manual and study report on ALIS

Manual

ALIS operation manual

Survey operating manual for national staff

Area survey manual for researchers

Study report

Consideration for making of area framework in ALIS

Consideration of statistical accuracy on Master sample method

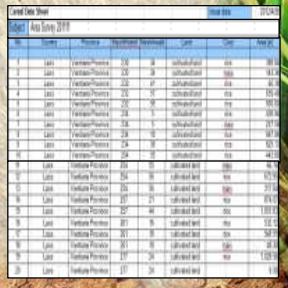
Accuracy Calculation on ALIS program

Others

Additional possibility of ALIS

ALIS has potential to be used as the statistical supporting system for other surveys by using area framework.

- Agricultural census
- Agricultural structural survey
- Agricultural dynamic survey
- Livestock survey
- Damage survey
- Others



THANK YOU

Website: www.afsisnc.org