



# “Striving for Efficiency”

## Malaysia's eCadastre Project

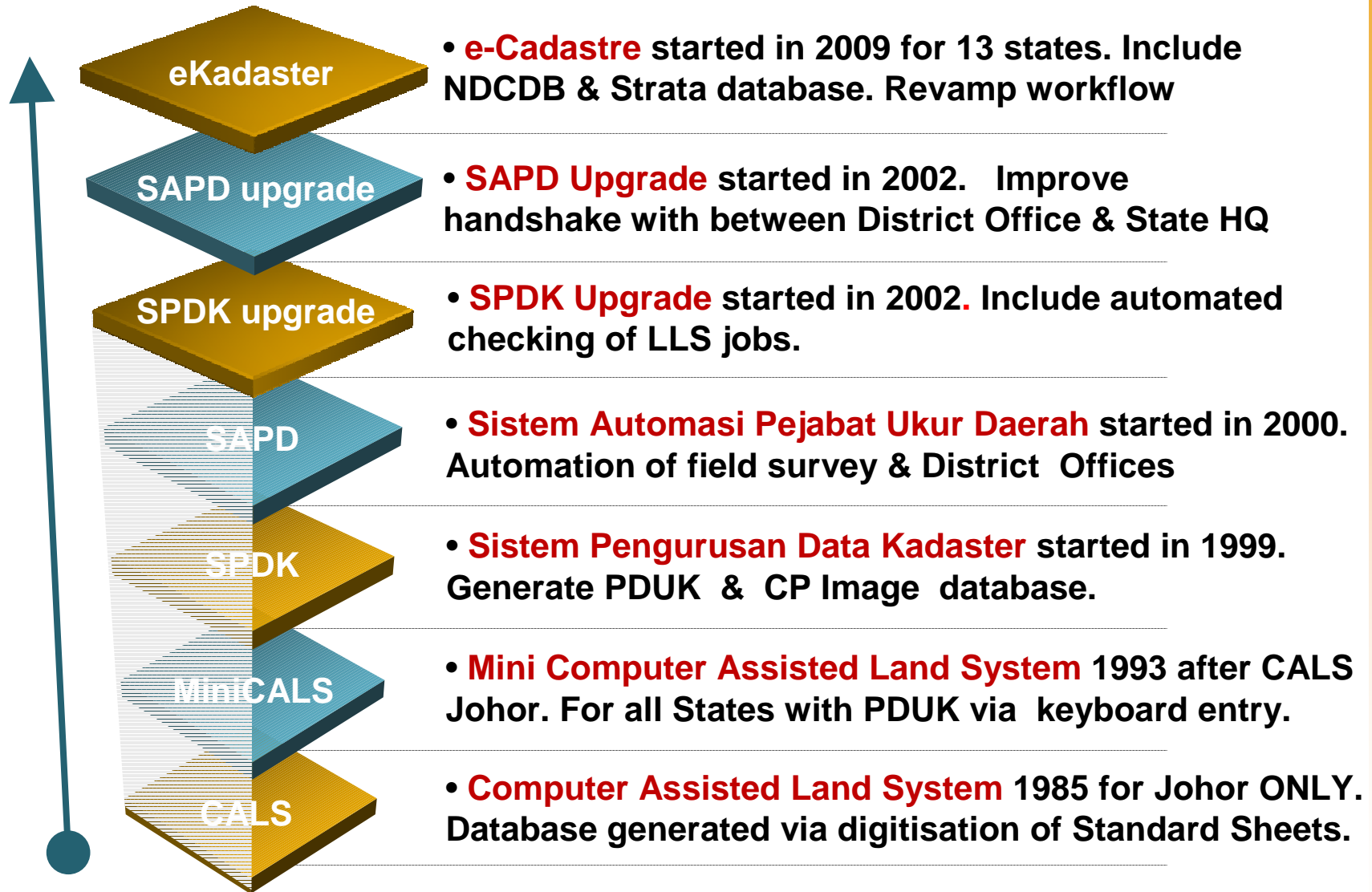
[www.jupem.gov.my](http://www.jupem.gov.my)

by  
**Dr. Teng Chee Hua**  
Department of Survey and Mapping  
Malaysia  
15 October 2009

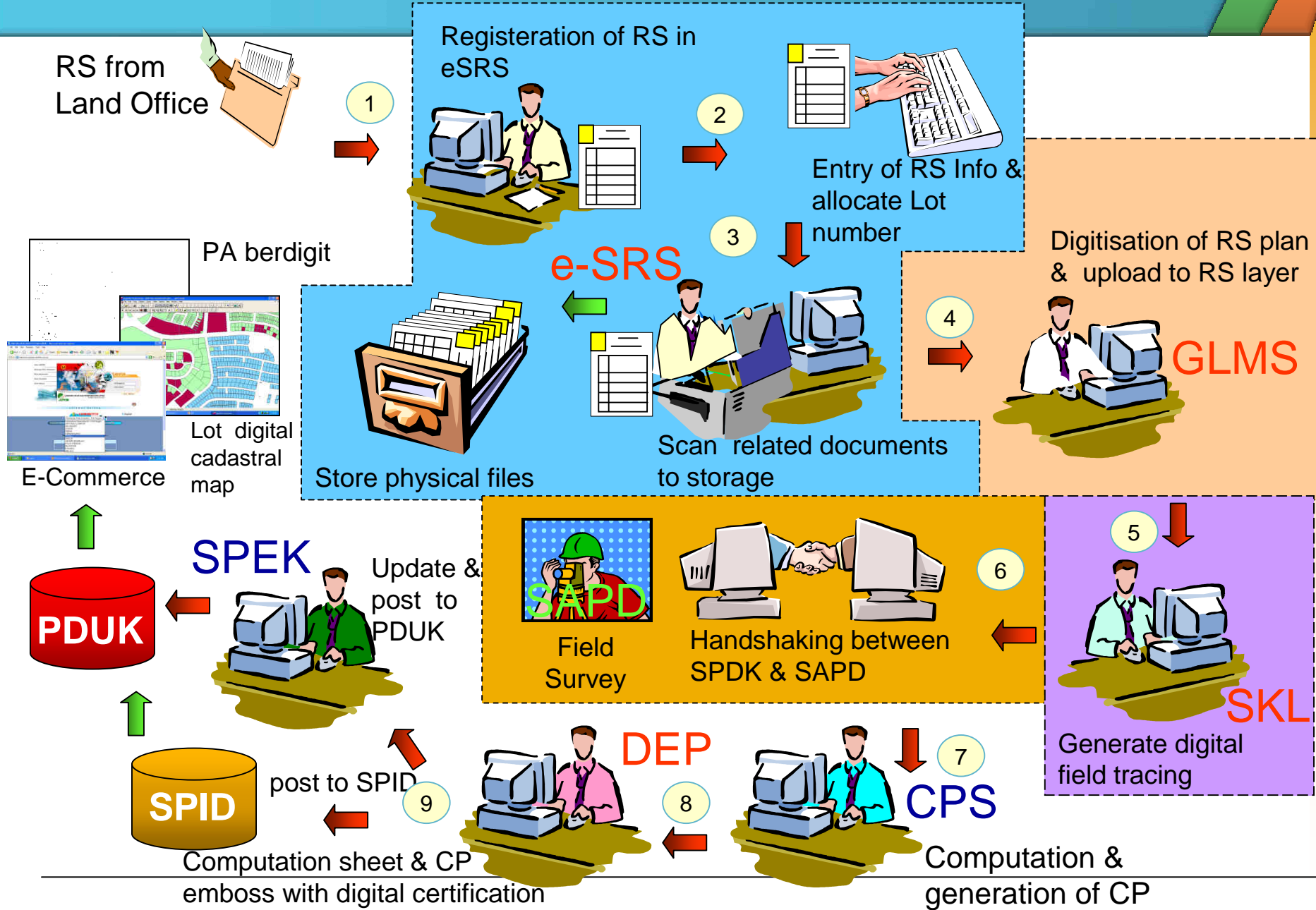
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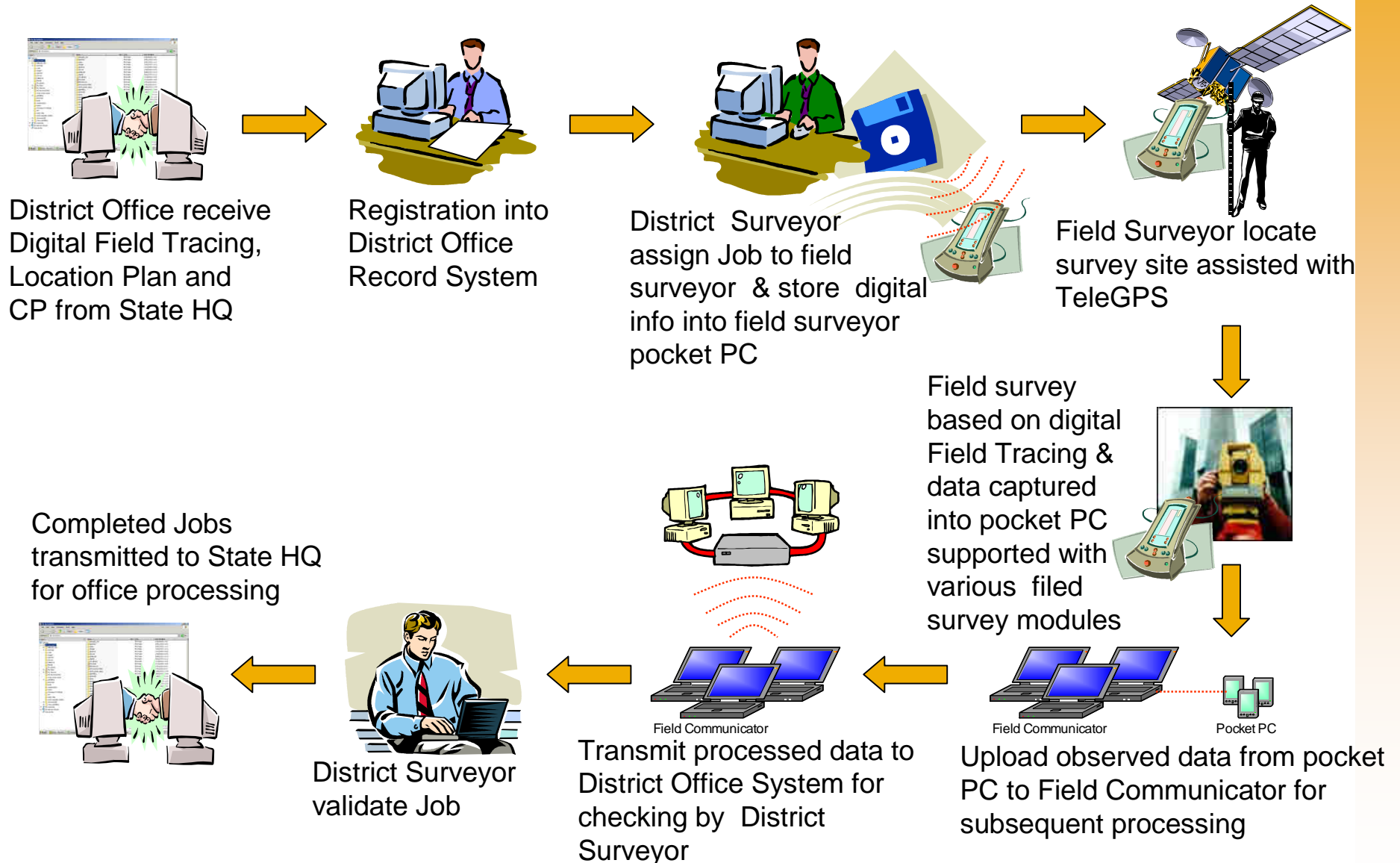
# Computerisation



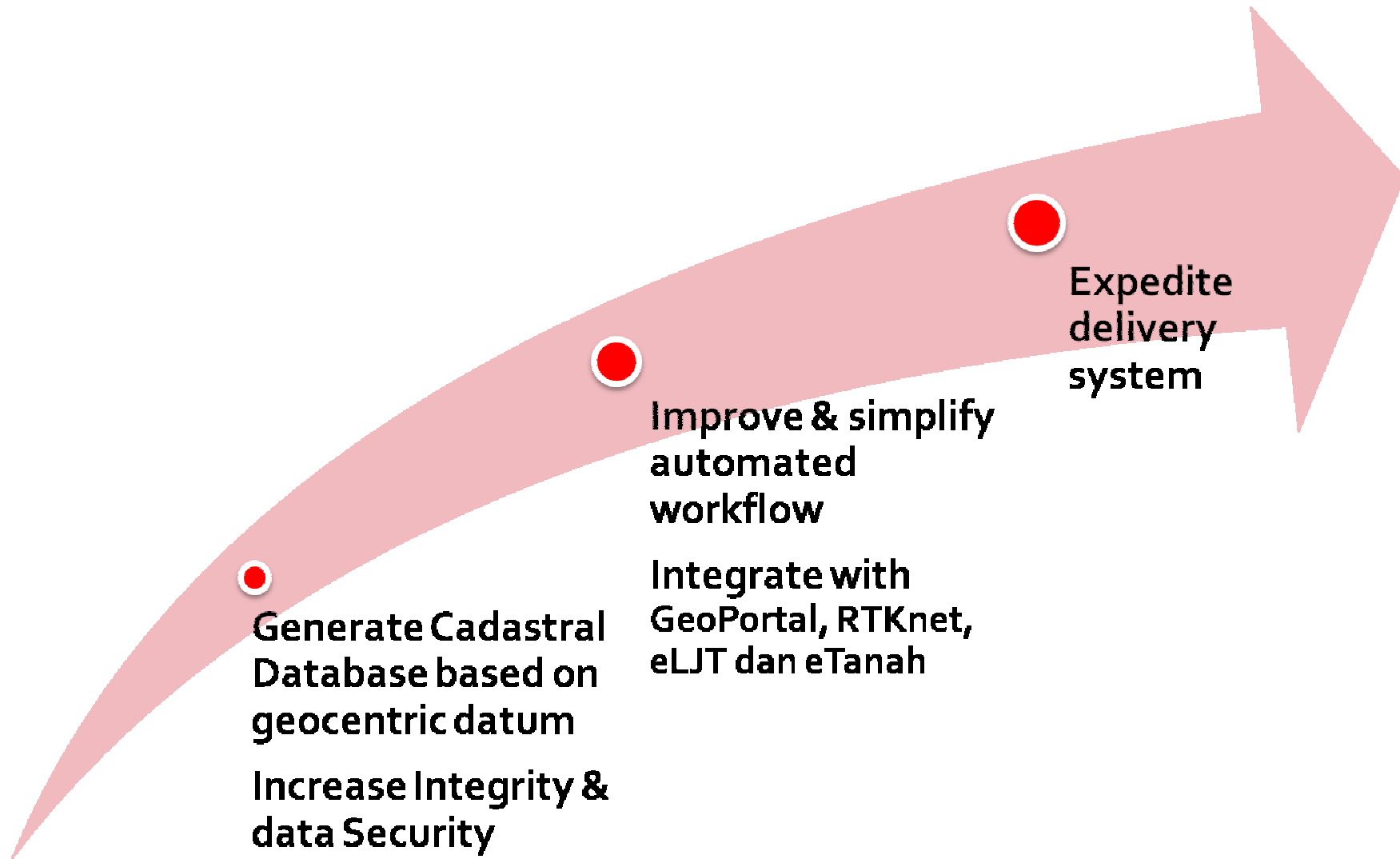
# Old Workflow (office)



# Old Workflow (field work)



# New Approach



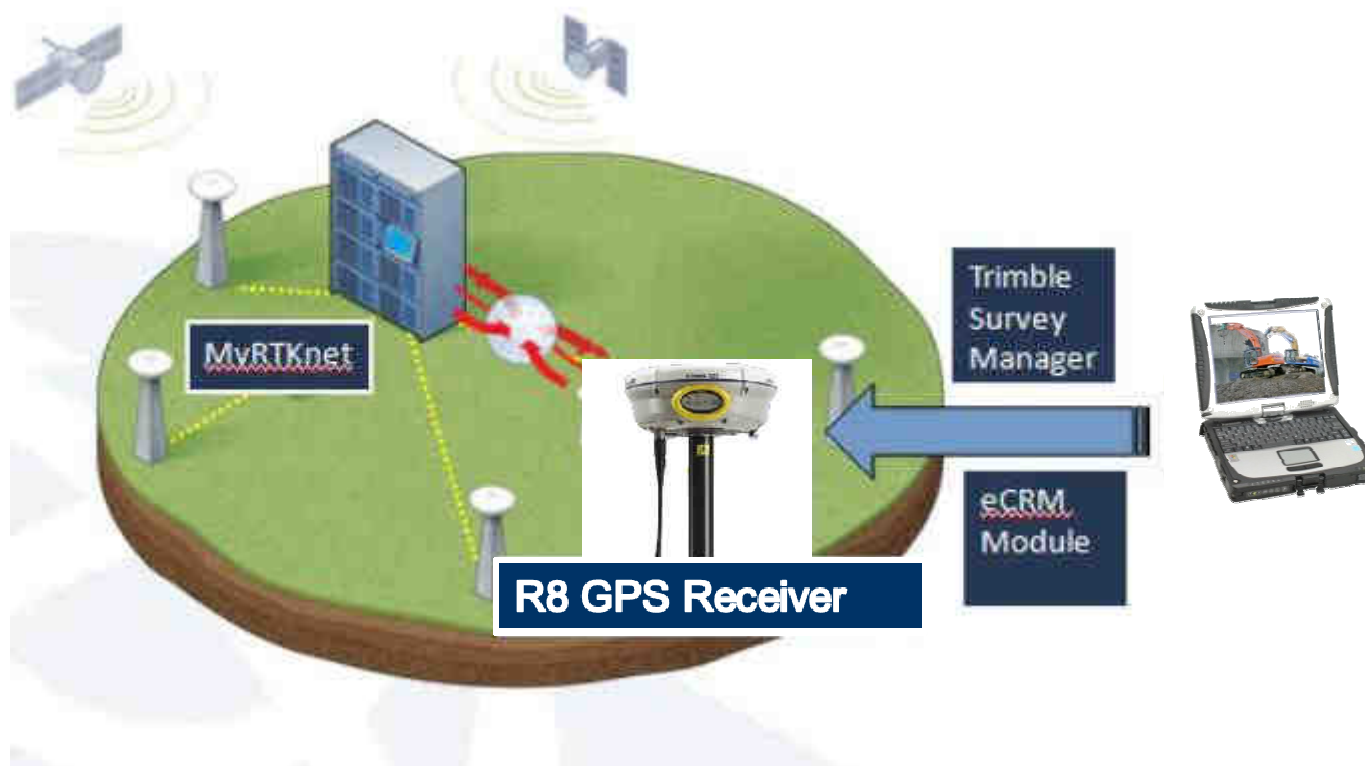
# New Approach

## ◆ New technology being used

- GNSS
  - Conform to homogenous NDCDB
  - Simplify & speed-up field data collection
  - More feasibility for surveyor
- Web based application modules
  - Allow access to information at all time
  - Improve monitoring of Jobs
- Modern Equipments
  - Fast processing
  - Improve Security
  - Large Storage

# New Approach

## ◆ Global Navigation Satellite System








# **e-CADASTRE**

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# Application Modules

## Web GIS




- JUPEM2U
- eLodgement
- eKadasOnLine
- CSRS
- eSIM
- eBorang
- Ecadasonline
- eKiosk
- eReporting
- eMonitoring
- SUM
- eNotification
- SUM LSA
- eNotification

## Desktop GIS

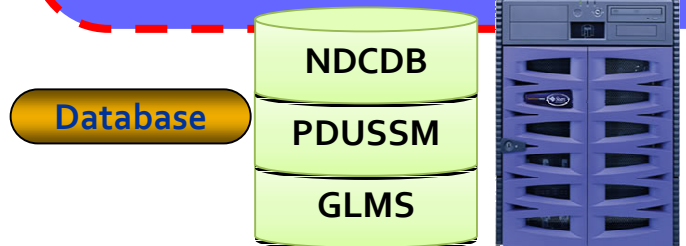


- ePU
- DRP
- ePU
- eGLMS
- eJalan
- eTownKg
- eAdminBdy
- eHidrografi
- eBangunan
- eWarta
- eGrid
- eSPID
- eFEE
- eFee

## Field



- eTSM
- Total Stn Survey
- eCRM
- GNSS Control
- eSSM
- Bldg Verification



## Strata GIS



- Strata
- Strata 3D viewer
- Strata Data Entry LS

## Non GIS

- eMedmAS
- ePKI
- Calibration
- eSigning
- eSupport
- eVerifier
- Maintenance
- PKI 2D Barcode
- eAnnotation
- eReporting
- SPAK
- eReporting
- SPAK
- EDM/GPS Calibration
- SPPK
- Security
- SPPK
- SSO

## SPEK

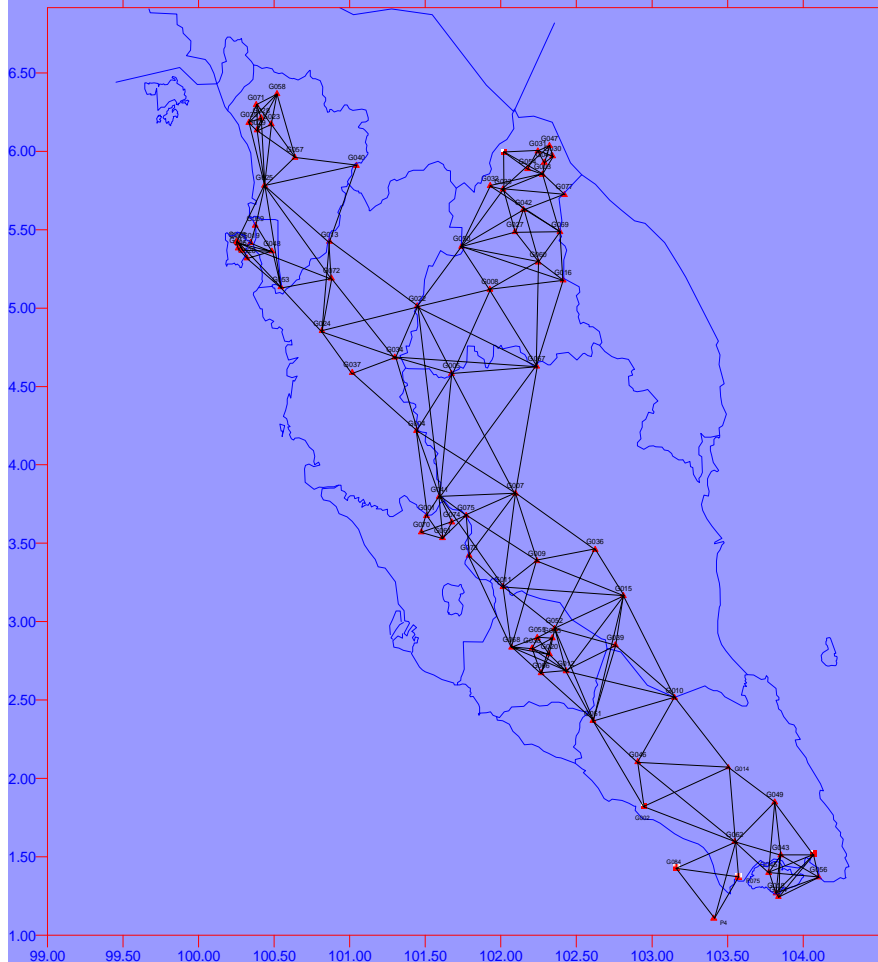


- eSPEK
- DB Merging
- eQC
- Lot overlap

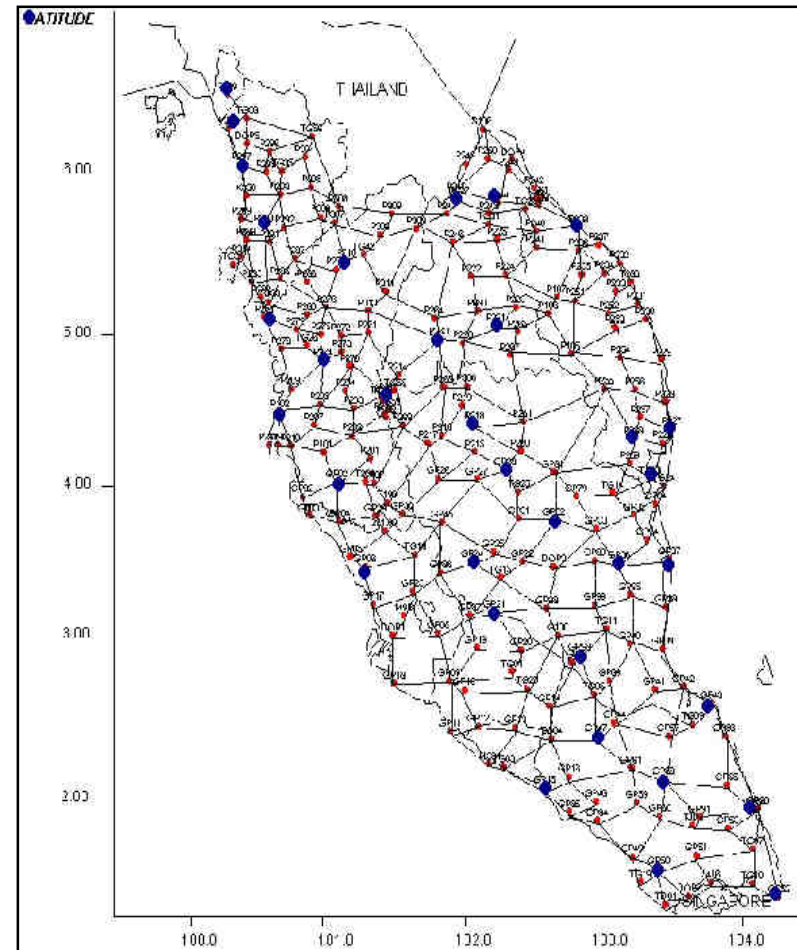
# NDCDB

## OLD AND NEW GEODETIC INFRASTRUCTURE:

**GEODETIC TRIANGULATION  
PENINSULAR MALAYSIA**

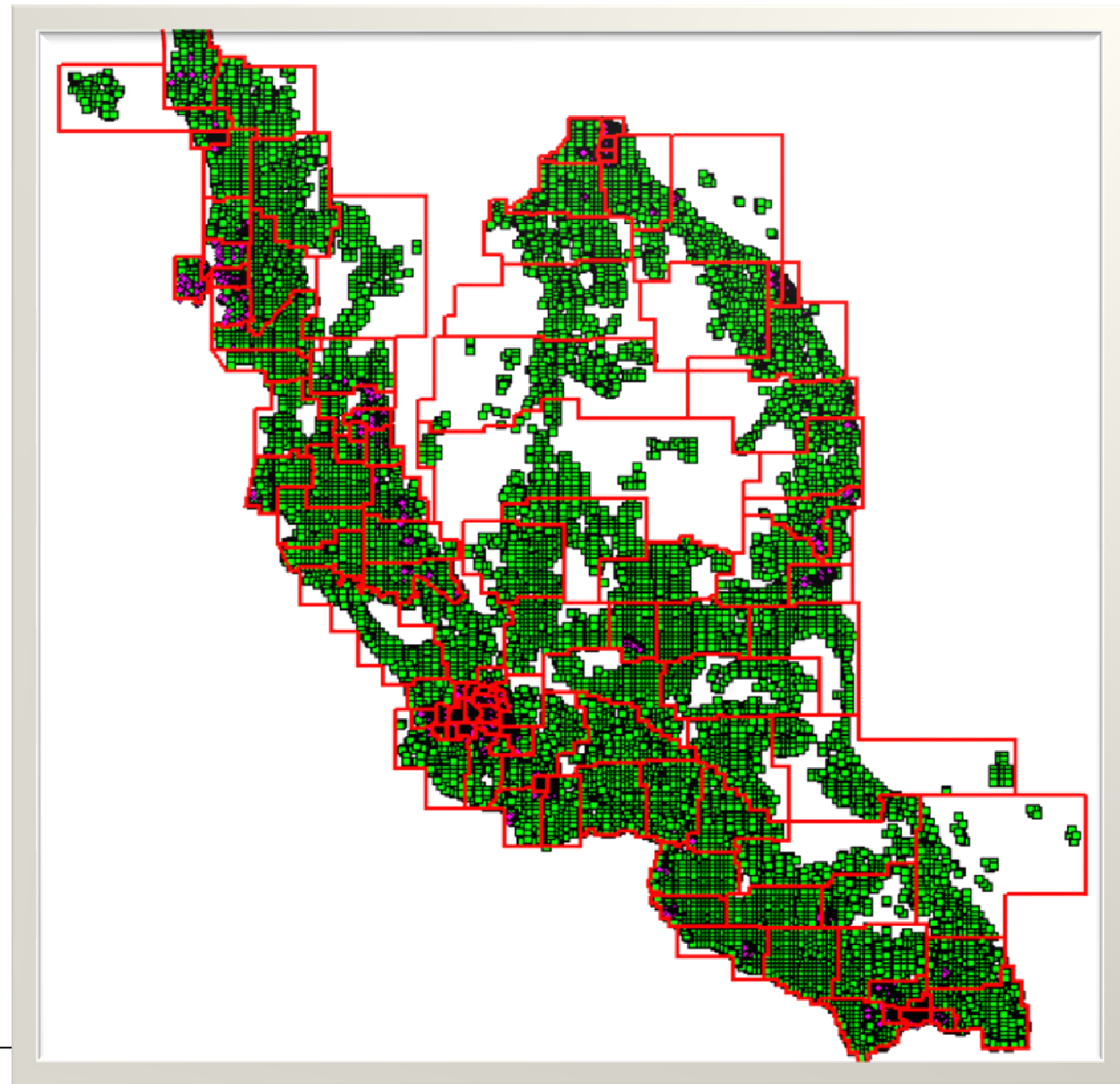


**GPS BASED REFERENCE SYSTEM**



# Cadastral Control Infrastructures

STATE	NO_CCI
Perlis	203
Kedah	1,694
P Pinang	934
Perak	3,941
Selangor	4,324
WPKL	1,071
N Sembilan	1,608
Johor	4,221
Pahang	3,145
Terengganu	1,810
Kelantan	2,048
<b>Total</b>	<b>24,999</b>



# NDCDB – Background of DCDB

## DIFFERENT TYPES OF CADASTRAL COORDINATES

**RIGID  
COORDINATE**

**Homogenous and Systematically  
Adjusted**

**PLOTTING  
COORDINATE**

**For cadastral map plotting purposes**

**SYSTEM  
COORDINATE**

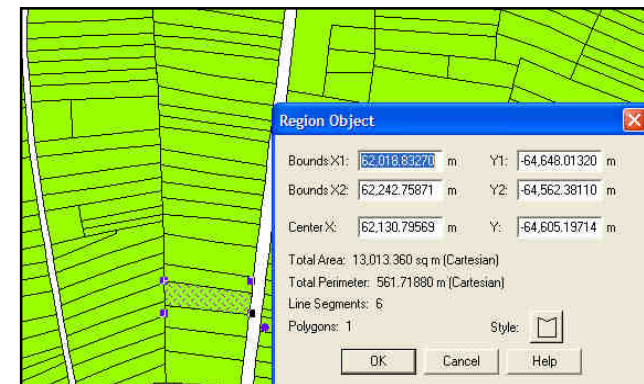
**System/Software generated coordinate  
based on features location**



**Rigid Coordinate**



**Plotting Coordinate**



**System Coordinate**

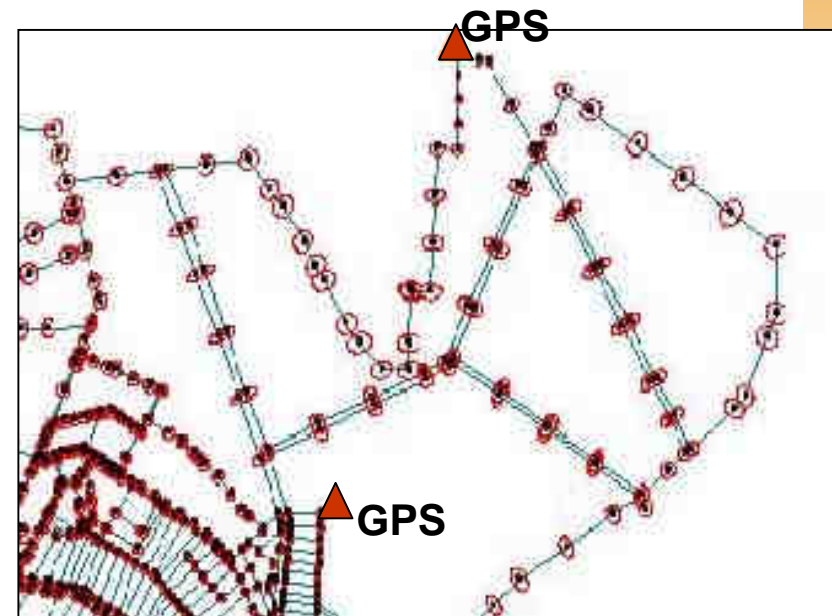
# NDCDB – Background of DCDB

## Bowditch

BLOCK 1 (SAMBUNGAN)						
62	321 37 20	8.533	6.689	-5.298	3118.6	( 0.000)
20	321 33 50	8.806	6.898	-5.474	3125.5	(-0.001)
23	24 36 50	32.221	29.293	13.420	3154.7	( 0.000)
38	24 56 20	1.578	1.431	0.665	3156.2	( 0.000)
54	24 37 40	12.652	11.501	5.272	3167.7	(-0.001)
55	24 36 10	23.379	21.257	9.733	3188.9	( 0.000)
56	24 36 20	18.916	17.198	7.876	3206.1	(-0.001)
57	24 35 50	16.888	15.356	7.029	3221.5	( 0.000)
58	24 36 20	10.070	9.156	4.193	3230.6	(-0.001)
61	23 32 30	37.298	34.194	14.897	3264.8	(-0.001)
60	21 28 20	3.861	3.593	1.413	3268.4	( 0.000)
59	30 22 30	7.384	6.370	3.734	3274.8*	( 0.000)
JUMLAH		632.288	0.017	0.032		
TIKATAN LURUS 1 : 17449						
TIKATAN/BERING : 0.036m/ 62 01 10						

**Bowditch adjustment distributes closing errors linearly but not able to provide a unique coordinates solution.**

## Least Squares

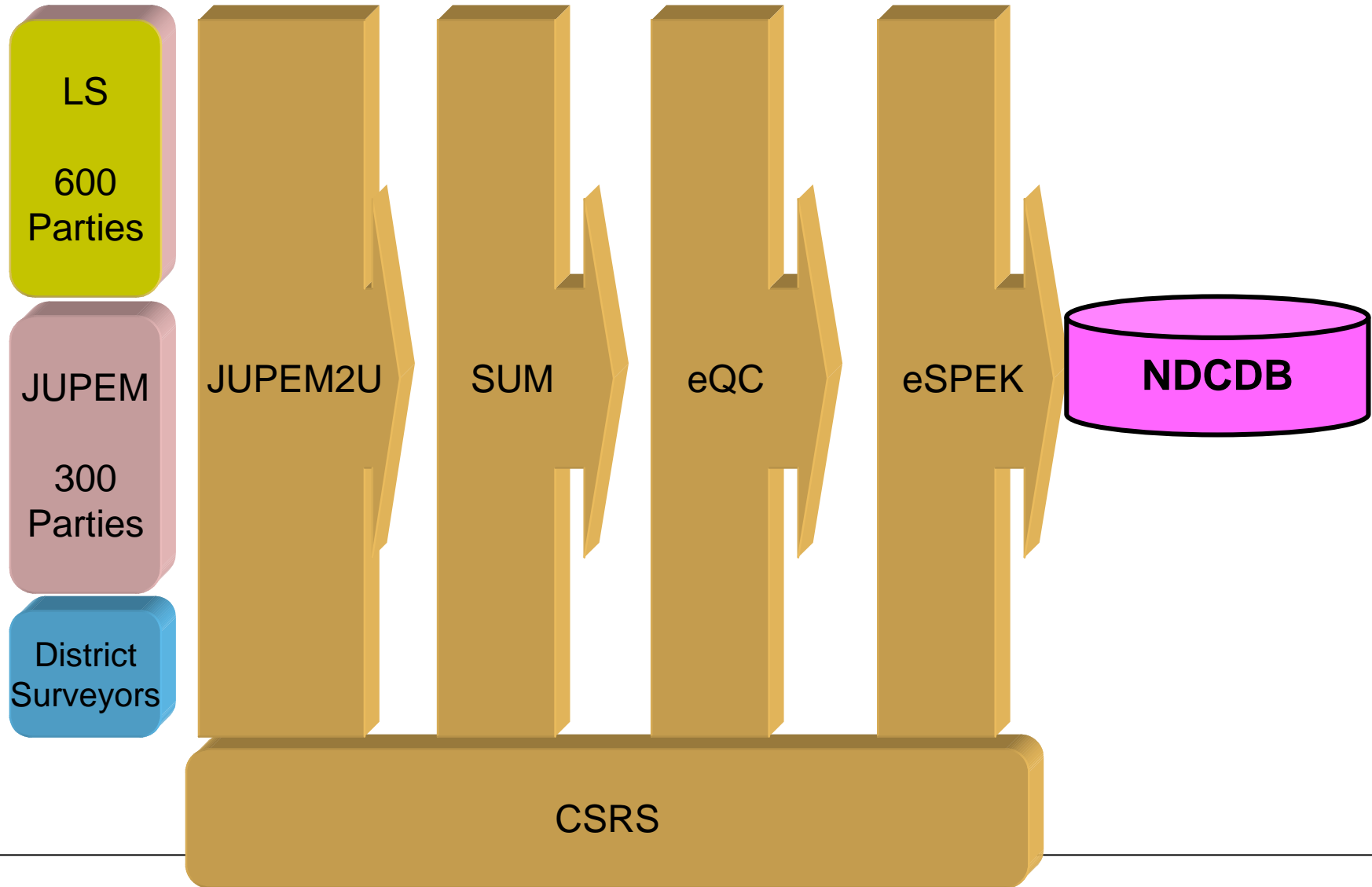


**Least Squares adjustment technique determine a unique set of coordinates for each boundary mark from a set of observed values**



# NDCDB

## Updating of NDCDB in eCADASTRE



# JUPEM<sub>2</sub>U

JUPEM2U v2.0 - Windows Internet Explorer

http://jupem2u.jupr.gov.my/j2u/jupem2u.html

File Edit View Favorites Tools Help

Google Search Bookmarks Check AutoFill Sign In

Favorites Suggested Sites Web Slice Gallery

JUPEM2U v2.0 Page Safety Tools


 **Jupem2U**  
**JABATAN UKUR DAN PEMETAAN MALAYSIA** 

Home

**Log In**  
User Name:   
Password:

[eMedmas](#)  
[eSupport](#)  
[SPAK](#)  
[SPPK](#)  
[eReporting](#)

Selamat Datang . . .

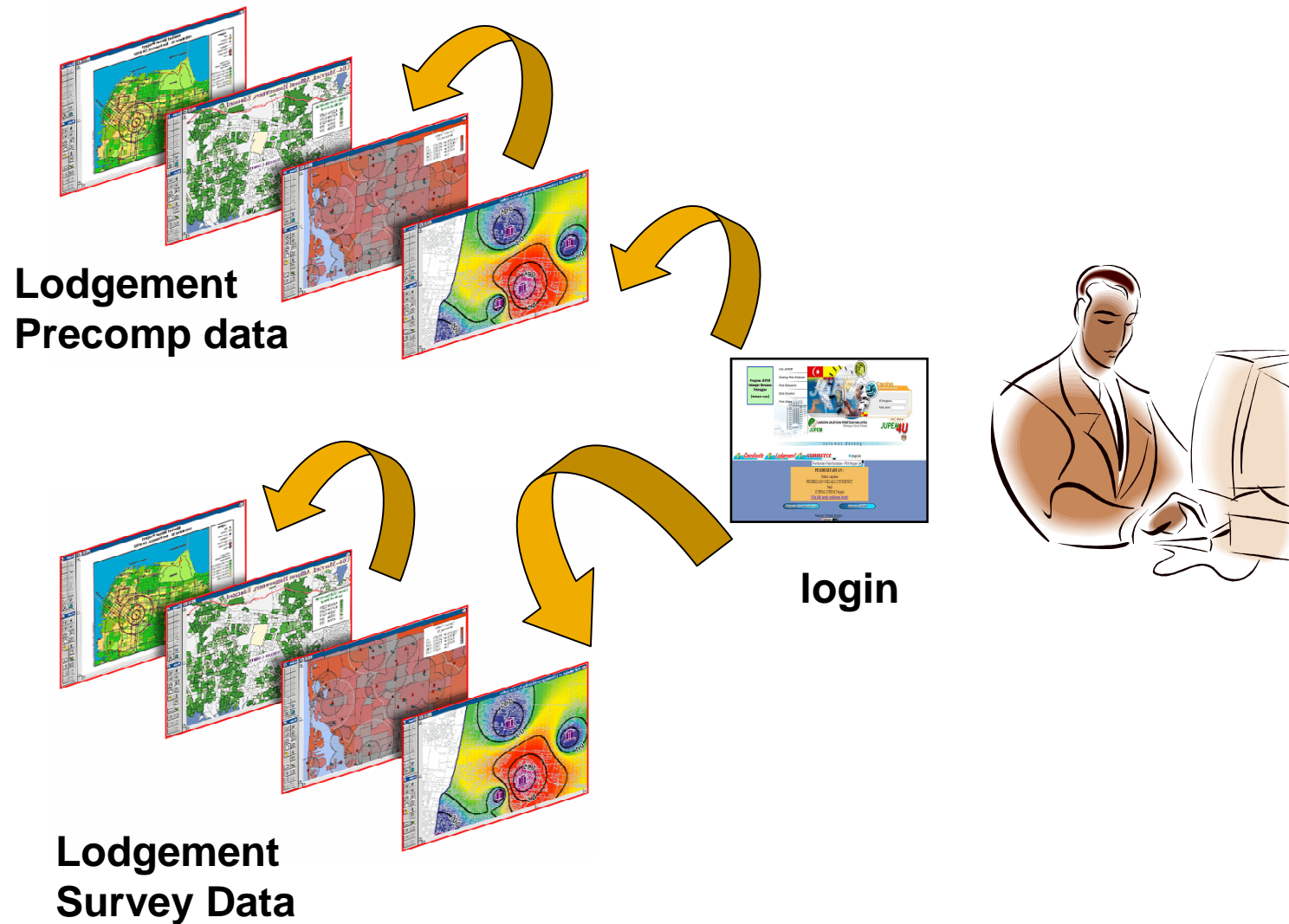
  
**JUPEM2u**  
JUPEM eKadaster  


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Best View in IE 7.0, Min Resolution 1280 x 1024.

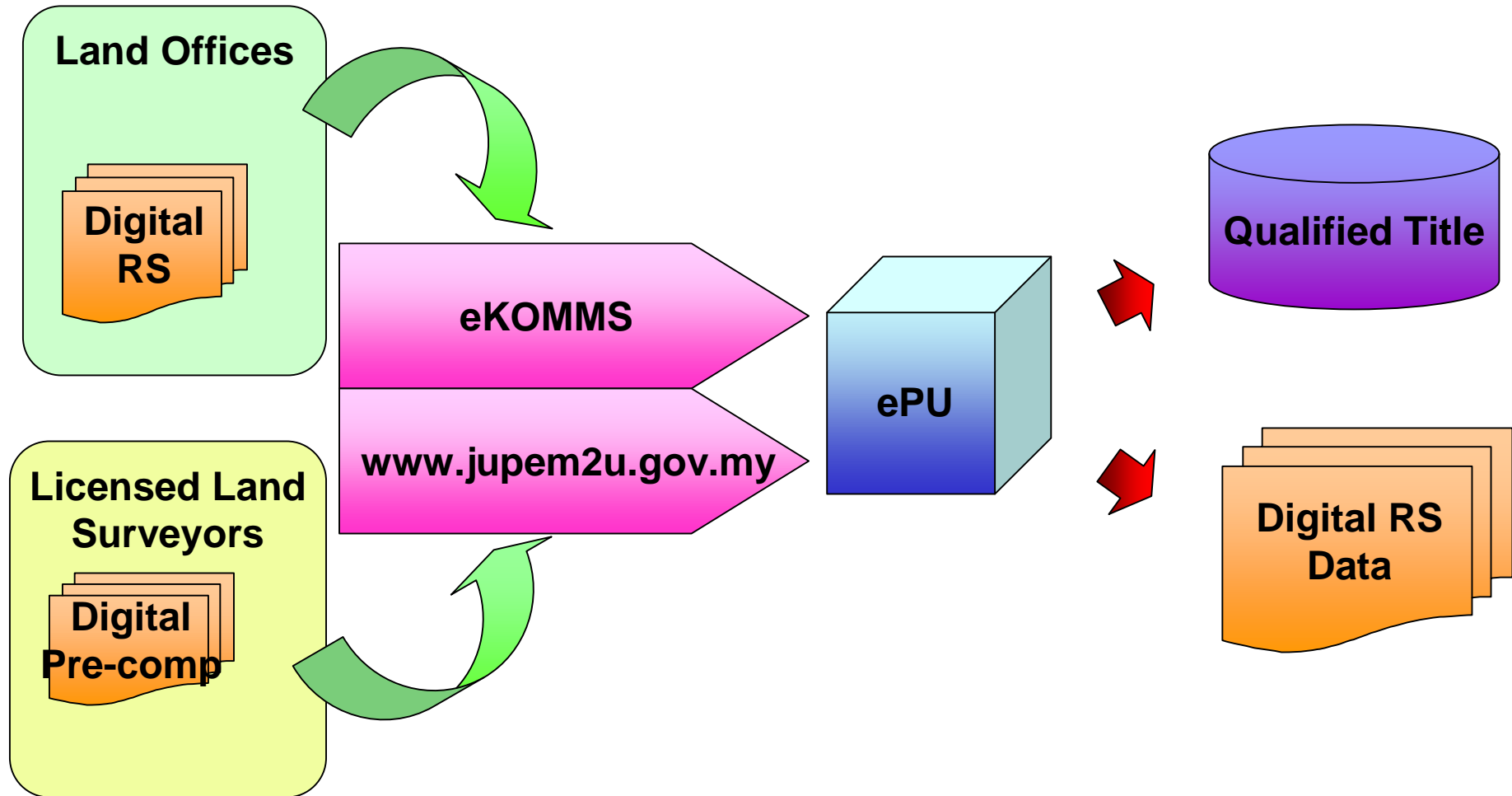
start Microsoft PowerPoint ... JUPEM GeoPortal - Wi... eKadaster Website - ... JUPEM2U v2.0 - Wind... EN 10:50



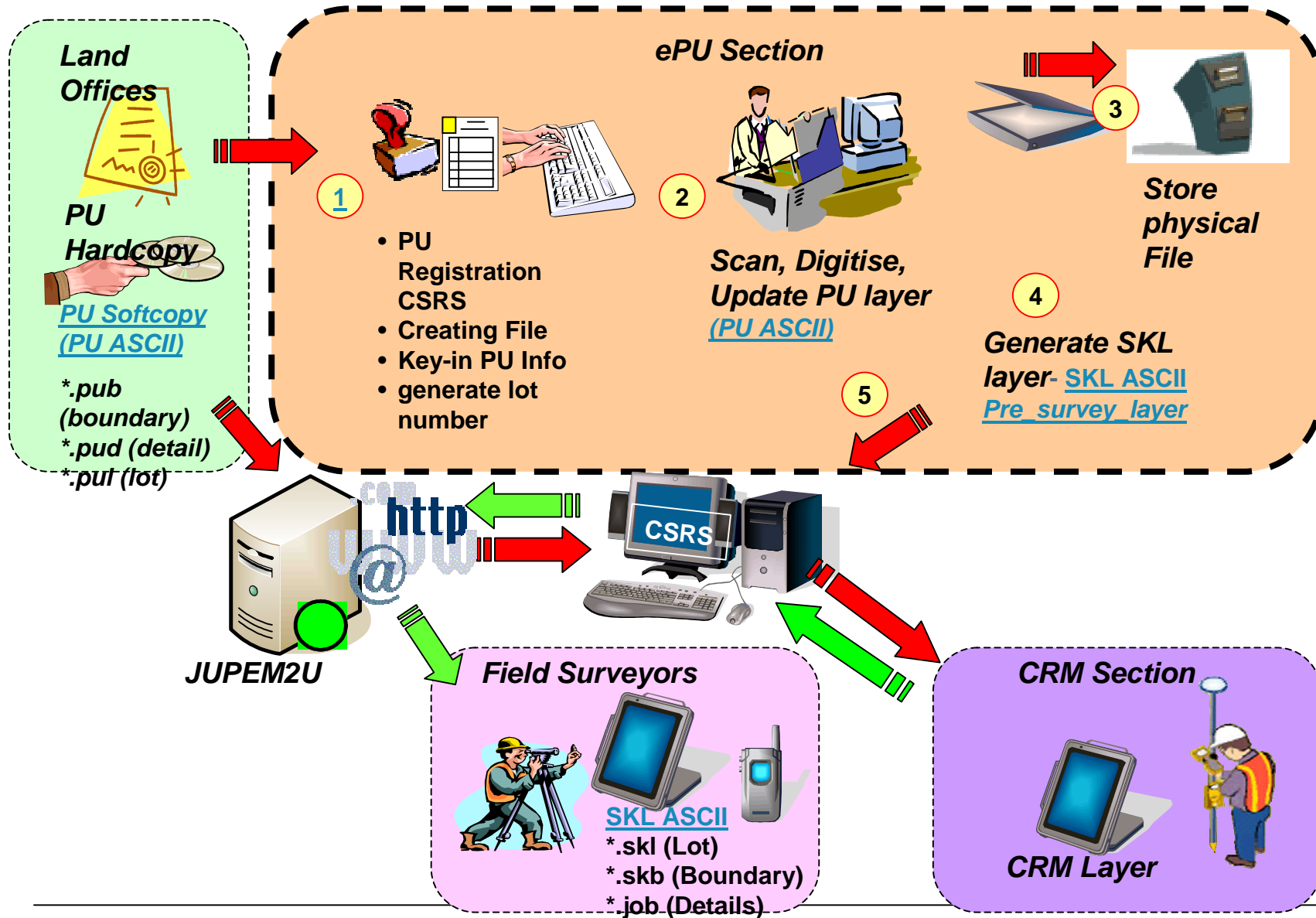
# JUPEM<sub>2</sub>U



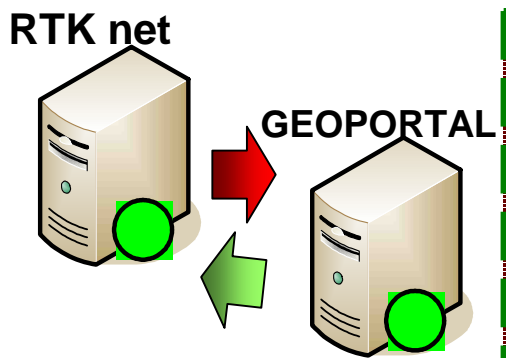
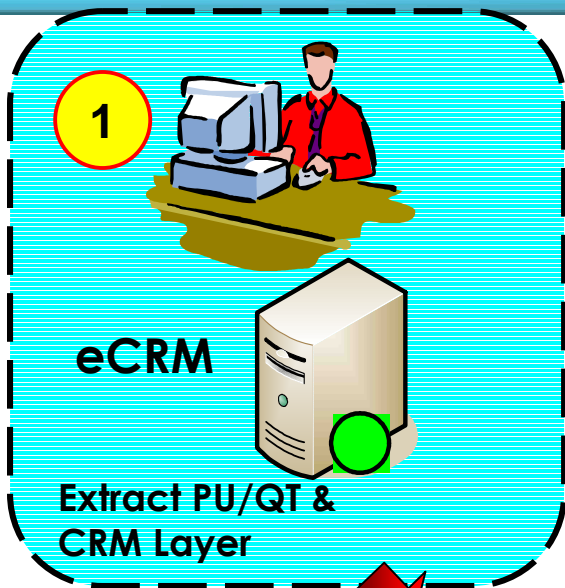
# ePU



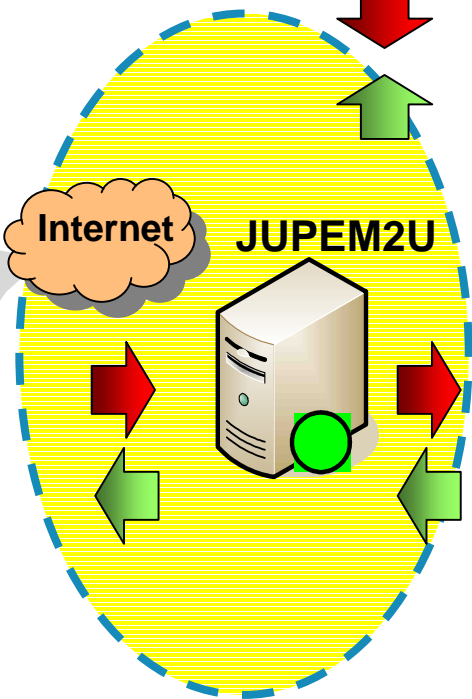
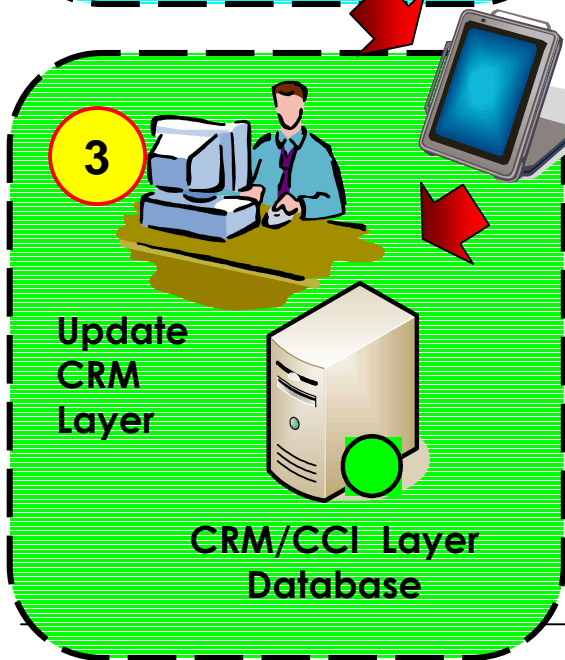
# ePU Module



# eCRM

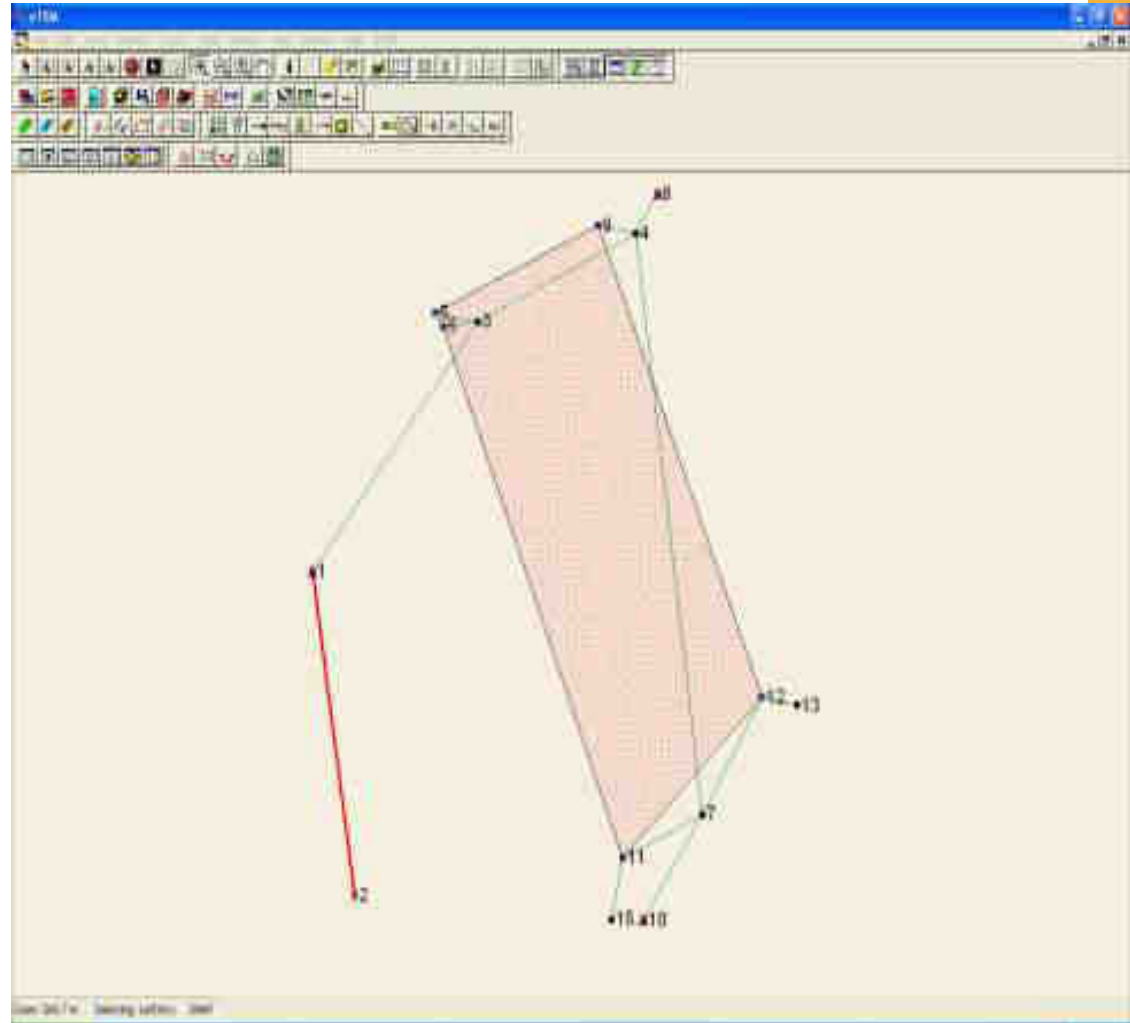


- Planning
- Establish CRM
- Observation
- Processing
- Transform Module

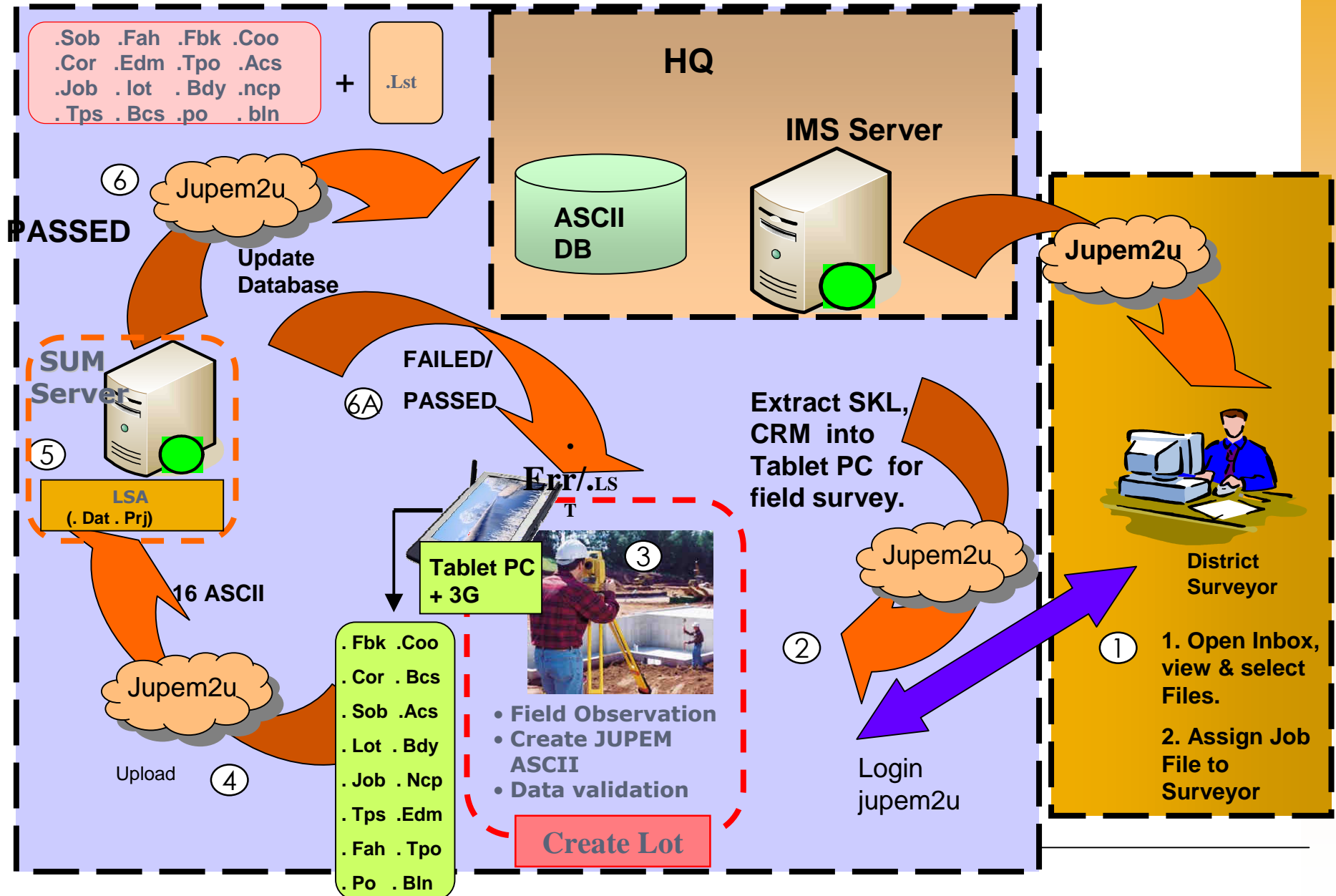


# eTSM Module

- Module develop to assist Field Surveyor perform digital data collection. Adjustment using least square adjustment
- GIS application to assist graphical interaction
- Developed to reduce possible field error.

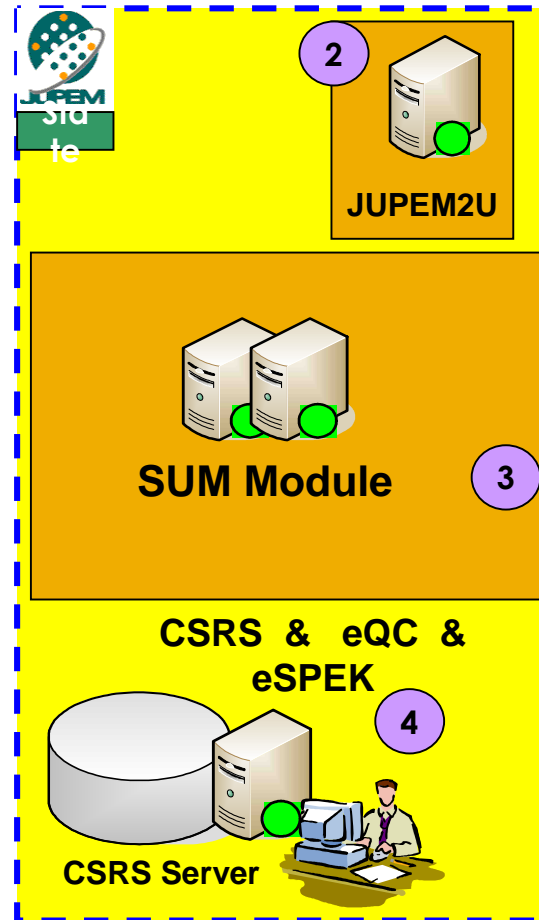


# eTSM



# eSUM

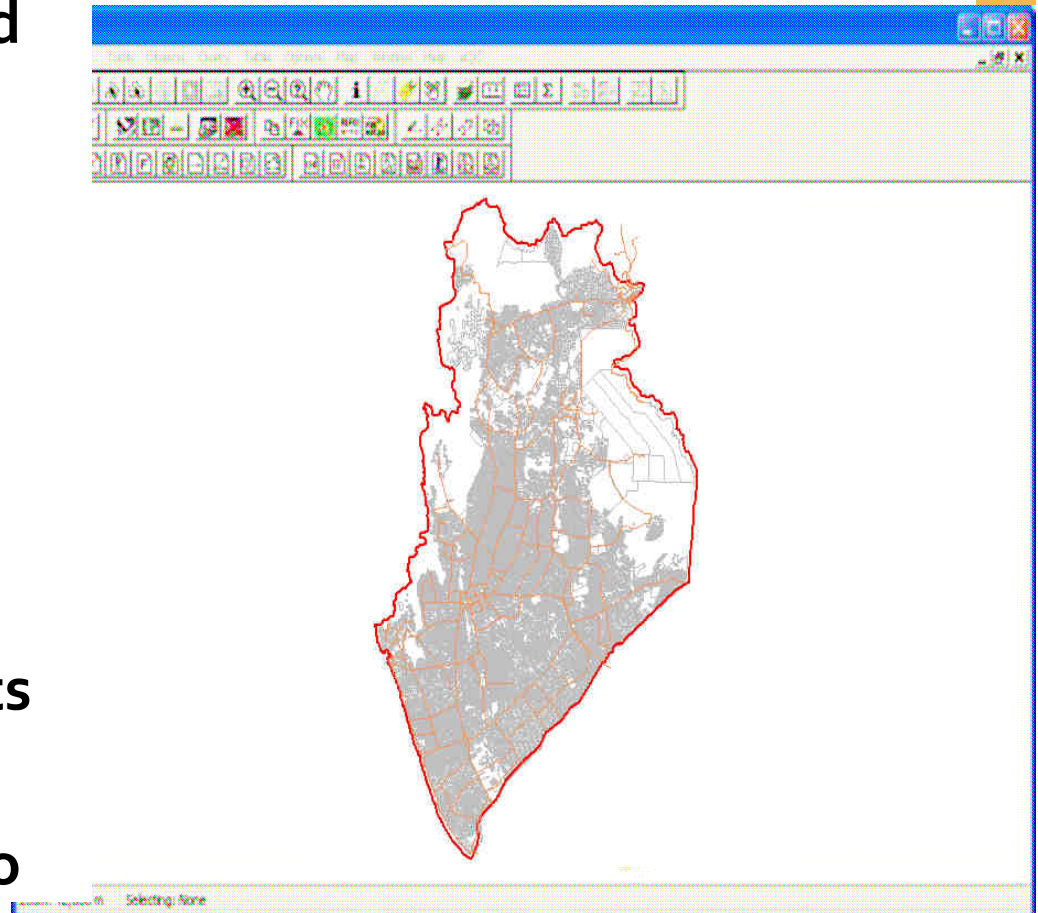
- **Sistem Ukur Maya (SUM)** is a web-based Least Square Adjustment, fully automated to assist Field Surveyors
- **SUM Servers** designed to operate with no downtime





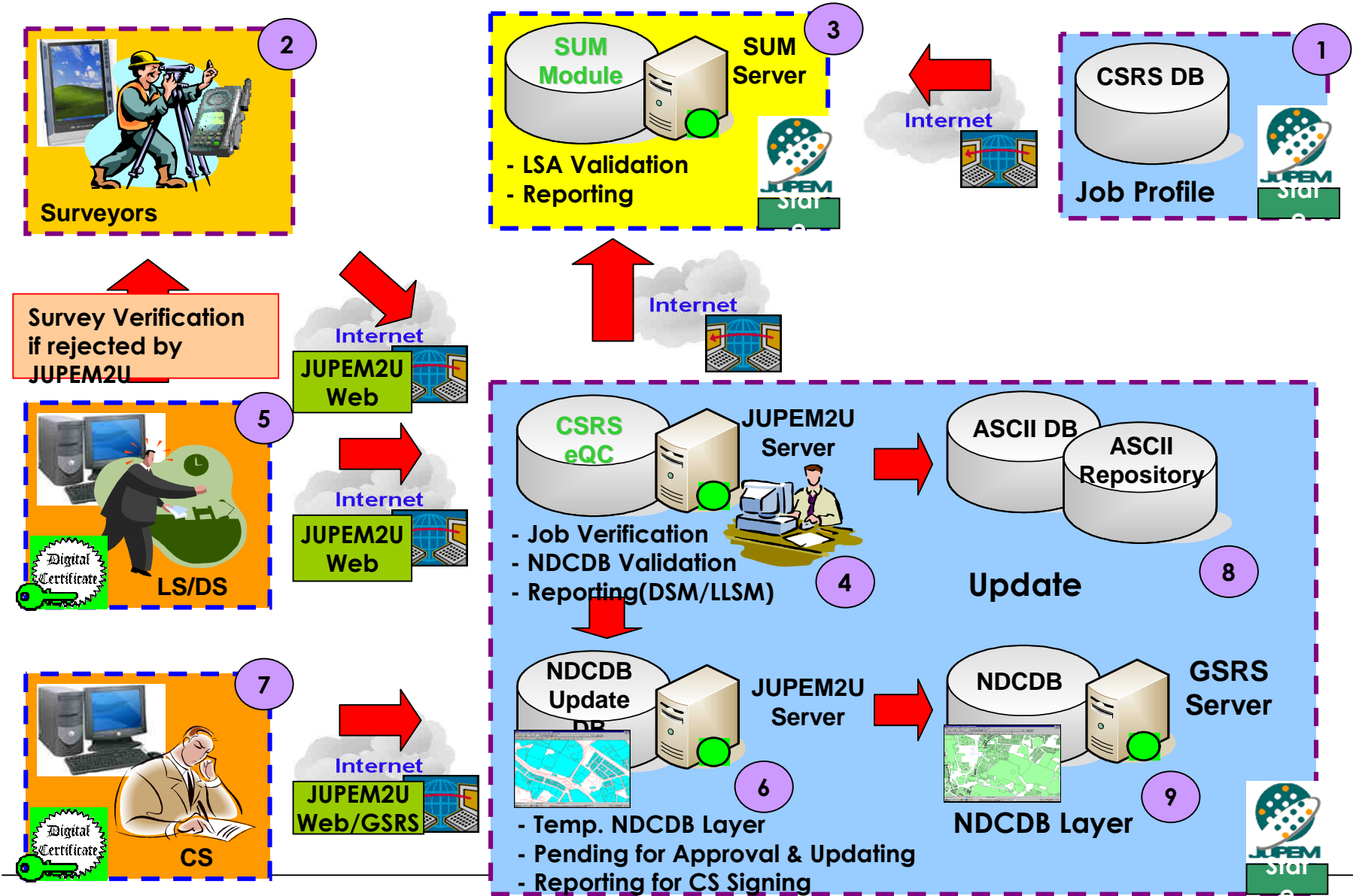
# eQC Module

- eQC module – checking and Verification of 16 ASCII via JUPEM2U
- Function;
  - Load job from DS/LLS
  - Verify digital files
  - Detect false editing of observation
  - Check for overlapping lots
  - View attached files
  - Commit files (16 ASCII) to FBK ASCII database

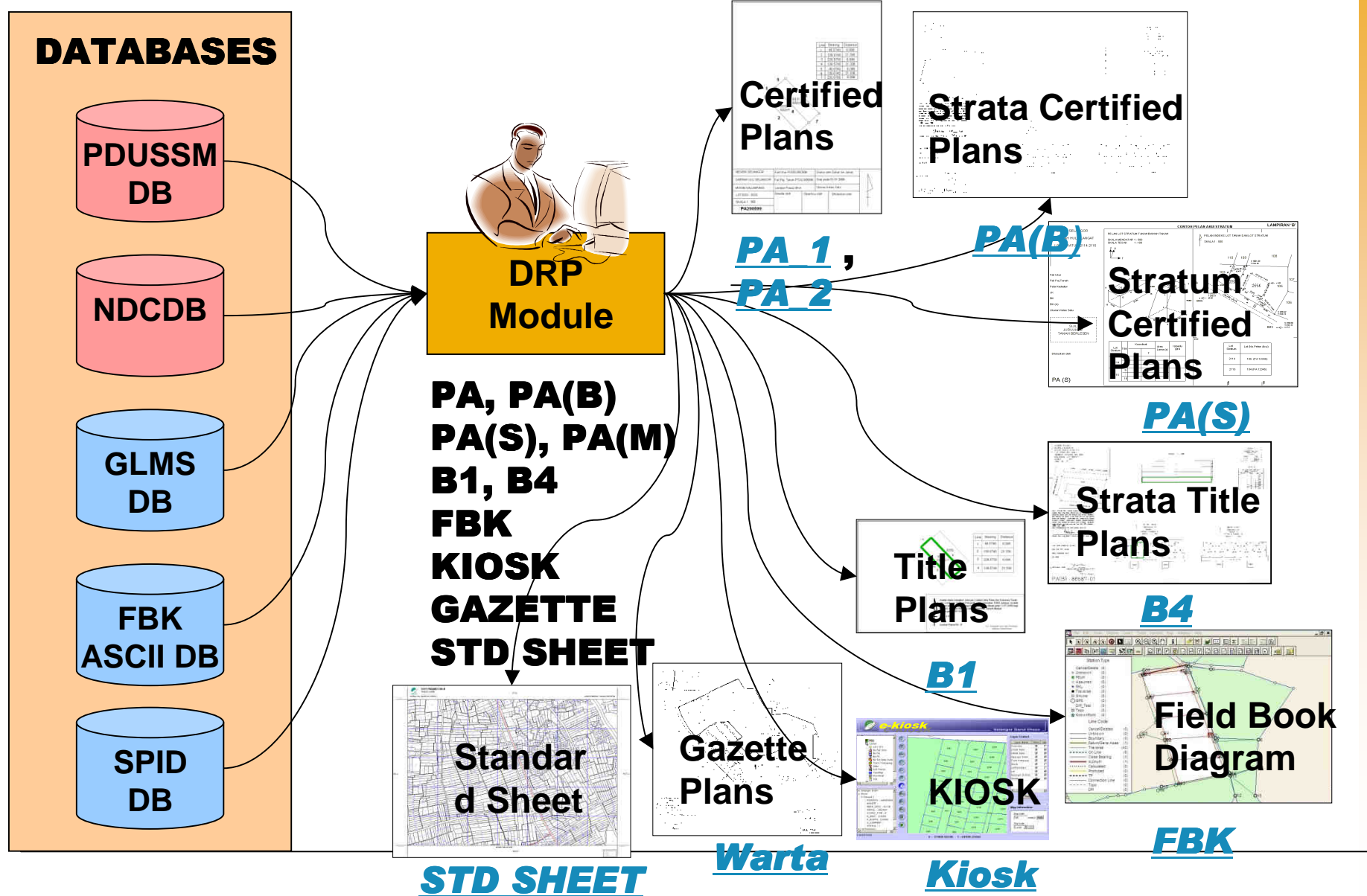




# eSPEK



# DRP



# ePKI 2D BARCODE

The screenshot shows a web browser window with the address bar displaying `http://localhost/eannotation/ammend.php?pa=PA91616&task=pu`. The page title is "PA No. : PA91616" and there is a "Complete Job >>" button in the top right. A toolbar contains various icons for document management: Save, Print Setup, Print, Normal View, Fit to Window, Zoom In, Zoom Out, Pan, Initial, Signature, Date, eSigning, Verify Barcode, and About Us.

The main content area displays the following text:

UR PUBLSEL312/1994  
J. TANAH PTK14/138/92(10)  
SKAN PADA  
SKAN OLEH

Below the text, there is a handwritten signature and the date "10/02/2008". To the right of the signature is a 2D barcode.

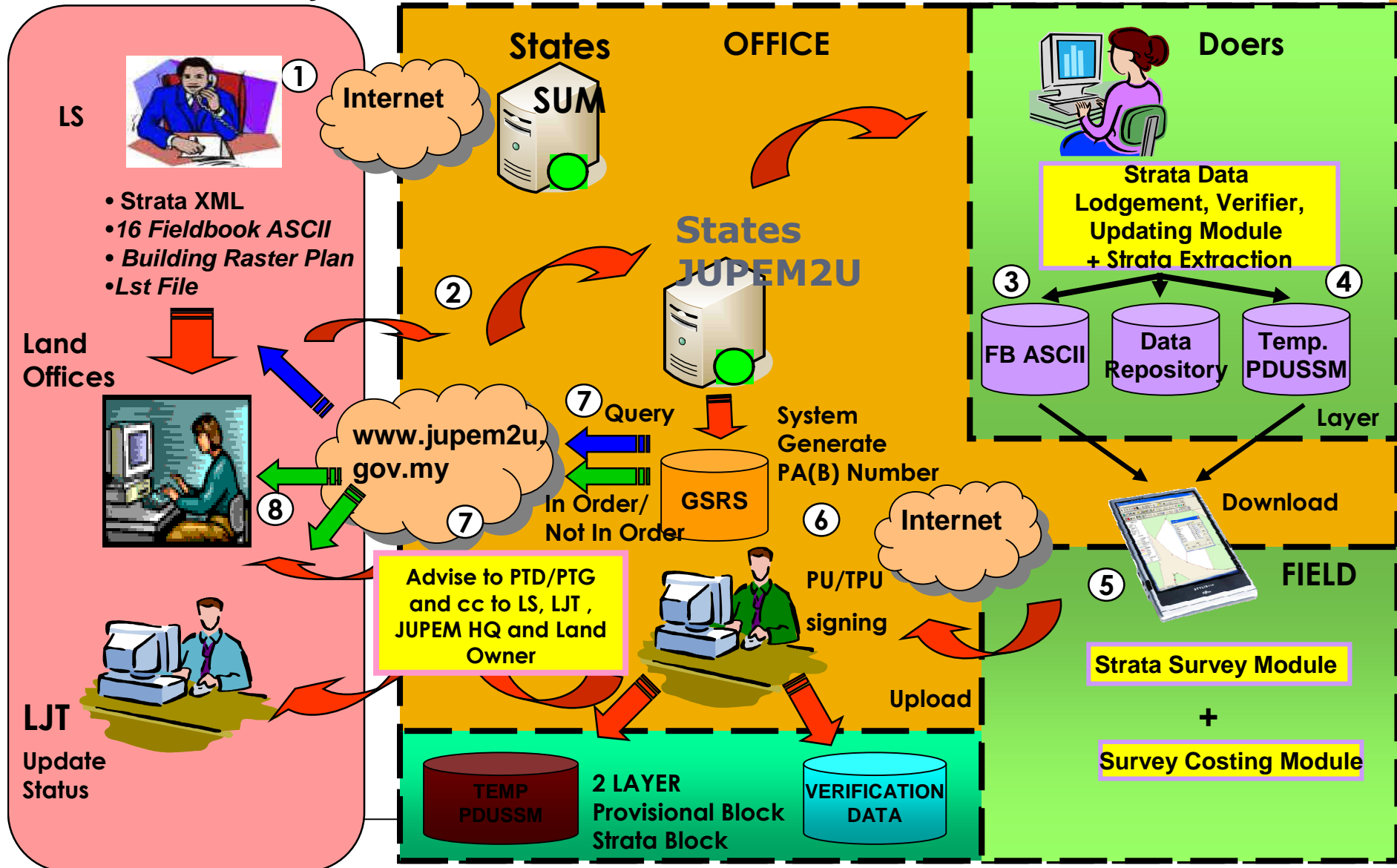
Below the signature and date, the text reads:

\_VIS KOH  
RAH UKUR DAN PEMETAAN SELANGOR

The bottom status bar shows "Welcome to LEADTOOLS DEP32 for JUPEM" and technical details: "StatWidthHeight", "StatBPP 90%", and "StatSize".

# PDUSSM, eSSM

## 1st Phase Survey





# CONCLUSION

- ❖ **DSMM believe the eCadaastre project will make a paradigm shift to the current cadastral survey process;**
  - ❖ **Able to improve the delivery system from 2 years to 2 months for its land title survey process;**
  - ❖ **The NDCDB with survey accurate coordinate will allow DSMM to expedite the cadastral survey process with the use of satellite technology (GPS) and provide fully GIS-ready information;**
-



Thank You

[www.jupem.gov.my](http://www.jupem.gov.my)

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