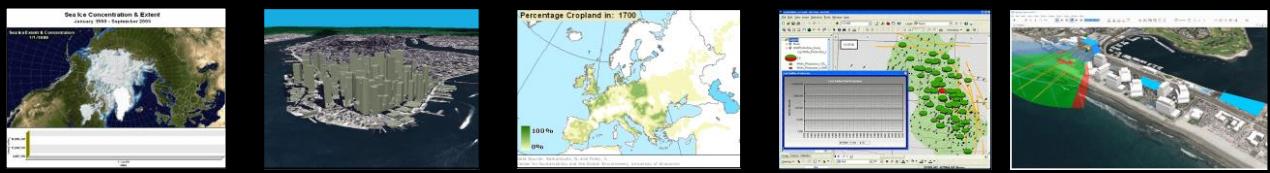


GIS Concept



1

Lesson topics

- **What is GIS?**
- **GIS components**
- **Apply GIS**
- **GIS in the future**

2

What is GIS?

3



4

What is GIS?

GIS : Geographic Information System

ระบบสารสนเทศทางภูมิศาสตร์ หรือ ระบบภูมิสารสนเทศ

- Something about Maps
- About Computer & Database System
- About Internet, Cloud, and Online
- And also about Mobile



ArcGIS



5

Geographic Information

What is “geographic information”?



 **esri Thailand**
ESRI (THAILAND) CO., LTD.

202 Floor 12 CDG House Nanglinchi Rd.,
Chongnonsee, Yannawa, Bangkok 10120

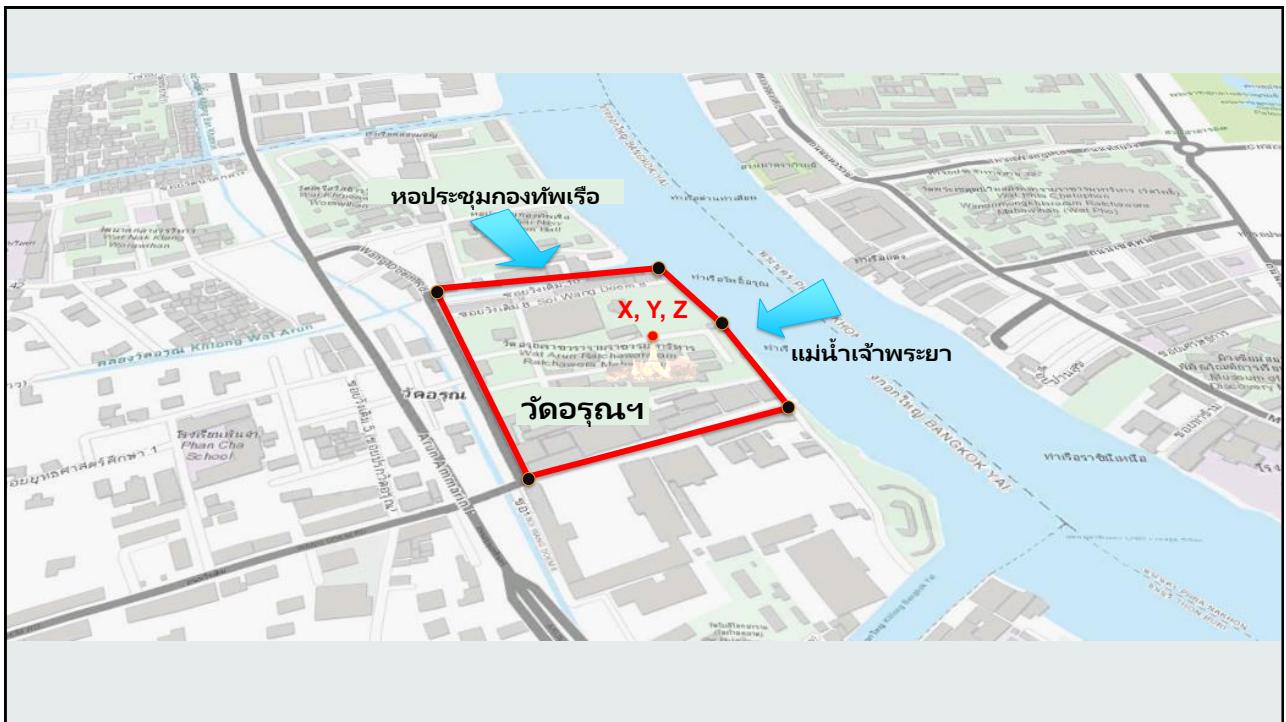
Spatial Location

Tel: 02 678 0710, 02 678 0714
Fax: 0 2678 0321-3
Contact: esrith.contact@cdg.co.th
Office Hours: Monday-Friday
08:00 am - 05:00 pm

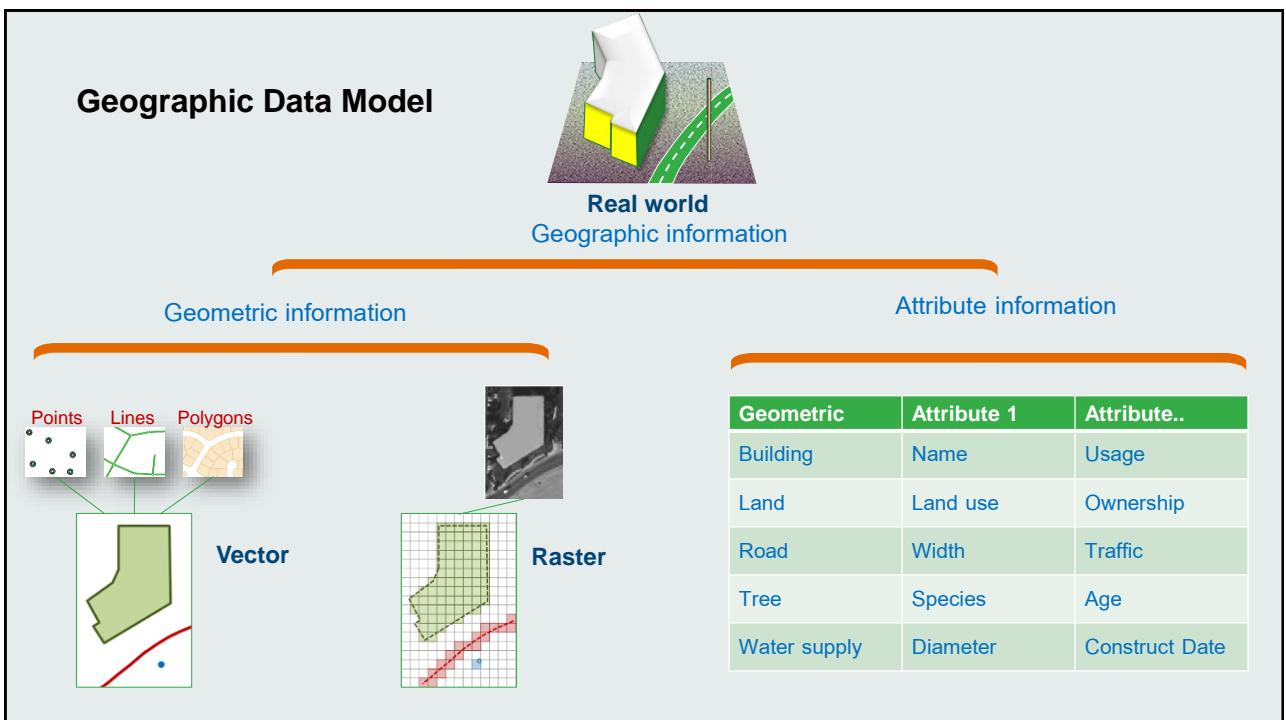
Attribute



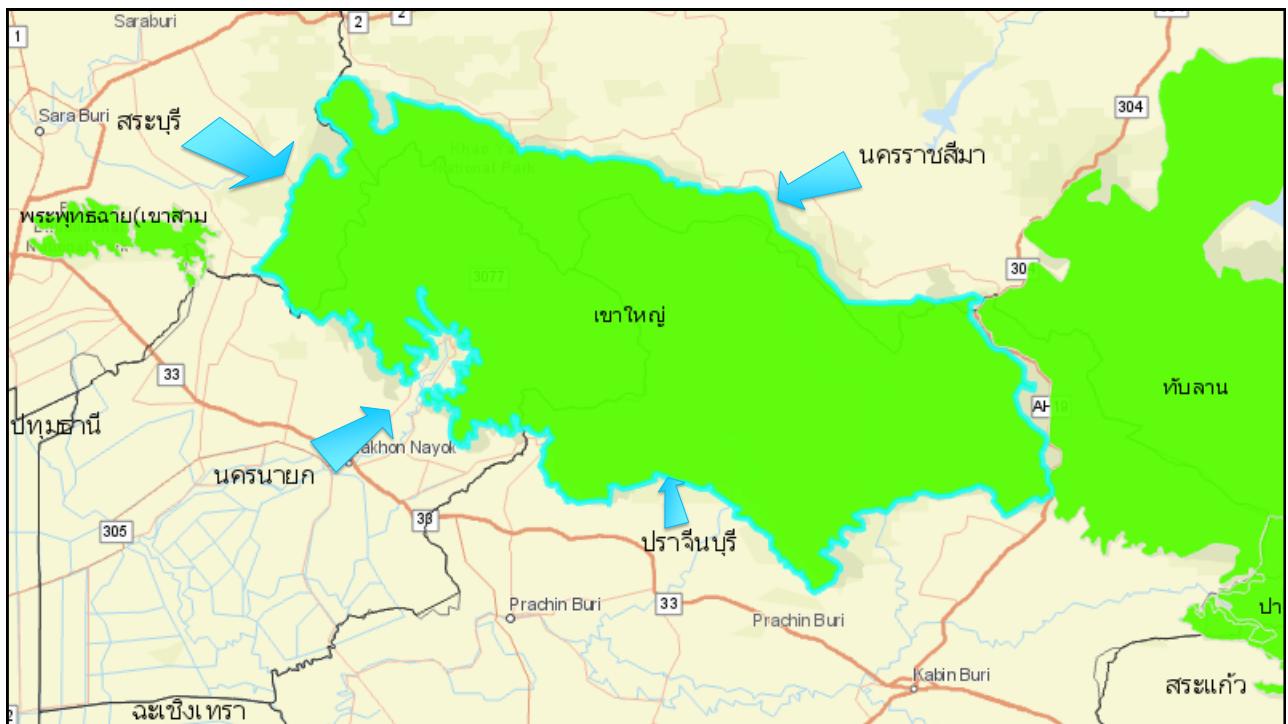
6



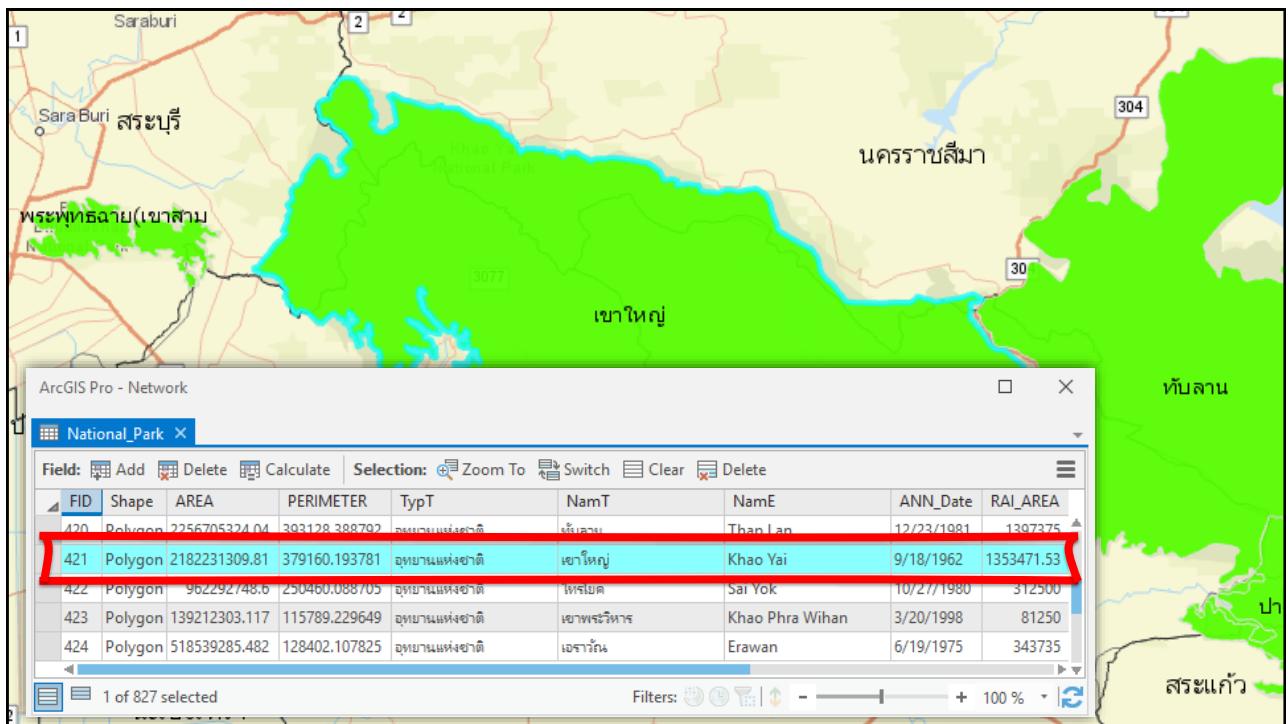
7



8



9



10

Geographic information includes spatial and attribute information.

- **Where something is?**

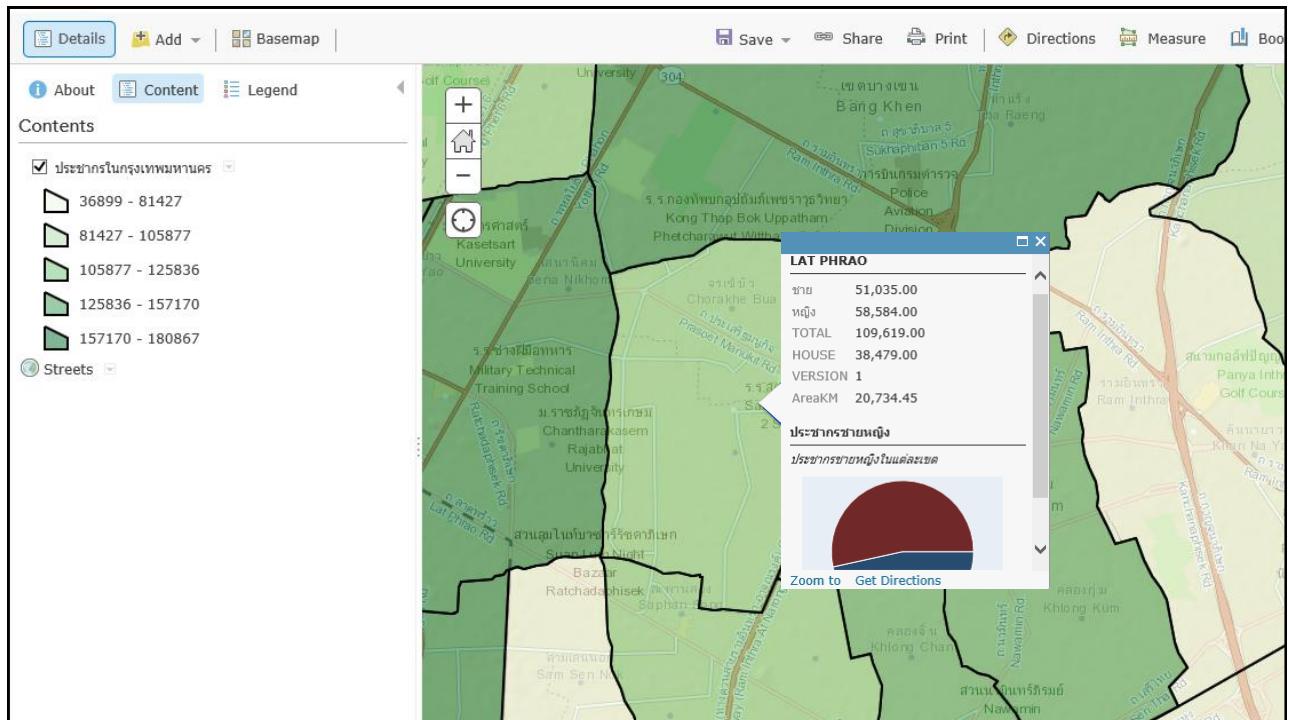
- Spatial Information

- **What something is?**

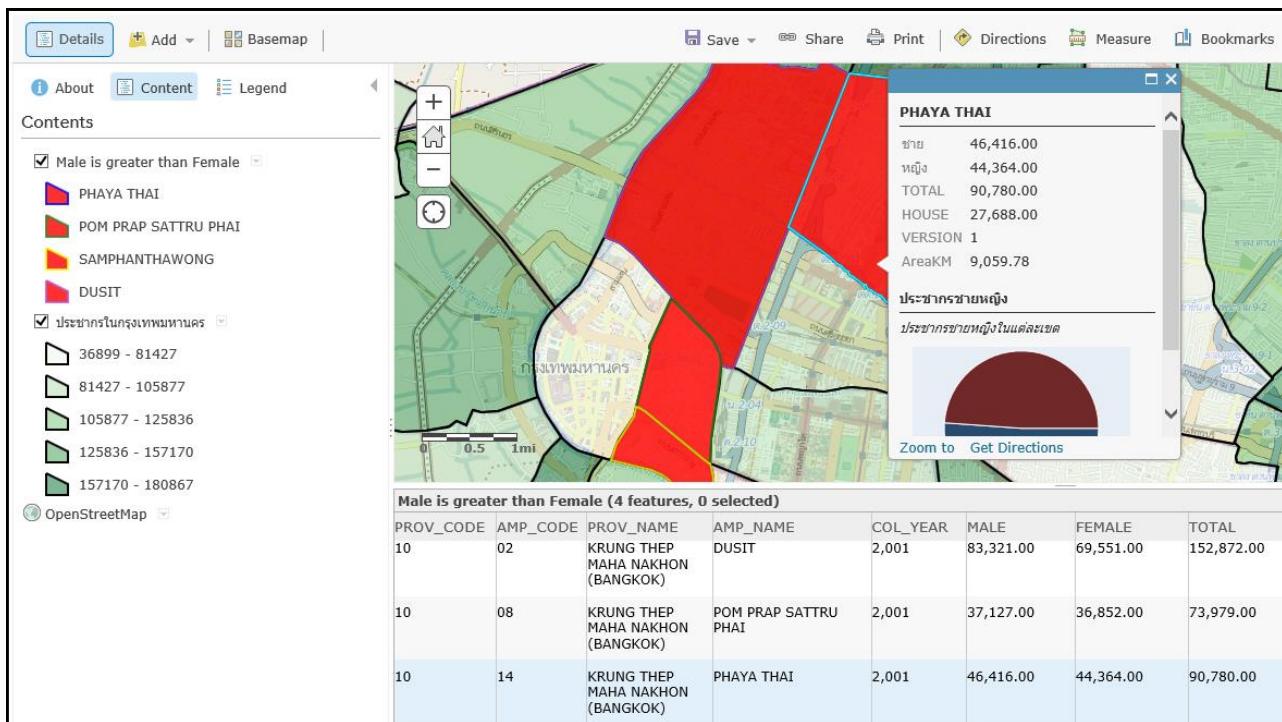
- Attribute Information



11



12

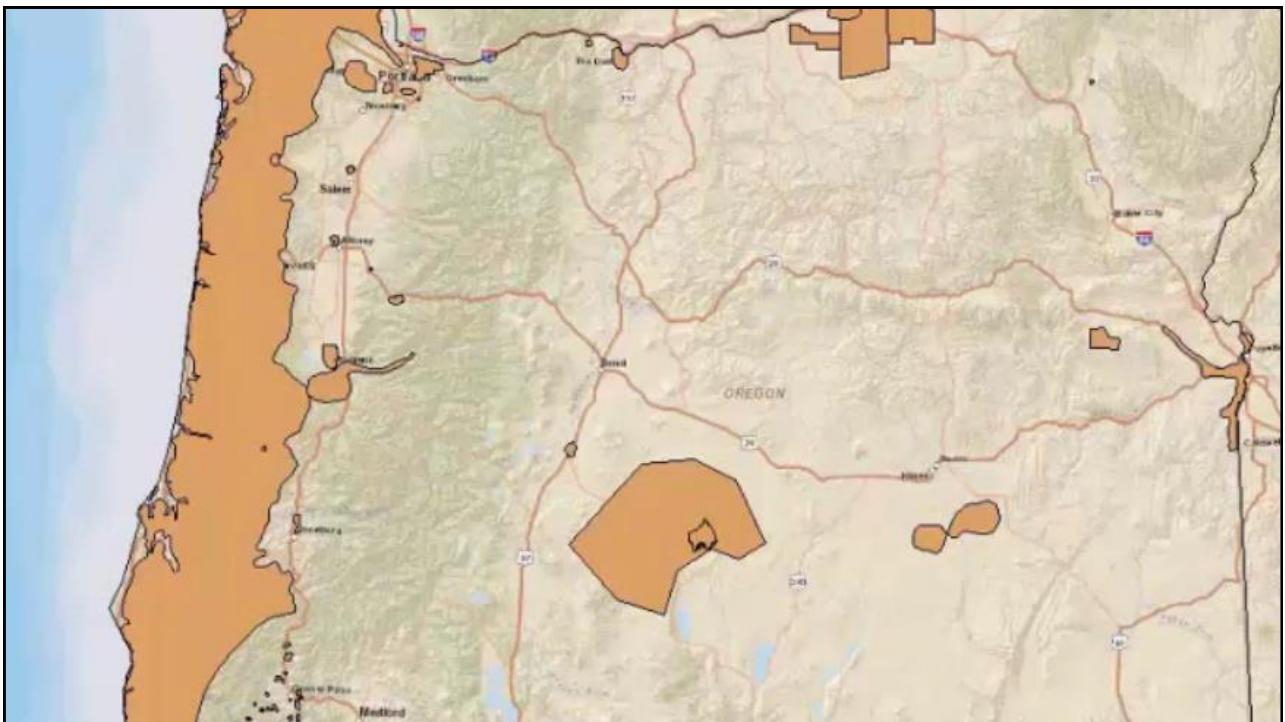


13

Analyzing the geographic information can help us answer other questions.

- What is on top of what (overlay)
- What is next to what (proximity)
- How far from (network)
- Why this is suitable for (spatial)
- When something change (3D or time aware)

14

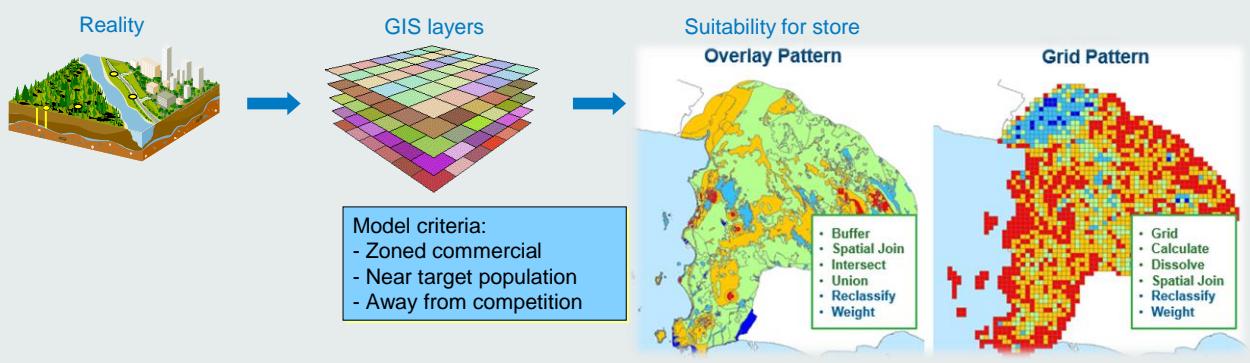


15

Why...?

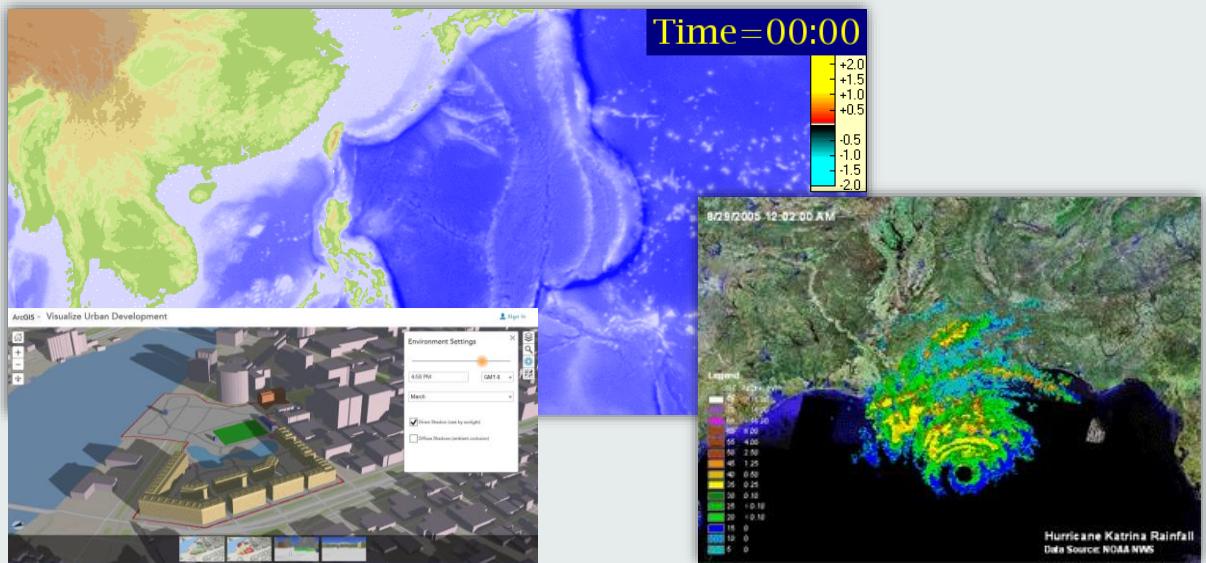
Models help us understand and solve complex problems

- Simplify reality and combine geographic layers to answer questions e.g., “Where should you build your next store?”

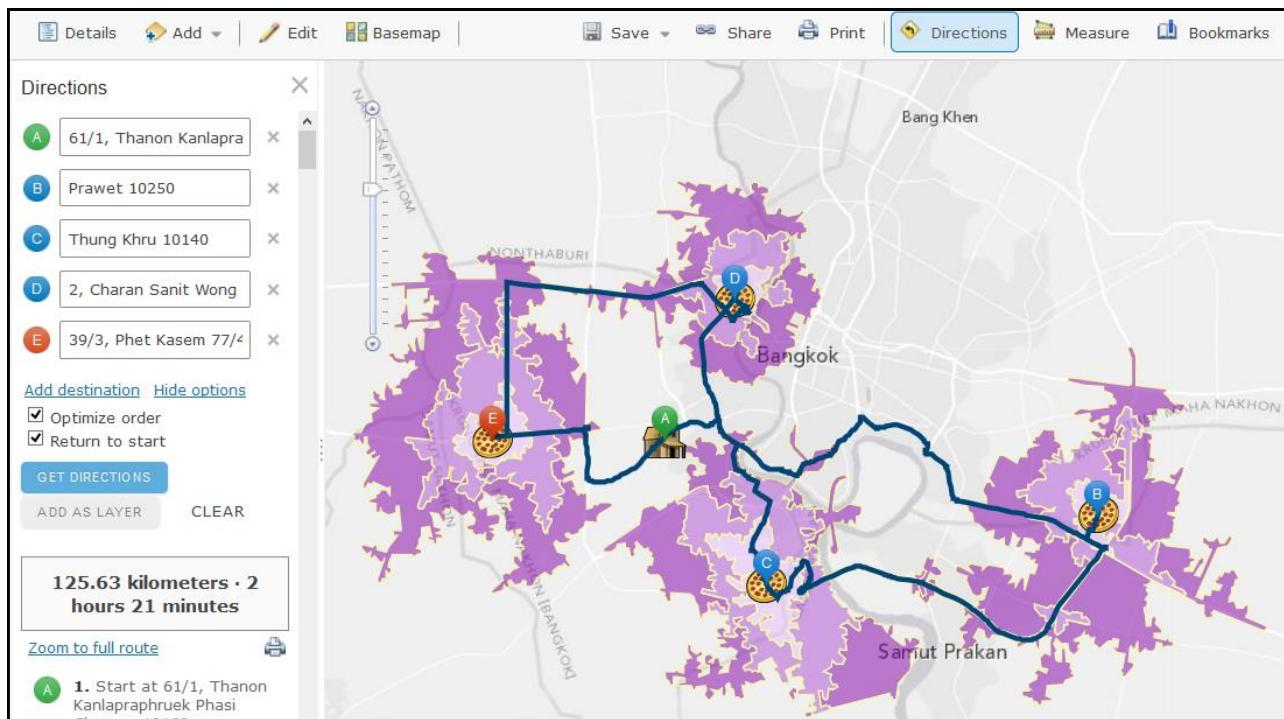


16

When...?



17

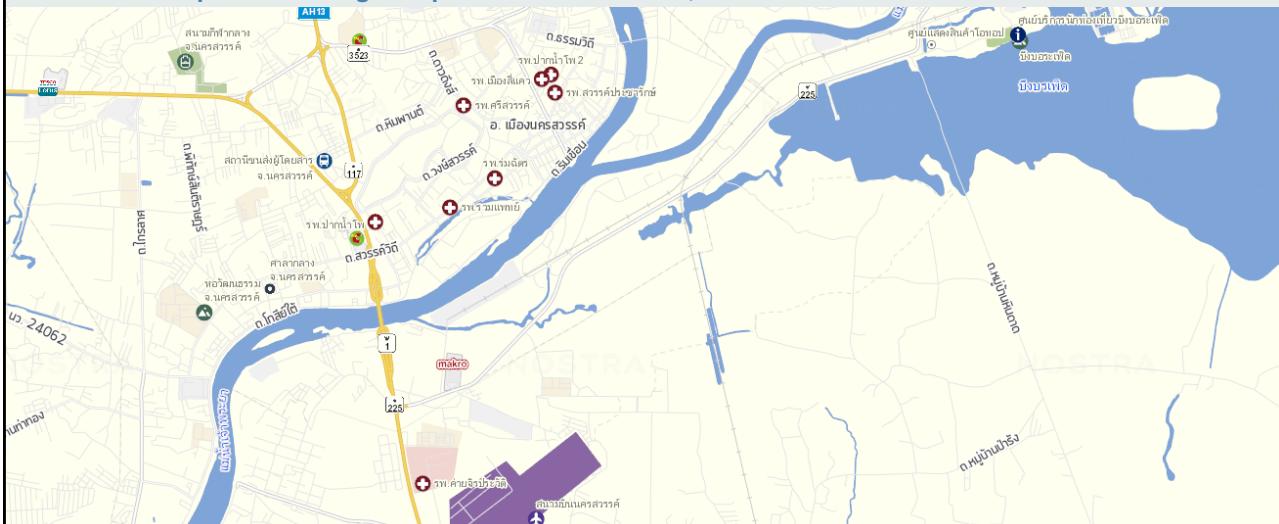


18

What can you do with GIS?

Map locations

Example: The Bueng Boraphet in Nakhon Sawan, Thailand

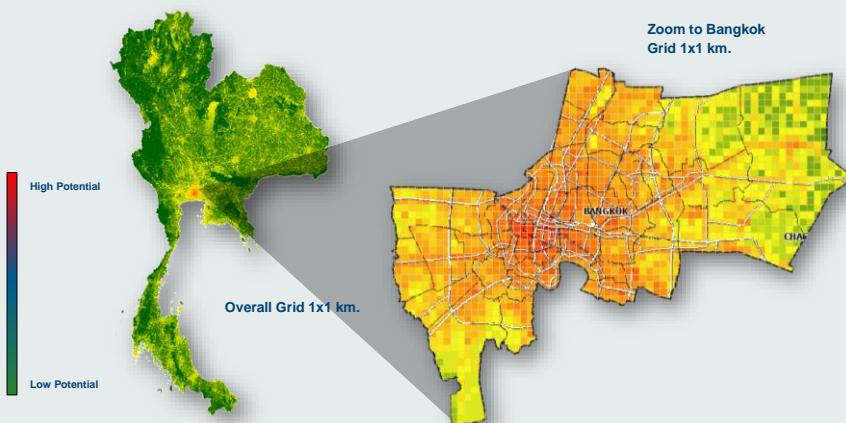


19

What can you do with GIS?

Map quantities

Example: Number of population in 1 square kilometers

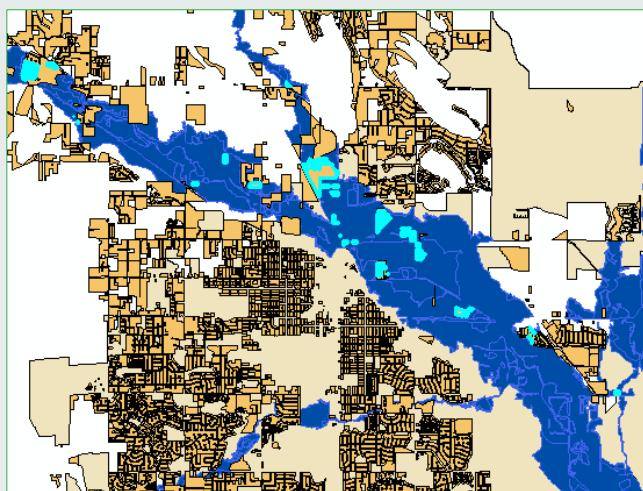


20

What can you do with GIS?

Find what is inside

Example: Parcels inside flood zone



21

What can you do with GIS?

Find what is nearby

Example: Shipwrecks within a half mile of coral reefs

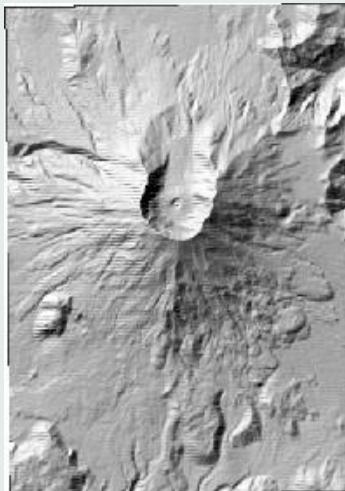
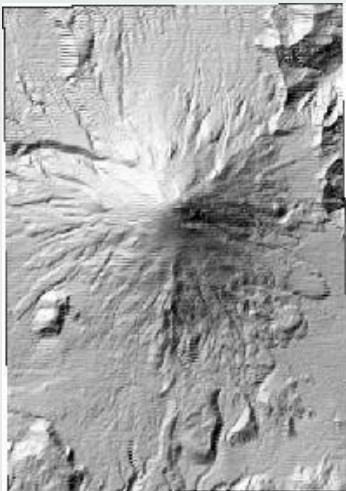


22

What can you do with GIS?

Map change

Example: Mount St. Helens before and after the 1980 eruption



23

More Top News
Will Breadfruit Solve the World Hunger Crisis?
New Developments in an Innovative Food Garden
By Matthew P. Lucas and Diane Ragone, National Tropical Botanical Garden

Highlights

- Breadfruit recently captured the attention of world leaders
- It can be used to combat malnutrition
- It's a fast-growing tree that can withstand extreme weather
- The fruit can be eaten raw or cooked, in baking or juicing.

A study found a possible solution to food scarcity and malnutrition worldwide. Breadfruit has been cultivated for thousands of years and is now being developed as a major food source around the world. The study found that breadfruit is a fast-growing tree that can withstand extreme weather and is a good source of protein and fiber. The researchers believe that breadfruit could be a key to solving world hunger.

The study was conducted by a team of researchers from the National Tropical Botanical Garden in Kauai, Hawaii. The team found that breadfruit is a highly nutritious food that can be grown in almost any climate. The researchers also found that breadfruit is a good source of protein and fiber. The researchers believe that breadfruit could be a key to solving world hunger.

The study was conducted by a team of researchers from the National Tropical Botanical Garden in Kauai, Hawaii. The team found that breadfruit is a highly nutritious food that can be grown in almost any climate. The researchers also found that breadfruit is a good source of protein and fiber. The researchers believe that breadfruit could be a key to solving world hunger.

NGO Non Governmental Organization

Breadfruit is a tropical fruit that is native to the Pacific Islands. It is a large, round fruit with a thick, fleshy skin. It is a staple food in many countries in the Pacific, including Fiji, Samoa, and Tonga. It is also grown in other parts of the world, such as Thailand, Indonesia, and the Philippines. As a result of the popularity of breadfruit, many NGOs have been working to promote its cultivation and consumption. One such organization is the Breadfruit Institute, which has developed a new planting technique called "no-till" that allows for faster growth and higher yields. Another organization, the Breadfruit Foundation, has developed a new variety of breadfruit called "Breakfast" that is sweeter and more flavorful than traditional breadfruits. Because of its unique taste and nutritional value, breakfast breadfruit has become a popular food in many countries around the world.

Break

Photo credit: National Tropical Botanical Garden



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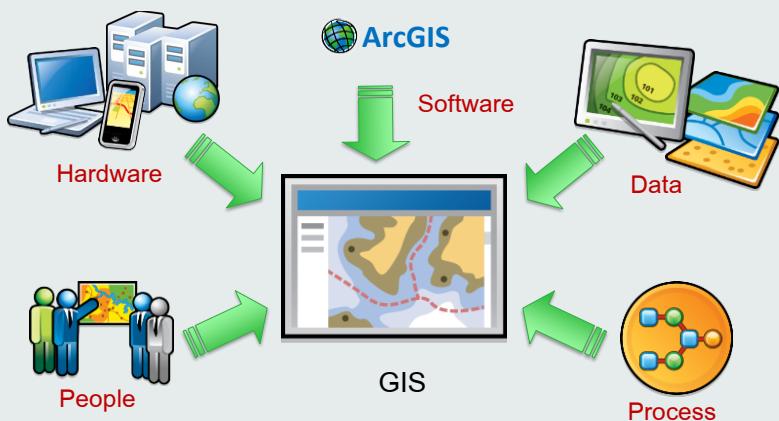
GIS components

What comprise of a GIS and what are the most important components?

25

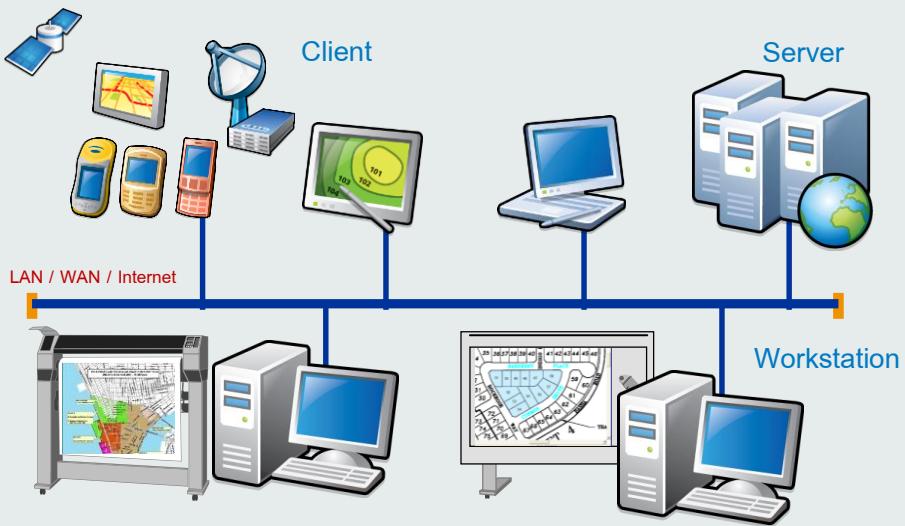
GIS Components

What comprise of a GIS and what are the most important components?



26

Hardware



27

Software



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Data



Shape	ID	PIN	Area	Addr	Code
1	334-1626-001	7,342	341 Cherry Ct.	SFR	
2	334-1626-002	8,020	343 Cherry Ct.	UND	
3	334-1626-003	10,031	345 Cherry Ct.	SFR	
4	334-1626-004	9,254	347 Cherry Ct.	SFR	
5	334-1626-005	8,856	348 Cherry Ct.	UND	
6	334-1626-006	9,975	346 Cherry Ct.	SFR	
7	334-1626-007	8,230	344 Cherry Ct.	SFR	
8	334-1626-008	8,645	342 Cherry Ct.	SFR	

Database Tables



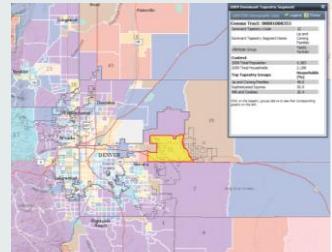
Images



Drawing Files



GPX ASCII



GIS Graphics and Attributes

29

GIS Data Sources



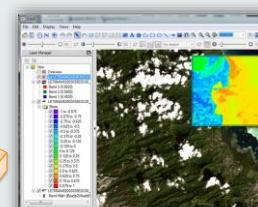
GPS & Ground Survey



Existing Data



Photogrammetry

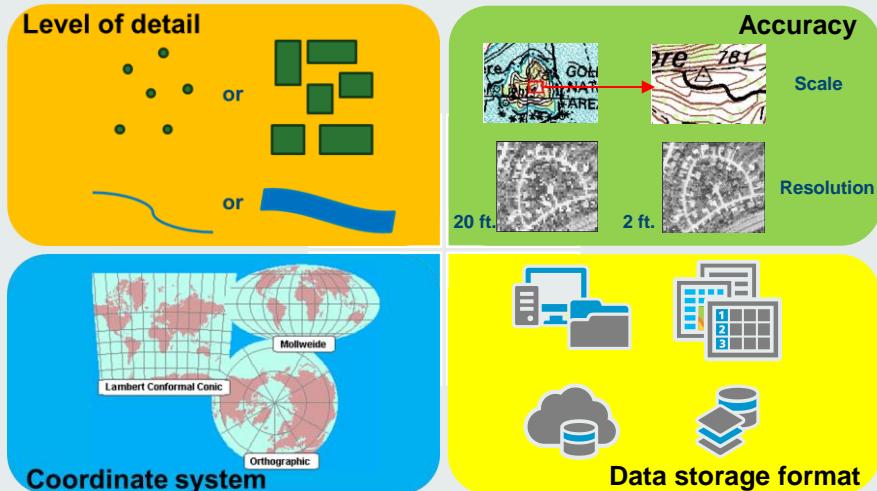


Remote Sensing



30

Considerations for creating GIS data



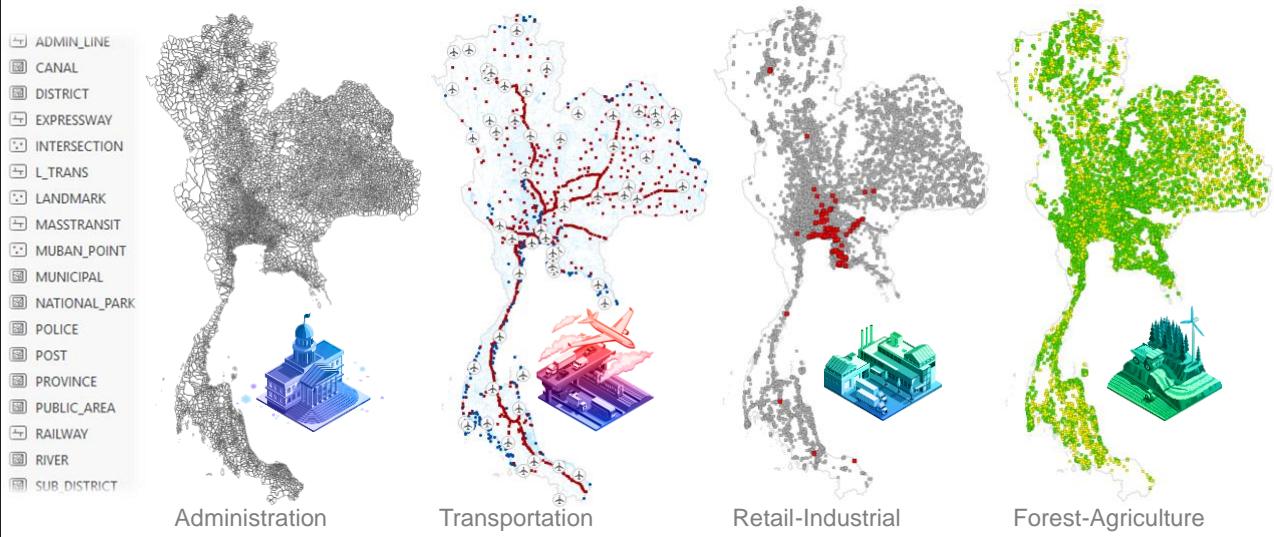
31

GIS Stores Data as Layers



32

Sample Feature Layers



33

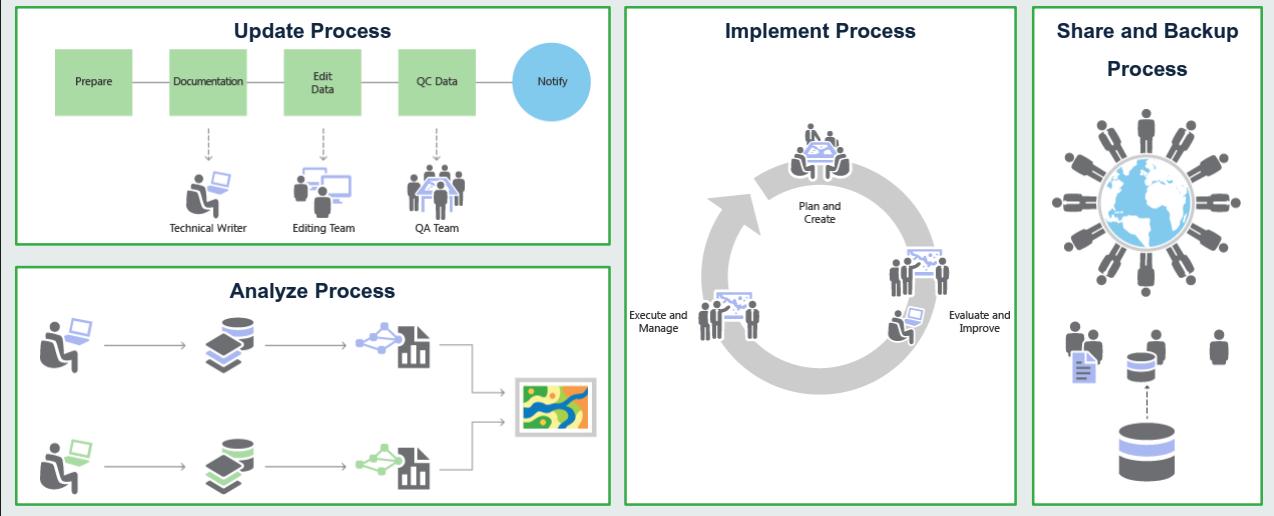
Example of Vector Graphic Features and Attribute Data

Feature	Examples	Graphic Data	Attribute Data
Point	- ร้านค้า - เสาไฟฟ้า - บ้าน		- Name - Height - Members
Line	- ถนน - สายไฟ โทรศัพท์ - แม่น้ำ		- Width - Size
Polygon	- เขตการปกครอง - การใช้ที่ดิน, แปลงที่ดิน		- Population - Area

34

Process

To ensure the continuity of GIS implementation, examples are



35

People

- ผู้จัดการโครงการ GIS
- นักวิเคราะห์ระบบ GIS
- โปรแกรมเมอร์
- นักแผนที่ Cartographers
- Technical Support
 - นักสำรวจ นำเข้าข้อมูล
 - ผู้ออกแบบ ดูแล ฐานข้อมูล
 - ฝ่ายสนับสนุนการใช้งานซอฟแวร์ GIS
 - ผู้ดูแลระบบ Network



36

How important are the components?

Hardware - เทคโนโลยีที่สุดแต่สำคัญน้อยที่สุด

Software – สำคัญมากขึ้นกว่า Hardware

Data – เปลี่ยนแปลงตลอดเวลา ใช้งบประมาณเพื่อจัดเก็บ

People - สำคัญที่สุดในการทำให้โครงการสำเร็จ

Process - ทำให้แน่ใจได้ว่าโครงการที่วางแผนไว้จะทำงานได้ต่อเนื่องต่อไป

37



38

Apply GIS

39

Our Customers

Government

State Enterprise



กระทรวงทัพยการ
ธารมนาด และสังฆาดล้อม



กรมโยธาธิการ
และผังเมือง



กระทรวงเทคโนโลยี
สารสนเทศและการ
สื่อสาร



การไฟฟ้าส่วนภูมิภาค



การประปาส่วนภูมิภาค



กรมส่งเสริมคุณภาพ
สิ่งแวดล้อม



กระทรวงศึกษาธิการ



สำนักงาน กสทช.



การไฟฟ้าส่วนภูมิภาค



การเคหะแห่งชาติ



กรมที่ดิน



กรมการบินพลเรือน



กระทรวงมหาดไทย



บริษัท การไฟฟ้าฝ่ายผลิต จำกัด



บริษัท ไปรษณีย์ไทย จำกัด



กรุงเทพมหานคร



กรมทางหลวงชนบท



กรมชลประทาน



บริษัท การไฟฟ้าฝ่ายผลิต จำกัด



บริษัท ไปรษณีย์ไทย จำกัด



กรมทรัพยากรน้ำ



กรมป่าไม้



การไฟฟ้าส่วนภูมิภาค



บริษัท การไฟฟ้าฝ่ายผลิต จำกัด



บริษัท ไปรษณีย์ไทย จำกัด



จังหวัดสุพรรณบุรี



เมืองพัทยา



จังหวัดแพะ



เทศบาลเกาะสมุย

40

Our Customers

Education



สถาบันเทคโนโลยี
เพ็งเอรี่



มหาวิทยาลัย
แม่โจ้



มหาวิทยาลัย
ทักษิณ



สถาบันเทคโนโลยี
พระจอมเกล้าเจ้า
คุณทหารลาดกระบัง



มหาวิทยาลัย
มหิดล



มหาวิทยาลัย
ธรรมศาสตร์



มหาวิทยาลัย
เชียงใหม่



มหาวิทยาลัย
เทคโนโลยี
มหานคร



มหาวิทยาลัย
ราชภัฏกษัตริย์



จุฬาลงกรณ์
มหาวิทยาลัย



มหาวิทยาลัย
สหศึกษาเวทนากร



มหาวิทยาลัย
แม่ฟ้าหลวง



มหาวิทยาลัย
ขอนแก่น



มหาวิทยาลัย
ศรีปทุม



มหาวิทยาลัย
นเรศวร



มหาวิทยาลัย
เกษตรศาสตร์



มหาวิทยาลัย
ศรีนครินทร์

+ and more...



SINGHA



BJC



CPALL



ptt



TESCO
Lotus



Pizza
Hut



The PIZZA
Company



S&P



Amazon



TMB
ธนาคารไทย
ธนชาติ TMB BANK



Power Bay



true
move



AIS



Bangkok Bank
ธนาคารกสิกรไทย
KASIKORN BANK



dtac



PRUksa



Unilever



SCG
Siam Forestry

Geography Matters Everywhere

GIS for Government

GOVERNANCE & JURISDICTION



Government

Ensuring quality of life is the goal. Proven location-based technology is the key to achieving it.

Smart maps and analysis advance government.



Official Statistics



Public Works



Public Health



Roads & Highways

INFRASTRUCTURE & TRANSPORTATION



Agriculture



Earth Sciences



Forestry



Mining



Petroleum & Pipeline



Water Resources

RESOURCE MANAGEMENT



Defense



Emergency & Disaster Management



Emergency Call-Taking, Dispatch & Records Management



Fire, Rescue, & Emergency Medical Services



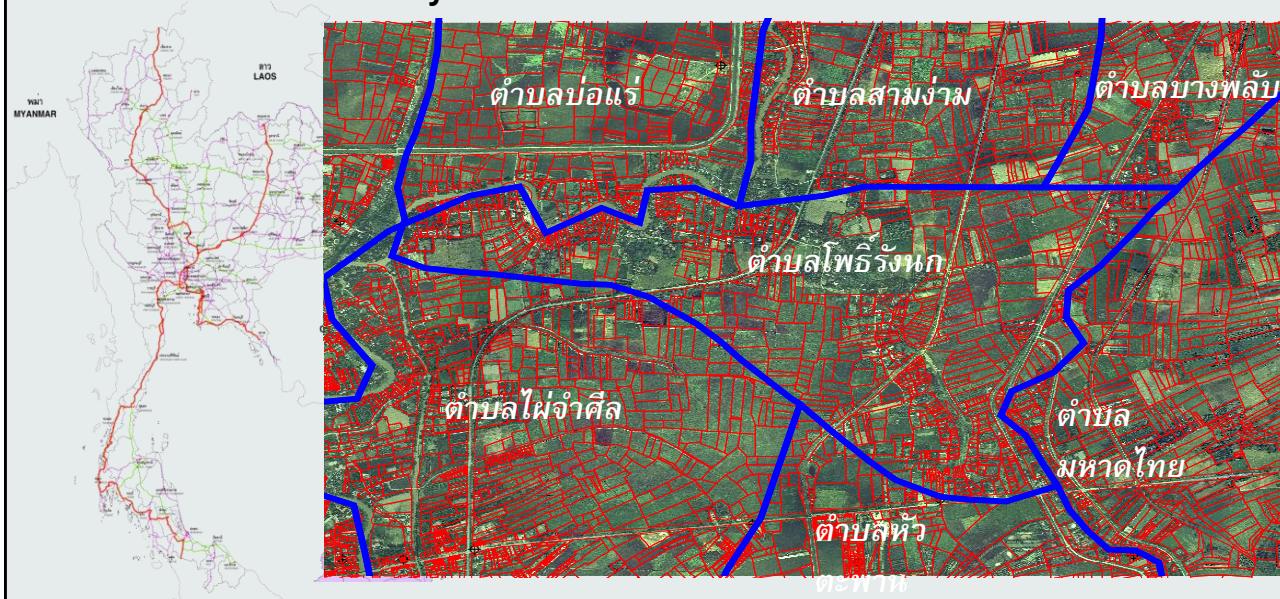
Intelligence



Law Enforcement & National Security

43

Administrative boundary and Land record



44

GIS for Natural Resources



Agriculture

Increase yield. Understand the effects of location, soil, weather, and other variables before you plant.



Climate, Weather, Atmosphere

Design climate change programs that help your community 10, 20, and 100 years from now.



Conservation

Drive community action. Show how land use change has and will influence habitat overtime.



Environmental Management

Analyze sensor, satellite, crowd-sourced, and scientific data to measure environmental impacts and build policy.



Forestry

Repurpose stand inventory data for forestry activities at the strategic, tactical, and operational levels.



Mining

Know your operations. Track mine assets, personnel, and sensor readings in real time in 3D.



Water Resources

Forecast the future of water resource availability to model community resilience flood and drought plans.



Petroleum

Better locate and extract new resources, improve operational efficiency, and increase your bottom line.

45

GIS for Transportation



Airports and Aviation

Improve management, safety and security, and regulatory compliance.



Roads and Highways

Plan, monitor, and manage strategic infrastructure more effectively.



Ports and Maritime

Use a proven platform for operations and asset management that also enhances sustainability and security efforts.



Public Transport

Optimize routes, understand assets in real-time, and communicate with web maps and apps.



Railways

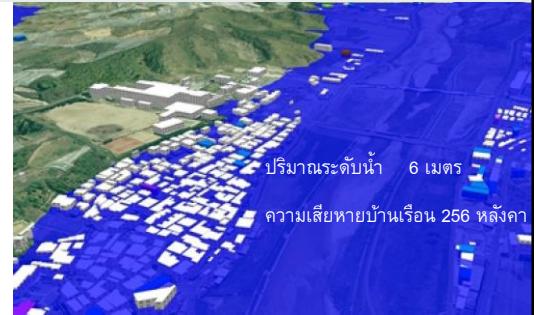
Manage assets, maximize throughput, monitor safety, and communicate with staff and the public.

46

GIS for Public Safety

Public Safety

The members of your community trust you to keep them safe. Put your trust in GIS to get it right with smarter situational awareness.



Emergency and Disaster Management

Develop response and recovery plans and strengthen situational awareness



Law Enforcement and National Security

Understand crime and security patterns and collaborate across jurisdictions



Fire, Rescue, and Emergency Medical Services

Analyze risk, develop pre-incident plans, and improve response times



Emergency Call Taking, Dispatch, and Records Management

Gives personnel better awareness and understanding of emergencies

47

GIS for Business



Insurance

Provide better customer support, precise risk analysis, and efficient claims processes.



Retail

Solidify brand and find the best location for your outlet.



Manufacturing

Create a streamlined, green supply chain through the power of location analytics.



Real Estate

Find and keep the best tenants by understanding the state of the market and where it is headed.



Banking

Understand the needs of your customers so you can provide them the products and services they need.



Media and Entertainment

Bring your storytelling to a whole new level.



Supply Chain

Streamline deliveries, cut costs, and improve customer satisfaction.

48

GIS for Education

Schools

Lessons resonate longer when interactive web maps and apps support K-12 subject matter. Understanding what's where—and why—helps students in class and beyond.

[See offers](#)

Higher Education

Every aspect of the higher education enterprise—teaching, learning, research, service, and academic administration—benefits from ArcGIS and spatial thinking.

[See offers](#)



Engaging Maps

Children learn in a variety of ways, but visual learning is especially effective. Using maps in the classroom illustrates geographic context, helping students connect lessons with real places.

[Find online training for GIS teachers >](#)



Student "Maptivists" Inspire



Career-Ready Graduates

Hundreds of thousands of employers value mapping and spatial analysis skills. Learning with GIS gives graduates a competitive edge in many fields.

[Take a look at careers in GIS >](#)



GIS students do amazing things

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GIS in the Future

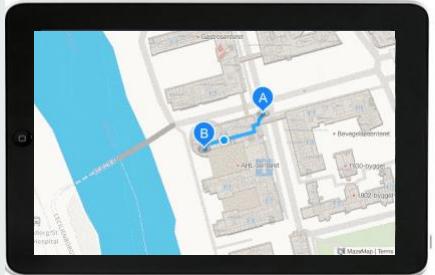
51

Real Time contents



52

Integrating Mobile Devices



Tablet PC



Smart Phone

- GPS locations / Navigate
- Indoor Mapping / Real-time geography
- Internet Map Services
- Query / Data Collection
- Editing / Updating



Smart Watch



53

AR (Augmented Reality) Applications



AuGeo

Use Augmented Reality to visualize and interact with GIS data on mobile devices

54

Real-Time Dynamics & 3D Hologram



55



56



60

Which Font is Best For Your Presentation?

Avenir Next

If you are the sole presenter and **will not distribute your PowerPoint presentation to others outside of Esri** and will only be using your own Esri computer for presenting, please use the new font Avenir Next LT Pro.

See instructions on the following slide to see how to use this new font.



Use Avenir Next if ...

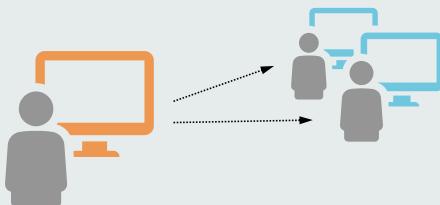
Sole Presenter

Single computer used for presentation

Arial

If you will be distributing your PowerPoint presentation to **others outside of Esri**, or using various computers to present please use Arial.

Using Arial gives your PowerPoint presentation the flexibility to be used by many people on various machines without the risk of font compatibility and changing the look of your layout.



Use Arial if...

Multiple Users / Presentation Distributed to others

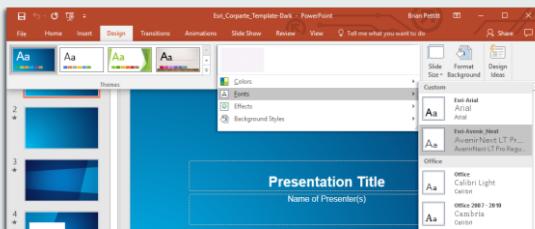
Presentation used on multiple computers

61

How to Change Your Theme Fonts to Avenir Next

Windows

Select: Design
Variants (arrow)
Fonts > Esri-Avenir Next

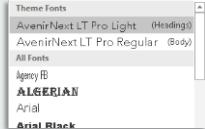


Mac

Select: Design
Variants (arrow)
Fonts > Esri-Avenir Next



What if my
fonts don't
change?



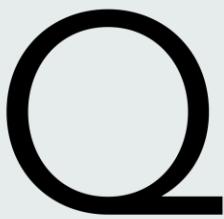
← If the text boxes on your slides are not using
(Heading) or (Body) fonts from the Theme Fonts
section, they will not update correctly.
You will have to replace them manually.

Esri Distributor Template-Dark v3.4
16:9 version – January 29, 2017

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How to Test if you're using Avenir Next

If you have Avenir Next
installed, the two Qs will match.



Picture



Live Text

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Did you know?

To quickly update any current presentation

Copy and paste your slides from your **current** deck into the **newest** template. The title and ending logo slide will update automatically.

For More Templates, Sample Files, and Icons See

<https://compass.esri.com/resources/presentations/Pages/Main.aspx>

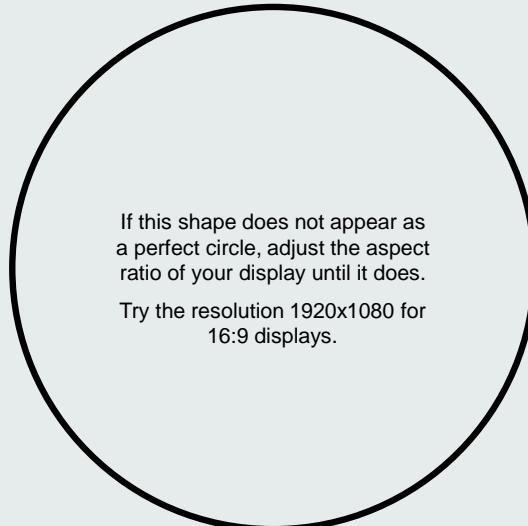
Videos not working?

For video in PowerPoint, animated GIF is recommended. AVI and WMV (native PC files) will work best on a PC platform. H.264 MP4 will work only on PowerPoint 2013 and later.

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64

Aspect Ratio Test



If this shape does not appear as a perfect circle, adjust the aspect ratio of your display until it does.

Try the resolution 1920x1080 for 16:9 displays.

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