

National Disaster Observatory

Integrating space-based
information for effective disaster management

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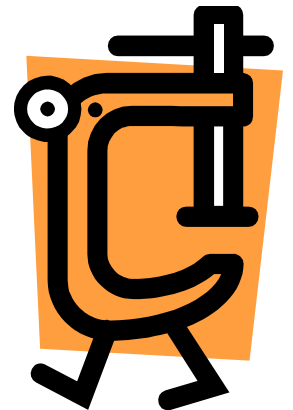
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Outline

- 1、 Background
- 2、 NDO Development
- 3、 Conclusion & Next Plan



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- 2、NDO Development
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Laboratory for NDO

- The NDO is developed, based on **CERAM Shanghai**, a Center of Excellence for Disaster Assessment and Management supported by UNDP, and a **Laboratory for National Disaster Observatory**



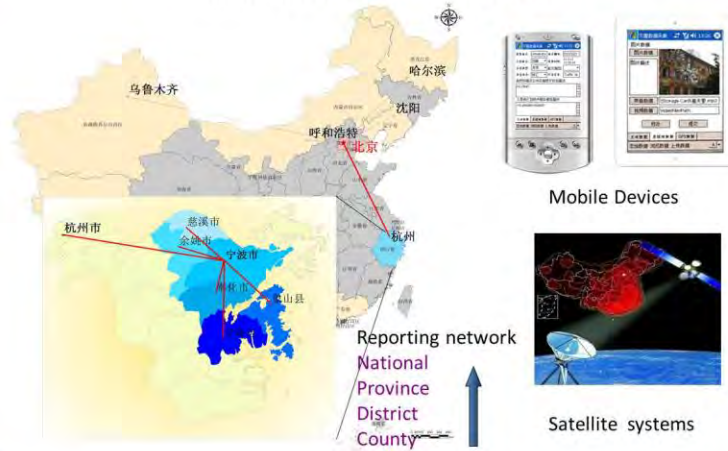
Developing Technologies for National Disaster Observatory (NDO)

National Disaster Observatory is a Disaster Information Management System designed for systematically collecting, storing, analyzing, and disseminating of disaster-related data and information (Disaster Information), with key applications to:

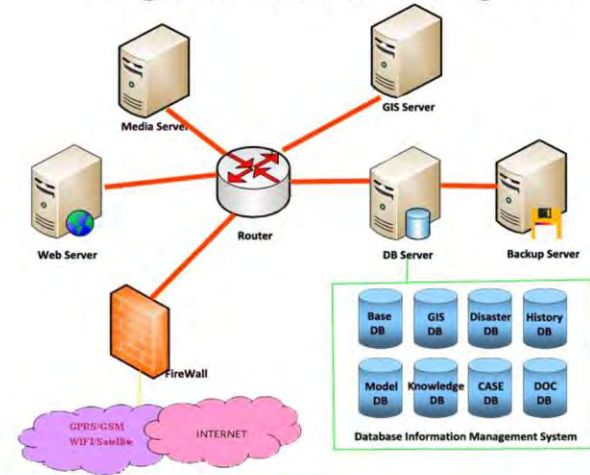
- Disaster Loss Accounting (灾损统计)
- Disaster Forensics (灾情分析)
- Disaster Risk Modeling (灾难风险建模)

National Disaster Observatory (NDO)

Innovative Data Collection



Integrated Information Management



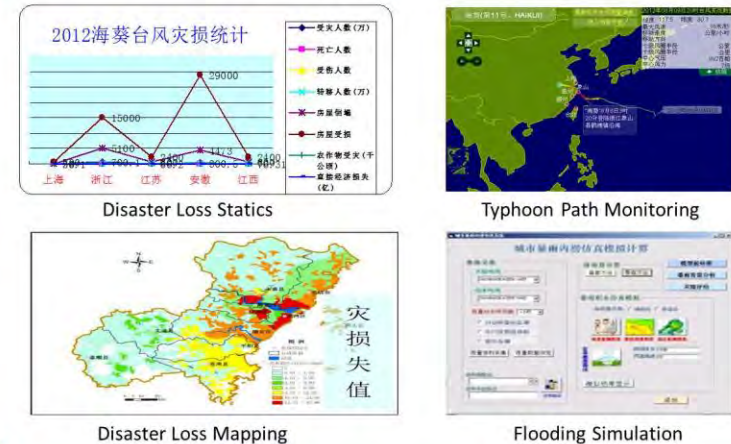
Information Dissemination



Access to the public

Dynamic Visualization at
Emergency Operation Centre

Instant Disaster Analysis and Mapping



Disaster Loss Mapping

Flooding Simulation

Outline

1、 Background

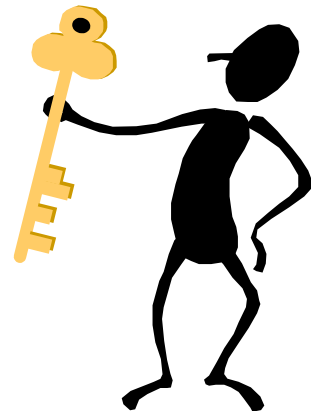
2、 NDO Development

3、 Conclusion & Next Plan



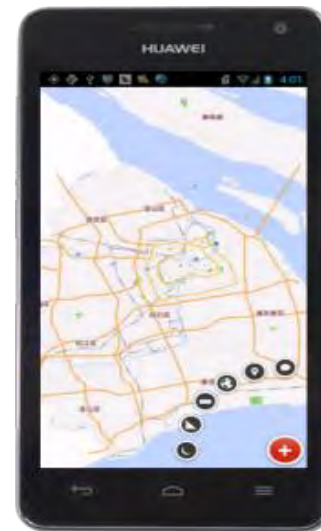
NDO Development in First Phase

- Disaster Information Collection and Reporting System based on **Smart Handheld Devices** and **WEB Online**
- Integrated Data Management System
- Information Dissemination Platform



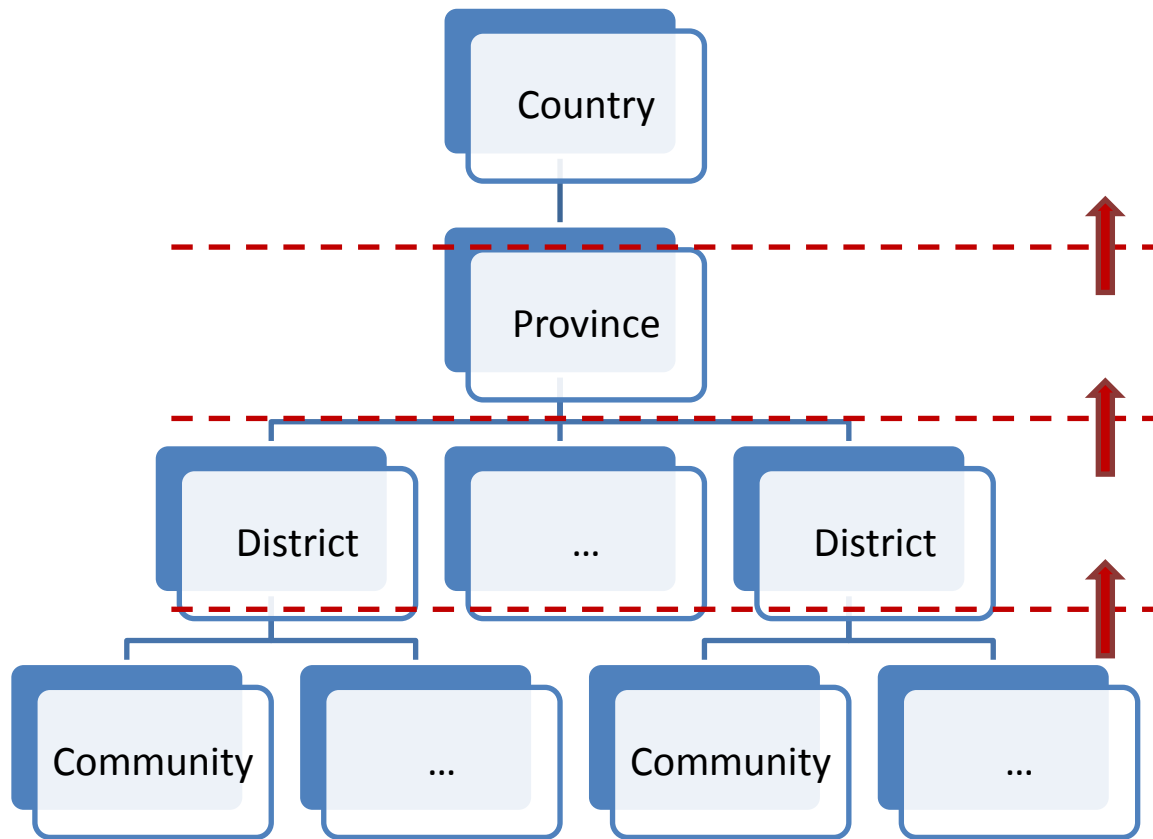
Disaster Information Collection Based on Smart Handheld Devices

- Map Exploration
- Location Positioning
- Geometric Measurement
- Photo Taking
- Sound Recording
- Information recording and Reporting
- Historical Record Query



Disaster Information Collection and Reporting System based on **WEB Online**

1. Collecting Disaster Information Based on Administrative unit, and Reporting Level by Level



Reporting Mechanism

2. Essential Information Collection

- ❑ Including Event, Disaster Loss, Context Information etc.
- ❑ In addition, Recording the Disaster Process Information

Disaster Observatory

Hello, c1 Log Out

Data Management Information Query Statistical Analysis System Management PDA Management Map Display User's Manual

Business Menu

Data Management : Disaster Information - Disaster Event - Add

Back

Event Name:	宁波大风 *	Mother EventID:	216 Please
Hazard Type:	气象灾害 暴风雨 暴风 *	Event Type:	二级事件
Disaster Class:	Please	Severity Class:	Please
Starting Date:	2012/08/08 *	Ending Date:	2012/08/09
GLIDE:		Serial Number:	
Event ID:			
Causes:	台风海葵引起		
Affected Extent:	宁波周边地区		

Save Reset

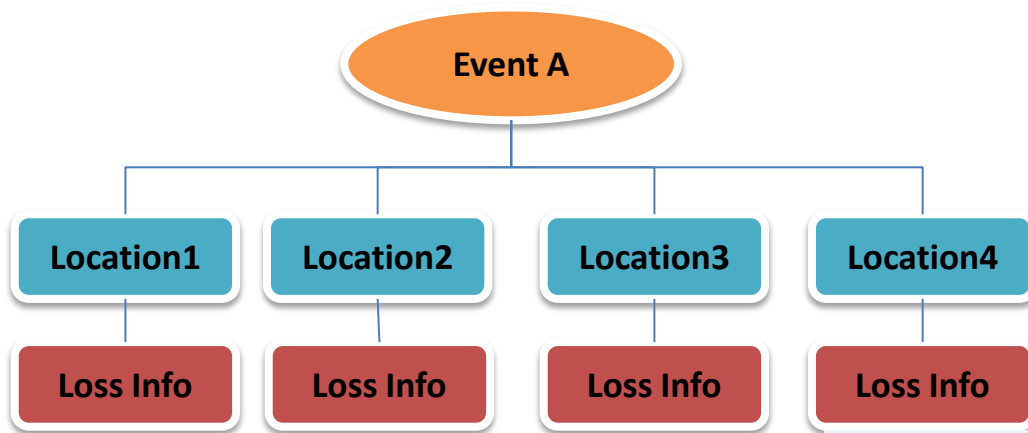
- **Event Information:**

- ✓ Hazard type, intensity, location, time that events start and end, affected extent,
- ✓ event chain information.

- **Disaster loss information**

- ✓ Affected population, physical damage, functional disruption, economic loss and macro-impact.
- ✓ Disaster classification
- ✓ Loss information is recorded based on location, or basic administration units, and also based on economic sectors.

3. Disaster Loss Information Collection



□ Location-based Loss Information Recording

□ Sector-based Loss Information Recording, the sectors can be Customized

Data Management : Disaster Information - Loss Data - Incidence Site - Loss Details - Add				Back
Economic Loss in Industries:	12311	Economic Loss in Agriculture:	8212	
Economic Loss in Infrastructure:	19431	Economic Loss in Public Facilities:	4354	
Economic Loss in Family Property:	2421	Exchange Rate:	6.5	

Loss_HumanLives_General	Loss_Fisheries	Loss_Power_Communications	Loss_Transportation	Loss_Buildings	Loss_Relief	Loss_Water_Supply_Irrigation	Loss_Agriculture_Livestock
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No. Affected Males:	110081	Economic Loss	5.5232
No. Affected Females:	90881	Economic Loss	4.012
No. Dead Males:		Economic Loss	0
No. Dead Females:	1	Economic Loss	0
No. Injured Males:	431	Economic Loss	251
No. Injured Females:	663	Economic Loss	331
No. Affected Families:		Economic Loss	0
No. Evacuated Families:		Economic Loss	0
No. IDP Camps:		Economic Loss	0
No. People in Camps:		Economic Loss	0
No. Missing:		Economic Loss	5
No. Families in Camps:		Economic Loss	0
Loss in HumanLives:			

2. Disaster Information Management

□ including: Event Information, Damage Loss Data, Multimedia Data

The screenshot displays the National Disaster Observatory web application. The top navigation bar includes icons and labels for Data Management, Information Query, Statistical Analysis, System Management, PDA Management, Map Display, and User's Manual. The main content area is titled "Data Management : Disaster Information - Disaster Event". It features search filters for Event Name, Starting Date, Ending Date, and Hazard Type, along with Query and Add buttons. A table lists disaster events with columns for Numbering, Event Name, Hazard Type, Event Type, Affected Extent, Starting Date, Recorder, and Operate. The left sidebar contains a Business Menu with options like Disaster Information, Event Information, Damage Loss Data, Multimedia Information, Context Information, Data Entry Approval, Data Entry Auditing, and Statistical Report.

Business Menu

- Disaster Information
 - Event Information
 - Damage Loss Data
 - Multimedia Information
- Context Information
- Data Entry Approval
- Data Entry Auditing
- Statistical Report

Data Management : Disaster Information - Disaster Event

Event Name: Starting Date: Ending Date: Hazard Type: Please

Numbering	Event Name	Hazard Type	Event Type	Affected Extent	Starting Date	Recorder	Operate
249	宁波大风	暴风	二级事件	宁波周边地区	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
248	岱山县风暴潮	风暴潮	三级事件	岱山县附近及周围地区	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
247	舟山大风	暴风	二级事件	浙江舟山群岛附近及周围	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
246	金山大风	暴风	二级事件	金山附近及周围地区	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
245	青浦暴雨	暴雨	二级事件	上海青浦地区	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
244	金山暴雨	暴雨	二级事件	上海金山暴雨	2012/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
228	汶川地震灾难	构造地震	主要事件		2008/05/12	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
227	映秀洪水灾难	山洪	主要事件		2013/09/22	d1	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>
226	海门龙卷风	龙卷风	四级事件	江苏周边地区	2013/08/08	严丽军	<input type="button" value="Attr"/> <input type="button" value="Edit"/> <input type="button" value="Del"/>

3. Disaster Information Query

Disaster Observatory

Hello, c1 [Log Out](#)

[Data Management](#) **[Information Query](#)** [Statistical Analysis](#) [System Management](#) [PDA Management](#) [Map Display](#) [User's Manual](#)

Business Menu

[GeneryQuery](#)

[GeneryQuery](#)

[Fasttips](#)

Information Query : Genery Query

HazardCodeType:

Please
热带气旋
暴雨
暴风
洪涝
山洪
洪水
风暴潮
滑坡

Disasterclass:

Please
国家级
省级
市级
区级

Country	Province	District	Street or Township
Please 中国 美国			

Begin Time:

End Time:

DisastersName:

[Query](#)

4. Disaster Information Statistical Analysis

Data Management
 Information Query
 Statistical Analysis
 System Management
 PDA Management
 Map Display
 User's Manual

Disaster Observatory

Hello, c1 [Log Out](#)

Business Menu

[Statistical Analysis](#)

- Conventional Statistics
- Statistics by Jurisdiction
- Statistics by Sector
- Statistics by Event Chain
- Statistics by Hazard Type
- Statistics by Disaster Class

Statistical Analysis : Conventional Disaster Loss Statistics

Starting Date:

Ending Date:

Disaster Class:

Please ▼

Severity Id:

Please ▼

Hazard Type:

Please ▼

Statis

Map

Export

灾害级别	数里
特别重大	3
重大	1
严重	1
中度	1
微弱	3

灾害等级:

数里

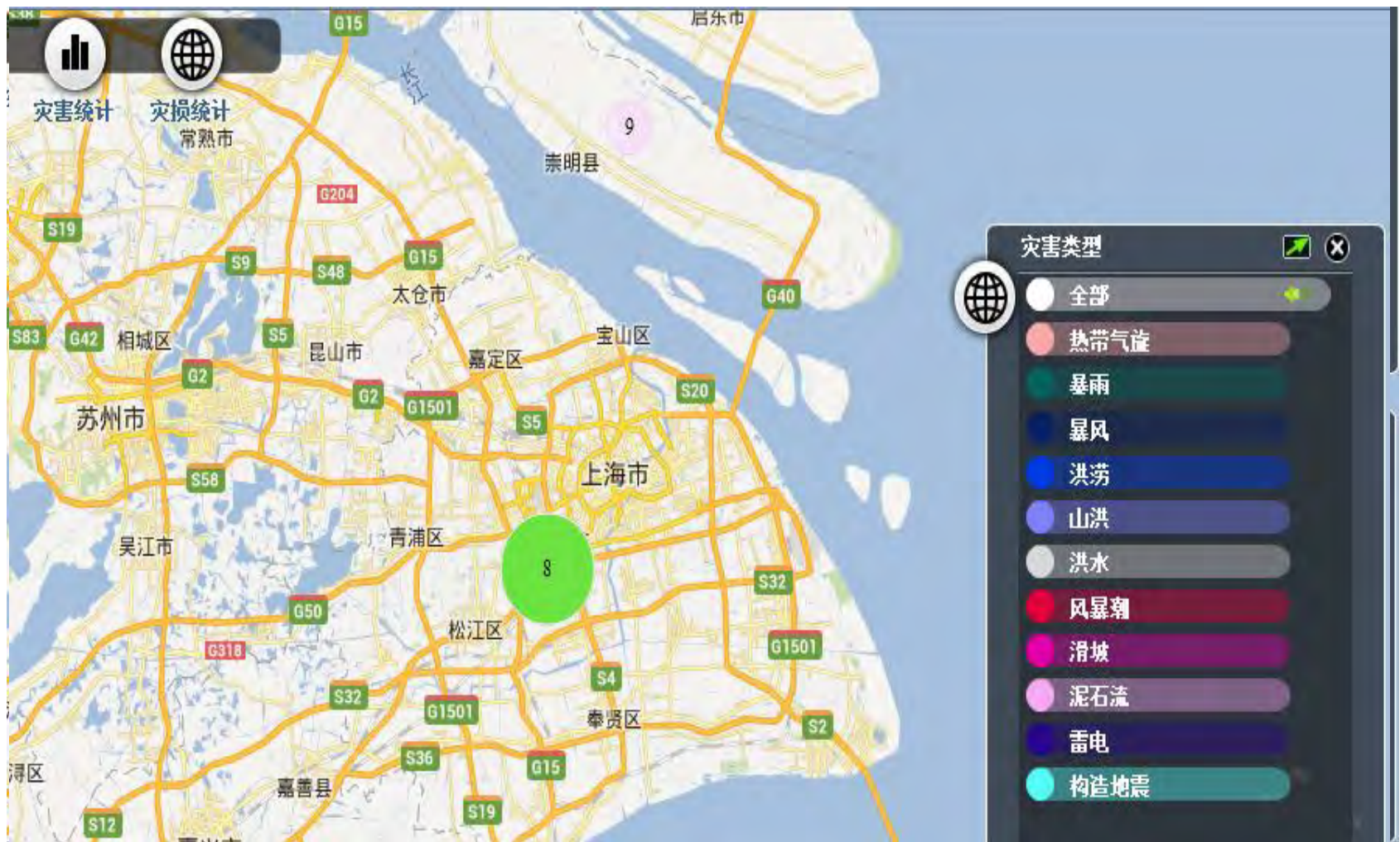
国家级	3
省级	2
市级	3
区级	1

灾害类型

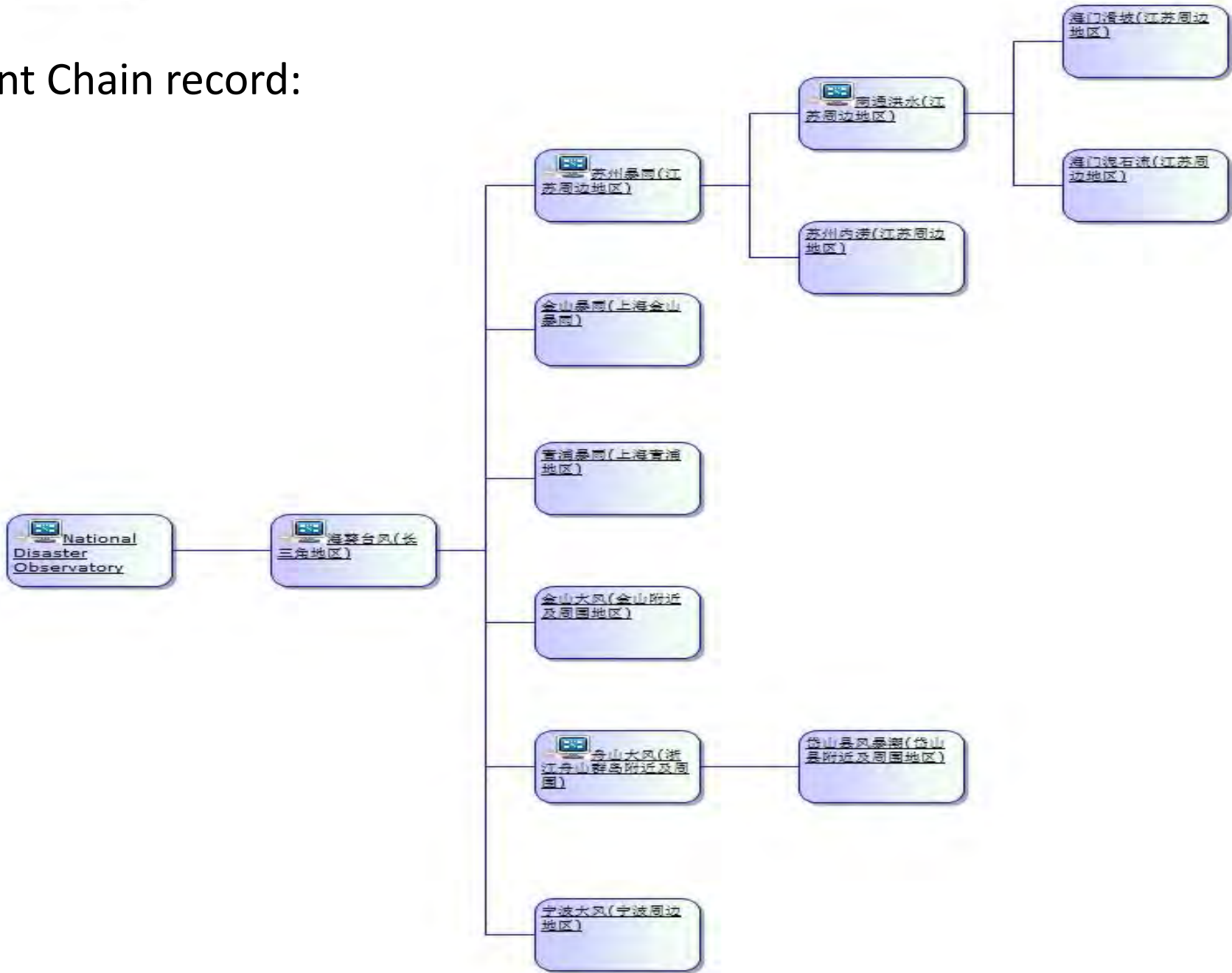
数里

热带气旋	2
暴雨	2
暴风	0
洪涝	0
山洪	1
洪水	2
风暴潮	1
滑坡	1

5. Spatial Query & Statistics



Event Chain record:



7. Background Information Management of geophysical, social-economic data, and maps, etc.

Address	Year	AreaAcreage	Rresident Population	External Population	Population Density
上海市-黄浦区	2011	20.46	68.04	18.41	33255
上海市-徐汇区	2011	54.76	109.50	28.52	19996
上海市-长宁区	2011	38.30	69.00	17.15	18016
上海市-静安区	2011	7.62	24.36	5.28	31969
上海市-普陀区	2011	54.83	129.72	36.24	23659
上海市-闸北区	2011	29.26	83.80	20.23	28640
上海市-虹口区	2011	23.48	85.16	19.13	36269
上海市-杨浦区	2011	60.73	132.43	28.07	21806
上海市-闵行区	2011	370.75	248.40	124.08	6700
上海市-宝山区	2011	270.99	193.50	77.93	7140
上海市-嘉定区	2011	464.20	150.62	85.96	3245
上海市-浦东新区	2011	1210.41	517.50	214.64	4275
上海市-金山区	2011	586.05	75.87	22.93	1295
上海市-松江区	2011	605.64	165.00	100.28	2724
上海市-青浦区	2011	670.14	111.76	64.22	1668

8. Management of Administrative Division Change



9. Visualization and Dissemination

□ Location Distribution of Disaster

□ Event Track Playback Display



NDO Website Platform



灾情观测系统

enter keywords here. GO

Chinese Hello, 请登录 / 注册 退出

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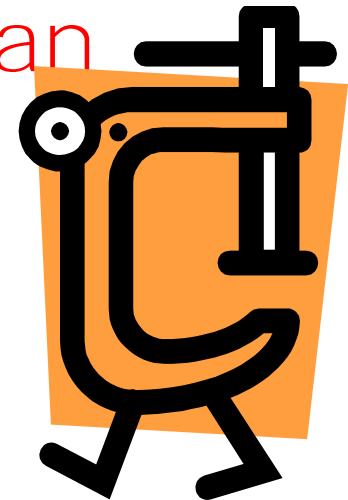
灾情观测系统

我国是世界上自然灾害种类最多、活动最频繁、危害最严重的国家之一。气象灾害每年给我国造成的经济损失占到国民生产总值的1%~3%。近年来,极端天气气候事件频发,而且在未来还将呈增加

Dissemination platform based on internet.

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- 2、 NDO 1st Development
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Disaster Information Collection and Reporting System based on **Smart Handheld Devices** and **WEB Online**

Integrated Disaster Information Management:

- ✱ Geospatially-based Information Collection
- ✱ Context Information
- ✱ Tracing administrative unit change
- ✱ Event and disaster classification
- ✱ Hazard Event Chains
- ✱ Information Visualization
- ✱ System can be Customized

NDO has solved the five key issues for recording disaster information

- **Necessary disaster-related context information should be included.**
- **Disasters must be classified.**
- **Event chains must be tracked to avoid duplicating disaster loss accounting.**
- **Changes in administrative boundaries must be tracked.**
- **Records in the database can't be directly used to statistic analysis.**

Next Step

1. Disaster and Risk Analysis & Assessment tools
2. Hazard Monitoring and Early Warning
3. Disaster and Risk Modeling

Applied for Disaster Preparedness, Disaster Relief, Decision-making

A close-up, low-angle shot of a massive blue wave curling over, creating a tunnel-like structure. The water is a vibrant blue, and the crest is breaking into white foam and spray. The perspective is from within the wave's barrel, looking towards the breaking crest.

Thank You !