

# **Impact Assessment Implementation Progress of WENS**

*Shanghai, September 22, 2010*

# Outline

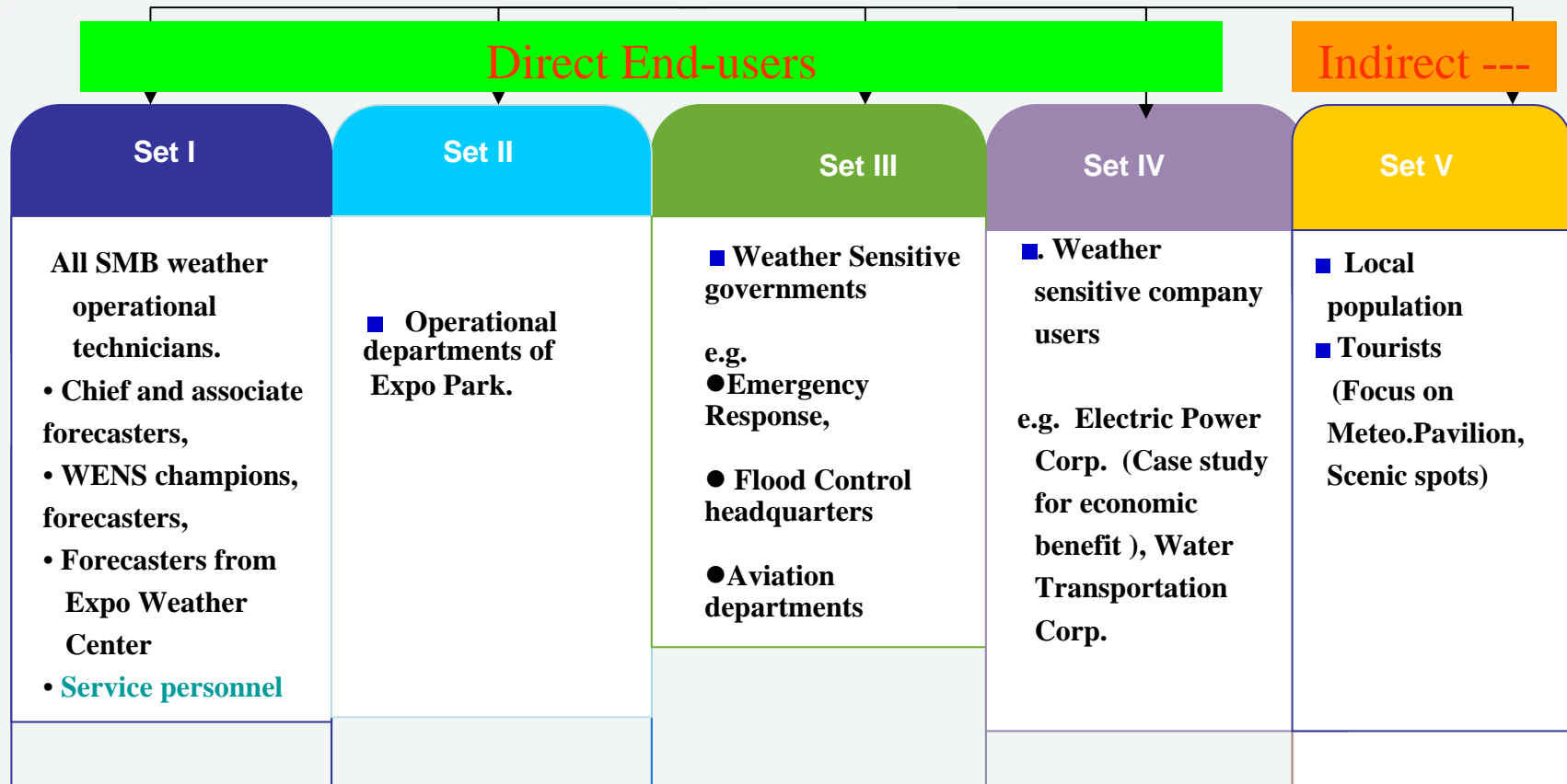
- 1. Review on Implementation Plan**
- 2. Progress before Oct 2010**
- 3. Next plans**

# 1. Review on Implementation Plan

- **WENS End-Users**
- **Goals and Targets**
- **Methods and Phases**

# 1.1 WENS End-Users

## WENS End-users



### Standards for Different Types and Sets

- (a) *characteristic of WENS products available to the users,*  
 (b) *familiarity and experience on weather information in decision-making.*

## 1.2 Goals & Targets

### Goals for forecasters Impact Assessment:

- Identify the **operational benefits** brought by WENS depending on several assessment methods;
- Identify **WENS' role** in nowcasting based on survey results;
- Improve and utilize the existing or updated nowcasting weather **products/services**;
- Obtain **new understanding and knowledge** of the nowcasting weather service by the active interaction between the participating systems and the local forecasters.

## 1.2 Goals & Targets

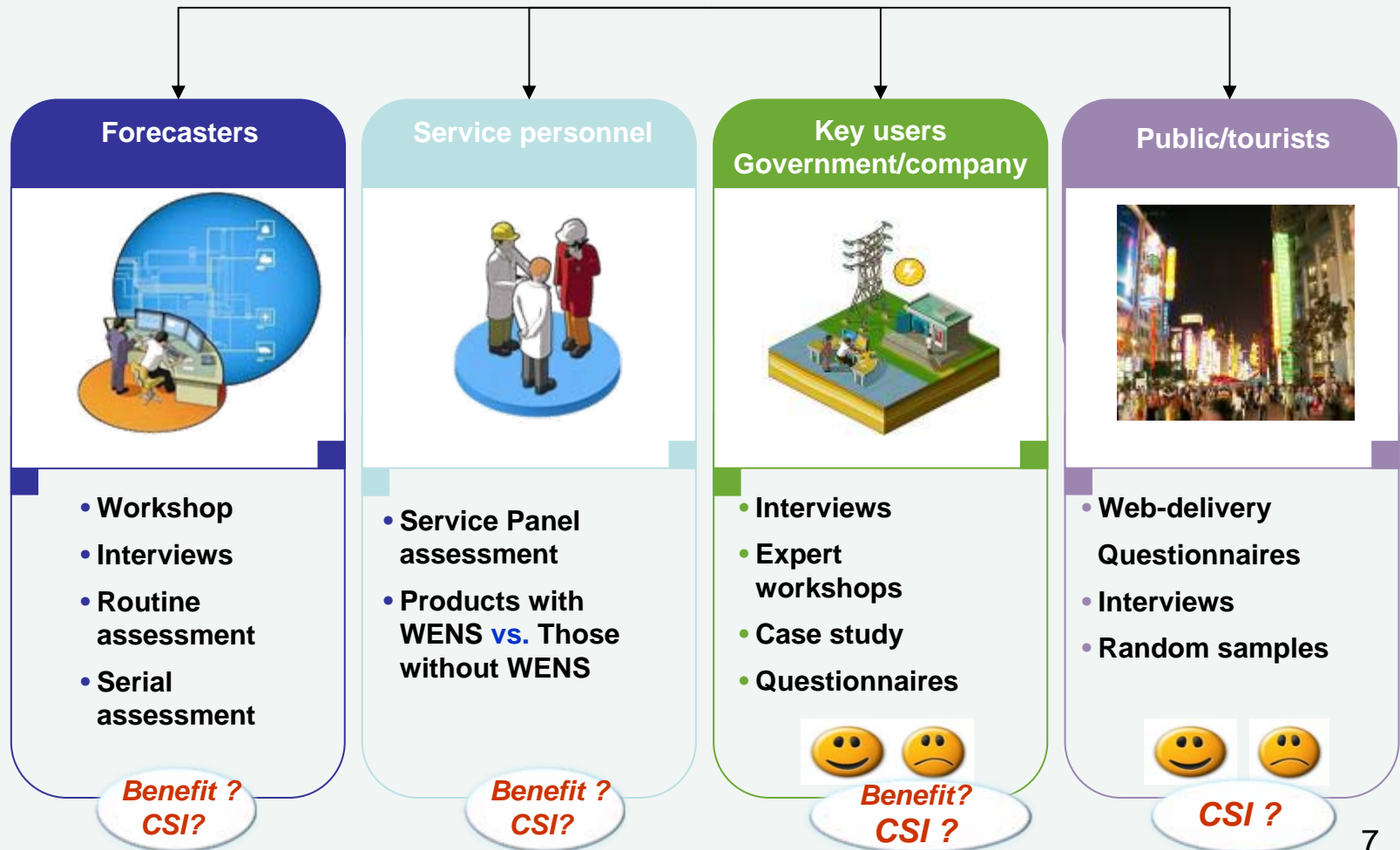
### Goals for Social End-users Impact Assessment

- Users' weather service requirements better understood;
- Better access to customer-tailored products/service;
- A better knowledge & understanding of weather service/products through WENS project;
- Improvement of nowcasting lead time & forecast accuracy supported by WENS, better social/economic benefits, and higher CSI especially in Expo weather service.

“cake”

# 1. 3 Methods and Phases

## WENS Impact Assessment Methods

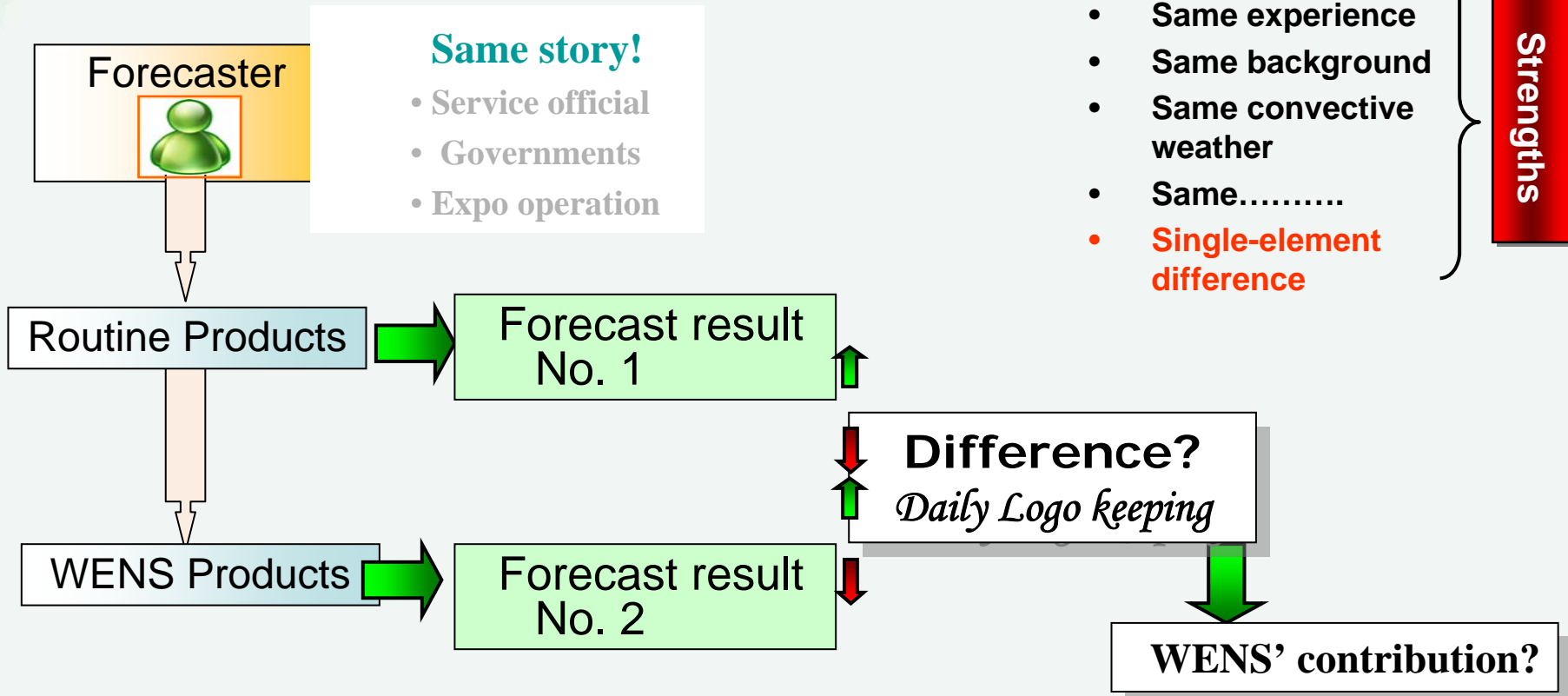


## Methods for Forecasters

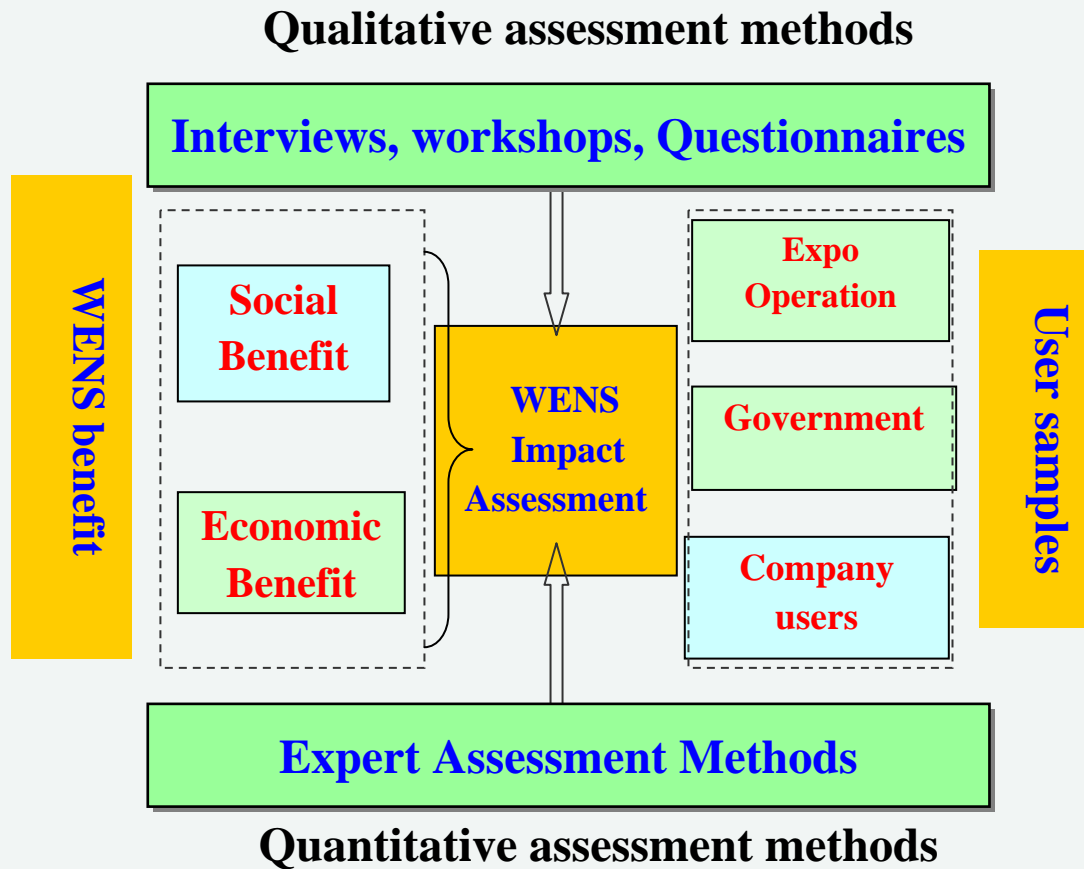
- ◆ **Routine Operations Assessment**
- ◆ **Serial Forecast Assessment**
- ◆ **Weather Consultation & Results Comparison**



## < Serial Forecast Assessment >

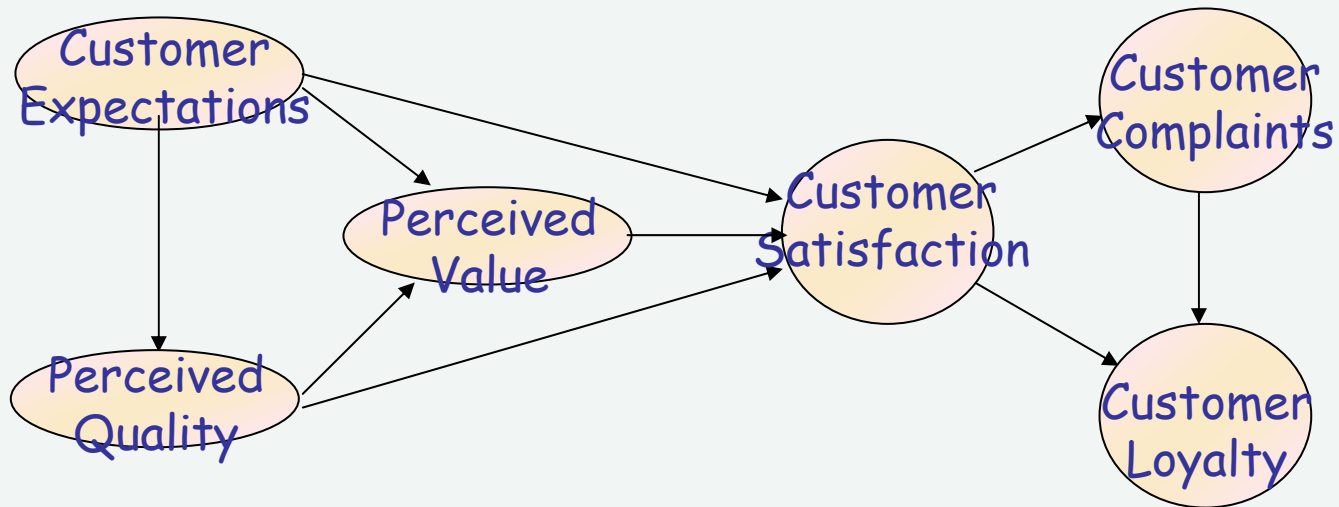


## Methods for key Users



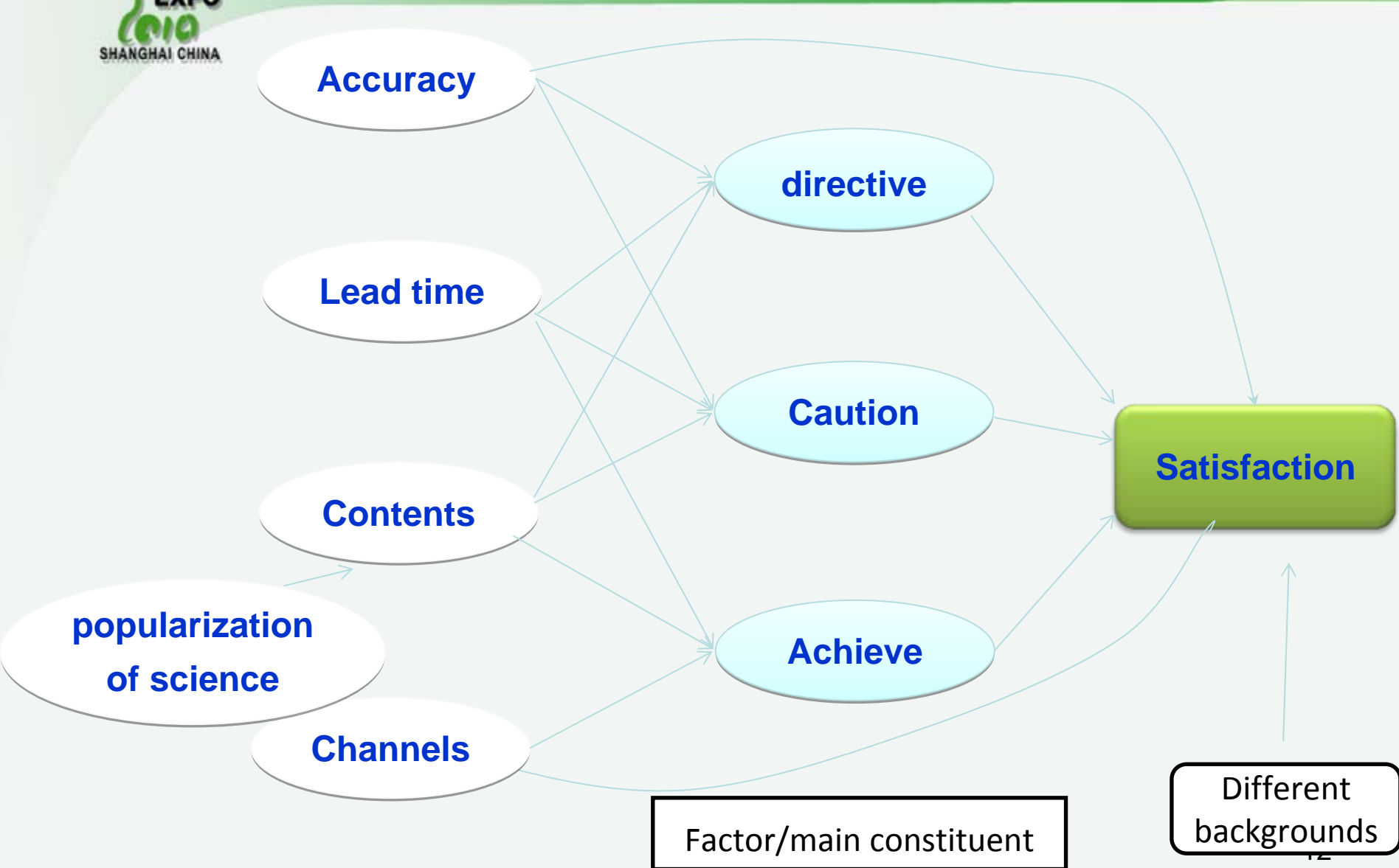
## Methods for Public/tourists Survey

### CSI Model: Structural Modeling



American Customer Satisfaction Index (ACSI) ,1994

# Questionnaires path diagram



## 1. 3 Methods and Phases

### Three-Phase Survey for Forecasters

**Phase I: Pre-EXPO baseline evaluation (Before June 2009)**

**Phase II: WENS Run Period (Jun-Oct 2010)**

**Phase III: After WENS Run Period (Oct 2010 later)**

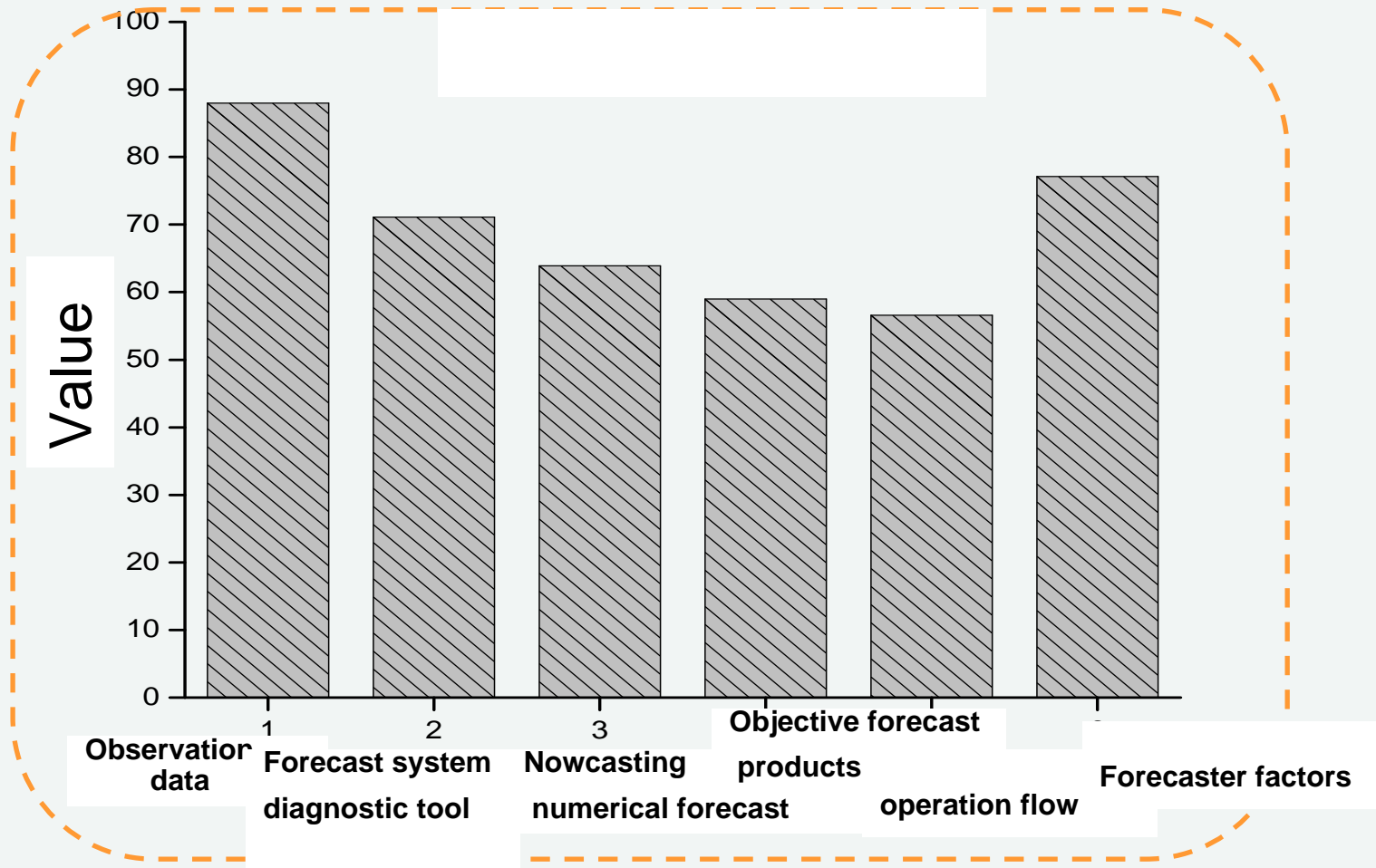
## 2. Progress before Oct 2010

*Results  
show*

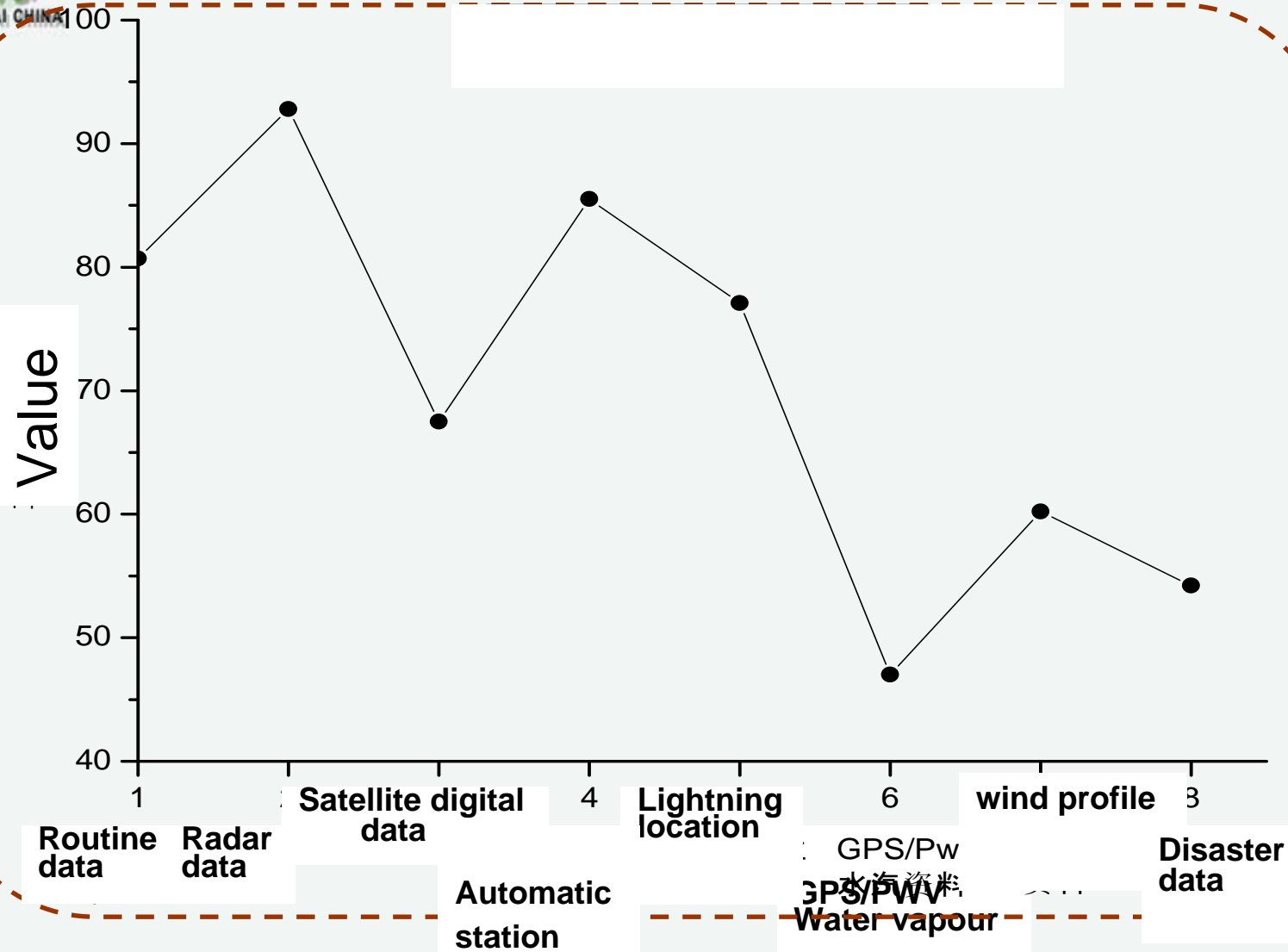
- **Achievements in forecaster surveys**
- **Achievements in key end-users surveys**
- **Achievements in public/tourists surveys**

## 2.1 Review on First-phase Forecaster Surveys

### Requirement for Nowcasting **operational systems**

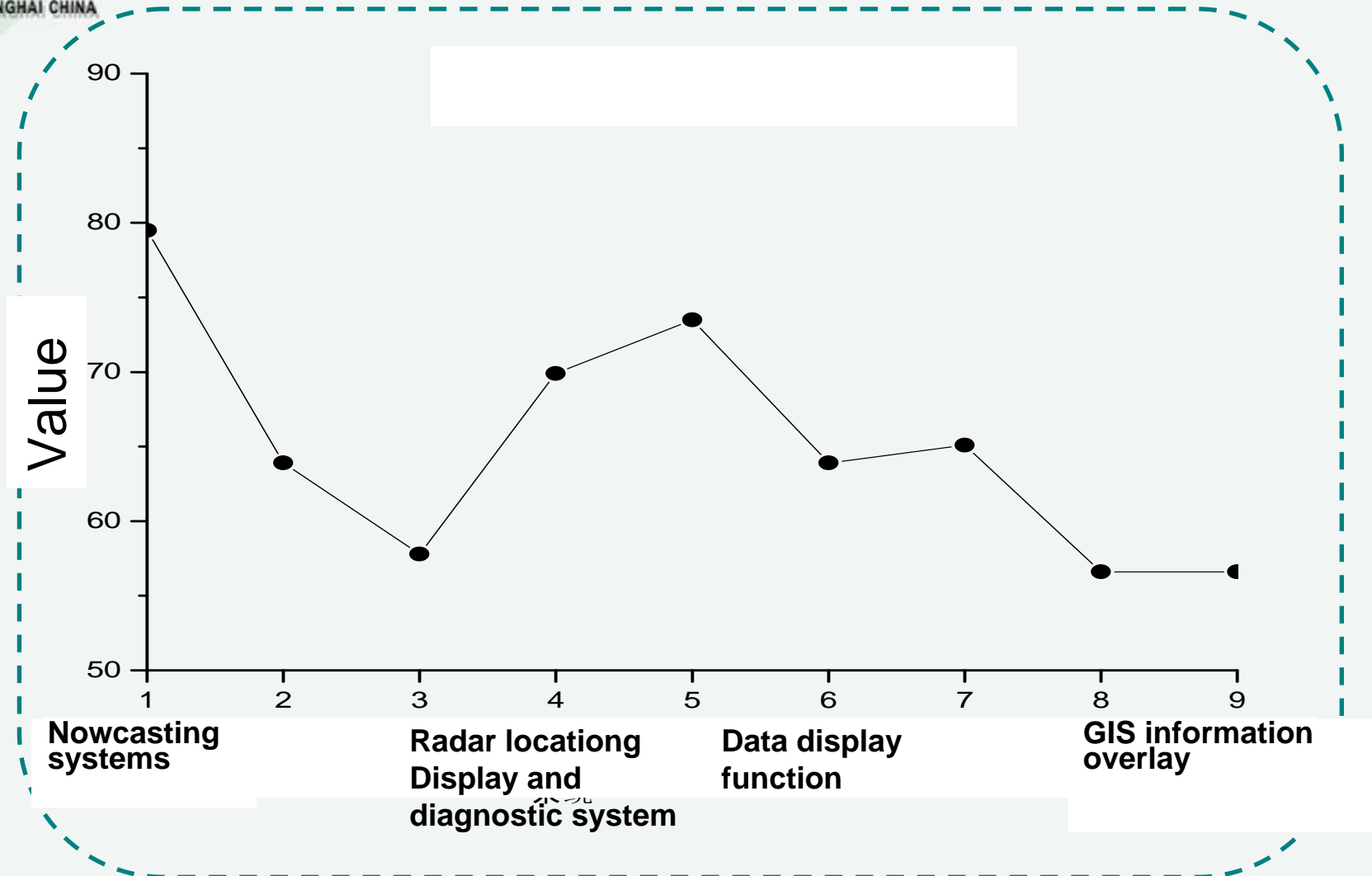


# Requirement for observation data

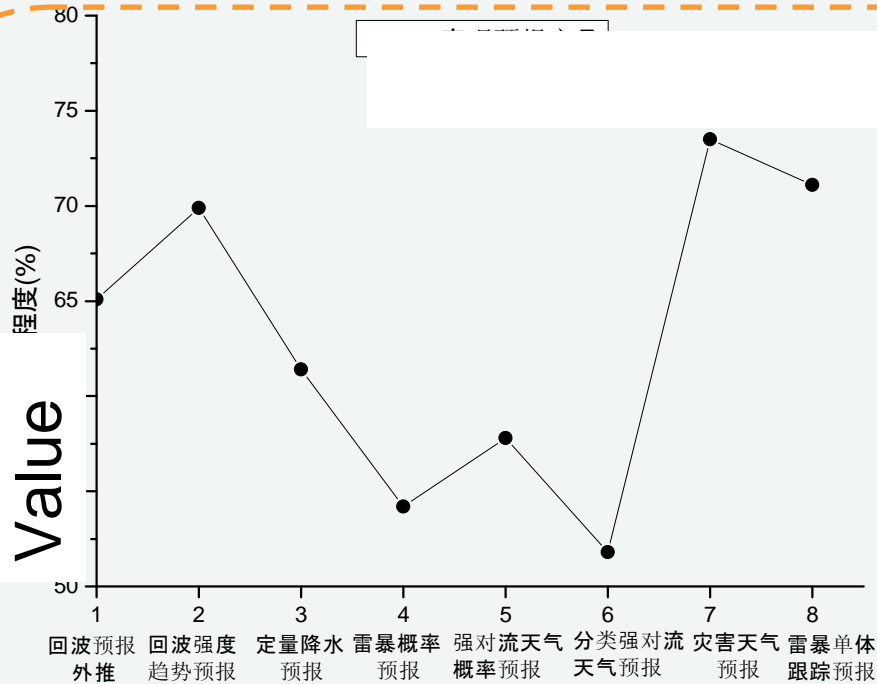




# Requirement for forecast system and diagnostic tools



# Requirement for objective forecast products

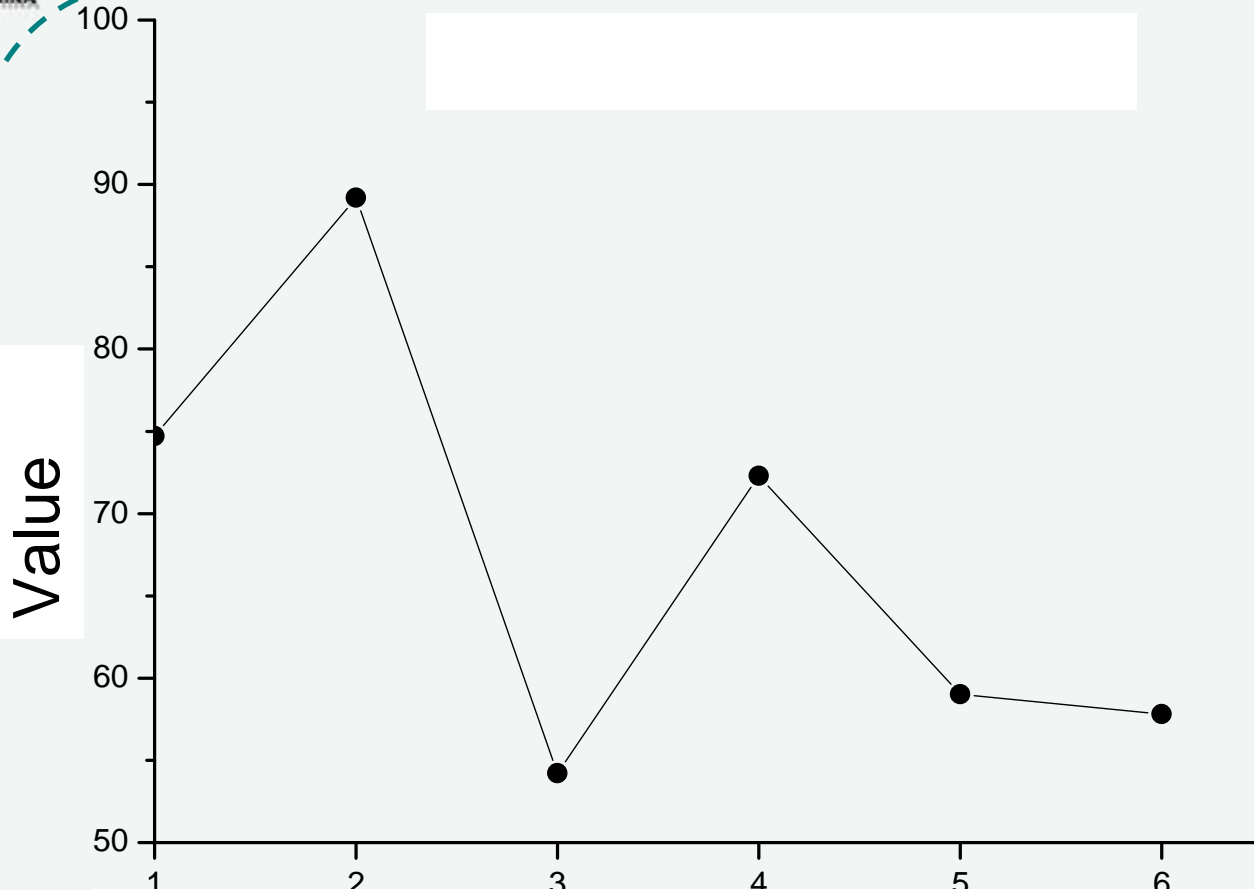


tracing prediction of  
thunderstorm cell

tendency prediction of  
Radar echo

Disaster weather  
forecast

# Important intensity about operation flow

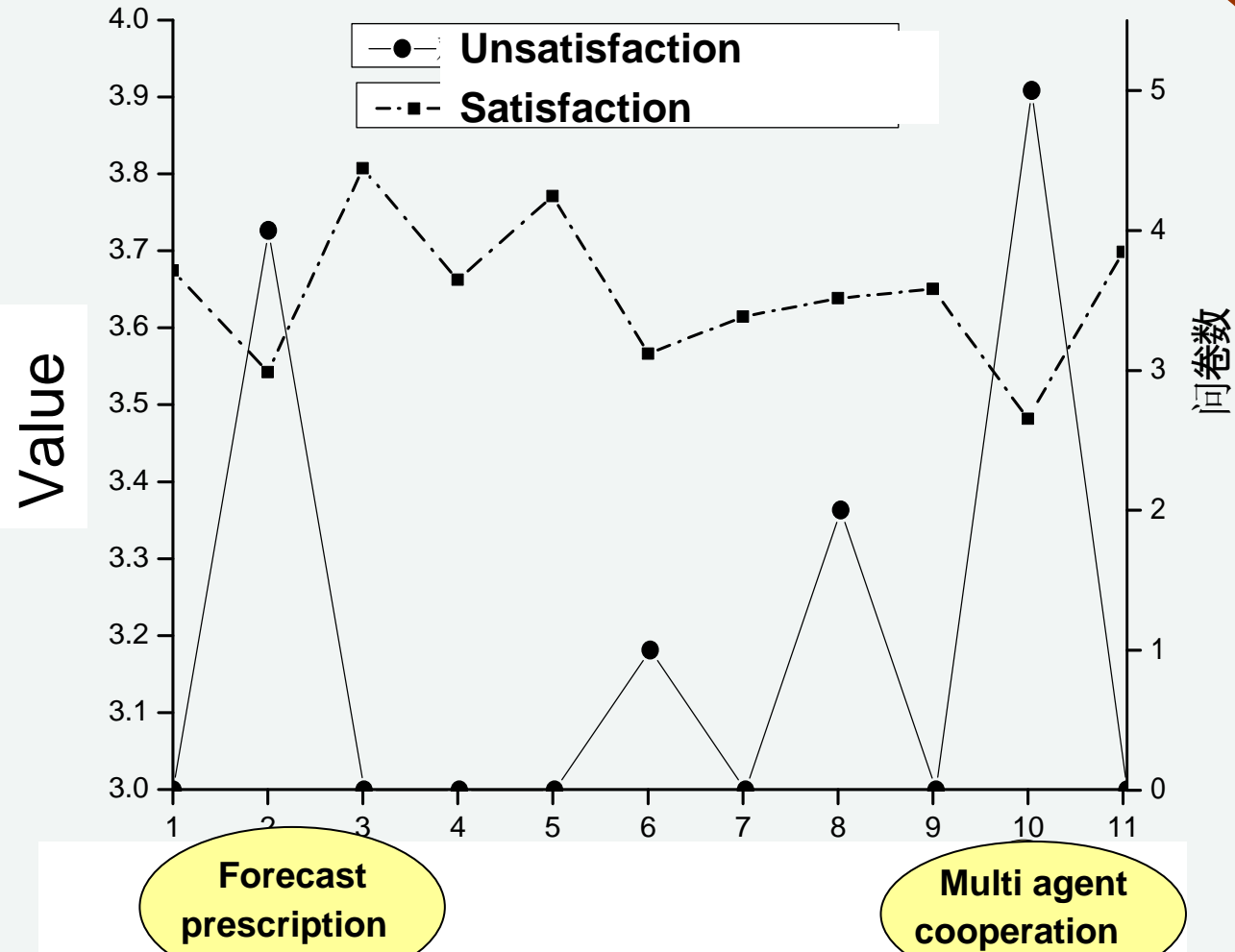


severe convective  
weather outlook

Find earlier

Zone defense

# Satisfaction of nowcast level



## 2.2 Achievements in key end-users surveys before Oct 2010

*Results show*

### 2.2 .1 Review on Key End-users First-phase Surveys

Organization	Weathers of Impact (In decreasing order)
EXPO Bureau	Typhoon, Heavy rain, Thunder & Lightning, strong wind
Flooding Prevention Office	Typhoon, Heavy rain, Down surge, strong wind
Emergency Response Management Center	Typhoon, strong wind, heavy rain, Down surge
Emergency Response Center	Typhoon, strong wind, heavy rain, Down surge
Yatong Shipping Corp	Strong wind, Down surge, Typhoon

## 2.2.1 Review on Key End-users First-phase Surveys

### Requirements on Severe Convective Weather

<b>Organization</b>	<b>Forecast accuracy</b>	<b>Forecast Lead Time</b>	<b>Space Resolution</b>
<b>EXPO Bureau</b>	<b>70%, Opening: &gt;97% Operation Dept: 80%</b>	<b>1 Hr Operation Dept: 24 Hrs</b>	<b>Key Activity sites, EXPO Park, Downtown, whole city</b>
<b>Flooding Prevention Office</b>	<b>70%</b>	<b>Updated within 24 Hrs</b>	<b>District/county</b>
<b>E. R. Management Center</b>	<b>50%</b>	<b>1 Hr for Orange+ levels</b>	<b>District/county</b>
<b>E. R. Center</b>	<b>70%</b>	<b>1 Hr</b>	<b>District/county</b>
<b>Yatong Shipping Corp</b>	<b>50%</b>	<b>3 Hrs</b>	<b>District/county</b>

### Expectations on Weather Contents & Channels

<b>Organization</b>	<b>Expectations on Weather Channels (In decreasing order)</b>	<b>Expectations on Weather contents (In decreasing order)</b>
<b>EXPO Bureau</b>	<b>Public screens, Internet, fax, cell phone, TV/radio, Weather hotline</b>	<b>Real-time weather, disaster situation, disaster pre-assess, disaster prevention guidance</b>
<b>Flooding Prevention Office</b>	<b>Cell phone, fax, TV/radio, Internet, Weather hotline, Public screens,</b>	<b>Real-time weather, Impact period</b>
<b>E. R. Management Center</b>	<b>Fax, cell phone</b>	<b>Real-time weather, disaster pre-assess, Impact period, disaster prevention guidance</b>
<b>E. R. Center</b>	<b>Cell phone, fax, TV/radio, Public screens, Internet, Weather hotline,</b>	<b>Real-time weather, Impact period, disaster prevention guidance</b>
<b>Yatong Shipping</b>	<b>Fax, TV/radio, Internet</b>	<b>Real-time weather</b>

## 2.2 .2Review on Key End-users second-phase Surveys

### Cases evaluate

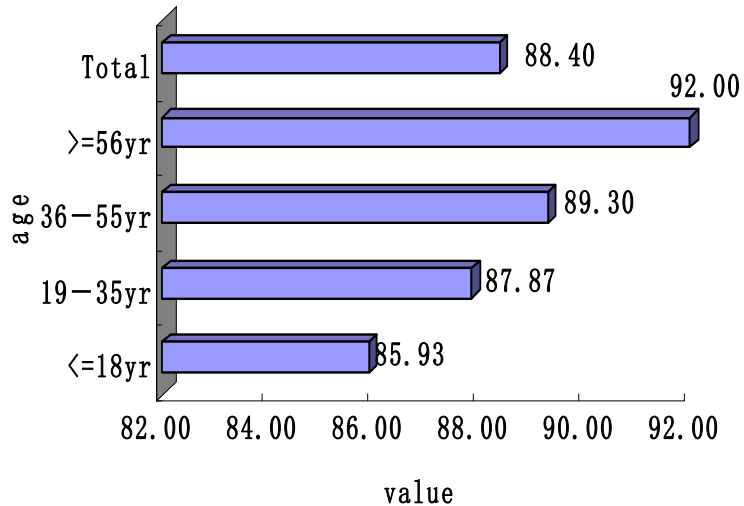
<i>Weather type</i>	<i>Accuracy</i>	<i>Lead time</i>	<i>Satisfaction</i>
thunderstorm	80	81.3	86
thunder and lightning	84	90	90

<i>Organization</i>	<i>Accuracy</i>	<i>Lead time</i>	<i>Satisfaction</i>
<i>EXPO Bureau</i>	82	94	94
<i>Weather Sensitive governments</i>	82	84	86
<i>Weather sensitive company users</i>	84	88	88

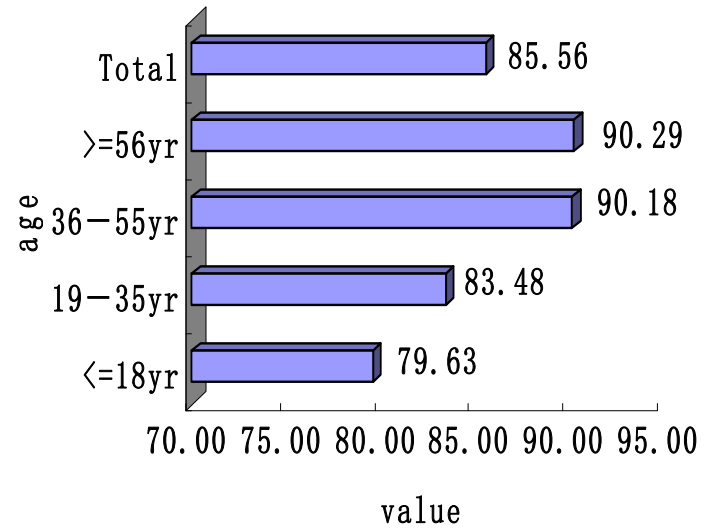


## 2.3 Achievements in public/tourists surveys before Oct 2010

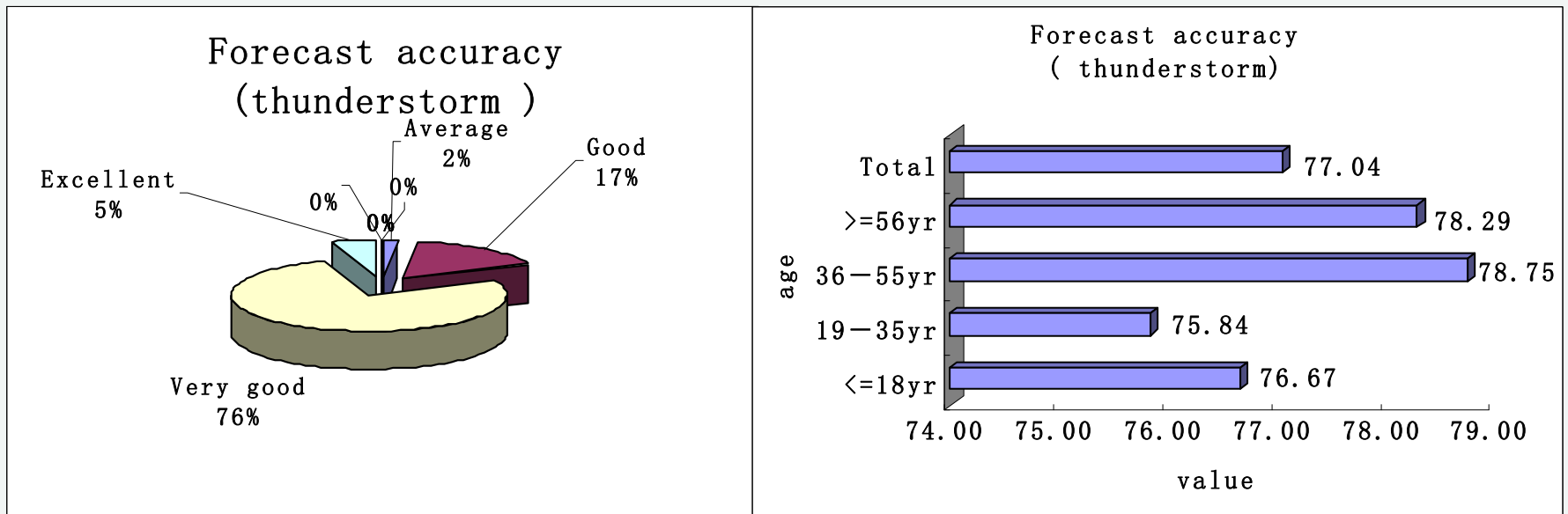
The importance of weather forecast to people's work and life



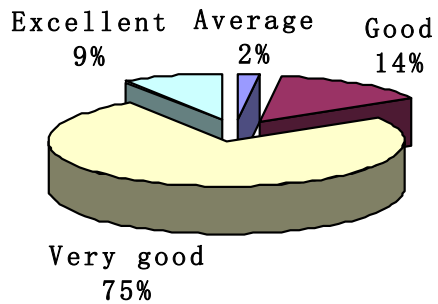
The attention to weather forecast



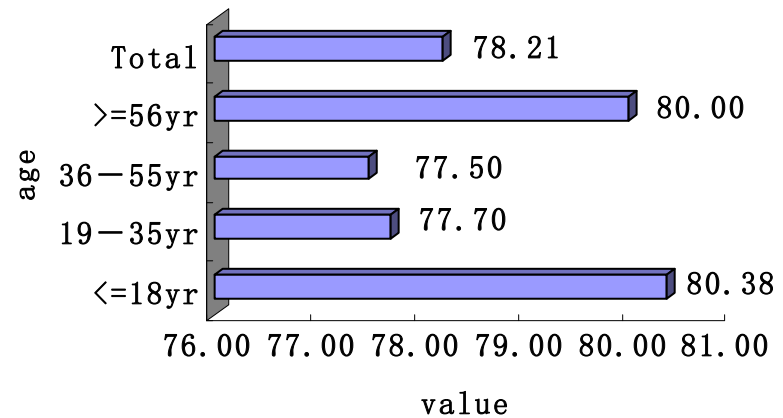
## Nowcasting forecast Accuracy evaluate



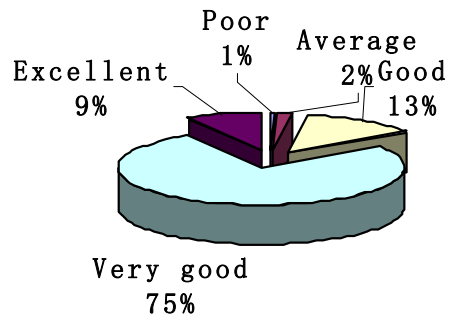
### Forecast accuracy (thunder and lightning )



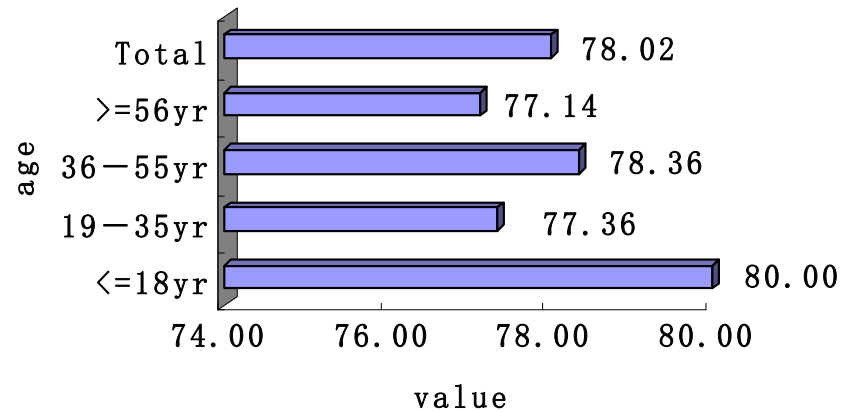
### Forecast accuracy (thunder and lightning)



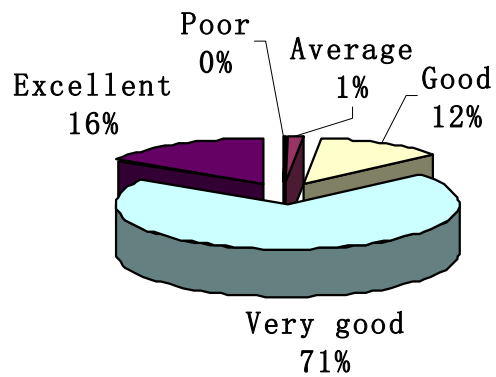
Forecast accuracy  
(Strong wind)



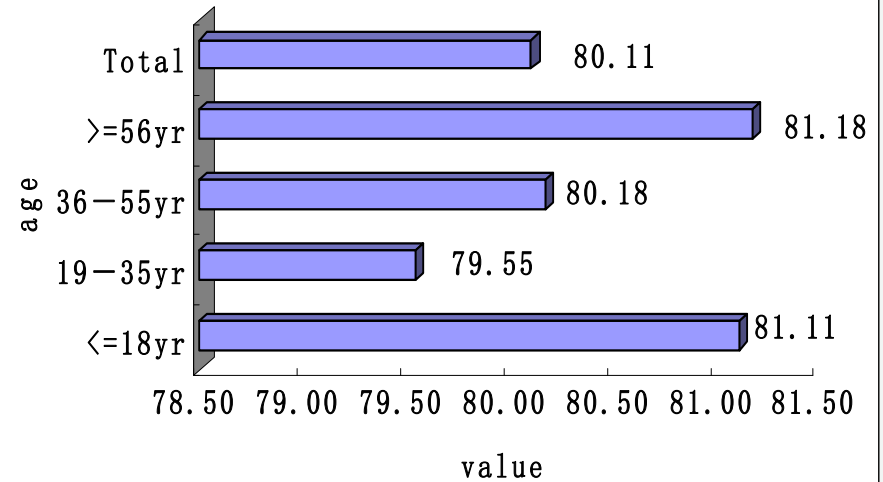
Forecast accuracy  
(strong wind)



### Satisfaction



### The total satisfaction



## 3. Next Plans

- **Analyse questionnaires of forecasters in Expro. Identify the operational benefits brought by WENS depending on several assessment methods .**
- **Continue the Key users (Government/company) assessment, especially case study (Electric Power Corp).**
- **Use SEM Analyse the data of public/tourists surveys , get the relationship between each variable. According to model, we can analyze nowcasting and know customer requirements and demands in order to improve the quality of our service.**

*Thank you !*