江河瑞通(北京)技术有限公司
RICHWAY (BEIJING) TECHNOLOGY. CO.,LTD

水行业数字化应用探索与实践

Exploration and Practice of Digital Application in the Water Industry

首席技术官：周威
CTO: ZHOU Wei

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1. 国内外数字化发展趋势Development Trend of Digitalization at Home and Abroad

6次

自2014年“大数据”连续六年进入国务院政府工作报告

Since 2014, “big data” has been included in the Government Work Report of the State Council of China for six consecutive years

13省14个

全国13个省 14个不同行业发布“大数据”政策文件，13个省建立了数据中心、数据局、数据研究院

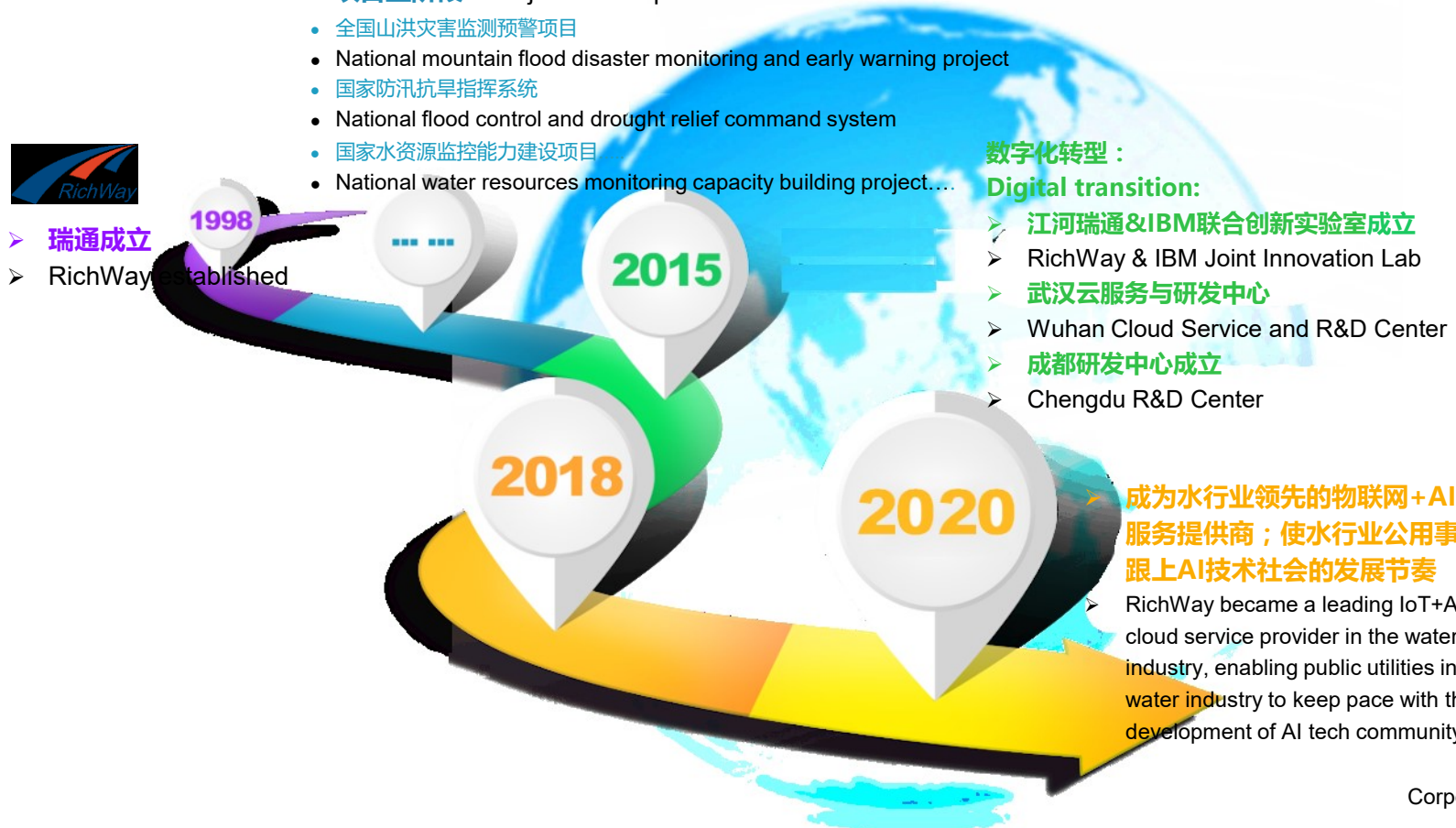
14 industries in 13 provinces have issued “big data” policy documents, 13 provinces have established data centers, data bureaus and data research institutes

11份

自水利部陆续发布关于“大数据”相关政策文件11份

The Ministry of Water Resources of China has issued 11 “big data” related policy documents

2. 江河瑞通公司数字化发展追逐历程Digital Development and Pursuit of RichWay



- **瑞通成立**
- RichWay established

- **项目型阶段：**Project-based phase:
  - 全国山洪灾害监测预警项目
  - National mountain flood disaster monitoring and early warning project
  - 国家防汛抗旱指挥系统
  - National flood control and drought relief command system
  - 国家水资源监控能力建设项目
  - National water resources monitoring capacity building project….

数字化转型：
Digital transition:

- **江河瑞通&IBM联合创新实验室成立**
- RichWay & IBM Joint Innovation Lab
- **武汉云服务与研发中心**
- Wuhan Cloud Service and R&D Center
- **成都研发中心成立**
- Chengdu R&D Center

- **成为水行业领先的物联网+AI云服务提供商；使水行业公用事业跟上AI技术社会的发展节奏**
- RichWay became a leading IoT+AI cloud service provider in the water industry, enabling public utilities in the water industry to keep pace with the development of AI tech community

3. 水行业数字化发展特征Characteristics of Digital Development of the Water Industry

体量巨大Massive volume

形成了“**空-天-地**”水联网感知体系；超过**14万**处水利信息采集点；存储资源近**2.5PB**。

An “air-sky-earth” water network sensing system; more than 140,000 water conservancy information collection sites; nearly 2.5PB resources stored

复杂多样Complex and diverse

数据类别：监测信息+辅助信息；数据格式：**结构化+半结构化+非结构化**数据以及数据不同来源格式多样性。

Data categorization: monitoring information + auxiliary information; data format: structured + semi-structured + unstructured data, different data sources, a variety of data formats

价值很高High value

对价值密度低的历史数据挖掘，了解水利系统的历史演变规律，**预测**未来发展趋势。

The historical data with low value density is excavated to figure out the historical evolution rules of water conservancy system and predict the future development trends

交互性Interactivity

水利行业数据同行业外数据的交互融合，全方位挖掘分析服务于行业内外。

The data of the water conservancy industry and other industries is interacted and fused to provide omni-directional data mining and analysis services both inside and outside the industry

分散割裂Scattered and segmented

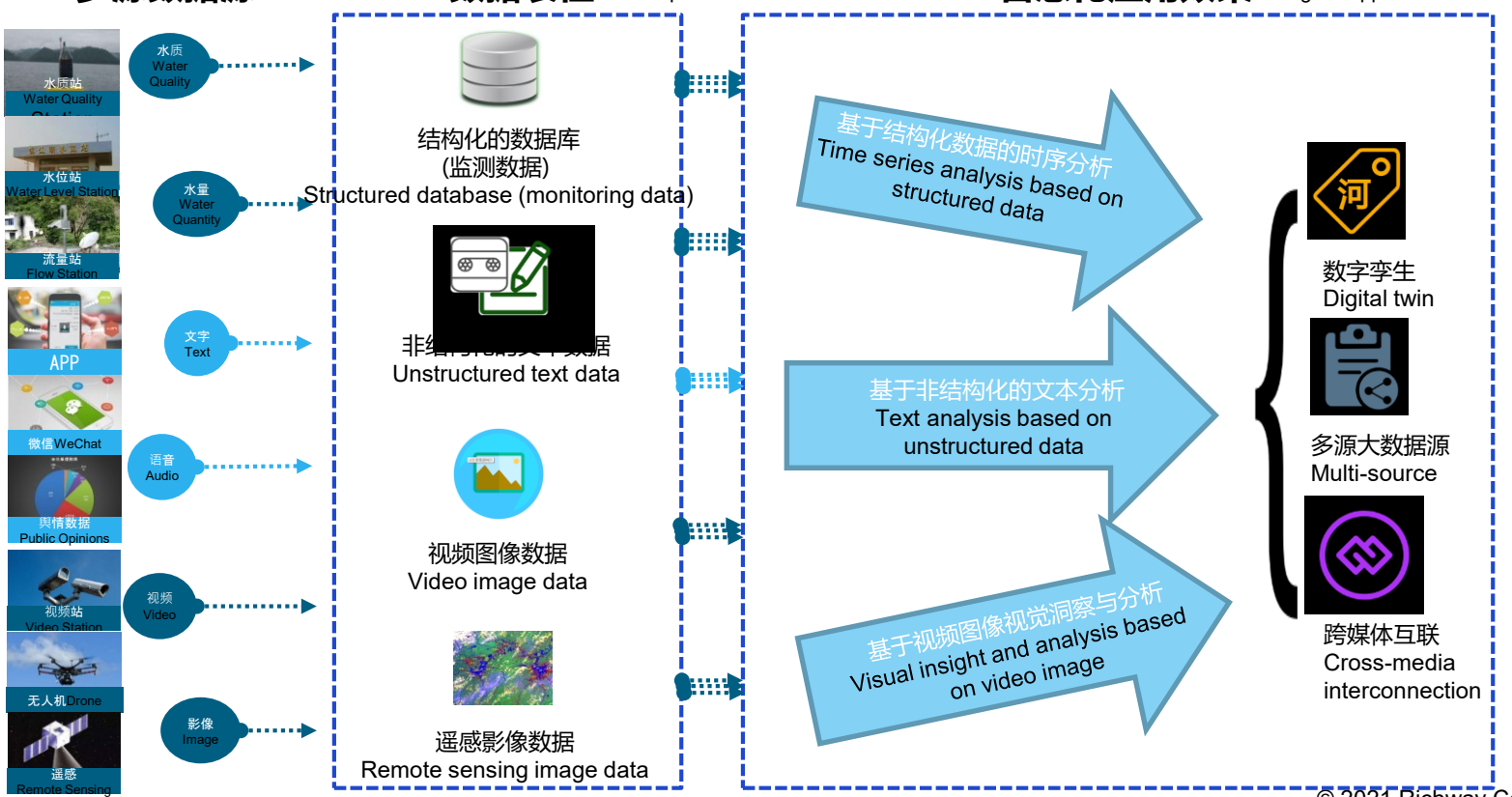
水利应用系统烟囱式构建，“**各自为政**”，信息数据孤立重复，呈现**数据分散**、标准不统一、共享困难。

Water conservancy application systems are built up like chimneys separately. The information data is isolated and repeated, features scattered data, disunified standard, and difficulty of sharing

4. 多源跨媒体数据汇集 Multi-Source Cross-Media Data Collection

基于跨媒体感知，构建水利感知网，坚实智慧水利数据基础

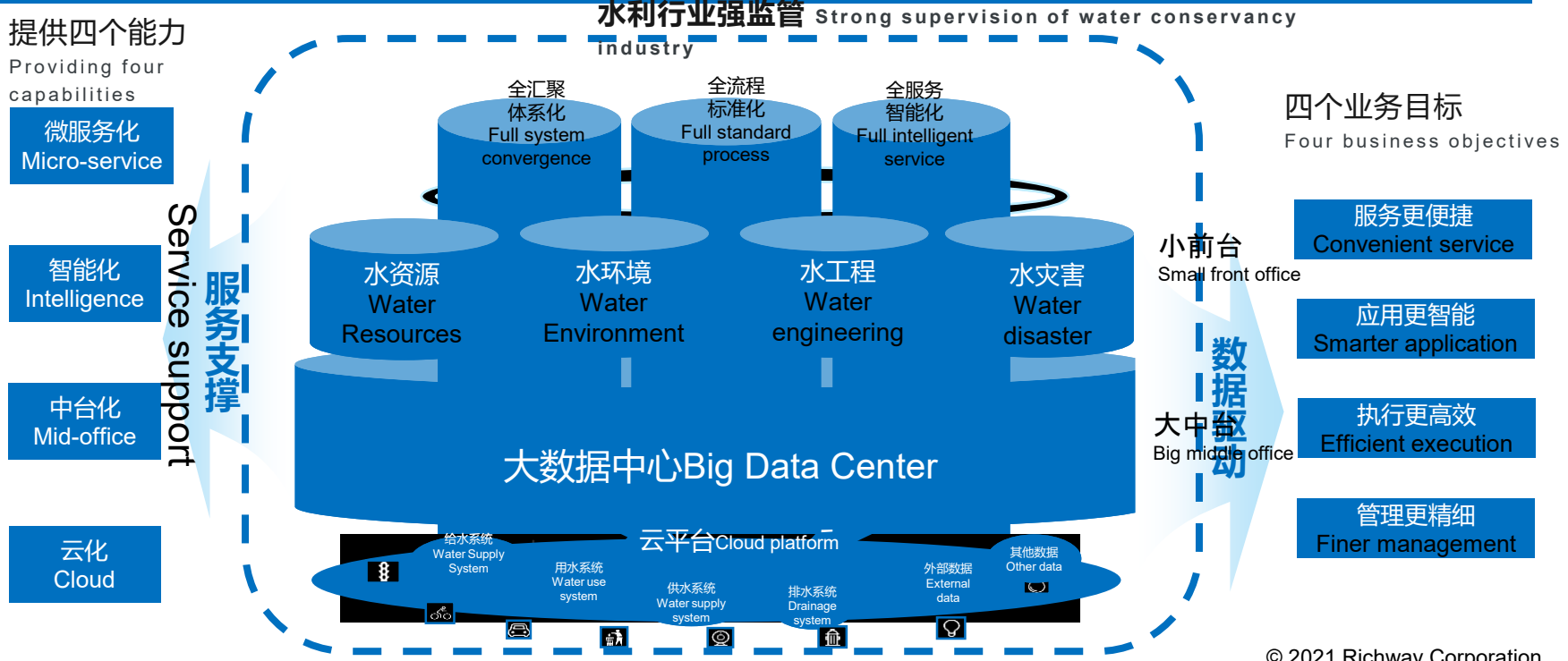
Constructing water conservancy sensing network and consolidating intelligent water conservancy data foundation based on cross-media sensing



5. 数据融合平台Data Fusion Platform

数据融合平台，推动水务数字化创新、数据资产运营和全方位智能应用，全面推动水利数据智能转型升级

The data fusion platform promotes digital innovation of water affairs, data asset operation and omni-directional intelligent application, and comprehensively promotes intelligent transition and upgrading of water conservancy data

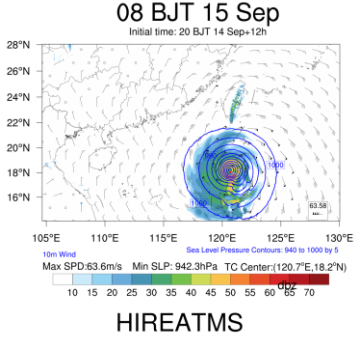


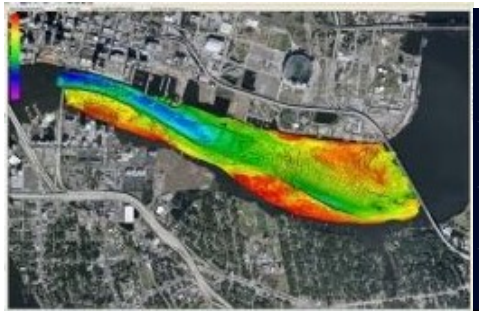
6. 水利数字化应用——基于大数据的多模型的耦合计算分析

6. Digital Application of Water Conservancy—Big Data Based Multi-Model Coupling Calculation and Analysis

利用基于时间序列的结构化数据，实现大数据分析模型与行业机理模型的融合，实现对河湖上下游水情动态及风险的精准预测预报。

Using the structured data based on time series to realize the fusion of big data analysis model and industry mechanism model, and the accurate prediction of water regime dynamics and risks in the upper and lower reaches of rivers and lakes





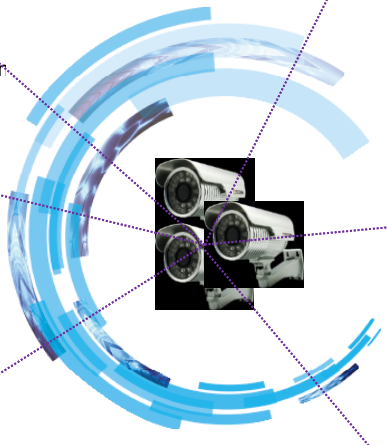
7. 水利数字化应用——视频智能识别分析 Digital Application of Water Conservancy -- Intelligent Video Identification and Analysis

河湖岸线比对

River and lake shoreline comparison

水域变化识别 Water area change identification

水位流速识别 Water level and velocity identification



基于视频图像智能识别分析

Intelligent identification and analysis based on video image

垃圾漂浮物识别 Floating garbage identification

人员非法闯入识别

Break-in identification

蓝藻程度识别

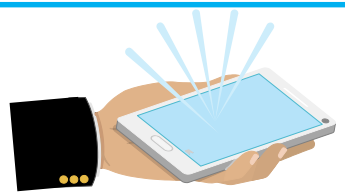
Cyanobacteria severity identification

7. 水利数字化应用——基于知识图谱的智能分析推理

Digital Application of Water Conservancy -- Intelligent Analysis and Reasoning Based on Knowledge Graph

台风山竹来袭

Typhoon Mangkhut is coming



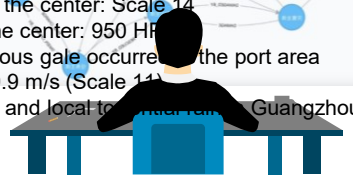
历史相似度分析

Analysis of historical similarity

Typhoon Hagupit in 2008
Moderate to heavy rain
Beaufort Scale 8-9
Extraordinary storm surge
More than 20,000 people were evacuated to the safe place
The embankment of the city's outer river was overtopped at 193 places
The dike burst at two places in Panyu

Typhoon Vicente in 2012
Took a tortuous path, intensified offshore, with strong wind and rain
Beaufort Scale 10-11
Maximum gust: 32.4m/s (Scale 12)
Heavy to torrential rain in Guangzhou

Typhoon Hato in 2017
Maximum wind force in the center: Scale 14
Minimum pressure in the center: 950 HP
Scale 13-14 instantaneous gale occurre the port area
Maximum land gust: 29.9 m/s (Scale 11)
Moderate to heavy rain and local to Guangzhou on the 24th



关注信息定向推荐

Recommendation of information concerned

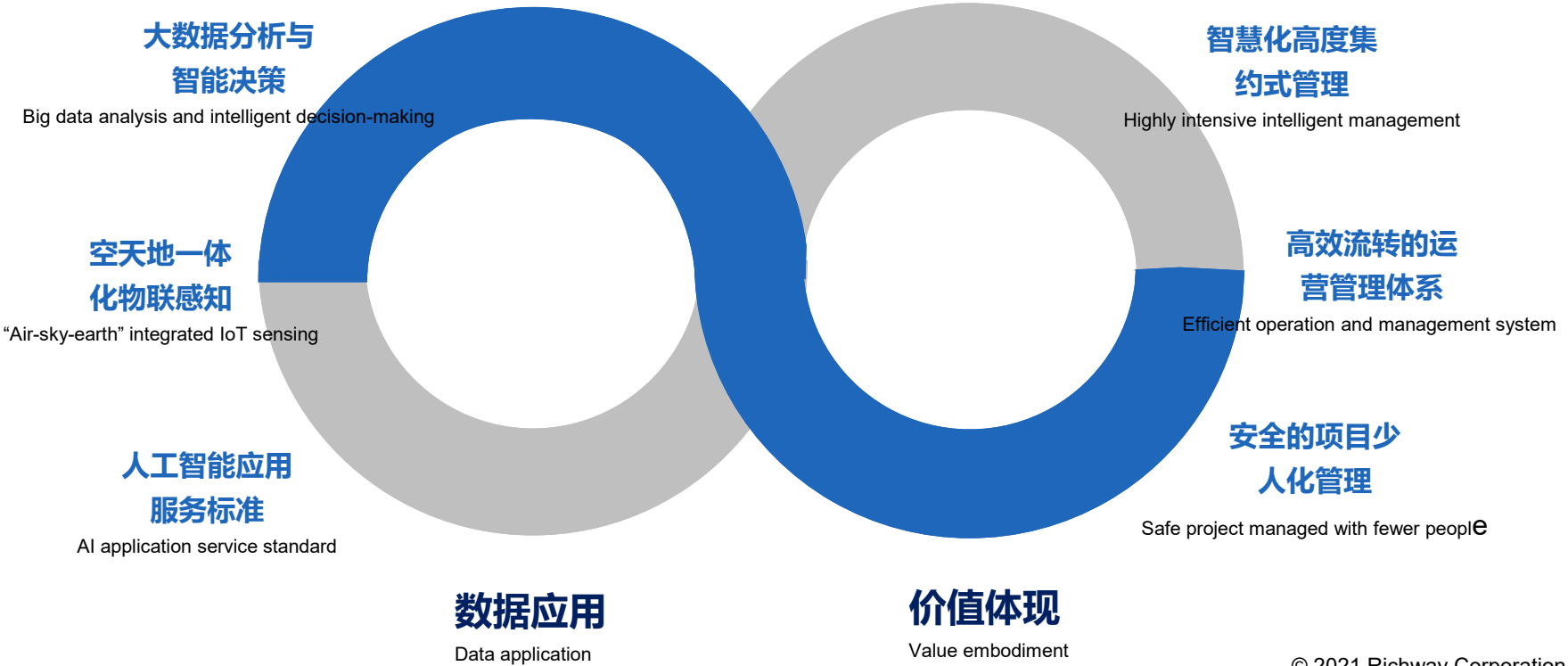
最优决策方案推荐

Recommendation of optimal decision and solution

8. 水利数字化交流合作展望 Prospect of Digital Communication and Cooperation in Water Conservancy

希望进一步加强合作交流，共同推动水行业数字化转型

We look forward to further strengthening cooperation and communication to jointly promote digital transition of the water industry



谢 谢！
Thank You!