DioVISTA webinar July 29, 2020



## In the field of construction consultancy Leveraging DioVISTA



time	course	substance
10:00 -	1	Utilization of DioVISTA in the field of construction consulting We will introduce DioVISTA, which is used by many companies in the construction consulting field, and how to use it for creating flood estimation maps and flood prediction area maps.
11:00 -	2	Utilization of Dam Dashboard in the Dam Sector
13:00 -	3	Utilization of DioVISTA in the field of non-life insurance
14:00 -	4	Utilization of DioVISTA in the field of disaster prevention administration
15:00 -	5	Proposal of BCP support for flood countermeasures for corporate disaster prevention
16:00 -	6	DioVISTA Flood Simulator- technology & use case

Today's materials will be uploaded at a later date. Participants will be notified of the link by email.



## 1. Introduction

#### 2. Creating a flood area map using DioVISTA

Mokuji

3.

#### 4. Conclusion

### Purpose of the seminar

- Major changes in society
  - With Corona, a changing way of working
    - Telework, computerization, cloud computing
    - Standardization, depersonalization, remote OJT
  - Intensification of climate change and flood damage
    - "Conversion to watershed flood control"

#### What is watershed flood comparison?



In addition to flood control measures mainly implemented by managers of rivers, sewers, erosion control, coasts, etc., not only the catchment area and the river area, but also the flood area are regarded as one basin, and all parties involved in the basin work together to (1) prevent flooding as much as possible, (2) measures to reduce the damage target, and (3) damage mitigation, We will comprehensively and multi-layered measures for early recovery and reconstruction.

DioVISTA screen example

Ref: MLIT, on water-related disaster countermeasures based on climate change, URL, July 2020.

#### Collaboration of all stakeholders in the basih



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#### Expectations for construction consultants

- Support the collaboration of all stakeholders in the watershed.
  - Quantify and visualize hazards, exposures and vulnerabilities
  - Quantification and visualization of cross-sectoral measures
- Wide-area, detailed, and numerous flood analyses are essential

#### Proposals for the construction consulting field

- Streamline flood analysis with DioVISTA
  - Analysis can be performed in accordance with the business manual.
  - Analysis is completed in a short time
  - Standardization of operations will progress.

#### DioVISTA screen example



Complete 6 hours of flood analysis in 4 secondsVisualize intermediate results during simulation executionMesh size 25 m

#### DioVISTA User Testimonials HITACHI Inspire the Next

#### The calculation speed is insanely fast.

It is 10 times faster than the self-developed program . I wonder what the hardships have been so far.

#### The calculation is stable.

Mixing of normal currents in river channels, reverse overflow from floodplains, and backwater from the main river to tributaries can also be calculated without worrying about them.

Easy to verify.

You can visually check the setting conditions and calculation results on maps and river channel cross-sectional maps.

You can consult with the help desk. While complying with the business manual, we were able to construct a model that matches the characteristics of the watershed.

I decided to introduce it at my new job.

Be proactive and be able to bid.



## Mokuji

#### 1. Introduction

# 2. Creating a flood area map using DioVISTA

#### 3. Flood estimation of small rivers using DioVISTA

#### 4. Conclusion

#### Ingest river data





CSV compliant with [Ministry of Land, Infrastructure, Transport and Tourism, Guidelines for Creating Regular River Cross-Section Data, May 20] You can import files.

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#### Ingest river data





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#### **Review cross-sections**



#### **Review profile views**



#### Create a breakage point HITACHI Inspire the Next



#### Calculation execution

HITACHI Inspire the Next



[Ministry of Land, Infrastructure, Transport and Tourism, Manual for Drawing Flood Inundation Prediction Area (4th Edition), July 27 ] Compliant with Basic formulas are available. © Hitachi Power Solutions Co., Ltd. 2020. All rights reserved.

#### Calculating ...





#### Creation of deliverables HITACHI Inspire the Next



[Ministry of Land, Infrastructure, Transport and Tourism, Guidelines for Digitization of Flood Prediction Area Map Data (3rd Edition), September Reiwa ] CSV and NetCDF output is possible © Hitachi Power Solutions Co., Ltd. 2020. All rights reserved.

### **Confirmation of deliverables**



Visualize NetCDF files on a 3D map. DioVISTA/Storm http://www.hitachi-power-solutions.com/products/product03/p03\_61.html



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#### Purpose of the flood estimation diagram

- It is necessary to prepare and publish flood risk information even for small rivers
  - Conventionally, the target rivers of the flood prediction area map are flood forecast rivers + rivers with known water levels (2092 lines)
  - Small rivers: Class-1 and Class-2 rivers that are not subject to inundation area maps (approx. 19,000)
- Flood estimation maps cover about nine times as many rivers as before.
  - It is necessary to save time and labor.

Ministry of Land, Infrastructure, Transport and Tourism, Guide to Estimating Flooding of Small Rivers, June Reiwa 2. https://www.mlit.go.jp/river/shinngikai\_blog/tyusyokasen/pdf/manual.pdf

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### Selection of flood analysis method.

• For flood analysis methods, appropriate methods shall be selected by setting items that serve as criteria for selection, determining suitability for multiple flood analysis methods, comparing the results of the arrangement, and comprehensively judging the superiority or inferiority of flood analysis methods.

(Handbook p.18)

- 1. Flood status of the target river
- 2. Types of information obtained from flood analysis
- 3. Reproducibility of phenomena and characteristics of flood flow
- 4. Labor, time, etc. required for analysis

Streamlining flood analysis with DioVISTA











#### Setting the Floodplain Roughmess



#### Calculation execution

![](_page_28_Figure_1.jpeg)

#### Calculating ... (Determination of calculation

![](_page_29_Figure_1.jpeg)

Japan Patent No. 4761865, United States Patent 7603263, China Patent PZL200610008661.4

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#### Calculating ...

![](_page_30_Picture_1.jpeg)

![](_page_30_Figure_2.jpeg)

#### Create a deliverable

![](_page_31_Picture_1.jpeg)

#### Create a deliverable

![](_page_32_Picture_1.jpeg)

![](_page_33_Figure_1.jpeg)

![](_page_34_Figure_1.jpeg)

![](_page_35_Figure_1.jpeg)

![](_page_36_Figure_1.jpeg)

![](_page_37_Picture_0.jpeg)

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## Summary

![](_page_38_Picture_1.jpeg)

- Streamline your analysis with DioVISTA
  - Analysis can be performed in accordance with the business manual.
  - Visual screen so you can work step by step
  - Setting conditions and calculation results are displayed in an easy-to-understand manner
- Analyses are completed in a short time
- Standardization of operations will advance

### **END**