

Findings on the Outcrop3D Component of the DDE Platform

Follow-up Action from the 18th EC Meeting — Item: Contact Zhejiang University to clarify responsibility for the Outcrop3D component

Findings

1. Current ownership and operation

The Outcrop3D component is entirely managed, maintained, and operated by the team of Dr. Hanting Zhong at Chengdu University of Technology (CDUT). This team is the original proposer of the component and has been its primary contributor since inception.

2. Development history (2022-2023)

During 2022-2023, Dr. Zhong's team participated extensively in DDE R&D activities organized in Hangzhou, working in close collaboration with the DDE Platform team (Zhejiang University) and other contributing groups. Through this collaborative effort, the Outcrop3D component was developed and launched on the Deep-time.org platform as an integrated module.

In response to the follow-up inquiry from the Secretariat, Zhejiang University confirmed that it has not been responsible for the development or deployment of the Outcrop3D component. During the 2022–2023 R&D period, ZJU's role was to develop the overarching DDE Platform and provide integration support, helping component teams launch their work as integrated modules on the Deep-time.org platform. It should be noted, however, that the boundary between platform-level integration support and component-level development was not always clear-cut in practice. ZJU deployed a sizable R&D team during this period, and the extent of its involvement varied across components. At one end of the spectrum, for components such as GlobalLayer (a 1:5M geological map visualization module), the ZJU team took a leading role in development well beyond landing support. At the other end, for components such as OneStratigraphy, ZJU's contribution was limited to helping the component display on the platform. Outcrop3D fell somewhere in between: CDUT had its own development capacity, yet ZJU contributed to a significant portion of the component's R&D as well.

3. Transition of cloud deployment (late 2024)

In late 2024, significant changes occurred in the provision of cloud computing resources for the DDE platform. Following these changes, the cloud deployment, ongoing development, and operational maintenance of several platform components began to be assumed by their respective contributing institutions. For the Outcrop3D component specifically, all cloud resource deployment, continued R&D, and day-to-day operation and maintenance are now handled entirely by the CDUT team led by Dr. Zhong.

4. Current access arrangement

The access entry point for Outcrop3D remains hosted on the Deep-time.org platform (<https://outcrop3d.deep-time.org/>), maintaining a unified user-facing portal. However, the underlying

cloud infrastructure, application servers, and technical operations are managed independently by CDUT team.

5. Connection with DDE-funded digital outcrop projects

At its 14th meeting (August 23, 2024, Kunshan), the DDE Executive Committee approved two international scientific initiative projects both directly related to digital outcrop research:

KY-C03-SGF-2025-005: "Innovative Application of Digital Outcrop Models in University Pre-college Education", undertaken by Asia Pacific University (APU), Malaysia, PI: Dr. Edward Robeck

KY-C03-RND-2024-003: "DDE 3D Digital Outcrop and Subsurface Data Dynamic Exchange Integration (Svalclime: DDE SubsurfaceXD)", undertaken by Universität Hamburg, Germany, PI: Dr. William Foster

Following the 18th EC meeting, the DDE Secretariat reached out to Dr. Hanting Zhong (Chengdu University of Technology) to brief him on these two projects and explore potential synergies with the Outcrop3D component.

Dr. Zhong expressed willingness to collaborate with both project teams. He indicated that the Outcrop3D platform can serve as an enabling infrastructure for research activities, and that suggestions and technical requirements put forward by the project teams will be incorporated into the next round of development requirements for the Outcrop3D component.

Observations

- **To date, no formal contract or legal arrangement has been identified between CDUT and the DDE parties (Secretariat, Suzhou Center, Hangzhou Center) or ZJU, regarding content ownership, modification rights, or service-level commitments for the Outcrop3D component. The current arrangement appears to be based on the original collaborative relationship established during the 2022-2024 development period.**
- **A formal agreement is advisable.** Given the EC's interest in establishing clear rules and procedures for project contributions to the DDE Platform (another 18th EC follow-up action), the Outcrop3D case illustrates the importance of formalizing the relationship between component contributors and the DDE platform — covering IP, content modification rights, service continuity, and cloud resource responsibilities.

Recommended Next Steps

1. Develop a standard component contribution agreement template (to be circulated as part of the IP and data-sharing policy framework currently under preparation).
3. Engage CDUT and other component-contributing institutions in formalizing their arrangements with the DDE platform.

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