

# Improving Data Management Procedures based on CoreTrustSeal Certification



Chinese Astronomical Data Center adopts Repository Audit and Certification Catalogue RDA Recommendation

*The Chinese Astronomical Data Center (CASDC) has been developed over 30 years and has great influence in the astronomical community. But over the years, we did not attach much importance to the standardization of data management, resulting in repetitive work and omissions. As a mandatory standard for WDS, CoreTrustSeal provides us with a comprehensive checklist for all aspects of our work in data management. By introducing the CoreTrustSeal system,*

*we realized the insufficiency of our work and made some improvements accordingly. In the future, we will continue to make improvements on data management procedures based on CoreTrustSeal and recommend other data centers to adopt this standard.*

**Prof. Chenzhou Cui**, National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China

## The Challenge

The CASDC has been meeting the data needs of the Chinese Astronomical community for decades. Over the past years, we have published and managed hundreds of Terabytes of data. Due to the limitation of manpower, we were exhausted from one project to another, without much concerning about the standardization of data center services. Although some documents were written during different projects, there was not a standardized procedure formed. This has led to some problems in our work including reinventing the wheels and omissions in task handover.

## The RDA outputs adopted

We carefully examined the CoreTrustSeal certification system, based on the DSA-WDS Core Trustworthy Data Repositories Requirements catalogue and procedures, and considered it a good evaluation system. The CoreTrustSeal Data Repositories Requirements provide guidance for all the perspectives a data center should care about, which is very helpful in improving the quality of a data center. In addition, under the circumstances that both data centers at home and abroad are paying more attention to standardization, getting a certification would help us gain peer recognition. Currently, several other data centers in China are consulting us on standardization of their data centers. Without a suitable standardization system, the CASDC will develop slowly in exploration. The CoreTrustSeal provides a comprehensive view and an excellent reference for the standardization of the CASDC. By adopting the CoreTrustSeal and localizing it to our data center, we could eliminate trail and errors and improve efficiency in the development process.

## The benefits of adopting the RDA output

For data producers, who are mainly researchers and observation equipment teams from various research institutions, the documentation of CASDC standard procedure allow them to quickly know about what materials should be provided to meet the requirements of data management and distribution. At the same time, it also facilitates the standardization of their data.

For data consumers, including professional and public users, they will also benefit from standardized procedure, by making it easier to get relevant information, knowing where to find the data they need, and finding out how to process the data.

CoreTrustSeal puts forward a number of specific requirements for long-term stable operation of a data center in many aspects, such as data security personnel stability, etc. CoreTrustSeal's requirements are very specific, especially in data management, which makes us realize that the data management in CASDC was not good enough. Further optimization and enhancements are needed according to the criteria of CoreTrustSeal.



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## The adoption process

In the course of the CoreTrustSeal evaluation, we complemented the required specifications of our data center according to the evaluation system. We have also discussed details with colleagues to optimize the

workflow. Further work has already been undertaken, for example, we are planning to use DOI to standardize data references. More standardization effort will be carried out in the future.

## Main Takeaways

We found that for each requirement in the CoreTrustSeal system, CAsDC has more or less work done for it. The problem is that a lot of things have been done, but there was no formal summary and documentations. Therefore, there is not a standard procedure formed for repetitive work, and which can be optimized gradually. From now on, we must consider promoting the standardization of procedure while carrying out specific work, and constantly summarizing and improving the procedure.

Other data centers will also benefit from the CoreTrustSeal's full range of guidance to understand how they can make improvement and better service. After getting approved by CoreTrustSeal, we are playing a leading role among data centers in China. Several peer data centers have consulted us on how to get certified and we recommend them to apply CoreTrustSeal.

## Chinese Astronomical Data Center (CAsDC)

The National Astronomical Observatories, Chinese Academy of Sciences (NAOC) is the host institute of the WDS facility, the Chinese Astronomical Data Center (CAsDC). The Center for Information and Computing at NAOC is the host division of the CAsDC, which also hosts the core R&D team of the Chinese Virtual Observatory (China-VO).

CAsDC collects data from nationwide distributed telescopes, and mirrors of several important international astronomical datasets. These data are from not only NAOC but also other observatories in China, including Purple Mountain Observatory, Shanghai Astronomical Observatory, Yunnan Astronomical Observatory and Xinjiang Astronomical Observatory. Each of these institutes has several observation sites.

At the end of 2018, the CAsDC web portal has 20,900 registered users, including about 2400 users from research and education institutes, and more than 18,000 public users. CAsDC focuses on services for professional researchers and students, and also has several public outreach projects. Most amateurs do not necessarily fully understand astronomical data, but the population is huge and they are providing important contributions to citizen science projects.



CAsDC team at National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China

**Contact person: Prof. Chenzhou Cui**, National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China

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