

These core principles apply to the functional specifications recommended for inclusion in the pre-award portion of the OHSU ERA system. There may be technological and/or resource limitations that prevent full adherence to a given principle; nevertheless, we urge that these principles be followed to the maximum extent practicable.

**Principle 1:** Data should be collected once, at its inception, without redundant data entry. The ability to access and re-use data from previous sessions should be provided, as well (within the confines of security).

**Principle 2:** Electronic data must be secure from unauthorized access and transmission.

**Principle 3:** Data integrity is essential.

**Principle 4:** System performance must be adequate for the processes and applications supported. The system should be robust and scalable in order to handle current and future research activities (e.g. sending large amounts of preliminary result data to the sponsor, inclusion of graphics in the science narrative, support of different data formats, development of proposals that include much more information than average proposals, etc.).

**Principle 5:** Training and support of all system users and administrators must be planned and budgeted for.

**Principle 6:** Interoperability with other institutional electronic data systems such as HR, IRB, SPA, etc. should be maximized.

**Principle 7:** When possible, the applicable research administrative processes should be simplified before being made electronic (it would be useful if the entire research process were documented).

**Principle 8:** The system must be platform independent and have the same functionality no matter which platform is being used.

**Principle 9:** The system must support all common types of applications, including center grants.

**Principle 10:** The system should support submissions to a variety of funding agencies and provide for submitting proposals on paper for those agencies that do not have the capability of receiving electronic submissions.

**Principle 11:** If the system is purchased from a vendor, there must be a long-term commitment on the part of the vendor to support the product. The vendor must also be evaluated in terms of the likelihood of it staying in business for the

long term. The source code for any system purchased from a vendor should be held in escrow to guard against the possibility of vendor business failure.

**Principle 12:** The system must be able to be customized easily and without great expense. Upgrades to vendor system versions should not entail a complete re-work of customizations.

**Principle 13:** The system must comply with the standards of funding agencies and have the ability to be adapted as standards change.