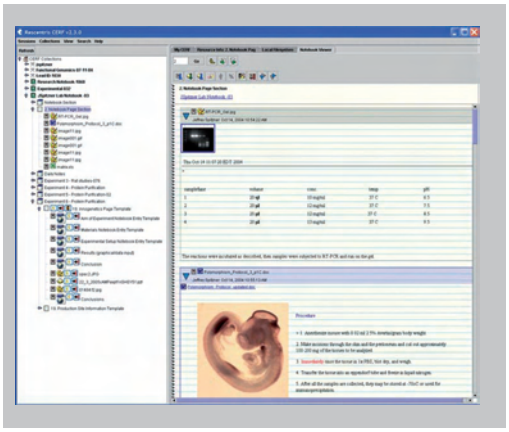
SigmaCERF - The Electronic Lab Notebook for Biology and Multidisciplinary Life Sciences

The Collaborative Electronic Research Framework™ is a unique ELN solution designed specifically for scientists and R&D organizations

SigmaCERF-Notebook™
Provides a simple yet powerful interface for recording your research and accessing shared resources. Projects, documents, data, and notebooks are managed centrally on your secure SigmaCERF Server but can be created and utilized from anywhere that the user has an Internet connection. SigmaCERF-Notebook lets users organize their thoughts, ideas, and data into the real research story - much as a paper notebook does, but with the benefits of sharing, searching, digital signatures, templates, and more!



SigmaCERF is an extensible and scalable solution that meets needs and improves research performance in many organizations:

- **Pharmaceutical companies and departments**
  SigmaCERF is the Notebook and daily research environment (knowledge desktop) for your life scientists and integrates into your enterprise information infrastructure.

- **Biotechnology and service companies**
  The SigmaCERF ELN and scientific content management solution may serve all of your needs out of the box, and CERF is readily tailored to support the scientists' activities and information workflows.

- **Government labs**
  SigmaCERF provides the secure record-keeping and research collaboration platform needed for an internal department or for research projects distributed across multiple sites and diverse scientific units.

- **Academic departments and laboratories**
  Our cross-platform SigmaCERF product may be the turnkey solution for your university lab, department, or core facility. SigmaCERF provides record-keeping (notebook) as well as shared information management and project organization in an adaptable, low-maintenance system designed for diverse users and workgroups.

SigmaCERF provides the features you need in an ELN solution – and addresses the requirements of all your stakeholders.

Key features of SigmaCERF include:

- Works the way your scientists work
- Compliant with 21 CFR Part 11: Audit trails, time/date stamps, security, access controls, user authentication, document versioning, digital signatures, PDF reports
- Captures annotations, scientific interpretation: record the trail of discovery
- Offers search capabilities based on full-text content, rich metadata, controlled vocabularies
- Increases accuracy, efficiency, and user compliance with templates and forms for protocols and data capture
- Built on ontologies – easy to customize scientific data models, templates, business policies
- Guides planning and decision making for the organization
- Designed for usability: graphical interface, highly interactive
- Promotes organization and sharing of projects, experiments, notebooks, reports

SigmaCERF delivers benefits to stakeholders across the R&D organization

The Value Proposition:*SigmaCERF can increase your productivity and pay for itself in less than one year - contact us to see how!*

The Collaborative Electronic Research Framework is a unique solution designed to provide a unified electronic record-keeping environment for the scientist and the organization.

SigmaCERF offers scientists an organized user-centric 'Labtop™' environment to do their daily work, which may include creating, viewing, analyzing, and annotating research records. It offers records managers signed records in printable and human-readable, long-term storage formats that capture the data and document the complete evidence trail. SigmaCERF protects novel intellectual property (IP), is readily configured for regulatory policies (such as 21 CFR Part 11), and can help managers identify IP and business opportunities faster. SigmaCERF enables organizations to create and follow secure business policies for sharing research information and reports, whether external R&D collaborations or cross-department teamwork. The system enables leverage of expertise and knowledge across the enterprise to improve management of projects as well as R&D portfolios. SigmaCERF delivers better tracking and oversight of research while improving team interactions and communication.

Scientists:

- Reduces time spent managing information, recording research, and searching for things (from today's 35 - 60%)
- Increases productivity, information access, and sharing
- Manages SOPs and organizes projects and data
- Allows more time for interpretation, analysis, and innovation

Legal/Regulatory:

- Improves regulatory compliance (21 CFR 11)
- Promotes faster regulatory submissions
- Decreases risks
- Captures/protects Intellectual Property

Business/R&D management:

- Improves R&D productivity, quality, and decision-making (decrease risks and reach project endpoints sooner)
- Increases valuation and enables better ROI in R&D
- Improves portfolio and project management and overall R&D performance Accelerates speed to market
-

IT Services/Informatics:

- Installs and updates from the web
- Decreases Total Cost of Ownership to support R&D IT needs
- Performs across platforms; has manageable and extensible open systems built on data standards, ontologies, and semantic web technologies
- Integrates with and leverages existing systems and data

What is SigmaCERF?

Collaborative Electronic Research Framework™ (SigmaCERF) is a secure, 21 CFR Part 11-compliant enterprise scientific informationsystem designed specifically for managing and sharing information in life sciences research organizations. SigmaCERF combines a full-featured electronic lab notebook(ELN) with scientific content management, an extensible knowledge and dataintegration framework, and a science-driven informatics platform. Its intuitive cross-platform desktop interface allows scientists to organize and unify access to personal and shared content (e.g., documents, spreadsheets, scientific data, reports), applications, and databases. The SigmaCERF server provides central management of data storage, system functions (i.e., security, business policies, user and system administration, workflow), projects, organization of experiments, content, annotations, and rich metadata. The mission is to provide IT to improve the ROI of R&D™ with software that improves the efficiency of the scientists, captures the research records, and future-proofs your information assets.

SigmaCERF was designed to address key problems faced by life sciences organizations and improve R&D performance by:

- Improving productivity and communications in your collaborative research projects
- Capturing and protecting your intellectual capital – actively - and in compliance with 21 CFR 11, USPTO, GLP, etc.
- Improving decision making and management of research programs
- Collecting, sharing, and searching your laboratory and informatics records in a real-time environment

SigmaCERF is the best solution for biology and multidisciplinary life sciences R&D organizations to meet their needs for scientific content management and electronic lab notebooks.

SigmaCERF provides the features you need in an ELN solution
SigmaCERF does more than simply replace your paper lab notebooks with a digital solution. SigmaCERF is a highly usable and useful product that offers the features you need to improve research performance throughout your organization - contact us to see how!

Advantages of the SigmaCERF-Notebook solution

- Designed for life scientists and the diversity of Biology
- Combines full-function ELN with scientific content management solution, collaboration, project organization
- Built on standards and ontologies to enable extensibility and rich content. 'The semantic ELN™'
- Cross-platform - same experience on Windows/Linux/Mac
- The Knowledge Worker's desktop: SigmaCERF unifies personal and team activities and content. SigmaCERF is designed to be user-centric rather than data-centric
- Offers adaptable and customizable add-on components: The SigmaCERF Development Kit includes the Ontology Manager suite for the creation of forms, templates, workflows, scientific data & metadata models, controlled vocabularies, and database integration

SigmaCERF features include:

Collaboration in a Secure Environment
SigmaCERF projects and notebooks are available for access and real-time data sharing with any number of users - so long as they supply suitable digital credentials to be authorized. SigmaCERF offers easy use through intuitive user interfaces that hide the sophistication of a robust and extremely secure system designed to meet the requirements and challenges of today's life sciences research organizations. Views and action menus are automatically filtered to reflect the rich sets of role based access privileges associated with membership in SigmaCERF workgroups - so that users have transparent access to everything that they can see and do (and never have access to restricted content or activities).

Version Control
SigmaCERF offers a full document control system that makes it easy to track information while meeting the requirements of 21 CFR 11. Content in SigmaCERF can be placed under version control to avoid overwriting changes when collaborating on documents. All versions are tracked and retained, each with its own metadata, and users can browse and open previous versions on demand. The version history includes a record of contributors, updates, identifiers, and resource information. Strong access controls give users the flexibility to change their personal protocols and templates without inadvertently changing lab SOPs.

Metadata
SigmaCERF automatically extracts basic metadata from each document when it is registered in the SigmaCERF database. Metadata are useful in constructing audit trails and include contributor, creation date, resource type, and last update. Users can use forms to add more metadata such as author, comments, or definitions, and they can select from the Dublin Core metadata set, custom scientific data models, and customizable controlled vocabularies for a more powerful means of annotating (and searching) for resources. SigmaCERF supports batch additions of content and metadata, as well as configurable automated data processing of diverse object types.

Ontologies
Actions in SigmaCERF are defined by OWL ontologies that control what a user can do with a given type of resource. For example, if a user adds a jpeg image file to the system, SigmaCERF knows that the user can manipulate the resource using a graphics viewer. If the user specifies that the jpeg is a Biomedical Image, SigmaCERF may give the user a completely different set of functions than are available for standard images - the metadata form will contain controlled vocabularies that are specific to biomedical images, and the image may be opened with specific rather than generic image viewers (e.g., gel analysis software). Custom ontologies can be created for practically any user, resource, situation, and workflow, and may include automation and data processing scripts.

Forms and Templates
Much of research involves recording data, and this task may involve many people across your organization. Templates provide a means for standardizing procedures and increasing the accuracy and efficiency of data input. As with all resources in SigmaCERF, templates have associated metadata that provide a complete audit history and added search capability. Templates and forms are easily customized - either by us, or by your SigmaCERF administrator or power users - to suit your requirements.

Controlled Vocabularies
Instead of having to enter annotations by typing in a string of words, SigmaCERF offers controlled vocabularies that allow the user to choose appropriate metadata categories and keywords from pre-defined lists (flat or hierarchical). These controlled vocabularies are configurable and customizable, so that you can have different sets associated with different types of resources. Now everyone in your organization will spell correctly and be able to find relevant content.

Digital Signatures
Any document, dataset, or Notebook page in SigmaCERF can be digitally signed by the resource contributor and one or more cosigners (according to your designated workflows). This allows for authentication and verification of a document's origin and contents, and it includes a time/date stamp and signer comments. SigmaCERF-Notebook™ generates unique encryption keypairs for each user and even allows you to attach a scanned image of your handwritten signature to the signed documents. Notebook pages allow a configurable signature workflow in which cosigners with specific signing roles must sign the resource in a defined order - all managed behind the scenes by SigmaCERF.

Microsoft Office Integration
SigmaCERF comes with an optional Microsoft Office® Integration package, which makes it even easier to save Microsoft Office documents to your SigmaCERF-Notebook. After running the installation, you will see a new "Export to Local SigmaCERF" button in your Microsoft Office applications. The Microsoft Office Integration package comes with a "Select 'n Search" option that allows you to search a number of databases by highlighting text as the search term(s) and then save the results of your search to SigmaCERF.

Optional integration with Amphora PatentSafe™
The SigmaCERF-Notebook™ has been integrated with the Amphora PatentSafe™ system - now you can have the best of both worlds! Instant access to the secure electronic records in their original format, in the ELN, and secure printouts of your records on the Amphora Patent-Pad security paper.

Browse SigmaCERF to review and reuse previous work (filtered by access controls)
- Projects, Experiments, Notebooks, files
- Background information, database references

Search SigmaCERF to find the information you need (content and context)
- Titles, authors, metadata
- Full-text search
- Locate experts and expertise
- Using terms from hierarchical controlled vocabularies

Manage web and database content
- Rescentris Microsoft® Office/IE integration
- Save web pages
- SigmaCERF integration with data sources (applications, web services, SQL/XML data base systems)
- Public and 3rd-party data access/management

Store any kind of data and simplify data entry
- Work with data from all your favorite applications (general, scientific)
- Use custom data entry forms that match specified research content types and support consistent annotation, including controlled scientific vocabularies, and required/optional form fields

Increase the quality and consistency of research
- Use Notebook templates to create experiment structure and contents, including all the forms and files to fill in during the course of the project.
- Capture the raw and processed data for reuse and re-analysis by the scientists, and create and manage human-readable notebook views and printable PDF renditions of data (in the context of the complete record and evidence trail) to support regulatory compliance