EIAL-NJ (Florham Park)
"CMM 2+ in 2001" Project

EIAL Implementation Plan for the Software Configuration Management (SCM) Key Process Area (KPA)

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Preface

Purpose: To present the EIAL lab plan for addressing, in 2001, the *Key Process Area* (KPA) *for Software Configuration Management*, one of the 6 or 7 KPA's that need to be addressed as part of the CHO effort to achieve CMM level 2+ by the end of 2001.

Audience: EIAL CMM team;
other CHO labs' CMM teams, as appropriate.

Terminology: CMM uses a lot of terminology, and I think we may need to identify a few terms of our own. §2.3, CMM Terminology and EIAL, will cover this.

Core Reference Documents:

- **[TR24]** *Capability Maturity Model for Software, Version 1.1*, Technical Report CMU/SEI-93-TR-024, Feb 1993.
  The first of the two defining documents for CMM.
- **[TR25]** *Key Practices of the Capability Maturity Model, Version 1.1*, Technical Report CMU/SEI-93-TR-025, Feb 1993.
  The second of the two defining documents for CMM.
- **[Dymond95]** *A Guide to the CMM: Understanding the Capability Maturity Model for Software*, Kenneth M. Dymond, Process Transition International, 1995.
  A very useful guide to interpreting the 2 CMM TR's; I wrote §1 of this Plan to try to summarize what I had read in **[TR25]** and **[TR25]**, but this book's 16-pp. Chapter 1 does it better.

Related documents:
TBD

Notation: We use the 2-character/1-digit notation of **[Dymond95]** to identify the key practices of the SCM KPA: e.g., Co.1, Ab.2, Ac.7, Ve.1, etc.

Status: This version 1.3 of April 3 contains some rework from version 1.2 of March 19. This version is being used as the basis for the discussion planned for the April 10th meeting of the CHO SCM KPA team via conference call, a discussion that will try to identify work that could be done at the CHO level instead of the EIAL (or lab) level.

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1. Introduction

The *Capability Maturity Model* (CMM) of the *Software Engineering Institute* (SEI) defines 5 levels of software process maturity, from 1 to 5. Each level (except 1) contains several *Key Process Areas* (KPA), which describe the process areas that must be addressed for an organization to reach that level. Level 2, the *Repeatable Level*, includes the *Software Configuration Management* (SCM) KPA. The **[TR24]** document gives, in Chapter 3, an operational definition of *Software Configuration Management*:

> The purpose of Software Configuration Management is to establish and maintain the integrity of *the **products** of the software project throughout the project's software life cycle*. Software Configuration Management is an integral part of most software engineering and management processes. [*emphasis added*]

Note that the reference to the ***products*** of a software project: configuration management applies to both software source code and the interim products of the software process—usually documents in one form or another. In Chapter 4, "Interpreting the CMM," §4.3.3 of **[TR25]**, further clarification is made between *software products* (which are delivered to customers) and *software work products* (which are the internal work products used to create the software products); both are subject to control and configuration management.

It is valuable to note some relevant qualifying remarks in both **[TR24]** and **[TR25]**. In §2.2 of **[TR24]**, "Understanding the Maturity Levels," it states:

> The CMM is a descriptive model in the sense that it describes essential (or key) attributes that would be expected to characterize an organization at a particular maturity level. It is a normative model in the sense that the detailed practices characterize the normal types of behavior that would be expected in an organization.... The intent is that the CMM is at a sufficient level of abstraction that it does not unduly constrain how the software process is implemented by an organization; it simply describes what the essential attributes of a software process would normally be expected to be. In any context in which the CMM is applied, a reasonable interpretation of the practices should be used.... The CMM is not prescriptive; it does not tell an organization how to improve.

In §4.3.6 of **[TR25]**, "Technology and the CMM," it states:

> The key practices neither require nor preclude specific software technologies, such as prototyping, object oriented design, or reusing requirements, design, code, or other elements.

And in §4.3.7, "Documentation and the CMM," it states:

> The key practices describe a number of process-related documents, each one covering specific areas of content. The key practices do not require a one-to-one relationship between the documents named in the key practices and the actual work products of an organization or project.... The key practices require only that the applicable contents of these documents be part of the organization's or project's written work products.
>
> In terms of document structure, the contents of a document referred to in the key practices could be part of a larger document.... Alternatively, the contents of a document referred to in the key practices could be distributed over a set of documents that differ from the set named in the key practices.

This means that as long as we achieve the goals required by the KPA, exactly how we do them, and the number and kind of documents we produce, is not mandated by CMM. For example, some key information during HP-UX release projects is exchanged via e-mail, and this will continue; but there are probably some key pieces of such information that should be moved from e-mail to a small set of documents for each project to meet the goals and spirit of the CMM and to ensure repeatability from release to release.

This plan presents the activities, work products, and process changes that I believe EIAL (and CHO) should and can do to satisfy the goals of the SCM KPA.

1.1 "Software" in CMM Includes Code *and* Documents

In case it was not clear from the material in the beginning part of this section—it is important to recognize the word *software* in the term *software configuration management*, in the realm of the CMM, includes the **documents** that are the *software work products* involved in producing the code that we tend to think of as "software." This is important to understanding the structure of this *SCM KPA Plan* for EIAL.

As you are well aware, we are obviously in good shape with respect to the configuration management of our source code because of our established use of ClearCase and **jazz**. There are some areas of this part of SCM that we do need to address—mostly in documenting the SCM plans for each project—and these tasks are identified in this plan. However, where EIAL (and CHO) is deficient is in the control of some of the interim work products—the documents—of our software projects. I believe this is where we must spend the bulk of our CMM SCM effort in 2001.

In §2.3 of **[TR24]**, "Visibility into the Software Process," the authors give a useful perspective on how the visibility of a software project's process—the level of information that managers and engineers not directly involved with the detailed work of the project can get about the project and the process—improves as the maturity level of an organization increases:

> At Level 2, the customer requirements and work products are controlled, and basic project management practices have been established. These management controls allow visibility into the project on defined occasions. The process of building the software can be viewed as a succession of black boxes that allows management visibility at transition points as activity flows between boxes (project milestones). Even though management may not know the details of what is happening in the box, the products of the process and checkpoints for confirming that the process is working are identified and known.

Much of this visibility can be provided by the configuration management of documents. Configuration management of documents is typically provided by a *document management system* (DMS), which is a term we will use in the rest of this plan.

The term *software configuration management* as used in the CMM covers both the control and configuration management of source code and the control and configuration management of documents. However, most developers do not think of documents when they use the word "software." Because of this, I think that terminology will help or hinder us in this CMM effort. To help our organization start to understand that they both are important and required to achieve CMM Level 2, I will attempt to use throughout this plan the 2 separate terms

- *SCM for code*
- *SCM for documents*

to distinguish between the two separate aspects of the SCM KPA. When using just the term SCM, I will try to have it mean SCM for both code and documents. However, sometimes, the term document management will be used in lieu of SCM for documents (though I think this is confusing, the former term is easier to say).

1.2 CHO-wide CMM

This plan is being written for the EIAL lab, but the 2001 CMM 2+ effort is a being done at the level above, in the Core HP-UX operation (CHO), which includes 5 other labs. At the time of this draft (March, 2001), it was unclear how much the labs were going to work together for this KPA, but it should be done, to reduce duplication of effort and to address those areas that should be standard across all labs working on HP-UX. With such cooperation, it is possible this document will be superceded by a CHO-wide Plan, or will largely just reference it. The initial areas where cooperation seemed likely are two:

- the use of a common DMS (Odin/DocuShare) across most or all CHO labs
- SITL has stepped up to own some significant part of the SCM KPA process for the source code aspect, for all of CHO, since the UXSCM Program (ClearCase and **jazz**) are done in a section in SITL. This is reflected in the "Scope" column in the tables I give in §4 and §5 of this *Plan*.

1.3 CMM Terminology and EIAL

The need for this section is TBD.

There are numerous terms used in the CMM that I use in this Plan. Some of you may know them already and do not need any help. For others, I will just list the terms here for now; as the meanings can be reasonably well understood from the use of the terms in this Plan (the terms are often *italicized*) or from the core reference documents mentioned in the Preface.

- *maturity level*
- *key process area*
- *goal*
- *common idea*
- *key practice*
- *sub-practice (subordinate key practice)*
- *software product*
- *software work product*
- *policy*
- *procedure*
- *document*
- *template*

Also, note that the term *project* is used in CMM materials and in this document, in its generic sense, whereas in HP the term *project* is often used to describe a group of people in an organizational hierarchy, groups that usually have a *project manager* (just a "boss" to some people!). I believe that in CHO the work we do around a *release* of HP-UX is a *project* in the CMM sense and I will use it that way in this Plan.

2. Issues

Since the CMM Team is still learning a lot about how we will be doing this and how we will be cooperating with other labs in CHO, the issues around this plan need to be up front.

2.1 Open Issues

This list of open issues is just off the top of my head. There must be more.

A. EIAL has two partner companies closely working with its engineers on HP-UX development (NEC and Hitachi) with full ClearCase access in server rings run behind corporate firewalls. If and how these partner engineers have access to a DMS must be considered. The initial impression is that because DocuShare implements access to all documents via a non-changing URL, and EIAL already supports partner company access to a defined list of internal HP web pages, we will be able to easily add access to a defined list of documents trough the URL mechanism.

B. The HP-UX development culture does not appear to me to have done much (if any) configuration management of documents. Given that, the terminology we use in this SCM KPA effort and in the documents and templates produced for it will have an effect on changing the culture towards a more mature one in the CMM framework. Given that, how should the terms *software configuration management* and *document management* be used in our "CMM 2+ in 2000" effort? How do we get people to understand that SCM includes documents as well as code? Should we always use separate terms? Separate documents? Although I have decided to use the separate terms *SCM for code* and *SCM for documents* in this Plan, I think the issue could use a little more consideration.

C. What constitutes a *document*? When is a web page a document and when isn't it? Can we accept just a web page (where the *authoring format* of the information is HTML) as a *document* as used by the CMM? If so, can that web page be a document if it is not in the DMS? What role do lab and project web sites have in CMM?

   These questions may sound picayune but concern the *visibility* of software work products discussed in the CMM—so they could be important questions to decide.

D. Version control of documents is tool-dependent and may need *policy* or *procedures* steps to make effective.

2.2 Closed Issues

A. mid-February budget cuts that affect the purchase of user licenses for Odin, the SITL DocuShare® database that EIAL considers a good candidate for our *document management system* (DMS)

   SOLVED: RSN has obtained 500 DocuShare licenses.

3. Using the SCM KPA to Improve Our Process

So what does EIAL have to do to implement the CMM SCM KPA? We need to meet the goals of the SCM KPA. There are four goals for his KPA, stated in Appendix A.2 of **[TR24]:**

1. Software configuration management activities are planned.
2. Selected software work products are identified, controlled, and available.
3. Changes to identified software work products are controlled.
4. Affected groups and individuals are informed of the status and content of software baselines.

And how do we reach these goals? We use the *key practices* of the SCM KPA. As the summary of CMM structure given in §2.3 of **[TR25]** states:

> The CMM is composed of five maturity levels. With the exception of Level 1, each maturity level is composed of several *key process areas*. Each key process area is organized into five sections called *common features*. The common features specify the *key practices* that, when collectively addressed, accomplish the *goals* of the key process area.

Since the *software work products* of a software project include the intermediate work products—documents—produced during the software project lifecycle, we must reach the goals for this KPA using the *key practices* in two separate but related domains: HP-UX source code and documents. Thus, this Plan will address both the SCM of Source Code KPA work and the SCM of Documents KPA work. The primary tool for achieving the former, ClearCase/**jazz**, is already in place. The primary tool for doing the latter, a *document management system* (DMS), must be adopted (and adapted to our needs); EIAL has chosen to use Odin, the implementation of DocuShare setup in the Richardson lab SITL.

3.1 CMM KPA "Common Features"

Each KPA consists of a number of *key practices*, which are organized into five *common features*:

- Commitment to Perform abbreviation: Co
- Ability to Perform abbreviation: Ab
- Activities Performed abbreviation: Ac
- Measurement and Analysis abbreviation: Me
- Verifying Implementation abbreviation: Ve

These *common features* are the same across all KPA's although the *key practices* are different from KPA to KPA. The middle one, Activities Performed, is where the majority of the key practices that require work (as opposed to managerial commitment) are defined. This will become clear in the tables in the next section.

3.2 SCM KPA "Key Practices"

Appendix C of **[TR25]** summarizes **t**he top-level key practices for the Activities Performed Common Feature for Software Configuration Management:

Ac.1 A SCM plan is prepared for each software project according to a documented procedure.
Ac.2 A documented and approved SCM plan is used as the basis for performing the SCM activities.
Ac.3 A configuration management library system is established as a repository for the software baselines.
Ac.4 The software work products to be placed under configuration management are identified.
Ac.5 Change requests and problem reports for all configuration items/units are initiated, recorded, reviewed, approved, and tracked according to a documented procedure.
Ac.6 Changes to baselines are controlled according to a documented procedure.
Ac.7 Products from the software baseline library are created and their release is controlled according to a documented procedure.
Ac.8 The status of configuration items/units is recorded according to a documented procedure.
Ac.9 Standard reports documenting the SCM activities and the contents of the software baseline are developed and made available to affected groups and individuals.
Ac.10 Software baseline audits are conducted according to a documented procedure.

There, are, of course, key practices in the 4 other Common Features for this KPA, and these will be highlighted in later sections of this document.

4. Current EIAL Processes and the SCM KPA

In order to have an implementation plan for the SCM KPA, I believe that we must look at where EIAL's current processes fall with respect to the key practices, identify the gaps where we are not conforming to those practices, and then identify the work needed to improve EIAL processes to the point where all the key practices of the SCM KPA are being done. This is what is needed to achieve the goals of the SCM KPA, as part of our reaching CMM maturity level 2.

The work this Plan will identify from the analysis of the gap between current EIAL processes and the SCM key practices will consist primarily of:

- processes that need to be defined
- documents that need to be written

Since I have already broken down this KPA into two working components—the SCM of Source Code KPA work and the SCM of Documents KPA—this analysis and identification of needed work will be broken down the same way, in the following 2 sub-sections of §4. Each sub-section will use a table with:

- key practices in the rows
- my assessment of EIAL status and the work needed in the columns

NOTE: Each *key practice* consists of a number of more specific and detailed *sub-practices*, or *subordinate key practices*, that (according to §3 of **[TR25]**) describe "what one would expect to find implemented for the top-level key practice." For the most part, these subordinate practices will not be identified or referenced in this Plan, though they are being used to assess the status of EIAL processes.

Documents on EIAL Web Site

Many documents already exist on internal HP web sites. The EIAL web site has 120,000 files in its tree: there are 2,750 Word, Excel, PowerPoint, or Acrobat documents and nearly 23,000 HTML files. But could you find many of the non-HTML files? Not easily! They are only easily accessible if you happen to browse to the right sub-tree of the overall site.

The fact that web sites have become the place where most people "put" documents reflects, I believe, the fact that the web solution (did anyone define the problem well?) was an improvement over the previous situation, where documents were scattered much more among personal home directories and sometimes organized, common file systems. However, even with web sites, it is still much too hard to find documents, or reuse documents, and getting EIAL to the point where there are 2,750 documents in the DMS with just pointers to them from the web site is part of the long-term effort needed on our road to a higher CMM maturity level. And there are numerous issues to resolve in this area, such as "What is the role of internal web sites with the DMS in place?" (I believe that web sites will come to contain more "glue" and less actual content.)

E-mail vs. Documents

As mentioned earlier, I think that some of what the CMM would expect to be in "documents" gets sent to various sets of people within CHO as e-mail. Some of this kind of e-mail is very long and very detailed, and goes through various revisions. I believe that achieving the overall goals of the CMM and of this KPA (e.g., with respect to *visibility* of the processes used to develop the software) would be done more easily if the right subset of this kind of e-mail is identified as material to be put in one or more documents that are made available to people through the DMS, such that they can retrieve the information easily and at any time. Such documents would also provide a better long-term legacy for a project, allowing subsequent software projects to learn from the earlier projects' work, and to re-use it.

Thus, in this Plan I have identified several documents that could be used to capture some of this information that is currently sent as e-mail. There may be more such information that needs to be captured into documents, and others' knowledge of HP-UX development processes will be helpful in developing the *templates* needed for some of these process documents.

4.1 SCM for Source Code

In the tables in this section and in §4.2, the italicized wording for each *key practice* comes directly from the CMM document, **[TR25]**.

Common Feature & *Key Practice*	Assessment of Current EIAL Process	Scope of Activity	Needed Work
Commitment to perform [Co.*n*]			
1. *The project follows a written organizational policy for implementing software configuration management (SCM).*	I do not think this exists.	EIAL & CHO	Need a written policy at lab or CHO level. Could perhaps be part of a single management policy document for CMM.
Ability to perform [Ab.*n*]			
1. *A board having the authority for managing the project's software baselines (i.e., a software configuration control board, or SCCB) exists or is established*	If a project is a release of HP-UX, then this exists for some projects. I do not know how they are named.	CHO	Making sure this board exists for each project must be part of the documented SCM process.
2. *A group that is responsible for coordinating and implementing SCM for the project (i.e., the SCM group) exists.*	Yes: EIAL SCM team and UXSCM Program.	EIAL & CHO	none
3. *Adequate resources and funding are provided for performing the SCM activities.*	Yes.	EIAL & CHO	none
4. *Members of the SCM group are trained in the objectives, procedures, and methods for performing their SCM activities.*	Yes, though perhaps some improvement could be made.	EIAL & CHO	none
5. *Members of the software engineering group and other software-related groups are trained to perform their SCM activities.*	Yes, the developers on the project are trained in **jazz**.	EIAL & CHO	none
Activities Performed [Ac.*n*]			
1. *An SCM plan is prepared for each software project according to a documented procedure.*	I do not think this is currently done. Some of he information seems to be sent in e-mail.	CHO (DCIA team?)	The procedure needs to be developed, with a corresponding template.
2. *A documented and approved SCM plan is used as the basis for performing the SCM activities.*	I don't think this is done explicitly, no.	CHO	Needs to be part of the SCM procedures.
3. *A configuration management library system is established as a repository for the software baselines.*	Yes: ClearCase and **jazz** are used.	CHO & EIAL	none
4. *The software work products to be placed under configuration management are identified.*	I don't think this is done explicitly, no.	CHO & EIAL	Part of each project's *SCM Plan*.
5. *Change requests and problem reports for all configuration items/units are initiated, recorded, reviewed, approved, and tracked according to a documented procedure.*	I think CHART is used for this, but if it is documented, I don't know where.	CHO	Identify or write the document; should be part of SCM procedures doc.
6. *Changes to baselines are controlled according to a documented procedure.*	Perhaps this is in UXSCM e-mail or release-specific web site?	CHO	Identify or write the document; should be part of SCM procedures doc.
7. *Products from the software baseline library are created and their release is controlled according to a documented procedure.*	If it is documented, I don't know where.	CHO	Identify or write the document; should be part of SCM procedures doc.
8. *The status of configuration items/units is recorded according to a documented procedure.*	Is this anything more than what we get from ClearCase capabilities (comments, reporting commands?)	CHO	Add procedural info to SCM procedures doc.
9. *Standard reports documenting the SCM activities and the contents of the software baseline are developed and made available to affected groups and individuals.*	Don't know. Someone said that Arun's "churn reports" might be an example of this.	CHO	Identify whether any reports should be done as a document, add to procedures doc, and do the template?
10. *Software baseline audits are conducted according to a documented procedure.*	What exactly does this mean? I doubt it is done. Some info is discussed in e-mail. Seems to be a post-release assessment.	CHO	Formalize the process and develop template?

Common Feature & *Key Practice*	**Assessment of Current EIAL Process**	**Scope of Activity**	**Needed Work**
Measurement and Analysis [Me.*n*]			
1. Measurements are made and used to determine the status of the SCM activities.	I do not think this is currently done.	CHO	Establish metrics and process, and do template?
Verifying Implementation [Ve.*n*]			
1. The SCM activities are reviewed with senior management on a periodic basis.	I do not know if this is currently done.	CHO	Make part of procedure template?
2. The SCM activities are reviewed with the project manager on both a periodic and event-driven basis.	I assume that this is currently done.	EIAL & CHO	Document as part of plan or template?
3. The SCM group periodically audits software baselines to verify that they conform to the documentation that defines them.	I do not think this is currently done. (And what does it mean, really?)	EIAL & CHO	Establish process?
4. The software quality assurance group reviews and/or audits the activities and work products for SCM and reports the results.	I do not think this is currently done.	CHO SQA	Establish process? Work with CMM SQA KPA team to define this?

4.2 SCM for Documents

To emphasize the fact that this table of key practices is being used to assess the state of current EIAL process with respect to the configuration management of documents, I have added the emphasized words "*[for documents]*" to each activity in the left column of this table.

Common Feature & *Key Practice*	**Assessment of Current EIAL Process**	**Scope**	**Needed Work Items**
Commitment to perform [Co.*n*]			
1. The project follows a written organizational policy for implementing software configuration management (SCM) *[for documents]*.	This is not done.	EIAL	Policy document on document management of *software work products*. Needs particular commitment, I believe.
Ability to perform [Ab.*n*]			
1. A board having the authority for managing the project's software baselines (i.e., a software configuration control board, or SCCB) exists or is established *[for documents]*.	This is not done.	EIAL	How do we want to handle this? A group? At least must be documented.
2. A group that is responsible for coordinating and implementing SCM for the project (i.e., the SCM group) exists *[for documents]*.	This is not done.	EIAL (CHO?)	Figure out how the SCM for documents will be done and who does it. Should probably tie in with the Project Planning KPA.
3. Adequate resources and funding are provided for performing the SCM *[for documents]* activities.	CHO is committed to CMM 2+ in 2001, so I assume this is so…	EIAL (CHO?)	Nothing for now.
4. Members of the SCM group are trained in the objectives, procedures, and methods for performing their SCM *[for documents]* activities.	This is not done.	CHO	Lab DMS reps, and perhaps Project Planners, need to master Odin and get needed training.
5. Members of the software engineering group and other software-related groups are trained to perform their SCM *[for documents]* activities.	This is not done.	EIAL & CHO	Provide training to local developers. Assume base materials will come from Odin group.
Activities Performed [Ac.*n*]			
1. An SCM plan *[for documents]* is prepared for each software project according to a documented procedure.	This is not done.	EIAL	Define a process for writing such a plan, and write a template for it. Work with the Project Planning KPA engineer.
2. A documented and approved SCM plan *[for documents]* is used as the basis for performing the SCM activities.	This is not done.	EIAL	Make the *SCM Plan for Documents* a baselined document.
3. A configuration management library system *[for documents]* is established as a repository for the software baselines.	Odin is being investigated now as a possible DMS.	CHO and EIAL	Tasks to make Odin usable for document management for EIAL.
4. The software work products to be placed under configuration management *[for documents]* are identified.	This is not done.		This would be done in each project's *SCM Plan for Documents* (which might also be called the project's *Document Management Plan* or *Project Document Roadmap*.
5. Change requests and problem reports for all configuration items/units *[for documents]* are initiated, recorded, reviewed, approved, and tracked according to a documented procedure.	CHART might be used for some documents now.		A process for the SCM of project documents must be defined and documented.
6. Changes to baselines *[for documents]* are controlled according to a documented procedure.	This is not done.		*(same process as for Ac.5)*
7. Products from the software baseline library *[for documents]* are created and their release is controlled according to a documented procedure.	NA—internal project documents (*software work products*) are not made into customer products. I do not think this key practice applies.		NA

Common Feature & *Key Practice*	**Assessment of Current EIAL Process**	**Scope**	**Needed Work Items**
8. The status of configuration items/units *[for documents]* is recorded according to a documented procedure.	This is not done.		*(same process as for Ac.5)*
9. Standard reports documenting the SCM activities and the contents of the software baseline *[for documents]* are developed and made available to affected groups and individuals.	This is not done.		*(same process as for Ac.5)* and a template for the reports
10. Software baseline *[for documents]* audits are conducted according to a documented procedure.	This is not done.		*??? …(same process as for Ac.5)*
Measurement and Analysis [Me.*n*]			
1. Measurements are made and used to determine the status of the SCM activities *[for documents]*.	This is not done.		Make this part of the defined process.
Verifying Implementation [Ve.*n*]			
1. The SCM activities *[for documents]* are reviewed with senior management on a periodic basis.	This is not done.		Make this part of the defined process.
2. The SCM activities *[for documents]* are reviewed with the project manager on both a periodic and event-driven basis.	This is not done.		Make this part of the defined process.
3. The SCM group periodically audits software baselines *[for documents]* to verify that they conform to the documentation that defines them.	This is not done.		Make this part of the defined process.
4. The software quality assurance group reviews and/or audits the activities and work products for SCM *[for documents]* and reports the results.	This is not done.		Make this part of the defined process.

5. Deliverables and Tasks for the EIAL SCM KPA

This section summarizes

- the processes and procedures (written as documents)
- the document templates
- the other documents

that have to be defined and produced to implement the SCM KPA. It is based on the assessment presented in tables in §4 of this document. In a later version, once ownership/scope issues have been resolved, it will include dates for the drafts and initial working versions of these documents. The section also describes other tasks that must be done to implement this *Plan*.

5.1 Policy Documents to be Developed

Other documents identified in §4.1 and §4.2 include:

#	CMM Key Practice	Working Title	Sub-KPA	Scope	Owner
1	Co.1	*CHO Policies for Software Configuration Management*	*code*	CHO	Varnau?
2	Co.1	*EIAL Policies for Document Management-*	*documents*	EIAL	Gill

The first document above, from the Co.1 (*Commitment to Perform*) key practice—a policy document—could be vital to launching the CMM practices within EIAL (and helping to keep them going), especially for the KPA for documents. Given the importance of the document management system to the CMM effort, I think that we should consider making the first official communication in e-mail to all EIAL lab members about the CMM effort come from our Lab director. This should be a very brief message with a URL pointing to the policy document, *EIAL Policies Document Management*, within Odin. This would communicate two things to lab members immediately:

- the CMM work is a written policy of the Lab, from the highest level
- the DMS is the mechanism we use to do CMM of documents

As **[Dymond95]** states on p. 1-12: "A Commitment to Perform practice is usually an organization policy signed by top management. Ability to perform practices ensure that resources—usually money and time—are available to carry out the other practices and that enabling conditions, like training, have been satisfied."

5.2 Processes and Procedures to be Defined and Documented

The bulk of the processes and procedures that need to be defined to effect the key practices in the SCM KPA for code, as reflected in the "Needed Work Items" column of the table in §4.1, can probably be incorporated into a single document for CHO; since this document will be based on existing practice around ClearCase and **jazz** and the integration and baselines process now driven out of Cupertino. I believe that Cupertino will own that document. Since the document management procedures needed are new to all of us, addressing this at the lab level for the time being may make the most sense. However, over time, the procedures for document management should probably be at the CHO level because of the common purpose of our work.

#	CMM Key Practice	Working Title	Sub-KPA	Scope	Owner
3	Ac.1 thru Ac.10; Me.1; Ve.1 thru Ve.4	*CHO Procedures for SCM of a Release of HP-UX*	*code*	CHO	Varnau?
4	Ac.1 thru Ac.10; Me.1; Ve.1 thru Ve.4	*EIAL Procedures for Document Management*	*documents*	EIAL	Gill

5.3 Document Templates to be Developed

The CMM key practices for SCM describe documents and reports that are typically produced to meet the goals of a key practice. From the tables in §4, I have identified some templates that need to be written to ease the creation of the documents to be produced during a project:

#	CMM Key Practice	Working Title	Sub-KPA	Scope	Owner
5	Ac.1 thru Ac.10	*Template for an* SCM Plan *for an HP-UX Release*	*code*	CHO	Varnau?
6	Ac.1-6, Ac.8-10	*Template for a* Document Management Plan *for a Project*	*documents*	EIAL	Gill
7	Ac.9	*Template for an* SCM Status Report *for an HP-UX Release*	*both code & documents*	CHO	Varnau?
8	Ac.10	*Template for an* SCM Audit Report *for an HP-UX Release*	*both code & documents*	CHO	Varnau?
9	Me.1	*Template for an* SCM Metrics Report *for an HP-UX Release*	*both code & documents*	CHO	Varnau?

I have already used three different titles for the document for which I have identified the need for a template in the 2nd item above:

- *SCM Plan for Documents*
- *Document Management Plan*
- *Project Document Roadmap*

The right title for this needs to be thought through given my earlier concerns with terminology's role in effectively getting CMM processes established.

5.4 Other Tasks Required to Implement the SCM KPA

These other tasks mostly concern the establishment and use of a document management system.

#	CMM Key Practice	Task	Sub-KPA	Scope	Owner
10	Co.1.4; Ac.3	Establish EIAL access to Odin, the DocuShare implementation that is the common CHO document management system.	*documents*	EIAL	Gill
11	Ab.1, Ab.2	Establish board or other mechanism for the SCM and baselining of documents.	*documents*	EIAL/ CHO	Gill/?
12	Ab.3	Learn to use and administer DocuShare/Odin.	*documents*	EIAL	Gill
13	Ab.3	Contribute to the administration, configuration, and design of Odin, including any policies needed to make it effective for EIAL and CHO use.	*documents*	EIAL	Gill
14	Ab.4	Develop or adapt training materials for the EIAL use of Odin.	*documents*	EIAL, CHO	Gill/Cash?
15	Ab.4	Deliver training to EIAL staff.	*both?*	EIAL	Gill

Design, Configuration, Administration, and Policies for Odin, the Common DMS

I believe EIAL needs to contribute to and cooperate with the overall CHO effort on setting up the Odin implementation of the DocuShare DMS. There are issues in the areas of design, administration, configuration and tailoring, and use policies for CHO use of Odin; this is why I have the 4th task in the table above.

There are probably a few capabilities in DocuShare that we would like to configure in certain ways to enhance the effectiveness of our use of it. For example, I believe that certain metadata, or document attributes, properly defined and used, can contribute significantly to the success of searches on a large document management system, and this will be important as we deploy it and use it over time and it contains 1000's of documents. (For one metadata reference, see the *Dublin Core Metadata Element Set*). Other aspects of Odin administration that will probably need addressing include:

- defining a common structure for document folders at the top 2 or 3 levels of the Odin document hierarchy
- reducing Odin administrative overhead by connecting the granting of Odin logins to the HP Corporate Windows NT login mechanism
- reducing the administrative overhead in managing Odin groups
- configuring the display of search results to provide the most useful information
- increasing the effectiveness of using access and collaboration features in Adobe Acrobat for the documents stored in Odin in that derivative format

5.5 Other Deliverables and Tasks

5.5.1 EIAL Web Site Changes

We probably need to work with the other EIAL KPA teams to integrate the SCM KPA material into our local FPK web site. However, this work will probably mostly be introductory material that "glues" various process and template documents stored in the DMS into a coherent whole, and has not been scoped out. The schedule in §6 does not include dates for this.

5.5.2 EIAL Pilot Program

It is not yet clear how the pilot use of the new policies, procedures, templates, and documents defined in this Plan for the SCM KPA will be done in EIAL. Part of the reason for this is that much of the SCM for code work is being done at the CHO level and not the EIAL level. When the CHO work for the code aspects becomes clearer, we may be able to describe here how this work will get a pilot test in EIAL.

For the *SCM for documents* aspect of this KPA, we expect that the other CMM KPA teams in EIAL will be the first users of the new EIAL SCM processes. This will probably begin informally during 2Q01 and may be seen to be a pre-pilot use of the processes. In 3Q01, we would like to identify a specific HP-UX project within EIAL that may be the first real pilot users of the new processes.

5.5.3 EIAL Rollout

TBD, but probably not until 4Q2001. Or is it just supposed to be ready to be used by the entire lab starting January 1, 2002? This is not clear to me yet.

6. Implementation Plan

6.1 Staffing

The current staffing in EIAL is a single person, Tim Gill, part-time. His other work is ClearCase/MultiSite administration, for which he is the lead administrator. He is giving current small projects and maintenance work to backup admin team members, but will have to remain as the primary ClearCase admin for major projects and problems.

6.2 Assumptions

We assume that

- CHO and EIAL are sufficiently committed to this CMM work to provide for staffing and budget needs
- most of the tasks to be done for the source code aspect of the SCM KPA will be done at the CHO level and will not require many EIAL resources
- EIAL management will address the *cultural change* required by this work

6.3 Risks

The greatest risk in implementing this plan is that the ClearCase administration work of the primary SCM engineer will require significant time (there are major projects—a 2nd ClearCase ring to be setup—on the horizon in 2Q01), especially unexpected problems that require immediate attention.

Other risks include

- Cultural resistance among Unix developers to process. We've heard it for years. One HP veteran characterizes it as "malicious compliance."
- The DocuShare product or the Odin implementation may have weaknesses that make our effort more difficult.

6.4 Schedule

This section gives a working schedule for me to get the tasks and deliverables that are based in EIAL done. Since some work seems to belong at the CHO level and other work may move there, this is very fluid. I have summarized the CHO-level deliverables in §6.4.2.

6.4.1 EIAL/Gill Schedule

The dates in this schedule reflect the EIAL management mandate to have drafts of all the new CMM processes and templates done by the end of 2Q2001.

Deliverable or Task	Priority	Task/Deliverable	Staff Days *(calendar days)*	Start Date	Draft, or "Done"
2	1a	*EIAL Policies for Document Management-*	5	03/26	04/02
4	1b	*EIAL Procedures for Document Management*	10	04/02	04/16
12	1b	Learn to use and administer DocuShare/Odin.	15 ☺	04/02	04/17
6	1c	*Template for a* Document Management Plan *for a Project*	5	04/23	04/30
13	1d	Contribute to the administration, configuration, and design of Odin, including any policies needed to make it effective for EIAL and CHO use.	30	**as needed**	--
10	1d	Establish EIAL access to Odin…	10	05/14	--
11	2	Establish board or other mechanism for the SCM and baselining of documents.	2	05/28	--
14	2	Develop or adapt training materials for the EIAL use of Odin.	10	06/04	06/15
7	3	*Template for an* SCM Status Report *for an HP-UX Release*	3	06/11, with CHO?	06/15
8	3	*Template for an* SCM Audit Report *for an HP-UX Release*	3	06/18, with CHO?	06/22
9	3	*Template for an* SCM Metrics Report *for an HP-UX Release*	3	06/25, with CHO?	06/29
15	4	Deliver training to EIAL staff.	3	4Q01	--

6.4.2 CHO Tasks

I cannot give a schedule for the work to be done at the CHO level—and the exact work to be done at that level instead of at the EIAL level is still being investigated by the CHO SCM KPA team. But the following table summarizes the tasks identified in §5 that I think belong at the CHO level.

Deliverable or Task	Priority	Task/Deliverable	Staff Days *(calendar days)*	Start Date	
1	--	*CHO Policies for Software Configuration Management*	--	--	--
3	--	*CHO Procedures for SCM of a Release of HP-UX*	--	--	--
5	--	*Template for an* SCM Plan *for an HP-UX Release*	--	--	--
7	--	*Template for an* SCM Status Report *for an HP-UX Release*	--	--	--
8	--	*Template for an* SCM Audit Report *for an HP-UX Release*	--	--	--
9	--	*Template for an* SCM Metrics Report *for an HP-UX Release*	--	--	--