NASA Small Business Innovation Research (SBIR) Technologies Management Using Process Libraries and Electronic Handbooks (Where Shakespeare Meets Freud)

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Abstract

We believe that to truly understand one's universe, one must see it thru multiple "eyes" and also have tools to "communicate" these views. To do this, we propose editable and cost-saving process documentation "plays" for process developers and participants to help them quickly and effectively learn, integrate, test, teach, and work together. These "plays" may be added to new or existing systems. Benefits are that it facilitates the collection of system and organizational requirements, does not anger/upset people whose opinions are heard, and it increases the interaction between managers, process developers, and participants. For each subprocess, an "Integration View" is the integration or combination of other subprocess views. An "Integration View" facilitates intra- and inter-organization communication. We illustrate using NASA Small Business Innovation Research (SBIR) Technologies Management. In Section 1, we examine common problems that arise in the management of complex distributed processes. In Section 2, we provide an overview of tools that are solutions to these problems. Simply speaking, we regard subprocesses as "plays" and let organizations put on productions of the "play". In Section 3, we provide examples of these tools. In Section 4, we outline some complex distributed processes in the Federal Government that are applications of the methodology. In Section 5, we conclude with some final thoughts.

0. Introduction

In this paper, we deal with the important problem of managing complex distributed processes involving potentially thousands of participants. An example of such a process is the management of National Aeronautics and Space Administration (NASA) Small Business Innovation Research (SBIR) Technologies Programs. This program funds hundreds of small businesses all around the United States to develop and later market technology-based products. The NASA SBIR program constitutes roughly 50% of all of NASA's new annual contracts. Managing complex distributed processes is difficult due to 1) the complexity of the subprocesses, 2) the diversity of views of different organizations, 3) the diversity of views of teachers, documentors, managers, implementors, and participants taking part in the subprocesses, 4) subprocess Live-Cycle views, and 5) the "Game of Telephone" syndrome.

We believe that to truly understand one's universe, one must see it thru multiple "eyes" and also have tools to "communicate" these views. To do this, we propose editable and cost-saving process documentation "plays" for process developers and participants to help them quickly and effectively learn, integrate, test, teach, and work together. These "plays" may be added to new or existing systems. See Figure 0 (a). Benefits are that it facilitates the collection of system and organizational requirements, does not anger/upset people whose opinions are heard, and it increases the interaction between managers, process developers, and participants. For each subprocess, an "Integration View" is the integration or combination of other subprocess views. See Figure 0 (b). An "Integration View" facilitates intra- and inter-organization communication.

An outline of the paper is as follows:

In Section 1, we examine common problems that arise in the management of complex distributed processes. In Section 2, we provide an overview of tools that are solutions to these problems. Simply speaking, we regard subprocesses as "plays" and let organizations put on productions of the "play". In Section 3, we provide examples of these tools. In Section 4, we outline some complex distributed processes in the Federal Government that are applications of the methodology. In Section 5, we conclude with some final thoughts.

Before going through the paper, the reader may want to first quickly look at some examples in Figures 3(a)-(p).

1. Problems

We discuss here some of the problems that are intrinsic to the management of complex distributed processes.

First, complex distributed processes tend to have lots of related subprocesses. For example, Figure 1(a) shows some of the subprocesses of NASA Small Business Innovation Research (SBIR) Technologies Programs. Notice that we organize the subprocesses into five categories: Product Realization, Product Distribution, Support, Improvement, and Common.

Second, for each subprocess, we tend to have multiple organizations, each having their own view of the subprocesses. Some of these views may be proprietary. For example, Figure 1(b) shows some of the organizations participating in the NASA Small Business Innovation Research (SBIR) Technologies Programs. In addition, there are also organizations that distribute the products that come out of the subprocesses as well as organizations that support and improve the subprocesses.

Third, within each subprocess organization, we have eight "Play Development" stages. See Figure 1(c). These are 1) summarizing (descriptions), 2) playwriting (outlines), 3) staging (mockups), 4) dress rehearsal (implementations), 5) performance (implementations), 6) evaluations (implementations), 7) revisions (outlines, mockups, implementations), and 8) closing.

Fourth, within each subprocess organization, we have numerous teachers, documentors, managers, implementors, and participants, each person having their own view of the subprocess. See Figure 1(d). It is very important that teachers, documentors, managers, implementors, and participants quickly learn and then establish integrated views for their roles in the subprocess.

Fifth, there are a number of subprocess Life-Cycle views that have to be dealt with in the management of subprocesses. See Figure 1(e). These factors reflect the Life-Cycle of organizations that participate in the subprocesses.

Sixth, as each person tries to pass-on their view of the subprocess, they omit details to the person(s) they are teaching. See Figure 1(f). This is called the The "Game of Telephone" Syndrome: Where People Pass-On Only Parts of the "Message".

Solutions to these problems are discussed in the next section. See Figure 1(g) for an overview of how

editable and cost-saving process documentation tools can solve problems.

2. Solutions

We discuss here an overview of tools that are solutions to these problems.

Process Libraries (PLs) maintain organization's views of the subprocesses. See Figure 2(a). Here we have a section of the Process Library for a particular subprocess. Notice that there is a place for different organization's views of the subprocess. These will be described below.

Our basic approach is to wrap organization's subprocesses in a common envelope containing communication vehicles that facilitate intra- and inter-organization communication. See Figure 2(b). Notice that the envelope contains a number of items. Descriptions facilitate quick learning of the subprocess. Plays document the temporal flow of the subprocess and also have Implementation Mockups and Implementation versions. Documents define the documents used in the subprocess and also have Templates, Examples, Instructions, Implementation Mockups, and Implementation versions. Guidelines or Electronic Handbooks give user roles on how to participate in the subprocess and also have Implementation Mockups and Implementation versions. Worksheets facilitate the manager's monitoring of the subprocess and also have Implementation Mockups and Implementation versions. Contacts contain the names of the people who are able to answer questions about the subprocess. References provide alternative views of the subprocess. Credits provide the names of people who are part of the development of the organization's subprocess.

Some tools may be focused on during stages. See Figure 2(c).

Documents in Process Libraries have three levels of access. See Figure 2(d). Some documents are unconditionally accessible to all over the Internet via a hyperlink. Some documents need to be accessed only through an organization's library. Finally, some documents are proprietary and one needs individual permission to obtain them.

For each subprocess, an "Integration View" is the integration or combination of other subprocess views. An "Integration View" facilitates intra- and inter-organization communication.. See Figure 2(e).

Process Libraries are where Shakespeare meets Freud. See Figure 2(f). In Process Libraries, subprocesses are represented as "plays" where "actors" communicate thru the Internet. Each organization puts on its own "productions". For each role, Electronic Handbooks (EHBs) (also called Guidelines) guide "actors" thru their parts. Managers are "directors" using Worksheets as learning/management tools. Documentors serve as "playwrights". [Shakespearean] Organizations are represented as "families" having "multiple personalities". Subprocess "plays" and its "components" provide communication vehicles between members of the same family, different families, and families from different subprocesses. Documentors also serve as "family therapists". [Freudian]. The approach uses a modernization of the Socratic Method or Dialogue to gain consensus between teachers, documentors, managers, implementors, and participants. See Figure 2(g).

Process Libraries and Electronic Handbooks (EHBs) methodologies have been used in a number of operational applications. See Figure 2(h). Here we see a number of different projects throughout the US Federal Government.

The subprocess Life-Cycle views in Figure 1(d) are supported. See Figure 2(i).

Basic people principles are supported. See Figure 2(j). The failure of a management system to follow these basic principles will generally result in people not utilizing the system.

Subprocess/Play Developments are supported. Subprocesses are built and revised using the play development paradigm over multiple productions. See Figure 2(k). This enables one to develop the subprocesses in stages and at each stage learn and modify the subprocesses.

Process Libraries operations are supported. See Figure 2(l). This outlines the ongoing operational maintenance and responsibilities for running the Process Library. Specifically, here we deal with the steps of organization formulation, implementation, customer support, evaluation, update and closeout.

3. Some Examples

We provide some examples of tools outlined above.

Process Libraries are organized by subprocesses. See Figure 3(a). Here we show one level of the Process Library which list the subprocesses. For each subprocess, the library shows how organizations view their subprocess. See Figure 3(b). Here we have a section of the Process Library for a particular subprocess. Notice that there is a place for different organization's views of the subprocess.

For each organization, an organization's view for a subprocess is comprised of several components. See Figure 3(c). Descriptions summarize subprocesses. See Figure 3(d). Plays describe subprocess execution or temporal flow. See Figure 3(e). Documents describe subprocess data. See Figure 3(f). Guidelines/Electronic Handbooks describe user subprocesses. See Figure 3(g). Subprocess Worksheets facilitate subprocess manager communication with process developers and participants. See Figure 3(h). References list other related resources. See Figure 3(i). Credits acknowledge people's contributions. See Figure 3(j). Some tools may be focused on during stages. See Figure 3(k).

In addition, several other tools are relevant. Integration Tools allow item types to be seen across different organizations. See Figure 3(l). Electronic Handbooks (EHBs) help participants learn and execute their roles. See Figure 3(m). Demonstration Tools introduce the concepts to a community in their terms. See Figure 3(n). Requirements Capture Tools (RCTs) facilitate subprocess development. See Figure 3(o). Improvement Tools facilitate subprocess improvement. See Figure 3(p).

4. Other Applications

We discuss here several applications where the above methodology has been applied. See Figure 2(h).

NASA Small Business Innovation Research (SBIR) Programs (http://sbir.nasa.gov). This program funds hundreds of small businesses all around the United States to develop and later market technology-based products. The NASA SBIR program constitutes roughly 50% of all of NASA's new annual contracts.

Department of Justice (DOJ) Bulletproof Vests Program (http://www.ojp.usdoj.gov/bvpbasi/). This

program co-funds purchases of Bulletproof Vests for all eligible law enforcement agencies and jurisdictions across the United States and its territories. The Bulletproof Vests system was the 1999 Gold Award Winner of the Federation of Government Information Processing Councils (FGIPC) Intergovernmental Open Systems Solutions (IOSS) Awards program.

Department of Justice (DOJ) Block Grants Program (http://www.ojp.usdoj.gov/bvpbasi/). This program funds all eligible law enforcement agencies and jurisdictions across the United States and its territories and is one of the largest programs in the Department of Justice's Bureau of Justice Assistance.

Department of Health and Human Services (HHS) Health Resources Services Administration (HRSA) Grants (http://www.hrsa.gov/). This process represents hundreds of Health Resources Services Administration's grant programs. These programs fund doctors, nurses, hospitals all across the United States and its territories.

Federal Emergency Management Administration (FEMA) Grants (http://www.fema.gov/). This process represents hundreds of Federal Emergency Management Administration's grant programs. These programs fund disaster assistance all across the United States and its territories.

5. Summary

In this paper, we dealt with the important problem of managing complex distributed processes involving potentially thousands of participants. In Section 1, we examined common problems that arise in the management of complex distributed processes. In Section 2, we provided an overview of tools that are solutions to these problems. In Section 3, we provided some examples of these tools. In Section 4, we outlined some complex distributed processes in the Federal Government that are applications of the methodology.

We conclude with some final remarks. As is seen throughout this discussion, we believe that to truly understand one's universe, one must see it thru multiple "eyes" and also have tools to "communicate" these views. See Figure 4(a). As William Shakespeare said "All the world's a stage ...". See Figure 4(b). Finally, Dr. Martin Luther King Jr. described some effects of separation. See Figure 4(c).

For more information about Process Libraries and Electronic Handbooks, see http://ehbs.us. For more papers on other applications, see http://ehbs.us/papers.

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USFA Press Release "Over 19,500 Applications Received For Firefighters Grant Program", April 15, 2002.

3. Interim Deliverables

-Submit Deliverables-
Contract   Specialist:
 Call For Deliverables

Awardee:
 Submit Deliverables

Contract   Specialist:
 Review For Late Deliverables
 Notify Awardees of Late Deliverables

-Technical Intermediary Deliverables-
Contract   Specialist:
 Notify COTR to Review Deliverables

COTR:
 Review Deliverables

Contract   Specialist:
 Examine Review of Deliverables
 Notify Awardees To Resubmit Deliverables

Contract   Specialist:
 Approve Deliverables

-Financial Intermediary Deliverables-
Contract   Specialist:
 Notify Field Center Contracting Officer to Review Vouchers

Field   Center Procurement Manager:
 Review Vouchers

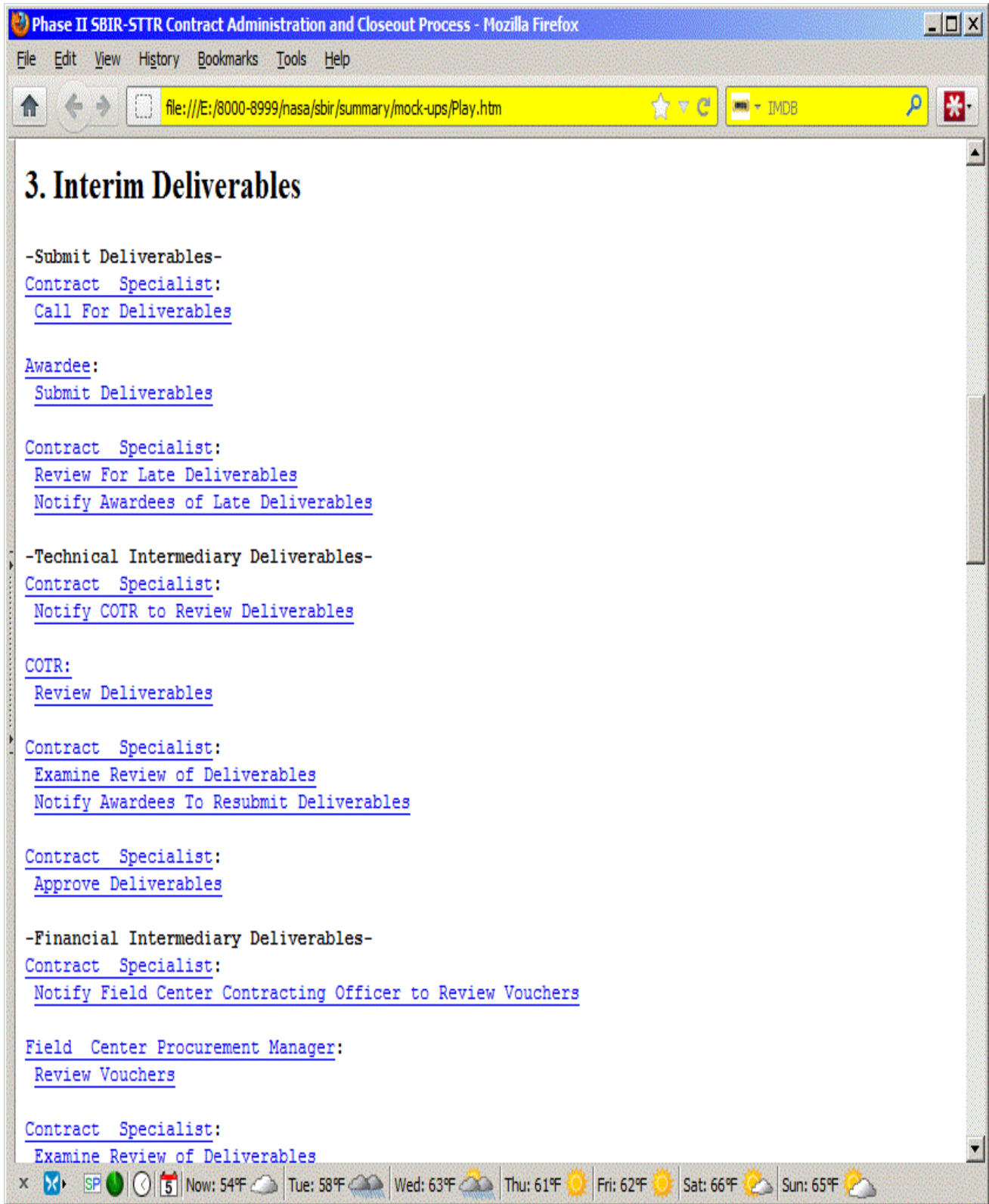Contract   Specialist:
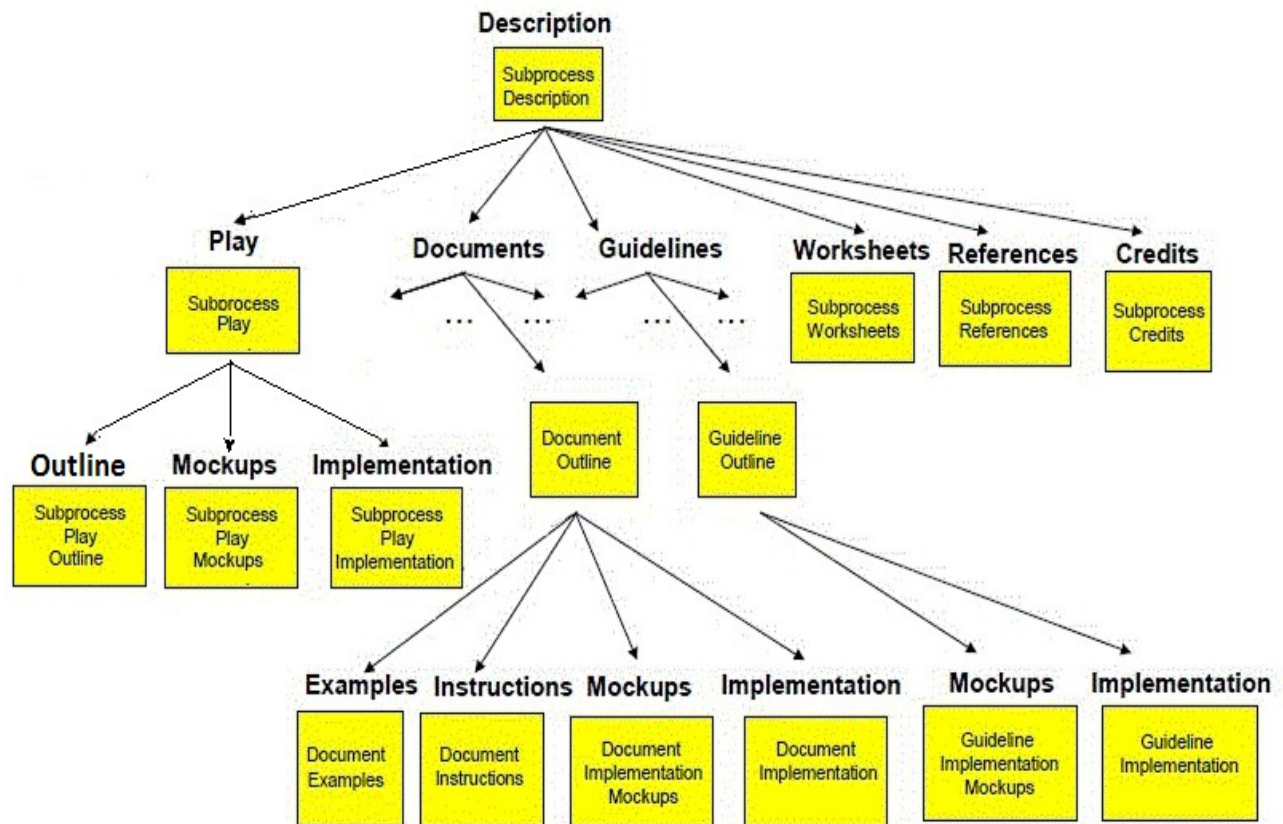 Examine Review of Deliverables

Figure 0 (a). Plays describe subprocess execution.

Figure 0 (b). For each subprocess, an "Integration View" is the integration or combination of other subprocess views.

File   Edit   View   History   Bookmarks   Tools   Help

Home   Back   Forward   Reload   Stop   http://lincoln.gsfc.nasa.gov/sbir/whatare/process.htm   Webster

NASA SBIR/STTR Technologies

Product Realization Subprocesses													
Integrated Problems-Solutions Database	Planning Technologies	Solicitation Development	1 Submission	1 Review & Selection	1 Contract Negotiation	1 Contract Administration	1 Contract Closeout	2 Submission	2 Review & Selection	2 Contract Negotiation	2 Contract Administration	2 Contract Closeout	Post-Closeout

(Potential Customers: Flight Projects)

Product Distribution Subprocesses							
Integrated Problems-Solutions Database	Planning Distributions	Distribution Facility Solicitation Development	Problem Submission	Problem Handling	Agreement Administration	Agreement Closeout	Post-Agreement Closeout

(Potential Customers: Flight Projects, Non-NASA Customers)

Support Subprocesses										
SBIR/STTR Level I, Other SBIR/STTR Agencies, and SBA Support	Computer Systems Development and Evolution	Computer Systems Operations and Network Administration	Home Page Management	Education and Outreach Activities	Facilities Management	Security	Small Systems (Mac and PC) Support	Visualizations	Program Support Reporting	Quality Assurance

Improvement Subprocesses		
ISO 9001: 2000	CMMI- Staged	CMMI- Continuous

Common Subprocesses					
Organization Subprocess Formulation	Organization Subprocess Implementation	Organization Subprocess Customer Support	Organization Subprocess Evaluation	Organization Subprocess Update	Organization Subprocess Closeout

GP   5   Now: Sunny, 82 ℉   Sat: 87 ℉   Sun: 85 ℉   Mon: 80 ℉   Tue: 85 ℉   Wed: 84 ℉   Thu: 81 ℉

Figure 1(a). Subprocesses.

File   Edit   View   History   Bookmarks   Tools   Help

file:///E:/8000-8999/nasa/sbir/whatare/Organizations.htm

Amazon.com

NASA SBIR/STTR Organizations

Product Realization Subprocesses Organizations
ARC SBIR/STTR Office
DFRC SBIR/STTR Office
GRC SBIR/STTR Office
GSFC SBIR/STTR Office
HQ SBIR/STTR Office
JPL SBIR/STTR Office
JSC SBIR/STTR Office
KSC SBIR/STTR Office
LaRC SBIR/STTR Office
NSSC SBIR/STTR Office
MSFC SBIR/STTR Office
Office of Exploration Systems SBIR/STTR Offices
Office of Aeronautics Research SBIR/STTR Offices
Office of Science SBIR/STTR Offices
Office of Space Operatons SBIR/STTR Offices
SBIR/STTR PMO Office
SSC SBIR/STTR Office

Product Distribution Subprocesses Organizations
ARC IPP Office
DFRC IPP Office
GRC IPP Office
GSFC IPP Office
HQ IPP Office
JPL IPP Office
JSC IPP Office
KSC IPP Office
LaRC IPP Office

Now: 82℉   Sat: 88℉   Sun: 78℉   Mon: 76℉   Tue: 80℉   Wed: 81℉   Thu: 80℉

Figure 1(b). Subprocess organizations.

Organizations execute the eight "Play Development" stages.

1) summarizing (descriptions),
2) playwriting (outlines),
3) staging (mockups),
4) dress rehearsal (implementations),
5) performance (implementations),
6) evaluations (implementations),
7) revisions (outlines, mockups, implementations), and
8) closing.
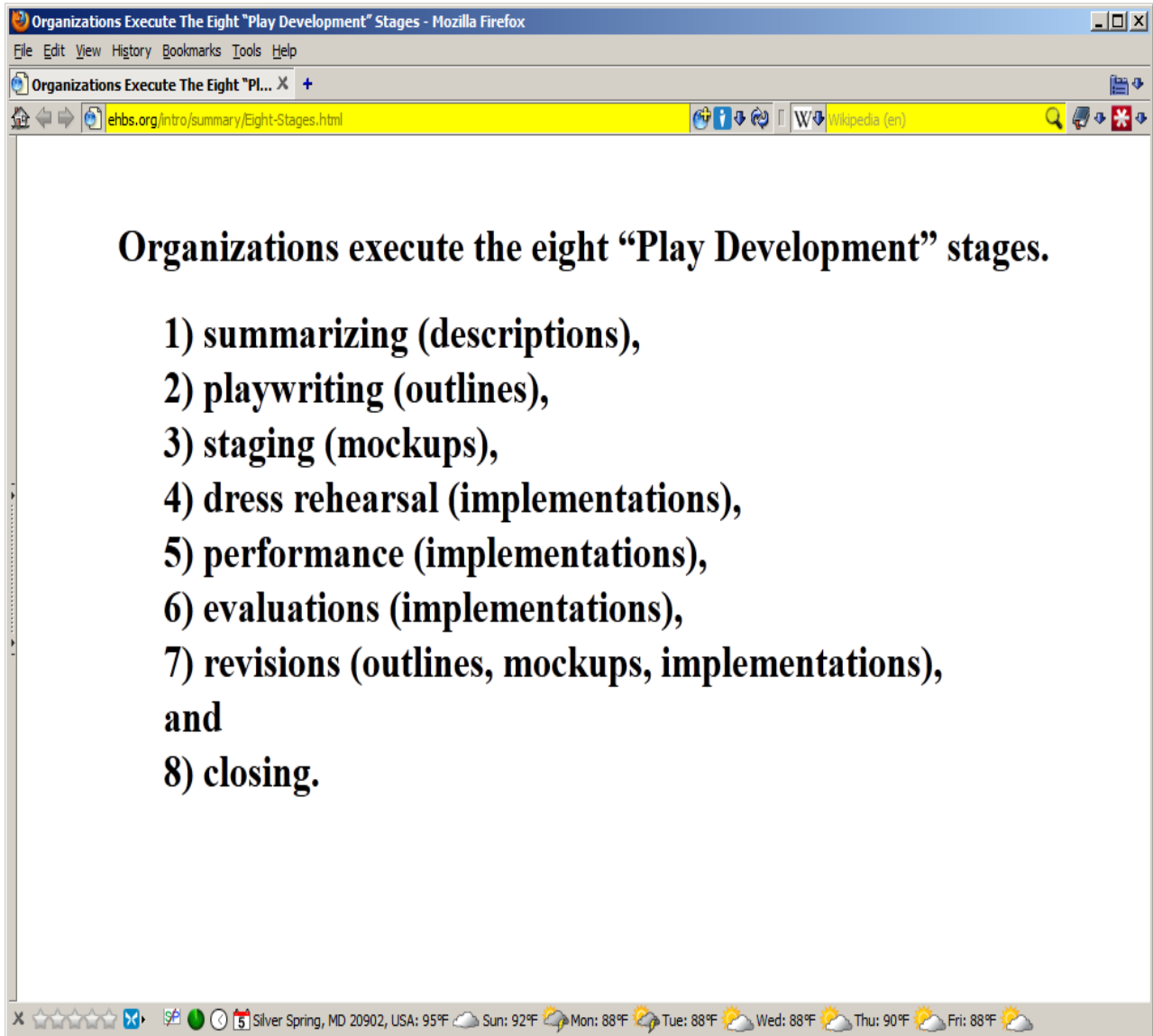
Figure 1(c). The eight "Play Development" stages.

Figure 1(d). People in organizations provide different views of the subprocesses.

Organizations generate
Subprocess Life-Cycle* Views

- Organization subprocess teachers want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)

- Organization subprocess documentors want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)

- Organization subprocess managers want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)

- Organization subprocess implementors want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)

- Organization subprocess participants want to quickly learn, integrate, and perform tasks that are part of their views. (Critical)

- Organization subprocess managers want to quickly monitor execution of tasks that are part of their views.

- Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly improve, test, and teach their subprocesses.

- Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly improve, test, and teach using other organization's views.

- Organization subprocess teachers, documentors, managers, implementors, and participants become hurt/angry when their views are not supported.

- Organization subprocess implementors want to quickly update, test, and teach tools that help facilitate execution of their subprocesses.

- Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly leave when their views continue not to be supported.

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* Also, called the "Universal Subprocess".

Figure 1(e). Subprocess Life-Cycle Views.

Figure 1(f). The "Game of Telephone" Syndrome:
Where People Pass-On Only Parts of the "Message".

Overview of how editable and
cost-saving process documentation tools can solve problems.

Problem	Solution
Develop Internet-based tools to support the paperless documentation and management of complex distributed processes.	Editable process documentation tools can be tailored to each subprocess.
Organizations provide different views of the subprocesses.	Editable process documentation tools can be tailored to reflect different organization's views of the subprocess.
Organizations execute the eight "play development" stages.	Editable process documentation tools can be tailored to reflect the eight "play development" stages.
People in organizations provide different views of the subprocesses.	Editable process documentation tools can be tailored to communicate different people's views of the subprocess.
Organizations generate Subprocess Life-Cycle Views.	Editable process documentation tools can be tailored to reflect different Life-Cycle views of the subprocess.
The "Game of Telephone" Syndrome: Where People Pass-On Only Parts of the "Message".	Editable process documentation tools can be tailored to layer below different people's views of the subprocess.

Figure 1(g). Overview of How Editable and Cost-Saving Process Documentation Tools Can Solve Problems.

Views

Total 11 Entries

Classification: **Product Realization Subprocesses** (T4-00-00-00)

Subprocess: **Phase II Contract Administration** (T4-3-00-00)

Create View

View	Steps
ARC Lee, Geoff (geoff.lee@nasa.gov)	Update Copy Delete
DFRC Bogue, Rodney (rod.bogue@nasa.gov)	Update Copy Delete
GRC Kim, Walter S. (walter.s.kim@nasa.gov)	Update Copy Delete
GSFC Chern, Dr. E. James (Engmin.J.Chern@nasa.gov)	Update Copy Delete
HQ Ray, Carl G. (carl.g.ray@nasa.gov)	Update Copy Delete
JPL Schober, Wayne R. (Wayne.R.Schober@jpl.nasa.gov)	Update Copy Delete
JSC - Krishen, Dr. Kumar (kumar.krishen-1@nasa.gov)	Update Copy Delete

Done

Figure 2(a). Process Library.

Figure 2(b). Subprocesses in a common envelope.

Tools To Focus On During Stages- By Tool.

Tool	Process Developer	Process Participant
Descriptions	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Plays	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Documents	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Role Guidelines/EHBs	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Subprocess Worksheets	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
References	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Credits	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together

Figure 2(c)(1). Some tools may be focused on during stages- by tool.

Tools To Focus On During Stages- By Stage.

Stage	Process Developer	Process Participant
Learn	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Integrate	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Documents Using Role Guidelines/EHBs.
Test	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Teach	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Work Together	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.

Figure 2(c)(2). Some tools may be focused on during stages- by stage.

Document Access in Process Libraries. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ehbs.org/intro/summary/documents.htm

Wikipedia (English)

CNN   New York Times   Washington Post   Comcast   NOMAD   File Hippo   Summaries   Process Libraries   NASAFCU   Cnet   »

Google   Search   Bookmarks   PageRank   »   Settings

EHBs Home Page   Document Access in Process Libr...

Documents in Process Libraries have three levels of access.

- **Unconditionally Distributable Documents.** Here the document's hyperlink will point directly to the organization's document.

- **Documents (On-Line/Off-Line) Maintained In Organization Libraries.** Here the document's hyperlink will point into the organization's library maintaining the document.

- **Proprietary Documents.** Here the document's hyperlink will point to the organization's person/persons responsible for the document from whom permission must be obtained.

Figure 2(d). Documents in Process Libraries have three levels of access.
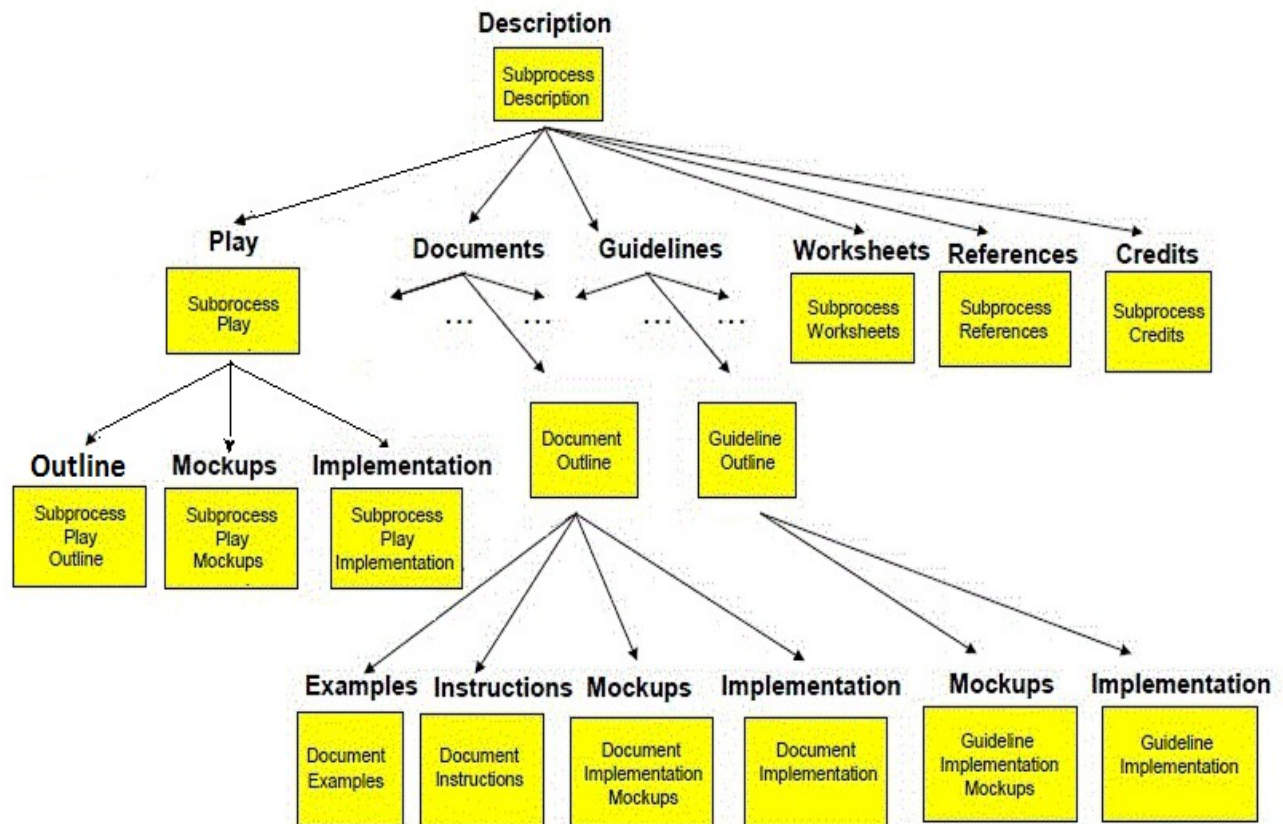
Figure 2(e) For each subprocess, an "Integration View" is the integration or combination of other subprocess views. An "Integration View" facilitates intra- and inter-organization communication.

Process Libraries (PLs) and Electronic Handbooks (EHBs) are where Shakespeare meets Freud

- In Process Libraries (PLs), subprocesses are represented as "plays" where "actors" communicate thru the Internet. Each organization puts on its own "productions". For each role, Electronic Handbooks (EHBs) (also called Guidelines) guide "actors" thru their parts. Managers are "directors" using Worksheets as learning/management tools. Documentors serve as "playwrights". [Shakespearean]

- Organizations are represented as "families" having "multiple personalities". Subprocess "plays" and its "components" provide communication vehicles between members of the same family, different families, and families from different subprocesses. Documentors also serve as "family therapists". [Freudian]

Done

Figure 2(f). Process Libraries (PLs) and Electronic Handbooks (EHBs) are where Shakespeare meets Freud.
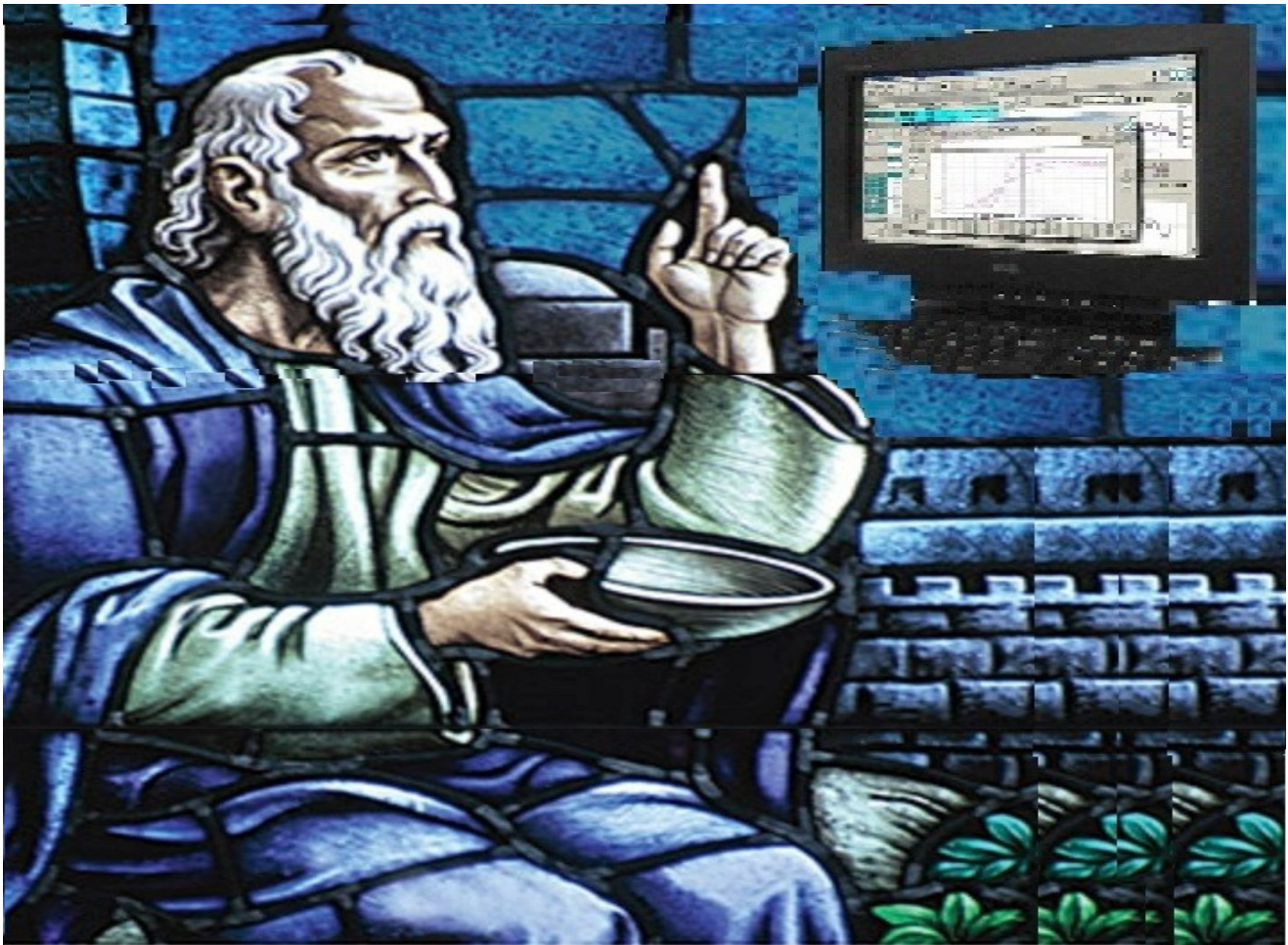
Figure 2(g). The approach uses a modernization of the Socratic Method or Dialogue to gain consensus between teachers, documentors, managers, implementors, and participants.
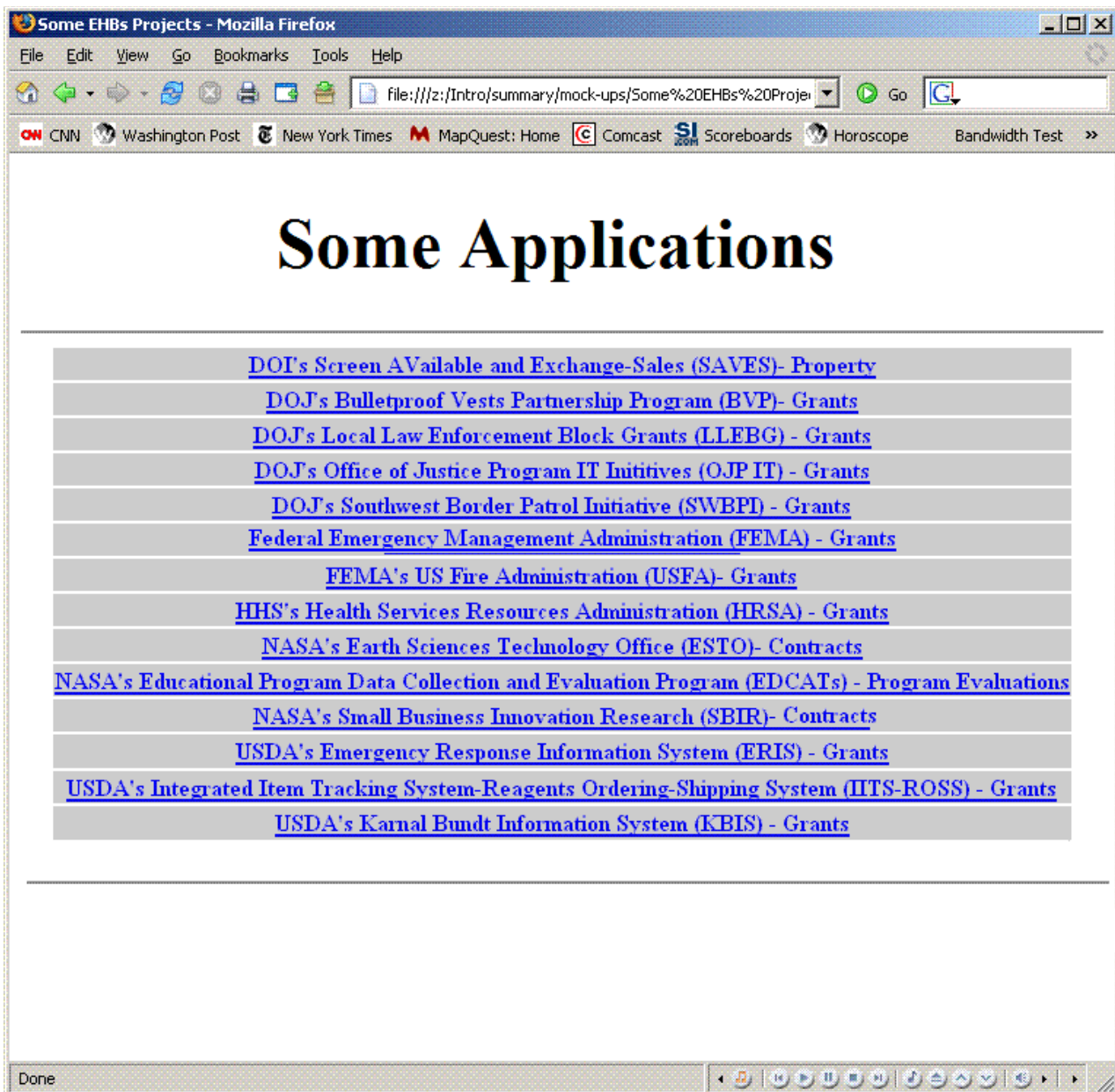
Figure 2(h). Some Process Libraries (PLs) and Electronic Handbooks (EHBs) projects.

Subprocess Life-Cycle Views that are supported.

- **Organization subprocess teachers want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)** Organization subprocess teachers copy relevant organization subprocess Plays/Documents/Guidelines/Worksheets in the Process Library and then learn, integrate, test, and teach their new organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess documentors want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)** Organization subprocess documentors copy relevant organization subprocess Plays/Documents/Guidelines/Worksheets in the Process Library and then learn, integrate, test, and teach their new organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess managers want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)** Organization subprocess managers copy relevant organization subprocess Plays/Documents/Guidelines/Worksheets in the Process Library and then learn, integrate, test, and teach their new organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess implementors want to quickly learn, integrate, test, and teach their own views of their subprocesses. (Critical)** Organization subprocess implementors copy relevant organization subprocess Plays/Documents/Guidelines/Worksheets in the Process Library and then learn, integrate, test, and teach their new organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess participants want to quickly learn, integrate, and perform tasks that are part of their views. (Critical)** Organization subprocess participants study the steps of their organization subprocess view Guidelines.

- **Organization subprocess managers want to quickly monitor execution of tasks that are part of their views.** Organization subprocess managers monitor the execution of tasks using their organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly update, test and teach their subprocesses.** Organization subprocess teachers, documentors, managers, implementors, and participants update, test, and teach their organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly update, test, and teach using other organization's views.** Organization subprocess teachers, documentors, managers, implementors, and participants update, test, and teach using other relevant organization subprocess Plays/Documents/Guidelines/Worksheets in the Process Library.

- **Organization subprocess teachers, documentors, managers, implementors, and participants become hurt/angry when their views are not supported.** Organization subprocess teachers, documentors, managers, implementors, and participants update, test, and teach their organization subprocess Plays/Documents/Guidelines/Worksheets.

- **Organization subprocess implementors want to quickly update, test and teach tools that help facilitate execution of their subprocesses.** Organization subprocess implementors update, test, and teach tools using requirements from Plays/Documents/Guidelines/Worksheets in the Process Library.

- **Organization subprocess teachers, documentors, managers, implementors, and participants want to quickly leave when their views continue not to be supported.** Organization subprocess teachers, documentors, managers, implementors, and participants archive their organization subprocess Plays/Documents/Guidelines/Worksheets.

- **The Key Human Factor Issue: Communication Within and Across Organizations.** Organization subprocess Plays/Documents/Guidelines/Worksheets in Process Libraries facilitate intra- and inter-organization communication.

Figure 2(i). The Subprocess Life-Cycle Views are supported.

Basic People Principles that are supported.

- **Subprocesses determine tools.** The approach supports people doing their jobs as they see it. Forcing additional tools on people only adds more burdens to their jobs and they will likely ignore them. Additional requirements should be integrated into existing subprocesses.

- **Everyone's subprocesses should be supported as best as possible.** The approach supports people seeing their jobs differently. This is often a good thing for subprocess improvement.

- **Tools are role-based so that data is collected during subprocess execution.** As people partake in the subprocesses, the approach supports data entry in the system. If data collection is done after the fact, the quality of the data generally suffers.

- **Tools are people-based so that users require minimal training.** The approach helps people to determine which steps to use. For each of the substeps (i.e., forms and documents), the approach should have clear templates, instructions, and samples.

- **Tools are web-based so that users can easily partake.** The web-based approach supports the reduced need to install special software on user's computers. This is especially important in the case where the number of participants is large.

- **Everyone helps build the tools.** The approach supports joint ownership in the subprocesses and the underlying systems which is crucial for overall acceptance.

Figure 2(j). Basic People Principles that are supported.

Subprocess/Play Developments that are supported.

- **Presentation & Paper/Marketing.** The approach supports presentation & paper/marketing using the contents of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Worksheet/Outlining.** The approach supports worksheet/outlining using the drafting of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Temporal Flow/Playwriting.** The approach supports temporal flow/playwriting using the drafting of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Examples/Rehearsal.** The approach supports examples/rehearsals using the mockups of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Implementation/Staging.** The approach supports implementation/staging using the building of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Utilization/Performance.** The approach supports users utilization/performance using execution of Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Revision/New Production.** The approach supports revision/new production using updates of the Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

- **Closeout/End Production.** The approach supports closeout/ end performance using storage of the Descriptions, Plays, Documents, Guidelines, Worksheets, Contacts, References, and Credits.

Figure 2(k). Subprocess/Play Developments that are supported.

http://ehbs.org/intro/summary/operations.htm

IMDB

Process Library Operations that are supported.

- **Organization Subprocess Formulation.** The approach supports the introduction of new organizations and their subprocesses into the library.

- **Organization Subprocess Implementation.** The approach supports implementation of common tools for organizations in the library.

- **Organization Subprocess Customer Support.** The approach supports user requests for the library.

- **Organization Subprocess Evaluation.** The approach supports organization subprocess evaluations.

- **Organization Subprocess Update.** The approach supports the updating of organizations and their subprocesses in the library.

- **Organization Subprocess Closeout.** The approach supports the closeouts of organizations and their subprocesses from the library.

SP   5   Now: Cloudy, 34 °F   Tue: 38 °F   Wed: 43 °F   Thu: 47 °F   Fri: 52 °F   Sat: 44 °F   S

Figure 2(l). Process Libraries Operations that are supported.

Figure 3(a). Process Libraries are organized by subprocesses.

Views

Total 11 Entries

Classification: **Product Realization Subprocesses** (T4-00-00-00)

Subprocess: **Phase II Contract Administration** (T4-3-00-00)

Create View

View	Steps
ARC Lee, Geoff (geoff.lee@nasa.gov)	Update Copy Delete
DFRC Bogue, Rodney (rod.bogue@nasa.gov)	Update Copy Delete
GRC Kim, Walter S. (walter.s.kim@nasa.gov)	Update Copy Delete
GSFC Chern, Dr. E. James (Engmin.J.Chern@nasa.gov)	Update Copy Delete
HQ Ray, Carl G. (carl.g.ray@nasa.gov)	Update Copy Delete
JPL Schober, Wayne R. (Wayne.R.Schober@jpl.nasa.gov)	Update Copy Delete
JSC - Krishen, Dr. Kumar (kumar.krishen-1@nasa.gov)	Update Copy

Done

Figure 3(b). For each subprocess, the library shows how organizations view the subprocess.

Figure 3(c). Components of an Organization's view .

Phase 2 Administration

Table of Contents

1. Overview
2. Play
3. Documents
4. Guidelines
5. Others

1. Overview

In this subprocess, we deal with the process of Contract/Agreement Phase 2 Administration.

Organization: ORG

All-Files. These are all the view files.
Benefits

2. Play

In this subprocess, the play is divided in several parts:

Figure 3(d). Descriptions summarize subprocesses.

3. Interim Deliverables

-Submit Deliverables-
Contract Specialist:
 Call For Deliverables

Awardee:
 Submit Deliverables

Contract Specialist:
 Review For Late Deliverables
 Notify Awardees of Late Deliverables

-Technical Intermediary Deliverables-
Contract Specialist:
 Notify COTR to Review Deliverables

COTR:
 Review Deliverables

Contract Specialist:
 Examine Review of Deliverables
 Notify Awardees To Resubmit Deliverables

Contract Specialist:
 Approve Deliverables

-Financial Intermediary Deliverables-
Contract Specialist:
 Notify Field Center Contracting Officer to Review Vouchers

Field Center Procurement Manager:
 Review Vouchers

Contract Specialist:
 Examine Review of Deliverables

Figure 3(e). Plays describe subprocess execution.

Description - Mozilla Firefox

File   Edit   View   History   Bookmarks   Tools   Help

http://ehbs.org/sbir/library/Integration/PRSs/Phase 2 Administration/Descrip

IMDB

CNN   New York Times   Washington Post   Comcast   OOWA   NASAFCU   File Hippo   Cnet   Scoreboards   TV Guide   MapQuest

Google   Search   Bookmarks   AutoLink   AutoFill   Sign in

5. **Contract/Agreement & Deliverables Modifications.** This is where Contract/Agreements & Deliverables are modified.
6. **Analysis.** This is where participants use report tools.

3. Documents

In this subprocess, we have the following document types:

Registrations. These are used to represent user Registrations.
Contracts. These are used to represent Contracts folders.
Deliverables Tables. These are used to represent Deliverables Tables.
Deliverables. These are used to represent Deliverables.
Advisors. These are used to represent Grant Advisors.
Contract-Agreement Modifications. These are used to represent Contract-Agreement Modifications.
Deliverables Modifications. These are used to represent Contract-Agreement Deliverables Modifications.

4. Guidelines

In this subprocess, we have the following Guidelines:

Phase 2 Administration Manager. This is the manager of the Phase 2 Administration subprocess.
Contracts Manager. This is the overall Contracts Manager of all the program.
Program Manager. This is the manager of the program.
Field Center Procurement Manager. This is the Field Center Procurement Manager of the program.
Contract-Agreements Specialist. This is the Contract-Agreements Specialist of the program.
COTR. This is the COTR of the program.

Figure 3(f). Documents describe subprocess data.

Deliverables Modifications. These are used to represent Contract Agreement Deliverables Modifications.

4. Guidelines

In this subprocess, we have the following Guidelines:

Phase 2 Administration Manager. This is the manager of the Phase 2 Administration subprocess.
Contracts Manager. This is the overall Contracts Manager of all the program.
Program Manager. This is the manager of the program.
Field Center Procurement Manager. This is the Field Center Procurement Manager of the program.
Contract-Agreements Specialist. This is the Contract-Agreements Specialist of the program.
COTR. This is the COTR of the program.
JPL Technical Monitor. This is the JPL Technical Monitor of the program.
Awardee. This is the Awardee.
Mission Advisor. This is the Mission Advisor of the program.
Topic Manager. This is the Topic Manager of the program.
Budget Personnel. This is the Budget Personnel of the program.
New Technology Reviewer. This is the New Technology Reviewer of the program.
Mission Directorate Representative. This is the Mission Directorate Representative of the program.
Field Center Program Manager. This is the Field Center Program Manager of the program.
Organization Manager. This is the person managing the Organization.
Overall Organizations Manager. This is the person managing the overall Organizations.

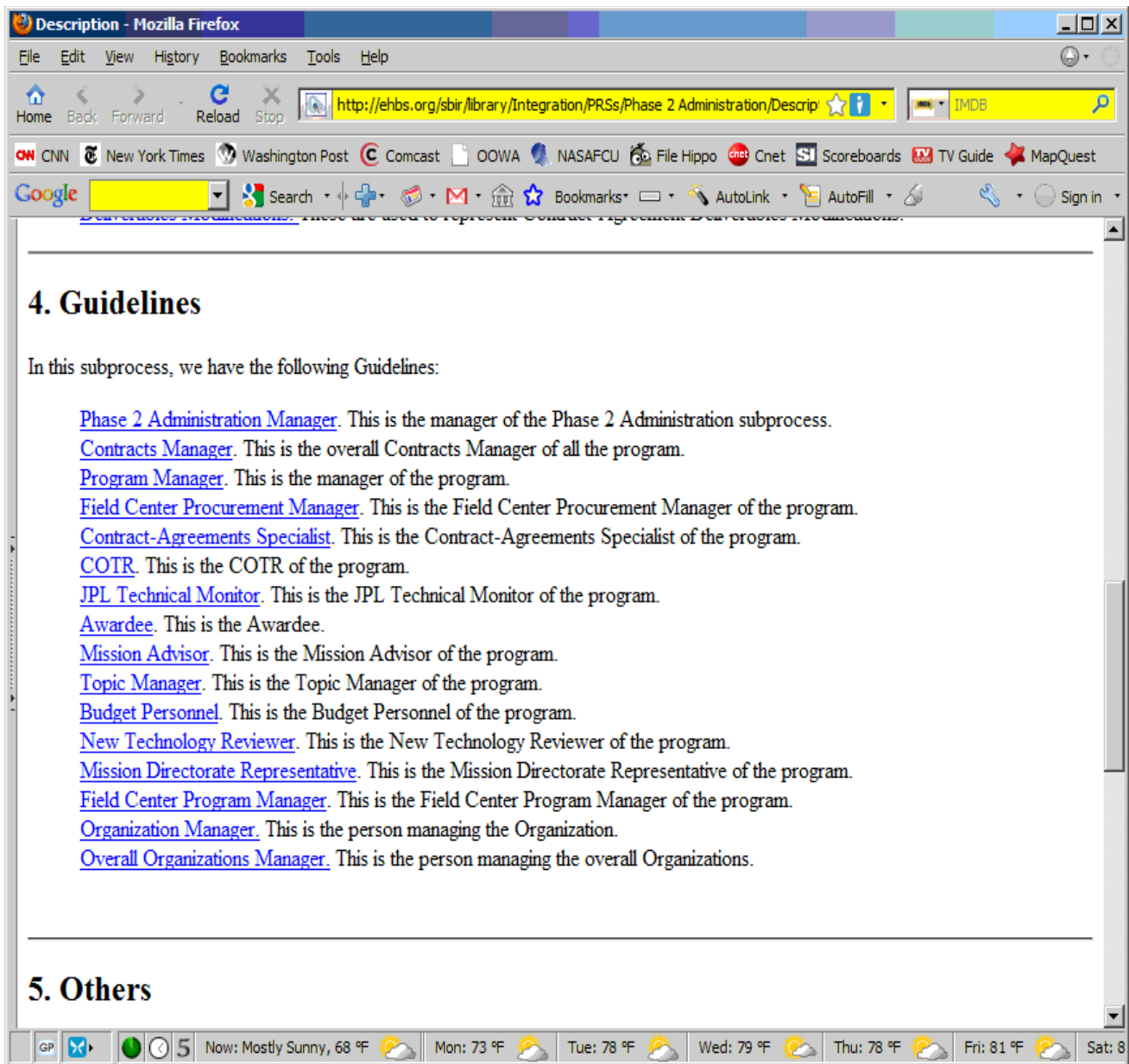## 5. Others

Figure 3(g). Guidelines/Electronic Handbooks describe user subprocesses.

Worksheet - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Home Back Forward Reload Print Stop file:///E:/8000-8999/nasa/sbir/summary/mock-ups/Worksheet.htm IMDB

Subprocess Worksheet

Subprocess: Phase II Contract Administration

Purpose: The purpose of this subprocess is to manage SBIR/STTR Phase II Contract Administration .

Organization: MSFC SBIR/STTR Program

Task	Purpose	Suggested Roles	Task Lead(s)	Estimated Completion Date	Actual Completion Date	Documents					
						Document	Instructions and Samples	Document Lead(s)	Estimated Completion Date	Actual Completion Date	Document Location(s)
Administration	The purpose of this task is to administer the design of SBIR/STTR Phase II Contract Administration.	Procurement Manager, Contracting Officer, Contract Specialist, Procurement Reviewer, COTR, JPL Technical Monitor, Awardee, Advisor, Program Manager/Program Executive, Mission Directorate Representative, Topic Manager, Subtopic Manager, Field Center Program Manager, Technology Infusion Manager, Budget Personnel	Helen Stinson	07/23/07	08/23/07	Document Library	Instructions and Samples	Helen Stinson	06/23/07	07/23/07	Library: NS2034
Planning	The purpose of this task is to plan the design of SBIR/STTR Phase II Contract Administration.	Procurement Manager, Contracting Officer, Contract Specialist, Procurement Reviewer, COTR, JPL Technical Monitor, Awardee, Advisor, Program Manager/Program Executive, Mission Directorate Representative, Topic Manager, Subtopic Manager, Field Center Program Manager, Technology Infusion Manager,	Helen Stinson	06/23/07	06/23/07	Planning Document	Instructions and Samples	Helen Stinson	06/23/07	07/23/07	Library: NS2034
						Draft Project Requirements Document	Instructions and Samples	Helen Stinson	06/23/07	07/23/07	Library: NS2034
						Project Plan	Instructions and Samples	Helen Stinson	06/23/07	07/23/07	Library: NS2034
							Instructions and	Helen			Library:

Do... Now: Sunny, 75° F Tue: 87° F Wed: 85° F Thu: 85° F Fri: 85° F Sat: 87° F Sun: 84° F

Figure 3(h). Subprocess Worksheets facilitate subprocess manager communication with process developers and participants.
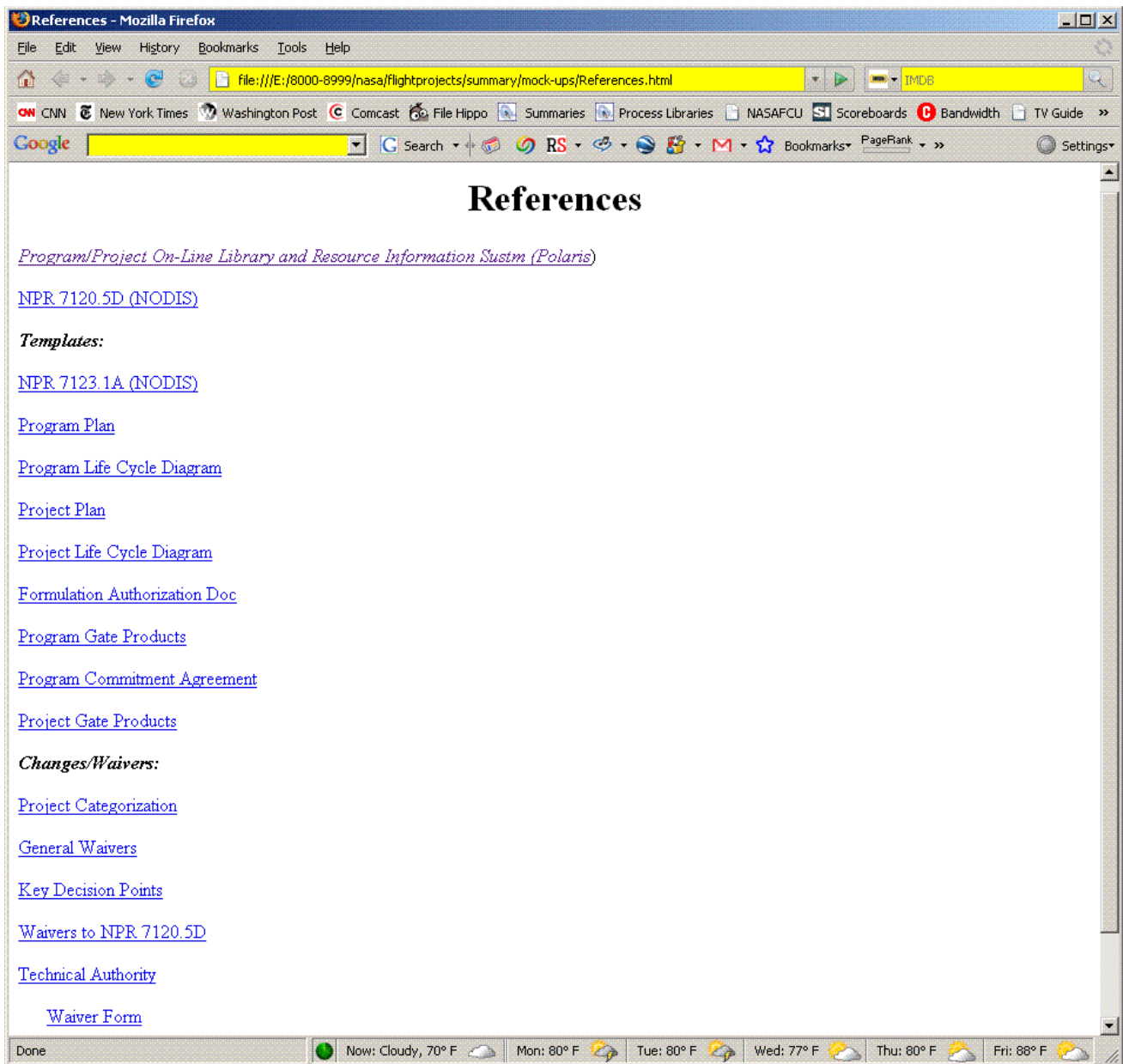
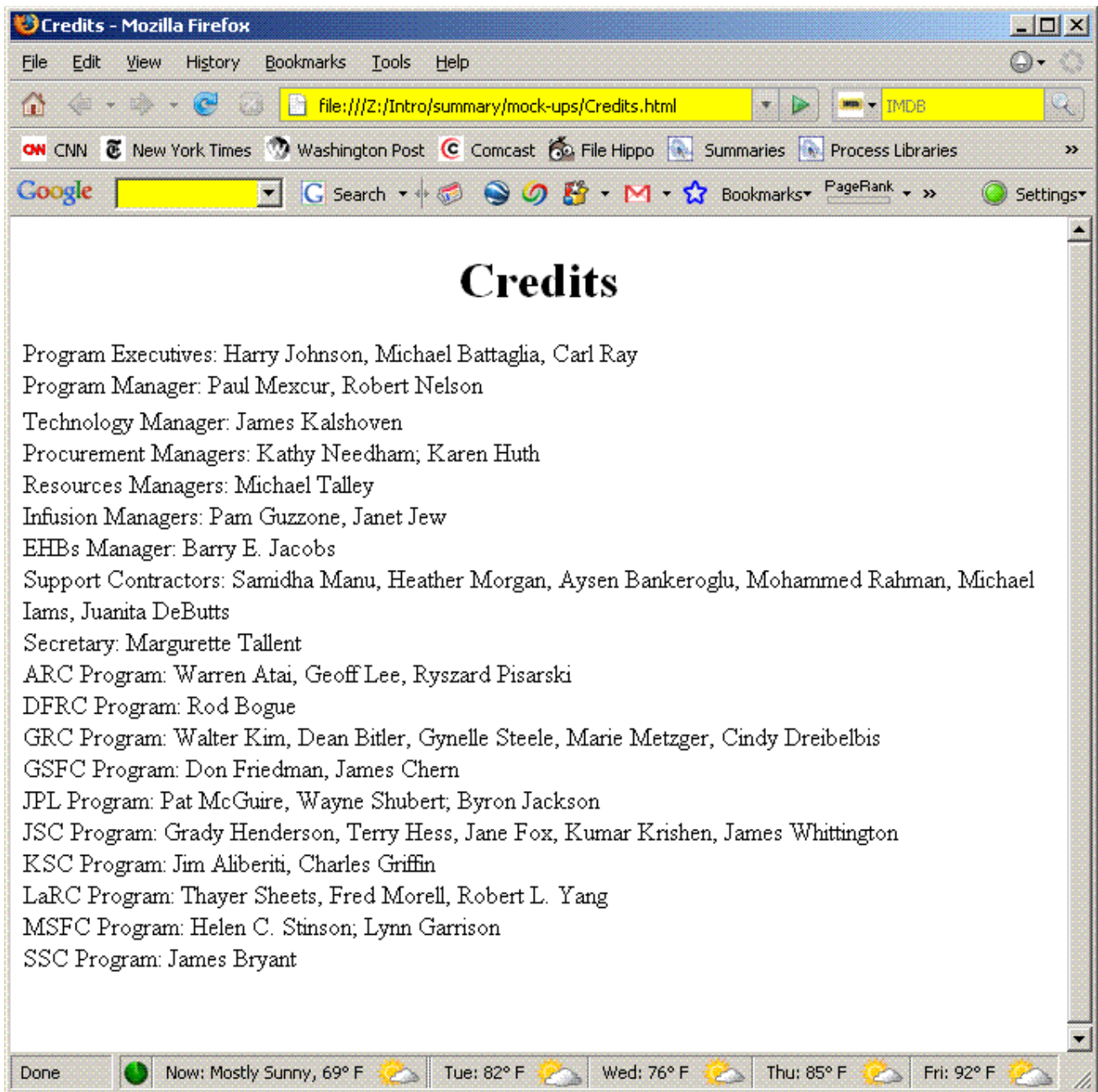Figure 3(i). References list other related resources.

Credits

Program Executives: Harry Johnson, Michael Battaglia, Carl Ray
Program Manager: Paul Mexcur, Robert Nelson
Technology Manager: James Kalshoven
Procurement Managers: Kathy Needham; Karen Huth
Resources Managers: Michael Talley
Infusion Managers: Pam Guzzone, Janet Jew
EHBs Manager: Barry E. Jacobs
Support Contractors: Samidha Manu, Heather Morgan, Aysen Bankeroglu, Mohammed Rahman, Michael Iams, Juanita DeButts
Secretary: Margurette Tallent
ARC Program: Warren Atai, Geoff Lee, Ryszard Pisarski
DFRC Program: Rod Bogue
GRC Program: Walter Kim, Dean Bitler, Gynelle Steele, Marie Metzger, Cindy Dreibelbis
GSFC Program: Don Friedman, James Chern
JPL Program: Pat McGuire, Wayne Shubert; Byron Jackson
JSC Program: Grady Henderson, Terry Hess, Jane Fox, Kumar Krishen, James Whittington
KSC Program: Jim Aliberiti, Charles Griffin
LaRC Program: Thayer Sheets, Fred Morell, Robert L. Yang
MSFC Program: Helen C. Stinson; Lynn Garrison
SSC Program: James Bryant

Figure 3(j). Credits acknowledge people's contributions.

ehbs.org/intro/summary/stages1.html   Google

Tools To Focus On During Stages- By Tool.

Tool	Process Developer	Process Participant
Descriptions	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Plays	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Documents	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Role Guidelines/EHBs	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Subprocess Worksheets	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
References	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together
Credits	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents Using Role Guidelines/EHBs, Test, Teach, Work Together

Figure 3(k)(1). Some tools may be focused on during stages-by tool

Tools To Focus On During Stages- By Stage.

Stage	Process Developer	Process Participant
Learn	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Integrate	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Documents Using Role Guidelines/EHBs.
Test	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Teach	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.
Work Together	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.	Descriptions, Plays, Documents, Role Guidelines/EHBs, Subprocess Worksheets, References, and Credits.

Figure 3(k)(2). Some tools may be focused on during stages-by stage

Fetch Integration

Read Integration	
Classification	Product Realization Subprocesses
Subprocess	Phase II Contract Administration
Type	Guidelines
Title	Advisor
Id	T4-4-3-00
Integration Url	Fetch
Ordinal	33
Date Created	03-MAY-2005
Date Updated	18-MAY-2005

Samples From Views	
ARC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
DFRC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
GRC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
GSFC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
HQ Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
JPL Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
JSC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
KSC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
LaRC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
MSFC Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
Org : Type 1	Date Created: 23-Jun-2005

Done

Figure 3(l). Integration Tools allow item types to be seen across different organizations.
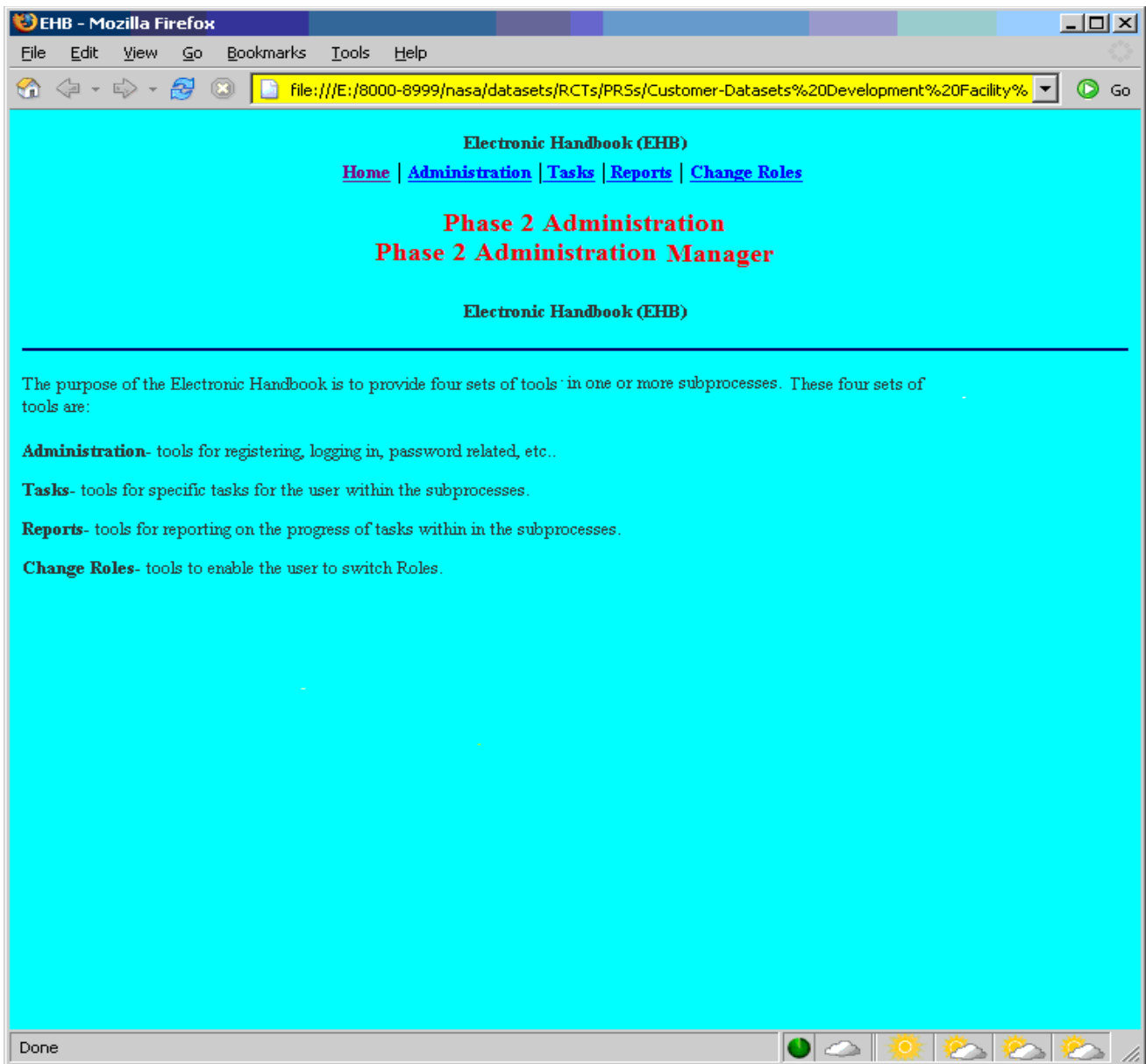
Figure 3(m). Electronic Handbooks (EHBs) help participants learn and execute their roles.

SBIR - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/sbir/ | Yahoo

NASA's Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)- Technologies
Process Libraries (PLs) and Electronic Handbooks (EHBs)
[Where Shakespeare Meets Freud]

1. What Are PLs and EHBs?
2. Summary
3. Some Applications
4. In The Press
5. Experiences
6. Some Demonstration Tools
7. Some Subprocesses and Their Documentations
8. Assembly Line Processes
9. Benefits

White Paper
Book

U.S. GOVERNMENT COMPUTER
If not authorized to access this system, disconnect now.

YOU SHOULD HAVE NO EXPECTATION OF PRIVACY
By continuing, you consent to your keystrokes and data content being monitored.

NASA Privacy, Security Notices

Last Modified: *June 23, 2005*
Curator: Dr. Barry E. Jacobs

Now: 45℉ Thu: 58℉ Fri: 39℉ Sat: 36℉ Sun: 33℉ Mon: 39℉ Tue: 49℉

Figure 3(n). Demonstration Tools introduce the concepts to a community in their terms.
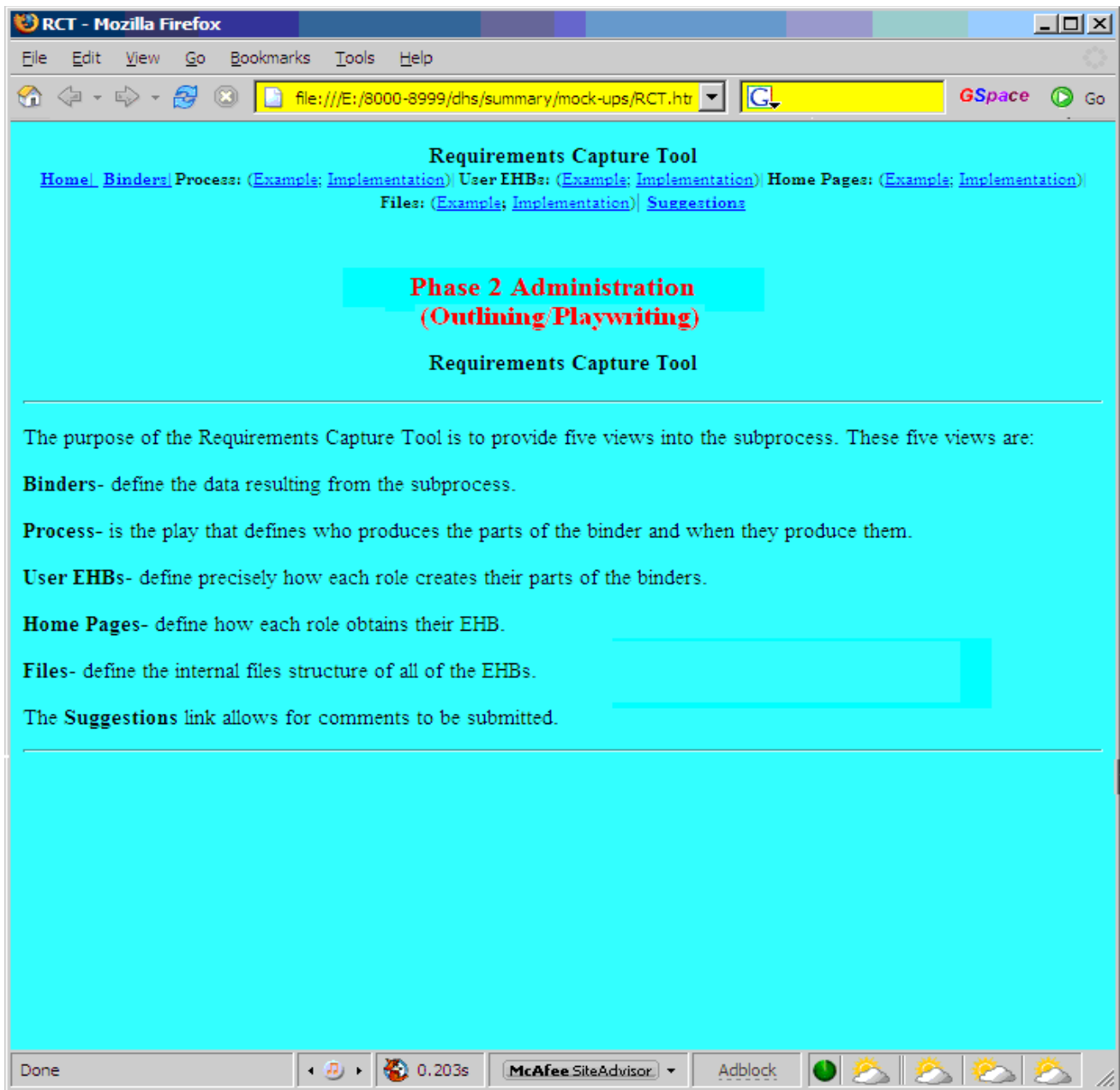
Requirements Capture Tool
Home| Binders| Process: (Example; Implementation)| User EHBs: (Example; Implementation)| Home Pages: (Example; Implementation)|
Files: (Example; Implementation)| Suggestions

**Phase 2 Administration
(Outlining/Playwriting)**

Requirements Capture Tool

The purpose of the Requirements Capture Tool is to provide five views into the subprocess. These five views are:

Binders- define the data resulting from the subprocess.

Process- is the play that defines who produces the parts of the binder and when they produce them.

User EHBs- define precisely how each role creates their parts of the binders.

Home Pages- define how each role obtains their EHB.

Files- define the internal files structure of all of the EHBs.

The **Suggestions** link allows for comments to be submitted.

Figure 3(o). Requirements Capture Tools (RCTs) facilitate subprocess development.

ISO 9001: 2000
Improvement Tool

Introduction

1. **Quality Policy/Objectives**
2. **Quality Manual**
   4. **Quality Management System**
   4.1 General Requirements
   4.2 **Documentation Requirements**
   4.2.1 General
   4.2.2 Quality Manual
   4.2.3 Control of Documents
   4.2.4 Control of Records

   5. Management Responsibilities
   5.1 Management Commitment
   5.2 Customer Focus
   5.3 Quality Policy
   5.4 **Planning**
   5.4.1 Quality Objectives
   5.4.2 Quality Management System Planning
   5.5 **Responsibility, Authority and Communication**
   5.5.1 Responsibility and Authority
   5.5.2 Management Representative
   5.5.3 Internal Communication
   5.6 **Management Review**
   5.6.1 General

Figure 3(p). Improvement Tools facilitate subprocess improvement.
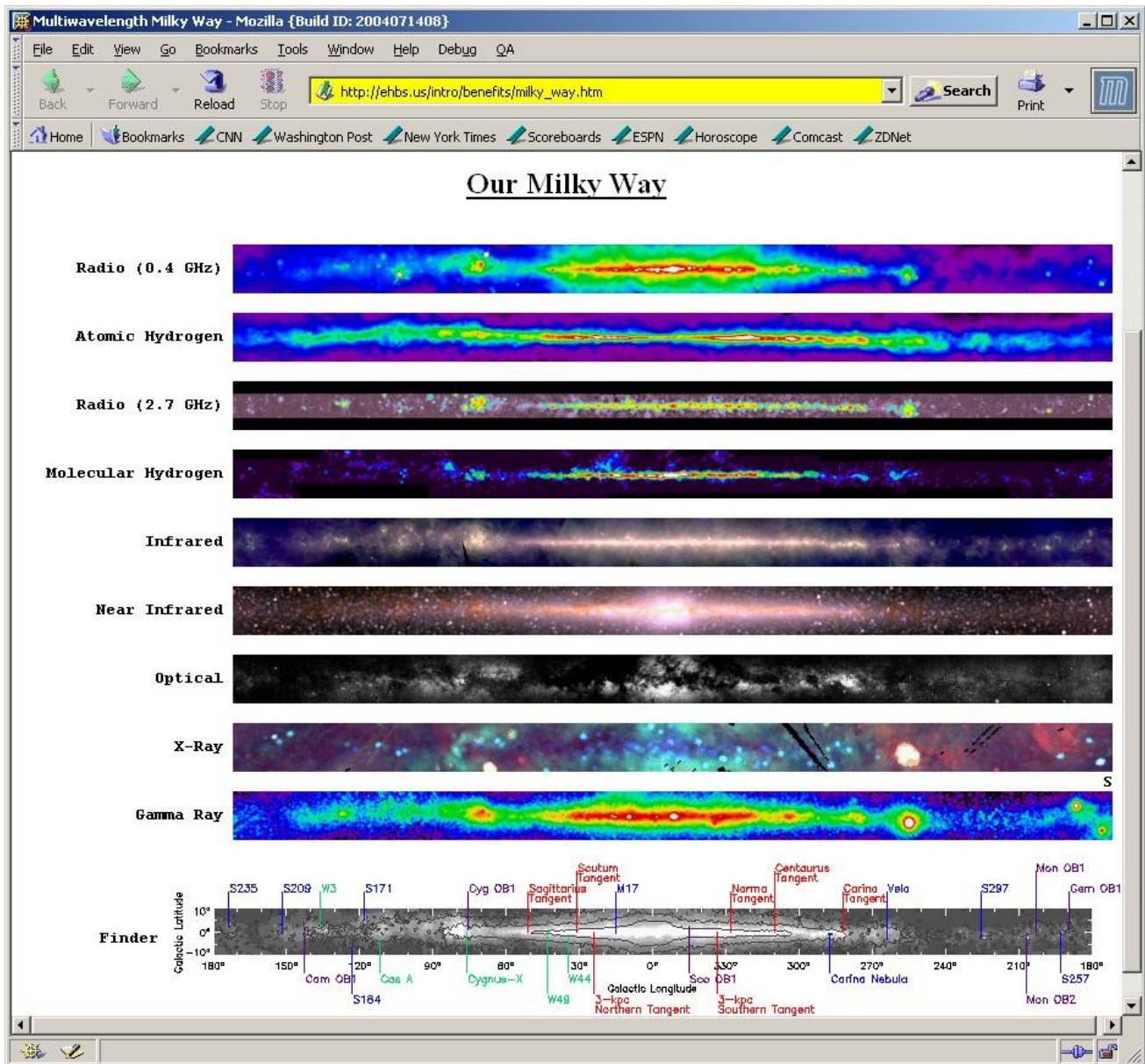
Figure 4(a). We believe that to truly understand one's universe, one must see it thru multiple "eyes" and also have tools to "communicate" these views.
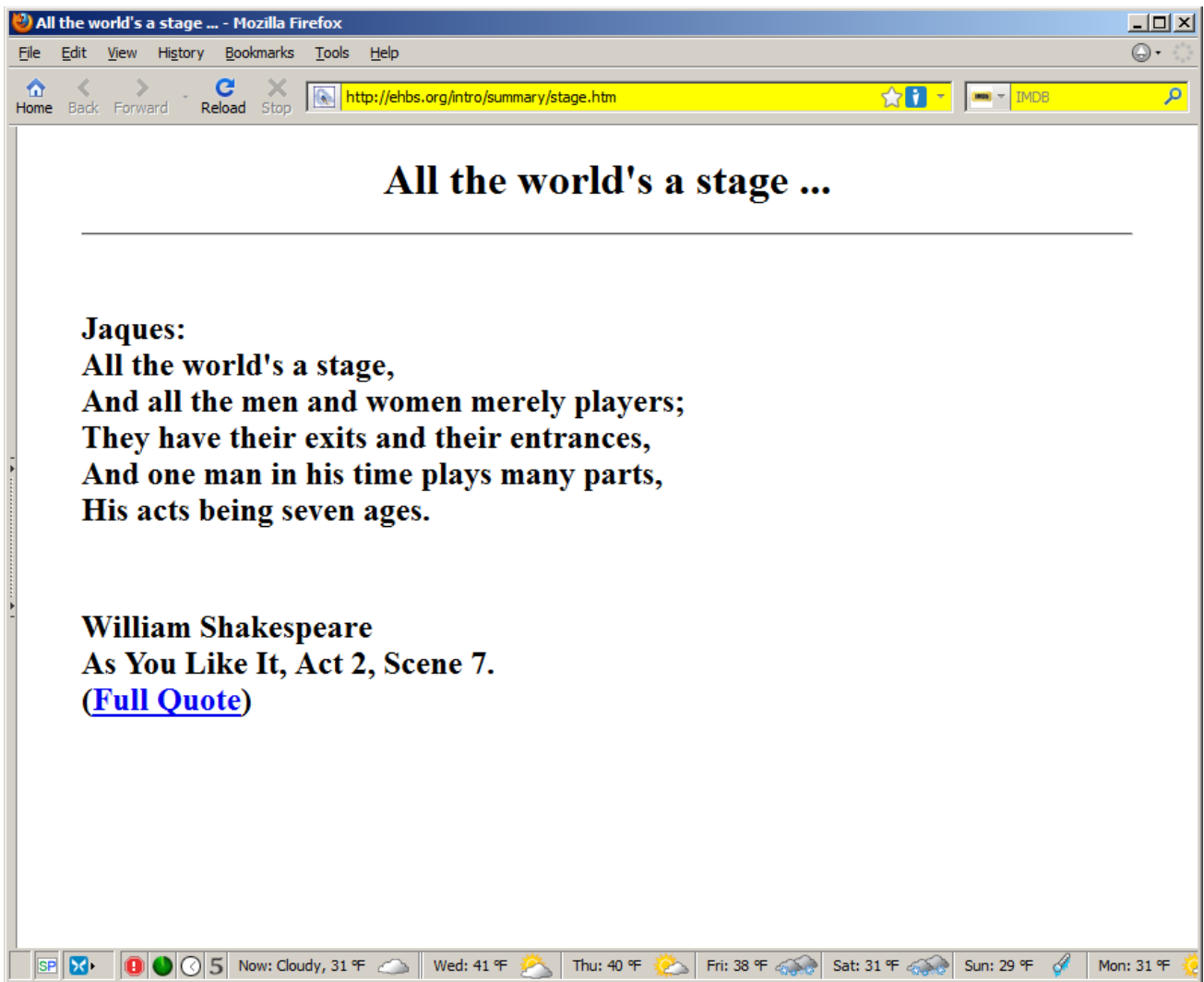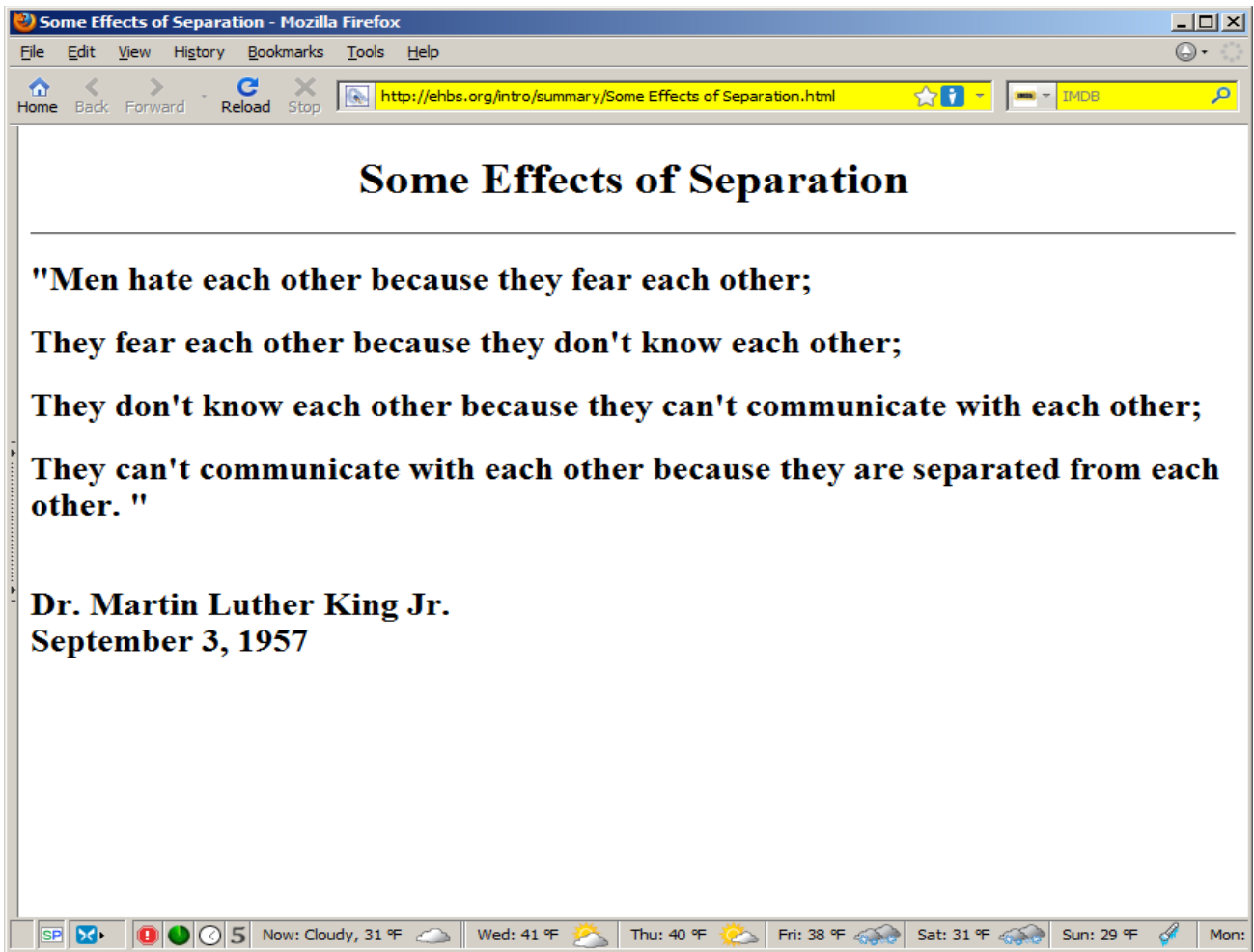
All the world's a stage ...

Jaques:
All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances,
And one man in his time plays many parts,
His acts being seven ages.

William Shakespeare
As You Like It, Act 2, Scene 7.
([Full Quote](#))

Figure 4(b). All the world's a stage ...

Some Effects of Separation

"Men hate each other because they fear each other;

They fear each other because they don't know each other;

They don't know each other because they can't communicate with each other;

They can't communicate with each other because they are separated from each other. "

Dr. Martin Luther King Jr.
September 3, 1957

Figure 4(c). Some effects of separation.

Theatre of Dionysus- Athens, Greece

For More Details