

NASA Software 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 Software 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) Software. NASA Software is a key ingredient of NASA Flight Projects which are the heart of NASA. 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 Software. 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 Software. 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>.

References

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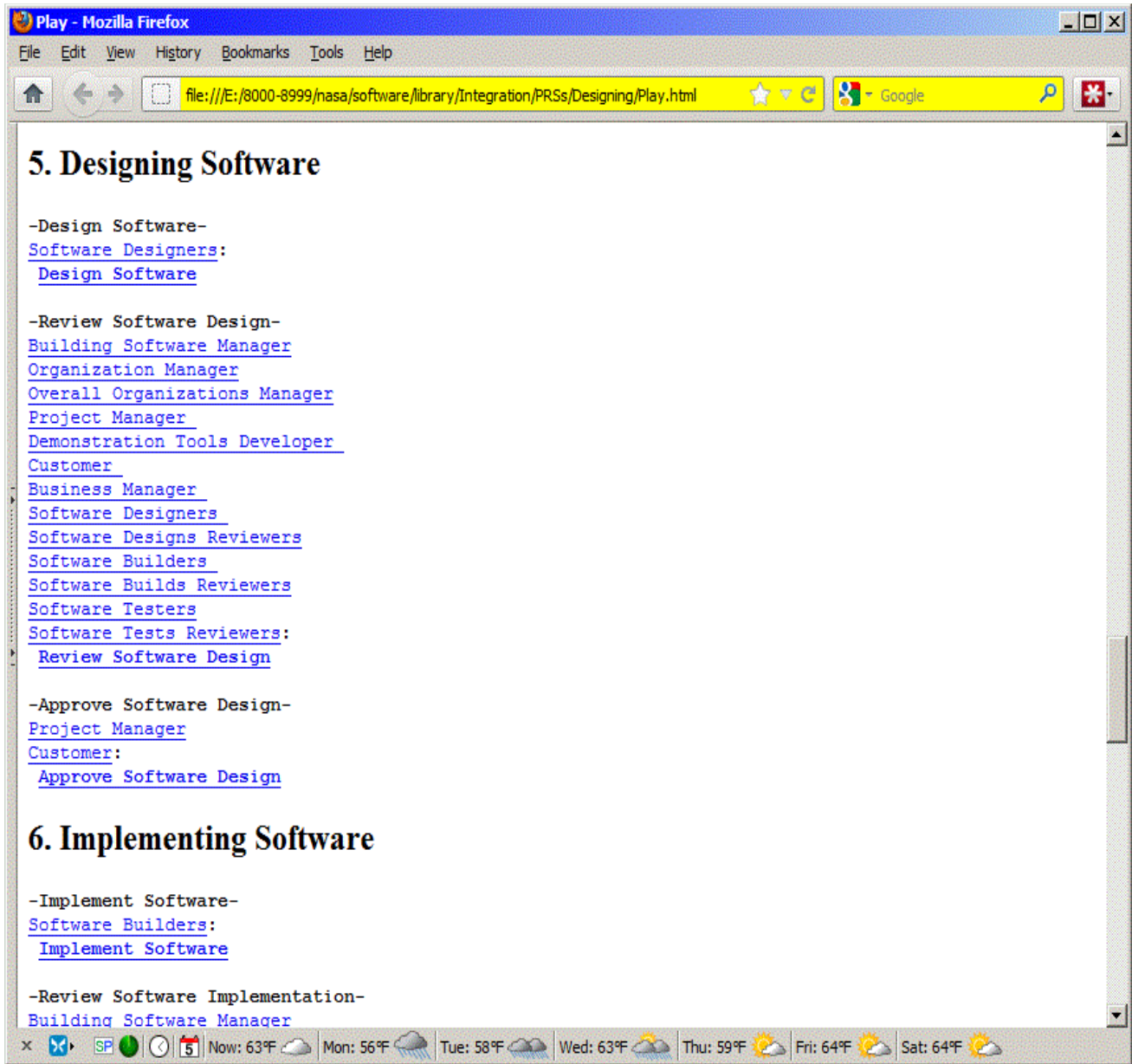


Figure 0 (a). Plays describe subprocess execution.

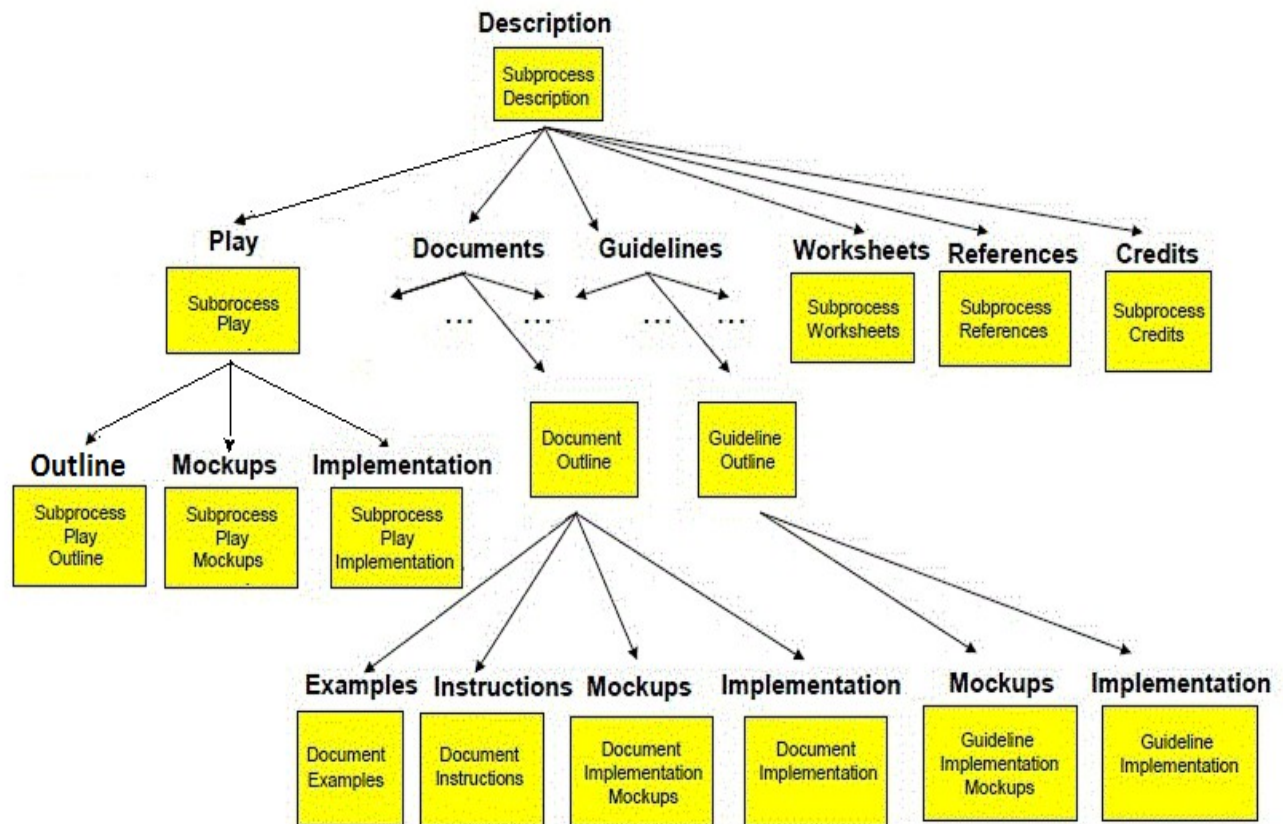


Figure 0 (b). For each subprocess, an “Integration View” is the integration or combination of other subprocess views.

Subprocesses - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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

Software

Product Realization Subprocesses*												
Integrated Problems-Solutions Database	Planning Software	Software Development Facility Solicitation Development	Submission	Handling	Gathering Requirements	Designing Software	Building Software	Using Software	Improving Software	Revising Software	Closing Software	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								
Survey Management	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

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 °F Sat: 87 °F Sun: 85 °F Mon: 80 °F Tue: 85 °F Wed: 84 °F Thu: 81 °F

Figure 1(a). Subprocesses.

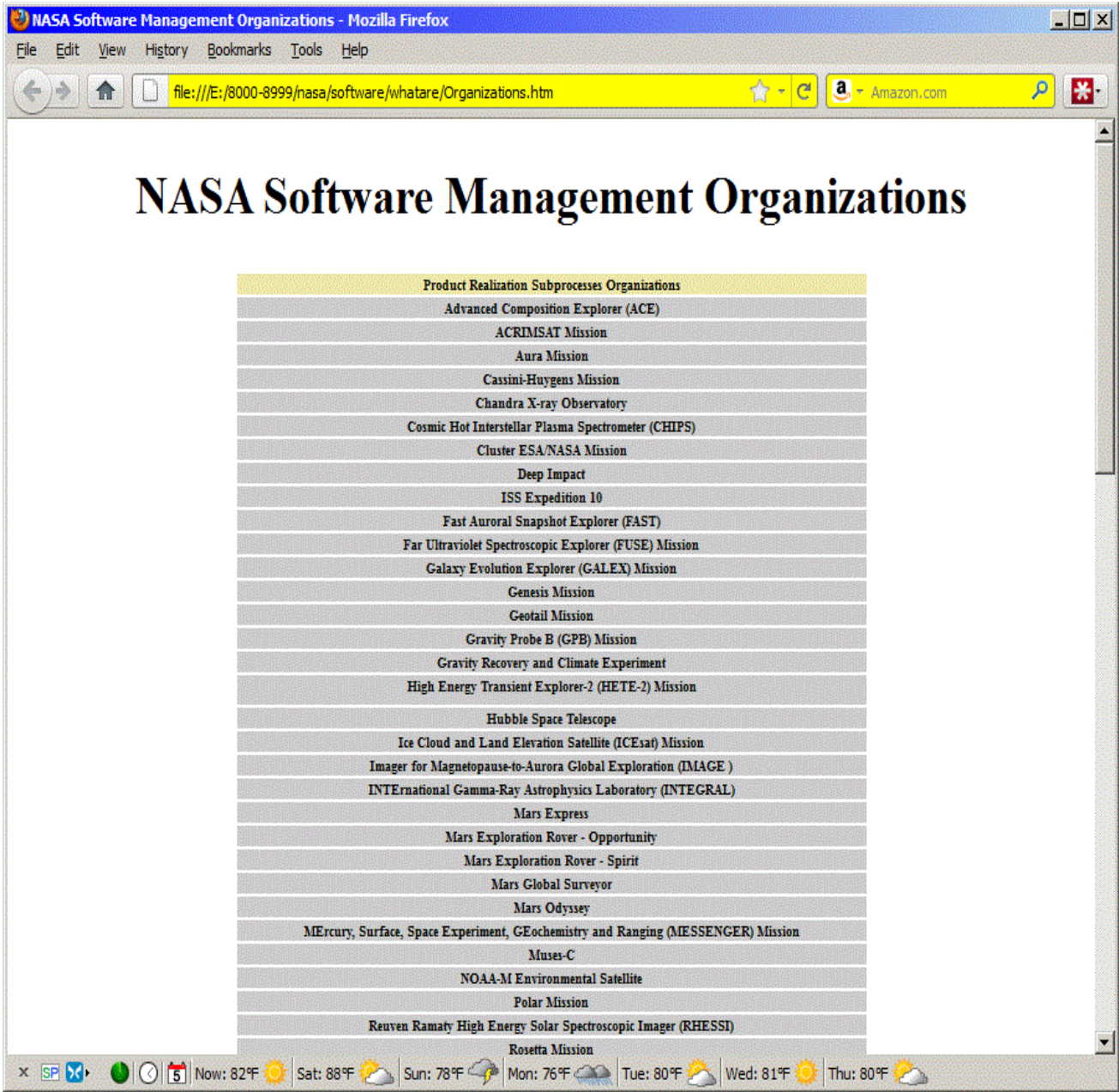


Figure 1(b). Subprocess organizations.

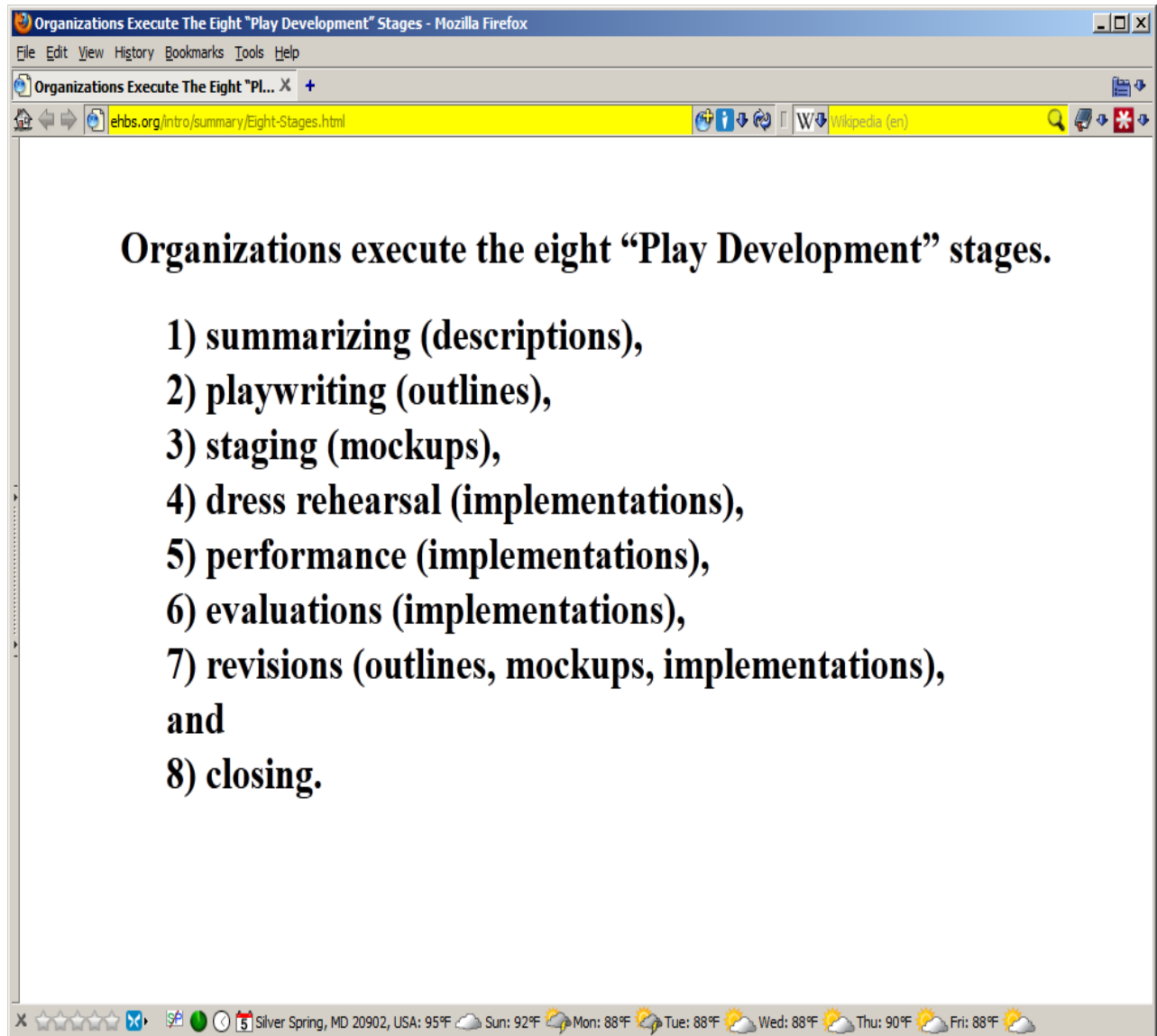



Figure 1(c). The eight "Play Development" stages.


The Key Human Factor Issue - Mozilla Firefox 4.0 Beta 10

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People in organizations provide different views of the subprocesses.



Subprocess Documentor's View



Subprocess Teacher's, Manager's, Implementor's and Participant's Views

Silver Spring, MD 20902, USA: 34°F Thu: 38°F Fri: 40°F Sat: 40°F Sun: 38°F

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

Organizations Generate Subprocess Life-Cycle Views - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/Important Human Factor Issues/

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.

* Also, called the "Universal Subprocess".

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

The "Game of Telephone" Syndrome - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://ehbs.org/intro/summary/Telephone Game Syndrome.htm

YouTube YouTube Feedback

The "Game of Telephone" Syndrome: Where People Pass-On Only Parts of the "Message"



A group of nine business professionals (seven men and two women) are standing in a line. Above each person is a blue speech bubble containing the word "View". Two black rotary telephones are on the floor in front of the group. The background is white.

Silver Spring, MD 20902, USA: 54°F Tue: 61°F Wed: 58°F Thu: 51°F Fri: 47°F

Figure 1(f). The "Game of Telephone".

Overview of how editable and cost-saving model/documentation tools can solve problems. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/problems-solutions/

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.

Silver Spring, MD 20902, USA: 88°F Tue: 87°F Wed: 89°F Thu: 92°F Fri: 93°F Sat: 95°F Sun: 91°F

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

Views - Mozilla Firefox

file:///E:/9000-8999/nasa/software/summary/mockups/views.htm

Views

Total 30 Entries

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

Subprocess: **Designing Software** (T4-08-00-00)

[Create View](#)

View	Steps
ASTRO-E2 Don Margolies (Don.Margolies@nasa.gov)	Update Copy Delete
CHIPS Dave Pierce (Dave.Pierce@nasa.gov)	Update Copy Delete
CINDI/TWINS Jim Byrd (Jim.Byrd@nasa.gov)	Update Copy Delete
Constellation-X Liz Citrin (Liz.Citrin@nasa.gov)	Update Copy Delete
ESDIS MaryAnn Esfandiari (MaryAnn.Esfandiari@nasa.gov)	Update Copy Delete
EO-1 Bryant Cramer (Bryant.Cramer@nasa.gov)	Update Copy Delete
EOS AURA	Update

Done Now: Mostly Sunny, 69° F Sat: 76° F Sun: 82° F Mon: 78° F Tue: 74° F Wed: 69° F

Figure 2(a). Process Library.

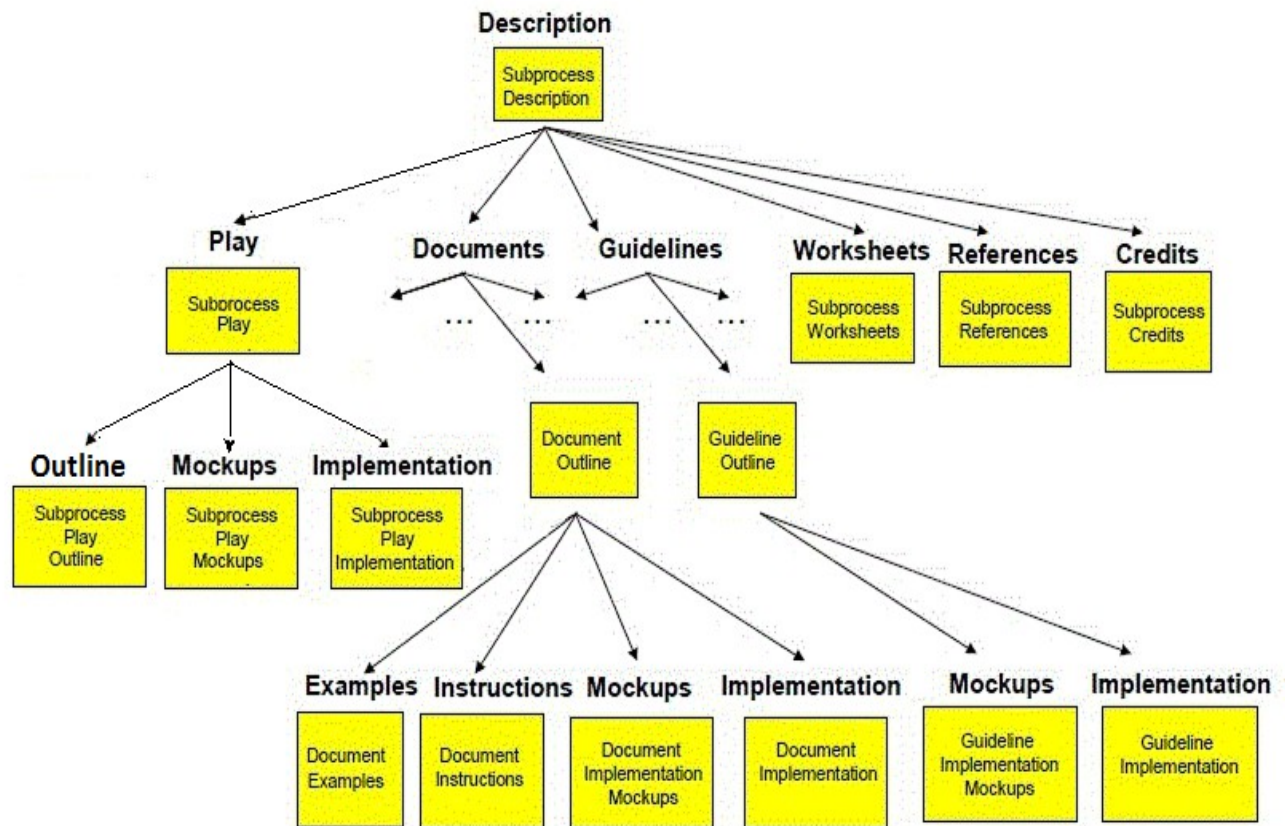


Figure 2(b). Subprocesses in a common envelope.

Tools To Focus On During Stages. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/stages.1.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/EHB, Test, Teach, Work Together
Plays:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Document:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Role Guidelines/EHB:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Subprocess Worksheets:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
References:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Credits:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together

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

Tools To Focus On During Stages. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/stages2.html

Google

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.

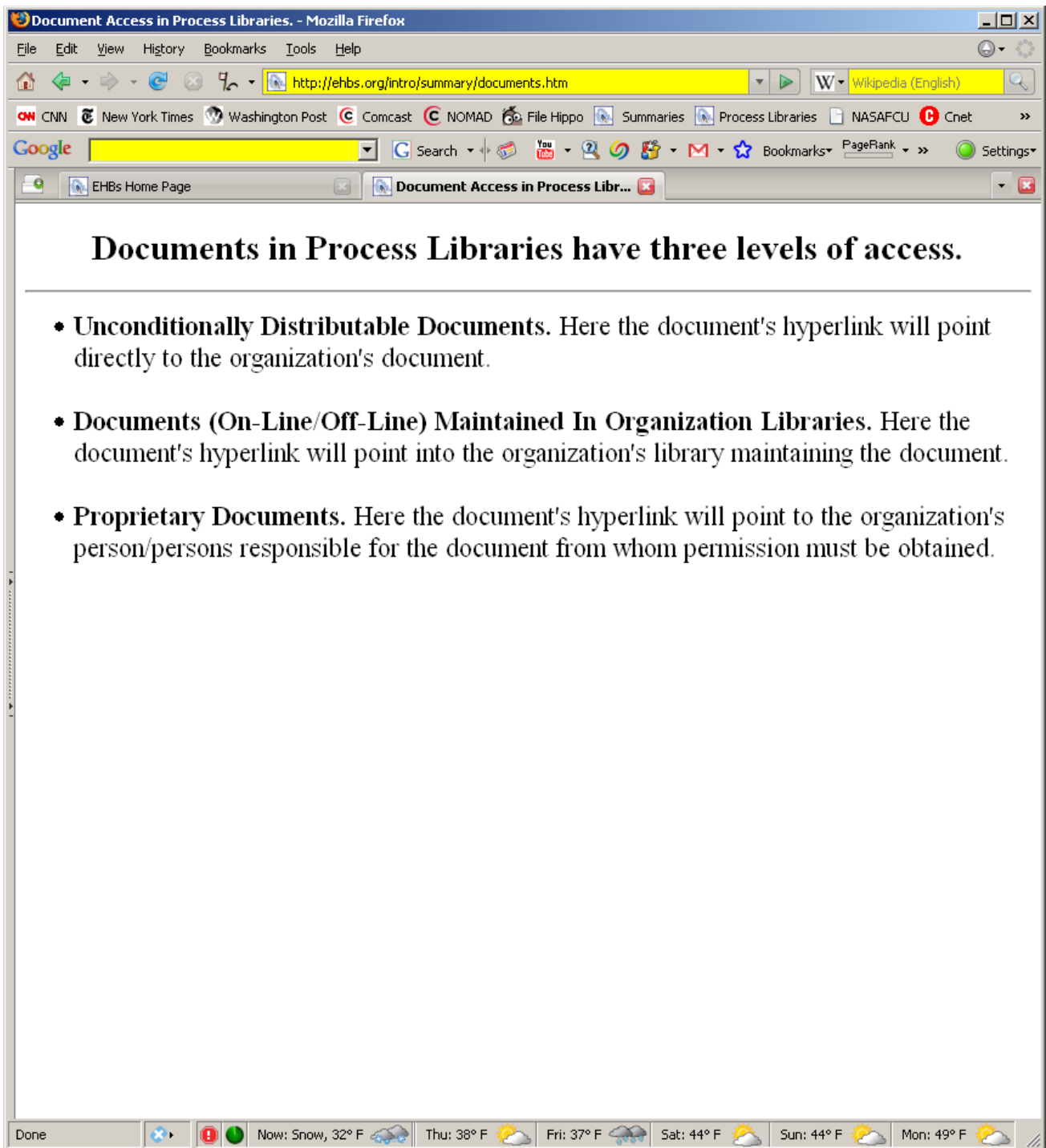


Figure 2(d). Documents in Process Libraries have three levels of access.

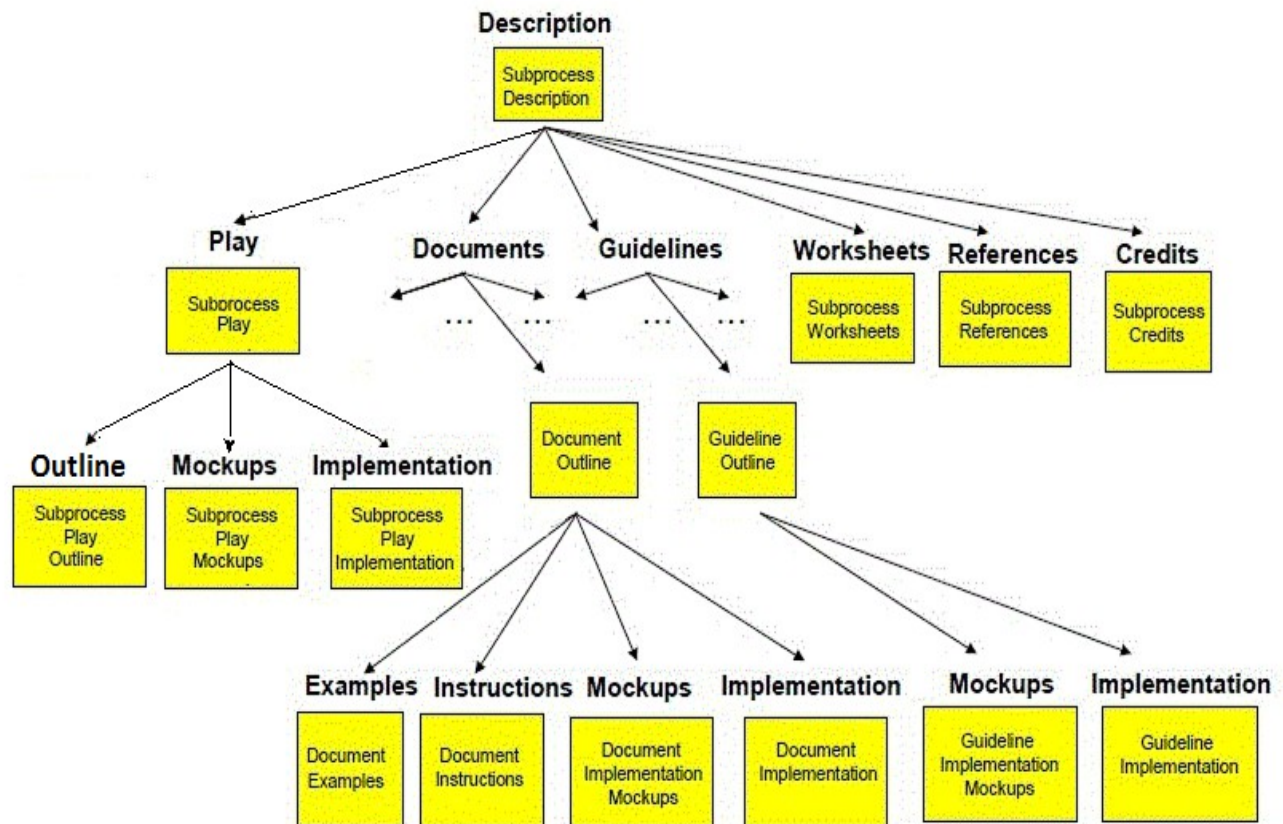



Figure 2(e). For each subprocess, an “Integration View” is the integration or combination of other subprocess views. An "Integration View" facilitates intra- and inter-organization communication.


Shakespeare Meets Freud - Mozilla Firefox 4.0 Beta 3

File Edit View History Bookmarks Tools Help

Shakespeare Meets Freud +



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.

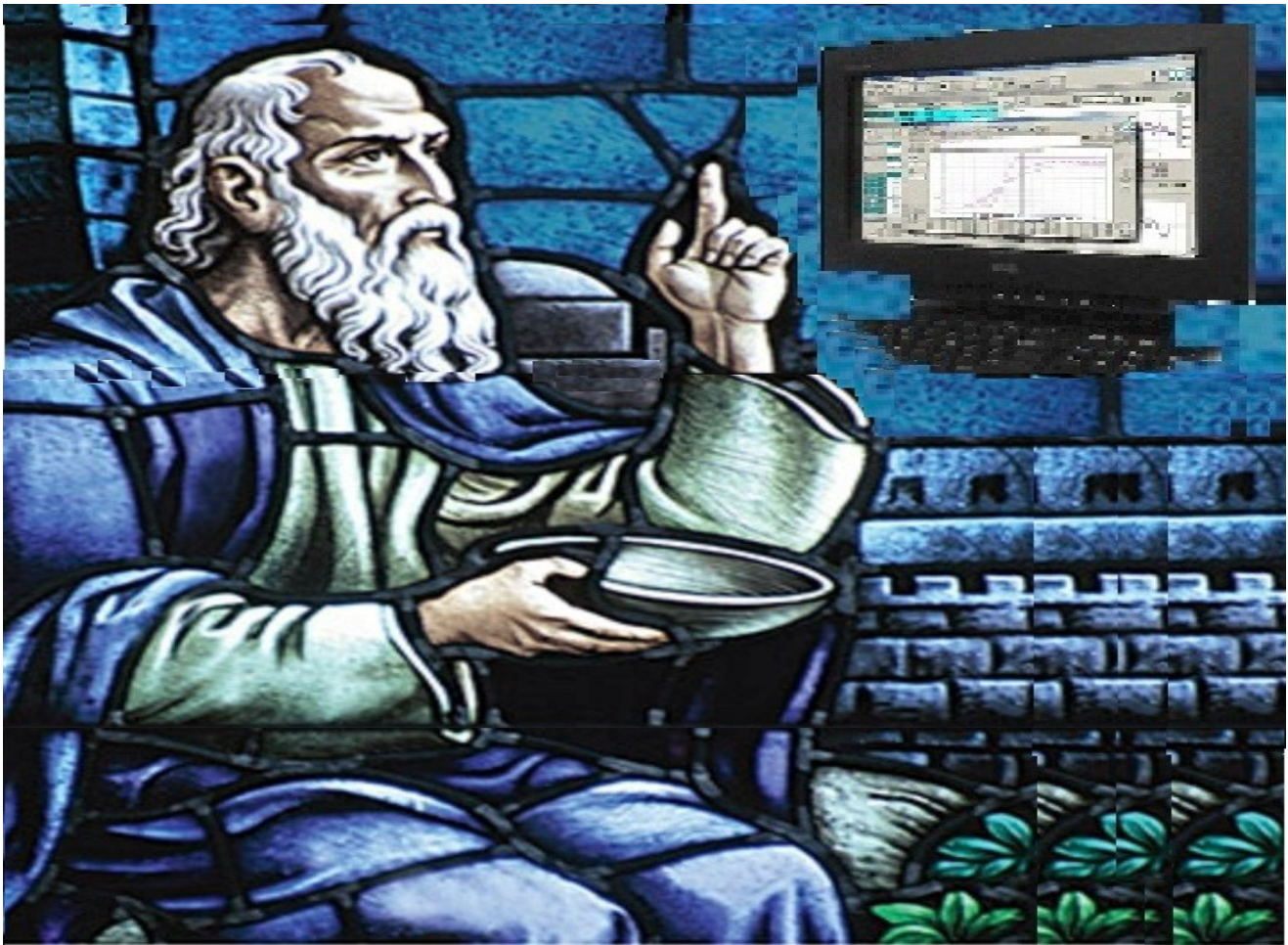


Figure 2(g). The approach uses a modernization of the Socratic Method or Dialogue to gain consensus between teachers, documentors, managers, implementors, and participants.

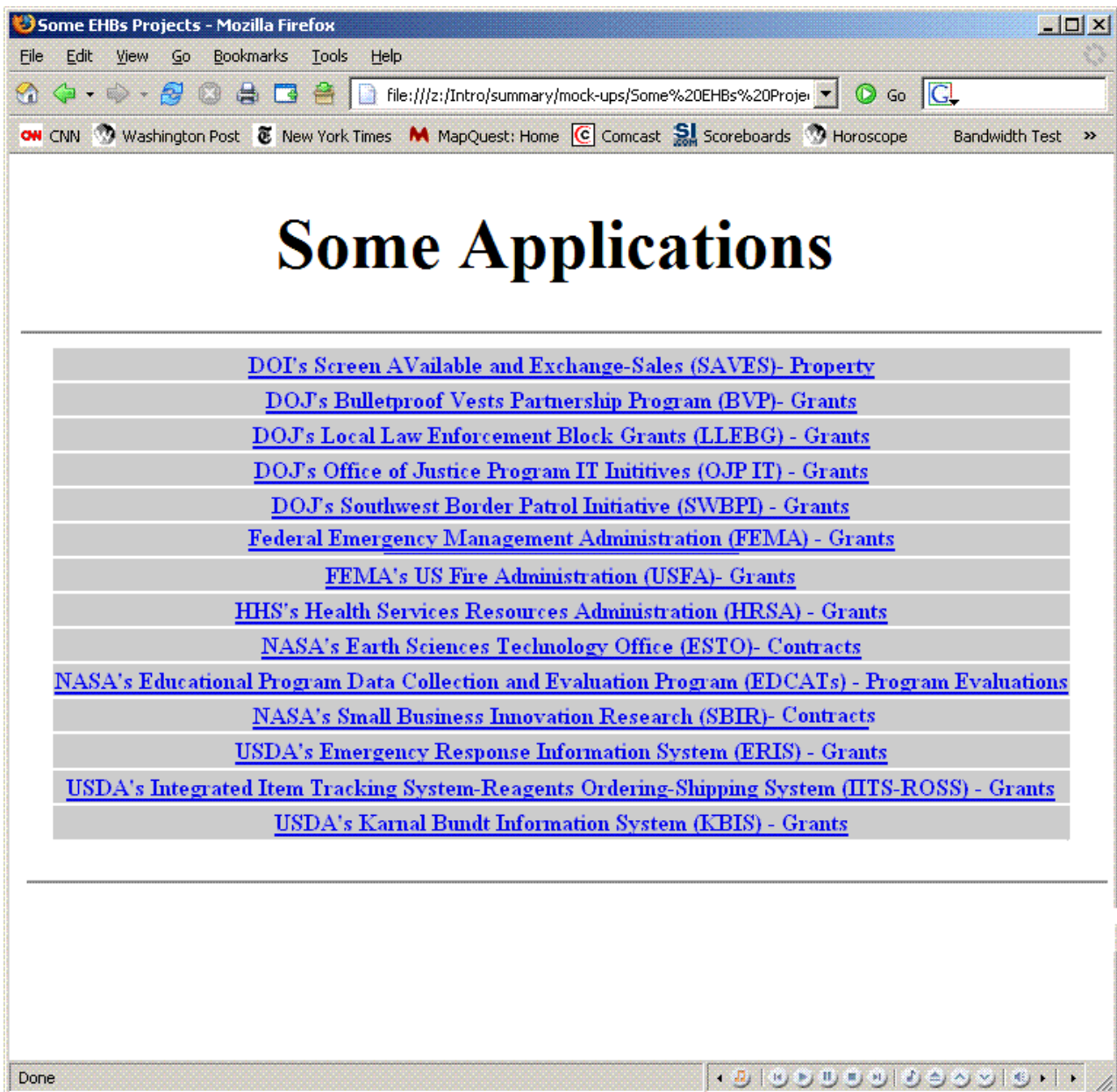


Figure 2(h). Some Process Libraries (PLs) and Electronic Handbooks (EHBs) projects.

Subprocess Life-Cycle Views that are supported. * - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/benefits.htm

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.

The screenshot shows a Mozilla Firefox browser window with the title "Basic People Principles that are supported - Mozilla Firefox". The address bar contains the URL "http://ehbs.org/intro/summary/Basic Principles.htm". The page content features a main heading "Basic People Principles that are supported." followed by a list of six bullet points:

- **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.

The browser's status bar at the bottom shows the system clock as 5:00, the current weather as "Now: Cloudy, 32 °F", and a forecast for the following days: "Tue: 38 °F", "Wed: 43 °F", "Thu: 47 °F", "Fri: 52 °F", and "Sat: 44 °F".

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

Subprocess/Play Developments that are supported - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Home Back Forward Reload Stop <http://ehbs.org/intro/summary/play-development.htm> IMDB

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.

Now: Cloudy, 32 °F Tue: 38 °F Wed: 43 °F Thu: 47 °F Fri: 52 °F Sat: 44 °F

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

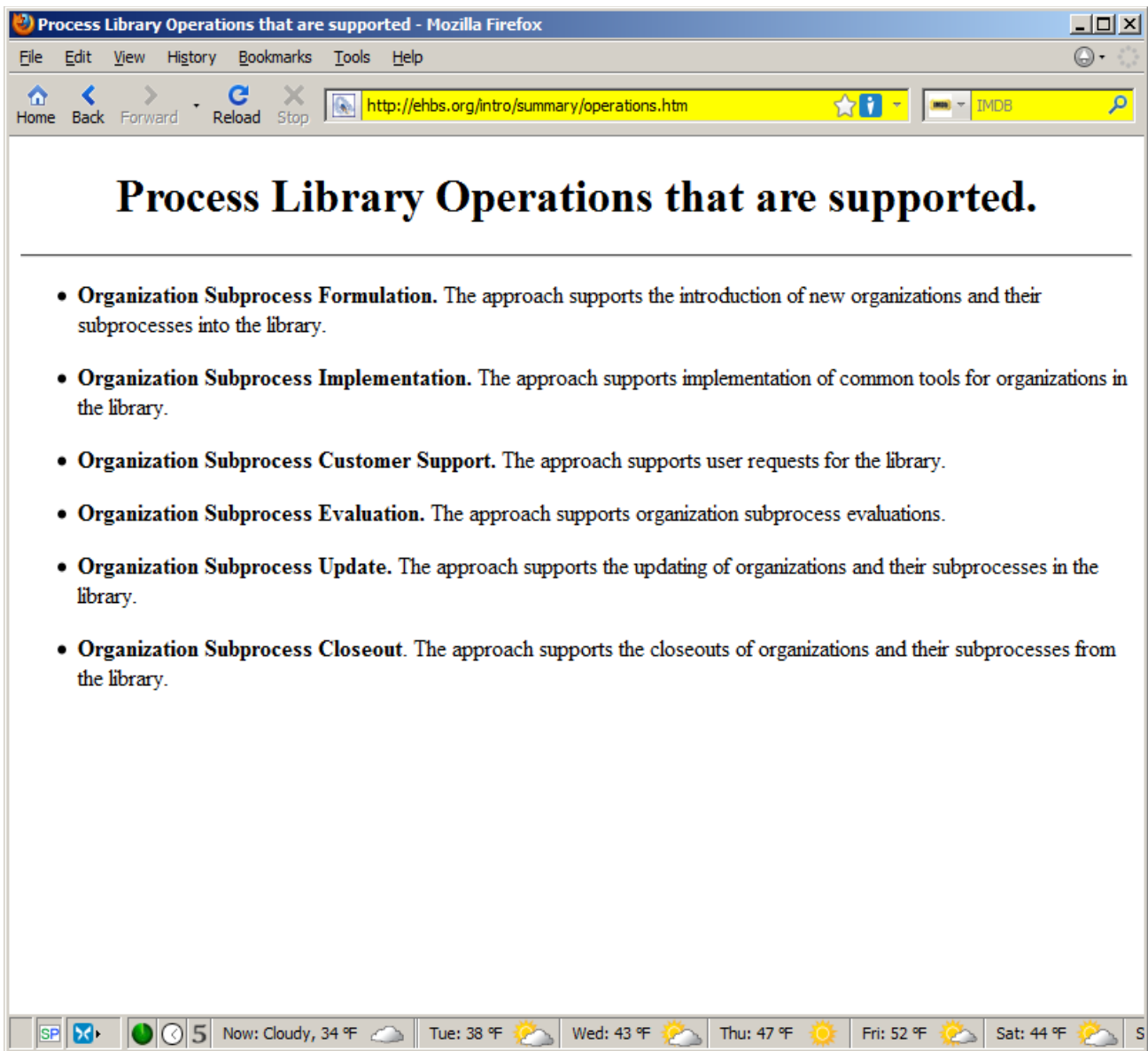


Figure 2(1). Process Libraries Operations that are supported.

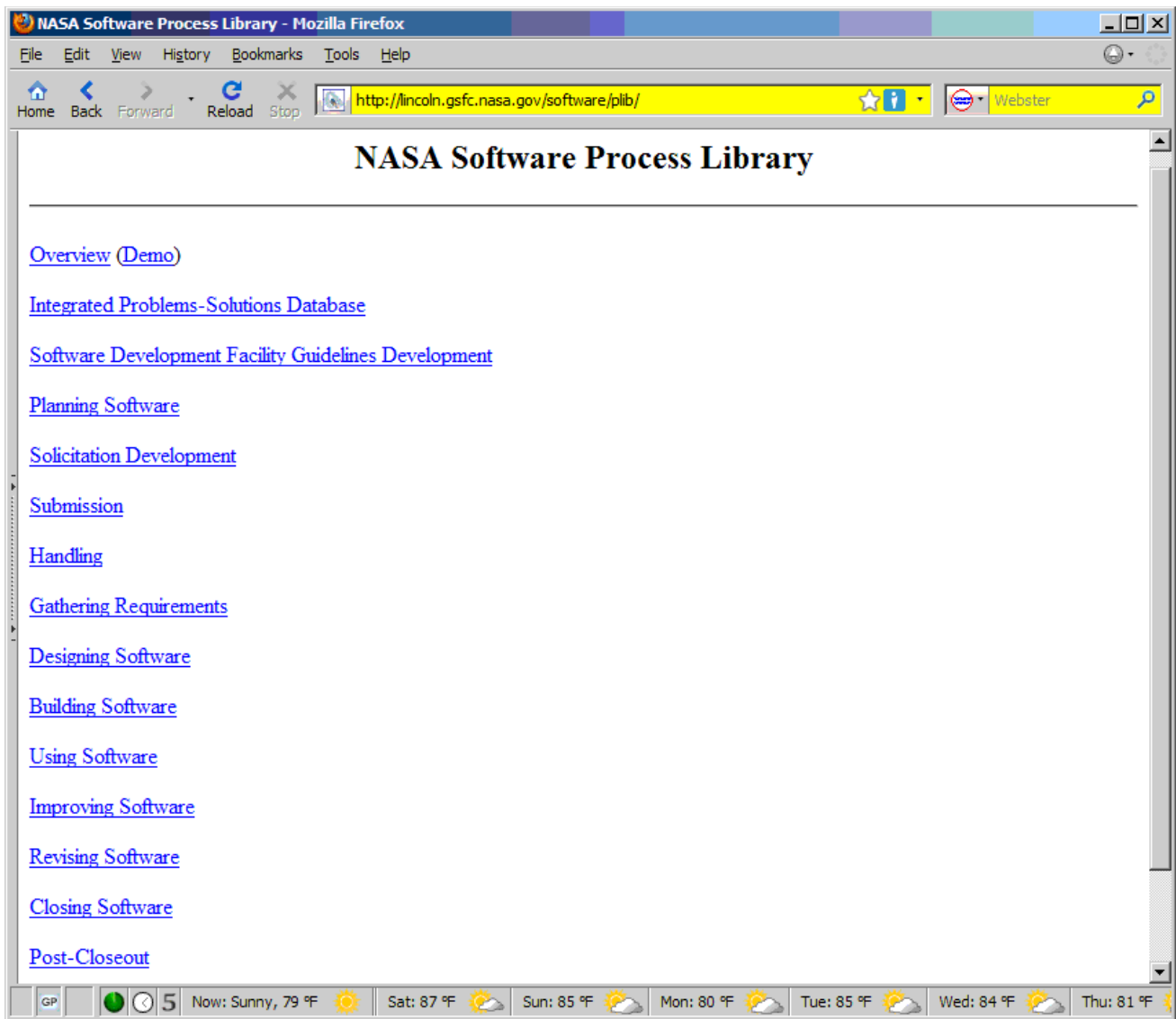


Figure 3(a). Process Libraries are organized by subprocesses.

Views - Mozilla Firefox

file:///E:/8000-8999/nasa/software/summary/mockups/views.htm

CNN New York Times Washington Post Comcast File Hippo Summaries Process Libraries NASAFCLU Scoreboards Bandwidth

Google Search

Views

Total 30 Entries
 Classification: **Product Realization Subprocesses** (T4-00-00-00)
 Subprocess: **Designing Software** (T4-08-00-00)

[Create View](#)

View	Steps
ASTRO-E2 Don Margolies (Don.Margolies@nasa.gov)	Update Copy Delete
CHIPS Dave Pierce (Dave.Pierce@nasa.gov)	Update Copy Delete
CINDI/TWINS Jim Byrd (Jim.Byrd@nasa.gov)	Update Copy Delete
Constellation-X Liz Citri (Liz.Citri@nasa.gov)	Update Copy Delete
ESDIS MaryAnn Esfandiari (MaryAnn.Esfandiari@nasa.gov)	Update Copy Delete
EO-1 Bryant Cramer (Bryant.Cramer@nasa.gov)	Update Copy Delete
EOS AURA	Update

Done Now: Mostly Sunny, 69° F Sat: 76° F Sun: 82° F Mon: 78° F Tue: 74° F Wed: 69° F

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

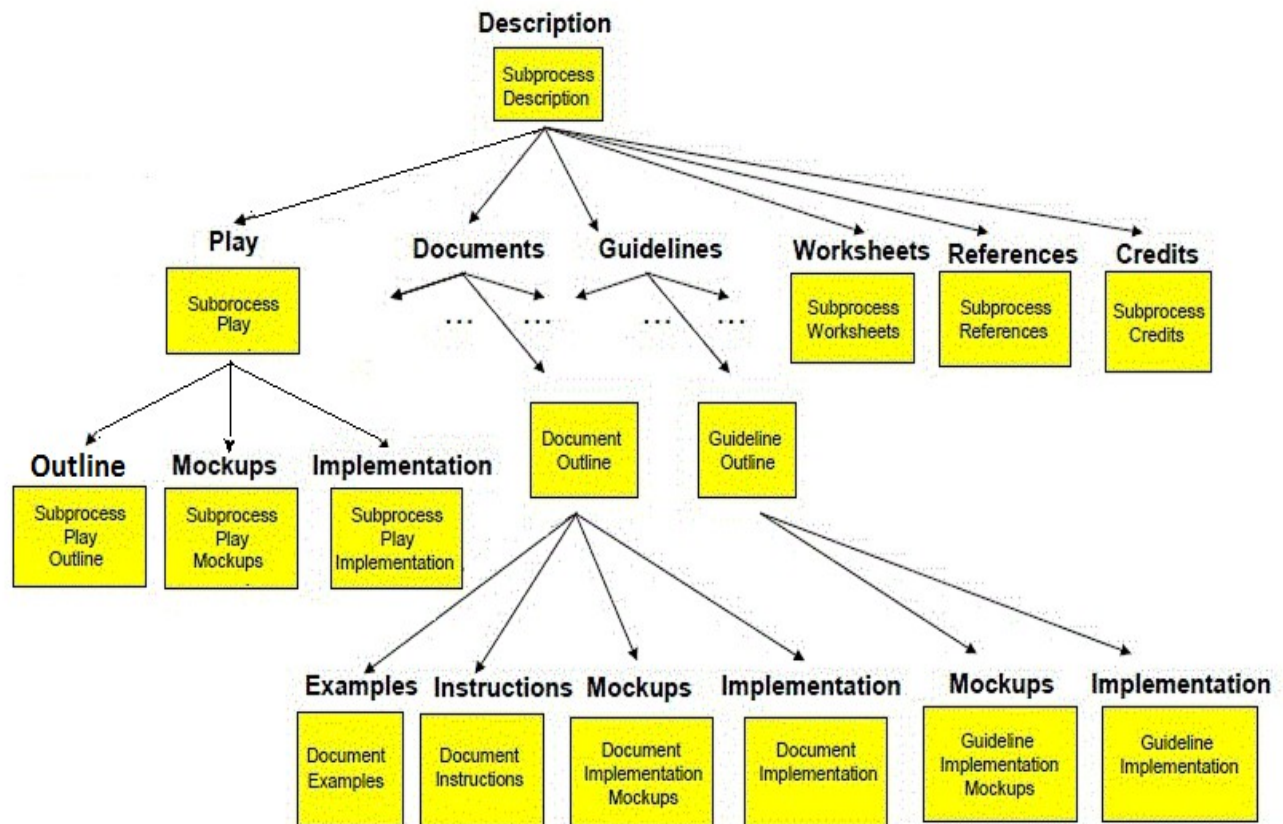


Figure 3(c). Components of an Organization's view .

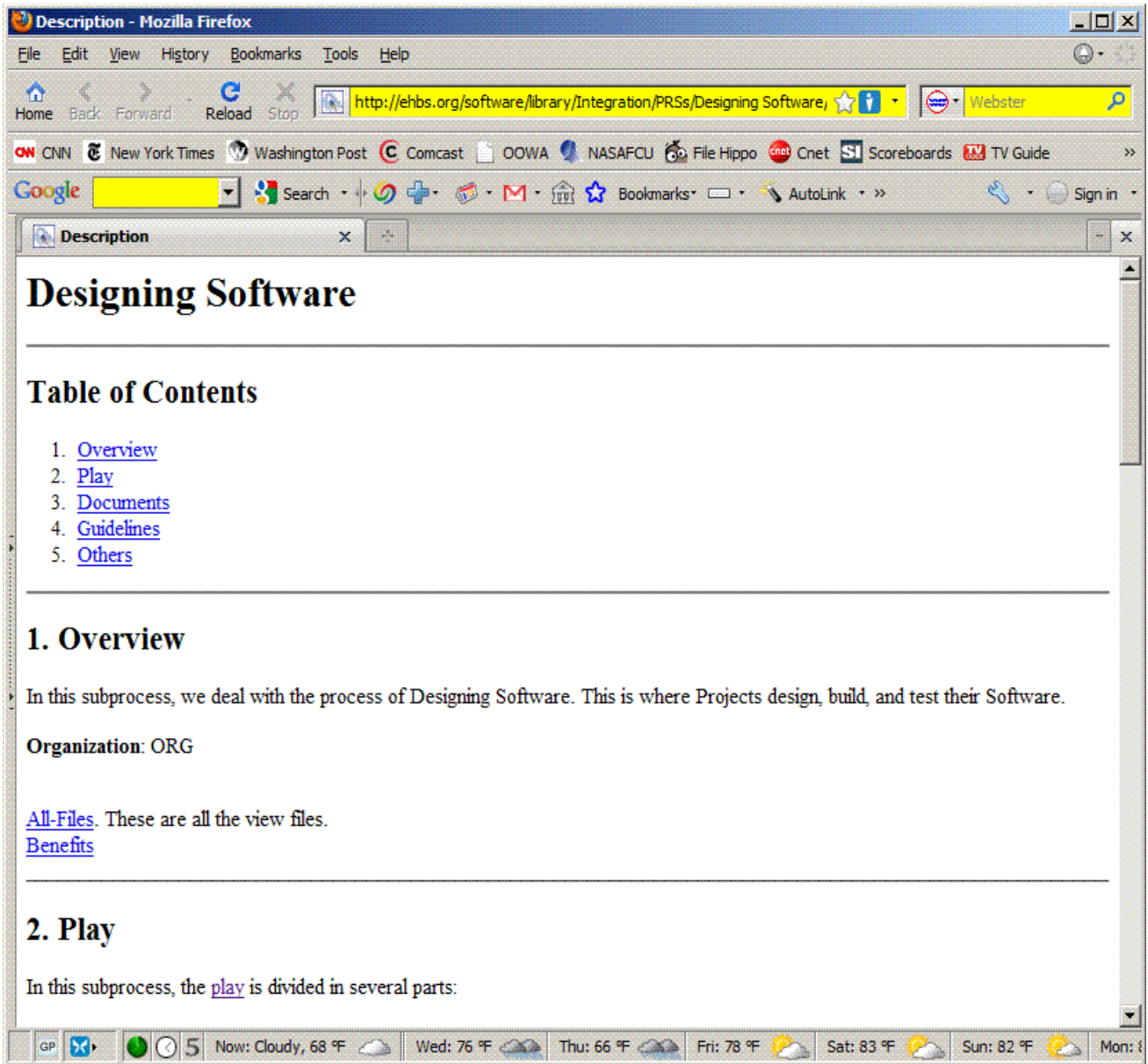


Figure 3(d). Descriptions summarize subprocesses.

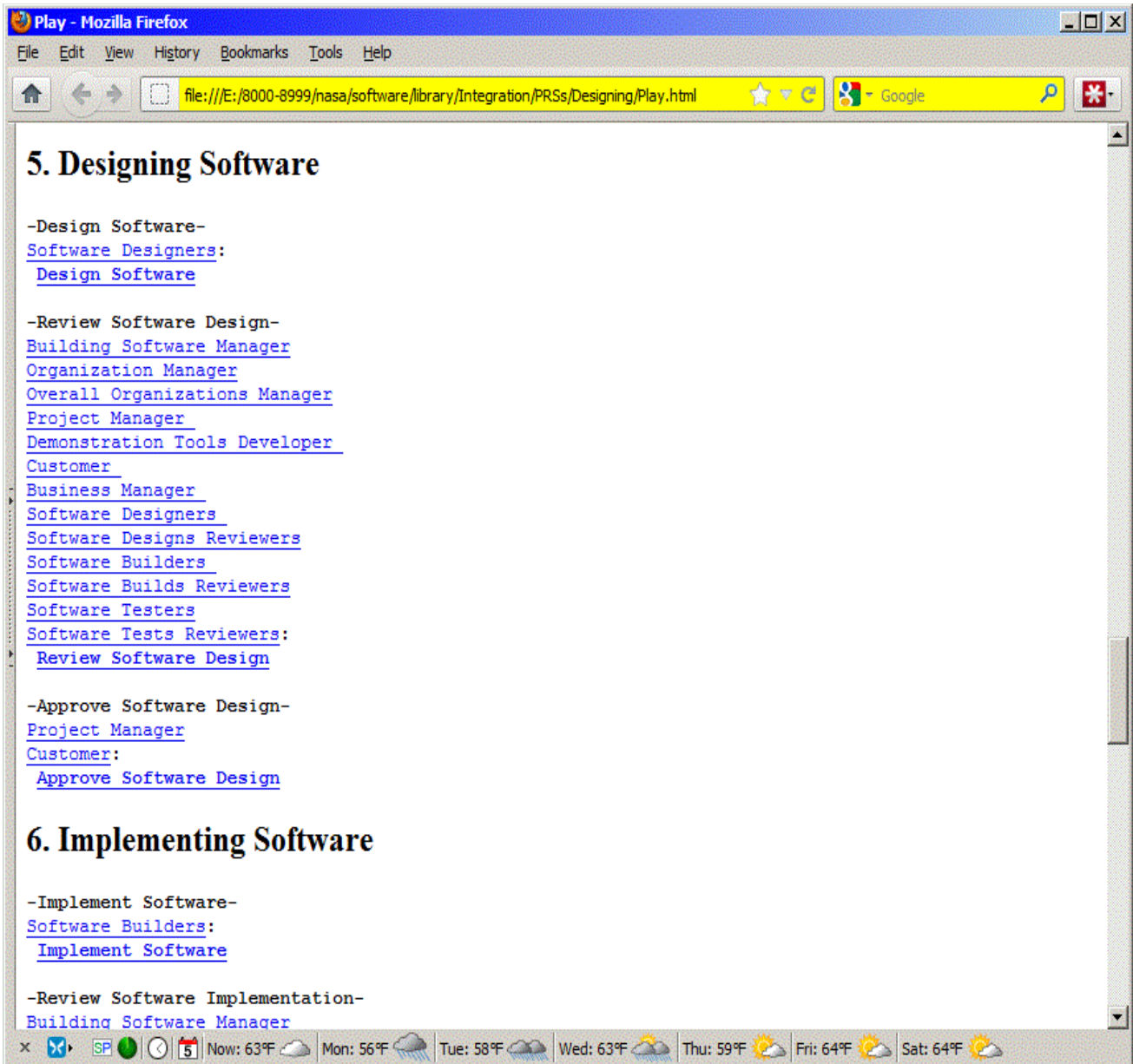


Figure 3(e). Plays describe subprocess execution.

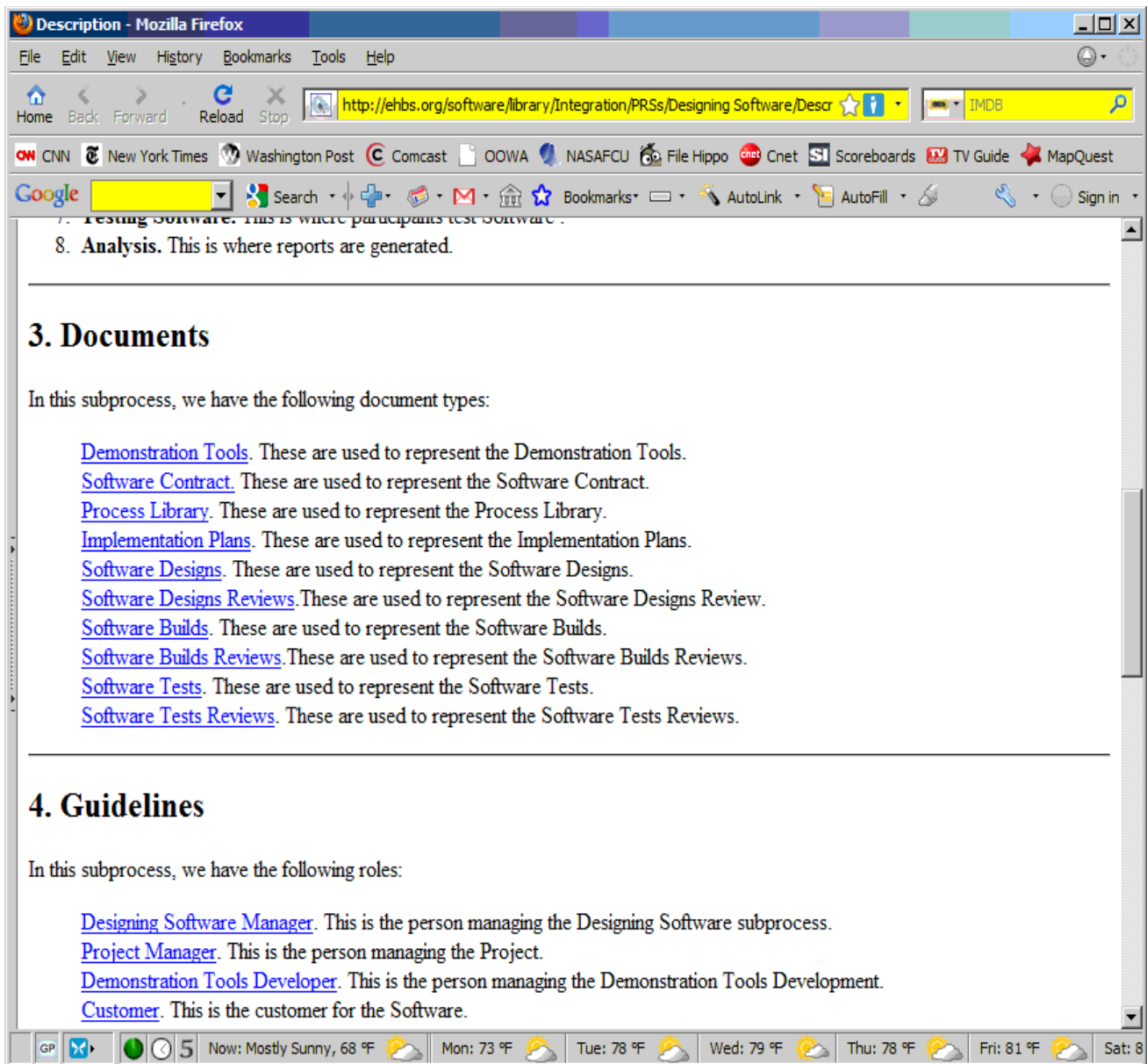


Figure 3(f). Documents describe subprocess data.

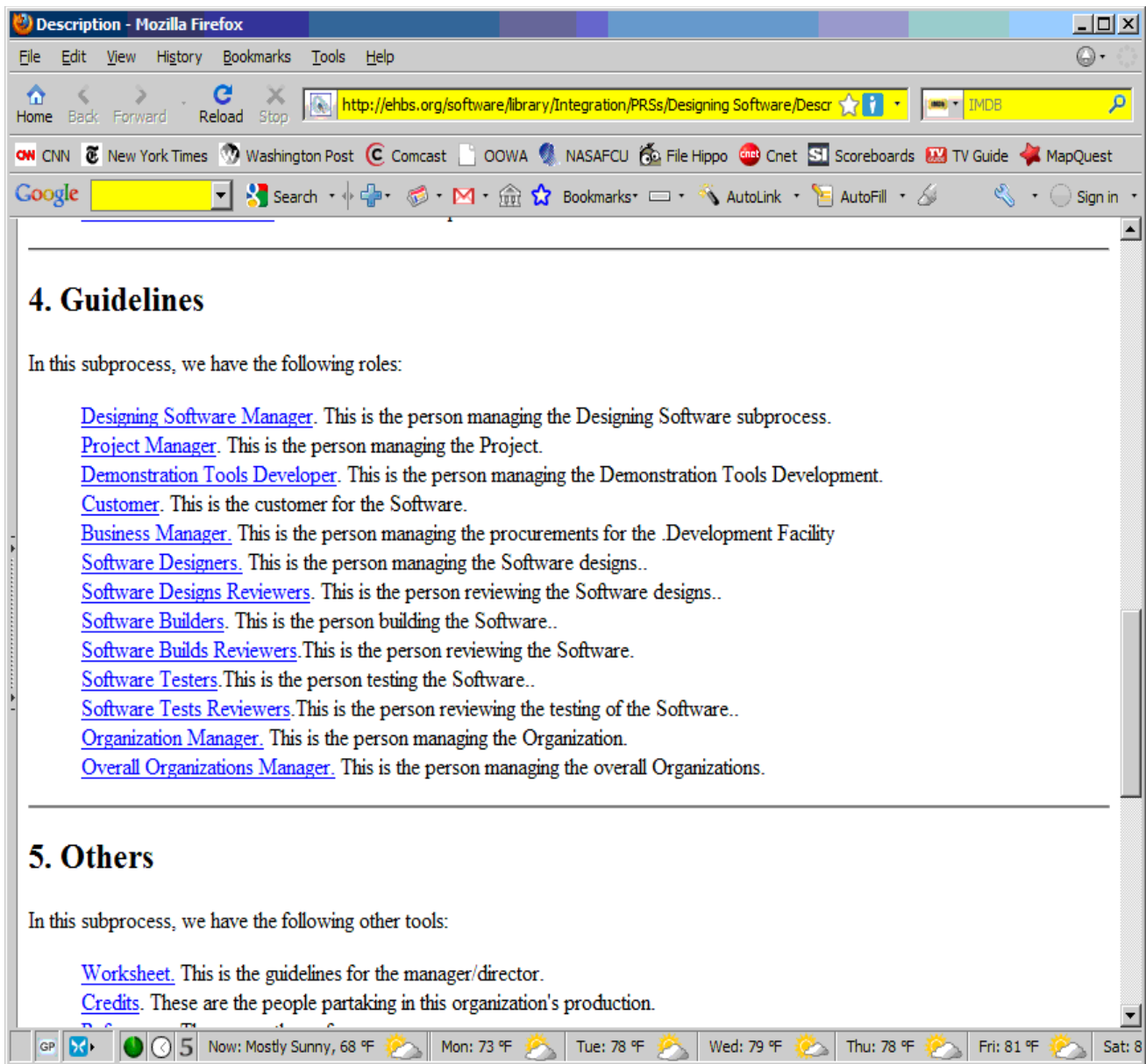


Figure 3(g). Guidelines/Electronic Handbooks describe user subprocesses.

Worksheet - Mozilla Firefox

file:///E:/8000-8999/nasa/software/summary/mockups/Worksheet.htm

Subprocess Worksheet

Subprocess: Designing Software
Purpose: The purpose of this subprocess is to design Software.
Organization: IMAGE

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 Software.	Task Lead, Subtask Lead, Subtask Member, Reviewer, Approval Official, Project Manager, Documents Manager	James Green	07/23/07	08/23/07	Document Library	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
Planning	The purpose of this task is to plan the design of Software.	Task Lead, Subtask Lead, Subtask Member, Reviewer, Approval Official, Project Manager, Documents Manager	James Green	06/23/07	06/23/07	Planning Document	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Draft Project Requirements Document	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Project Plan	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
Designing Software	The purpose of this task is to design the Software.	Task Lead, Subtask Lead, Subtask Member, Reviewer, Approval Official, Project Manager, Documents Manager	James Green	07/23/07	07/23/07	Design Document	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Project Plan	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Review Forms	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Approval Forms	Instructions and Samples	James Green	06/23/07	07/23/07	Library: NS2034
						Development Document	Instructions and	James Green	06/23/07	07/23/07	Library: NS2034

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.

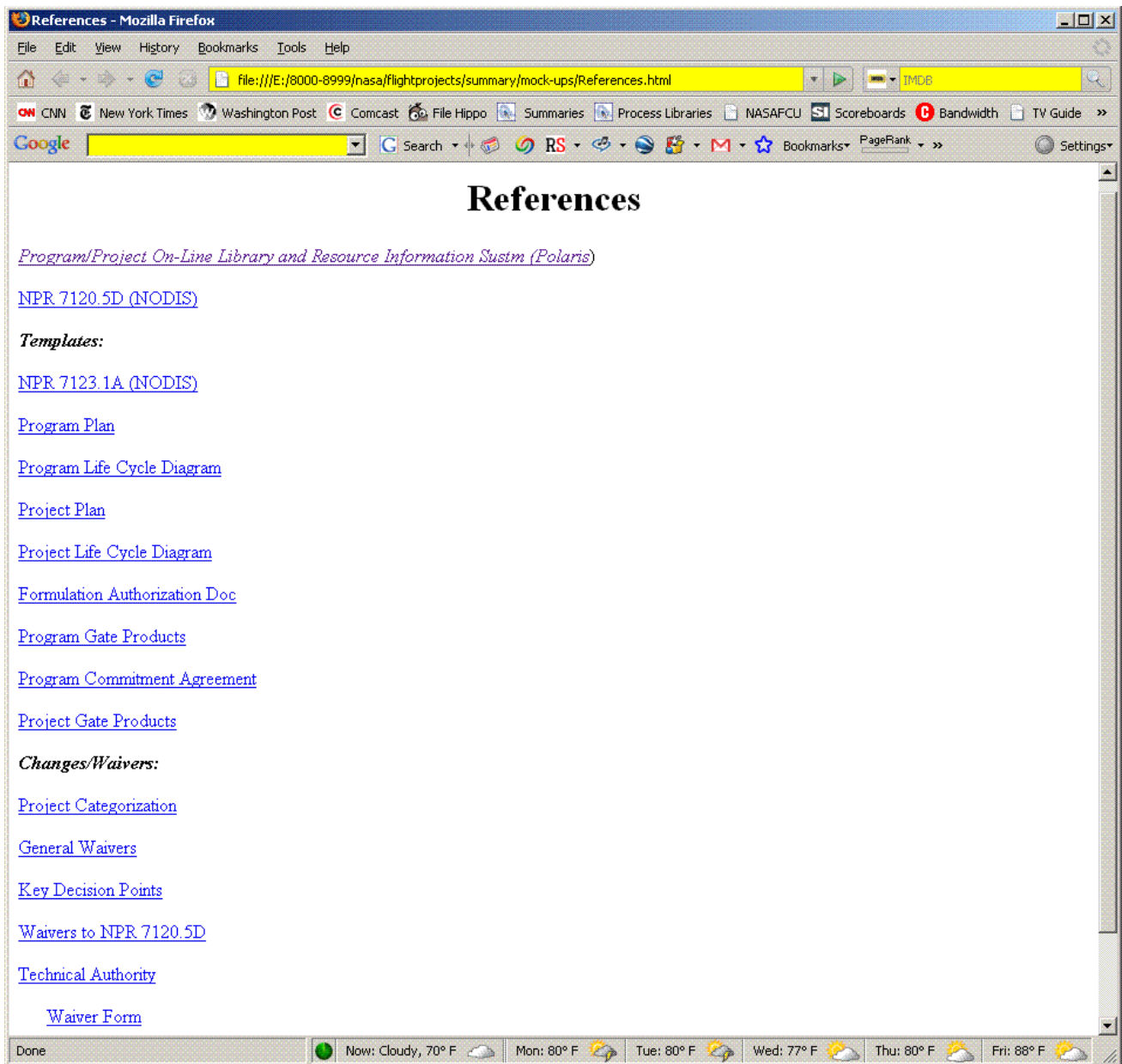


Figure 3(i). References list other related resources.

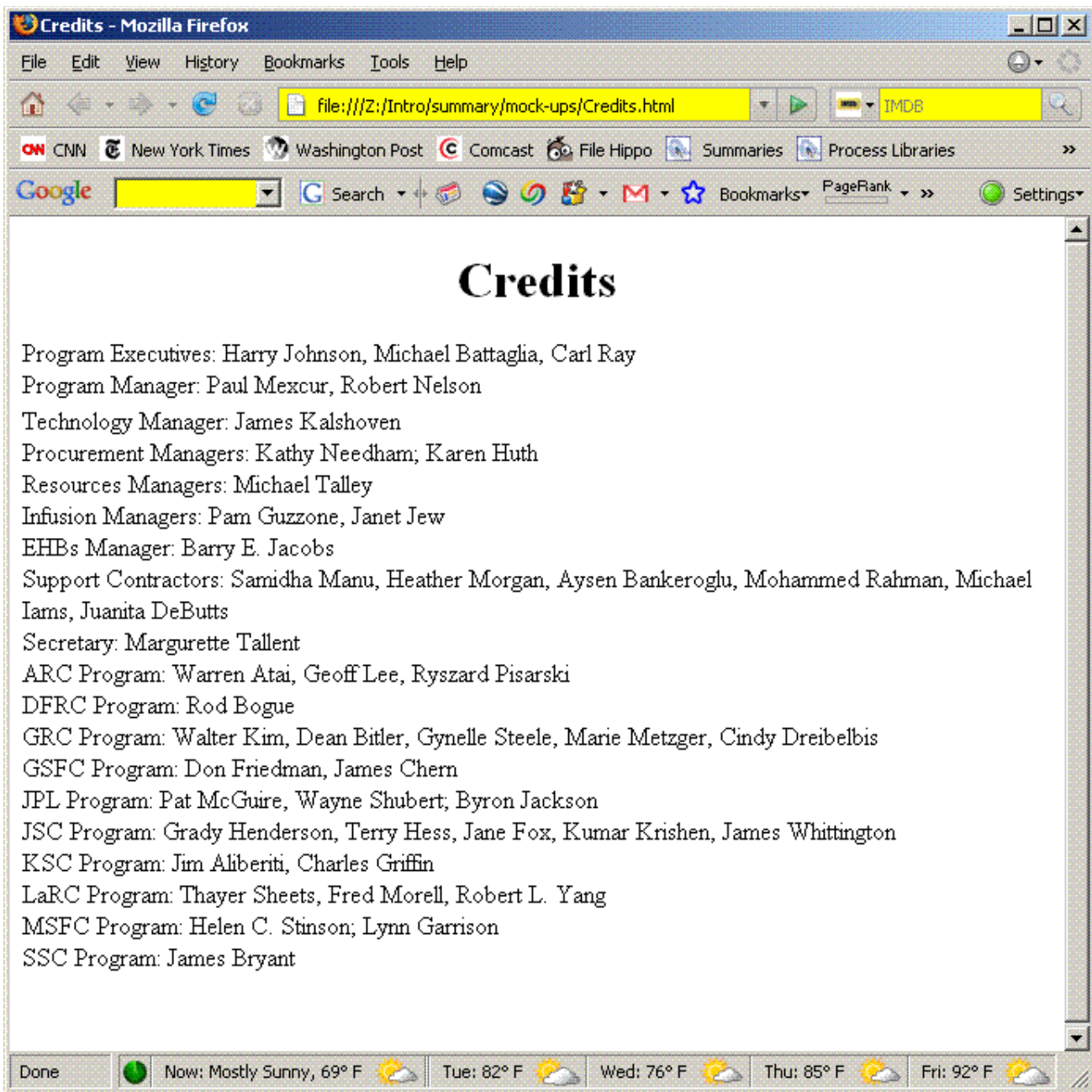


Figure 3(j). Credits acknowledge people's contributions.

Tools To Focus On During Stages. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/stages.1.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/EHB, Test, Teach, Work Together
Plays:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Documents:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Role Guidelines/EHB:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Subprocess Worksheets:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
References:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together
Credits:	Learn, Integrate, Test, Teach, Work Together	Learn, Integrate Documents: Using Role Guidelines/EHB, Test, Teach, Work Together

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

Tools To Focus On During Stages. - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/intro/summary/stages2.html

Google

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 - Mozilla Firefox

file:///E:/8000-8999/nasa/software/summary/mockups/Integrations.htm

Fetch Integration

Read Integration	
Classification	Product Realization Subprocesses
Subprocess	Designing Software
Type	Guidelines
Title	Designing Software Manager
Id	T4-4-3-00
Integration Url	Fetch
Ordinal	33
Date Created	03-MAY-2005
Date Updated	18-MAY-2005

Samples From Views	
ASTRO-E2 Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
CHIPS Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
CINDI/TWINS Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
Constellation-X Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
ESDIS Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
EO-1 Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
EOS AURA Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
ESMO Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
EXIST Fetch - (Size: 10 KB)	Date Created: 23-Jun-2005 Date Updated: 23-Jun-2005
CAL EX	Date Created: 23-Jun-2005

Done Now: Mostly Sunny, 54° F Sat: 76° F Sun: 78° F Mon: 80° F Tue: 80° F Wed: 74° F

Figure 3(1). Integration Tools allow item types to be seen across different organizations.

NASA Software - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ehbs.org/nasasoftware/

 **National Aeronautics and Space Administration (NASA) - Software** 

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](#)
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Last Modified: *June 23, 2005*
Curator: [Dr. Barry E. Jacobs](#)
NASA Official: [Dr. Barry E. Jacobs](#)

Now: 45°F Thu: 59°F Fri: 41°F Sat: 38°F Sun: 38°F Mon: 36°F Tue: 45°F

Figure 3(n). Demonstration Tools introduce the concepts to a community in their terms.

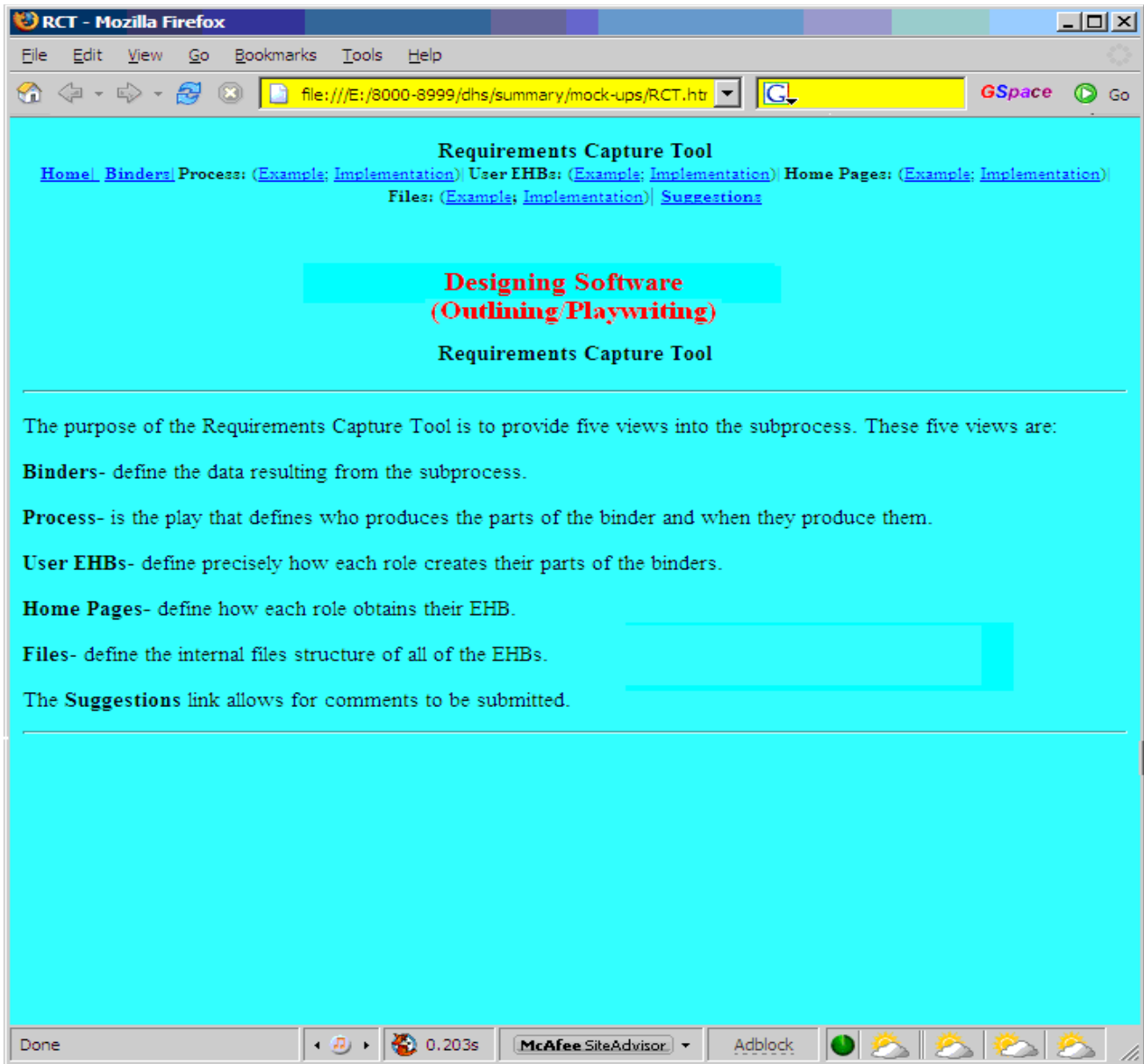


Figure 3(o). Requirements Capture Tools (RCTs) facilitate subprocess development.

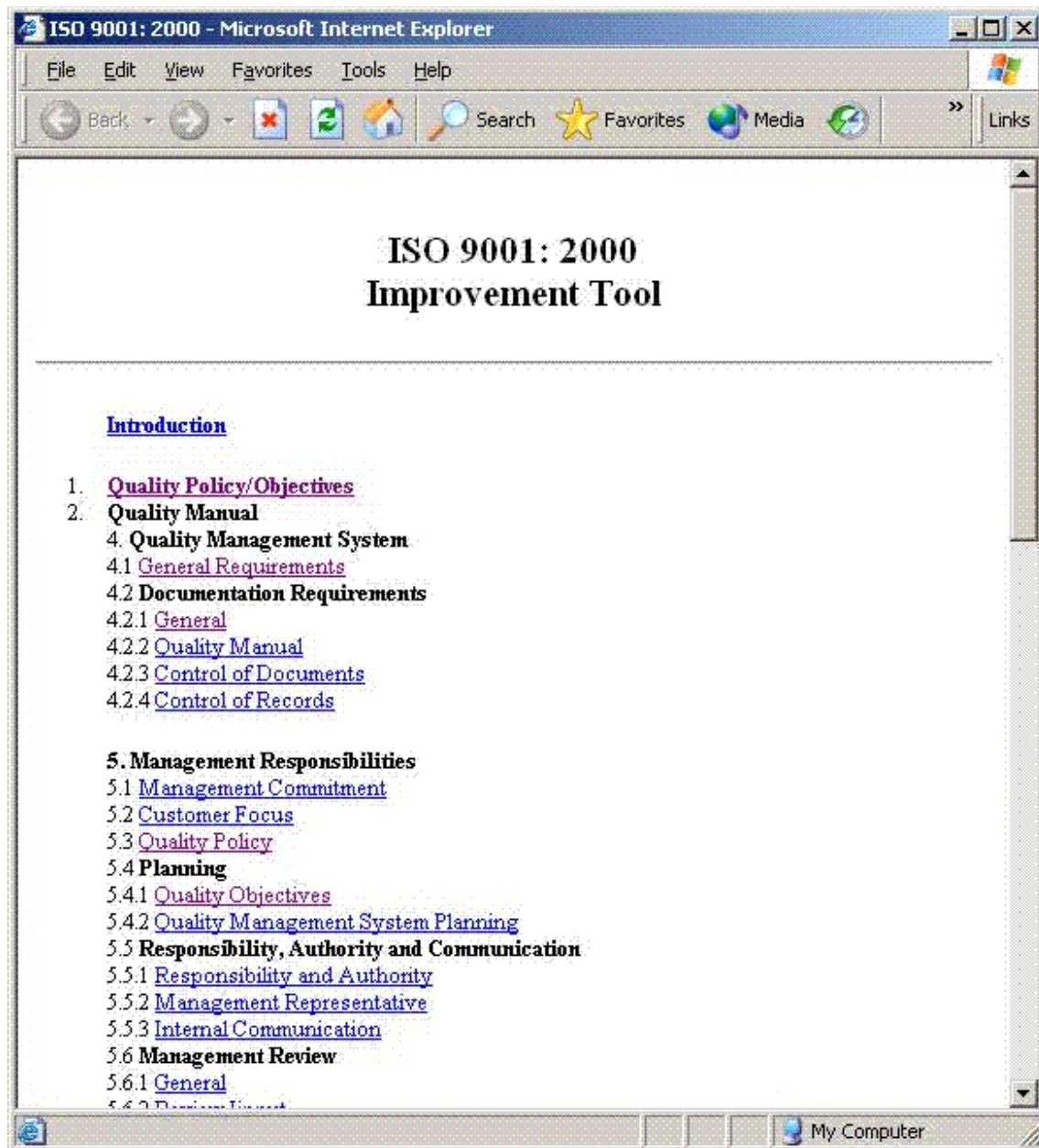


Figure 3(p). Improvement Tools facilitate subprocess improvement.

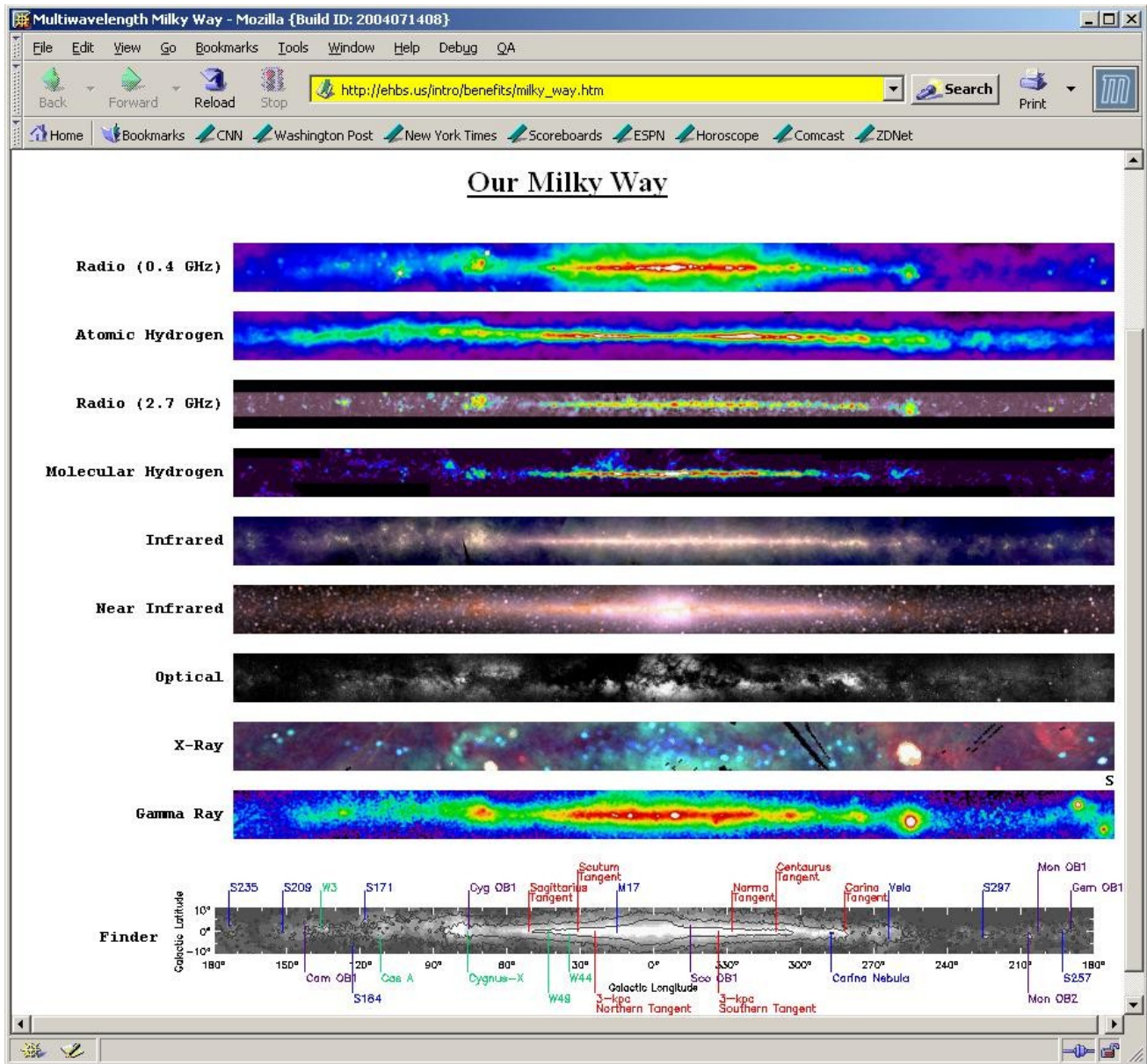


Figure 4(a). We believe that to truly understand one's universe, one must see it thru multiple "eyes" and also have tools to "communicate" these views.

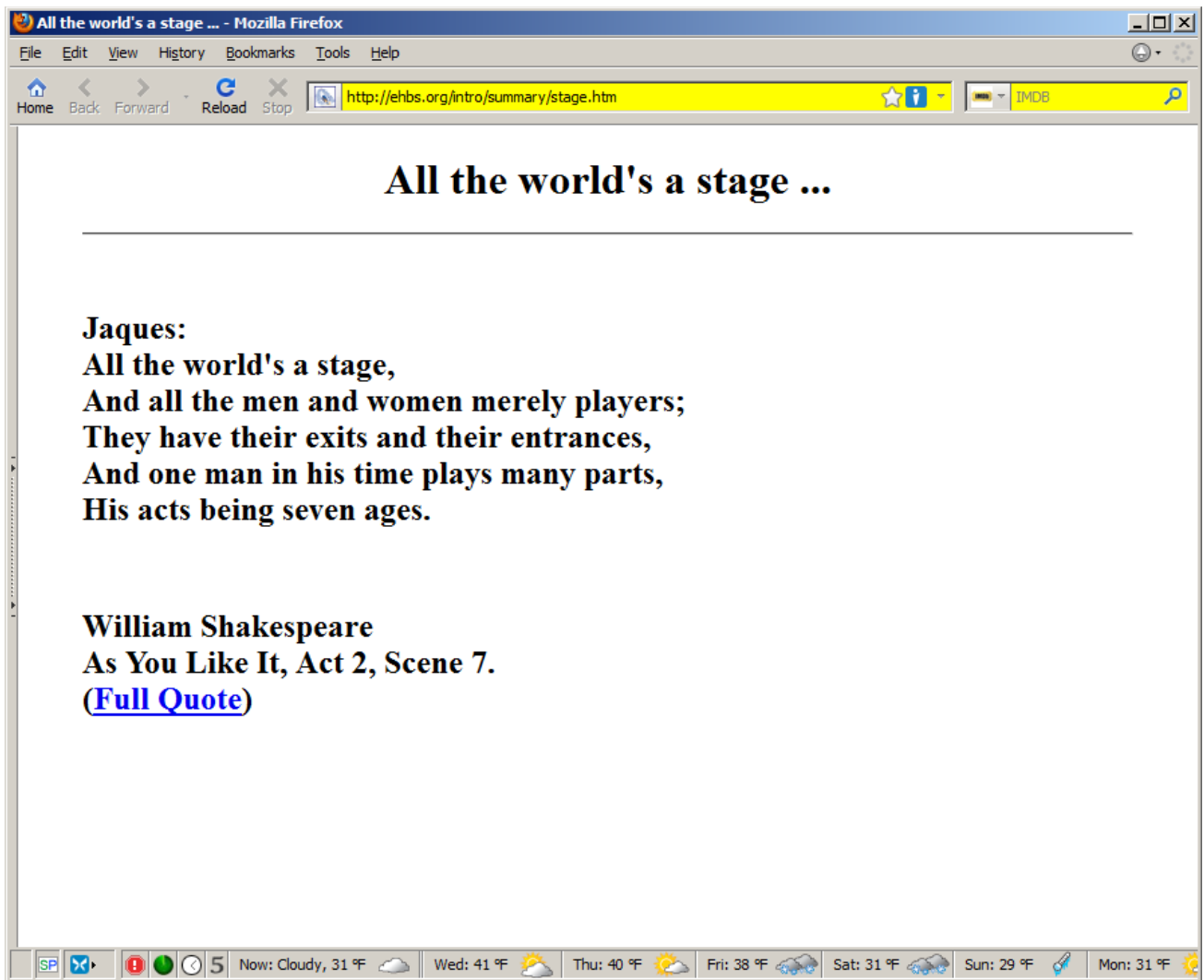


Figure 4(b). All the world's a stage ...

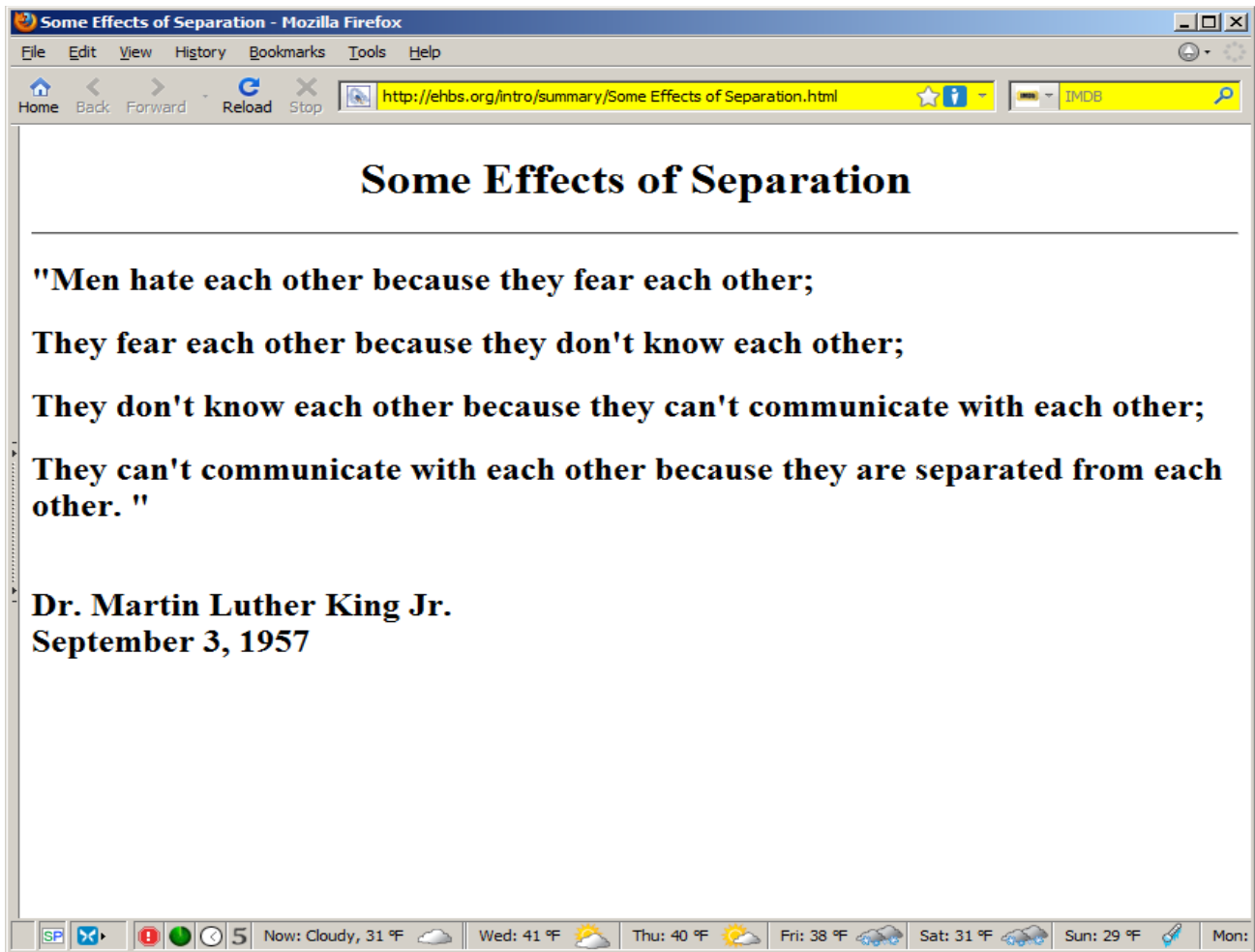


Figure 4(c). Some effects of separation.

Theatre of Dionysus- Athens, Greece



For More Details

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ehbs.us

Complex Process Management Using PLs and EHBs [Where Shakespeare Meets Freud]

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BY D'ANGELO FOR THE WASHINGTON POST

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