

Labors undertaken on the Human Factors Services Contract for a ‘Study Package’, ‘Clinical Study Package’, various study support items or “UX Guide Content” Deliverables are variable in terms of the *Complexity* and *Size* of the effort (the ‘Factors’). Given the unpredictable nature of Human Factors Engineering (HFE) activities, the pricing for each study package (PWS 5.2.1-5.2.3), engagement, project, and study support work (PWS 5.3) and UX Guide content (PWS 5.4) shall be assessed as a product of the unique activities effort’s Factors: $Complexity(C) \times Size(S) = Functional\ Point\ (FP)$. Each Category (i.e., SPECIFYING HIS CONTEXT OF USE AND USER REQUIREMENTS) has a customized spread of complexity and size given the dynamics of the skillset required.

For example- A nominally complex and sized ‘Study Package’ is 1 functional point- $1 \times 1 = 1$; whereas a nominally complex but very-large sized ‘Study Package’ is 4 functional points- $1 \times 4 = 4$.

Category	Size of Activity					
	Extra-Small	Very Small	Small	Nominal	Large	Very-Large
<i>Specifying HIS Context of Use and User Requirements</i>	.1	.2	.4	1.0	2.0	4.0
<i>Designing HIS Solutions</i>	.1	.2	.4	1.0	2.0	4.0
<i>Evaluating HIS Usability</i>	.2	.4	.6	1.0	2.0	4.0
<i>Coordinating engagements, Projects, and Studies</i>	.1	.2	.4	1.0	2.0	4.0
<i>Maturing content for the User Experience (UX) Guide</i>	.1	.2	.4	1.0	2.0	4.0

Category	Level of Complexity		
	Nominal	High	Very-High
<i>Specifying HIS Context of Use and User Requirements</i>	1.0	2	4
<i>Designing HIS Solutions</i>	1.0	2	4
<i>Evaluating HIS Usability</i>	1.0	2	4
<i>Coordinating engagements, Projects, and Studies</i>	1.0	1.5	2
<i>Maturing content for the User Experience (UX) Guide</i>	1.0	1.5	2

Below are descriptions of work for five types of efforts outlined in this PWS. Work in the first three descriptions (5.2.1 – 5.2.3) would include activities that are required for an HFE study (such as the completion of a study proposal, study plan and an After-Action Review submission into the Lessons Learned Journal).

Furthermore, the PWS 5.1 deliverables reflect the scale of work pursued under the other PWS sections, and thus are dynamic. Given the FP payment process, the PWS 5.1 deliverables are Not Separately Priced (NSP) and are understood to be overhead costs on the FP allocated for work assigned.

SPECIFYING HIS CONTEXT OF USE AND USER REQUIREMENTS (5.2.1)

A nominally-sized and nominally complex effort in this category can be expected to produce an analysis of user needs for the primary role for a proposed HIS, with a focus on describing user task-flows and information needs. Approximately 6 one-hour phone interviews are carried out with participants. The addition of another primary user role in the investigation, or the inclusion of two or three non-primary user roles, can be expected to double the complexity of the effort. The complexity of the effort can also expect to double with the inclusion of additional remote methods (such as a questionnaire or virtual focus group) for a multi-method study. The complexity of the effort can be expected to quadruple for an on-site multi-method study that includes workflow observations with a time-motion assessment along with the in-person interviews.

DESIGNING HIS SOLUTIONS (5.2.2)

A nominally-sized and nominally complex effort in this category can be expected to produce a mockup of a user interface (UI) design for a single-task HIS (such as a reminder dialog for documenting patient encounters for a clinical service). The UI design would be informed by a prior study that analyzed user task-flow, information needs, and decision support needs. The design would comply with VA clinical protocol and terminology standards, as well as requirements for clinical data capture.

The incorporation of user preferences, such as for documentation styles into the design (dictation versus typing, documenting throughout the encounter versus at the end of the encounter) and the resolution of resulting design trade-offs can be expected to double the complexity of the effort. The complexity can also be expected to double if the design effort is part of an iterative process that incorporates findings from user testing and feedback from subject matter experts and stakeholders. The level of complexity can be expected to quadruple if the design effort includes a re-engineering of the workflow for the clinical service to improve process efficiency, care team coordination, data utilization, and health IT interoperability.

EVALUATING HIS USABILITY (5.2.3)

A nominally-sized and nominally complex effort in this category can be expected to produce a report of usability issues, risks, and design recommendations based on a cognitive walkthrough with four representative users of a proposed user HIS interface. The walkthrough would utilize scenarios and design criteria created during a prior study. The addition of another user role in the usability assessment (to include another four participants) can be expected to double the complexity of the effort. The level of complexity can also be expected to double if another method is included in the assessment (such as keystroke-level modeling to predict task times). The level of complexity can be expected to quadruple when a series of user interactions take place across multiple workflows, systems, and environments where new development of questionnaires, tasks and scenarios are required along with multiple methods applied.

COORDINATING ENGAGEMENTS, PROJECTS, AND STUDIES (5.3)

A nominally-sized and nominally complex effort in this category can be expected to produce materials for (and to deliver) training to HFE staff on the approach used to conduct a series of studies related to a HIS design and implementation project. The hands-on training would include explanations of artifacts used in the study, along with example exercises. The level of complexity can be expected to be doubled to produce materials for journal submission (report writing, technical editing/proofreading for formal PR and WG, publishing support and graphical design) and a formal presentation (panel/poster) at a professional conference (i.e., HFES Healthcare) to describe a series of studies executed by HFE that led to the successful implementation of a HIS.

MATURING CONTENT FOR THE USER EXPERIENCE (UX) GUIDE (5.4)

A nominally-sized and nominally complex effort in this category can be expected to produce online materials that would enable a Clinical Informaticist at a VA Medical Center to plan and lead a usability walkthrough of a proposed health IT application (such as a clinical reminder dialog) with intended users. The materials would include an overview of the method, step-by-step instructions, sample artifacts, and templates for carrying out the method. The addition of audio/video instructions can be expected to double the complexity of the effort. The technique and approach to gathering or creating relevant content to inform creation of the materials is expressed within the effort, although when previous studies' deliverables can be leveraged for UX Guide content, the size of the effort is expected to decrease.

Complexity Determination Guidelines

The Contractor's estimate of complexity shall be in accordance with the following guidelines.

1. Efforts should align with the primary objectives of the tasking, where optimized for available/preferred schedule, cost, and quality.
2. When feasible the programmatic re-use that enables efficiencies to be gained in future work should be identified early.
3. When holistic perspectives are relevant to study objectives, they are pursued within available resource/schedule constraints, and the risks of any atomistic (non-holistic) perspectives are communicated.

The Contractor's estimate of complexity should consider the expected number of:

- **FILES** reviewed or designed
- **REPORT FORMATS** designed
- **BRIEFINGS/SUMMARIES** designed and presented
- **TOOLS** engaged
- **APPLICATIONS** accessed or evaluated
- **SCREENS/PAGES** accessed, designed, or evaluated
- **SCREEN ELEMENTS and LAYOUT OBJECTS** within UI
- **USER INTERACTION TYPES** encountered
- **SOCIO-TECHNICAL FACTORS** evaluated

Attachment C

Functional Point Alignment- Human Factors Services

- **FORM CHANGES** from underlying structure
- **SYSTEM INTEGRATIONS** (including data interoperability) within system workflow
- **NAVIGATION STEPS** encountered
- **ERRORS** identified
- **TRANSACTIONS** audited or diagramed (e.g., tree/fault analysis)
- **PROCESSES** (including workflow, task-flow, and decision-making) mapped, evaluated, or redesigned
- **FUNCTIONAL LOGIC OPERATORS** within UI
- **QUESTIONNAIRE ITEMS and RESPONSES** created and analyzed
- **OPERATING SYSTEMS** applied
- **FORM FACTORS** evaluated
- **METHODS** applied
- **TEMPLATES** created
- **GRAPHICAL ICONS/LOGOS** created
- **USER ROLES** investigated or analyzed
- **USER STORIES** (or Job Stories) captured, mapped, or addressed
- **CONTENT FORMATS** (e.g., video, HTML, article) produced
- **CONTENT WORD COUNT** produced