

Occupational Information Development Advisory Panel

**Content Model and Classification
Recommendations
for the
Social Security Administration
Occupational Information System**

Report to the Commissioner of Social Security



September 2009

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**Occupational Information Development Advisory Panel
Content Model and Classification Recommendations**

TABLE OF CONTENTS

Executive Summary	1
Introduction	5
SSA’s Occupational Information Needs	11
The Occupational Information System Project	13
Occupational Information Systems in the United States	15
Update or Replace the DOT?	21
The Scope and Work of a FACA Panel.....	25
OIDAP Content Model and Classification Recommendations.....	31
Summary and Future Activities	57
Glossary.....	63
Bibliography	67
Appendix A—About the Panel	A-1
Appendix B—Report of the Physical Demands Subcommittee	B-1
Appendix C—Report of the Mental/Cognitive Subcommittee.....	C-1
Appendix D—Report of the Work Experience Analysis Subcommittee.....	D-1
Appendix E—Report of the Work Taxonomy and Classification Subcommittee	E-1
Appendix F—Report of the User Needs and Relations Subcommittee	F-1
Appendix G—Relevant Regulations and Social Security Rulings	G-1
Appendix H—Final List of Approved Subcommittee Recommendations.....	H-1
Appendix I—Global List of Acronyms and Glossary.....	I-1

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Executive Summary

In December 2008, Commissioner Michael J. Astrue established the Occupational Information Development Advisory Panel (Panel or OIDAP). The Charter of the Panel states that we are to:

... provide advice and recommendations related to SSA's disability programs in the following areas: medical and vocational analysis of disability claims; occupational analysis, including definitions, rating, and capture of physical and mental/cognitive demands of work, and other occupational information critical to SSA disability programs; data collection; use of occupational information in SSA's disability programs; and any other area(s) that would enable SSA to develop an occupational information system [OIS] suited to its disability programs and improve the medical-vocational adjudication policies and processes.¹

The recommendations set forth in this report constitute our initial efforts to meet the dictates set forth in our Charter. The scope of this first set of recommendations are specific to the content model and classification needs of the OIS. They are displayed in the person- and job-side, linking, and other categories that are detailed in this report. From an operational perspective, and within the scope of this first report, the advice is best summarized with seven general recommendations.

GENERAL RECOMMENDATIONS SUPPORTING THE NEED FOR A NEW OIS AND ON THE TECHNICAL, LEGAL, AND DATA REQUIREMENTS OF SUCH AN OIS

The creation of a new occupational information system is needed to replace the Dictionary of Occupational Titles for Social Security Administration's (SSA's) disability adjudication system. The OIS must include: a) occupations aggregated at a level to support individualized disability assessment; b) a cross-walk to the Standard Occupational Classification; c) precise occupationally-specific data; d) core work activities; e) minimum levels of requirements needed to perform work; f) observable and deconstructed measures; g) a manageable number of data elements; h) sampling methodology capturing the full range of work; i) inter-rater agreement justifying data inference; j) data collection of high quality data; k) valid, accurate, and reproducible data; l) whether core work activities could be performed in alternative ways; and, m) terminology that is consistent with medical practice and human function.

¹ Occupational Information Development Advisory Panel Charter, December 9, 2008.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

In order to create such a new OIS with these requirements, the basic data elements that constitute the starting point for researching its framework, or the content model and classification systems, are outlined in depth by the Panel. These data elements are the center of the scope of this first set of recommendations from the Panel to SSA.

GENERAL RECOMMENDATIONS REGARDING DATA ELEMENTS FOR THE NEW OIS

An initial empirically derived work taxonomy should serve as a stimulus to develop instruments to measure each dimension. Specific data elements for the development of the OIS include physical and psychological abilities required to do work; they also include work activities, context, and extra data elements for the content model.

The scope of the recommendations from the Panel include that of the occupational classification for the OIS. Beyond the technical, legal, and data requirements of the OIS as identified in the first general recommendation, the Panel further sets out another recommendation for the classification of the system.

GENERAL RECOMMENDATION FOR THE CLASSIFICATION OF THE OIS

Once a large database representative of all work in the national economy is available, SSA should examine various job classification methods based on the common metric.

The data element and classification recommendations represent the main scope of our advice for the content model and classification framework for the OIS.

We would be remiss to not consider the context upon which these recommendations lie or the need of a mechanism to create and maintain the structure of our recommendations such as depicted in Table 1. An OIS specific to SSA's needs should have a strong network of technical and professional expertise within and outside of SSA to support its creation and maintenance. Consequently, the Panel identifies recommendations that together comprise the fourth set of general recommendations.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

GENERAL RECOMMENDATIONS FOR THE CREATION OF INTERNAL AND EXTERNAL EXPERTISE FOR THE CREATION AND MAINTENANCE OF THE OIS

Development of an independent internal unit at SSA staffed with experts addressing the work analysis and person-side development and research needs for the creation and maintenance of the OIS. Concurrent development and maintenance of online communities of researchers and other professionals to inform the unit's emerging and ongoing ideas, research, and methods.

With a strong independent internal unit of experts specific to the OIS, and input from research and professional communities external to SSA, the research needs of the OIS can better be examined. Although the primary scope of our recommendations in this report were for the data elements needed for the content model and classification, within the context of our review and deliberation, the Panel identified areas of basic and applied research that SSA may want to consider in the development the OIS and its application within disability adjudication. The constellation of the potential research results in the fifth set of recommendations by the Panel.

GENERAL RECOMMENDATIONS FOR BASIC AND APPLIED RESEARCH

Research to develop and pilot work-side instruments and prototypes, perform a usability analysis, and create a sampling plan. Exploratory, validation, and reliability research on the quantitative link between person- and job-side mental/cognitive, physical, or environmental attributes and demands of jobs. Studies that focus on the consideration of the data collected vis-à-vis a work experience analysis. Research on best methods and standards for measurement and scaling of person-side variables. Applied research should focus on the user needs and comparative effects of new instruments on SSA's disability process and programs. Research should consider the inclusion of additional person- and job-side data elements that could foment independent research.

Related to the data element and research recommendations outlined above, the Panel found areas of measurement within the development or maintenance of the OIS that SSA may want to consider. These measurement suggestions are summarized in the sixth set of general recommendations by the Panel.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

GENERAL RECOMMENDATIONS FOR MEASUREMENT CONSIDERATIONS

Identify, refine, or create scales for person- and job-side dimensions, categories, and ratings that are discrete and consider frequency, duration, or other needs. Person-side measurements should be based on functional levels. These scales should have sufficient specificity to measure person-side constructs. Use decomposed ratings of work to prevent holistic ratings of abstract characteristics.

The Panel recognizes the importance of communication with and among users, the public, and the research and scientific communities. Therefore, the seventh set of general recommendations is directed at this interaction.

GENERAL RECOMMENDATIONS FOR COMMUNICATION WITH USERS, THE PUBLIC, AND THE SCIENTIFIC COMMUNITY

Explore, develop, host, and monitor the creation and use of various forms of traditional and emerging government and private media to inform or solicit input from various audiences about SSA and Panel activities regarding the development of the OIS.

These seven general recommendations constitute the Panel's first set of advice for the content model and classification phases of the creation of a new OIS to replace the DOT within SSA's disability adjudication process.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Introduction

The Commissioner for Social Security established the Occupational Information Development Advisory Panel (“OIDAP” or “Panel”) on December 9, 2008, as a discretionary panel under the Federal Advisory Committee Act, to provide advice “on creating an occupational system tailored specifically for SSA’s disability programs.”² At the Panel’s inaugural meeting in February 2009, the Commissioner directed the Panel to submit recommendations to the Social Security Administration (SSA) by September 30, 2009, regarding the type of occupational information that SSA should collect and the manner in which occupations should be grouped that best serves disability evaluation.

The following report articulates the Panel’s recommendations to SSA on the type of data it should collect (content model) and on the way it can best organize occupations for disability adjudication process (classification). In developing the recommendations we address not only the data that SSA needs, but also the context in which SSA must operate to produce accurate and fair disability decisions as timely as possible.

We believe it is vital to investigate ways in which recent and emerging technology and research may serve SSA’s efforts to create a new occupational system. Furthermore, we consider SSA’s current disability policy as the groundwork on which SSA can build an OIS that can serve the agency today and in the future as SSA’s policies and process evolve in light of the new occupational information collected and in light of what can be learned and applied from a variety of research methods and new technologies.

Our mission encompasses the research and development phase of the agency’s OIS project. Toward that end, we provide independent advice and guidance regarding the development of the OIS in terms of occupational data and what these data reflect and are intended to measure. In addition, we will research how quantitative and qualitative research methods may enable us to provide SSA with guidance regarding the use of OIS data. We understand that, ultimately, our advice combined with the results of SSA’s OIS data collection and SSA’s related

² Occupational Information Development Advisory Panel Charter, December 9, 2008.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

basic and applied research will inform the agency's own future deliberations regarding the need for any policy development and revision that SSA may deem appropriate. Therefore, while we offer recommendations for data elements for the OIS (such as whether the occupation requires the worker to be literate³) that may be useful for SSA adjudicators as they apply SSA's medical-vocational policy, we do not make recommendations regarding SSA's policy.

³ See Other OIS-Related Panel Recommendations, Extra Data Element Recommendations for the Content Model

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Background

To appreciate fully the importance of occupational information in SSA's disability process and why SSA needs an occupational information system designed to meet its adjudicative needs, we provide a brief summary of how SSA came to use occupational information. Specifically, we describe the use of the *Dictionary of Occupational Titles* (DOT; US Department of Labor, 1991), and why SSA continues to reference it.

The SSA requires occupational information about the requirements of work to assess whether an individual's⁴ impairment prevents the individual from doing not only his or her past work, but also any work in the national economy. Following a series of judicial and Congressional challenges in the early 1960s⁵, SSA began to rely on the DOT to evaluate adult disability claims, and has done so ever since. Changes to the statutory definition of disability in 1967 that remain in effect today compel SSA to continue to look to the world of work to determine disability and to support its decisions. This definition states:

Inability to engage in any substantial gainful activity by reason of a medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months ... [A]n individual shall be determined to be under a disability only if his physical or mental impairment or impairments are of such severity that he is not only unable to do his previous work but cannot, considering his age, education, and work experience, engage in any other kind of substantial gainful work which exists in the national economy, regardless of whether such work exists in the immediate area in which he lives, or whether a specific job vacancy exists for him, or whether he would be hired if he applied for work. For purposes of the preceding sentence (with respect to any individual), "work which exists in the national economy" means work which

⁴ As the definition of disability in § 223(d)(1) and (2) and §1614 (a)(3)(A) and (B) of the Social Security Act refers to "an individual," we use the term "individual" throughout the report to reflect a title II, title XVI, or concurrent title II and title XVI disability claimant or beneficiary when it is not necessary to distinguish between a claimant and a beneficiary or between titles.

⁵ See, for example, *Kerner v. Fleming* (2nd Circuit, 1960) and *Rinalidi v. Ribicoff* (2nd Circuit, 1962) and Harrison Subcommittee Report, Preliminary Report to the Committee on Ways and Means (U.S. House of Representatives, 1960), p. 17-20.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

exists in significant numbers, either in the region where such individual lives or in several regions of the country.⁶

It is important to note that SSA's definition of disability embodies a medical-vocational concept. It requires a medical cause (i.e., a "medically determinable physical or mental impairment") and a directly related vocational consequence (i.e., the "inability to engage in any substantial gainful activity"). So, SSA's disability sequential evaluation process at Steps 4 and 5 relies, fundamentally, on a comparison between what a person can do despite the effects of an impairment⁷ and what work requires.⁸

To make this comparison, SSA found the DOT's data to be uniquely suited to its purposes. In fact, the agency determined that the DOT was so vital to evaluating disability that SSA based the medical-vocational guidelines⁹ it published in 1978 on the DOT. Simply put, this means that SSA's medical-vocational process and policy for assessing an individual's residual functional capacity (RFC)¹⁰ and ability to work are tied to DOT constructs, definitions, and measures.

SSA administers the nation's two largest disability programs. The context in which SSA must operate to develop an OIS is significant both fiscally and programmatically. In calendar year 2008, SSA paid approximately \$128 billion in benefits to disabled title II workers and title XVI disabled individuals age 18 and over.¹¹ Also, in fiscal year (FY) 2008, SSA received nearly 2.6 million initial claims for disability benefits under titles II and XVI.¹² Approximately 1.5 million of these claims cannot be decided on medical facts alone at Step 3 of the sequential evaluation process and require SSA to assess the individual's RFC and ability to work at Steps 4 and 5.¹³ As the claims that reach Steps 4 or 5 of the sequential evaluation process involve considering the medical and vocational aspects of an individual's claim, these claims are more complex, and therefore, are more difficult to adjudicate. Clearly, development of an OIS represents an effort that is critical to SSA and to thousands of users, including the public that SSA serves.

§223(d)(1)(A) and 223(d)(2)(A) of the Social Security Act. The Statute provides a different definition of disability for children under the age of 18 applying for benefits under Title XVI.

⁷ 20 CFR 404.1508, 404.1511 and 416.908, 416.911(a)(1).

⁸ 20 CFR 404.1520 and 416.920 regarding the Five-Step sequential evaluation process.

⁹ 20 CFR, Part 404, Subpart P, Appendix 2; 404.1560-1569 and 416.960-969.

¹⁰ 20 CFR 404.1546 and 416.

¹¹ See <http://www.ssa.gov/OACT/STATS/table4a6.html> for disabled workers and <http://www.ssa.gov/OACT/ssir/SSI09/Payments.html#426908> for title XVI benefits for individuals age 18 and over. Neither of the amounts cited include amounts for Medicare or Medicaid benefits.

¹² SSA Administrative data files in the Office of Retirement and Disability Policy.

¹³ SSA administrative data files in the Office of Retirement and Disability Policy.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Finally, the Department of Labor last updated the DOT in 1991 and has since replaced the DOT with the Occupational Information Network (O*NET)¹⁴. SSA evaluated O*NET and found that, as it was developed for career development and exploration purposes, it is not suited to disability evaluation.

¹⁴ <http://online.onetcenter.org/>

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

SSA's Occupational Information Needs

Given SSA's law and the nature of individualized assessments of disability claims, SSA has determined that it continues to require an occupational resource to evaluate disability and to meet its burden of proof when the agency finds that an individual can do other work despite the effects of a severe impairment. The agency has determined that any occupational resource it introduces into its disability process must meet certain legal, program, and technical criteria.¹⁵ Namely, it must:

- Reflect National Existence and Incidence of Work

A new occupational resource must show that the work exists and that the work exists in numbers sufficient to indicate that it is not obscure.

- Reflect Work Requirements

A new resource must enable SSA to evaluate an individual's ability to perform work rather than to obtain work. As such, any new resource must reflect occupational information that is aggregated, defined, and measured in a way that allows SSA to compare work requirements to an individual's RFC to determine the ability to work despite a severe impairment.

- Be Legally Defensible

SSA must meet a burden of proof that the individual is "actually—not theoretically—capable of doing some kind of work."¹⁶ Any alternative occupational resource that SSA uses in its disability process must be based on sound empirical grounds and validated for disability evaluation to withstand legal scrutiny.¹⁷

¹⁵ SSA Working Paper, Social Security Administration's Legal, Program, and Technical/Data Occupational Information Requirements (February, 2009) at www.ssa.gov/oidap

¹⁶ As implied by Section 223(d)(2)(A) of the Social Security Act, Committee on the Ways and Means, Staff Report on the Disability Insurance Program (U.S. House of Representatives, 1974), p. 45.

¹⁷ While we acknowledge that SSA's appeals process is administrative and non-adversarial, Federal courts require expert testimony (and the data and methods cited and applied) to meet specified standards. See *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- Meet Specific Technical and Data Requirements

Any new occupational resource that SSA uses must reflect the following:

- 1) Classification system that is aggregated to support individualized disability assessment and that can be cross-walked to the United States' Standard Occupational Classification (SOC).¹⁸
- 2) Occupationally-specific data that are precise (i.e., they capture homogeneous ratings of work demands and worker traits), and they can be aggregated into clusters of similar work activities (i.e., occupational titles) such that SSA is able to develop and maintain the OIS for its needs.
- 3) Core tasks or work activities of the occupation.
- 4) Minimum levels of requirements needed to perform the work.
- 5) Observable and deconstructed measures.
- 6) Manageable number of data elements or constructs that are critical to disability adjudication.
- 7) Sampling methodology that captures the full range of work (i.e., all skill¹⁹ levels).
- 8) Inter-rater agreement levels that justify data inference of high quality data.
- 9) Data collection methods that produce high quality data.
- 10) Occupational data that is empirically established as valid, accurate, and reproducible.
- 11) Whether or how occupations allow workers to perform core work activities in alternative ways (e.g., sit-stand option).
- 12) Terminology that is consistent with standard medical practice and human function.

509 U.S. 579 (1993), and *Kumho Tire Co. v. Carmichael*, No. 97-1709, Slip op. At 11, 67 USLW 4179, 4183 (March 23, 1999).

¹⁸ <http://www.bls.gov/SOC/>

¹⁹ That is, the OIS must reflect work at the full range of complexity levels. SSA currently conceives of complexity level of work in terms of “unskilled,” “semi-skilled,” and “skilled” work. See 20 CFR 404.1568 and 416.968.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

The Occupational Information System Project

After studying possible policy options and investigating alternative occupational resources, SSA embarked on a project in 2008 to develop an occupational information system (OIS) tailored for its disability programs (*Social Security Administration Strategic Plan, 2008*²⁰). The overall OIS effort involves short- and long-term projects.

1. *Short-Term Project*

In September 2008, SSA began a contracted evaluation to ascertain whether a private sector updated DOT-based data set exists that could meet SSA's criteria and could be integrated into its disability process seamlessly while the OIS is developed. On June 30, 2009, SSA received the final evaluation report from contractor, ICF International, regarding the existing, updated DOT-based data and methods of another contractor, Career Planning Software Systems, Incorporated. At the time of this writing, the SSA is reviewing the report.

2. *Long-Term Project*

While the Panel is a key element of SSA's long-term research and development, to support the development of an OIS for SSA's disability programs, SSA has initiated a series of strategies for its long-term project involving several phases.²¹ The first phase, research and development, includes claims studies, user needs analyses, OIS content model and instrument development, classification development, as well as sampling and data collection efforts. This phase informs subsequent project phases. The second phase involves policy development based on the results of the research and development phase studies and OIS data collection. Changes to disability current disability policies should be considered by SSA in light of the new occupational data collected and the implications of relevant research it has conducted. The third phase of the long-term project entails integration of the OIS data and any policy revisions into SSA's disability process and systems to assist adjudicators. There are also plans to make the OIS data available externally. Finally, the fourth phase of the long-term project involves ongoing research and maintenance to ensure that the OIS remains organic. The Panel envisions an ongoing exchange of ideas and research between and among external

²⁰ <http://www.ssa.gov/asp/>

²¹ SSA's Plans to Develop Occupational Information presented by Sylvia Karman at the OIDAP inaugural meeting, February 24, 2009, <http://www.ssa.gov/oidap/agenda.htm>

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

researchers, other professionals involved in the disability process, and SSA to inform OIS long-term development and maintenance.

To support the OIDAP's contributions to the long-term project, SSA established a project staff to direct and carry out the agency's work for OIS development recommended by the Panel. The long-term project also involves collaboration among stakeholder SSA offices that have been convened as the Occupational Information System Development Workgroup to provide guidance on policy and operational issues and end-user needs.²²

²² User Needs & Relations Subcommittee report in Appendix F details information about members of the workgroup.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Occupational Information Systems in the United States

Three government-developed occupational information classifications are used in the United States today. The military classification of occupations (MCO) provides a taxonomy of the military occupational specialties found across the branches of the armed forces. Overall, the MCO crosswalks about 8,700 occupations to the Standard Occupational Classification (SOC).²³

In the civilian sector, two occupational information classifications are used. As indicated above, the DOT was initially developed by the US Department of Labor in 1939 and was last updated in 1991 with nearly 13,000 occupations. In 1998, the O*NET was introduced by the Department of Labor to replace the career exploration and search functions of the DOT. As of June 2009, the O*NET 14 includes 1,102 occupations.²⁴ Like the military occupational information system, the O*NET is also linked to the SOC's classification structure.

Although all three of these systems represent occupational taxonomies, none of the three includes a world-of-work taxonomy that is adequate for applied uses requiring moderate-to-high specificity descriptions of work activity (including disability adjudication). That is, none fully describes a common-metric profile that lists what is actually done on the job, at the Level 2 degree of specificity needed to ensure verifiable, accurate ratings of job (see Figure 1). The SOC provides only the briefest description of what actually is done in the occupations because its purpose is only to categorize occupational clusters and name such clusters. An OIS must have both a taxonomy of titles and a data collection system that describes what is done. In other words, an OIS is 1) a way to describe the person and job side worlds of work and 2) a data collection component that includes generalized work activities, skills, etc. that provide common metric data.

For civilian employment, neither the DOT nor the O*NET were designed for forensic or disability adjudication purposes. The DOT constructs, however, have been applied in that function for nearly half a century for SSA and other private disability insurance programs (e.g., workers' compensation, long term disability, etc.). From the United States, to Canada, to Australia, some of the worker trait variables from the DOT continue to be the standard of practice for professionals performing analyses of an individual's capacity to work, as well as to be rehabilitated into other kinds of work.

For SSA purposes, the disability adjudication process considers an individual's residual ability to work, not his or her probable rehabilitation potential. Therefore,

²³ <http://www.bls.gov/SOC/>

²⁴ <http://online.onetcenter.org>

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

an OIS specifically designed and developed for SSA's disability adjudication purposes is crucial to the decision-making process considering the individual's RFC. The variables included in the SSA process might differ from those needed to evaluate an individual under another disability system (e.g., workers' compensation) or for rehabilitation purposes (i.e., where interests may be important). As we noted earlier, according to SSA's legal, program, and technical/data requirements:

... the occupational resource must provide the data SSA needs in order to evaluate the individual's capacity and qualifications to *perform* work as it currently exists in the economy, rather than to actually *obtain* work. As such, the resource must report occupational information that is both current, as well as aggregated, described, and rated in a manner that enables SSA to compare the work requirements of occupations to the individual's ability to perform work despite the individual's limitations resulting from a severe impairment(s).²⁵

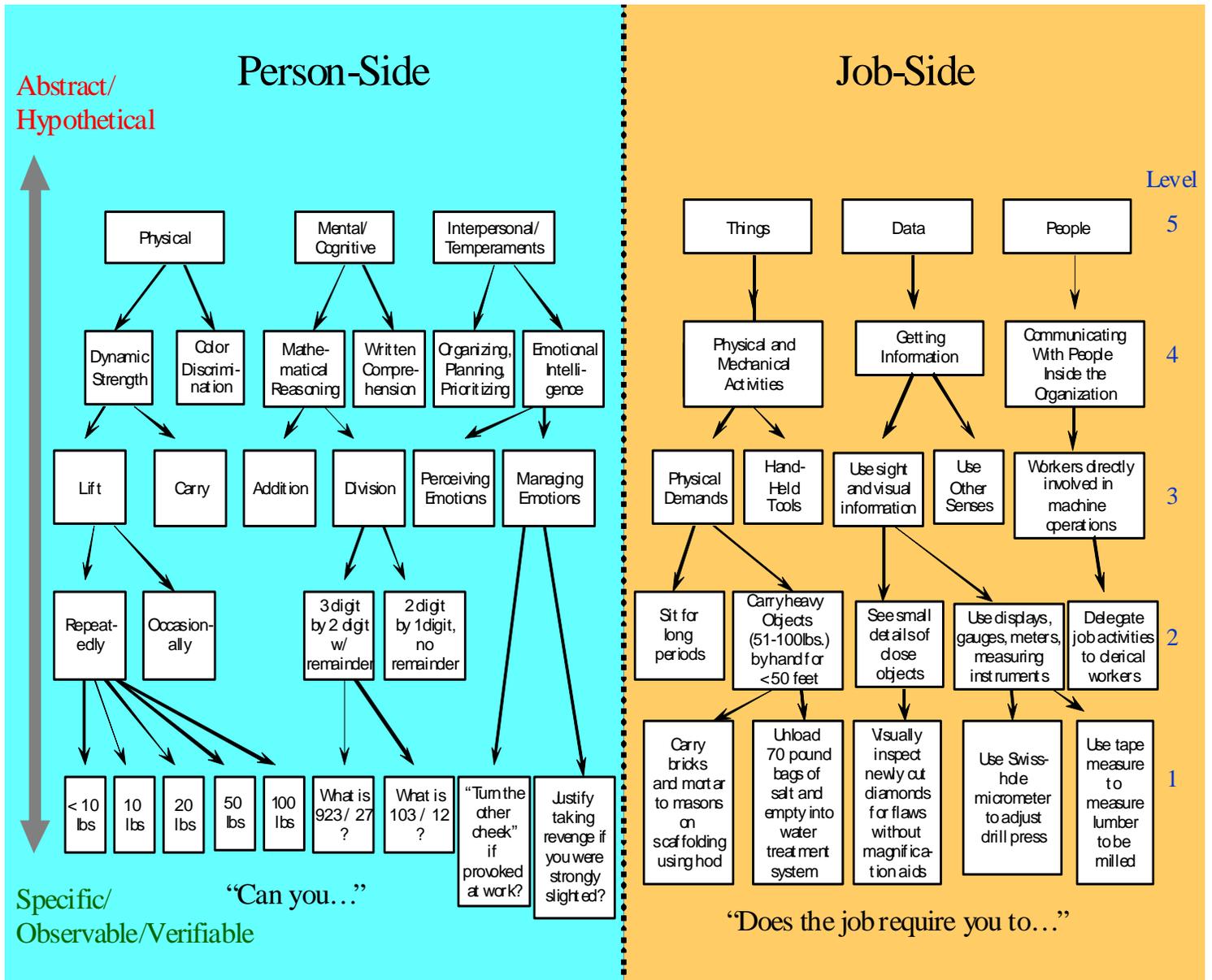
An OIS developed for SSA offers the opportunity to explore scientifically the essential elements inherent in the person-job match when disability may be a barrier to work, and to assist in the decision-making process important to the individual applying for disability benefits.

²⁵ *Social Security Administration's Legal, Program, and Technical/Data Occupational Information Requirements*. (2009). Baltimore, MD: Social Security Administration, Office of Program Development and Research, p. 2. Note this coincides with the recommendation from the Work Taxonomy and Classification Subcommittee report in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Figure 1. Levels of data specificity within the “person side” and “work side” domains of the “world of work”



Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

We purposefully use language about the “individual” because it is important to understand that although there are millions of claims made each year for Social Security disability benefits, the disability decision is made on a case-by-case basis. SSA requires information to make ground-level decisions about whether an individual with limitations resulting from an impairment can do past or other work. Therefore, while SSA’s disability adjudication process requires the review of millions of initial disability claims annually, it is not accurate to represent SSA’s process as, for example, $n=1.6$ million. Rather, SSA’s adjudicative process can be best represented as $n=1$, a million times over, annually. We find that $n=1$ is a critical concept to the development of an OIS for SSA’s purposes from an operational perspective; that is, how an SSA adjudicator applies OIS and other quantitative and qualitative data of the individual’s RFC through adjudicative judgment to determine if the individual has the ability to perform past work or other work. The $n=1$ concept is a vital target for us to keep in mind as we consider ways to reduce data inference and increase the effectiveness of adjudicative judgment.

The disability population is heterogeneous. Individuals possess a wide range of physical, mental, and cognitive diagnoses resulting in a multiplicity of functional outcomes. Consequently, the OIS must reflect the most observable and verifiable elements of work that, given the person’s residual function and other elements important to the disability adjudication process, could limit his or her capacity to perform work at the substantial gainful activity level.

To reduce the leap in judgment during the person-job match, an OIS must contain job-side data that are observable and that can be empirically linked to unobservable person-side characteristics that are deduced from an individual’s behavior (or RFC). This level of data collection is what we call Level 2 data (see Figure 1 for the different levels of data). Likewise, data collected from the world of work must be at a sufficient level of granularity to provide information to make comparisons and distinctions between such data (e.g., to define the occupation). Again, referring to Figure 1, we anticipate data to be collected at about Level 2. The DOT, for example, has data collected between Levels 2 and 4 on the Job Side part of Figure 1, leading to difficulties in comparing such data and increasing the range of inferential leap, and, consequently adjudicative judgment.

Simply put, the different levels of data assumed in Figure 1 would be akin to obtaining sufficient granularity of that data to allow someone to understand if they are looking at: 1) a case of apples or pears (Rosaceae fruit family; Level 2 data) so it can be compared and distinguished from 2) a crate of mixed fruit (Level 3 data) and from 3) other food sources (vegetables, dairy, etc.; Level 4 data), and be recognized as 4) Things (Level 5 data) instead of people, data, or something altogether different. Level 1 data (e.g., if the apple is a Granny Smith, Fuji, or

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

another varietal), is considered to be at a level of too much granularity where the cost for its collection would be too great compared to the benefit of having information at that level. Relating this example back to the OIS's data collection, it is sufficient to know that someone uses a word processing program on the job (Level 2 data) and their proficiency level to perform the core tasks of the work, not what the brand of the software might be (Level 1 data).²⁶

The O*NET was the Department of Labor's first attempt to describe all work in the national economy by a common work taxonomy and database. The disability adjudication process requires work to be described as it is actually done by workers, rather than by more abstract occupational unit levels as is the case with the O*NET.²⁷ Thus, SSA requires an OIS that uses a work taxonomy that has observable and verifiable variables that are less abstract and that are aggregated at a more detailed level than the O*NET to guide the person-job match.

Undoubtedly, there are some aspects of the DOT and the O*NET occupational information systems that are helpful to the development of the OIS tailored to SSA's disability adjudication needs. The recommendations in this report thus include some features of both systems that meet SSA's legal, program, technical, and data needs. Our recommendations go further, however, in that they introduce features for the new OIS that will allow it to function within the context of its forensic intent and application. Much like the existing civilian and military occupational information systems, the OIS should be cross-walked to the SOC.²⁸ This connection is useful as a link to other sources of occupational data within the Federal government inherent in, or auxiliary to, the disability adjudication process (e.g., number of jobs in the economy).

²⁶ For further discussion on this topic, please see the Work Taxonomy and Classification Subcommittee report in Appendix E.

²⁷ Work Taxonomy and Classification Subcommittee findings in Appendix E.

²⁸ Work Taxonomy and Classification Subcommittee recommendations in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Update or Replace the DOT?

“If the DOT has been used for nearly a half century in disability adjudication for SSA and other disability systems, and continues to be used, why not just update it?” “Why is SSA thinking of *replacing* the DOT for its disability adjudication purposes instead of merely *revising* the DOT?” The Panel considered these valid and important questions. Although our mission clearly states that we are to provide SSA with independent advice and recommendation to *create* a new OIS to *replace* the DOT, comments from users and the public²⁹ imply that some people mistakenly believe our mission is to *update* and *revise* the DOT.

As noted in the User Needs & Relations Subcommittee report³⁰:

the fact that the last substantial revision of the DOT occurred in 1977 is not the extent of the limitations of the DOT ... the DOT does not contain information regarding the mental/cognitive requirements of work, nor is it a straightforward matter to build these new work demands ... into the DOT’s taxonomic structure. While the DOT was a remarkable achievement for its time, advances in technology, psychometrics, job analysis, and taxonomic theory, as well as changes in the US labor market, render the DOT’s foundation problematic ... Merely updating the DOT will not serve SSA and its disability claimants for the long term.

Certainly, given some of the recommendations offered in this report, to some readers our efforts may be interpreted as a revision of the DOT. However, a revision or update of the DOT is not our recommendation.³¹ Such an update assumes that the psychometric foundation of the DOT is sufficient upon which to build a new OIS for SSA’s disability program purposes in light of the technological and scientific advancements available now and emerging. This is not the case. As early as 1980, the National Research Council expressed:

[c]oncern about the validity of the DOT’s ratings of worker functions and worker traits ... the factors represented by this set of variables are vague and ambiguously defined. It is not readily apparent what the variables are intended to measure

²⁹ User Needs & Relations Subcommittee report, Appendix F.

³⁰ User Needs & Relations Subcommittee report, Appendix F, p. 7.

³¹ Work Taxonomy and Classification Report findings and recommendations in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

... Scales that ... reflected the state of the art of vocational trait measurement at mid-century are ... outdated.³²

The creation of an OIS *specifically* for SSA disability adjudication purposes affords the opportunity to develop improved psychometric underpinnings for an OIS upon which worker trait variables targeted for SSA's disability process will rest, and to ensure that elements are considered under a common metric so that there is less room for data inference. Subjective judgment between the person and job side variables would also be reduced; that is, there would be less of a judgment leap. As the judgment leap challenges all users of occupational information who are directly or indirectly involved with SSA's disability process, an improved psychometric platform for an OIS will serve all users within and external to the agency, including disability claimants.

A common metric is a taxonomy of job descriptors that can be applied to all jobs and, therefore, allows work activities to be compared across and between all jobs. See our discussion above regarding Figure 1 for the importance of having common levels of data on the person and on the job sides to allow for reduced conjecture at the person-job match.

The use of a common metric will avoid inaccuracies associated with job classification based on job titles, which may or may not be representative of similar work activities.³³ For example, having common descriptors of work behavior for job classification allows for the comparison and distinction within and among occupations such as those with a job title of "driver." In one case, the title might refer to someone operating a golf cart in the parking lot of a university during special events. In another case, the job title could describe an individual who needs a special license to operate a semi truck hauling tons of hazardous waste across state lines. The common metric allows the job to be classified by work activities that may require different levels and breadth of work behaviors, not by job titles that do not necessarily reflect the variability among and within those work activities. Thus, users (claimants, claims examiners, vocational experts, claimant's representatives, administrative law judges, and the general public) can have access to better empirical data for use in their roles within the disability adjudication process.

In short, by offering recommendations to *create* an OIS that *replaces* the DOT in SSA's disability adjudication process, we acknowledge the shortcomings of the present DOT and encourage SSA to embrace today's advances in technology,

³² Miller, A. R., Treiman, D. J., Cain, P. S., & Roos, P. A. (Eds.) (1980). *Work, jobs, and occupations: A critical review of the Dictionary of Occupational Titles*, p. 164-168.

³³ Work Experience Analysis Subcommittee report in Appendix D and the Work Taxonomy and Classification Subcommittee recommendations in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

work, medical, ergonomic, neuroscience, rehabilitation, economic, and other research that provides us with unprecedented opportunities to embark on the

...enormous task that is going to take expertise, persistence, and creativity... [that is done] in a way that is more thoughtful [to] help [SSA] make more accurate decisions, faster decisions, and ... be as user friendly for [SSA] employees and for the public to use as possible.³⁴

³⁴ SSA Commissioner Astrue, February 23, 2009.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

The Scope and Work of a FACA Panel

The OIDAP is a discretionary committee chartered by SSA's Commissioner Astrue and formed under the auspices of the Federal Advisory Committee Act (FACA). All Panel-level deliberations are recorded and are open to the public that attends the meeting in person or through telephone call in.³⁵

Per FACA guidelines, a Designated Federal Officer is assigned to the Panel to:

- 1) Call, attend, and adjourn committee meetings;
- 2) Approve agendas;
- 3) Maintain required records on costs and membership;
- 4) Ensure efficient operations;
- 5) Maintain records for availability to the public; and,
- 6) Provide copies of committee reports to the Committee Management Officer for forwarding to the Library of Congress.³⁶

The OIDAP was developed to constitute 12 Panel members possessing a variety of expertise important to the development of the OIS,³⁷ and to include the Director of SSA's Occupational Information Development Project. An Interim Chair was appointed to the Panel; this appointment was followed by a vote of the Panel as to a permanent Chair at the September 2009 meeting. Based upon the Panel's deliberations and needs, the Chair along with the Designated Federal Officer and the Project Director work together to coordinate the plans and administrative needs of the OIDAP.

At the Panel's inaugural meeting, subcommittees formed to address work taxonomy, physical demands of work, mental/cognitive demands of work, and general issues pertaining to users and the public. Later, a fifth subcommittee was established to address the OIS data elements needed for work history assessment and transferable skills analysis.³⁸ Per the Panel's approved Operating Procedures, the Chairs of the subcommittees form the Executive Subcommittee that is lead by the Panel Chair. Each subcommittee is assigned a SSA staff lead from the Occupational Information Development Project to support

³⁵ Subcommittees and fact-finding Panel meetings could be closed under FACA; however, deliberations must be at the Panel level in open meetings.

³⁶ The Federal Advisory Committee Act (FACA) Brochure, www.gsa.gov

³⁷ Appendix A lists the biographies and subcommittee assignments for Panel members.

³⁸ Initially, this subcommittee was named the Transferable Skills Analysis subcommittee. However, to acknowledge that SSA conducts "transferable skills analysis" in very limited circumstances (20 CFR 404.1568(d) and 416.968(d)) and that the subcommittee focused on data elements needed for all types of work experience analyses in SSA's disability adjudication, the Panel renamed it the Work Experience Analysis subcommittee at the September 16, 2009 public Panel meeting.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

its needs. The Project Director in the Office of Program Development and Research manages the staff leads.

A. How the OIDAP Defines Terms

A challenge faced by any group of professionals brought together from different disciplines and practice settings is understanding common terms that may have different meanings for each group member. Early on in this process, we discovered that the way that practitioners on the Panel use terms such as “job analysis,” “skill,” “task,” and “inference” may be very different from the way in which academicians, psychometricians, or researchers might use the same term. In an attempt to identify a common language, some subcommittees included definition of terms for readers to understand the context of their research and recommendations. The glossary in this report includes definitions of terms that are common to this project.

“Inference” is a term that is used often in the subcommittee reports. However, the context of its meaning is different based upon the discipline of those involved in the subcommittee. For the Work Taxonomy and Classification Subcommittee, inference is the “the act of passing from statistical sample data to generalizations (as of the value of population parameters) usually with calculated degrees of certainty”³⁹ That is, inference is about data generalizations. For the other subcommittees, inference is “the act of passing from one proposition, statement, or judgment considered as true to another whose truth is believed to follow from that of the former.”⁴⁰ In short, it is the adjudicative or clinical judgment that occurs about an individual based upon a set of facts concerning the individual and the world of work.

To facilitate understanding of how inference is considered in this report, we are calling data generalizations “data inference” and judgments concerning people as “adjudicative judgment” or “clinical judgment.” So, too, “inferential leap” will involve the degrees of generalization about the data and “judgment leap” is the clinical or human judgment that occurs when taking a set of facts about the person or world of work and arriving at adjudicative or clinical conclusions.

B. How the OIDAP Developed its Recommendations

The methodology employed to arrive at the recommendations provided in this report used a variety of sources and techniques. Generally, the methodology included:

³⁹ www.webster.com

⁴⁰ www.webster.com

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- search and review of peer-review, government, and open source literature pertinent to the project in general, and specifically to each subcommittee's theme;
- qualitative research and the use of such validity measures as "member checking"⁴¹ with users;
- solicitation and review of input from a variety of stakeholders; and,
- integration and triangulation⁴² of information from all sources accessed within and beyond SSA.

This methodology ensured that our decisions were based upon the utility and objectivity of all information considered as relevant to our independent advice and recommendations. The subcommittee reports in the appendices detail the particular sources each subcommittee used or the analysis of the information. We note that not all of the recommendations and text in the subcommittee reports reflect the final Panel recommendations cited in this report. These differences are appropriate given the FACA deliberation process. The Panel as a whole may deliberate only in public meetings (either face-to-face or in teleconference); therefore, this final report reflects the Panel's deliberation and vote on all of the recommendations presented to it. A number of recommendations presented by the subcommittees have changed as reflected in their final form as Panel recommendations to SSA following full Panel deliberations on September 16-17, 2009.

Overall, the highlights of our data collection and consideration efforts are summarized below.

1. *OIDAP Meetings*

As a Panel we held three face-to-face meetings in Washington, DC, Atlanta, Georgia, and Chicago, Illinois from February through June 2009. In addition, the Panel held two teleconferences, one on July 14, 2009, and the other on August 31, 2009. These meetings provided the Panel the opportunity to deliberate on a variety of issues pertinent to its activities, and specific to arriving at the advice and opinions outlined in this report.

⁴¹ A qualitative research term that connotes understanding data, interpretations, or conclusions with members. In this instance, this involved communication, input, and interaction with various users through different methods.

⁴² Triangulation is a research term that describes applying and combining several research methods in the study of the same phenomenon.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

2. *Public Comment at Quarterly Meetings and Electronically*

At each of our quarterly meetings following the inaugural meeting, public comment was available to any person or organizational representative attending the meeting in person or via telephone per the guidelines outlined in the *Federal Register* notice for that meeting. The Panel also invited the public to provide input through OIDAP's website (www.ssa.gov/oidap) and e-mail address (OIDAP@ssa.gov), although very few comments were received in this manner. All comments or questions were addressed by the Designated Federal Officer or were remitted to the appropriate party for consideration.

3. *Working Papers and Literature Reviews*

Throughout its course of meetings and deliberations, the Panel was provided with working papers prepared by SSA staff and deemed important to the Panel's mission. These included:

- *Developing an Initial Classification System*
- *Social Security Administration's Legal, Program, and Technical/Data Occupational Information Requirements*
- *SSA Plans and Methods for Developing a Content Model: Key Questions to be Addressed*
- *What is a Content Model?*

In addition, the subcommittees performed extensive literature searches and reviews. For detailed bibliographies, please see the respective subcommittee reports in the appendices.

4. *Subject Matter Expert Roundtables*

Two of the subcommittees held roundtables with subject matter experts pertinent to their topic areas.⁴³

5. *Subcommittee Meetings*

Further, subcommittees held individual teleconference and face-to-face meetings based upon their work needs. Monthly or specially scheduled Executive Subcommittee teleconference or face-to-face meetings assisted in the intra-subcommittee flow of information and coordination of the Panel's work. Per FACA rules, subcommittee meetings are working sessions and not open to the public unless the Chair extends an invitation.

⁴³ Appendices C and D summarize roundtables held by the Mental/Cognitive Demands and the Work Experience Analysis subcommittees, respectively.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

6. *User Needs and Opinions*

Important to the Panel's objectives was the understanding of the intrinsic needs of users involved in SSA's decision-making process. Initially, a case study simulation comprising a variety of users within the decision-making continuum was presented at the April OIDAP meeting. Some Panel members wanted further experiential opportunities to learn about the SSA disability adjudication process. Therefore, they visited State Disability Determination Services and Office of Disability Adjudication and Review offices throughout the country, as well as the Appeals Council office in Falls Church, Virginia. Some Panel members also interviewed vocational experts and claimant representatives to understand better those user needs, or the user's respective roles within the decision-making process.

To obtain input from users employed within SSA, the Occupational Information Development Project staff, through the User Needs & Relations subcommittee, developed, piloted, and used a qualitative instrument. This process was called the "User Needs Analysis," or UNA. The instrument was used to perform individual interviews and focus groups at State Disability Determination Services, Office of Disability Adjudication and Review, Office of Quality Performance, and at regional offices in Illinois, Georgia, Maryland, West Virginia, and Pennsylvania. Some UNAs were held concurrently during OIDAP quarterly meetings or within geographic access of the interviewers. Results from this qualitative research were consolidated and provided to the OIDAP through the subcommittee Chairs.⁴⁴ Based on the iterative nature of our work, the UNAs will continue into the future to encompass greater geographic representation of user needs throughout the United States.⁴⁵

As part of the methodology to arrive at our recommendations, we also invited several organizations to provide input through presentations at our third quarterly meeting or in writing.⁴⁶ Specifically, the organizations were asked to opine about:

- any gaps that exist between the occupational information available in the DOT and what the members of the organization believe is necessary for the adjudication of claims in SSA's disability programs;

⁴⁴ Detailed results of the UNAs conducted may be found in the User Needs & Relations Subcommittee report in Appendix F.

⁴⁵ User Needs & Relations Subcommittee recommendations in Appendix F.

⁴⁶ For a list of the organizations and their input, see the User Needs & Relations Subcommittee report in Appendix F.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- the information that is most valuable for SSA to include to ensure a proper transferable skills assessment given claimants' work histories; and,
- the areas where additional or new information is needed (e.g., physical or mental/cognitive demands of work, educational requirements of work, work settings, work skills, etc.).

As we developed our recommendations for the content model and classification in this report, all user input resulting from these solicitations was considered. Again, the results of the organization's responses were provided to the subcommittees through their respective Chairs.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

OIDAP Content Model and Classification Recommendations

A. Recommendation Overview

The effort of the Panel members in developing these content model and classification recommendations by the end of FY09 constitutes a tremendous commitment. The recommendations offered here are the starting point for the development of the OIS, not the finish line. They are based upon the most recent data available to us. We know that the development of an OIS specific to SSA disability adjudication needs is an iterative process. The need for such an OIS is apparent and its development has never been attempted – much less to the scale contemplated and required to meet SSA's needs as envisioned in these recommendations.

In this document, our recommendations are offered in two formats. First, they are categorized below into four areas: Person Side, Job Side, Person-Job Link, and Other OIS-Related Recommendations. Generally, they are displayed in the manner in which they arose from the subcommittee process and how they fall into these general thematic areas. Table 1⁴⁷ broadly summarizes the recommendation categories, subsumes the subcommittee recommendations into these categories, and anchors the recommendations to proposed activities. However, to add greater meaning to the recommendations as they fall into the scope and context of the Panel Charter, we display these recommendations within that scope both as summarized in the Executive Summary at the start of this report and the final Summary and Future Activities section of this report.

Before enumerating each of the recommendations below, each of the categories is defined as follows:

- *Person Side*: These are the basic data elements reflecting abilities possessed by the individual that can be clinically or otherwise observed, verified, measured, or inferred. Included in these recommendations are data element, research, and measurement considerations. The specific details and narratives associated with these recommendations can be found in the Physical Demands Subcommittee and the Mental/Cognitive

⁴⁷ NOTE: Work Experience Analysis in the context of Table 1 implies the full medical-vocational assessment SSA must do to determine if an individual with a severe impairment retains the RFC to do substantial gainful activity given the demands of work and his or her medical and vocational profile. That is, while SSA conducts a transferable skills analysis (TSA) in limited circumstances (404.1568(d) and 416.968(d)), we mean to include the consideration of an individual's ability to do past work or other work as currently conceived by SSA (unskilled, semi-skilled, or skilled).

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Demands Subcommittee reports available in appendices B and C, respectively.

- *Job Side:* These are the basic empirically supported observable and verifiable work activities. Again, this section includes data element, research, and measurement recommendations. Unless otherwise noted by a footnote, the main source for the recommendations in this section is the Work Taxonomy and Classification Subcommittee report available in Appendix E.

Person-Job Link: This process in disability evaluation involves the greatest potential for judgment leap we aim to reduce through our recommendations. Person-job linkage occurs when the job side information is matched to the person's medical and vocational profile as determined by his or her RFC (based on the functional effects of physical, mental, or cognitive impairments). This process determines whether an individual retains sufficient residual capacity to perform substantial gainful activity. Many of the person and job side variables share the same terminology. Therefore, the distinction between the person side and the job side might not always seem evident. The main source of the recommendations offered in this section is the Work Experience Analysis Subcommittee report found in Appendix D, with additional contributions from the Work Taxonomy and Classification Subcommittee report in Appendix E.

- *Other OIS-Related Recommendations:* Our recommendations for OIS content model and classification extend beyond the person, job, and linkage areas. Other recommendations are intended to ensure that 1) the OIS remains organic, not static; 2) the support structure to create an OIS is considered; 3) the content model contains comprehensive information needed for adjudication and program evaluation; 4) user input and concerns are included, and 5) general recommendations that arose from Panel deliberations are noted. Unless otherwise noted by a footnote, the main source of the recommendations offered in this section is the User Needs and Relations Subcommittee report in Appendix F.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Table 1. Occupational Information Systems Project Activities

	Revised Physical RFC (person-side)	Revised Mental RFC (person-side)	Vocational Profile Assessment (person-side)	Linking job-side to person-side: Validation	New Title Taxonomy (job-side)	Work Measurement Instrument (job-side)	
1	Review preliminary list of targeted constructs for missing content	Review preliminary list of targeted constructs for missing content	Assemble team/committees to oversee process	Assemble team/committees to oversee process	Develop interim taxonomy (based on finding middle ground between DOT and SOC using existing empirical data)	Review preliminary list of targeted constructs for missing content	
2		Policy review to assess impact, acceptability of each additional non-physical construct for SSA	Study ways for assessing skills (measured by JA instrument) still possessed by claimants	Initial analysis and review of legal, technical, policy, practical issues (including additional cognitive measures)			Identify/evaluate alternatives for data-collection infrastructure (SSA employees, VEs, contractors)

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

	Revised Physical RFC (person-side)	Revised Mental RFC (person-side)	Vocational Profile Assessment (person-side)	Linking job-side to person-side: Validation	New Title Taxonomy (job-side)	Work Measurement Instrument (job-side)	
3		Form updated list of targeted non-physical constructs, removing problematic ones		Assist in design of JA, person-side pilots			Assemble data collection team for pilot; training
4		Review, feedback from users		Evaluate potential ways to link job and person sides using JA pilot results	Link to JA pilot sample identification		Identification of target occupations
5		Identify methods of collecting data on each construct, preliminary assessment of each		Additional data collection to evaluate methods for linking job and person sides (e.g., work experience analysis applications)			Oversee data collection process for pilot

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

	Revised Physical RFC (person-side)	Revised Mental RFC (person-side)		Vocational Profile Assessment (person-side)	Linking job-side to person-side: Validation	New Title Taxonomy (job-side)	Work Measurement Instrument (job-side)	
		Identify elements that will be rated directly	Identify potential measures or other processes that could be used to collect data on elements not directly rated					
6		Identify elements that will be rated directly	Identify potential measures or other processes that could be used to collect data on elements not directly rated		Assessment of bottom-line impact of various methods for doing work experience analysis			
7	Item writing, scale development to form prototype 1	Item writing, scale development to form prototype 1	Assess desirability, practicality of each data element	Item writing to form prototype 1			Item writing, scale development to form prototype 1	
8	Review, feedback from users, management	Review, feedback from users, management	Pilot study to test assessment procedures	Review, feedback from users, management			Review, feedback from users, management	

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

	Revised Physical RFC (person-side)	Revised Mental RFC (person-side)		Vocational Profile Assessment (person-side)	Linking job-side to person-side: Validation	New Title Taxonomy (job-side)	Work Measurement Instrument (job-side)	
9	Modify as needed; develop prototype 2	Modify as needed, develop prototype 2	Reassess desirability, practicality of each data element	Modify as needed; develop prototype 2			Modify as needed; develop prototype 2	
10	Pilot study to do preliminary assessment of measurement properties, usability	Preliminary assessment of measurement properties, usability study	Switch any data elements that need to move to direct-rating track	Pilot study of SSA claims processors using new instrument			Pilot study to evaluate JA instrument in sample of high-frequency occupations	
11	Revise instrument as needed, develop Instrument Version 1	Revise as needed, develop RC 1	Pilot study of SSA claims processors using new instrument				Revise instrument as needed, develop Instrument Version 1	
12	Pilot study to test assessment procedures	Pilot study to test assessment						

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

	Revised Physical RFC (person-side)	Revised Mental RFC (person-side)		Vocational Profile Assessment (person-side)	Linking job-side to person-side: Validation	New Title Taxonomy (job-side)	Work Measurement Instrument (job-side)	
		procedures						
13	Revise as needed, develop Instrument Version 2	Revise as needed, develop Instrument Version 2						
14	Pilot study of SSA claims processors using new instrument	Pilot study of SSA claims processors using new instrument						

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Recommendations

1. *Person Side Recommendations—Physical Demands of Work*

We know that while the physical demand worker traits of the DOT represent some of its best features, there is room to refine and expand the traits, include additional discrete elements, and make their measurement more realistic. Toward this end, the recommendations in this report for physical demands of work include, modify, or add to the variables within the DOT.

a. *Data Element Recommendations for Physical Demands of Work*

The Panel recommends that SSA consider these physical and sensory/motor abilities that are required to do work.

1. Physical (uni- and bilateral, where applicable)

- a. Balancing (expansion of categories)
- b. Bending from a sitting position
- c. Carrying
- d. Climbing (increased specificity)
- e. Crawling
- f. Crouching
- g. Fingering
- h. Gripping (simple, forceful)
- i. Handling
- j. Handwriting
- k. Kneeling
- l. Lifting
- m. Operating Foot/Hand Controls
- n. Pinching (simple, forceful)
- o. Pulling
- p. Pushing
- q. Reaching (various levels)
- r. Rotating/twisting the neck
- s. Running
- t. Sitting
- u. Standing
- v. Stooping/Forward bending
- w. Trunk rotation/twisting

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- x. Twisting wrist repetitively
- y. Using keyboard, mouse, touchpad or other manual input devices
- z. Walking

2. Sensory/Motor

- a) Feeling
- b) Hearing
- c) Smelling
- d) Speech
- e) Tasting
- f) Vision

b. Research Recommendations for Physical Demands of Work

1. Research to establish a standard for repetition for physical activities.
2. Study the specificity and measures of sensory demands.
3. Explore and consider the feasibility of and need for conducting empirical research concerning environmental attributes that may restrict the ability to do work.
4. Explore and consider the feasibility of and need for conducting empirical research that quantitatively links the physical and sensory abilities that are required to meet the demands of work.

c. Measurement Recommendations for Physical Demands of Work

1. Discrete and functional levels of measurement.
2. Level, time, concentration, and severity of environmental exposures.
3. Maximum continuous distance for dynamic movements (e.g., carrying, pushing, pulling, walking, climbing, running, crawling, etc.).
4. Maximum continuous duration of an activity that is required.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

5. Refinement or creation of scales which reflect physical activity or duration which is appropriate for SSA's adjudication needs.
6. Identify the variation of physical demands within an occupation.

We know that over the last century the American economy has transitioned from the industrial age to the information age. This trend has migrated work demands that, on the aggregate, require more mental and cognitive processes. Thus, this movement accentuates the need to directly consider and study the mental and cognitive demands of work. Individuals applying for disability benefits who possess mental or cognitive impairments likewise reflect this trend.⁴⁸

We recognize that the mental and cognitive demands of work are a tremendously challenging and ambitious area of research to undertake, but we believe it is necessary to do so now given the advances in research and technology that provide us with the exciting opportunity to start exploring these demands of work to establish better methods to reduce adjudicative judgment at the person-job match. This endeavor will require considerable and seminal efforts and we hope that SSA welcomes the challenge.⁴⁹

For SSA, “the question of who bears the burden of proof with respect to documenting the *job relatedness* and *validity* of ... non-physical personal traits that have the potential to produce significant *adverse impact* ... is a nontrivial applied issue that has significant legal implications.”⁵⁰ Therefore, we reviewed the present conceptual model of psychological abilities that SSA uses and we recommend revisions that SSA may consider. That is, a “revision of the current [Mental Residual Functional Capacity] should redress ...: 1) the underrepresentation of neurocognitive abilities, 2) the reliance on coarse and underspecified categories to rate residual abilities, 3) the failure to account for longitudinal fluctuations in mental functioning due to impairment, 4) the inclusion of elements that combine disparate abilities, 5) the failure to recognize differences in the predictive power of various abilities, and 6) the large judgment leaps required to match residual abilities with job demands.”⁵¹ The recommendations in this report are an attempt to start the dialogue regarding these elements of the demand of work. They are likely to change as this area of research proceeds.

⁴⁸ SSA Administrative data files in the Office of Retirement and Disability Policy.

⁴⁹ Mental/Cognitive Demands Subcommittee report, Appendix C.

⁵⁰ SSA Plans and Methods for Developing a Content Model: Key Questions to be Addressed, p. 15.

⁵¹ Mental/Cognitive Demands Subcommittee report, Appendix C, p. 17.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

2. *Data Elements Recommendations for Mental/Cognitive Demands of Work*

The Panel recommends that SSA consider the psychological abilities shown under each category below as important psychological abilities required to do work.

a. Neurocognitive Functioning

1. General cognitive ability (how well a person can reason, solve problems, and meet cognitive demands of varied complexity)
2. Language and communication (how well a person can understand spoken or written language, communicate his or her thoughts, and follow directions)
3. Memory acquisition (how well a person can learn and remember new information, such as a list of words, instructions, or procedures)
4. Attention and distractibility (how well a person can sustain the focus of attention in a work environment with ordinary distractions)
5. Processing speed (how quickly a person can respond to questions and process information)
6. Executive functioning (how well a person can plan, prioritize, organize, sequence, initiate, and execute multi-step procedures)

b. Initiative and Persistence

1. Attendance/punctuality (how consistently a person can leave his/her residence and maintain regular attendance and punctuality)
2. Initiative (whether a person can start and perform tasks once they are explained without an unusual level of supervision)
3. Pace/persistence (whether a person can continue performing understood tasks at an acceptable pace for a normal work week without excessive breaks)
4. Interpersonal Functioning

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

5. Cooperation (the extent to which a person's interactions with others are free of irritability, argumentativeness, sensitivity, or suspiciousness)
 6. Response to criticism (how well a person responds to criticism, instruction, and challenges)
 7. Social cognition (whether a person can navigate social interactions well enough to respond appropriately to social cues, state his or her point of view, and ask for help when needed)
- d. Self-management
1. Personal hygiene (how well a person maintains an acceptable level of personal cleanliness and socially appropriate attire)
 2. Symptom control (how well a person inhibits disturbing behaviors, such as loud speech, mood swings, or responding to hallucinations)
 3. Self-monitoring (how well a person can distinguish between acceptable and unacceptable work performance)
3. *Research Recommendations for Mental/Cognitive Demands of Work*
- a. Explore and consider the feasibility of conducting empirical research that quantitatively links the cognitive and mental abilities that are required to meet the demands of work.
1. Study ways to improve methods and scales for measuring psychological and interpersonal abilities of mental residual functional capacity.
 2. Conduct validation and reliability studies of instruments related to mental residual functional capacities and occupational demands.
- 4) *Measurement Recommendations for Mental/Cognitive Demands of Work*
- a. Use of appropriate scales with sufficient specificity for the constructs considered in the mental/cognitive demands of work.
 - b. Use of discrete categories and ratings for residual abilities.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Recommendations

1. Job Side Recommendations

We know that no existing *empirical* work taxonomy has been shown to describe all work in the economy.⁵² This set of recommendations attempts to springboard from the scientific and empirical literature from the past century to offer a scientifically supported paradigm to consider all work as it is performed in the national economy.

a. *Data Element Recommendations for Work Taxonomy*⁵³

1. Use the initial empirically derived work taxonomy as a stimulus to develop the instruments to measure each dimension (see Table 2).⁵⁴

b. *Research Recommendations for Work Taxonomy*

1. Pilot study (18-month period)
 - a) Select the jobs most frequently: 1) held by at least 95% of SSA disability claimants; and, 2) identified by SSA as examples of work for those with specific residual functional capacities.
 - b) Conduct pilot study
 - c) Train expert users as a source to provide job level data for pilot study.
 - d) Obtain job level data by interviewing job incumbents during the pilot study.

⁵² Work Taxonomy and Classification Subcommittee report, Appendix E.

⁵³ To the work taxonomy were more detailed environmental data element considerations recommended by the Physical Demands Subcommittee and accepted by the Panel on 9/17/09 as follows: "The Panel recommends that SSA consider these to be potentially important environmental attributes of work: Caustic, Chemicals, Cold, Confined spaces, Dust, Explosives, Fibers, Flammable, Fumes, Gases, Hazardous, Heat, Heights, Humidity, Lighting, Mold/Mildew, Noise, Smoke, Vibration, and Moisture."

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

2. Compare results of job level data from experts and incumbents.
3. Evaluate pilot study data for utility, reliability, and validity of job descriptions by the OIS through direct observation and convergence with expert validated job profiles.
4. Perform a usability analysis using the pilot study data to generate prototype occupational analysis reports and computerized systems.
5. Use pilot study results to refine the preliminary work taxonomy findings using psychometric principles.⁵⁵
6. Develop and implement a plan to sample work from all jobs in the national economy for the operational database.

c. *Measurement Recommendations for Work Taxonomy*

1. Identify multi-item scales for existing work taxonomy dimensions.
2. Use items scaled per a) frequency of job occurrence and b) duration of required performance for the job.
3. Use decomposed ratings of work to prevent holistic ratings⁵⁶ of abstract work characteristics.
4. Reduce degree of overlap or redundancy between data elements and ratings to the extent possible.
5. Develop a content model for the OIS using the common metric recommended in Figure 1 to substantially reduce inference.⁵⁷

⁵⁶ Table 2 of the Work Taxonomy and Classification Subcommittee report reproduced as Table 2 within the context of this report.

⁵⁶ Harvey, R. J., & Wilson, M. A. (2000). Yes Virginia, there *is* an objective reality in job analysis. *Journal of Organization*⁵⁶ Harvey, R. J., & Wilson, M. A. (2000). Yes Virginia, there *is* an objective reality in job analysis. *Journal of Organizational Behavior*, 21(7), 829-854.

⁵⁷ Work Taxonomy and Classification Subcommittee recommendations in Appendix E. Also, see the Mental/Cognitive Demands Subcommittee recommendations in Appendix C and the Work Experience Analysis Subcommittee recommendations in Appendix D calling for employing methods to reduce adjudicative or clinical judgment in the person-job match.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Table 2. Proposed Work Taxonomy Dimensions

Taxonomic Source	D/O/P/T	Consolidation of Dimensions Sorted by Data/Other/People/Things
CMQ	D	Managerial Decision Making: Acquire/start/sell businesses
CMQ	D	Managerial Decision Making: financial
CMQ	D	Managerial Decision Making: prods/services, higher impact
CMQ	D	Managerial Decision Making: products/services, lower-impact
CMQ	D	Managerial Decision Making: strategic planning, entire org
CMQ	D	Take info, orders, interview
CMQ*	D	info/decide/resolve: High-level
CMQ*	D	info/decide/resolve: Lower-level
CMQ*	D	info/decide/resolve: mid-level
CMQ*	D	info/decide/resolve: Prof/tech
CMQ*, O*NET*,SOC*	D	Computer Language use/programming
CMQ, O*NET*,SOC*	D	Tech/scientific/computers-machines
GWI	D	Stock keeping/Bookkeeping
O*NET	D	Estimating the Quantifiable Characteristics of Products, Events, or Information
O*NET	D	Evaluating Information to Determine Compliance with Standards
O*NET	D	Judging the Qualities of Objects, Services, or People
O*NET,SOC*	D	Scheduling Work and Activities
O*NET	D	Updating and Using Relevant Knowledge
OAI	D	Biological Testing/Inspection Activities
OAI	D	Environmental Planning and Maintenance
OAI	D	Technical Planning and Drawing
OAI, GWI, O*NET,SOC*	D	Utilization and Processing of Numerical Data
OAI, WAP*,SOC*	D	Routine Clerical & Administrative Activities
PAQ	D	Attentive/discriminating work demands
PCTAQ*	D	Individual/Job-Related Decision Making
PCTAQ*, O*NET*	D	Individual/Job-Related planning
CMQ	O	Language use/foreign
CMQ,SOC*	O	Safety/damage to others

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Table 2. Proposed Work Taxonomy Dimensions (cont'd)

Taxonomic Source	D/O/P/T	Consolidation of Dimensions Sorted by Data/Other/People/Things
PAQ	O	Variable vs. regular work schedule
PMPQ	O	Relevant Experience
PMPQ	O	Special Training
PMPQ*	O	Educational Requirements
WAP	O	Hourly Pay vs. Salary
WAP	O	job-related/required APPAREL
GWI, OAP	O-Cognitive	Spatial/Object Perception & Tracking
GWI, PAQ	O-Cognitive	Perceptual interpretation
O*NET	O-Cognitive	Thinking Creatively
PAQ, OAI	O-Cognitive	Environmental awareness
PCTAQ	O-Cognitive	General cognitive info processing
PCTAQ*	O-Cognitive	cognitive attention, focus
CMQ, SOC*	O-Context	Enforcement/demanding conditions
CMQ, PAQ	O-Context	Hazardous/unpleasant work environment
GWI	O-Context	Regulated/Standardized Work
MPDQ	O-Context	Autonomy of Action
MPDQ	O-Context	Complexity & Stress
WAP	O-Context	Job Security vs. Performance-Dependent Income
WAP	O-Context	Outdoor Work
PMPQ, PCTAQ*	O-Interpersonal	Interpersonal Activities
OAI	O-Physical	Activities Related to Coordination
OAI	O-Physical	Activities Related to Balance
OTHER	O-Physical	Activities Related to Hand Function
OTHER	O-Physical	Activities Related to Manual Materials Handling
OTHER	O-Physical	Activities Related to Position Tolerance
WAP	O-Physical	Activities Related to Mobility/Movement
OTHER	O-Sensory	Activities Requiring Olfactory Senses
OTHER	O-Sensory	Activities Requiring Tactile Senses
PAQ	O-Sensory	Visual input from devices/materials
PAQ	O-Sensory	Visual input from distal sources

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Table 2. Proposed Work Taxonomy Dimensions (cont'd)

Taxonomic Source	D/O/P/T	Consolidation of Dimensions Sorted by Data/Other/People/Things
PCTAQ	O-Sensory	Audio attention
CMQ	P	Managerial Decision Making: POM/HR higher-level
CMQ	P	Managerial Decision Making: POM/HR, lower-level
CMQ	P	MDM: Implementing
CMQ,SOC*	P	Treatment/therapy
CMQ*	P	Communication: press/media
CMQ*	P	Communication: public/customers/clients
CMQ*	P	Communication: Regulators, Government
CMQ*,SOC*	P	Communication: students/children/civic
CMQ*,SOC*	P	delegating
CMQ*,SOC*	P	Resolving conflicts
CMQ*	P	supervision: sales/service
CMQ*, OAI*, WAP*, PAQ*, MDPQ*	P	Supervision: lower-level
CMQ*, OAI*, WAP*, PAQ*, MDPQ*,SOC*	P	supervision: middle-level
CMQ*, WAP*, PAQ*, PMPQ*,SOC*	P	Communication: mid-level exchange info
CMQ, O*NET*,SOC*	P	Negotiation
CMQ, WAP*, O*NET*,SOC*	P	Persuade/sell
MDQ,SOC*	P	Advanced Consulting
O*NET	P	Developing and Building Teams
OAI	P	Communication: Verbal
OAI,SOC*	P	Improving/Monitoring the Physical Performance, Capability and Adjustment of Others
OAI, PMPQ,SOC*	P	Instructing
OTHER	P	Communication: Written
OTHER	P	Project Management

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

6. Once a large database representative of all work in the national economy is available, examine various job classification methods based on a common metric.

2. *Where the Person-Job Link Happens*

We also know that, ultimately, in the person-job match, what matters is whether the individual has any residual ability, medically and vocationally, that enables him or her to engage in either past work or other work in the economy that meets level of substantial gainful activity.⁵⁸ The individual's medical profile is considered and reflected in the individual's RFC. The individual's vocational profile involves consideration of his or her age, education, and work experience. For SSA, the medical-vocational profile considered at Step 4 includes the individual's RFC and work history, while Step 5 medical-vocational profile includes RFC, age, education, and work experience⁵⁹. Because the job side includes information describing what is done on the job (i.e., work activities, the physical and mental/cognitive demands of work) and what is currently thought of as skills, the person-job link occurs when an individual's medical and vocational profiles are compared to determine his or her ability to work.

In these recommendations, we attempt to distinguish the essential components of the definition of what a skill is and how a skills analysis or work experience analysis is performed and separate them into those elements or processes for which occupational data could be gathered. By doing so, we are able to study the resulting data collected vis-à-vis current paradigms of how skills transfer or could transfer, as well as to provide the opportunity to potentially explore other methods that might result in greater face and predictive validity that are based on empirical data. We note that SSA uses the "transferability of skills analysis"⁶⁰ at Step 5 in very limited circumstances. We mean to include the consideration of an individual's ability to do past work or other work as currently conceived by SSA (unskilled, semi-skilled, or skilled).

a. *Data Element Recommendations for Work Experience Analysis*

1. Use work activities as an observable and measurable proxy for 'skill' for data collection and development.
2. Develop work context factors for the OIS (e.g., industry, work settings, tools, machines, technologies, raw materials, products, subject matter, processes, service, etc)

⁵⁸ Work Experience Analysis Subcommittee report, Appendix D.

⁵⁹ 20 CFR 404.1568 and 416.968 for SSA definitions for skills.

⁶⁰ 20 CFR 404.1568(d) and 416.968(d) for SSA definition of transferable skills analysis.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- b. Research Recommendations for Work Experience Analysis*
1. Conduct studies on data elements and occupational data collected in pilot studies that may inform the application of OIS data in SSA's work experience analysis. These studies could inform Agency policy in such areas as TSA, vocational advantage, relevance of work, complexity level, and time to proficiency.

Other OIS-Related Panel Recommendations

We provide overall recommendations pertinent to the development and maintenance of the OIS that we believe are critical to retaining the viability and organic nature of the database over time and to capture information that may inform general research. The recommendations below reinforce the reason and purpose of the OIS. They articulate the themes of program development, OIS maintenance, and extra data elements for data collection efforts. Also included in this section are recommendations for applied research. Most of the recommendations included in this section are based on the User Needs & Relations Subcommittee report available in Appendix F, unless otherwise specified in a footnote.

Several themes arose from the subcommittee research and reports that resulted in two general recommendations and affirmations of the Panel as to SSA's plans for the OIS. Specifically, the Panel's review and research over the last several months resulted in the unanimous concordance with SSA that the DOT should be replaced and not updated. This was noted in General Recommendation #2 that states:

The Panel concurs with SSA that the Agency needs to create a new occupational information system to replace the Dictionary of Occupational Titles (US Department of Labor, 1991) in SSA's disability adjudication process.

Furthermore, the Panel concurred with the 12 specific technical and data requirements of this new OIS as discussed earlier in this report and affirmed in General Recommendation #1 that states:

The Panel concurs with SSA that any new occupational resources it creates must reflect the following:

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

- A classification system that is aggregated to support individualized disability assessment and that can be cross-walked to the United States' Standard Occupational Classification (SOC).
- Occupationally-specific data that are precise (i.e., they capture homogeneous ratings of work demands and worker traits), and they can be aggregated into clusters of similar work activities (i.e., occupational titles).
- Core tasks or work activities of the occupation.
- Minimum levels of requirements needed to perform the work.
- Observable and deconstructed measures.
- Manageable number of data elements or constructs that are critical to disability adjudication.
- Sampling methodology that captures the full range of work (i.e., all skill levels).
- Inter-rater agreement levels that justify data inference of high quality data.
- Data collection methods that produce high quality data.
- Occupational data that is empirically established as valid, accurate, and reproducible.
- Whether or how occupations allow workers to perform core work activities in alternative ways (e.g., sit-stand option).
- Terminology that is consistent with standard medical practice and human function.

Beyond the endorsing general recommendations that arose from the conglomeration of the Panel's work are additional OIS-specific recommendations detailed in the sections that follow.

c. Extra Data Element Recommendations for the Content Model

The Panel recommends that SSA consider these data elements for the OIS content model for adjudicative purposes.

1. English (Does the occupation require the worker to communicate in English?)
2. Literacy
3. Core work activities

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

4. Sit-stand option or alternative postures⁶¹
5. Use of assistive technology, tools, or other technology in performing work activity⁶²

d) *Applied Research Recommendations*

1. Develop a formal plan to conduct UNAs throughout the research and development phase of the OIS project to address the various stages of the OIS development and targeted to as many SSA internal and external users as possible.
2. When person-side instruments are developed, study the effects of the OIS content model data elements in SSA's disability process by comparing the use of newly-developed person-side instruments with the use of SSA's current physical and mental RFC assessments using a sample of disability claims that have already been adjudicated.
3. When the results of the pilot study of the work-side instruments are available, SSA should conduct studies of the application of these data in SSA's disability adjudication process to assess the effects of the data on both its disability process and programs (i.e., examine effects of the new OIS data, physical and mental demands of work, including work activities and other occupational data critical to RFC, work history, and transferable skills assessment).

⁶¹ Physical Demands Subcommittee recommendations in Appendix B also supports this recommendation.

⁶² Physical Demands Subcommittee recommendations in Appendix B also supports this recommendation.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

e. *Extra Data Element Recommendations for Research*

The Panel recommends that SSA consider these data elements for the OIS content model for research and program evaluation purposes only, not for adjudicative purposes.

1. Worker
 - a) Chronological work history
 - b) Concurrent jobs or occupations held
 - c) Educational attainment
 - d) Gender
 - e) Health insurance enrollment
 - f) Hours worked weekly or daily in occupation(s)
 - g) Mode of transportation
 - h) Primary or other language(s)
 - i) Race and ethnicity
 - j) Year of birth
 - k) Zip code of residence
2. Work
 - a) Alternative work arrangements (e.g., telecommuting)
 - b) Average shift
 - c) Health insurance offered
 - d) Seasonal or year-round
 - e) Zip code of employment setting
 - f) Language required other than English

f. *SSA OIS Development*⁶³

The information for this section of the recommendations came from the Work Taxonomy and Classification Subcommittee recommendations and General Recommendation #3.

1. Develop an internal unit devoted to OIS design, development, data collection and analysis, and maintained with experts in common metric work analysis, labor

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

economics, and other specialties such as internal project management to interface with experts in a registered online community for the creation, operationalization, and maintenance of the OIS.

- a) Increase internal work analysis expertise to carry out the core task of collecting and analyzing information about work, and maintaining the database accuracy.
- b) Establish independence and scientific credibility of OIS unit.
- c) Host online community of researchers and other relevant professionals to inform the OIS unit of emerging ideas, research and methods.

General Recommendation #3 further adds:

*The Panel recommends that SSA identify and retain internal expertise for developing and conducting research for both the person-side and work-side taxonomies of the OIS.*⁶⁴

g. OIS Maintenance⁶⁵

1. Regularly and randomly select jobs for audit to keep the database current.
2. Schedule review of OIS items for usefulness vis-à-vis expired and emerging work content.
3. Host online communities to indicate the need for research.⁶⁶

Lastly, the Panel knows that it does not operate in a vacuum. The most meaningful development of any OIS requires consideration of the voices of the users and other stakeholders, and provides opportunities for dialogue from and among the users, and the research, scientific, and academic communities, to help with the design and testing of tools applied effectively at the hands of the

⁶³ Work Taxonomy and Classification Subcommittee recommendations in Appendix E.

⁶⁴ User Needs & Relations Subcommittee report in Appendix F for similar recommendations.

⁶⁵ Work Taxonomy and Classification Subcommittee recommendations in Appendix E.

⁶⁶ User Needs & Relations Subcommittee recommendations in Appendix F with additional discussion in the Work Taxonomy and Classification Subcommittee recommendations in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

users.⁶⁷ Through our recommendations, we hope to develop the infrastructure to effectively deliver and enhance the communication with users, other stakeholders, and the public.

h. Communication Recommendations for Users, the Public, and the Scientific Community

1. Monitor developments in new and emerging media within SSA and the Federal government.
2. Explore alternative uses of the *Federal Register* for public comment to include the publication of the Panel's recommendations and other notices independent of the Panel's meeting announcements.
3. Develop FAQ sheets regarding the OIS project and the OIDAP for dissemination.
4. Summarize public comments and notify the public regarding the nature of these comments.
5. Publish notices about the OIDAP activities and contact information in relevant professional publications.
6. Develop branding and style sheets for a common look of the project and recognition by the public.
7. Electronic media presence
 - a) Explore the use of social media for contact with the public about the project.
 - b) Set expectations regarding the use of any social media notifying users of such media about the authoring, anonymity, expected response, online behavior, etc. differences in the use of such media.
 - c) Maintain electronic receptive and push media to inform the public about the project.
 - d) Host online communities during the development, operationalization, and maintenance of the OIS for registered scientific, research, academic, and related users to dialogue about occupational analysis data collected to encourage the development of an independent scientific community devoted to understanding occupational analysis issues using a

⁶⁷ User Needs & Relations Subcommittee report in Appendix F with additional discussion in the Work Taxonomy and Classification Subcommittee report in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

common metric that could suggest items for inclusion, propose work measurement instruments, and allow for the independent verification of SSA internal studies (e.g., pilot study, sampling plan, etc.).⁶⁸

⁶⁸ Work Taxonomy and Classification Subcommittee recommendations are contained in Appendix E.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Summary and Future Activities

The Charter of the OIDAP states that we are to:

... provide advice and recommendations related to SSA's disability programs in the following areas: medical and vocational analysis of disability claims; occupational analysis, including definitions, rating, and capture of physical and mental/cognitive demands of work, and other occupational information critical to SSA disability programs; data collection; use of occupational information in SSA's disability programs; and any other area(s) that would enable SSA to develop an occupational information system suited to its disability programs and improve the medical-vocational adjudication policies and processes.⁶⁹

The recommendations set forth in the previous section constitute our initial efforts to meet the dictates set forth in the Charter. The scope of this first set of recommendations is specific to the content model and classification needs of the OIS. They are displayed in the person- and job-side, linking, and other categories noted above. However, from an operational perspective and within the scope of this first set of recommendations, the advice reflected in these recommendations is best summarized in seven general recommendations.

GENERAL RECOMMENDATIONS SUPPORTING THE NEED FOR A NEW OIS AND ON THE TECHNICAL, LEGAL, AND DATA REQUIREMENTS OF SUCH AN OIS

The creation of a new occupational information system is needed to replace the Dictionary of Occupational Titles for SSA's disability adjudication system. The OIS must include: a) occupations aggregated at a level to support individualized disability assessment; b) a cross-walk to the Standard Occupational Classification; c) precise occupationally-specific data; d) core work activities; e) minimum levels of requirements needed to perform work; f) observable and deconstructed measures; g) a manageable number of data elements; h) sampling methodology capturing the full range of work; i) inter-rater agreement justifying data inference; j) data collection of high quality data; k) valid, accurate, and reproducible data; l) whether core work activities could be performed in alternative ways; and, m) terminology that is consistent with medical practice and human function.

⁶⁹ Occupational Information Development Advisory Panel Charter, December 9, 2008.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

In order to create such a new OIS with these requirements, the basic data elements that constitute the starting point for researching its framework, or the content model and classification systems, are outlined in depth by the Panel. These data elements are the center of the scope of this first set of recommendations from the Panel to SSA.

GENERAL RECOMMENDATIONS REGARDING DATA ELEMENTS FOR THE NEW OIS

An initial empirically derived work taxonomy should serve as a stimulus to develop instruments to measure each dimension. Specific data elements for the development of the OIS include physical and psychological abilities required to do work; they also include work activities, context, and extra data elements for the content model.

The scope of the recommendations from the Panel include that of the occupational classification for the OIS. Beyond the technical, legal, and data requirements of the OIS as identified in the first general recommendation, the Panel further sets out another recommendation for the classification of the system.

GENERAL RECOMMENDATION FOR THE CLASSIFICATION OF THE OIS

Once a large database representative of all work in the national economy is available, SSA should examine various job classification methods based on the common metric.

The data element and classification recommendations represent the main scope of our advice for the content model and classification framework for the OIS.

We would be remiss to not consider the context upon which these recommendations lie or the need of a mechanism to create and maintain the structure of our recommendations such as recommended in Table 1. An OIS specific to SSA's needs should have a strong network of technical and professional expertise within and outside of SSA to support its creation and maintenance. Consequently, the Panel identifies recommendations that together comprise the fourth set of general recommendations.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

GENERAL RECOMMENDATIONS FOR THE CREATION OF INTERNAL AND EXTERNAL EXPERTISE TO CREATE AND MAINTAIN THE OIS

Development of an independent internal unit at SSA staffed with experts addressing the work analysis and person-side development and research needs for the creation and maintenance of the OIS. Concurrent development and maintenance of online communities of researchers and other professionals to inform the unit's emerging and ongoing ideas, research, and methods.

With a strong independent internal unit of experts specific to the OIS, and input from research and professional communities external to SSA, the research needs of the OIS can better be examined. Although the primary scope of our recommendations in this report were for the data elements needed for the content model and classification, within the context of our review and deliberation, the Panel identified areas of basic and applied research that SSA may want to consider in the development the OIS and its application within disability adjudication. The constellation of the potential research results in the fifth set of recommendations by the Panel.

GENERAL RECOMMENDATIONS FOR BASIC AND APPLIED RESEARCH

Research to develop and pilot work-side instruments and prototypes, perform a usability analysis, and create a sampling plan. Exploratory, validation, and reliability research on the quantitative link between person- and job-side mental/cognitive, physical, or environmental attributes and demands of jobs. Studies that focus on the consideration of the data collected vis-à-vis a work experience analysis. Research on best methods and standards for measurement and scaling of person-side variables. Applied research should focus on the user needs and comparative effects of new instruments on SSA's disability process and programs. Research should consider the inclusion of additional person- and job-side data elements that could foment independent research.

Related to the data element and research recommendations outlined above, the Panel found areas of measurement within the development or maintenance of the OIS that SSA may want to consider. These measurement suggestions are summarized in the sixth set of general recommendations by the Panel.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

GENERAL RECOMMENDATIONS FOR MEASUREMENT CONSIDERATIONS

Identify, refine, or create scales for person- and job-side dimensions, categories, and ratings that are discrete and consider frequency, duration, or other needs. Person-side measurements should be based on functional levels. These scales should have sufficient specificity to measure person-side constructs. Use decomposed ratings of work to prevent holistic ratings of abstract characteristics.

The Panel recognizes the importance of communication with and among users, the public, and the research and scientific communities. Therefore, the seventh set of general recommendations is directed at this interaction.

GENERAL RECOMMENDATIONS FOR COMMUNICATION WITH USERS, THE PUBLIC, AND THE SCIENTIFIC COMMUNITY

Explore, develop, host, and monitor the creation and use of various forms of traditional and emerging government and private media to inform or solicit input from various audiences about SSA and Panel activities regarding the development of the OIS.

As the Panel reaches the close of its first fiscal year of operation, we are proud to provide SSA with these seven general areas of recommendations. Ultimately, we recognize that the foremost reason why the Panel exists can be reduced to one word: inference. As stated earlier, this inference can be defined by data generalization or by adjudicative or clinical judgment about an individual's ability to work given an impairment. Presently, the static nature of the occupational information available for disability evaluation creates an ever-increasing gap in the user's ability to apply it. That is, day by day, the data inference and judgment leaps grow for those involved in making decisions about an individual's disability.

Furthermore, the person-job side link has never existed for mental and cognitive function without a great deal of adjudicative judgment. Arguably, the current mental residual functional capacity assessment requires the adjudicator to make the greatest judgment leap in the adjudicative process. Some users may likewise believe that skills analysis involves a similar level of judgment leap. Thus, our recommendations target suggested research to reduce the level of adjudicative and clinical judgment in both areas.

We provide a framework that gives SSA the platform to launch the development of an OIS that will be empirical, psychometrically sound, and legally defensible. The recommendations from each of the subcommittees are not all at the same

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

level of data inference. For example, the recommendations for work taxonomy and physical demands of work are based on concrete, observable, and verifiable constructs that are well grounded in decades of work analysis, ergonomic, human factor, medical, and rehabilitation research. Recommendations regarding how skills transfer and mental/cognitive demands of work will require greater levels of creativity, consideration, and research. Indeed, Panel deliberations suggest that these are two areas where there will be the greatest need for collaboration and creativity in research and application to reduce not only data inference, but also clinical and adjudicative judgment.

We realize that occupational data is used within a greater context of decision making at the individual case assessment, or $n=1$, level. In the course of developing these recommendations, we have come to recognize the inevitable need to explore the foundation of data-driven decision making that uses sound quantitative and qualitative validity and reliability principles as these apply to adjudicative judgment. The Panel plans to study qualitative, quantitative, and mixed research methodologies that could assist those involved in the disability adjudicative process to more effectively perform an individual case assessment. We are not referring to automated decision making or doing research at the individual case or $n=1$ level. Instead, we are referring to research in methodological approaches that may assist SSA in reducing data inference and, thereby, may also improve adjudicative judgment in light of OIS development in ways that would improve the accuracy of SSA's disability adjudication, as well as address the day-to-day operational concerns facing SSA adjudicators. For example, we believe it would be valuable to explore how the adjudicator could use OIS quantitative data with informed, yet qualitative judgment about various areas of mental or cognitive functioning to adjudicate a claim. We have begun literature review toward this end and will provide SSA with ideas for conceptual models as these emerge.

As indicated earlier, the recommendations offered in this report are our independent advice based on current findings and suggested next steps as outlined in Table 1 to continue on our roadmap toward offering independent advice and opinion as to building an OIS to replace the DOT in the disability adjudication process. We understand that SSA will review those recommendations vis-à-vis its needs. Thus, we look forward to the opportunity of consulting with SSA staff to proceed with any activities outlined in this the advice offered in this report.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Glossary

<i>Classification</i>	How occupations are grouped.
<i>Content Model</i>	The type of data included in an occupational information system.
<i>Core Tasks</i>	Job duty or action that must be performed to carryout the purpose of the occupation.
<i>Deconstructed Measures</i>	<p>A measurement strategy that seeks to obtain measures of abstract, latent constructs by virtue of statistically combining multiple ratings of more-specific, observable elements that can be observed and rated. Also knows as the "decomposed-judgment" rating strategy.</p> <p>Synonymous with decomposed ratings.</p>
<i>Disability</i>	<p>Defined in §223(d)(1)(A) and 223(d)(2)(A) of the Social Security Act. For adults, it is the “[i]nability to engage in any substantial gainful activity by reason of a medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months. [A]n individual shall be determined to be under a disability only if his physical or mental impairment or impairments are of such severity that he is not only unable to do his previous work but cannot, considering his age, education, and work experience, engage in any other kind of substantial gainful work which exists in the national economy, regardless of whether such work exists in the immediate area in which he lives, or whether a specific job vacancy exists for him, or whether he would be hired if he applied for work. For purposes of the preceding sentence (with respect to any individual), “work which exists in the national economy” means work which exists in significant numbers, either in the region where</p>

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

such individual lives or in several regions of the country.”

The definition of disability for children under the age of 18 applying for benefits under Title XVI slightly differs from the above and is not included in this report.

g

General cognitive ability.

Inference

Inference is 1) the act of passing from statistical sample data to generalizations (as of the value of population parameters) usually with calculated degrees of certainty, and 2) the act of passing from one proposition, statement, or judgment considered as true to another whose truth is believed to follow from that of the former (www.webster.com).

Impairment

See [§404.1508](#) and [§416.908](#): An impairment results from anatomical, physiological, or psychological abnormalities which can be shown by medically acceptable clinical and laboratory diagnostic techniques. A physical or mental impairment must be established by medical evidence consisting of signs, symptoms, and laboratory findings, not only an individual's statement ([§404.1527](#) and [§416.927](#)). See [§404.1528](#) and [§416.928](#) for further information about symptoms, signs, and laboratory findings.

Job Analysis

The various methods to analyze the requirements of a job. For specifics of how this term is used in industrial/organizational psychology, rehabilitation, and credentialing fields, see http://en.wikipedia.org/wiki/Job_analysis

n=1

Synonymous with the individual case assessment.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

Residual Functional Capacity The greatest level of function an individual can still perform despite physical, mental/cognitive, or other limitations imposed by a medically determinable impairment. SSA assesses an individual's residual functional capacity based on all the relevant evidence in the case record. In determining residual functional capacity, SSA considers the individual's ability to meet the physical, mental, sensory and other requirements of work. See [§404.1545](#) and [§416.945](#) for detailed information.

Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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Occupational Information Development Advisory Panel

Content Model and Classification Recommendations

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