Study on a Practical Use of Task Analysis in Vocational Rehabilitation

[Survey Report No. 82] Summary

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Composition of the Survey Report

Purpose and method of the survey

■ Background and purpose of the study

In the vocational rehabilitation of persons with disabilities, it is considered to be important to accommodate working conditions(working environment) that support such persons as well as direct support for individuals with disabilities such as vocational consultation, vocational evaluation, pre-vocational training, Job Coaching etc.
Regional and local vocational centers for persons with disabilities and other vocational rehabilitation agencies, task analysis is utilized as a technique for providing effective support for the working conditions (working environment). In" Job Coaching" and" Support for the Return to Work of Persons with Mental Disabilities", practical techniques are needed to provide specific suggestions to employers in terms of adjustment of work and human environments to meet disability traits, job creation, and job re-design based on a result of the task analysis.
This study is therefore intended to elucidate the prospects for the availability of "Task Architect ― a software package for helping Hierarchical Task Analysis (HTA) ― as an effective method of task analysis in the situations of vocational rehabilitation, and the prospects for cutting the costs for task analysis.

■ Method of research

In addition to questionnaire surveys concerning the cases collected to grasp the use of task analysis and the work process analysis for vocational rehabilitation counselors at regional/local vocational rehabilitation centers for the disabled, the coauthors organized and analyzed the results of hearing surveys on the trial status of "Task Architect" with regard to local vocational rehabilitation centers for the disabled of the study cooperation.

Research period

Fiscal 2006 to 2007

Contents of the survey

■ "Task Architect"

1. Overview of Task Architect

"Task Architect" is a commercially available software application developed by Task Architect Company in Canada for supporting task analysis, which this software is used in various industries overseas.

2. Functions of Task Architect

When conducting HTA, it is necessary to indicate the hierarchy of work processes by tables and charts. This work can be done using another commercially available spreadsheet or graphic software, but using Task Architect, it is easy to arrange the work processes usually, entering information about work processes collected in an established format (spreadsheet) creates a list view of those work processes (Fig. 1) or a tree diagram representing the hierarchical structure (Fig. 2), both of which can be freely edited.

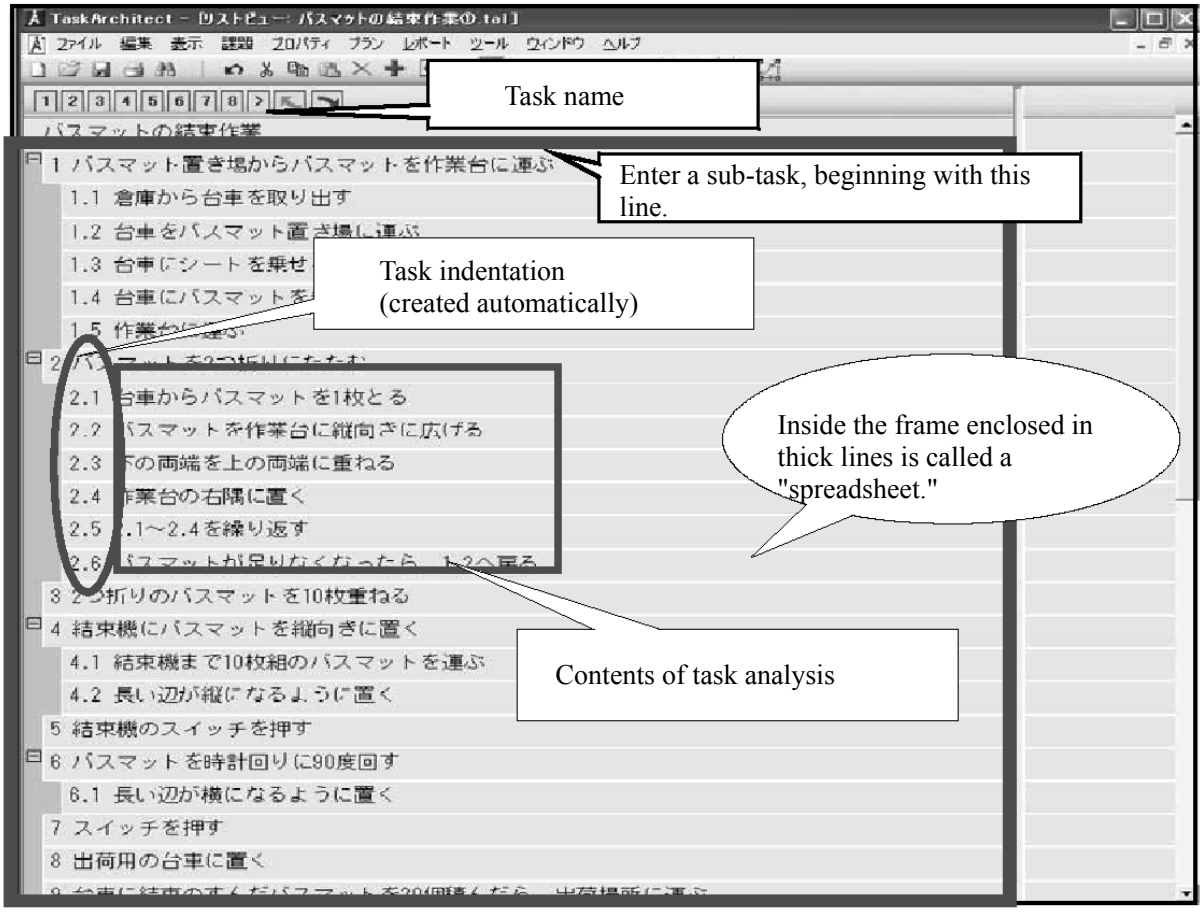

Fig. 1 Example of a list view

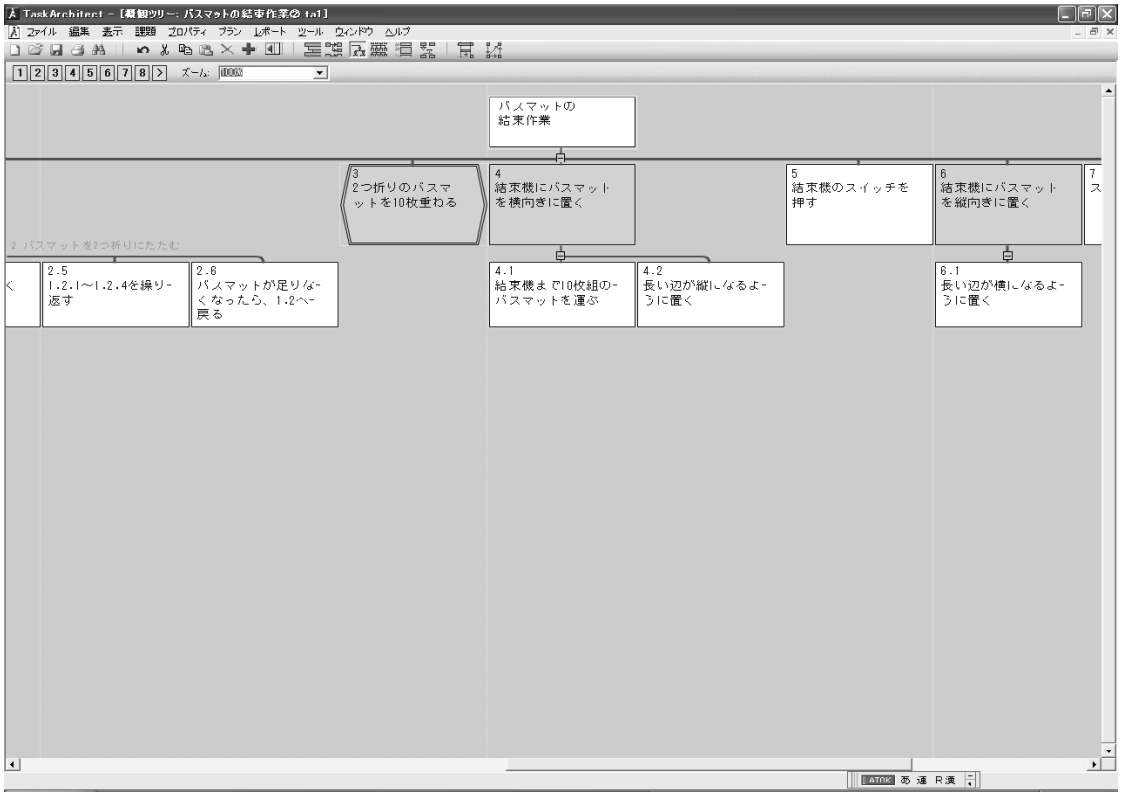

Fig. 2　Example of a tree diagram (an overview tree)

Also the use of a "template" (Table 1), which can be used differently according to the viewpoint of analysis and a "property" (Fig. 3), that is useful in considering specific methods of addressing your challenges, thereby enabling efficient task analysis in the situations of vocational rehabilitation.

Table 1　Various templates of Task Architect

Template name	Possible analysis
basic_JP	Basic task analysis
CBT_JP	Analysis of ability training
Cognitive Work Analysis_JP	Analysis of cognitive work
Human error assessment template_JP	Analysis of human errors
risk_JP	Risk analysis
Timelines template_JP	Schedule analysis
Training needs analysis_JP	Analysis of training needs

Fig. 3　Typical contents of a property

■Uses of task analysis and method for utilization of Task Architect

1. Survey of the uses of task analysis

To monitor the uses of task analysis in the situations of vocational rehabilitation, the coauthor conducted a questionnaire survey of vocational counselors for persons with disabilities at regional/local vocational centers for persons with disabilities.　Survey findings indicate that, although methods of task analysis are not sufficiently used at all regional/local vocational centers for persons with disabilities, some local vocational centers that positively employ task analysis have demonstrated its effectiveness.

2. Proposition for a method of task analysis based on Task Architect

The information about work processes at the host business place collected during usual work by vocational counselors for persons with disabilities was actually entered into Task Architect by the researchers in charge.　They then proposed cases as pertaining to methods of use (31 cases).

Here, the coauthors organized the relation between the viewpoint of task analysis in vocational rehabilitation and the templates in Task Architect.　The coauthors then organized data centering on the cases of proposals using "Timelines template_JP" (considered effective in supporting efforts to make work routines habitual) and "Human error assessment template_JP" (considered useful in reviewing and implementing measures for supporting people likely to make mistakes in operation).

Regarding the use of "Human error assessment template_JP", note that the coauthors modified the software so as to match the property definition with vocational rehabilitation according to technical documents on ergonomics that detail all of its types, causes, and actions against human errors.　The following figures show cases of using "Timelines template_JP" (Fig. 4) and "Human error assessment template_JP" (Figs. 5 and 6).

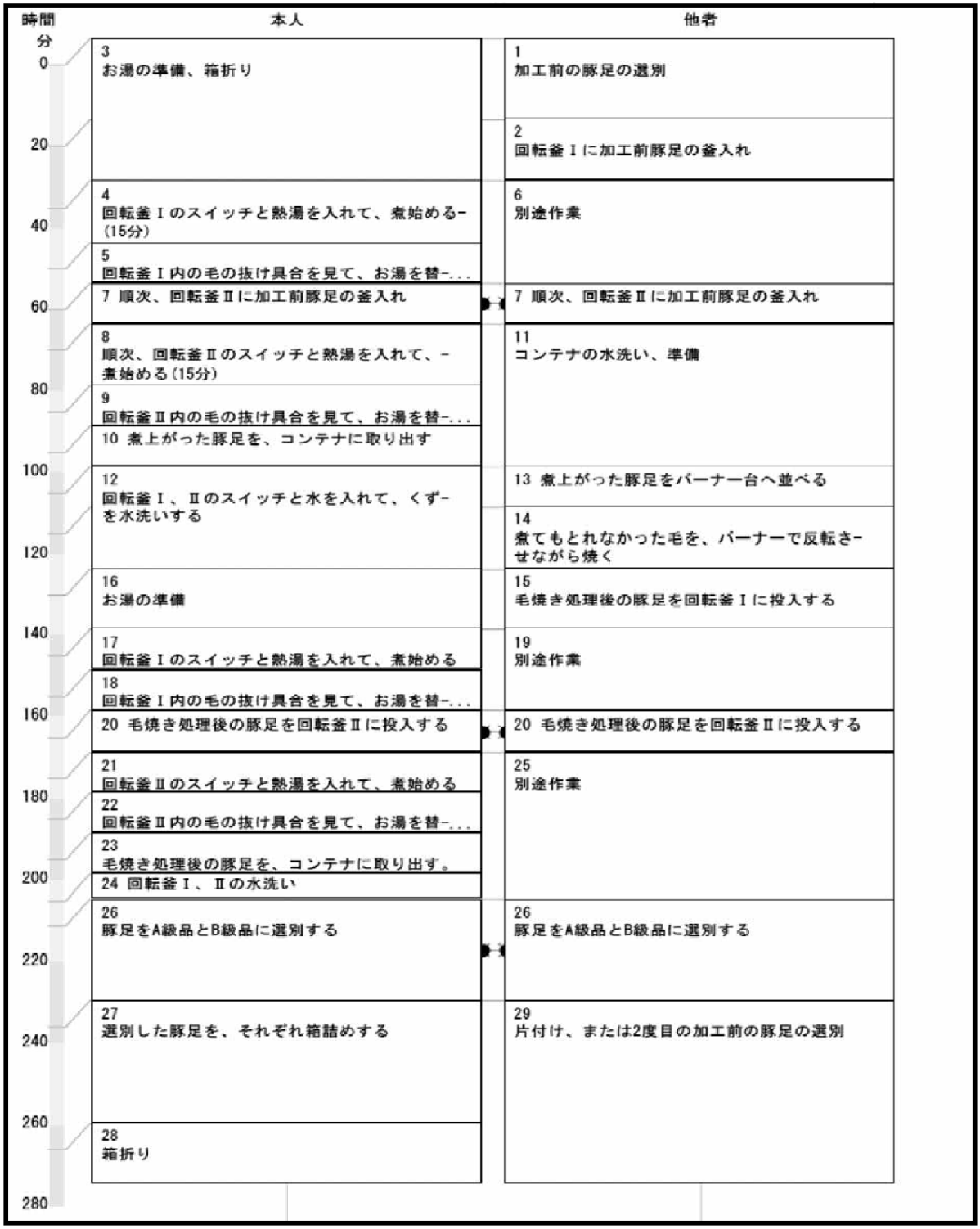

Fig. 4　Example of "Timelines template_JP"

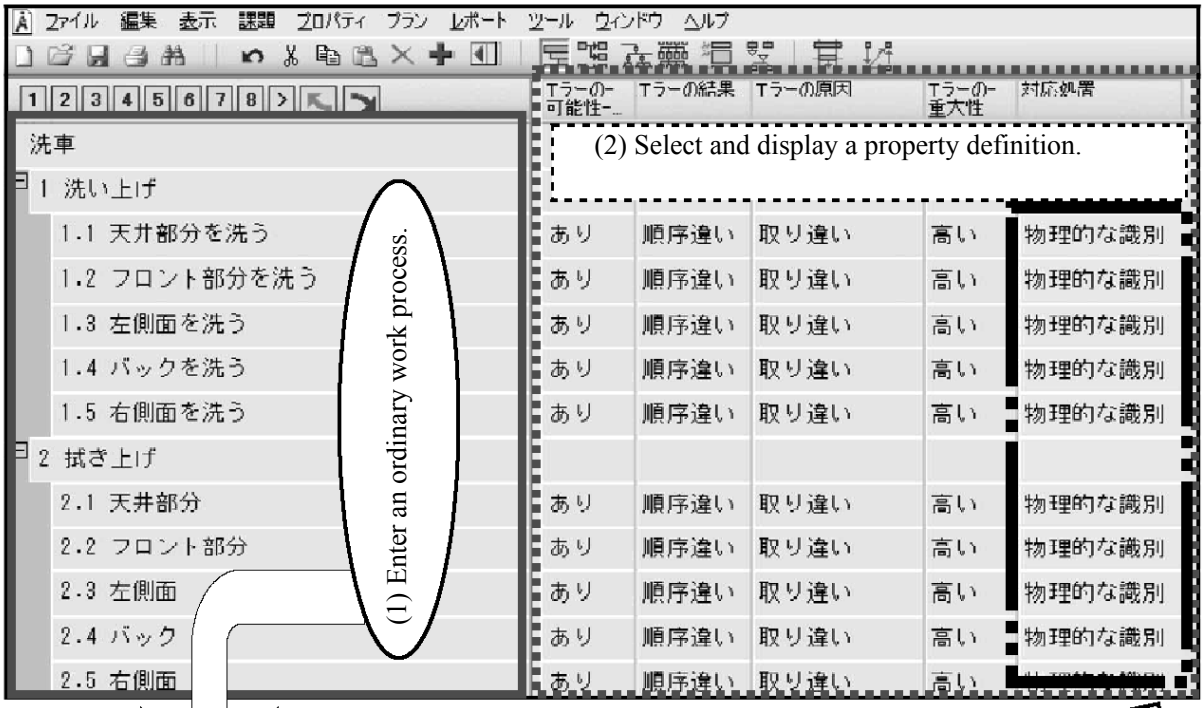

Fig. 5 List view where a property definition is selected

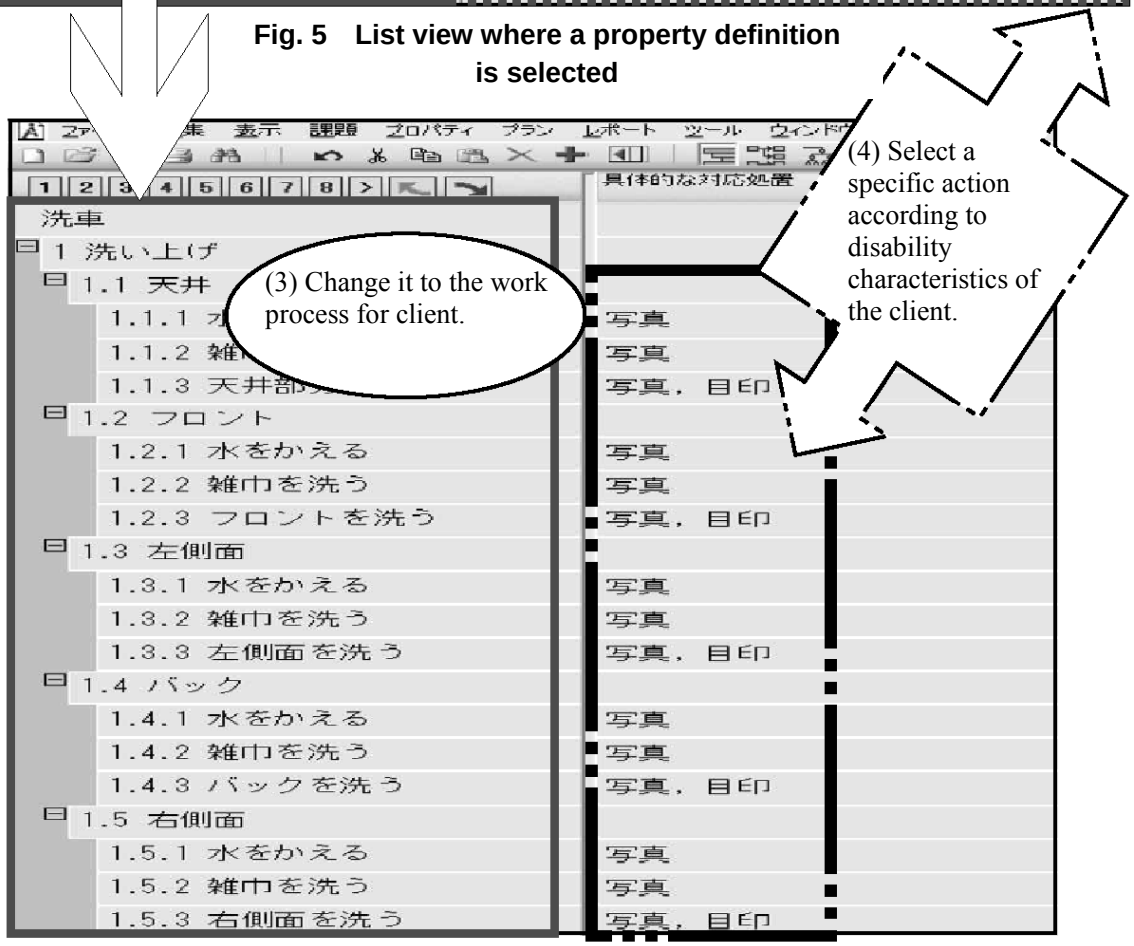

Fig. 6 List view indicating work processes and specific actions for client

■ Trial status of Task Architect

The coauthors conducted hearings on the trial use status of Task Architect with local vocational centers for persons with disabilities, and then considered the possible use of Task Architect and prospects for cost-cutting involved in task analysis.

These findings revealed that the main situations of use at local vocational rehabilitation centers were "use in vocational consultation", "use in guidance for work adjustment ", and "use in job coach assistance". Their respective contents are summarized below. Fig. 7 shows a typical list view created in Task Architect; Figs. 8 and 9 show tree diagrams.

Concerning the prospects of cost-cutting for task analysis, some people commented that this software application requires less time than other applications if only used to create lists of work processes and tree diagrams showing hierarchical structure, but when property redefinition is involved, it does not necessarily save time. Another person noted that the opportunities to use Task Architect may be lost due to insufficient time between the formulation of a vocational rehabilitation plan regarding job coach assistance and the beginning of provision of actual assistance.

1. Use in vocational consultation

1) Task Architect was used as a material for consultation to clarify the image of appropriate job content for clients who find it difficult to make realistic job selections.
2) Task Architect was used to make it possible to realistically consider the direction of job-seeking activities for clients who find it difficult to understand and organize the procedure for such activities (e.g., disclosure and nondisclosure of disabilities, respective advantages and disadvantages thereof).

2. Use in guidance for work adjustment

1) To rehabilitate clients showing unstable workplace attendance, the clients were made to carry a tree diagram showing the action and communication procedures whenever they hesitated to go to work, thereby helping them to achieve stable attendance.
2) Task Architect was used to prepare a schedule and create a work process table (as a complementary means) for clients who may be unable to fulfill their daily duties due to a failure to remember a given work procedure, as well as less spontaneity.

3. Use in job coach assistance

1) Task Architect was used to consider the content of preliminary assistance and methods of assistance being employed, because this assistance project was designed for inexperienced tasks by vocational counselors serving persons with disabilities.
2) Task Architect was used as an explanatory material for making proposals to business owners for creating jobs for the clients.

配車業務	
1 電話対応	
1.1 ハンズフリー操作	可能◎
1.2 受信	難しい×
1.2.1 挨拶「ありがとうございます。○○タクシーです」	
1.2.2 用件確認	
1.2.3 目的地の確認	難しい×
1.2.3.1 ゼンリン地図で町名の検索	
1.2.3.2 検索した頁を開く	
1.2.3.3 頁が複数にわたる場合は、頁番号をたどる	
1.2.3.4 目的地が見つかったら、同じ地図上で目標物を探す	
1.2.3.5 目標物から目的地までの方向や経路を確認する	
1.2.4 料金確認	
1.2.5 電話を終える	
1.3 転送・キャッチホンの操作	ほぼ可能○
2 車両呼び出し	
2.1 無線操作	可能◎
2.2 全車両に呼びかけ	可能◎
2.2.1 「△△車両、出れますか、どうぞ」	
2.2.2 「☆☆へお願いします、どうぞ」	
2.3 担当車両に用件を伝達	やや難しい△
2.4 目的地までのルート説明	難しい×

Fig. 7　List view of vehicle dispatching

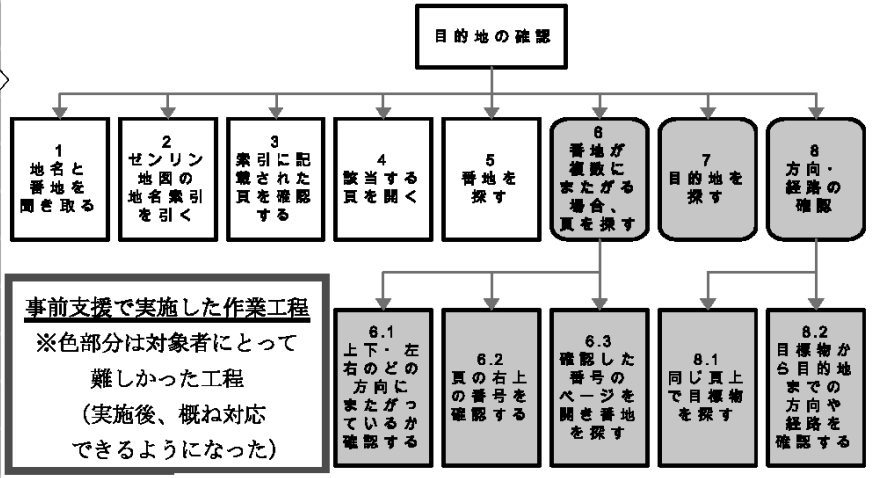

Fig. 8　Work processes for checking destinations [overview tree (based on Microsoft® Office Visio®)

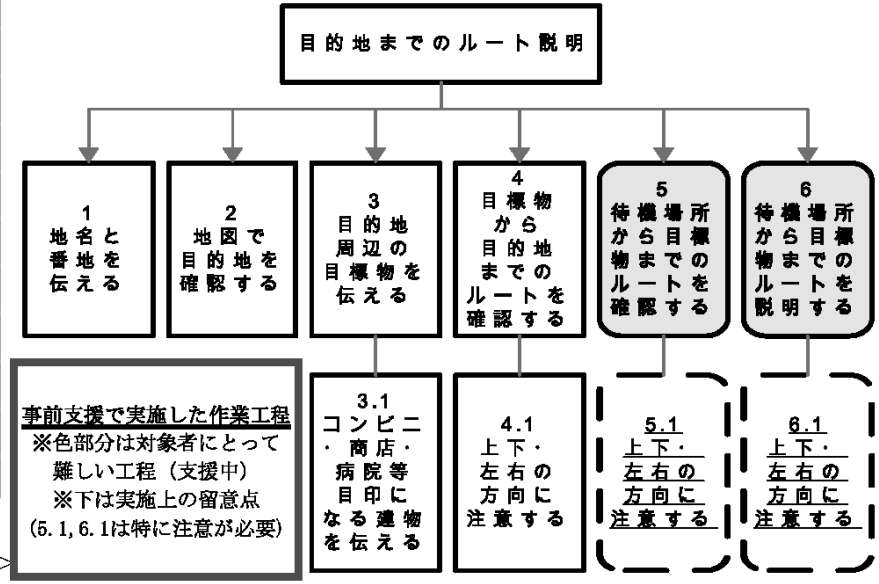

Fig. 9　Work processes for explaining routes to the destinations [overview tree (based on Microsoft® Office Visio®)]

Future challenges and issues

Among the advantages of using Task Architect in the situations of vocational rehabilitation are:

1) It makes it easier to recall the lower-level hierarchy of each work process, and is consequently useful in getting an overall image of all work processes.
2) Costs for task analysis can be reduced by limiting efforts to using lists of work processes and tree diagrams.
3) Using properties and task -emphasis functions can provide clues to organize the information in an integrated fashion and to consider measures of specific assistance for clients.

Conversely, other challenges and considerations include the following:

1) It must be customized according to purpose in order to make the templates for task analysis usable in the situation of vocational rehabilitation.
2) Since printing functions are limited after editing, some editing must be done using other application software.
3) It is desirable to provide automatic display of a legend linked with task -emphasis and add templates designed specifically for time scheduling.

In this way, it has been found that, although the functions of Task Architect that can be used immediately as installed are partially limited, they may be also used somewhat as a tool for more efficiently conducting task analysis at vocational rehabilitation agencies.

In this study, however, the trial cases of HTA based on Task Architect were limited to only a few, so that the coauthors were unable to conduct an adequate study on availability from a broader perspective.

In the future, it will be necessary to further organize the use cases of HTA and consider the uses of various functions of Task Architect in the situations of vocational rehabilitation. The coauthors also hope that these efforts will trigger the further use of Task Architect, and that the method of task analysis will provide an opportunity for vocational rehabilitation agencies to use it actively.

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