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TECHNOLOGY OF ACCEPTANCE OF ADMINISTRATIVE DECISIONS ON THE  
STAGE OF TECHNICAL PREPRODUCTION

**Annotation.** New technology of acceptance of project and productive decisions is offered on the stage of technical preproduction that is based on the use of the integrated informative environment of the modern integrated CASS. Such technology allows to perfect the processes of technical preparation and promote efficiency of administrative decisions on custom-building of wares. In opinion of authors of the article, a successful alternative to the considered approaches is creation of branch integration platforms that combine in itself flexibility and powerful possibilities of universal platforms with the productivity and subject oriented of partial decisions. Understanding it, the developers of software for integration create the certain templates of integration decisions, that are based on universal platforms. However, these templates of integration are accessible only for a limit amount of CASS after a functional and does not solve problem additional cost of introduction and service. Thus, new positions of perfection of processes of technical preparation and operative management of operations must be based on the use the only integrated model of data of machine-building enterprise with the «on order» type of production, that allows effectively to accept project and productive administrative decisions, and also form within the framework of the system a management productive processes three base administrative level: management an enterprise; management of technical preproduction processes; control is after a management. the worked out positions and algorithms of acceptance of administrative decisions on the stages of technical preproduction provide the receipt of data about efficiency of making of wares on ordering from the necessary degree of working out in detail, that allows to estimate efficiency of production of at generally from the point of view of achievement of the put aim.

**Key words:** productive data, integration of data, integrated automated systems, semantic design, integrated data.

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## ТЕХНОЛОГІЯ ПРИЙНЯТТЯ АДМІНІСТРАТИВНИХ РІШЕНЬ НА ЕТАПІ ТЕХНІЧНОЇ ПЕРЕВАГИ

**Аноація.** У статті проаналізована нова технологія прийняття проектних та виробничих рішень на етапі технічної підготовки, яка базується на використанні інтегрованого інформаційного середовища сучасного інтегрованого CASS. Така технологія дозволяє вдосконалити процеси технічної підготовки та сприяти ефективності управлінських рішень.

**Ключові слова:** продуктивні дані, інтеграція даних, інтегровані автоматизовані системи, семантичний дизайн, інтегровані дані.

**INTRODUCTION.** An acceptance of effective project and productive decisions in the conditions of operating modern machine-building enterprises is an extraordinarily thorny and at the same time actual problem both for Ukraine and for other post-soviet countries [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]. On present tense it exists neither theoretical nor, the anymore, practical decision of automation of informative support of process of acceptance of such decisions by a person that accepts him. principal reasons of absence of methods and corresponding information technologies are:

- it is plenty of input and initial informative streams of data;
- it is absence of the only integrated informative environment on enterprises;
- it is a presence of the various informative systems from different developers and absence them reliable informative integration (CRM-, PDM -, CAD -, ERP – and other systems).

**ANALYSIS OF LITERARY DATA AND RAISING OF PROBLEM.** In future will consider fundamentally the new going near the decision of problem of acceptance of project and productive decisions. The management of technical preproduction (TPP) processes at the level of scientific developments is based on the use of «processes» approach [4]. Classic positions of «processes» approach envisage development of the system of productive processes on the basis of analysis of all types of activity of enterprise. At the same time, process of acceptance of operative project and productive decisions and until now taken to preparation of a few their variants for person that makes decision. It can be chief of department, main designer, main engineer and other. Decision that

he accepts (for to the terms, cost, internals and other) unfortunately very subjective and cannot be examined as optimal [6, 7, 8, 9, 10, 22].

In opinion of authors of the article, a successful alternative to the considered approaches is creation of branch integration platforms that combine in itself flexibility and powerful possibilities of universal platforms with the productivity and subject oriented of partial decisions. Understanding it, the developers of software for integration create the certain templates of integration decisions, that are based on universal platforms. However, these templates of integration are accessible only for a limit amount of CASS after a functional (mainly unproductive spheres, financial) and does not solve problem additional cost of introduction and service.

A research object are processes of integration of informative CASS of the productive setting. The aim of work is presentation of results of researches from the mathematical design of processes of integration of data at the level of development and use of models of semantic nets of productive data on the stages of technical reproduction. For the put aim it was necessary to decide next tasks:

- to work out the mathematical model of integration of productive data;
- to offer the mechanism of integration of CASS of the productive assigning for the stages of technical preparation.

**OBJECT, AIM AND RESEARCH TASKS.** New positions, methods and corresponding information technologies of acceptance of administrative decisions are worked out must it is not simple to provide a management an enterprise in accordance with «processes» approach, but to guarantee that in such transition the key trends of activity of enterprise are observed with maximal efficiency [5]. In an order to define terms in accordance with that new positions of acceptance of administrative decisions will be worked out it is needed to set the weak points of existent «processes» management from the point of view of complication of their use for a machine-building enterprise with the shown type productions.

During the analysis of processes of TPP of base for this research enterprises next defects were set:

1. On the stages of analysis of current activity of enterprise and development of him productive processes possibility of the use of already existent reviewer models of productive processes is not examined, that considerably abbreviates efficiency of the use of sentinels and human capitals on these stages;

2. Working out in detail, with that the models of productive processes are developed "as is", "standard" often it is over loaded. As a result, part of worked out models is not used for the aims of analysis, and for providing of implementation of processes of enterprise;

3. The questions of adjustment of productive processes are not examined after the degree of their influence on efficiency of activity of enterprise. Absent methodologies of increase of efficiency of the basic stages of technical reproduction.

As be reasonable and well-proven, by informative basis for the acceptance of project and productive decisions there must be the only integrated model of data (IMD). The self use of IMD for a machine-building enterprise allows to shorten to time, financial and human resources at introduction of «processes» approach for a management an enterprise. Development of new positions for the processes of acceptance of administrative decisions on a machine-building enterprise will allow to decide the task of effective introduction of «processes» management an enterprise with the type of production «on order» [4, 11].

New positions must provide the special complex of measures sent to the improvement of those stages of technical preparation productions that considerably influence on the operation ability of acceptance of administrative decisions [5]. Effective decisions in area of management of project and productive data of one machine-building enterprise must be presented in a kind suitable for the use other machine-building enterprises (to be typical). Coming from the enumerated terms, new positions on the management of typical machine-building enterprise productive processes with the type of production «on order» it is possible to present in a next kind: 1. The initial models of processes of management of operations for realization of analysis and determination of specific of management of life cycle of good the basic stages are formed on the basis of IMD and existent models of productive processes; 2. Foreground project and productive processes are determined on the basis of criteria of choice of key processes of TPP and operative management of operations. For these processes a method that allows to promote efficiency of their implementation through the reasonable choice of values of "internal" parameters of processes is used; 3. After the worked out models of project and productive processes of TPP development of regulations of corresponding processes, and also development of positions of structural productive subdivisions, comes true. It is necessary for perfection of processes of acceptance of operative administrative decisions taking into account brought in adjustment of project and productive processes;

4. On condition of creation and use of the integrated informative environment of CASS of the productive setting approbation of the worked out algorithms of management the processes of TPP comes true. Efficiency of their use and introduction is determined on the basis of monitoring of key indexes [7, 22].

The basic differences of the offered positions from the existent methods of management of operations are presented on figure 1. Differences are base on that the observance of the new worked out positions allows: 1. To provide formalization, design and working out in detail only of those productive processes that is needed for researches; 2. To analyze activity of enterprise for the decision of next tasks: management of life cycle of good the basic stages; management of enterprise productive processes; acceptance of administrative project and productive decisions; 3. To provide development of improved control system by productive processes and stages of TPP of enterprise on the basis of the use of IMD; 4. To work out the algorithms of processes of acceptance of operative and

reliable administrative project and productive decisions.

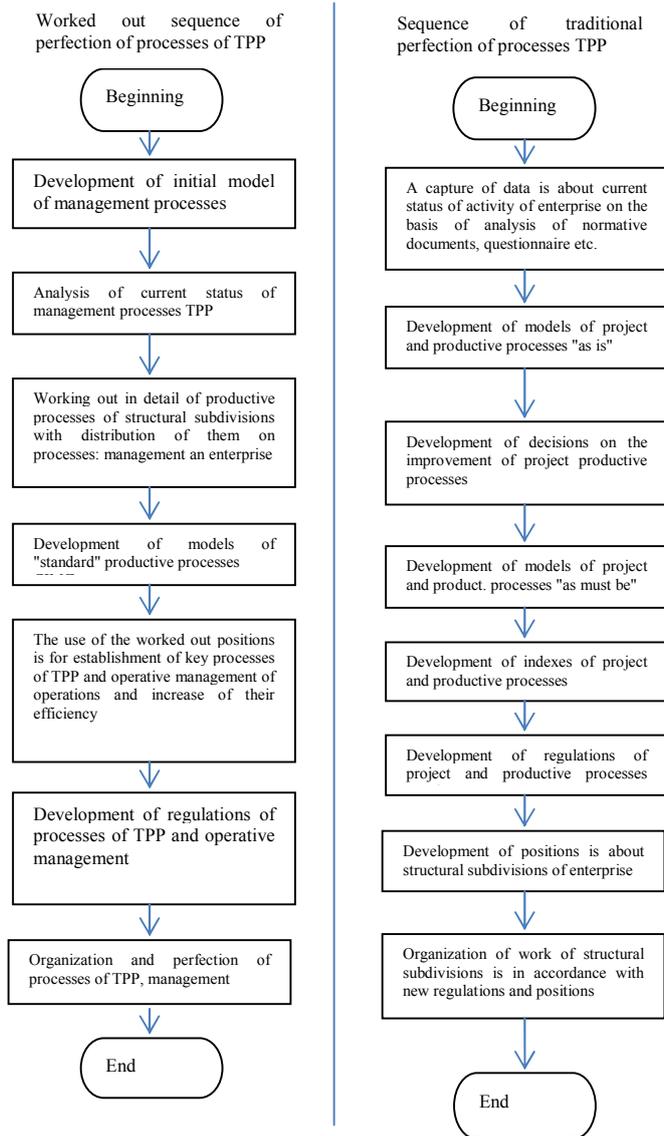


Fig. 1. Algorithms of "traditional" and worked out sequence of perfection of processes of TPP

It is necessary to mark, that the use of these positions needs development of next additional theoretical and practical instruments: only semantic model of project, productive and normatively-certificate data; algorithms of acceptance of administrative decisions on the stages of TPP; the systems of estimation of efficiency of processes of TPP of machine-building enterprise are with the «on order» type of production.

In accordance with positions of «processes» approach it is envisaged at development of «processes» models of the basic stages of life cycle of good of machine-building enterprise, that all types of project and productive processes of TPP must submit to the only rules of management [5].

Traditionally at development of models of productive processes on the stages of TPP of machine-building enterprise it does not a rise up with the small-scale, serial or mass type of production of complications. It is explained by that at the frequent filling of bases given on a personnel, to logistical support and other, only technology of her implementation is determined. To the performers known what resources are needed for implementation of works, it is known also, with whom they must carry out intercommunication. It is set that uniting data and knowledge in semantic models it is possible to create the intellectual informative environment of integrated automated systems of productive setting.

**CONCLUSION.** Thus, new positions of perfection of processes of technical preparation and operative management of operations must be based on the use the only integrated model of data of machine-building enterprise with the «on order» type of production, that allows effectively to accept project and productive administrative decisions, and also form within the framework of the system a management productive processes three base administrative level: management an enterprise; management of technical reproduction processes; control is after a management. the worked out positions and algorithms of acceptance of administrative decisions on the stages of technical reproduction provide the receipt of data about efficiency of making of wares on ordering from the necessary degree of working out in detail, that allows to estimate efficiency of production of at generally

from the point of view of achievement of the put aim.

## References

1. Andrichenko, A., Koptev, A. (2011). Printsipy integratsii PDM-sistem i SAPR tehnologicheskikh protsessov. CAD/CAM/CAE Observer, 8, 8–13.
2. Kul'ga, K. S. (2010). Modeli i metody sozdaniia integrirovanoi informatsionnoi sistemy dlia avtomatizatsii tehnicheckoi podgotovki i upravleniia mashinostroitel'nym proizvodstvom. Ufa: UGATU, 34.
3. Martynov, O. Yu. (2012). Razrabotka metodov i sredstv avtomatizirovannogo upravleniia tehnicheckoi podgotovki proizvodstva naukoemkikh izdelii s tsel'iu povysheniia ih konkurentosposobnosti. Moscow, 32.
4. Barrenechea, M. J., Jenkins, P. T. (2013). Enterprise Productive Information Management: The Next Generation of Enterprise Software. Waterloo, Canada: Open Text, 110.
5. Treityak V.V. Procesna model upravlenya tehnologichnou pidgotovkou virobnyctva v seredovushi integrovanih avtomatizovanyh sistem / V.V. Treityak // Visnek Nacionalnogo tehnicznogo universitetu «HPI». – H.: NTU «HPI» – 2015. – (Seria: Mehaniko-tehnologichni sistemu ta kompleksi) № 49 (1158). – S. 63–67.
6. Tolbatov A.V. Functional modeling – methodological basis for investigation of business processes at industrial enterprises / A.V. Tolbatov, S.V. Tolbatov, O.O. Tolbatova, S.V. V.A. Tolbatov // International scientific-technical magazine Measuring and computing devices in technological processes. – Khmel'nyts'kyi, 2017. – №3 –P.132–136.
7. Tolbatov A.V. Information technology for data exchange between production purpose integrated automated systems / P.M. Pavlenko, A.V. Tolbatov, V.V. Tretyak, S.V. Tolbatov, V.A. Tolbatov, O.B. Viunetko... // International scientific-technical magazine Measuring and computing devices in technological processes. – Khmel'nyts'kyi, 2016. – №1 –P.86–89.
8. Tolbatov A. Mathematical models for the distribution of functions between the operators of the computer-integrated flexible manufacturing systems / E. Lavrov, N. Pasko, A. Krivodub, A. Tolbatov // TCSET 2016 – Lviv-Slavske, 2016. – P. 72–75.
9. Tolbatov A. Cybersecurity of distributed information systems. The minimization of damage caused by errors of operators during group activity / E. Lavrov, N. Pasko, A. Tolbatov, V. Tolbatov // 2 International Conference on Advanced Information and communication Technologies–2017 (AICT–2017), Lviv, Ukraine, July 4–7, 2017. – P. 83–87.
10. Zaritskiy O. Theoretical bases, methods and technologies of development of the professional activity analytical estimation intellectual systems / O. Zaritskiy, P. Pavlenko, V. Sudic, S. Tolbatov, A. Tolbatov, O. Viunenko, O. Tolbatova, V. Tolbatov // 2 International Conference on Advanced Information and communication Technologies–2017 (AICT–2017), Lviv, Ukraine, July 4–7, 2017. – P. 101–104.
11. Tolbatov A.V. Metodyka pobudovy intehrovanooho informatsiynoho seredovyscha suchasnoho promyslovooho pidpryemstva / A.V. Tolbatov, V.A. Tolbatov / Perspektivnyie trendyi razvitiya nauki: tehnika i tehnologii. – Odessa: KUPRIENKO SV, 2016. – S.82–96.
12. Tolbatov A. Data Representing and Processing in Expert Information System of Professional Activity Analysis / Oleh Zaritskiy, Petro Pavlenko, Andrii Tolbatov // TCSET 2016 – Lviv-Slavske, 2016. – P. 718–720.
13. Tolbatov A.V. Information technology architecture development for work complexity assessment algorithms implementation / A.V. Tolbatov, V.A. Tolbatov, S.V. Tolbatov // Modern scientific research and their practical application. – Volume J21410. November 2014. – P. 166-170.
14. Tolbatov A.V. Development concept modeling of business processes of modern industrial enterprises in terms of theoretical and legal approaches to the analysis information security / A.V. Tolbatov, V.A. Tolbatov // International scientific-technical magazine Measuring and computing devices in technological processes. – Khmel'nyts'kyi, 2017. – №1 –S.196–199.
15. Tolbatov A.V. Information technology of the work complexity optimization for metalworking machinery with flexible logic operations' dynamics analysis / S.V. Tolbatov, A.V. Tolbatov, V.A. Tolbatov, O.A. Dobrorodnov // International scientific-technical magazine Measuring and computing devices in technological processes. – Khmel'nyts'kyi, 2014. – №3 (48). – P. 132–135.
16. Tolbatov A.V. Perspektivnyie dostizheniya sovremennyih uchenyih: tehnika i tehnologii: Analiz ta rozrobka kontseptsiyi modelyuvannya biznes-protseviv promyslovooho pidpryemstva z tochky zoru suchasnoyi metodolohiyi analizu ta proektuvannya skladnykh system / [avt.kol.Tolbatov A.V, Tolbatov V.A, Tolbatov S.V, V"yunenko O.B., Tolbatova O.O.]. – Odessa: KUPRYENKO SV, 2017 – 219s.
17. Tolbatov V.A. Orhanizatsiya system enerhozberezhennya na promyslovykh pidpryemstvakh / V.A. Tolbatov, I.L. Lebedyns'kyi, A.V. Tolbatov / – Sumy : SumDU, 2009. – 195 s.
18. Tolbatov V.A. Metodologichni osnovy vy'boru kry'teriyu parametry'chnoyi nadijnosti elektry'chny'x sy'stem upravlinnya metalorizal'ny'm obladnanniam / V.A. Tolbatov, A.V. Tolbatov // Visny'k SumDU. Seriya texn. nauky'.-2010.-№1.-S.37-45.
19. Tolbatov V.A. Inzhenerny'j sy'ntez za kry'teriyem nadijnosti elektry'chny'x sy'stem keruvannya metalorizal'ny'm obladnanniam iz zhorstkoyu logikoyu / V.A. Tolbatov, A.V. Tolbatov, S.V. Tolbatov // Visny'k SumDU. Seriya texn. nauky'.-2011.-№2.-S.48-54.
20. Tolbatov V.A. Tekniko-ekonomichne obrgruntuvannya pobudovy' sy'stem upravlinnya pidvy'shhenoyi nadijnosti // V.A. Tolbatov, A.V. Tolbatov, S.V. Tolbatov // Visny'k SumDU. Seriya texnichni nauky'.-2012.-№3.-S.68-71.
21. Tolbatov A.V. Metodolohiya stvorennya avtomatyzovanykh system keruvannya / A.V. Tolbatov, V.D. Cherv'yakov, T.L. Shcherbak // Visnyk SumDU. Seriya tekhnichni nauky №9(81)' 2005, Sumy, SumDU, 2005. – S. 124–130.
22. Tolbatov A.V. Business processes management at machine-building enterprise / A.V. Tolbatov, O.O. Tolbatova, I.A. Shekhovtsova, V.A. Tolbatov // International scientific-technical magazine Measuring and computing devices in technological processes. – Khmel'nyts'kyi, 2017. – №4 –P.119–124.

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