

*International Conference on Electrical, Computer and Energy Technologies (ICECET)*

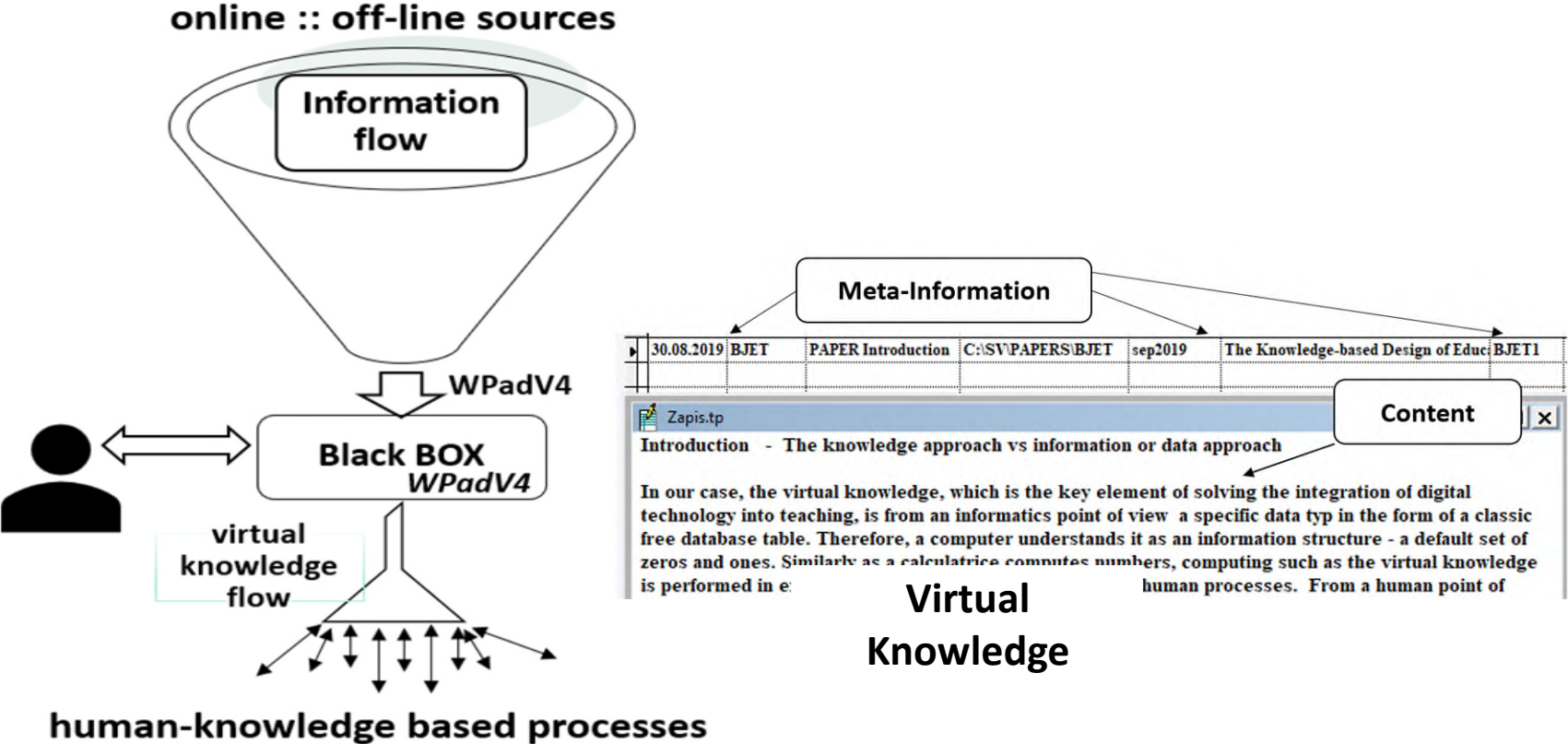
# Human-Centered Software Design for Knowledge-Based Processes

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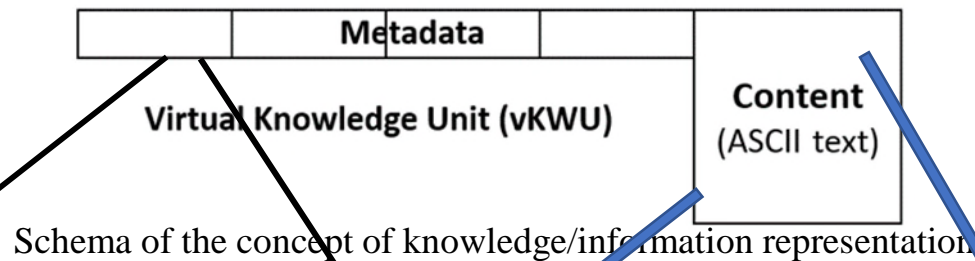
# Abstract

- **At the global level, too much information is rapidly overwhelming individuals. The main challenge is how to adapt digital technologies to human thinking without digital stress.**
- **If the interaction between a computer and a human is understood as a relationship between two powerful processors, the weakest point of the technology is the issue of how to improve the flow of information from a person to the computer.**
- **The aim of this paper is to present an alternative knowledge-based software design and a suitable IT infrastructure for applying a non-relational database paradigm for this purpose.**
- **In this context, the technological approach uses so-called ‘virtual knowledge’ can help individuals and knowledge workers to achieve better knowledge processing.**
- **The human-centered ‘all-in-one’ supporting computing system presented here can be universally applied to support any knowledge-based process and can replace numerous other software that individuals would need to use for the same activities (e.g., teaching and learning, self-study, research, publishing, cloud/offline interaction, personal knowledge management).**

# Schema of information flow for knowledge-based processes



Screenshots how human knowledge flow is inserted to the Virtual Knowledge Unit as a one row of Virtual Knowledge Table, consisting of many rows (virtual knowledge), so a personal Knowledge Base is created from the groups of Knowledge Tables



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Screenshot of part of the IEEE table

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- [8] ! TSE 03 Sekcia III Súčasnosť - inteligencia
- [9] ! TSE 01 Introduction

Screenshot of part of the IEEE table converted into html

## Example of concentration of teaching material onto one screen using WPad as the PHP source code repository

1. WPadV4 table – source codes rows in the WPad environment
- 2-3. Conversion to HTML table, – source codes rows in HTML format
4. Result of the launched PHP code – result of source code opened by browser (student does not see XAMPP)

The screenshot shows the WPadV4 interface with a table of source code files on the left and the rendered output of a PHP script on the right. The table has 17 rows, with the first row circled in red and labeled '1'. The second row is circled in blue and labeled '2'. The third row is circled in red and labeled '3'. The fourth row is circled in blue and labeled '4'.

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<tr width=450 size=1 color=navy align=left>
<?php
echo " pow(5, 3) = 5 x 5 x 5 = " . mocniny.php
echo pow(5, 3);
echo "<br>";

echo " pow(-3, 3) = -3 x -3 x -3 " .
echo pow(-3, 3);
echo "<br>";

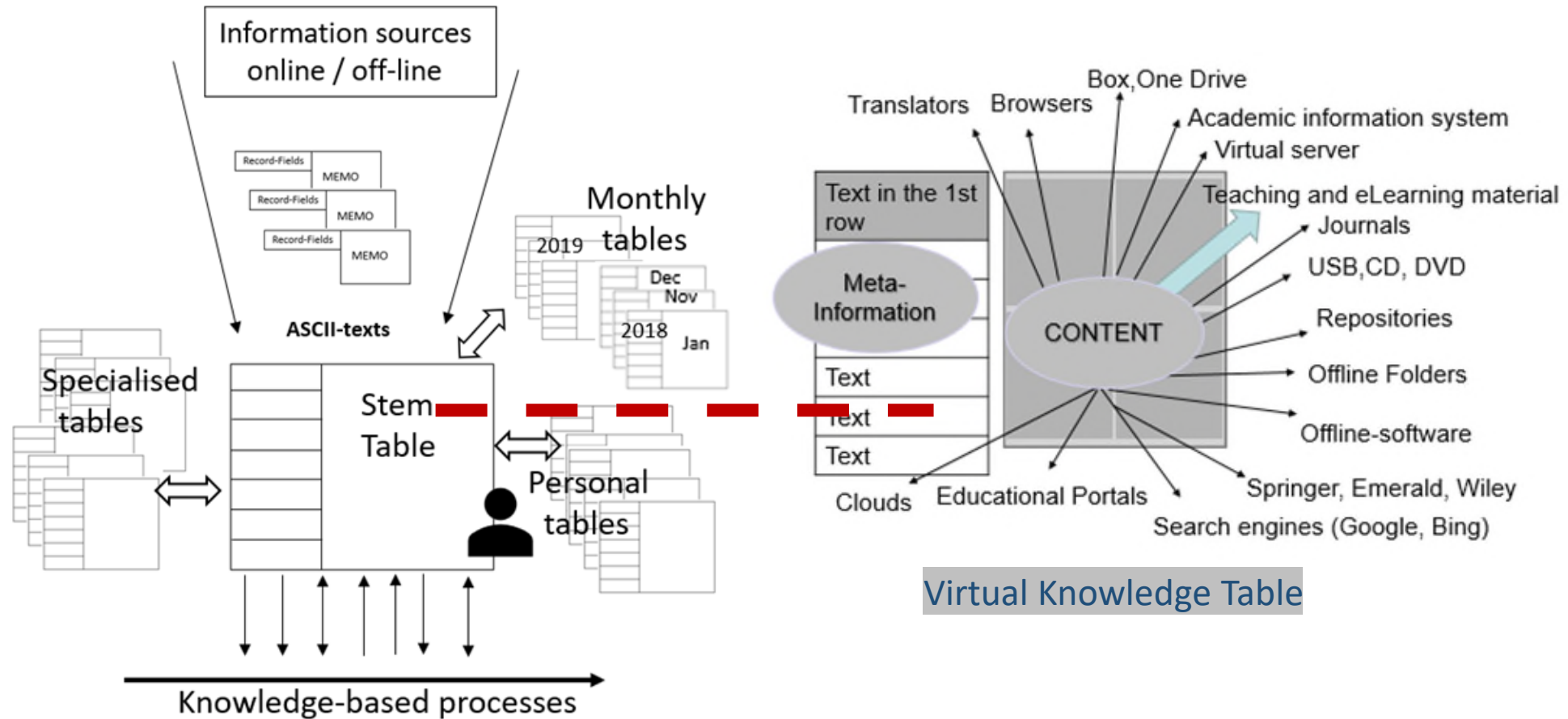
echo " pow(10, -7) = 10 exp(-7); (exp(1) = 2.71828182846
echo pow(10, -7); (exp(2) = 7.38905609893
?>
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<?php
echo " (exp(1) = " ;
echo(exp(1) . "<br />");

echo " (exp(2) = " ;
echo(exp(2) . "<br />");

```

pow(5, 3) = 5 x 5 x 5 = 125  
 pow(-3, 3) = -3 x -3 x -3 = -27  
 pow(10, -7) = 10 exp(-7) = [H+] =  
 (exp(1) = 2.71828182846  
 (exp(2) = 7.38905609893  
 (exp(3) = 20.0855369232  
 (exp(-1) = 1/ 2.718281828459 = 0

# Schema for HUMAN information processing, involving conversion to VIRTUAL KNOWLEGE and processing in the WPadV4 stem table



# Examples of self-reordering of the IEEE knowledge table

## Menu 1

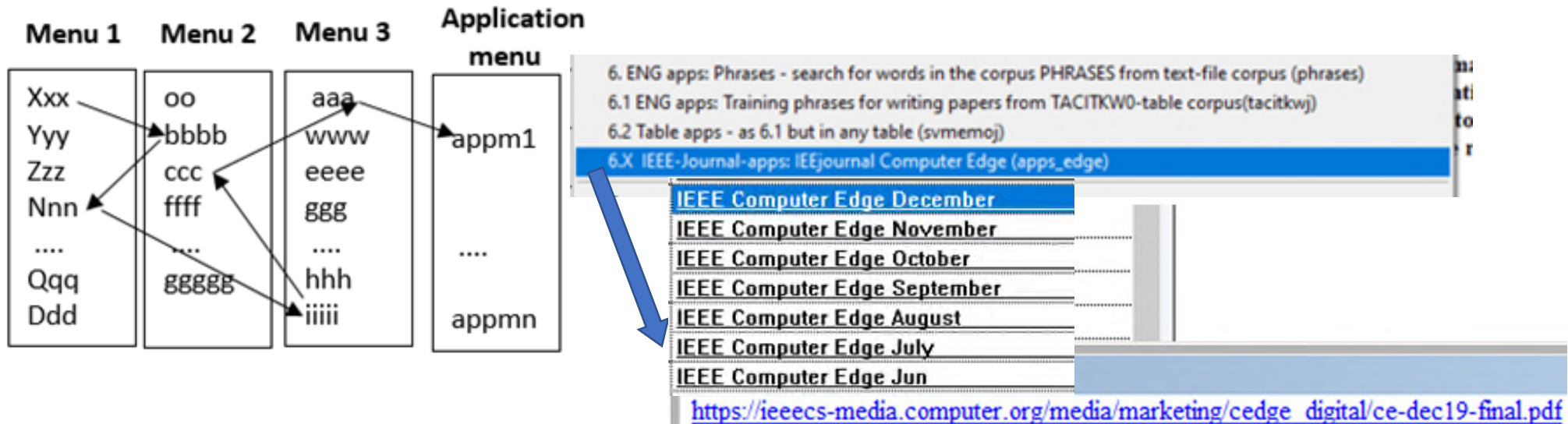
H [F9] SAVE TP AS tp.htm => ULOZ TP ako TP.htm
7 [CTRL-F1] SAVE table AS html => ULOZ tabulku ako HTML
E Open EXPLORER   Otvor prieskumnika Windows
4 Ad other table   PRIPOJ inu tabulku
1. Search in TXTUNI   Hladaj v TXTUNI => Search in TXTUNI (la
2. Search in TP   Hladaj v TP (pravom okne) : vytvor tp.dbf
6 Search in KODF   Hladaj v KODF
K Search in KOD1   Hladaj v KOD1
X TP Search 2 keyword - Hladaj podla 2 vyrazov
Y TXTUNI Search 2 Keywords   Hlada podla 2 keywords v txtun
5 General Search in other columns   Hladanie v inych stlpcoch
W Date Search
Add empty row - Pridaj prazdny riadok
3 Restart WPad by error   Oprava Obnovenie :: Oprava chyb
QUIT - KONIEC

CTRL-F3

F6

auto-filtering (F6)

# Examples of using Application Menus for opening IEEE Computer Edge Journal

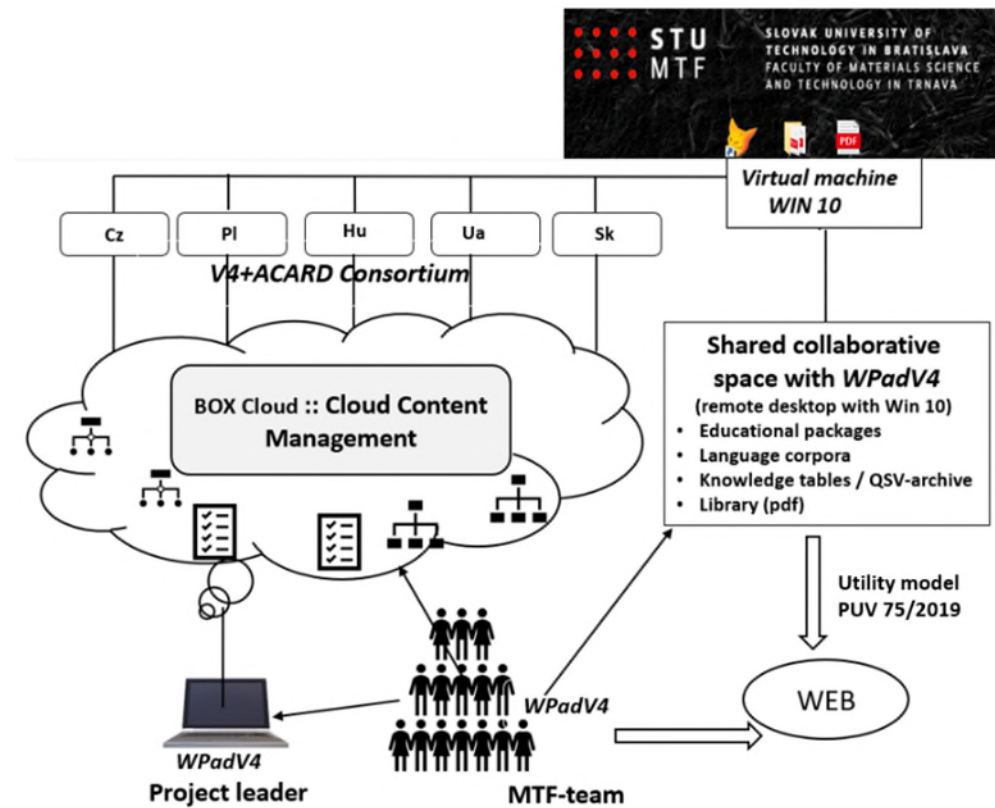






Thanks for paying attention

Contact: [svetsky@stuba.sk](mailto:svetsky@stuba.sk)



Consortium V4+ACARD - project IT infrastructure using Wpad software