Date: 23-02-2017
Place: TIRANA

# Knowledge FOr Resilient soCiEty

## Modalities of using ICT for b-learning
## Equipment for PhD studies

***UNIVERSITY OF NOVI SAD***

Co-funded by the
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# INNOVATIVE TEACHING AND LEARNING METHODS

## - INFORMATION AND COMMUNICATION TECHNOLOGIES IN HIGH EDUCATION -

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## BLENDED LEARNING

-an education program that combines
**traditional classroom methods** with **online digital media.**

Face to face – attending classes, going on consultation, take a standard written and oral examination

- graphical and seminar papers

- printed materials for learning

Face to face – LIVE STREAMING (attending classes online in real time)

Flex – e-library (curiculum, audio and video recordings), teachers are available for face-to-face online consultation

Labs - All of the curriculum is delivered via a digital platform but in a consistent physical location.

Online driver – Students complete an entire course through an online platform with possible teacher check-ins

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# CANVAS
# learning management system

www.canvaslms.com

CANVAS is a platform of the most modern 'interface', it is extremely easy to use and has all the digital tools and satisfies all the needs of online learning and courses.

Since its launch in 2011 it has been used by more than 1800 universities, school districts and institutions around the world.

On one platform are associated features of all the previous platforms and popular social networks which has led to such an expansion in short time and made world universities convert from existing to canvas platform.

Selected by Cisco Networking Academy (global educational program for career development and IT skills) to power "the world's largest classroom".

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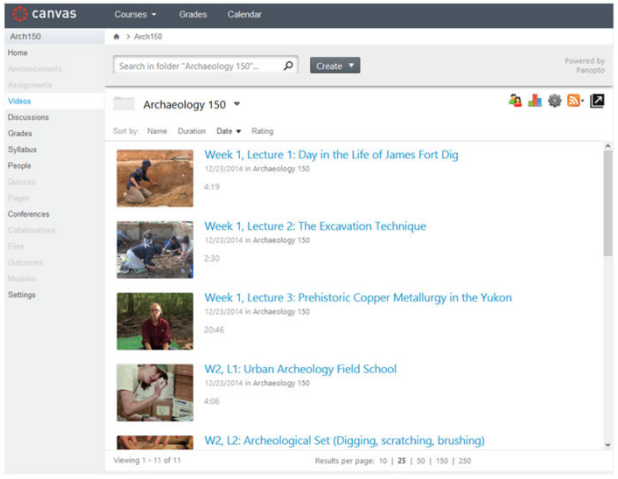
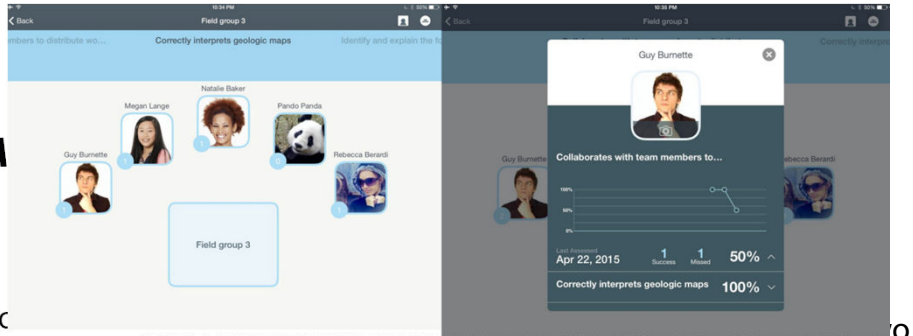



*Panopto videos seamlessly integrated into a Canvas course*

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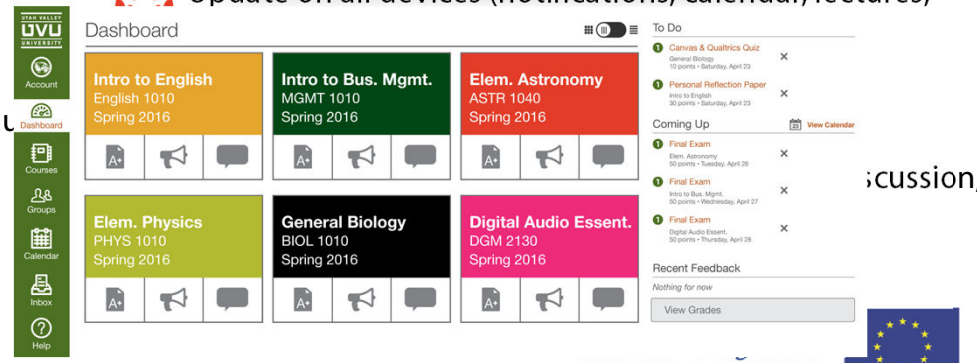


of the European Union

# SLACK
## comunication inside the consortium

www.slack.com

The SLACK platform provides communication between members or teams in real time.
SLACK is the platform with the highest increase in users in the last two years.
Before it's commercial use it was used as a platform in the NASA Center.

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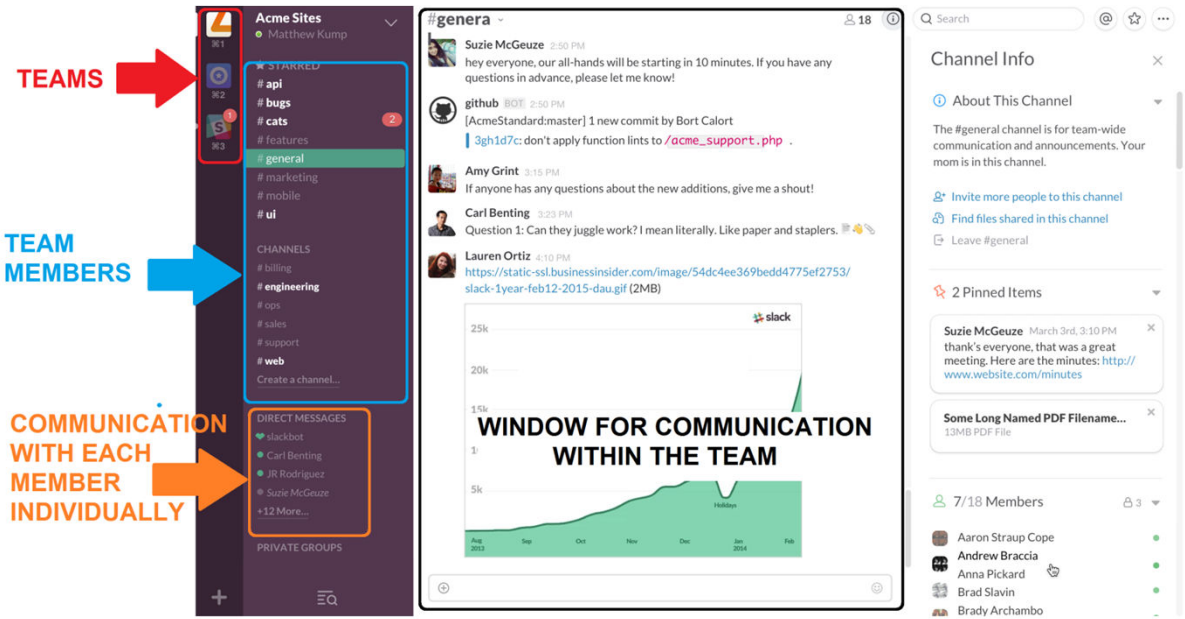
## *FEATURES AND ABILITIES:*

- Compatible with all devices (Android, iOS, Microsof' web browsers ...)
- Using account on multiple devices at once
- Posibility of adding video and audio recordings, links, e-mails,communicating between two or more members of the platform, corespodence with fb, tw, google account...
- Modern 'interface', extremely easy to use like popular social networks (fb, twitter...)

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# E-LIBRARY REPOSITORY

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# E-LIBRARY REPOSITORY

- Dropbox platform will be used as an E-Library repository.
- Every consortium member will have access to E-Library repository where they will store guidebooks, glossary, curriculum, guides, textbooks, conference proceedings, etc.

***Steps for creating and maintaining E-Library:***

1. Create new Dropbox account with name such as „K-FORCE University of Novi Sad“ and send designated e-mail adress (Dropbox username) to E-Library administrator (Ivan Lukić, **lookic@uns.ac.rs**)

2. E-Library administrator will share E-Library folder with every consortium member;

3. Consortium member will upload documents to specific E-Library folder.

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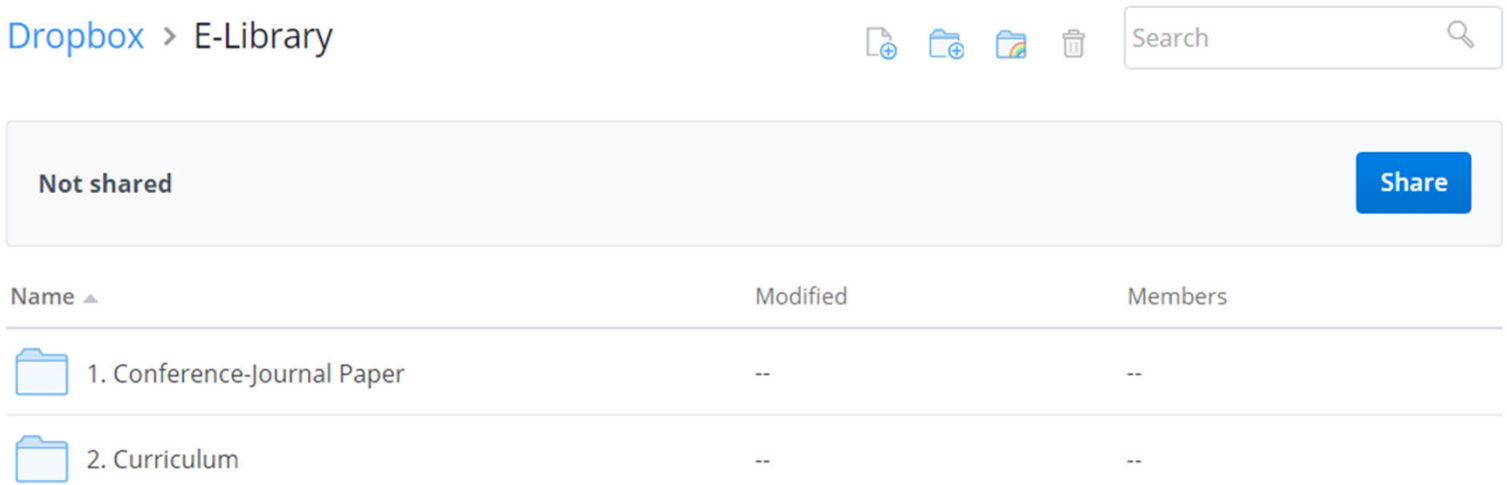
## *Structure of E-Library repository:*

*Root folder: E-Library*

1st level sub-folders:

Conference-Journal Paper
Curriculum
...

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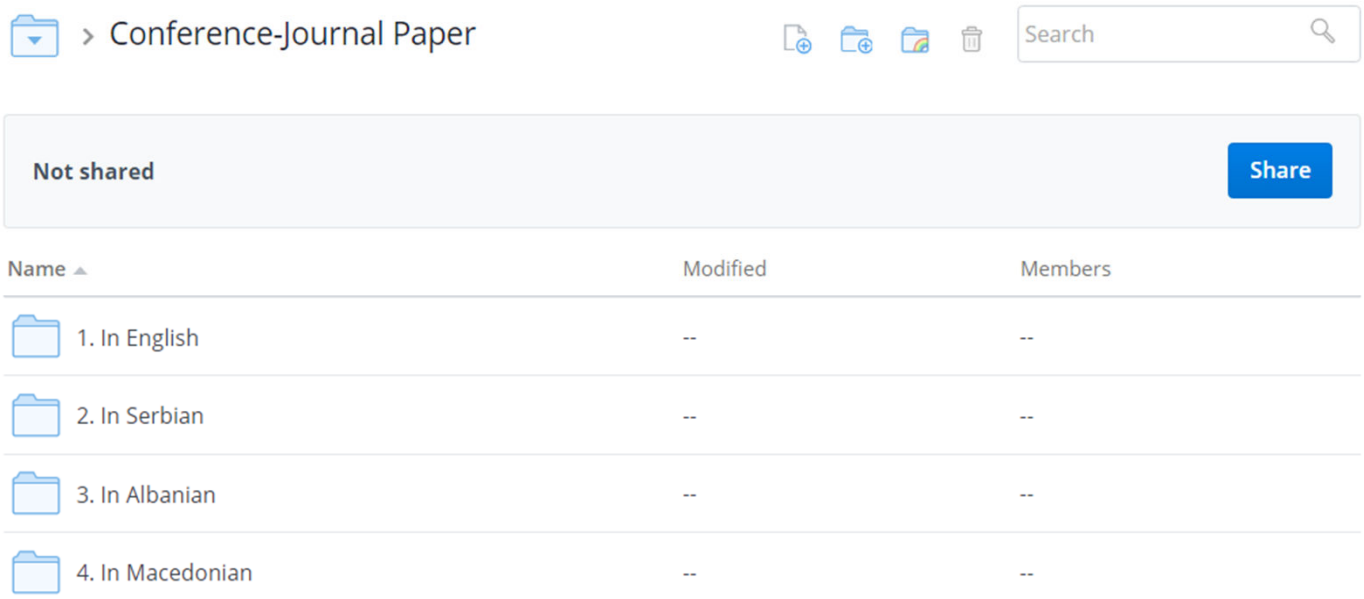
## *Structure of E-Library repository:*

2nd level sub-folders for „Conference-Journal Paper“ : In English; In Serbian; In Albanian; In Slovenian; In Macedonian.




Note:

1. For the conference and journal papers, file names should be „Title“ of paper
2. Alternative structure for „Conference-Journal Paper“ can be „Name of the conference/Journal (year)“, and at the end of file name to be stated language (e.g. „Title of paper-In English“)

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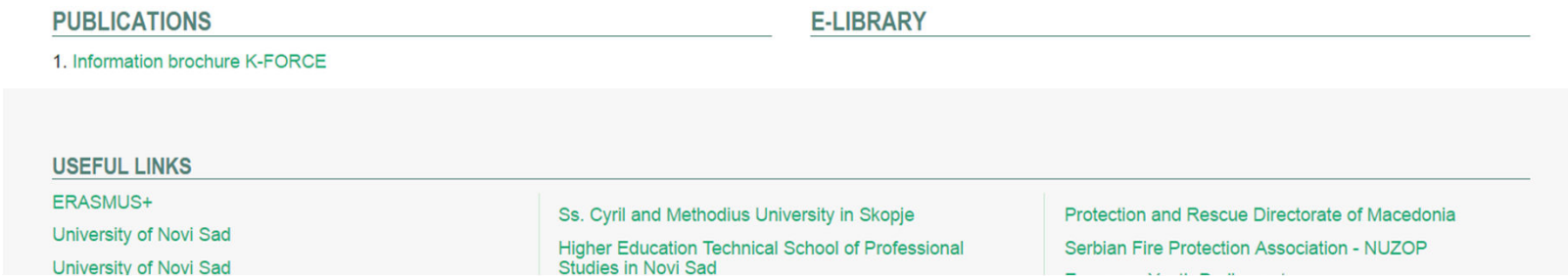
1st level sub-folder: Curiculum

2nd level sub-folders: University of Novi Sad – UNS; Technical University of Denmark – DTU; Aalborg University – AAL; Lund University – LU; ...etc

On the same principle will be organized the rest of E-Library content

## *E-Library on web site:*

*Link to E-Library repository will be on K-Force web site, located at the bottom of Home page (if necessary, it can be moved or placed on other pages as well).*




*All E-Library 1st level sub-folders will be linked on web site.*

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***Literature for E-Library – proposal:***

***All HE's instutions should send 2 papers/other material for E-Library?***

***Missing on web site***

*All HE's instutions should send photographs of their building (i.e. photo of building and table with a name of HE institution)*

*Photograps of participants*

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# SOFTWARE PACKAGES
# -EVACUATION MODELLING and FIRE AND SMOKE MODELLING

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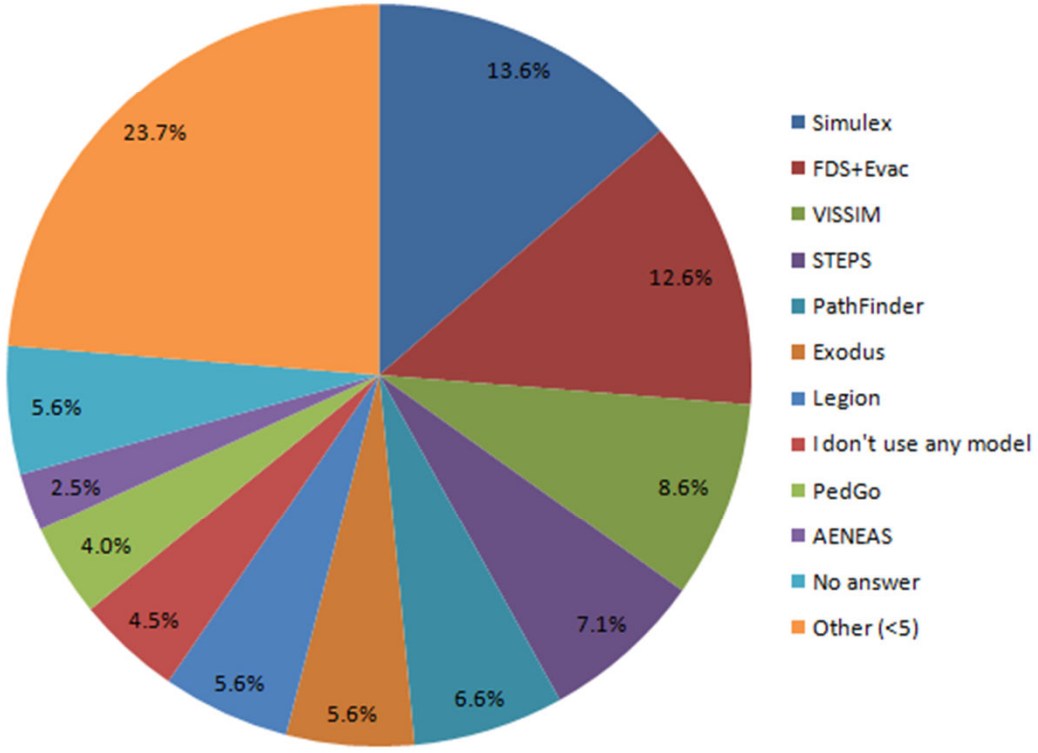
# SOFTWARE - Evacuation modelling

## Most used models




Ronchi E & Kinsey M (2011). Evacuation models of the future. Insights from an online survey on user's experiences and needs. In Proceedings of EVAC11, Santander (Spain)

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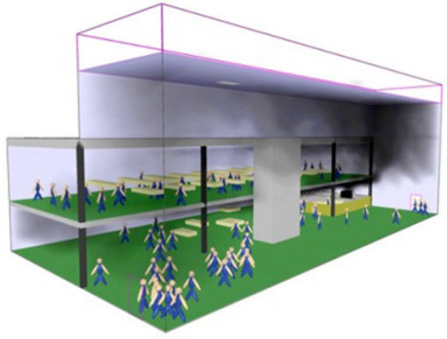
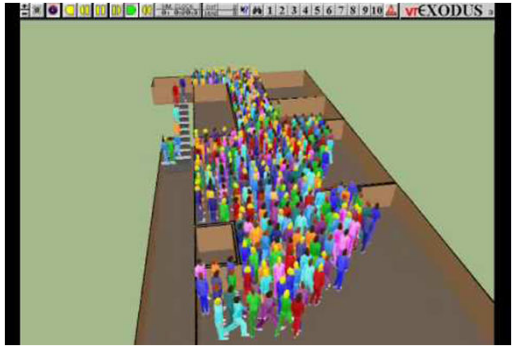
# SOFTWARE - Evacuation modelling

## Most known models (Top 5)

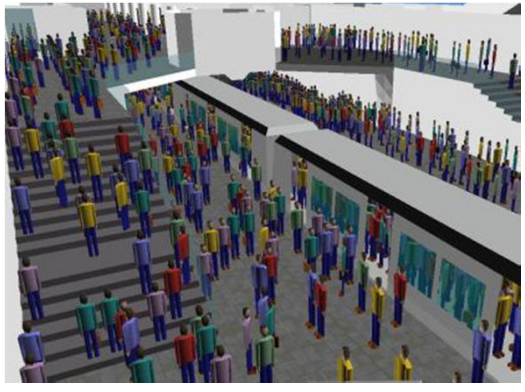


FDS + Evac (OpenSource)




BuildingEXODUS (FSEG)

PathFinder (Thunderhead)



STEPS (MottMac)

Simulex (IES)

Ronchi E (2013). Testing the predictive capabilities of evacuation models for road tunnel safety analysis. Safety Science Volume 59, pp.141-153

# Brief review of selected models (by Enrico Ronchi)

## PathFinder

- Possible to obtain free academic licenses
- Quite user friendly for students and non-expert users
- The main issue: at the moment it does not allow direct coupling with fire simulation (the user can only display results of fire models but not having them directly influencing the evacuation process)
- Quite widely used in the US

## STEPS

- An agent-based model developed in the UK
- Largely used in the design of train and metro stations all over the world
- Allows the simulation of both normal and evacuation conditions
- Allows direct coupling with two fire models (FDS and CFAST, both developed at NIST in the US).
- The main limitation of the software is that it is a grid-based model.

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# Brief review of selected models (by Enrico Ronchi)

## Simulex

- The first evacuation simulation model which made use of continuous representation of space (it is out there since the 90ies).

## FDS+Evac

- Open source and agent-based.
- A very powerful model,  but the input is code-based, so it requires a more expert user.

## VISWALK

- Developed by PTV in Germany)
- Coupled with VISSIM, one of the most used traffic simulation software.
- A quite useful tool to couple the use of traffic and pedestrian simulation software for evacuation

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# Brief review of selected models (by Enrico Ronchi)

## MassMotion

- Developed by Oasys, branch of Arup, multi-national British company.
- A continuous model
- It does not allow direct coupling with fire simulators

## Exodus

- Developed by Uni of Greenwich, UK.
- Allows coupling of fire and evacuation simulations.
- Based at the moment on a grid-based approach.

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# Licencing

## PathFinder

- Free **Educational Licensing**
- **Standard Perpetual License:**

| | |
|---|---|
| Node-Locked | **$5700** |
| Maintenance | **$1140** |

**Volume Licensing Discounts: 50% off all additional licenses**

- PyroSim and Pathfinder orders can be combined for volume licensing.

## buildingExodus

- **Educational Licensing** (inclusive of support and maintenance)**:**

| | |
|---|---|
| 12 month license | **£1000** |
| 36 month license | **£2100** |


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# Review of selected models

## Fire Dynamics Simulator (FDS)

- Computational Fluid Dynamics (CFD) model
- A large-eddy simulation (LES) code for low-speed flows, with an emphasis on smoke and heat transport from fires
- Free and open-source software tool

## CFAST

- A two-zone fire model
- Capable of predicting the environment in a multi-compartment structure subjected to a fire.
- It calculates the time-evolving distribution of smoke and gaseous combustion products as well as the temperature throughout a building during a user-prescribed fire
- includes Smokeview program
- Free and open-source software tool

# Review of selected models

## PyroSim

- Field Model / Miscellaneous
- A graphical user interface for the Fire Dynamics Simulator (FDS)
- It is used to create fire simulations that accurately predict smoke movement, temperature, and  toxin concentrations during a fire

## Licencing

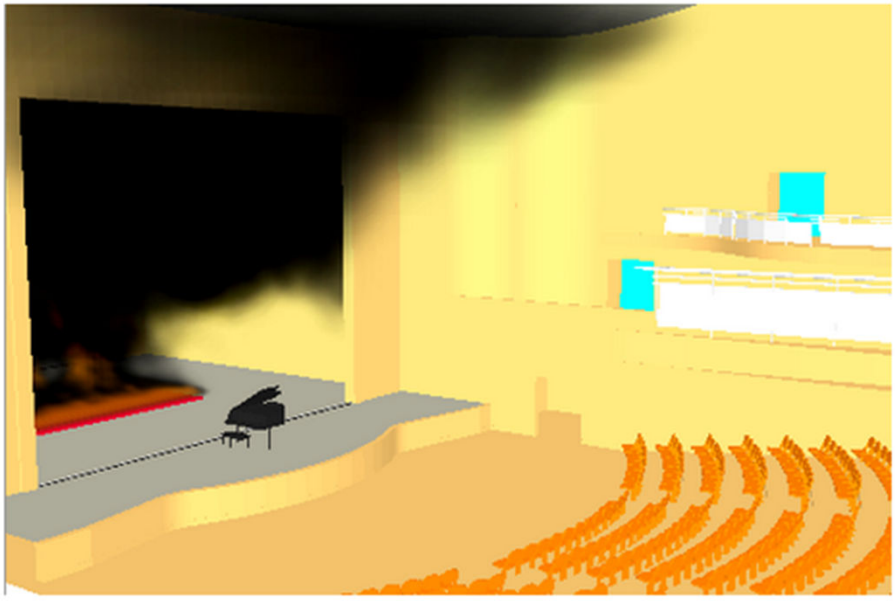
- Free **Educational Licensing**
- **Standard Perpetual License:**

| | |
|---|---|
| Node-Locked | **$2750** |
| Maintenance | **$550** |

**Volume Licensing Discounts**

- **50% off all additional licenses**

PyroSim and Pathfinder orders can be combined for volume licensing.



THUNDERHEAD ENGINEERING

# Review of selected models

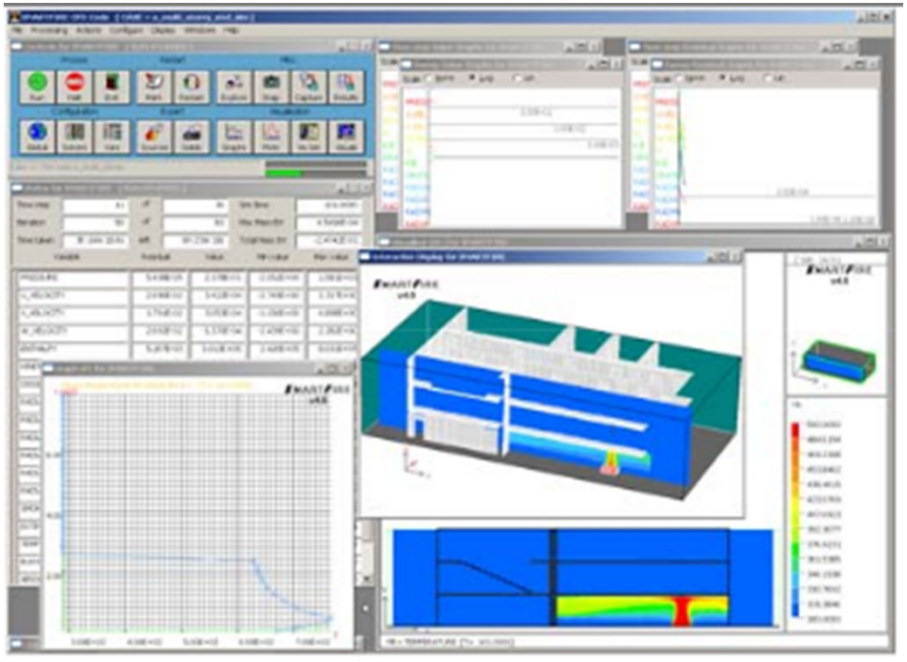
## SMARTFIRE

- Fire Field Modelling Environment using CFD
- A PC or Cluster based fire field model
- Automated mesh generation and interactive graphical interface providing dynamic control of the CFD software.
- Simulates fire, smoke, thermal radiation and toxicity within whole complex structures such as buildings, aircraft, ship and rail environments.

### Licencing

- **Educational Licensing** (inclusive of support and maintenance)**:**

| | |
|---|---|
| 12 month license | **£1000** |
| 36 month license | **£2100** |



### PROPOSAL:

- **Not to buy software packages**
- **Use free academic licenses**

# LEARNING MATERIAL

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## *LEARNING MATERIAL*

# New common courses in all WBC HEIs MPs – proposal
# > also planned as LLL courses

**Course 1 – Hazard/risk maps ?**

- Lectures + Practice + IT labs = 3 + 2 + 3
- 12 teaching weeks - 6 WBC HEIs > 2 teaching weeks/WBC HEI
- Learning material: 1. Book – P1-P6 > 2 chapters each (peer review by P7-P11)
  2. Webinars - professors speak AL/SRB/BH, titled in EN

**Course 2 – Protection and Rescue Plans ?**

- Lectures + Practice + IT labs = 3 + 2 + 3
- 12 teaching weeks - 6 WBC HEIs > 2 teaching weeks/WBC HEI
- Learning material: 1. Book – P1-P6 > 2 chapters each (peer review by P7-P11)
  2. Webinars - professors speak AL/SRB/BH, titled in EN

**PR partners should recommend printed books to buy for MPs**
**(due date: 10.03.2017.)**

# EQUIPMENT FOR PHD STUDIES

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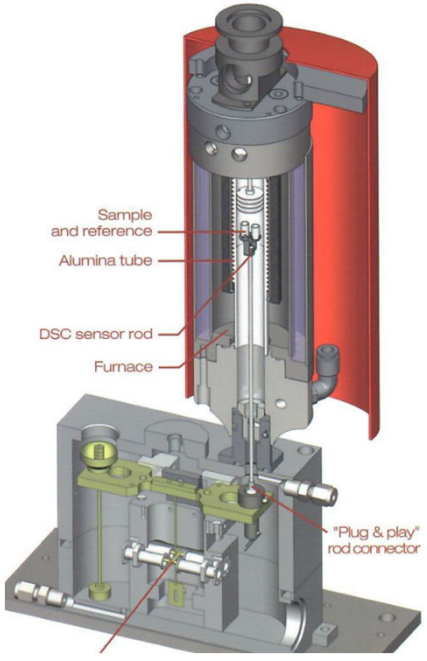
**User-exchangeable TG, TG/DTA or TG/DSC sample holders are available for this apparatus, shown in Figure 2**

# Hyphenated Thermal Analysis - FTIR Spectroscopy

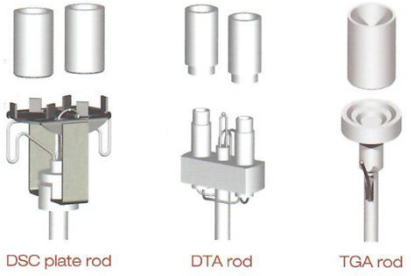



*Equipment for **Thermal Analysis** (**TA**) -simultaneous TG-DTA and TG/DSC analysis up to 1150°C and DSC rod for analysis up to 1600°C*

***TA**-enables qualitative and quantitative information about the effects of various heat treatments on mainly solid materials*

*TG-allows monitoring of mass change as a function of temperature during heating and cooling*

*DTA /DSC–allows the determination of endothermic and exothermic processes (physical and chemical)*




*User-exchangeable sample holders*

Co-funded by the Erasmus+ Programme of the European Union

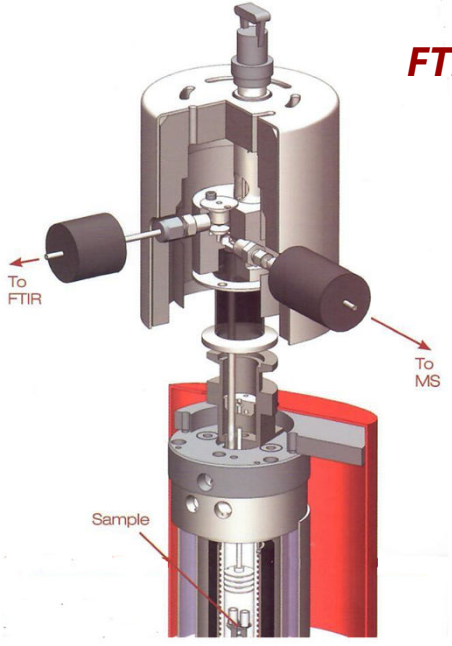
**User-exchangeable TG, TG/DTA or TG/DSC sample holders are available for this apparatus, shown in Figure 2**

# Hyphenated Thermal Analysis - FTIR Spectroscopy

*TA gives important information about decomposition processes which could be:*

*Physical properties-melting, crystallizations tem., enthalpy, specific heat capacity, vaporization, sublimation, solid-solid transition, glass transition temperature…*

*Chemical properties-dehydration, decomposition, oxidative and reductive reactions, solid state reactions, chemisorption, combustion, polymerization, curing.*




***FTIR**-the coupling of FTIR with a TA unit enables the identification of functional group and specific compound analysis of gasses developed during TA on the basis of vibrational spectra in the range 7800-350 $cm^{-1}$. The transportation of gasses from TA to FTIR will be governed by simultaneous TA-FTIR coupling interface including heated interface transfer line up to 300°C. It is equipped with Peltier thermostatted DLATGS as standard detector , KBr window, spectral resolution 0.4 $cm^{-1}$*

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# UNMANNED AERIAL VEHICLE (UAV)

The rapid development of precision GPS, gyroscope technology and modern techniques of data collection and processing, as well as the expansion of low-cost platform with amateur or professional cameras and systems necessary to navigate with high precision brought UAV (Unmanned Aerial Vehicles) technology.

An UAV, commonly known as a drone, unmanned aircraft system (UAS), or by several other names, is an aircraft without a human pilot aboard. The flight of UAVs may operate with various degrees of autonomy: either under remote control by a human operator, or fully or intermittently autonomously, by onboard computers.

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# UNMANNED AERIAL VEHICLE (UAV)

SenseFly SA is the creator of the lightweight, the sensor-rich **Albris** drone for civilian applications. Albris offering TripleView imaging and advanced situational awareness.

*Abilities:*

*- high-res 2D mapping, 3D building mapping, construction monitoring, agricultural & archaeological mapping*

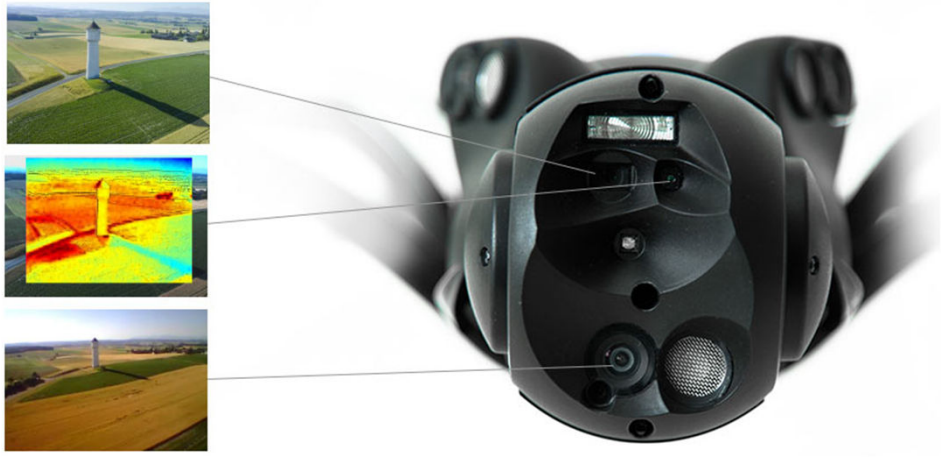
*- structural inspection & documentation, crack/defect detection, solar panel analysis, tower inspection etc.*

Co-funded by the Erasmus+ Programme of the European Union

**Albris senseFly FEATURES makes him unique in the world market:**

## *1 flight, 3 types of imagery*

Fully stabilised TripleView camera head allows you to switch between HD and thermal video imagery, live during your flight, plus you can capture high-resolution still images on demand, without landing to change cameras.



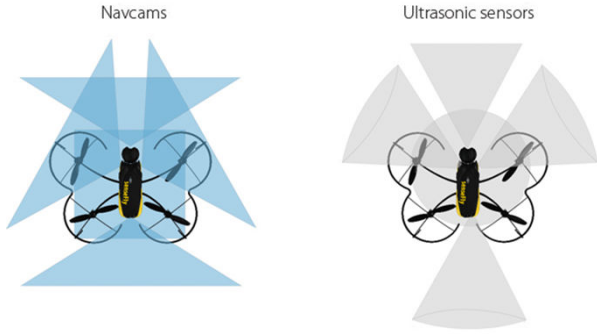
The TripleView head features a 180-degree vertical range of motion, 6x digital zoom, active gimbal stabilisation and, thanks to the albris' shrouding frame design, an unobstructed field of view allowing you to capture clear and stabilised imagery ahead, above and below the drone.

Co-funded by the Erasmus+ Programme of the European Union

**Albris senseFly FEATURES makes him unique in the world market:**

## *Advanced situational awareness*

The albris is designed from the ground up to perform live inspections of buildings and other structures. He features five dual-sensor modules, positioned around the drone.



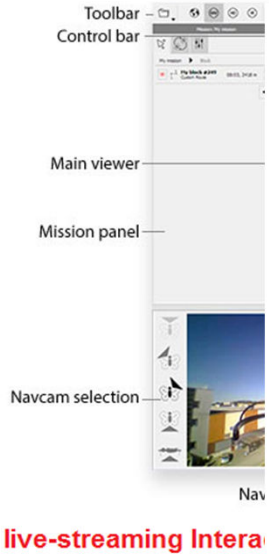

This high level of operator awareness makes albris particularly suitable for sensitive or dangerous sites, such as cliff faces, flare stacks, bridges... and he can operate close to structures and surfaces, to achieve sub-millimetre image resolutions.

Co-funded by the Erasmus+ Programme of the European Union

**Albris senseFly FEATURES makes him unique in the world market:**

## *Choose your flight mode*

Choose the mode that best fits your project: an Autonomous, GPS-guided mapping mission or a live-streaming Interactive ScreenFly flight. Or start in mapping mode and 'go live' on demand.





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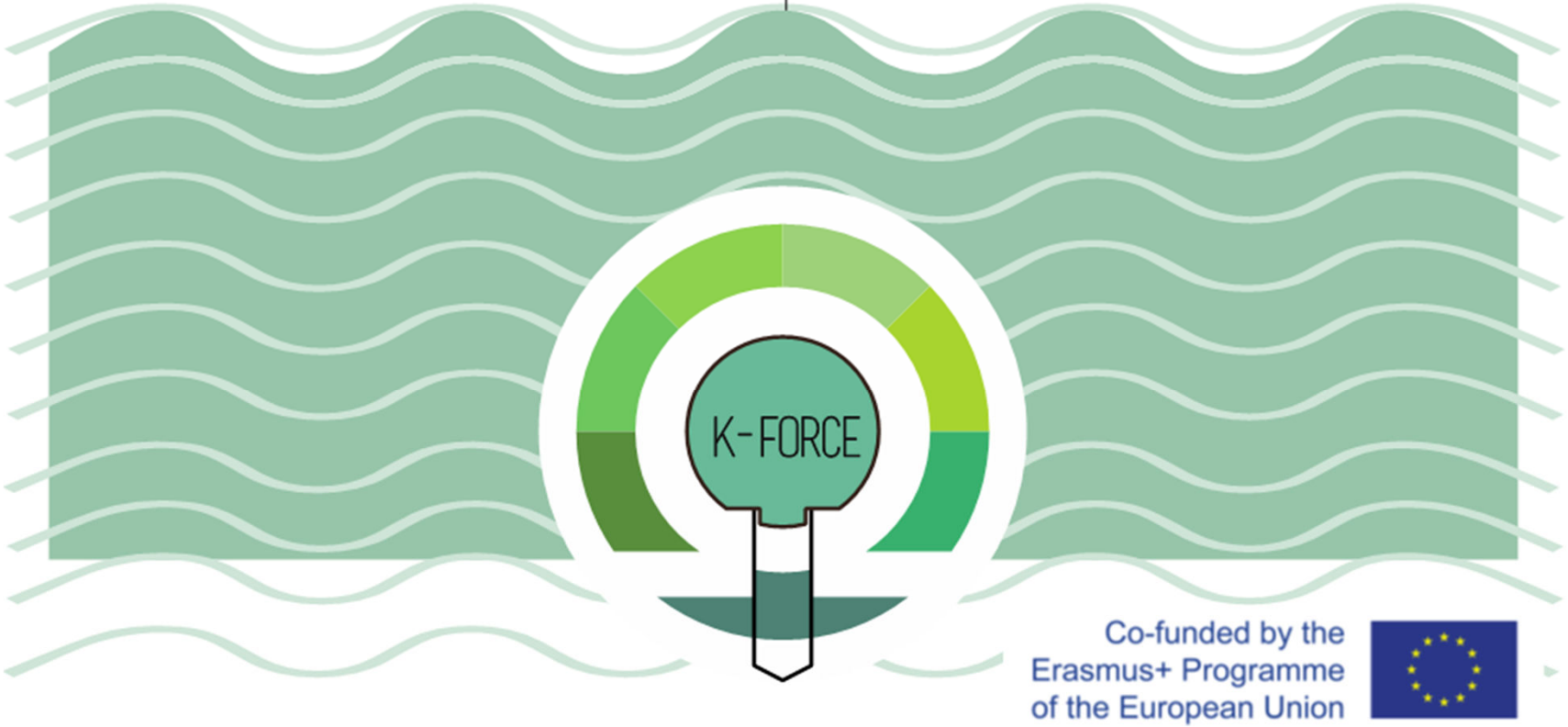


# Thank you for your attention!

*Contact info about the presenter:*
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*radonv@uns.ac.rs*
*mlaban@uns.ac.rs*

**Knowledge FOr Resilient soCiEty**