

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Just-In-Time Knowledge Capture Techniques



Presented by: **Neil Herber**  
Eton Systems, Ottawa, Canada

Co-authors:  
**Q.S. Bob Truong**  
Canadian Safeguards Support Program  
Canadian Nuclear Safety Commission  
Ottawa, Canada

**Haroldo Barroso Junior**  
International Atomic Energy Agency,  
Vienna, Austria

45th INMM Annual Meeting, Orlando, FL, USA, 18-22 July 2004

INMM paper 350 - 2004-07-22 Page 1 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Acknowledgements

- **Thanks to the following for advice and assistance:**
  - Ken Desson, Androcom Interactive Media, Ottawa
  - Cesare Liguori, IAEA, Vienna
  - Dr. David Martin, D.J. Films - Multimedia, Inc., Ottawa
- **Companion paper (133) presented by Ken Desson**
  - *Creating the Conditions for Effective Safeguards Knowledge Transfer*
  - Describes a workplace where knowledge transfer activities are an accepted routine

INMM paper 350 - 2004-07-22 Page 2 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## The CSSP and the IAEA

- **The Canadian Safeguards Support Program provides training support to the IAEA**
  - Training materials development
  - Course delivery
  - Subject matter experts



INMM paper 350 - 2004-07-22 Page 3 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Just-In-Time Knowledge Capture Techniques

- **What this paper covers:**
  - Introduction and Definitions
  - Knowledge Gathering Principles
  - The Technology
  - Strategy and Tactics
  - Real World Examples
  - Summary and Forecast

INMM paper 350 - 2004-07-22 Page 4 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Just-In-Time Knowledge Capture Techniques

# INTRODUCTION

INMM paper 350 - 2004-07-22 Page 5 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Challenges Faced by Many Organizations ...

- **Skilled employees have learned on the job**
  - no documentation or formal training material
- **Producing full-blown educational materials**
  - Expensive
  - Time-consuming
  - Requires professionals
- **The knowledge is escaping!**
  - Retirements, transfers, resignations




INMM paper 350 - 2004-07-22 Page 6 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Knowledge Management Systems

- **Three type of knowledge:**
  - Philosophy-based knowledge
  - Job-based knowledge
  - Task-based knowledge
- **We are concerned with task-based knowledge that can be used for training development**




INMM paper 350 - 2004-07-22 Page 7 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering

- Uses low-cost, low-tech equipment
- Moves the focus from high-end production values to content-rich data gathering
- Rooted in “guerilla reporting” tactics




INMM paper 350 - 2004-07-22 Page 8 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering

- **Guerilla reporting :**
  - No producers, writers, or editors
  - Reporters in the right place at the right time
  - “Scoop” the competition
- **Guerilla knowledge gathering**
  - Adopt a just-in-time mindset
  - Capture knowledge before it “gets away”



INMM paper 350 - 2004-07-22 Page 9 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering

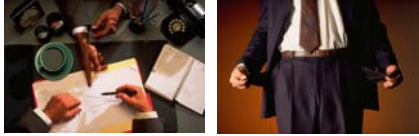
# PRINCIPLES

INMM paper 350 - 2004-07-22 Page 10 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Principle #1

- **Anything is better than nothing**
  - Video and audio for live capture
  - Original notes and presentations (electronic formats preferred)
  - Take notes




INMM paper 350 - 2004-07-22 Page 11 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Principle #2

- **Grab it when you see it**
  - Ask for hard copy
  - Get it on a memory stick





INMM paper 350 - 2004-07-22 Page 12 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering Principle #3

- Remember MBWA?
- Now try KGBWA!
  - Avoid emails and "telephone tag"





INMM paper 350 - 2004-07-22 Page 13 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering Principle #4


- Catch employees before they retire
  - Retirement is a predictable event
  - Act before the "golden handshake"



INMM paper 350 - 2004-07-22 Page 14 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering Principle #5



- Protect Your Originals
  - Make backup copies
  - Never edit originals

INMM paper 350 - 2004-07-22 Page 15 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering

# TECHNOLOGY

INMM paper 350 - 2004-07-22 Page 16 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering Technology

- Digital Video (DV) cameras




INMM paper 350 - 2004-07-22 Page 17 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

### Guerilla Knowledge Gathering Technology

- Digital still cameras





INMM paper 350 - 2004-07-22 Page 18 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Memory devices – USB memory stick




INMM paper 350 - 2004-07-22 Page 19 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Digital audio recorders

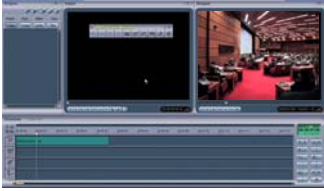


INMM paper 350 - 2004-07-22 Page 20 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Video editing software – MPEG Video Wizard
  - Relatively cheap at \$120 US
  - Relatively easy to use

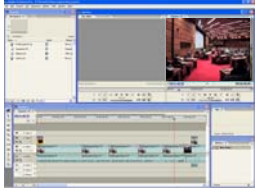


INMM paper 350 - 2004-07-22 Page 21 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Video editing software – Adobe Premiere Pro
  - Relatively expensive at \$700 US
  - Steep learning curve – lots of power



INMM paper 350 - 2004-07-22 Page 22 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Video compression

Comp.	Name	Bit Rate (Mbit/s)	Frame Size (NTSC)	1-Hour Size	# of CDs
DV	DV tape	25	720x480	14 GB	20
MPEG2	DVD	9.5	720x480	4.7 GB	7
MPEG2	DVD low	5.1	720x480	2.3 GB	4
MPEG2	SVCD	2.5	352x480	1.1 GB	2
MPEG1	VCD	1.15	352x240	700 MB	1

- For web or LAN delivery, smaller frame size and lower data rate MPEG1 is used

INMM paper 350 - 2004-07-22 Page 23 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Technology

- Still digital picture archiving and editing
  - ACDSee PowerPak is \$80 US
  - Easy to use
  - Cameras come with similar software




INMM paper 350 - 2004-07-22 Page 24 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering

---


# STRATEGY AND TACTICS

INMM paper 350 - 2004-07-22 Page 25 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

---




- Gain Your Expert's Confidence
- Have a Conversation – Not an Interview
- Offer an Immediate Return

INMM paper 350 - 2004-07-22 Page 26 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

---




- Arrive in person
- Take what you can get
- Use tag-team knowledge gathering

INMM paper 350 - 2004-07-22 Page 27 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

---




- Video Tips
  - Don't edit while gathering!
  - Keep it running!
  - Record questions and answers
  - Self-identify the tape

INMM paper 350 - 2004-07-22 Page 28 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

---



- Digital still camera tips
  - Don't edit while shooting
  - Shoot too much
  - Keep all shots

INMM paper 350 - 2004-07-22 Page 29 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

---




- Digital still camera trick
  - Revealing hidden information

INMM paper 350 - 2004-07-22 Page 30 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics




- **Keep it in context**
  - Where are these cables?

INMM paper 350 - 2004-07-22 Page 31 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

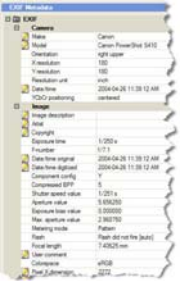


- **Keep it in context**
  - The Riesenrad at the Prater in Vienna
  - Featured in the movie "The Third Man"

INMM paper 350 - 2004-07-22 Page 32 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics




- **Mine the "hidden" data**
  - EXIF on stills
  - Timecodes on video

INMM paper 350 - 2004-07-22 Page 33 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

- **Keep your batteries charged**
- **Carry spare batteries and memory cards**



INMM paper 350 - 2004-07-22 Page 34 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering Strategy and Tactics

- **Don't use digital zoom**



Normal lens      Optical zoom      Digital zoom

INMM paper 350 - 2004-07-22 Page 35 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Guerilla Knowledge Gathering

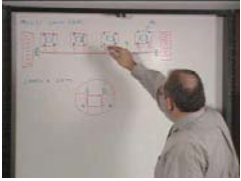
# REAL WORLD EXAMPLES

INMM paper 350 - 2004-07-22 Page 36 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Real World Example

- **Bot Engineering VIFM CDM Analysis**
  - Professional video “remined” for workshop
  - Converted from VHS to MPEG1 on CD


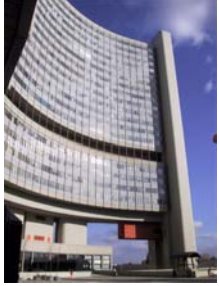


INMM paper 350 - 2004-07-22 Page 37 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Real World Example

- **IAEA CANE Rewrite**
  - KGBWA at the IAEA





INMM paper 350 - 2004-07-22 Page 38 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Real World Example

- **AECL ARC Seal Lectures**
  - Seals used in spent fuel bay
  - Prime developer and instructor retiring
  - Captured 2 lectures on DV
  - Captured informal walk-through on DV




INMM paper 350 - 2004-07-22 Page 39 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Summary

- **Be biased towards action - grab what you can, when you can**
- **Archive assets for later “mining”**
- **Be ready for even simpler technology**
- **It is the people behind and in front of the camera that make the difference**



INMM paper 350 - 2004-07-22 Page 40 Presented by Neil Herber, Eton Systems Canada

Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire IAEA

## Any Questions???



INMM paper 350 - 2004-07-22 Page 41 Presented by Neil Herber, Eton Systems Canada