

REQUIREMENTS ENGINEERING

CREATIVITY & PRODUCT INNOVATION



Group Two

Ilya Ryzhov, Karthick Sundararajan, Nikita Shah, Robert Sharpii, and Tanvi Singh

Presented by: Tanvi Singh & Karthick Sundararajan

29.10.2012

AGENDA

- Introduction
- Approaches
- Creativity Workshop
- Product innovation
- Conclusion



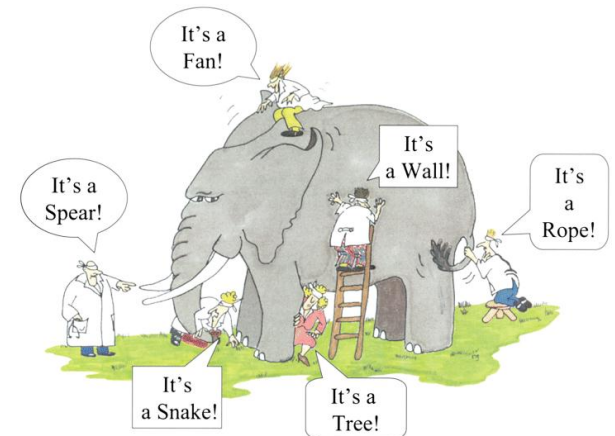


Introduction

- Why do we need creativity in requirement engineering? (Maiden 2005)
 - To create and invent new ideas.
 - To encourage creative thinking.
- Why do we need product innovation? (Gorschek 2010)
 - To enhance long term perspective of product and planning
 - To increase competitive advantages of a product.

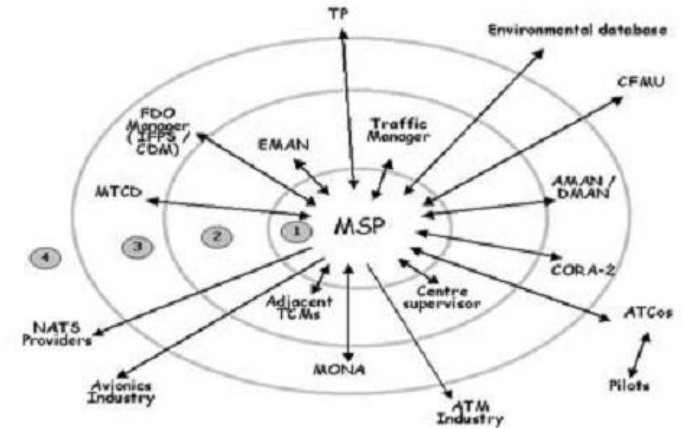
Applied Elicitation Techniques

- Group Work
 - Requirement Workshops
 - Co-operative Requirements Capture (CAC)
 - Joint Application Development (JAD))
- Storyboarding
- Viewpoints



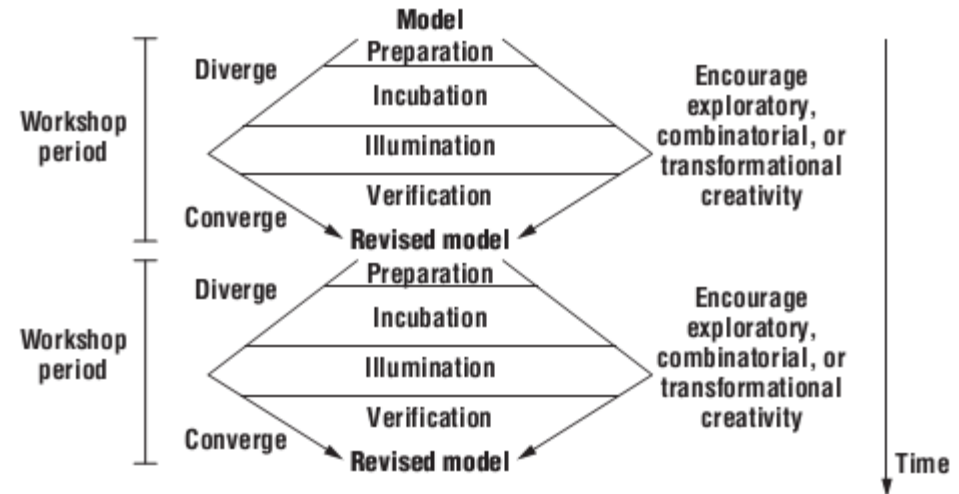
Approaches

- RESCUE
 - Integrating creativity in requirement process.
 - Applications
 - Conflict Resolution Assistant (CORA 2)
 - Multi-Sector Planning (MSP)
- Star Search
 - For product innovation
 - Application
 - For ABB and DHR



RESCUE

- Applies three creative models
 - Support divergence and convergence of CPS
 - Encourage Exploratory, Combinatorial and Transformational Creativity.
 - Encourage creative process: Preparation, incubation, illumination and verification



RESCUE - CORA 2

- Creativity workshops
- Other Creative Activities



Table 1

Some analogical mappings between the air traffic management, textile, and music domains

ATM domain	Textile domain	Music domain	Generalization
Air traffic controller	Textile designer	Music composer	A human agent seeking to solve to a problem
Aircraft conflict	Textile-design problem	Composition problem	A problem state the human agent encounters that requires using a tool to resolve the problem
Conflict resolution	Textile pattern	Musical piece	The problem's solution
Resolution strategy	Style or genre of the textile pattern	Musical style	A reusable abstraction that defines the solution type's characteristics and discriminates it from other types
Resolution details	Pattern features such as motif and layout	Musical notes	Elements of the solution
CORA-2 system	—	Musical instrument	The tool the human agent uses to solve the problem

RESCUE - MSP (Multi Sector Planning)

- Three day creative workshops
- Exploratory, Combinatorial and Transformational Creativity.
- The workshop result.
 - Open Brainstorming
 - Analogical Reasoning
 - Removing Constraints
 - Presenting knowledge space
 - Combining Ideas Directly

Workshop	Deliverable type	Number system-wide	Number use case-specific
1	General new ideas from workshop1	24	24
1	General new ideas from workshop2	13	0
1	MSP constraints	26	0
1	Ideas from MSP constraints	17	1
1	Ideas from analogical reasoning with intelligent highway systems	3	8
2	Ideas from analogical reasoning with software contract negotiation	7	0
2	Ideas from combinatorial creativity with fusion cooking analogy	4	0
3	Ideas from MSP visualisations	0	11
1	Workshop1 storyboards	0	2 story-boards
2	Workshop2 storyboards	0	6 story-boards
3	Workshop3 storyboards	1 story-board	0



RESCUE - Lessons Learned

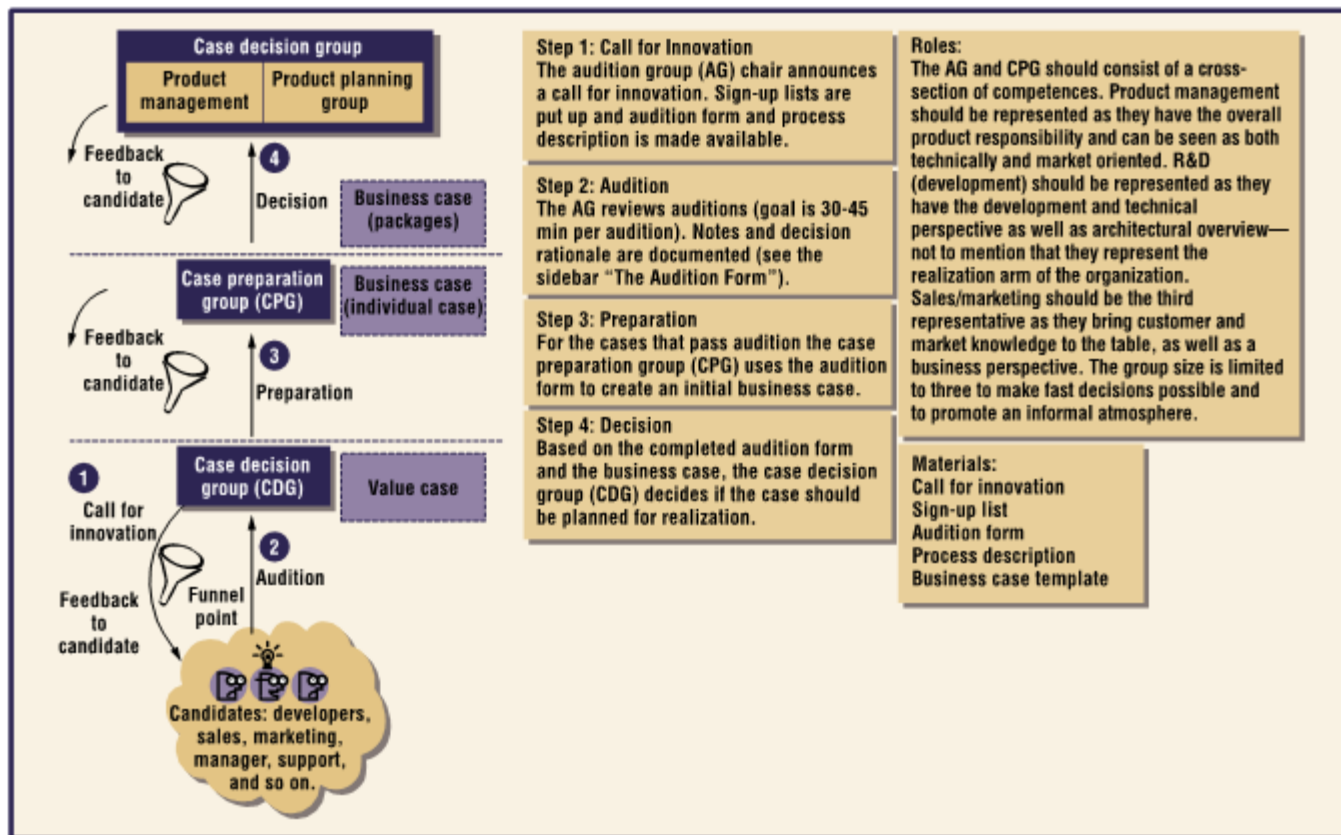
- Analogical reasoning is difficult.
- Encourage participants to explore more ideas.
- Plan, plan, plan the workshop.
- Use the storyboard to support combinatorial creativity.



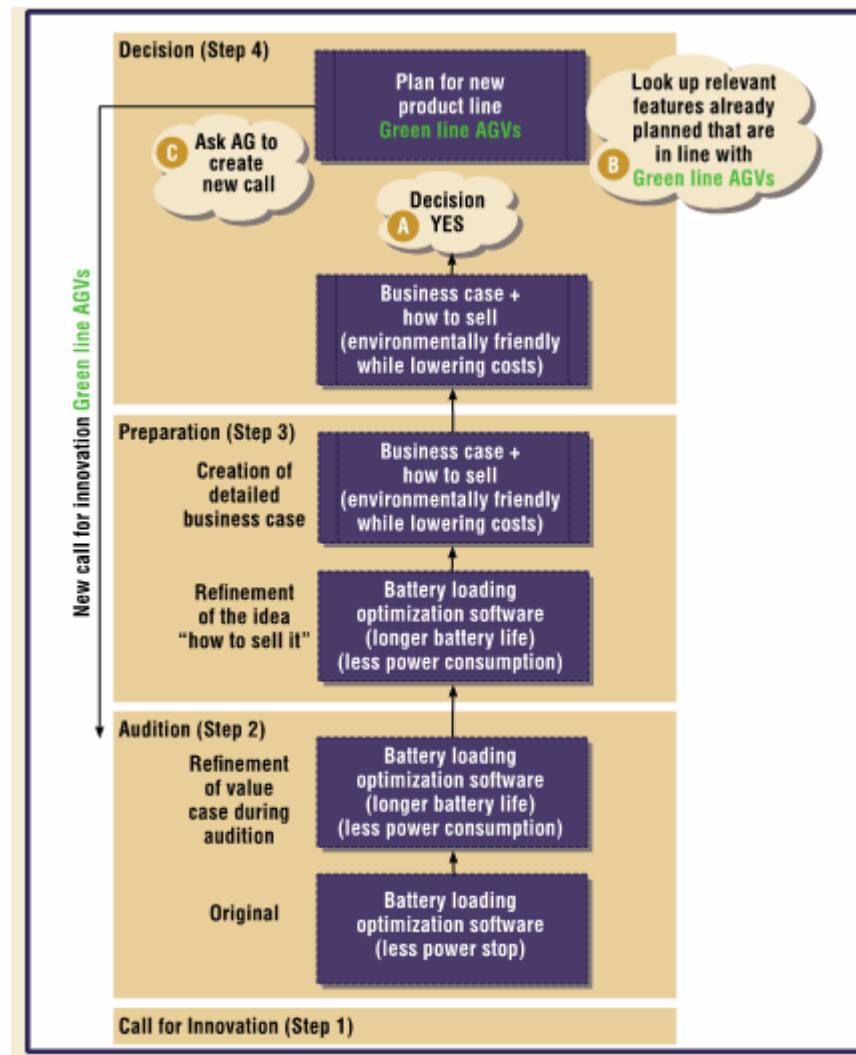
Star Search approach for new Product Innovation

- Challenges with issues in Research in Innovation Management
 - Creating an infrastructure that supports innovation Changes suggested.
 - Getting the new idea realized in competition with every- day product development activities.
- Star Search is a lightweight to maximize the continuous utilization of scarce resources for innovation.
- An innovation process using face-to-face screening and idea refinement with heterogeneous audition teams can enhance the long- term perspective of product planning and development.

Star Search Approach



Example Case from Danaher Motion





Star Search - Lessons learnt

- Trust is an issue/ Real gee-whiz ideas to be captured.
- A reward system can improve motivation if audition group is fair.
- The leader should dismiss ideas that encourages future idea submissions.
- The contender assisting the CPG not have additional workload.
- The level of refinement has its potential benefit, reward, and risks.
- The key is that the best ideas should be selected
- The case can lack the backing of a champion.
- Transparency of the overall Star Search process is paramount.

Conclusion

- Creativity workshop helps to encourage creative thinking in requirement process.
- The ability to encourage innovation from within the whole organization is crucial.



Questions





References

- [Maiden 2004] Provoking Creativity: Imagine What Requirements Could Be Like
- [Maiden 2005] Integrating Creativity into Requirements Processes: Experiences with an Air Traffic Management System.
- [Gorschek 2010]: A Lightweight Innovation Process for Software Intensive Product Development