Visual Analytics and Interdisciplinary Teams

Visual Analytics Lab | 2015-02-24

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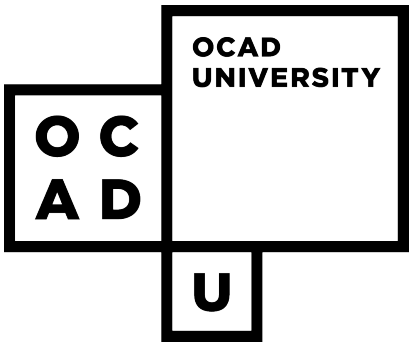


Summary

- Interdisciplinary nature of Visual Analytics
- Interdisciplinary teams
- Collaborative design processes

Visual Analytics, definition

The science of analytical reasoning facilitated by interactive visual interfaces.

(Thomas & Cook, 2006)

Is it:

- a design process (within organizations)?
- an analytical process?
- an artistic, or visualization, process?
- an organizational process designed to support decision-making?

VA is inherently interdisciplinary

- VA requires programmers, database experts, designers, analysts, artists, managers, etc.
- Typically, communities of practice to which VA team members belong may be quite different
- People need to learn to collaborate within organizations (with minimization of 'silos')

  (Heer & Agrawala, 2008)

VA: similarities to collaborative design processes

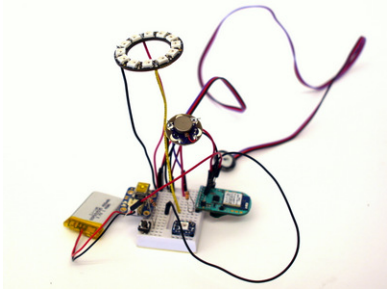
- Many sets of expertise required to solve complex problems
- Many possible solutions
- Action and reflection cycles

  (Schön, 1983)
- Need to build 'common ground' to enable communication

  (Clark, 1996)
- Use of 'boundary objects' between disciplines

  (Bowker & Star, 2000)

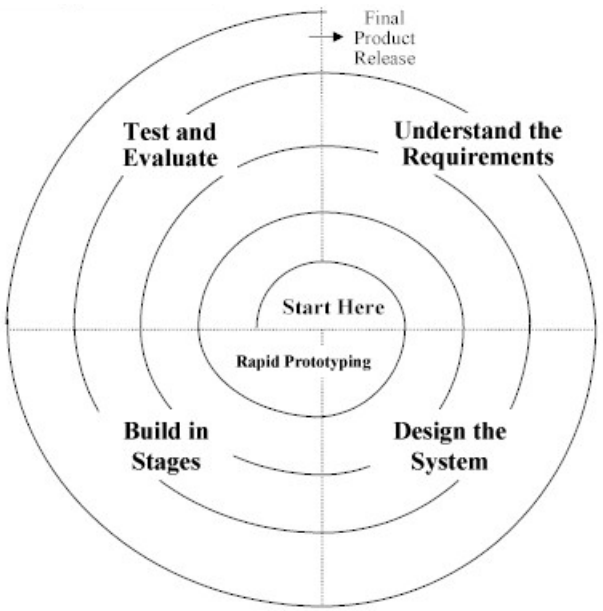
Shared objects



Design iteration

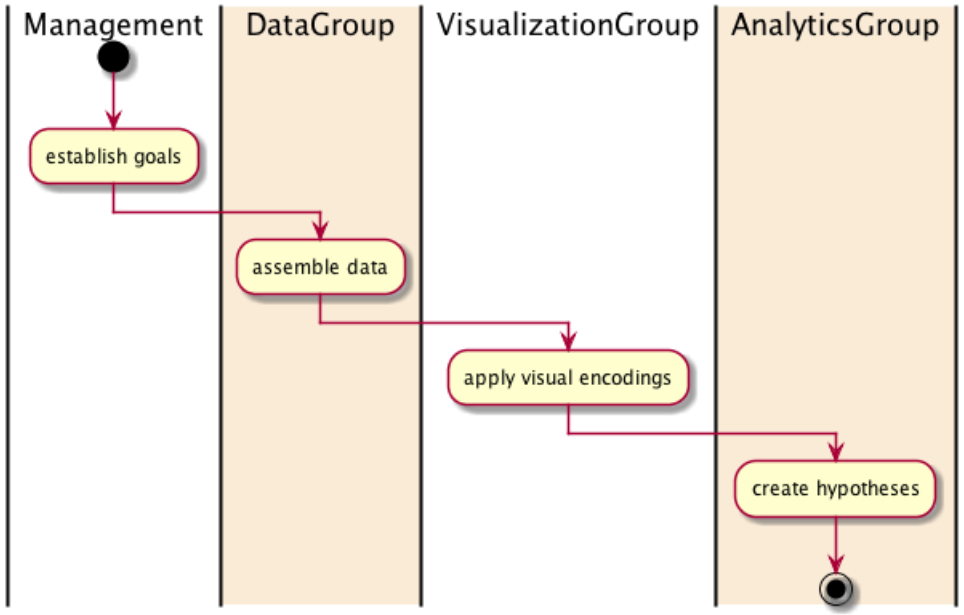
- Most design problems are too difficult to solve, or make sense of, without iteration
- Problems to be solved may not be clear

  (Schön, 1983) (Bucciarelli, 1994)

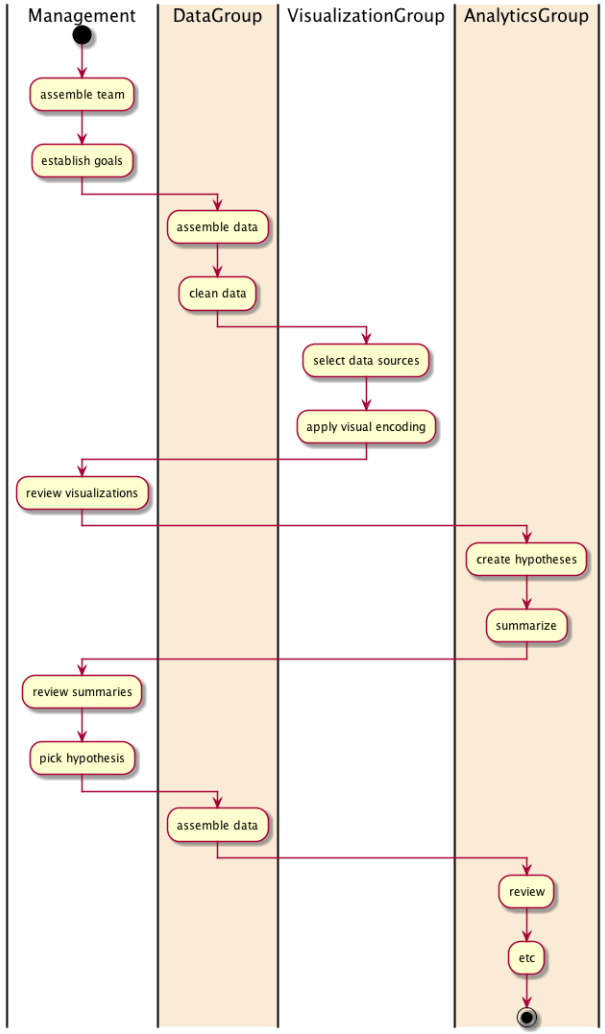


Waterfall model

- Waterfall models: only possible with simple, routine design problems



More realistic



Research questions

- How can VA teams be composed so they are sufficiently diverse?
- How can diverse teams learn to work well together?
- Where should VA teams fit into existing organizational structures?
- How can organizations facilitate communication between disciplines?

References

G. C. Bowker and S. L. Star. "Sorting things out: Classification and its consequences". MIT press, 2000.

L. L. Bucciarelli. "Designing engineers". MIT press, 1994.

H. H. Clark. "Using language". Cambridge University Press, 1996.

J. Heer and M. Agrawala. "Design considerations for collaborative visual analytics". In Information visualization, volume 7 (no. 1) p49 -- 62. SAGE Publications, 2008.

D. A. Schön. "The reflective practitioner: How professionals think in action". Basic books, 1983.

J. J. Thomas and K. A. Cook. "A visual analytics agenda". In Computer Graphics and Applications, IEEE, volume 26 (no. 1) p10 -- 13. IEEE, 2006.

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