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# An Evaluation of the DiaSuite Toolset by Professional Developers

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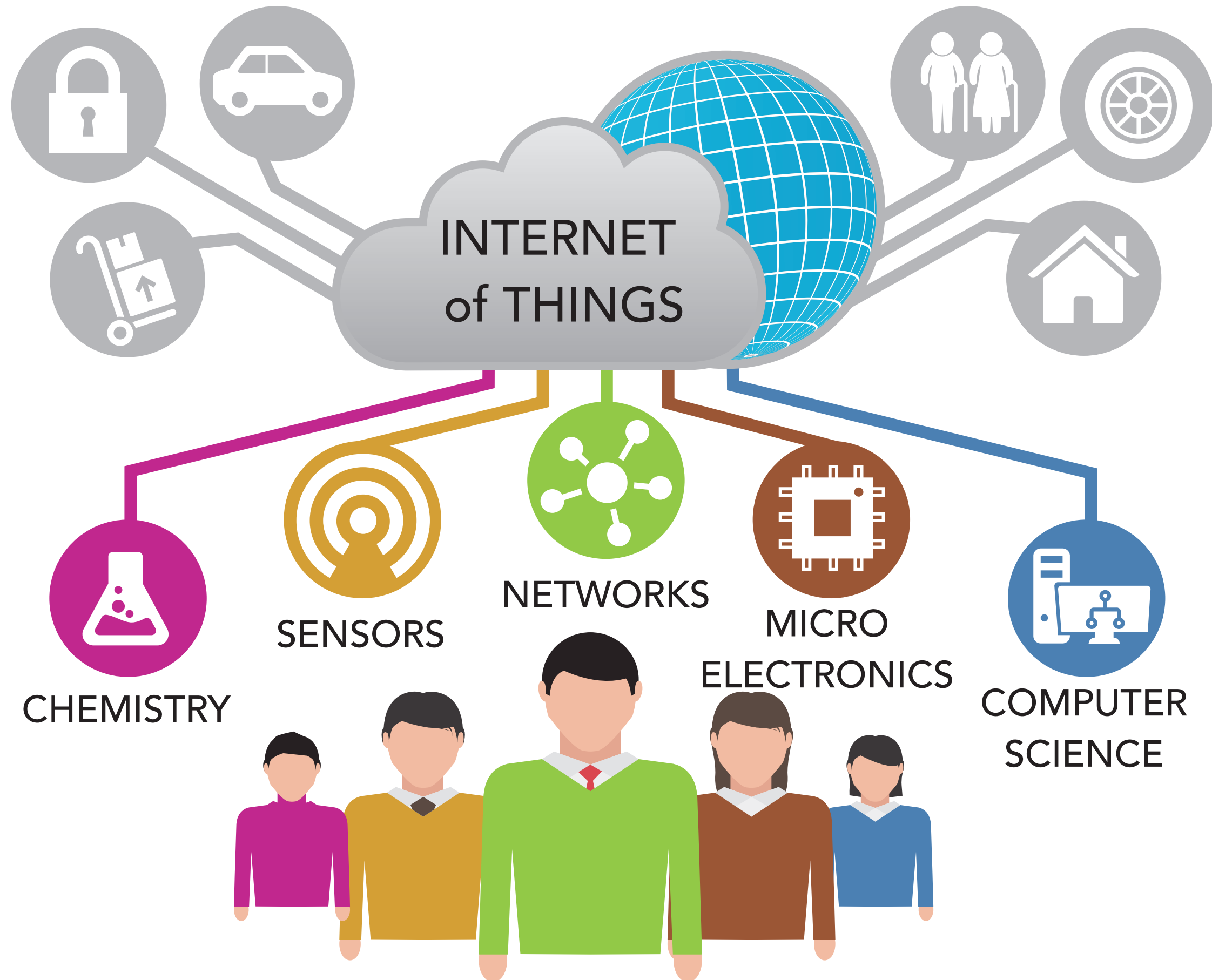
Charles Consel  
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## Goal

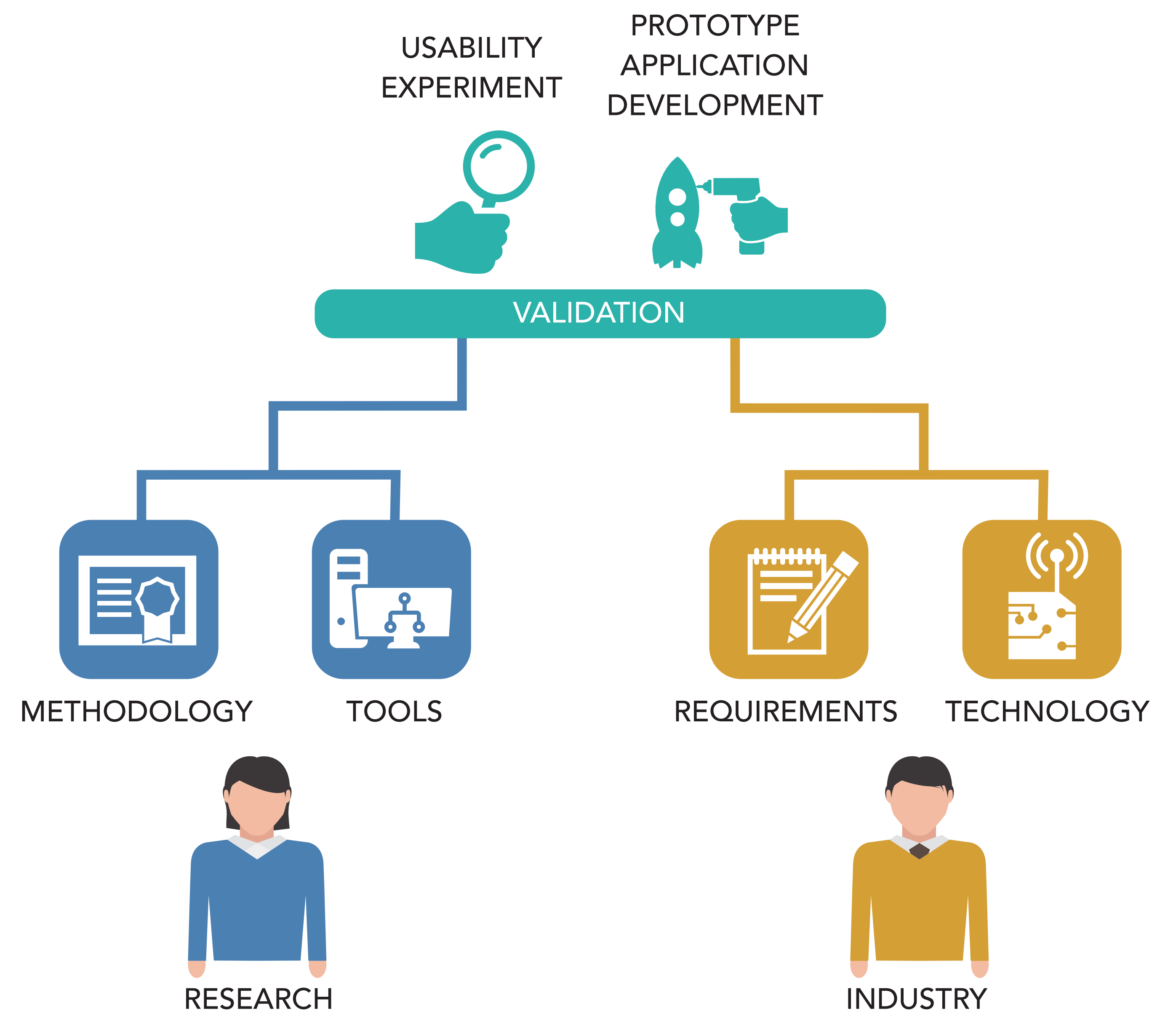
Evaluate the learning cost and usability of the DiaSuite tool-based approach dedicated to developing sensor/actuator applications.

## Context

- The Objects World project aims at building a sustainable ecosystem of Internet-of-Things stakeholders based upon the Sigfox radio network [3].

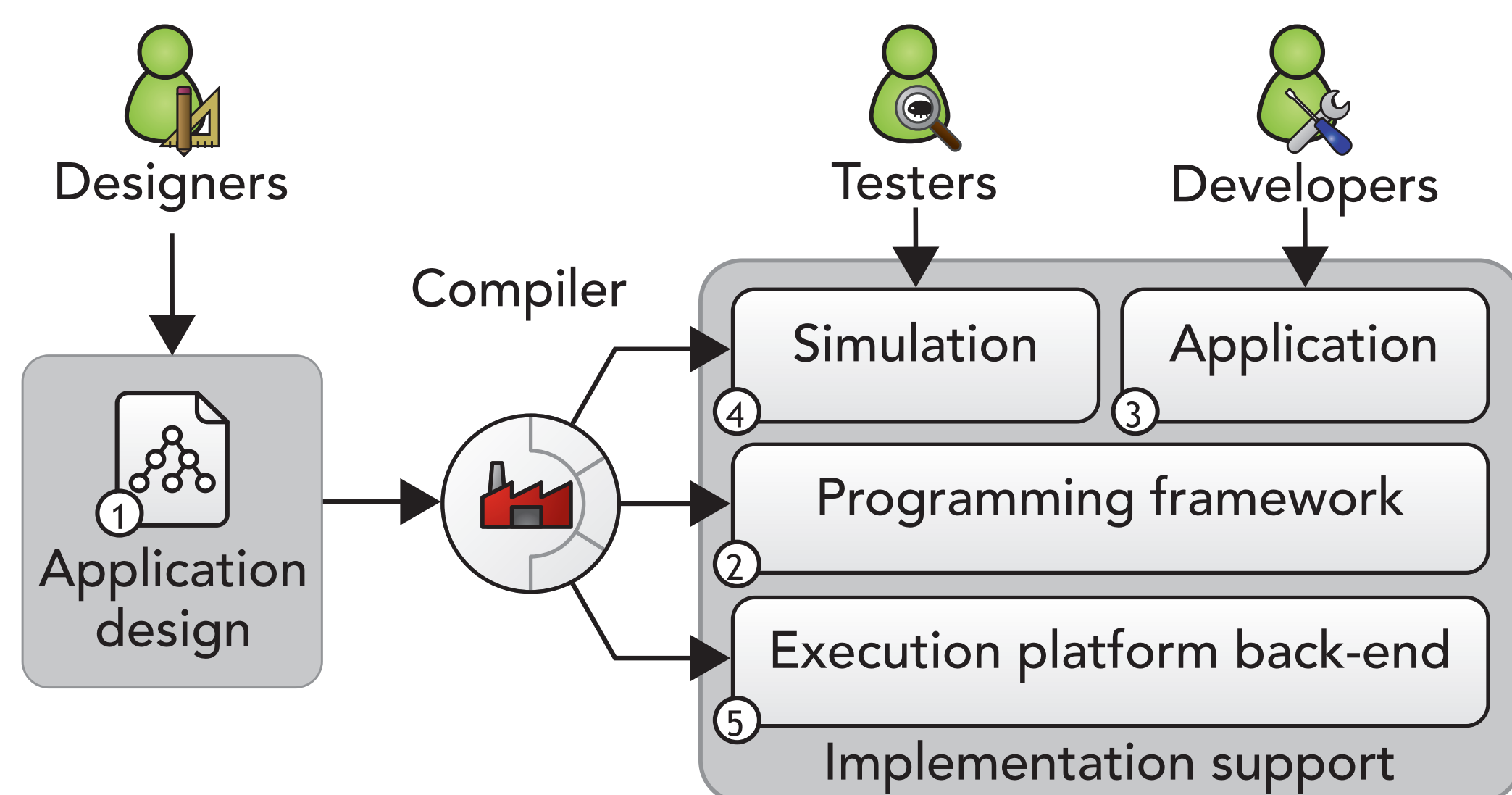


## Technology Validation



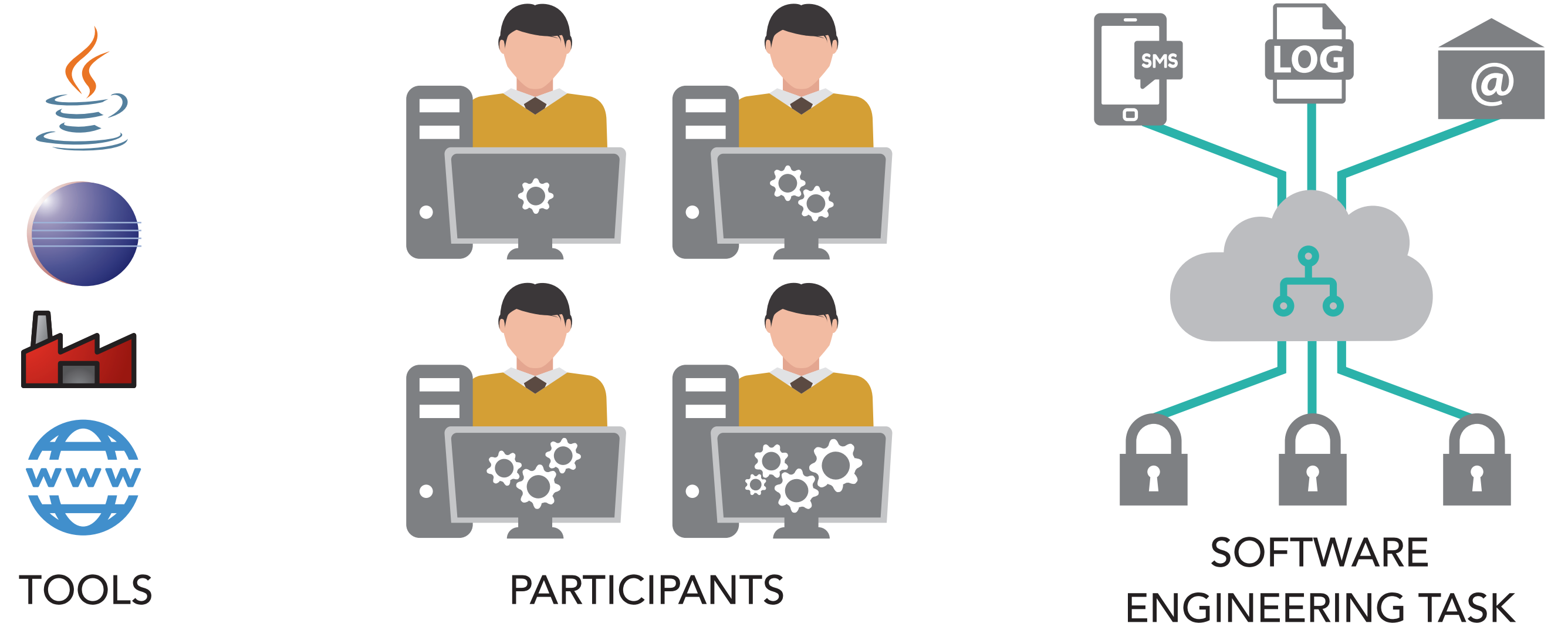
## DiaSuite Tool-Based Methodology

- Revolves around the Sense/Compute/Control (SCC) architectural pattern

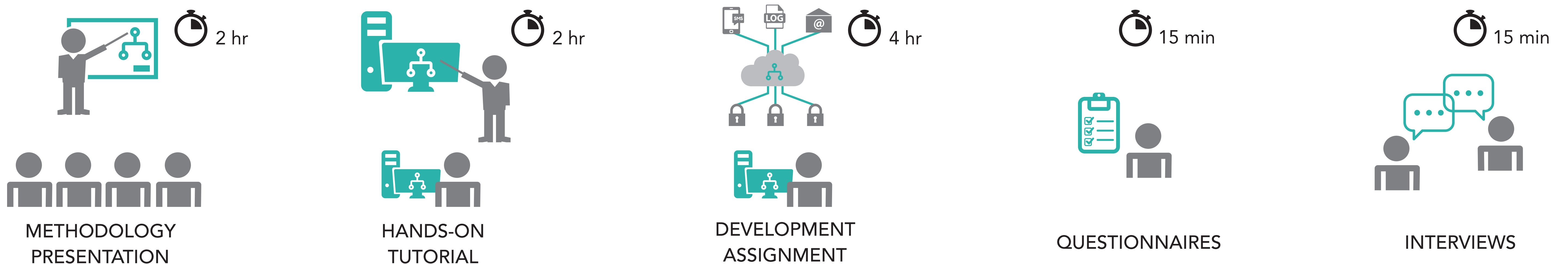


## Experimental Setup

- The experiment involved four professional software developers with background in development of IoT applications



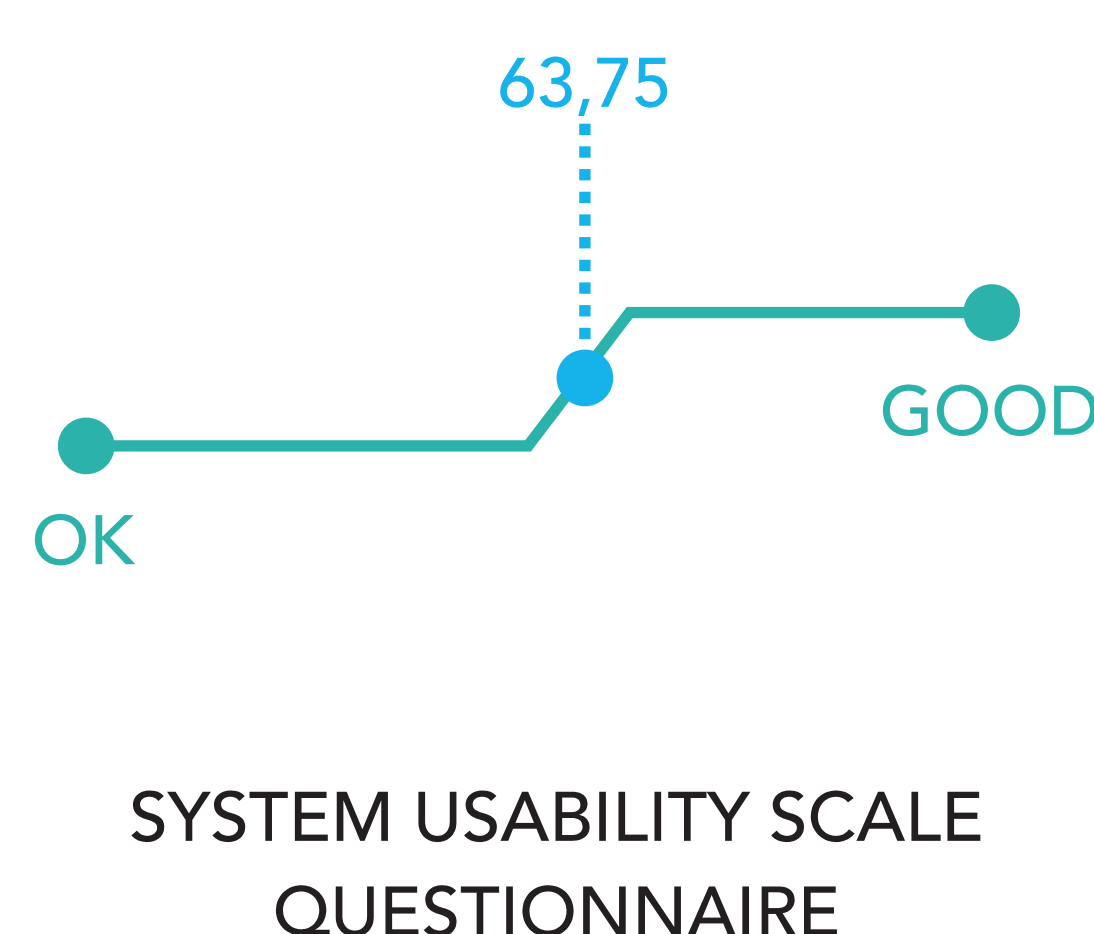
## Experimental Evaluation



## Experimental Results

Developer	Java exp. (years)	Eclipse exp. (years)	Design (min)	Dev. Feat1 (min)	Dev. Feat2 (min)	Dev. Feat3 (min)	Code size (LOC)	Man. Part (%)
Dev0	0	0	N/A	N/A	N/A	N/A	N/A	N/A
Dev1	1	1	30	92	30	-	1671	10,4
Dev2	3	3	30*	55	15	5	2141	10,7
Dev3	7	7	27	87	18	9	1724	10,3
Expert	3	3	15	32	14	6	1760	10,2

DEVELOPMENT TASK



## Conclusion

- Preliminary evidence that DiaSuite can be transferred to the IoT domain
- Need for further experiments on a statistically larger population
- DiaSuite is a candidate for continuous improvement
- Simple contexts help with the implementation, but may complicate testing

## References

- B. Bertran, J. Bruneau, D. Cassou, N. Lorient, E. Balland, C. Consel. DiaSuite: a Tool Suite To Develop Sense/Compute/Control Applications. Science of Computer Programming, 2012.
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- Sigfox Network Operator. Online, accessed 14/8/2015, <http://sigfox.com/en/#!/connected-world/sigfox-network-operator>.