Analítica Visual de la Evolución del Software

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Resumen
Este es el resumen de la tesis doctoral *Evolutionary Visual Software Analytics*, dirigida por el Dr. Francisco José García Peñalvo y el Dr. Roberto Therón Sánchez y defendida en la Universidad de Salamanca el 21 de mayo de 2015, obteniendo la calificación de Sobresaliente Cum Laude.

El desarrollo y mantenimiento de sistemas de software involucran a un gran número de complejos procesos que se extienden por largos periodos de tiempo (en algunos casos 10 años o más), e implican a grupos de personas (e.g., programadores y administradores de proyectos) que pueden encontrarse en diferentes países. Por lo cual quienes participan en esos procesos requieren de herramientas que les faciliten la comprensión de los sistemas, sus componentes y las relaciones que se establecen entre estos en el tiempo.

La comprensión de los sistemas adquiere una relevancia especial cuando se toma en cuenta la rotación de personal en las organizaciones y la frecuente ausencia de documentación técnica de los sistemas. Por lo tanto, en esta tesis se llevó a cabo un análisis detallado sobre las necesidades que tienen los programadores y administradores de proyectos, se hizo un mapeo sistemático de literatura y una revisión detallada de literatura; y se efectuó una encuesta sobre el uso de herramientas de visualización en la industria de *software* y departamentos de informática en la comprensión de los sistemas.

Con
base en los resultados obtenidos de las actividades anteriores, se realizó la definición y descripción del proceso de aplicación de la Analítica Visual a la Evolución de *Software* (el cual recibió el nombre de *Evolutionary Visual Software Analytics*).

La validación del proceso mencionado se llevó a cabo en tres etapas. En la primera etapa se diseñó una arquitectura con el fin de verificar que mediante el seguimiento de la descripción del proceso es posible diseñar herramientas de Analítica Visual para facilitar la comprensión de la evolución de los sistemas de *software*. En la segunda etapa se validó la arquitectura mediante la implementación de Maleku (una herramienta basada en dicha arquitectura). En la tercera etapa, se verificó la utilidad y usabilidad de Maleku en la comprensión de la evolución de sistemas de software por medio de varios casos de uso, un caso de estudio y un estudio de usabilidad.

Los resultados finales de este trabajo permitieron comprobar que la aplicación de la Analítica Visual a la Evolución de *Software*, usando el proceso descrito en esta investigación, puede contribuir con el desarrollo y mantenimiento de *software* al facilitar la comprensión de los sistemas, y por tanto, las preguntas de investigación de esta tesis fueron respondidas y los objetivos planteados se cumplieron.

Palabras clave
Evolutionary Visual Software Analytics, Analítica Visual Aplicada a la Evolución de Software, Analítica Visual, Visualización de Software, Evolución de *Software*, Análisis de la Evolución de los Sistemas

Acceso a la tesis

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