How E4 helped our Scrum team to produce quickly a full E4 application for our GNSS engineers
Who are we?

Cyrille FRANCOIS

- Product Owner
- Member of Agile Toulouse (www.agiletoulouse.fr)
- Eclipse RCP Project manager since 3 years
- Twitter: @CfrancCyrille

Philippe EUGENE

- Scrum Master
- Eclipse RCP since 7 years
- Twitter: @peugene

Twitter hash tags:
#e4scrumgnss
SILICOM is a private engineering company based in Paris, Toulouse and Rennes specialized in Electromagnetic, GNSS and hard-soft development

- Technical skills: GNSS, RF/Hyper, DSP, Software, Electronics
- Application domains: Space, Aeronautics, Defense, Telecom
- 30 years of existence, 200 Engineers
- 2012 Turnover > 13 M€
- Capital 8 M€

Aeronautics:
- Test flights (Echo, AFDX, Arinc, TMTC,...)
- Wireless Sensors
- Acquisition Chains: ex. Windtunnels
- Simulation Test Benches
- GNSS partnership (RTG2, Spoofing, DFS, Echo, Rx, Indoor...)
- Antenna/EMC

Space:
- Physical layer simulation
- GNSS: Simulation & Equipments
- AIT Test benches and Simulation benches
- NANO SATELLITES Platforms
- Antenna/EMC
- Constellation simulators
- RF & FPGA Equipments
Why a GNSS laboratory?

- SATELLITE
  - Orbits & Clock

- PROPAGATION & LOCAL ERRORS
  - Atmosphere (IONOSPHERE, Tropo, ...)
  - Attenuation & Réfraction
  - Multipath
  - Interferences

- CONSTELLATIONS
  - Geometry (DOP)
  - ∑ Satellites (Dispo & Obstacles)

- RECEIVERS
  - Signal & Algorithm
Who are the users?

GUIDE - French Centre of Excellence for applications and technology for satellite navigation (www.gnss-guide.org)

A nucleus of united actors:

GUIDE
3, Avenue Didier DAURAT – 31400 TOULOUSE
Tel +33 5 61 80 10 80 – contact@guide-gnss.com – WEB www.gnss-guide.org
Contact : Xavier LEBLAN
Who are the users?

- Laboratory tests
- Site of Experimentation and Validation:
  - Toulouse Open: Urban positioning with a Car
  - AeroDax: Aero positioning (helicopters, DRONES, ...)
  - Maritime and river positioning: A boat
  - High Precision: a railway geo-referenced
Who are the users?
What do they need?

- A large set of data analysis
- Simplest application
- Ready for futures analysis
- Register all test equipments

⇒ Navigation tree and specifics views
⇒ A user friendly GUI
⇒ Extensible IT solution
⇒ Data base of all test equipments
Be agile with Eclipse and EMF

Why not an E4 application?

Agile Project because:

- Few requirements
- A well defined domain
- Difficulty to synchronize all GUIDE members

Source: Strategic Management and Organizational Dynamics by Ralph Stacey in Agile Software Development with Scrum by Ken Schwaber and Mike Beedle.
Be agile with Eclipse and EMF

Collective Ownership
Continuous integration
Simple Design

Given-When-Then
Role feature
BDD

SCRUM
Testing
eXtrem Programing

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Be agile with Eclipse and EMF

- Given-When-Then
- Role
- feature

- Simple Design

- Daily Scrum
  Meeting

- BDD

- Continuous integration

- Collective Ownership

- Testing
- eXtrem Programing

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Challenge the E3 solution
- E3 is too easy 😊

Acquire competence for E4 applications development

Test E4 with a real case

GData the good project to test E4:
- A new application, no reuses, no GUI requirement ‘herited’ by a previous version or experience
- Simple GUI:
  - Few views and no complex Editors
- No plugin-ins E3 required!
The Challenge

Produce a Full E4 application

• E4 Application model

• Injection

• API By annotation
The Challenge

Produce a Full E4 application

• Services
  • ESelectionService
  • EModelService
  • EPartService
  • ECommandService & EPartService

• Editors & Editors LifeCycle
  • @ PostConstruct
  • @ Focus
  • @ Persist
GData – ApplicationModel: Windows & Perspective
GData – ApplicationModel: Handler

Run Configuration -> Clear Workspace
Injection : Where is my shell ?

Eclipse 3

- HandlerUtil.getActiveShell(event)
- getSite().getShell();
- PlatformUI.getWorkbench().getActiveWorkbenchWindow().getShell()
- PlatformUI.getWorkbench().getDisplay().getActiveShell()
- Others?

Eclipse 4

@Inject
@Named(IServiceConstants.ACTIVE_SHELL)
private Shell shell;
CDO / Teneo

- Change XMI persistence by a Data Base
- Share the instrument base between all sites (Toulouse, Biarritz, etc.)
- Concurrent access to DB
- Client automatic notification by the CDO server
GData – Data analysis Application

➤ Screen shots
➤ Dynamics demonstration:
  ▶ Analyse GNSS receiver precision around Carmes’s Market in Toulouse

IHM GUIDE – Eclipse RCP
First Feedback

Pros

- EMF everywhere
- IoC
- Views / editors
  - simples POJO
- Renderer

Cons

- Lake of basic UI elements
- All views are not available
- Application model ≠ Fragment model
## Conclusion

A trade-off between targets E3, E4 and E4 with compatibility layer for plug-ins E3:

<table>
<thead>
<tr>
<th></th>
<th>E3</th>
<th>E4 with compatibility layer</th>
<th>Full E4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complexity</td>
<td>★</td>
<td>?</td>
<td>★★★★</td>
</tr>
<tr>
<td>Data model</td>
<td>★★★</td>
<td>?</td>
<td>★★★★</td>
</tr>
<tr>
<td>Extensions</td>
<td>★★★★</td>
<td>?</td>
<td>★</td>
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<tr>
<td>UI Component</td>
<td>★★★★</td>
<td>?</td>
<td>★</td>
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<tr>
<td>Plug-ins</td>
<td>★★★★</td>
<td>?</td>
<td>★</td>
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<tr>
<td>Renderer</td>
<td>★</td>
<td>?</td>
<td>★★★★</td>
</tr>
<tr>
<td>OSGI Integration</td>
<td>★★★</td>
<td>?</td>
<td>★★★★</td>
</tr>
</tbody>
</table>

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Agility

- Agility practices map: guide.agilealliance.org/subway.html
- Scrum presentation: mountaingoatsoftware.com/scrum/a-reusable-scrum-presentation
- Hamlet D'Arcy, “60 Second Agility: ROTI Meetings”: java.dzone.com/articles/60-second-agility-roti

E4

- O. Prouvost (OPCoach) E4 injection session: www.eclipsecon.org/2013/sessions/injection-eclipse-4-all-you-need-know-about-it
- Renderers & Java FX: www.efxclipse.org/index.html

GNSS

- GUIDE: www.gnss-guide.org