

Discrete 3D surfaces of revolution

Final presentation

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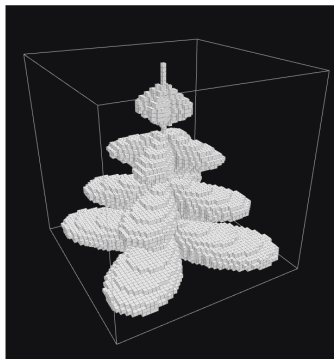
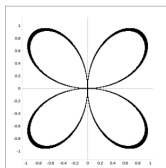
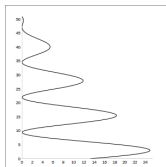
Outline

Outline

- Clients :
 - Éric ANDRES (Professor and former director of XLIM-SIC department)
 - Gaëlle LARGETEAU-SKAPIN (University lecturer, Discrete geometry)
- Exemple of final user :
 - Aurélie MOURIER (Artist)
- Pedagogic Supervisor :
 - Philippe MESEURE (Professor, Computer Graphics)

- Team composition :
 - Thomas BENOIST - Project manager
 - Zied BEN OTHMANE - Quality manager
 - Adrien BISUTTI - Risks manager
 - Lydie RICHAUME - Tasks manager

- Éric ANDRES and Gaëlle LARGETEAU-SKAPIN developed a new algorithm to model discrete surfaces of revolution.
- Display the result with Mathematica

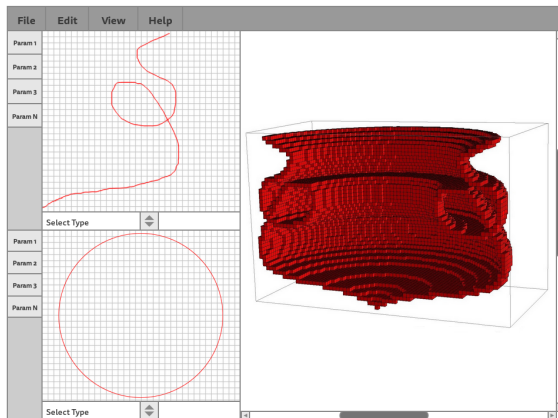


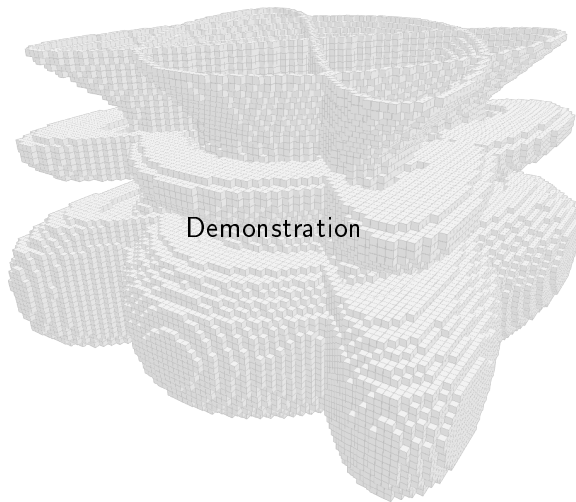
- Need of a tool usable by everyone and everywhere

- Surfaces visualization tool
 - 3D, slices visualization
 - Choose the generatrix and directrix
 - Export the results
- Algorithm to generate surfaces of revolution
 - Provided by the customers
 - Possible evolution of the algorithm

Outline

Prototype





- Generation
 - Just what do you want
 - All in one pass
- Rendering
 - Calcul à la volé lors de la demande d'affichage
 - Précalcul lors de la génération
 - Ingoré → laissé à la carte graphique
- Implicit curve display
 - Dcretisation of the curve
 - Use a library

- Controllers
- Displayers
- Interface managers
- Shaders
- Threads

TODO mettre un diagram ?

Outline

Task list

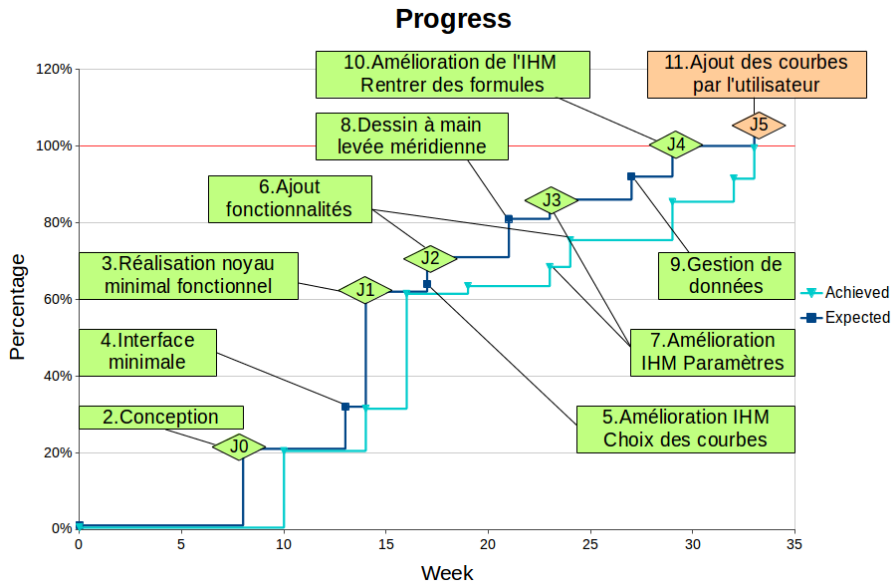
1 - Documentation, test et aide utilisateur		✓
2 - Conception		✓
3 - Noyau fonctionnel	✓	4 - Interface minimale ✓
6 - Ajout de fonctionnalités	✓	5 - Amélioration IHM Choix des courbes ✓
8 - Dessin à main levée méridienne	✓	7 - Amélioration IHM Paramètres ✓
9 - Gestion des données	✓	10 - Amélioration IHM Rentrer des formules ✓
11 - Ajout courbes utilisateur		✗
12 - Rédaction rapport technique		✓

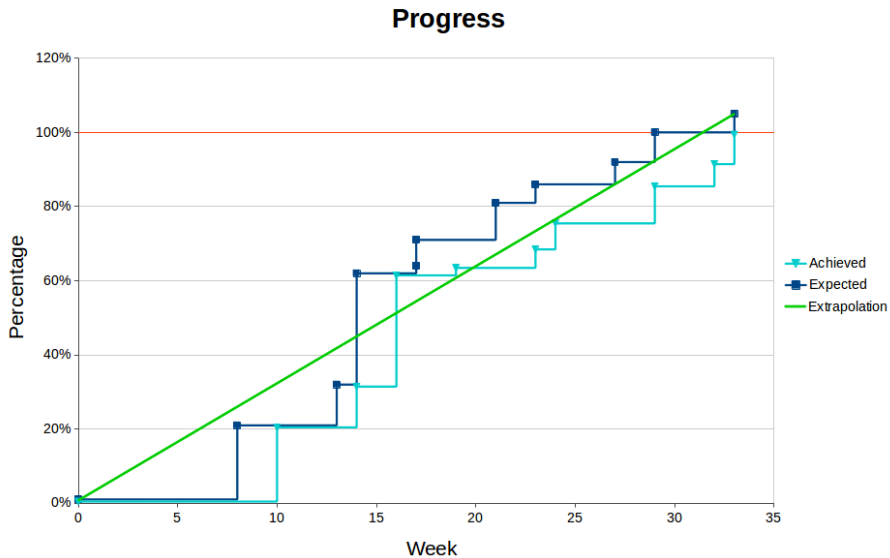
Diagramme prévisionnel

Diagramme réalisé

Diagramme prévisionnel

Diagramme réalisé





N°	Deliverable	Planned date	Actual date
1	Interface and algorithm result	Dec. 23 rd	Jan. 18 th
2	Minimal application	Jan. 21 st	Jan. 25 th
2 ^{bis}	Multicoupe et paramètres	—	Jan. 29 th
3	Free hand drawing and curves with editable parameters	Jan. 29 th	Feb. 24 th
4	Equations and export	Feb. 19 th	Feb. 24 th
5	Final application	Mar. 2 nd	Mar. 2 nd
5 ^{bis}	Final documentation	Mar. 11 th	Mar. 14 th

List of risks

Risk	Gravity	Probability	Criticity
Server linked problems	1	0	0
Panne ou dysfonctionnement des appareils	1	1	1
New client	1	2	1
La validation met en évidence un grave problème technique	2	1	1
Rendu 3D demandant trop de ressources	2	1	1
Evolution of the generation algorithm	1	3	2

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+!

*!

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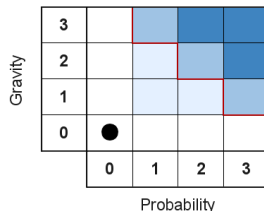
*!?

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Risk evolution

- Server linked problems

Gravity	0	1	2	3
Delay	●			
Costs	●			
Receipts	●			
Performance	●			
Other				
Global	●			

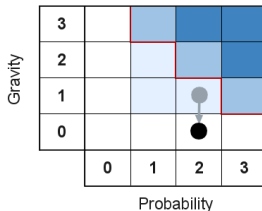


Level	Gravity	Probability	Criticality
0	None	< 1%	No critical
1	Low (marges)	de 1% à 5%	
2	Important	de 5% à 20 %	Critical
3	Dangerous	> 20%	

Risk evolution

- New clients

Gravity	0	1	2	3
Delay	● ← ●			
Costs	●			
Receipts	●			
Performance	● ← ●			
Other				
Global	● ← ●			

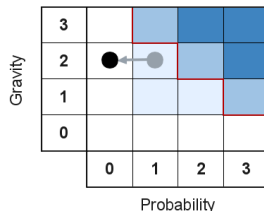


Level	Gravity	Probability	Criticality
0	None	< 1%	No critical
1	Low (marges)	de 1% à 5%	
2	Important	de 5% à 20 %	Critical
3	Dangerous	> 20%	

Risk evolution

- Slow rendering

Gravity	0	1	2	3
Delay			●	
Costs	●			
Receipts	●			
Performance			●	
Other				
Global			●	

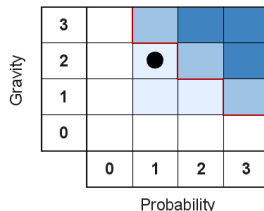


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Risk evolution

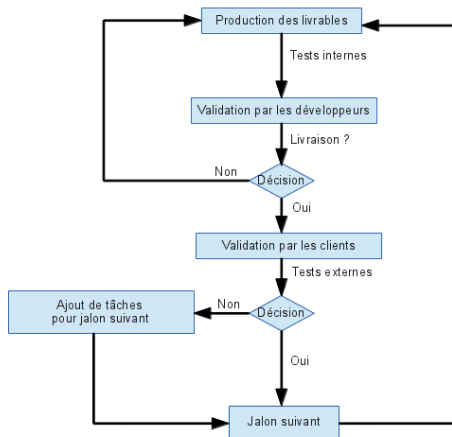
- Evolution of the generation algorithm

Gravity	0	1	2	3
Delay	●			
Costs	●			
Receipts	●			
Performance			●	
Other				
Global			●	

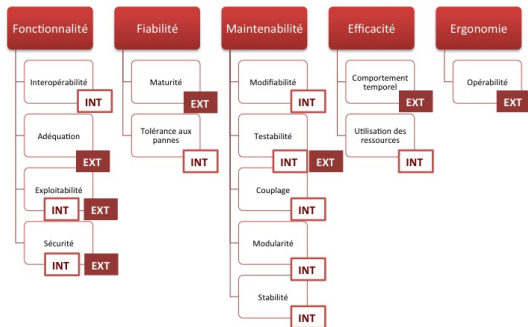


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Quality insurance plan



Milestones validation
with the clients



Why ISO-9126 ?

- International standard for the evaluation of software quality.
- Given a quality note according to different criteria.
- Validation of the application by the clients and the quality manager.
- Externals and internals tests.

Software quality measurement

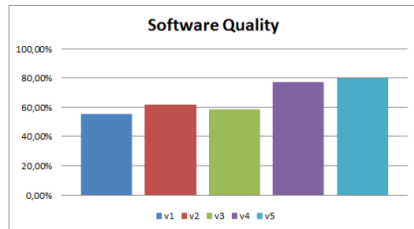
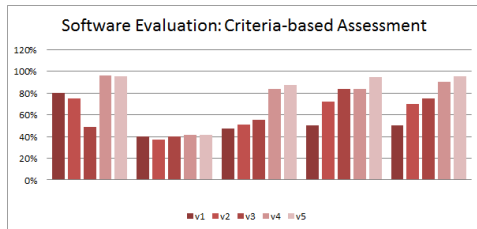
1	Question	Version 1	Version 2	Version 3	Version 4	Version 5
1	Overall vision	1	1	0.5	1	1
2	The ease to find the information	0.5	0.5	0.5	0.5	1
3	Response speed	0.5	0.5	0.5	1	1
4	Utility of the information	0	0.5	0.5	1	1
5	The choice of title and heading and their meanings	0.5	1	1	1	1
6	The completeness of the information found against the need	1	0.5	1	1	1
7	Rapidité d'exécution	0	0.5	1	1	1
8	Errors rate	0.5	0.5	0.5	1	1
9	Handling the use	1	1	1	0.5	0.5
10	The reliability of the application	0	1	1	1	1
	Total	50%	70%	75%	90%	95%

Standard divisions

- ① Quality model
- ② External metrics
- ③ Internal metrics
- ④ Quality in use metrics

1	Functionality	Level 1		Level 2		Level 3		Level 4		Level 5	
		INT	EXT	INT	EXT	INT	Ext	INT	Ext	INT	Ext
1	Interoperability										
Goal	Ability to interact with one or more systems										
Question	Is the application uses norms and technical standards?										
	Evaluation	90%		75%		85%		100%		95.83%	
1	Adequacy										
Goal	Checking the adequacy of spots against the needs										
Question	Does each function is adequate to the customer need?										
	Evaluation		100%		80%		25%		85%		90%
0.3	Operability										
Goal	The ability to properly use the software system										
Question	At what level the software is usable?										
	Evaluation	25 %	25 %		32.14%	35.71%	35.71%		100%		100%
	Note I/E	76.66 %	83.33%	75%	74.76%	60.35%	30.35%	100%	92.5%	95.83%	95%
	Fonctionnalité	79.99 %		74.88 %		45.35 %		96.25%		95.41%	

Software quality evaluation

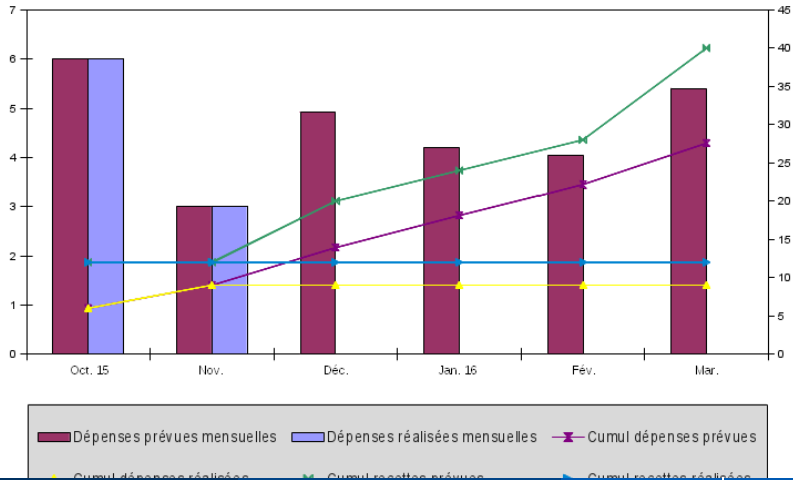


Q.I.P Reviews

- 1 Such techniques to analyze the quality during the requirements phases.
- 2 Well-differentiated characteristics of software quality has been developed.
- 3 A large number of software quality-evaluation metrics have been defined.
- 4 Quality can lead to significant savings in software life-cycle costs.

Figure: TODO régénéré cette image

Évolution des dépenses et des recettes (k€)



Outline

- Technical Javascript improvement (classes, worker, blob, webgl, etc.)
- Final deliverable in two step
- Perspectives
 - Réutilisation dans quelques semaines
 - Ajout de nouveau(x) algo

- Javascript improvement (classes, worker, blob, etc.)
- WebGL improvement
- Résolution de problème mathématique (matrice de changement de repère, tracer de courbe implicite)

Discrete 3D surfaces of revolution

Final presentation

Thanks for your attention.

Are there any questions ?