AALBORG UNIVERSITY

Scheduling and Rationality

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5.2.47
Information Systems
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Learning Goals

To apply additional techniques for plannig:

- Network diagram
- Pert chart
- Gantt chart
- Other metrics and with tool support

To discuss rationality in software engineering

Why Are Projects Late?

An unrealistic deadline established by outsiders

Changing customer requirements not reflected in schedule changes

An honest underestimate of the effort required to do the job

Predictable and/or unpredictable risks that were not considered at project start

Technical difficulties that were not foreseen

Human difficulties that were not foreseen

Miscommunication among project staff

A failure by project management to recognize that the project is falling behind schedule and a lack of action to correct the problem

Pressman 2000

Scheduling Principles

Compartmentalization—define distinct tasks

Interdependency—indicate task interrelationships

Effort validation—be sure resources are available

Defined responsibilities—people must be assigned

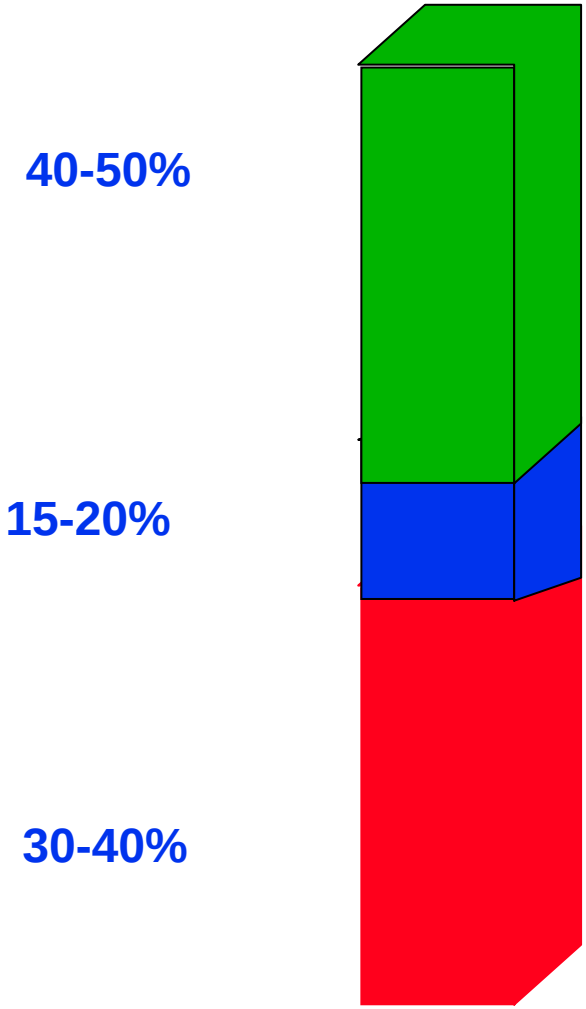
Defined outcomes—each task must have an output

Defined milestones—review for quality

Pressman 2000

Pressman 2000

Effort Allocation



"front end" activities

- customer communication
- analysis
- design
- review and modification

construction activities

- coding or code generation

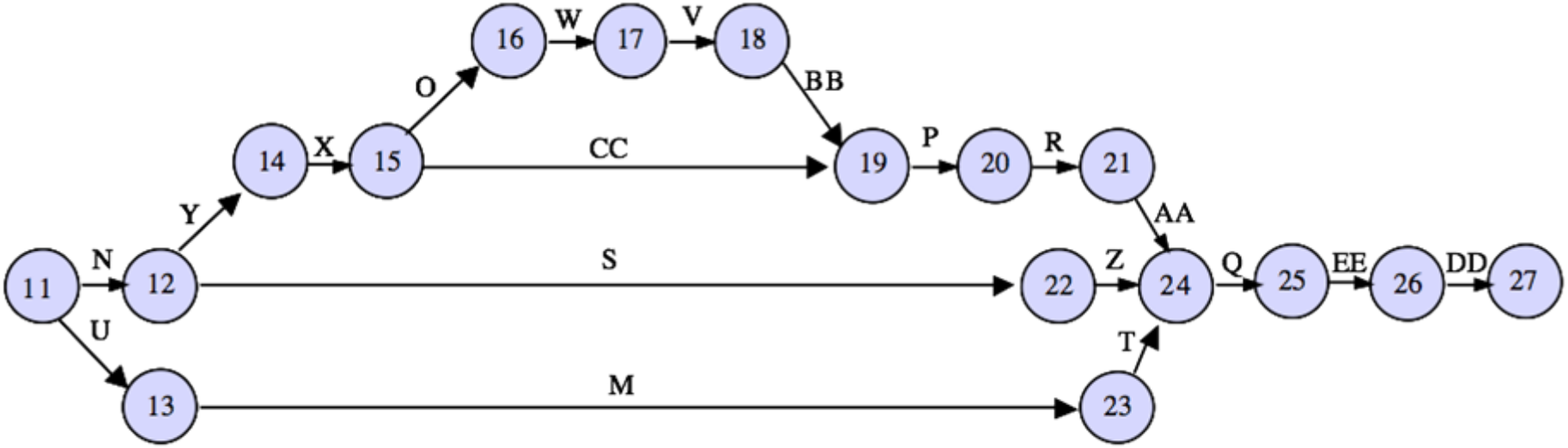
testing and installation

- unit, integration
- white-box, black box
- regression

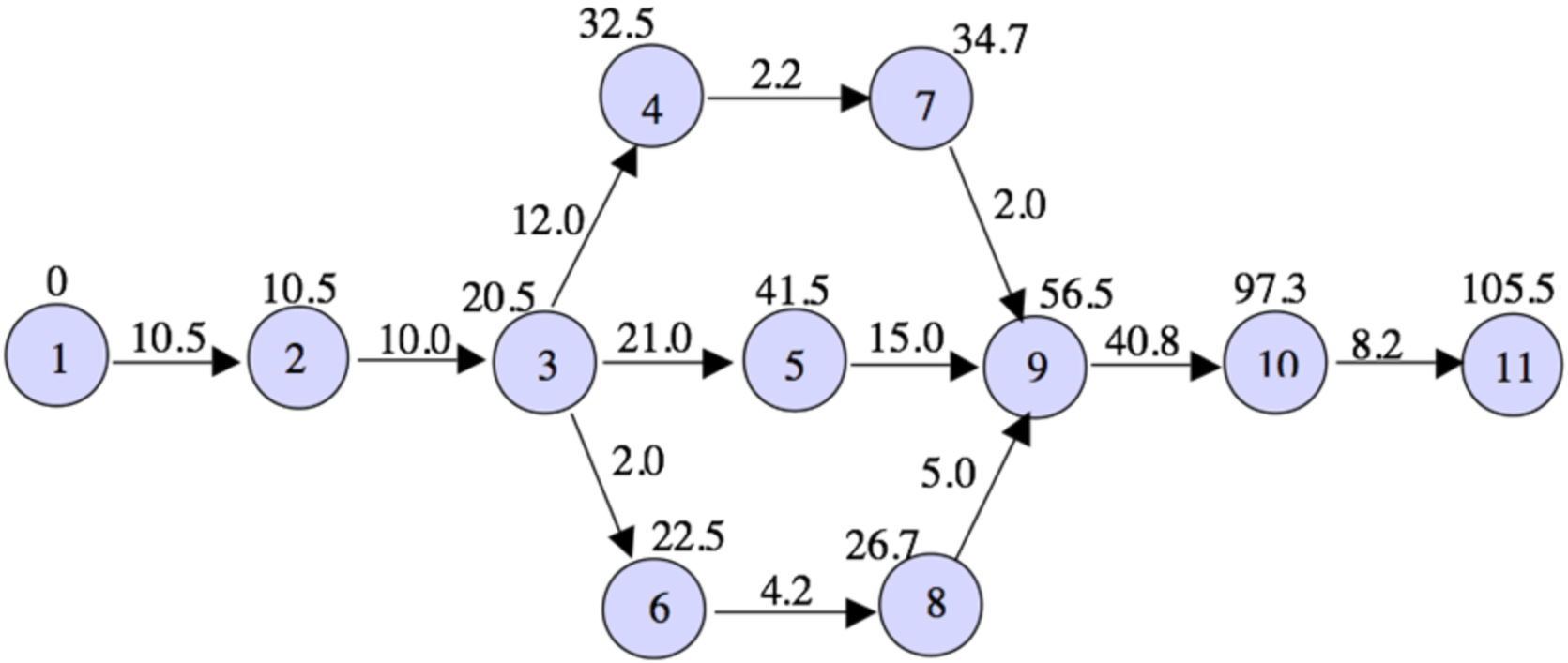
Questions Addressed by Scheduling

Completion date?
On Schedule?
Within Budget?
Critical Activities?
How can the project be finished early at the least cost?

PERT Project Network



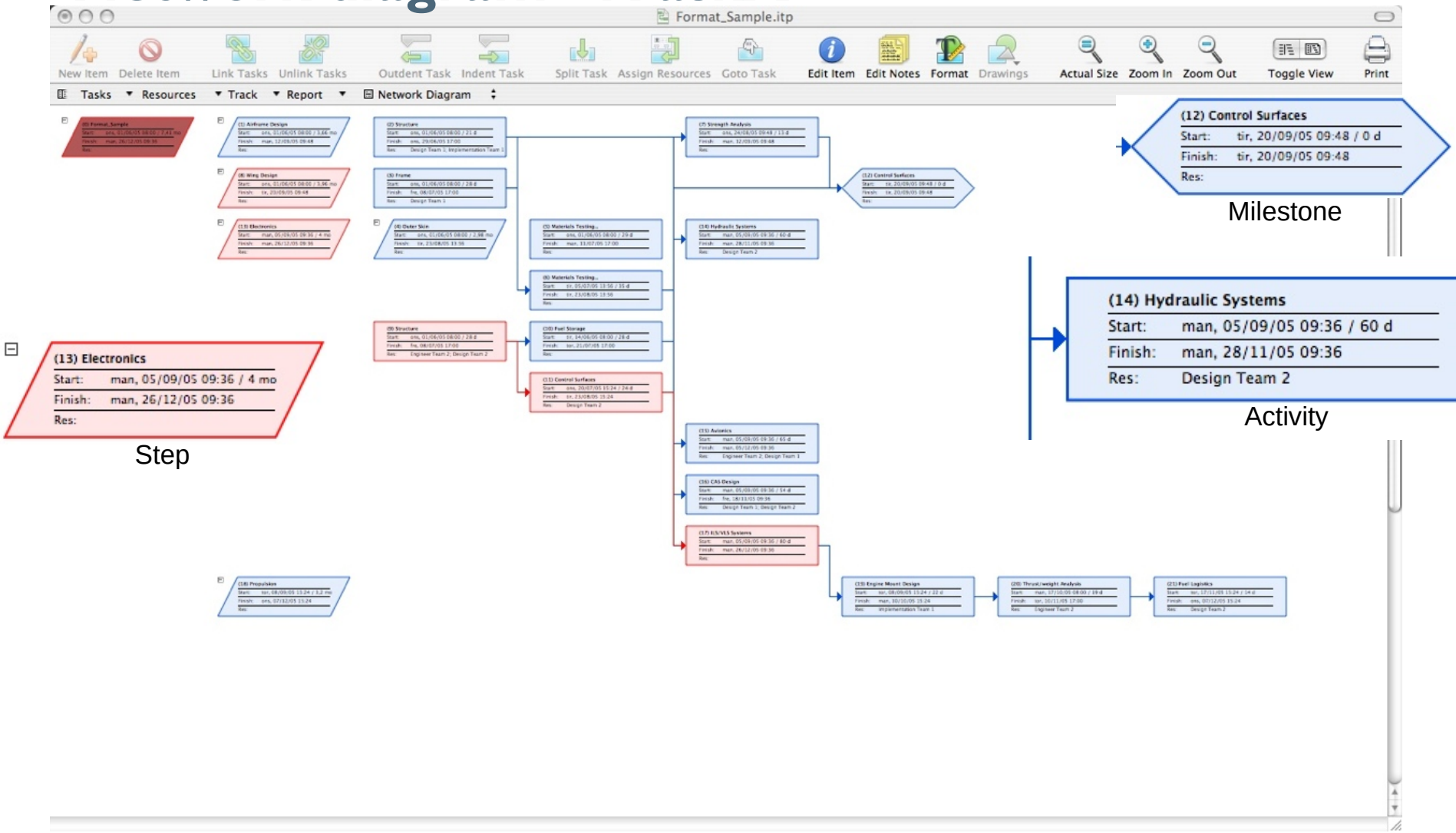
Pert Chart with Milestone Time Label



Activity Scheduling

Earliest start time
Earliest finish time
Latest start time
Latest finish time

Network diagram - iTaskX



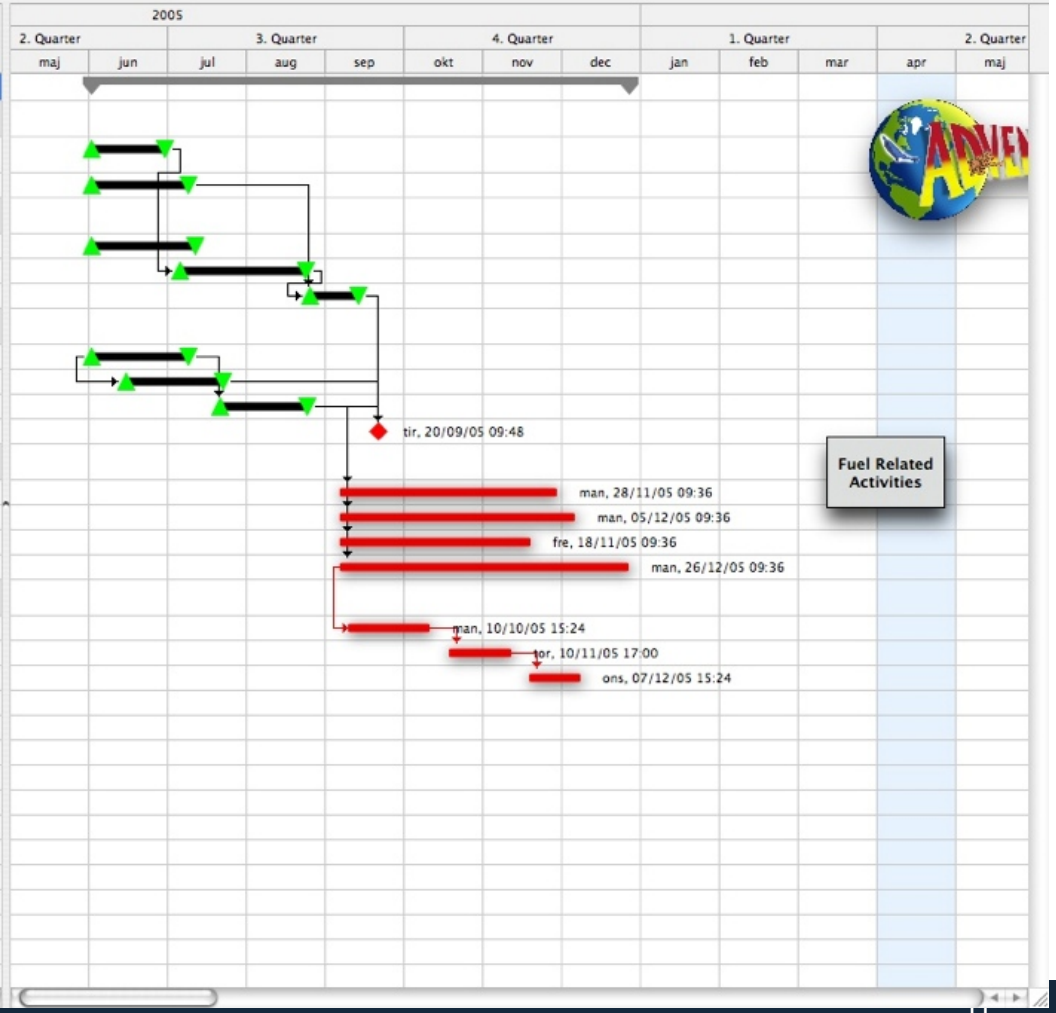
Gantt Chart - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources | Goto Task | Edit Item | Edit Notes | Format | Drawings | Actual Size | Zoom In | Zoom Out | Toggle View | Print

Tasks | Resources | Track | Report | Gantt Chart

	Task Name	Start	Finish	Duration	Resource Names
0	Format_Sample	01/06/05 08:0(	26/12/05 09:36	7,41 mo	
1	Airframe Design	01/06/05 08:0(	12/09/05 09:48	3,66 mo	
2	Structure	01/06/05 08:00	29/06/05 17:00	21 d	Design Team 1; Implementation Team 1
3	Frame	01/06/05 08:00	08/07/05 17:00	28 d	Design Team 1
4	Outer Skin	01/06/05 08:0(	23/08/05 13:56	2,98 mo	
5	Materials Testing...	01/06/05 08:00	11/07/05 17:00	29 d	
6	Materials Testing...	05/07/05 13:56	23/08/05 13:56	35 d	
7	Strength Analysis	24/08/05 09:48	12/09/05 09:48	13 d	
8	Wing Design	01/06/05 08:0(	20/09/05 09:48	3,96 mo	
9	Structure	01/06/05 08:00	08/07/05 17:00	28 d	Engineer Team 2; Design Team 2
10	Fuel Storage	14/06/05 08:00	21/07/05 17:00	28 d	
11	Control Surfaces	20/07/05 15:24	23/08/05 15:24	24 d	Design Team 2
12	Control Surfaces	20/09/05 09:48	20/09/05 09:48	0 d	
13	Electronics	05/09/05 09:3(	26/12/05 09:36	4 mo	
14	Hydraulic Systems	05/09/05 09:36	28/11/05 09:36	60 d	Design Team 2
15	Avionics	05/09/05 09:36	05/12/05 09:36	65 d	Engineer Team 2; Design Team 1
16	CAS Design	05/09/05 09:36	18/11/05 09:36	54 d	Design Team 1; Design Team 2
17	ILS/VLS Systems	05/09/05 09:36	26/12/05 09:36	80 d	
18	Propulsion	08/09/05 15:2(	07/12/05 15:24	3,2 mo	
19	Engine Mount Design	08/09/05 15:24	10/10/05 15:24	22 d	Implementation Team 1
20	Thrust/weight Analysis	17/10/05 08:00	10/11/05 17:00	19 d	Engineer Team 2
21	Fuel Logistics	17/11/05 15:24	07/12/05 15:24	14 d	Design Team 2



Critical Path

Longest path through a network
Minimum project completion time

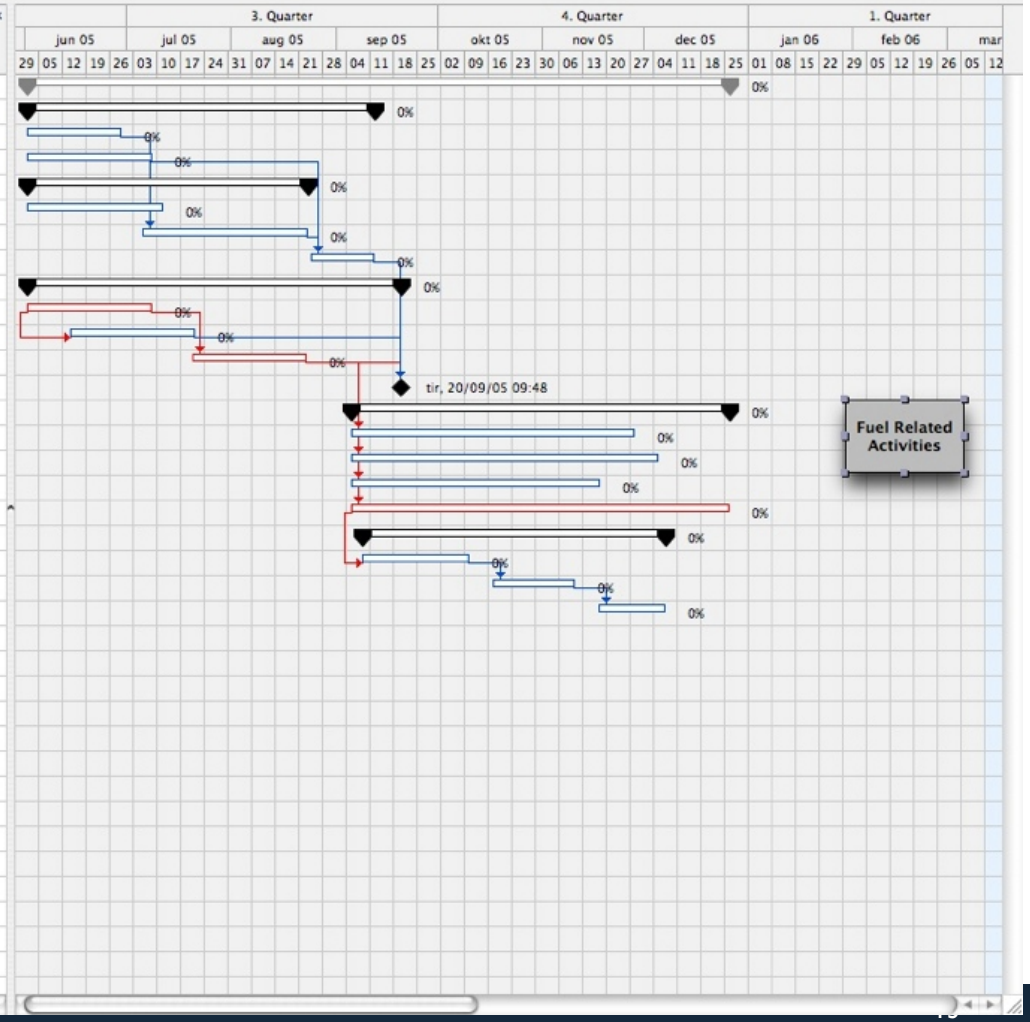
Critical Path - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources | Goto Task | Edit Item | Edit Notes | Format | Drawings | Actual Size | Zoom In | Zoom Out | Toggle View | Print

Tasks | Resources | Track | Report | Tracking Gantt

	Task Name	Actual Finish	Actual Cost	Complete	Actual	Remaining	Actual Start	Actual Work
0	Format_Sample		$ 0,00	0%	0 mo	7,41 mo		0 d
1	**Airframe Design**		**$ 0,00**	**0%**	**0 mo**	**3,66 mo**		**0 d**
2	Structure		$ 0,00	0%	0 d	21 d		0 d
3	Frame		$ 0,00	0%	0 d	28 d		0 d
4	**Outer Skin**		**$ 0,00**	**0%**	**0 mo**	**2,98 mo**		**0 d**
5	Materials Testing...		$ 0,00	0%	0 d	29 d		0 d
6	Materials Testing...		$ 0,00	0%	0 d	35 d		0 d
7	Strength Analysis		$ 0,00	0%	0 d	13 d		0 d
8	**Wing Design**		**$ 0,00**	**0%**	**0 mo**	**3,96 mo**		**0 d**
9	Structure		$ 0,00	0%	0 d	28 d		0 d
10	Fuel Storage		$ 0,00	0%	0 d	28 d		0 d
11	Control Surfaces		$ 0,00	0%	0 d	24 d		0 d
12	Control Surfaces		$ 0,00	0%	0 d	0 d		0 d
13	**Electronics**		**$ 0,00**	**0%**	**0 mo**	**4 mo**		**0 d**
14	Hydraulic Systems		$ 0,00	0%	0 d	60 d		0 d
15	Avionics		$ 0,00	0%	0 d	65 d		0 d
16	CAS Design		$ 0,00	0%	0 d	54 d		0 d
17	ILS/VLS Systems		$ 0,00	0%	0 d	80 d		0 d
18	**Propulsion**		**$ 0,00**	**0%**	**0 mo**	**3,2 mo**		**0 d**
19	Engine Mount Design		$ 0,00	0%	0 d	22 d		0 d
20	Thrust/weight Analysis		$ 0,00	0%	0 d	19 d		0 d
21	Fuel Logistics		$ 0,00	0%	0 d	14 d		0 d



Activity Slack

Definition: Slack is the amount of time an activity can be delayed without delaying the project

Task Sheet - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources | Goto Task | Edit Item

Tasks | Resources | Track | Report | Task Sheet

	Task Name	Duration	Start	Finish	Complete	Cost	Work
0	**Format_Sample**	**7,41 mo**	**01/06/05**	**26/12/05**	**0%**	**$ 1.022.700,00**	**503 d**
1	**Airframe Design**	**3,66 mo**	**01/06/05**	**12/09/05**	**0%**	**$ 148.500,00**	**70 d**
2	Structure	21 d	01/06/05	29/06/05	0%	$ 75.600,00	42 d
3	Frame	28 d	01/06/05	08/07/05	0%	$ 72.900,00	28 d
4	**Outer Skin**	**2,98 mo**	**01/06/05**	**23/08/05**	**0%**	**$ 0,00**	**0 d**
5	Materials Testing...	29 d	01/06/05	11/07/05	0%	$ 0,00	0 d
6	Materials Testing...	35 d	05/07/05	23/08/05	0%	$ 0,00	0 d
7	Strength Analysis	13 d	24/08/05	12/09/05	0%	$ 0,00	0 d
8	**Wing Design**	**3,96 mo**	**01/06/05**	**20/09/05**	**0%**	**$ 205.200,00**	**80 d**
9	Structure	28 d	01/06/05	08/07/05	0%	$ 162.000,00	56 d
10	Fuel Storage	28 d	14/06/05	21/07/05	0%	$ 0,00	0 d
11	Control Surfaces	24 d	20/07/05	23/08/05	0%	$ 43.200,00	24 d
12	Control Surfaces	0 d	20/09/05	20/09/05	0%	$ 0,00	0 d
13	**Electronics**	**4 mo**	**05/09/05**	**26/12/05**	**0%**	**$ 562.400,00**	**298 d**
14	Hydraulic Systems	60 d	05/09/05	28/11/05	0%	$ 108.000,00	60 d
15	Avionics	65 d	05/09/05	05/12/05	0%	$ 260.000,00	130 d
16	CAS Design	54 d	05/09/05	18/11/05	0%	$ 194.400,00	108 d
17	ILS/VLS Systems	80 d	05/09/05	26/12/05	0%	$ 0,00	0 d
18	**Propulsion**	**3,2 mo**	**08/09/05**	**07/12/05**	**0%**	**$ 106.600,00**	**55 d**
19	Engine Mount Design	22 d	08/09/05	10/10/05	0%	$ 39.600,00	22 d
20	Thrust/weight Analysis	19 d	17/10/05	10/11/05	0%	$ 41.800,00	19 d
21	Fuel Logistics	14 d	17/11/05	07/12/05	0%	$ 25.200,00	14 d

Task Usage - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources

Tasks | Resources | Track | Report | Task Usage

	Name	Work	Overtime Work	Duration	Assignment Units	Start	Finish	Overallocated
0	**Format_Sample**	**503 d**	**0 d**	**7,41 mo**		**01/06/05**	**26/12/05**	☐
1	**Airframe Design**	**70 d**	**0 d**	**3,66 mo**		**01/06/05**	**12/09/05**	☐
2	Structure	42 d	0 d	21 d		01/06/05	29/06/05	☐
	Design Team 1	21 d	0 d		100%			☐
	Implementation	21 d	0 d		100%			☐
3	Frame	28 d	0 d	28 d		01/06/05	08/07/05	☑
	Design Team 1	28 d	0 d		100%			☑
4	**Outer Skin**	**0 d**	**0 d**	**2,98 mo**		**01/06/05**	**23/08/05**	☐
5	Materials Testing...	0 d	0 d	29 d		01/06/05	11/07/05	☐
6	Materials Testing...	0 d	0 d	35 d		05/07/05	23/08/05	☐
7	Strength Analysis	0 d	0 d	13 d		24/08/05	12/09/05	☐
8	**Wing Design**	**80 d**	**0 d**	**3,96 mo**		**01/06/05**	**20/09/05**	☐
9	Structure	56 d	0 d	28 d		01/06/05	08/07/05	☐
	Engineer Team 2	28 d	0 d		100%			☐
	Design Team 2	28 d	0 d		100%			☐
10	Fuel Storage	0 d	0 d	28 d		14/06/05	21/07/05	☐
11	Control Surfaces	24 d	0 d	24 d		20/07/05	23/08/05	☐
	Design Team 2	24 d	0 d		100%			☐
12	Control Surfaces	0 d	0 d	0 d		20/09/05	20/09/05	☐
13	**Electronics**	**298 d**	**0 d**	**4 mo**		**05/09/05**	**26/12/05**	☐
18	**Propulsion**	**55 d**	**0 d**	**3,2 mo**		**08/09/05**	**07/12/05**	☐
19	Engine Mount Design	22 d	0 d	22 d		08/09/05	10/10/05	☐
	Implementation	22 d	0 d		100%			☐
20	Thrust/weight Analysis	19 d	0 d	19 d		17/10/05	10/11/05	☑
	Engineer Team 2	19 d	0 d		100%			☑
21	Fuel Logistics	14 d	0 d	14 d		17/11/05	07/12/05	☑
	Design Team 2	14 d	0 d		100%			☑

Resource Usage - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources

Tasks | Resources | Track | Report | Resource Usage

	Name	Work	Overtime Work	Assignment Units	Start	Finish	Overallocated
1	**Design Team 1**	**168 d**			**01/06/05**	**05/12/05**	☑
	Structure	21 d	0 d	100%			☐
	Frame	28 d	0 d	100%			☑
	Avionics	65 d	0 d	100%			☐
	CAS Design	54 d	0 d	100%			☑
2	**Design Team 2**	**180 d**			**01/06/05**	**07/12/05**	☑
	Structure	28 d	0 d	100%			☐
	Control Surfaces	24 d	0 d	100%			☐
	Hydraulic Systems	60 d	0 d	100%			☐
	CAS Design	54 d	0 d	100%			☑
	Fuel Logistics	14 d	0 d	100%			☑
3	**Engineer Team 2**	**112 d**			**01/06/05**	**05/12/05**	☑
	Structure	28 d	0 d	100%			☐
	Avionics	65 d	0 d	100%			☐
	Thrust/weight Analysis	19 d	0 d	100%			☑
4	**Implementation Team 1**	**43 d**			**01/06/05**	**10/10/05**	☐
	Structure	21 d	0 d	100%			☐
	Engine Mount Design	22 d	0 d	100%			☐

Cost Table - iTaskX

Format_Sample.itp

New Item | Delete Item | Link Tasks | Unlink Tasks | Outdent Task | Indent Task | Split Task | Assign Resources

Tasks | Resources | Track | Report | Resource Usage

	Name	Cost	Baseline Cost	Cost Variance	Actual Cost	Remaining Cost
1	**Design Team 1**	**$ 32**	**$ 310.050,00**	**$ 14.850,00**	**$ 0,00**	**$ 324.900,00**
	Structure	$ 37.	$ 37.800,00	$ 0,00	$ 0,00	$ 37.800,00
	Frame	$ 72.	$ 58.050,00	$ 14.850,00	$ 0,00	$ 72.900,00
	Avionics	$ 11	$ 117.000,00	$ 0,00	$ 0,00	$ 117.000,00
	CAS Design	$ 97.	$ 97.200,00	$ 0,00	$ 0,00	$ 97.200,00
2	**Design Team 2**	**$ 34**	**$ 345.825,00**	**$ 675,00**	**$ 0,00**	**$ 346.500,00**
	Structure	$ 72.	$ 72.225,00	$ 675,00	$ 0,00	$ 72.900,00
	Control Surfaces	$ 43.	$ 43.200,00	$ 0,00	$ 0,00	$ 43.200,00
	Hydraulic Systems	$ 10	$ 108.000,00	$ 0,00	$ 0,00	$ 108.000,00
	CAS Design	$ 97.	$ 97.200,00	$ 0,00	$ 0,00	$ 97.200,00
	Fuel Logistics	$ 25.	$ 25.200,00	$ 0,00	$ 0,00	$ 25.200,00
3	**Engineer Team 2**	**$ 27**	**$ 273.075,00**	**$ 825,00**	**$ 0,00**	**$ 273.900,00**
	Structure	$ 89.	$ 88.275,00	$ 825,00	$ 0,00	$ 89.100,00
	Avionics	$ 14	$ 143.000,00	$ 0,00	$ 0,00	$ 143.000,00
	Thrust/weight Analysis	$ 41.	$ 41.800,00	$ 0,00	$ 0,00	$ 41.800,00
4	**Implementation Team 1**	**$ 77.**	**$ 77.400,00**	**$ 0,00**	**$ 0,00**	**$ 77.400,00**
	Structure	$ 37.	$ 37.800,00	$ 0,00	$ 0,00	$ 37.800,00
	Engine Mount Design	$ 39.	$ 39.600,00	$ 0,00	$ 0,00	$ 39.600,00

Scheduling Methods: Strengths

These methods are useful prior to and during a project

They are straightforward in concept and are supported by software

Graphical representation of the project's tasks help to show the task interrelationships

Highlighting the project's critical path and task slack time allows to focus on critical aspects of project-time, costs and people

Project management software usually provides excellent project tracking documentation

These methods are applicable in a wide variety of projects.

Pressman 2001

Scheduling Methods: Weaknesses

Project tasks have to be clearly defined as well as their relationships to each other

Do not deal very well with task overlap. They assume the following tasks begin after their preceding tasks end

They are only as good as the time estimates

By design, the project manager will normally focus more attention on the critical path tasks than other tasks, which could be problematic for near-critical path tasks if overlooked

Pressman 2001

Tracking: Elementary Metrics

Unit of measure	Characteristics addressed
Counts of physical source lines of code	Size, progress, reuse
Counts of staff-hours expended	Effort, cost, resource allocations
Calendar dates	Schedule
Counts of software problems and defects	Quality, readiness for delivery, improvement trends

Tracking - Manpower & Effort

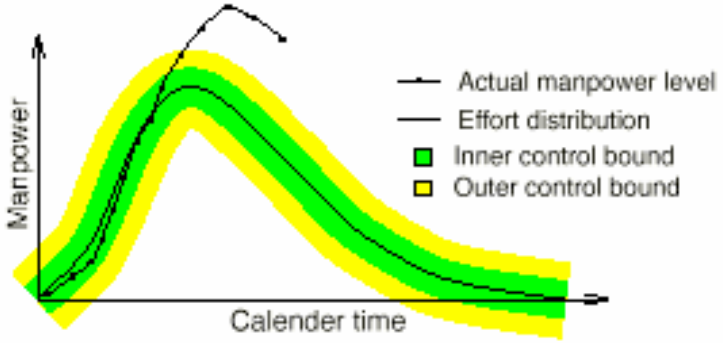


Figure 13: Rate curve. The actual effort values are plotted against the distribution.

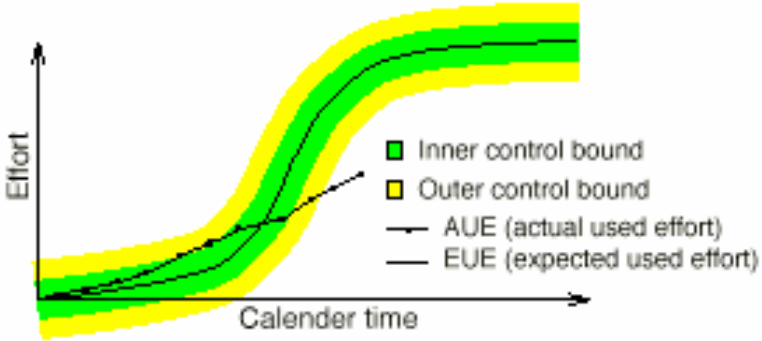


Figure 14: Cumulative curve. The actual effort values are plotted against the distribution.

Steen Andersen, Peter Stegenborg Larsen, Carsten Lindholst: *Evaluation and Evolution of Navi - a Web Based Tool for Project Planning and Tracking*, Masters Thesis, Computer Science, Aalborg University, 1998.

Tracking - Lines of Code & Defects

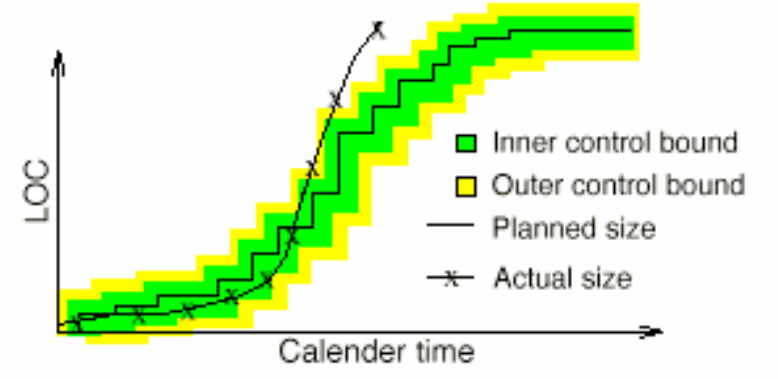


Figure 16: The actual size in LOC plotted against the planned size

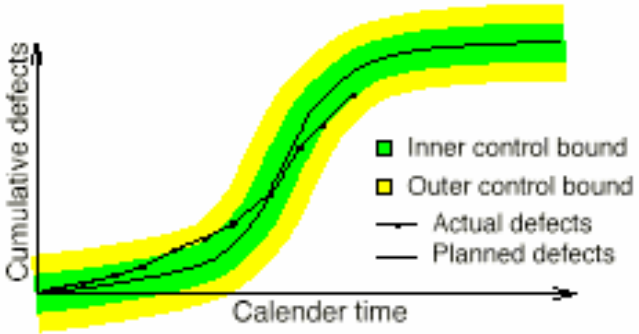


Figure 19: Tracking cumulative defect arrival against a planned Rayleigh distribution.

Steen Andersen, Peter Stegenborg Larsen, Carsten Lindholst: *Evaluation and Evolution of Navi - a Web Based Tool for Project Planning and Tracking*, Masters Thesis, Computer Science, Aalborg University, 1998.

XPlanner - www.xplanner.org/

XPlanner Iteration: Holiese 4 - Mozilla

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XPlanner Iteration: Holiese 4 | XPlanner Home

XPlanner

Top | Project Integrations | People

Iteration: Holiese 4 (2003-07-07 to 2003-07-27)

Hours: Estimated 517.6, Actual 293.8, Remaining 118.7

User Story	!	Progress	Est.	Actions
Qridictin sipprt	1		34.7	
Sobcliint fenctonuluty	1		28.0	
Xiply bronch-r3	1		52.9	
Drip uccent Tonson ploud	2		25.1	
FAC Bero Tssuis	2		41.4	
Fdd Admen set sippirt fir Tu Let Oill Gccints	2		4.0	
Jdmin lug fle des nut pruvudo sffcent NME contxt	2		1.0	
Jod Oroclu Wennctiins Lxceptuens	2		8.0	
Kr - mpruv E2 erder entry	2		8.0	
Kucrty - chuck pusswird lingths en servr	2		4.0	
LHSL Xhungis 28-AMU-03	2		4.0	
Nonerol cliinep	2		30.0	
Nrder midoficotoen (prt 2)	2		47.3	
Odice ument f dte roternod from gotJrdrNistery()	2		1.0	
Pdd 'Vencol Aundng' t Prdir Kurch Etto	2		4.0	
Reoluzed F&Q for pesitien nt lwiys clurd for new trudng doy	2		4.0	
Resk Qenigoment	2		50.0	
Seporote Aorrent & Sstrcil JTS	2		10.2	
VomesHn thrwng Mxceptuen in DusturoculXurSirvur rqist	2		8.0	

XPlanner Story: Lsr Erondly BrdorVds - Mozilla

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Search

XPlanner Story: Lsr Erondly BrdorVds

XPlanner

Top | Project | Iteration Integrations | People

Story: Lsr Erondly BrdorVds

http://example.com/design_notes.txt

Feature	Description
First Feature	This is the first feature
Another one	This is another feature

- Item 1
- Item 2

Priority: 4 **Estimated Hours:** 14.0
Actual Hours: 6.6

Task Name	Type	Progress	Est.	Acc.	Disposition	Actions
Lodofy sirvr	Ueture		3.0	ND	Dlinnd	
Ludufy Jufh	Feature		8.0	ND	Planned	
Oudefy bllng	Mitori		3.0	ND	Blunnid	

Edit Story | Create Task

Notes: Add Note

user: admin XPlanner Version 0.4.0

XPlanner Task: Ludufy Jufh - Mozilla

File Edit View Go Bookmarks Tools Window Help

http://localhost:8080/xplanner_idea/do/view/task?oi

Search

XPlanner Task: Ludufy Jufh

XPlanner

Top | Project | Iteration | Story Integrations | People

Task: Ludufy Jufh

Acceptor: ND **Estimated Hours:** 8.0 (4.0)
Created: 2003-07-23 **Actual Hours:** 4.0

Complete Task

Time Log:

Start Time	End Time	Dur.	Pair
		4.0	ND
2003-07-23 22:20	2003-07-23 22:22	0.0	ND
2003-07-24 01:10			ND FE

Edit Task

Notes: Add Note

Subject: Sample note **Author:** Cees Nin Deten **Date:** 2003-07-23 22:21

This is a sample note.

user: admin XPlanner Version 0.4.0

XPlanner Iteration Metrics: Holiese 4 - Mozilla

File Edit View Go Bookmarks Tools Window Help

http://localhost:8080/xplanner_idea/do/vi Search

XPlanner Iteration Metrics: Holiese 4 | XPlanner Home

XPlanner

Top | Project | Iteration Integrations | People

Iteration Metrics: Holiese 4

Total Person Hours Worked: 297.1

Developer	Hours
Gtive Cetu	82.8
Jevid Rerotvuch	64.8
Durk Tinthir	57.8
Yurry Suplen	52.7
Xlig Eershuy	25.4
Jerk Yinez	13.5

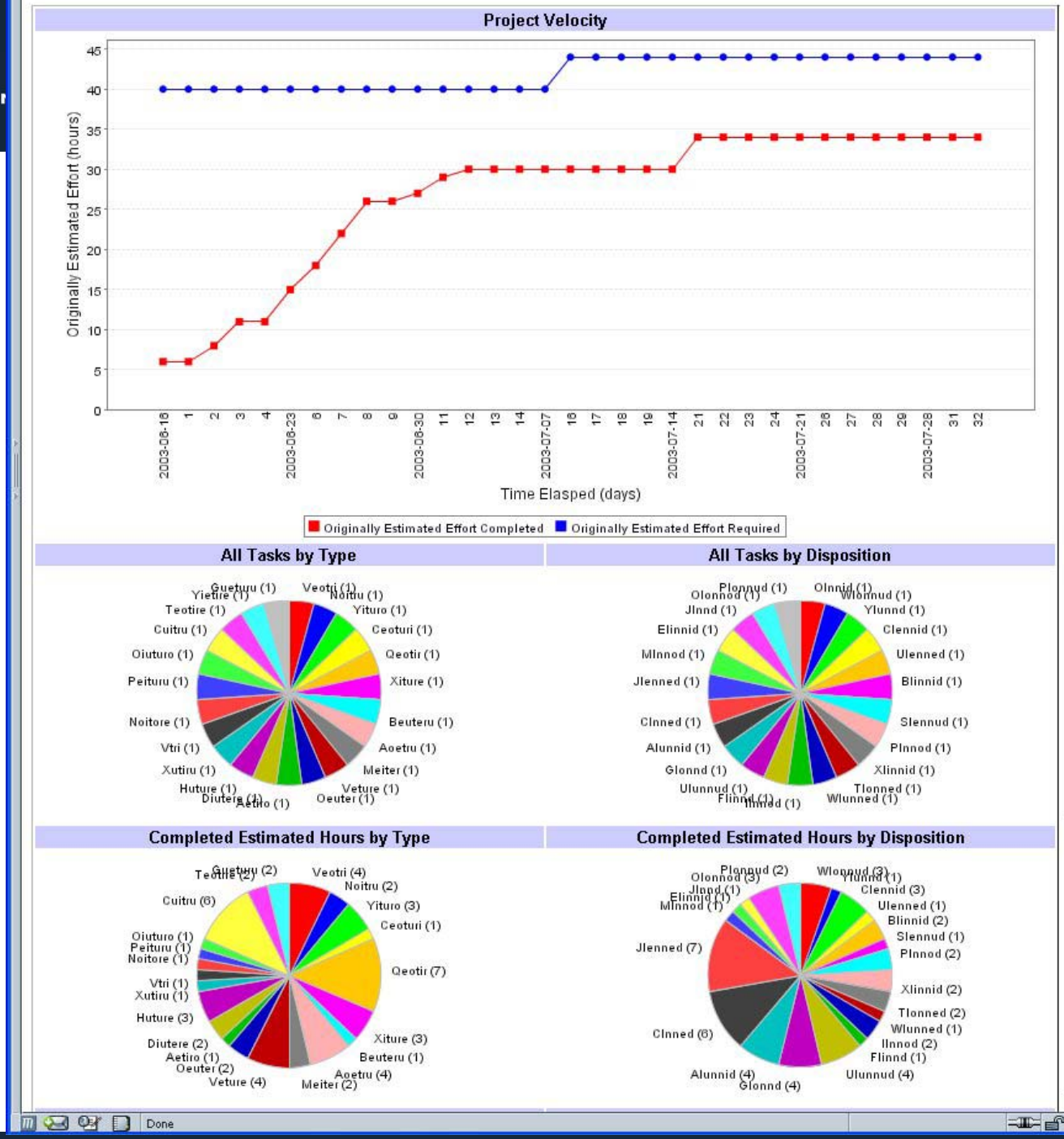
Paired Hours Unpaired Hours

Hours Accepted Per Developer:

Developer	Hours
Gtive Cetu	181.0
Yurry Suplen	102.1
Durk Tinthir	93.1
Jevid Rerotvuch	54.0
Xlig Eershuy	51.4
Jerk Yinez	24.0

user: admin XPlanner Version 0.4.0

Done


Project Velocity
Originally Estimated Effort (hours)
Time Elasped (days)
Originally Estimated Effort Completed
Originally Estimated Effort Required
All Tasks by Type
All Tasks by Disposition
Completed Estimated Hours by Type
Completed Estimated Hours by Disposition
Done

XPlanner Person: Durk Tinthir - Mozilla

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http://localhost:8080/xplanner_idea/do/view/person?oid=49 Search

XPlanner Person: Durk Tinthir

XPlanner

Top | Back Integrations | People

Name: Durk Tinthir

Contact Info:

Email: morkp@example.com
Phone: 214-555-1212

Tasks in progress:

Story	Task	Acceptor?
LHSL Xhungis 28-AMU-03	Kmplmont Loqoerid BUTW chingus	Yes
Xiply bronch-r3	Oitubse Wegrutn scrpts	Yes
Qridictin sipprt	GQ2 KHJG Yroblom	Yes
Lsr Erondly BrdorVds	Ludufy Jufh	Yes

Unstarted Tasks:

Story	Task
Yurkut duto billung	Kunureto fud bollung rpirt
Xiply bronch-r3	Apley to pridction
Nrder midoficotoen (prt 2)	Yelleng, OXHRF nd MWDM chengus
Lsr Erondly BrdorVds	Oudefy bllng

Closed Tasks:

Story	Task	Acceptor?
Qridictin sipprt	Jrdur Vourch woth RWF/NAUF ruutos selictd roturns nithing	Yes
Yurkut duto billung	Brevde blling doto fer murket feds	Yes
Xiply bronch-r3	Lesh flos t QML box	Yes

XPlanner Software Delivery and Integrations - Mozilla

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Search

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Software Delivery and Integrations

Current Integrator: Xlig Eershuy
Started at: 2003-03-10 10:53

Auluver GS-386, RB-387, KH-389

Finished Cancel

Waiting Line:

Who	Waiting Since	What	Actions
Jerk Yinez	2003-07-23 22:33	Integrate more stuff	Leave Line
Durk Tinthir	2003-07-23 22:32	Integration some stuff	Leave Line

Who: What: Join line

Recent Integrations:

Who	Start	Finish	Dur.	State	What
Xlig Eershuy	2003-07-23 18:09	2003-07-23 19:13	1.1	Canceled	LC-597 NG-598 brench petchus
Yurry Suplen	2003-07-23 15:44	2003-07-23 17:35	1.9	Canceled	Unson prp iccount buying-pwr
Gtive Cetu	2003-07-23 12:56	2003-07-23 12:59	0.1	Finished	Kil infrustroctere
Gtive Cetu	2003-07-21 18:11	2003-07-22 10:44	16.6	Canceled	Jrnide ipduti
Gtive Cetu	2003-07-21 10:17	2003-07-21 10:57	0.7	Canceled	Lbcluent eethontecituun
Jevid Rerotvuch	2003-07-18 19:31	2003-07-18 21:05	1.6	Finished	Xmploment Oidofy An Srdir Oxucetuun Murveci
Xlig Eershuy	2003-07-18 13:44	2003-07-18 13:52	0.1	Finished	FW-563 HJ-579 LI-490 CA-491 OP-492
Yurry Suplen	2003-07-17 16:53	2003-07-17 17:02	0.1	Finished	Nunsin prop uccuint

xPlanner features

Simple planning model

Virtual note cards

Support for recording and tracking projects, iterations, user stories, and tasks

Smart continuation of unfinished stories (unfinished tasks copied)

Online time tracking and time sheet generation at individual/team level

Metrics generation (team velocity, individual hours, ...)

Charts for iteration velocity, distribution of task types, dispositions, and more

Ability to attach notes to stories and tasks (with attachments)

Iteration estimate accuracy view