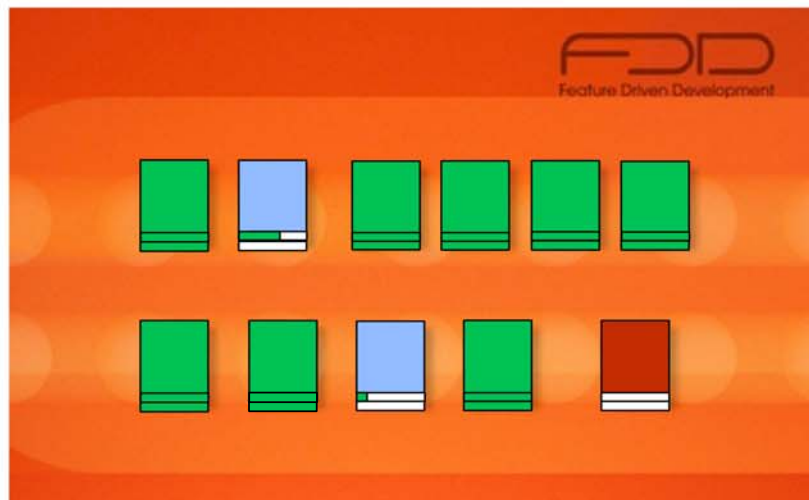# Feature Driven Development

overview

No Silver Bullet

What is the system I am building?

The system is the Project.

Managers must first learn to see, hear, and think about human systems before they can hope to control them. Software projects are human systems.

Why FDD?

▶ To enable the reliable delivery of working software in a timely manner with highly accurate and meaningful information to all key roles inside and outside a project
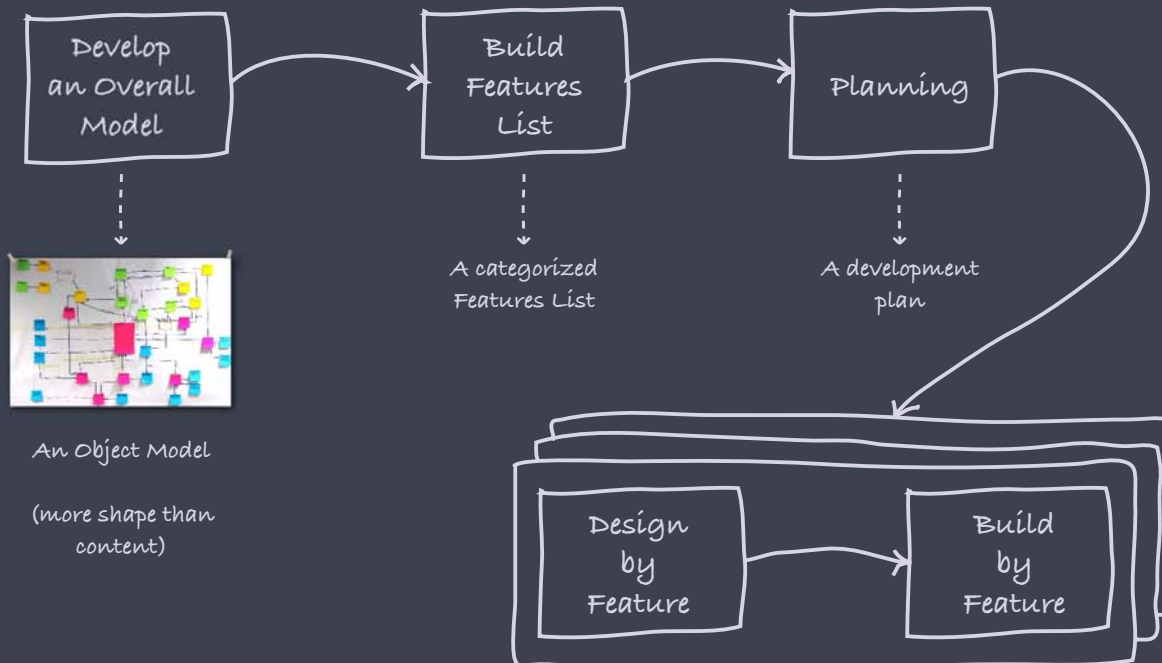
Feature Naming Template

<action> the <result> <by|for|of|to> a(n) <object>

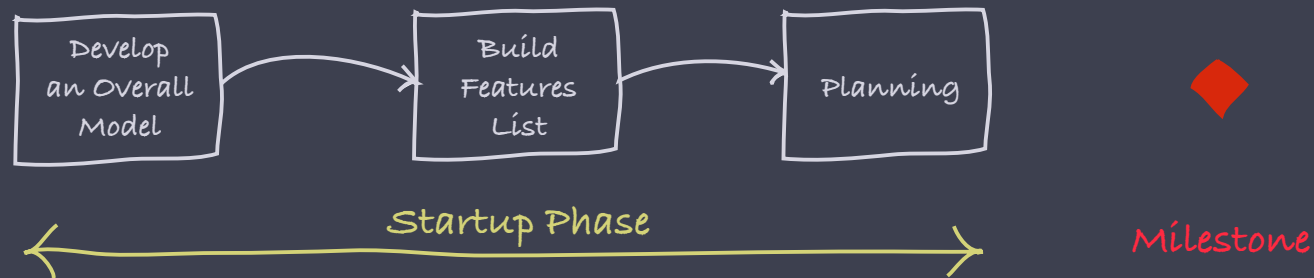Calculate *the total amount* of a Sale

Calculate *the total quantity sold by a Retail Outlet* for an Item Description

Determine *the most recent Cash Register Assignment* for a Cashier

Develop an Overall Model → Build Features List → Planning

An Object Model

(more shape than content)

A categorized Features List

A development plan

Design by Feature → Build by Feature

Initial Processes

Develop an Overall Model → Build Features List → Planning

Startup Phase

Milestone

Startup phase contains predictive metrics based on early available indicators
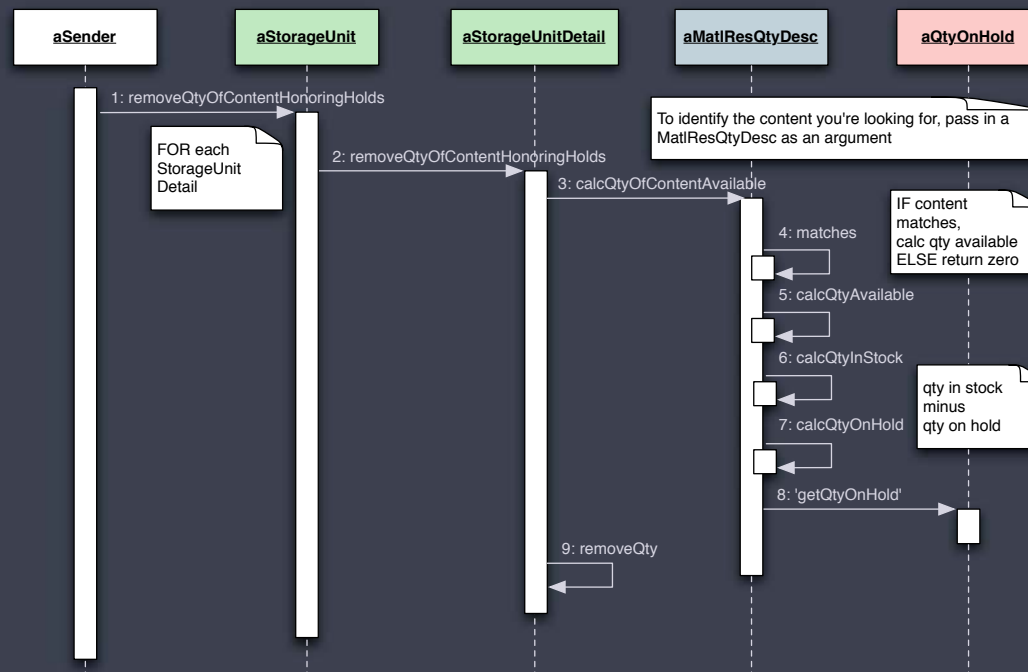
Initial project time estimate determines startup phase duration

Actual startup phase time taken calibrates project time estimate

Establish fixed-price construction after startup phase completed

Design by Feature → Build by Feature

Construction Phase
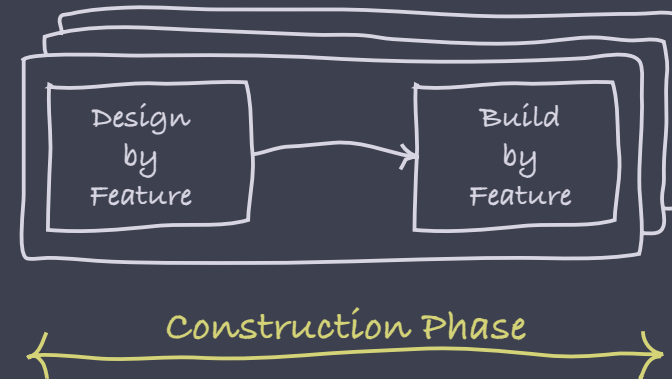
Reducing the Risk of Fixed-Price

Inventory Management: Remove a quantity of content from a storage unit, honoring holds.

Class Owners

Total *the approved limits* of an applicant

Applicant, Borrower,
LineOfCredit, Limit

Total *the unsecured facilities* for a party

Party, Borrower,
LineOfCredit,
SecurityCommitment

Applicant
Borrower

Party
Individual
Organization

Application
Approval Request

SecurityCommitment
Property

ObligorGroup
RelatedPartyGroup
PartyToPartyRelationship

LineOfCredit
FinancingPackage

LendingOfficer
MarketingOfficer
CreditApprovalOfficer

Limit
LineType
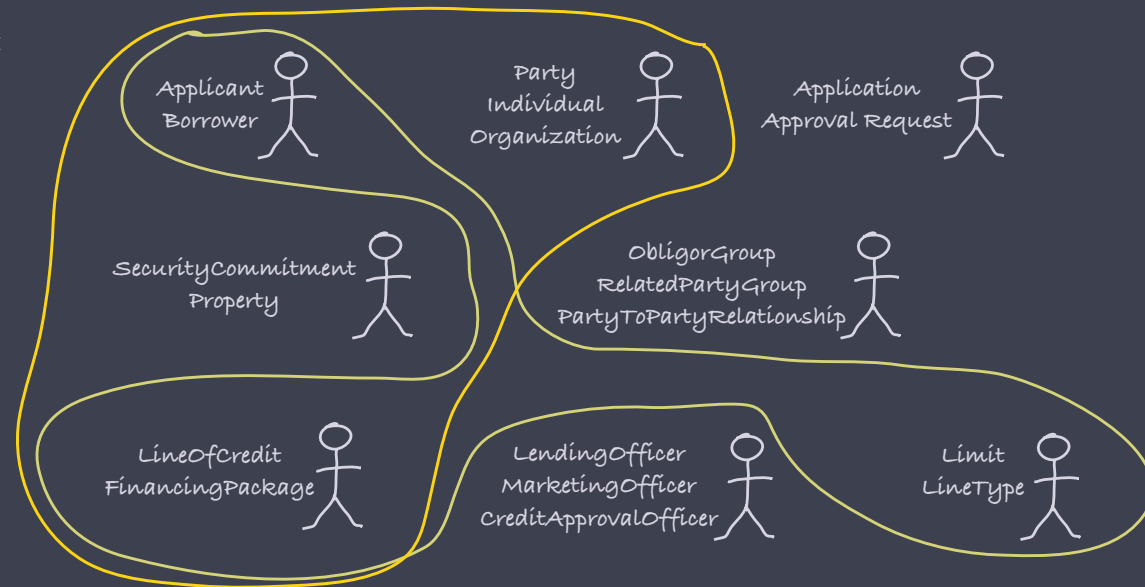
Feature Teams

A pool of class owners. Features assigned to CPs. CP determines classes involved.
Classes owned by programmers. Feature team dynamically forms.

Develop an Overall Model → Build Features List → Planning

An Object Model
(more shape than content)

A categorized Features List

A development plan

(more content than shape)

Design by Feature → Build by Feature

A design package

A client-valued function
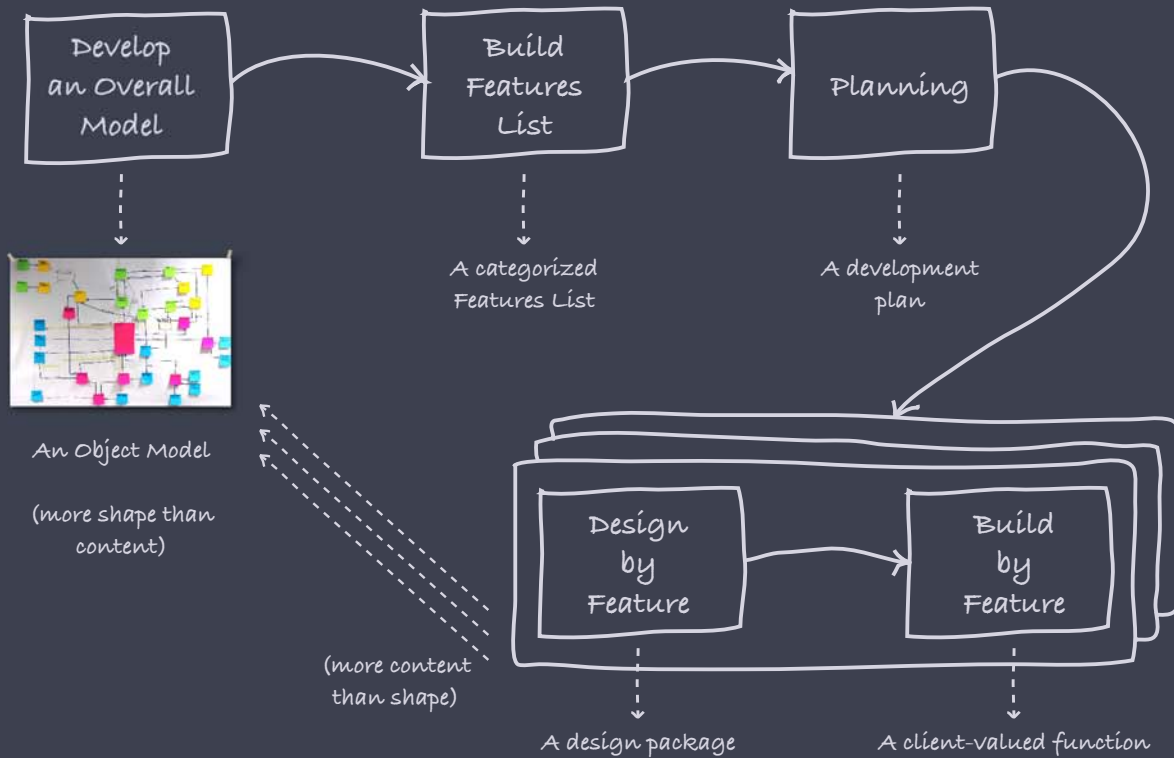
Engine-Room Processes

Milestones

▶ Milestones must be concrete, specific, measurable events defined with knife-edge sharpness

▶ A programmer will rarely lie about milestone progress, if the milestone is so sharp he can't deceive himself

▶ Getting the status is hard since subordinate managers have every reason not to share it

Fred Brooks

Domain Walkthrough	Design	Design Inspection	Code	Code Inspection	Promote to Build
1%	40%	3%	45%	10%	1%

Milestones

Domain Walkthrough		Design		Design Inspection		Code		Code Inspection		Promote to Build	
Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual

Milestones

Establish Security Committment (SC)

Business Activities	Total Features	Not Started	In Progress	Behind Schedule	Completed	Inactive	% Completed	Completion Date
Associate to Bank	2	0	0	0	2	0	100	Jul 1998
Associate to FP	6	0	0	0	6	0	100	Jul 1998
Associate to Line	3	0	0	0	3	0	100	Jul 1998
Establish Commitment	123	0	0	0	123	7	100	Jul 1998
New Features	1	0	0	0	1	0	100	Ongoing
Subject Area Total	**135**	**0**	**0**	**0**	**135**	**7**	**100**	

Implementation (MD)

Business Activities	Total Features	Not Started	In Progress	Behind Schedule	Completed	Inactive	% Completed	Completion Date
Authorisation	15	0	0	13	2	2	51	Mar 1999
Change Current Account for OD Line	12	12	0	0	0	0	0	Mar 1999
Establish Disbursement Details	35	0	0	4	31	1	91	Mar 1999
Establish Implementation Instruction	27	1	0	12	14	1	70	Mar 1999
Establish Line Implementation Details	21	0	0	4	17	0	89	Mar 1999
Establish BlockDiscounting Line Impl.	7	0	0	0	7	0	100	Mar 1999
Establish NIF RL Disbursement	8	6	0	0	2	1	25	Mar 1999
Establish Trade/Guarantee Line Impl.	9	0	0	0	9	0	100	Mar 1999
Establish an FX Line Implementation	5	0	0	0	5	0	100	Mar 1999
Establish OD Line Implementation	13	0	0	0	13	0	100	Mar 1999
New Features	3	0	0	0	3	0	100	Ongoing
Subject Area Total	**155**	**19**	**0**	**33**	**103**	**5**	**74**	

Progress Summary for Problem Domain

	Total Features	Not Started	In Progress	Behind Schedule	Completed	Inactive	% Completed
	1013	23	0	33	957	100	96

Actual Data

Progress Summary Report

Overall Status

- ☐ Not Started
- ☐ Work in Progress
- ☐ Attention (e.g. behind schedule)
- ☐ Completed

Completion Status

- ☐ Completed
- MY Target Completion Month

Comply with Credit Policy (19)

75%

Nov 05

Completion Percentage

- ☐ Progress Bar

Graphical Summary Legend

Establish Application (AR)

Abort Application (3)	Comply with MAS (5)	Create Application (14)	Register Application (14)	Search for AFL (3)	Validate AFL (7)
SP	SP	SP	SP	SP	SP
100%	100%	100%	100%	100%	100%
May 1998	Aug 1998	May 1998	May 1998	May 1998	May 1998

Establish Facility (FA)

Establish FP (5)	Establish Line (34)
TSB	TSB
100%	100%
May 1998	May 1998

Establish Security Commitment (SC)

Associate to Bank (2)	Associate to FP (6)	Associate to Line (3)	Establish Commitment (123)
PS	PS	PS	PS
100%	100%	100%	100%
Jul 1998	Jul 1998	Jul 1998	Jul 1998

Establish Approval (AA)

Approving an AFL (22)	Comply with Credit Policy (19)	Comply with MAS HLD (10)	Comply with MAS S29 (33)	Comply with MAS S34 (3)	Comply with MAS S757 (4)	Establish CLS User (13)	Generate CAS (85)	Routing for Approval (18)
PR	PS	PS	PS	PS	PS	SP	PR	PR
100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct 1998	Oct 1998	Oct 1998	Oct 1998	Oct 1998	Oct 1998	May 1998	Oct 1998	Sep 1998

Waivers (WR)

Request Waiver (6)
Oct 1998

Establish Credit Evaluation (CR)

Establish Comments and Recommend (130)	Establish Debt/Equity (5)	Establish Financial Stmts (90)	Establish Funds Flow Stmts (11)	Establish Rel with Other Bank (5)
PS	PS	PS	PS	PS
100%	100%	100%	100%	100%
Nov 1998	May 1998	Nov 1998	Aug 1998	Jul 1998

Establish Party (RM)

Establish Details (61)	Establish Financials (46)	Establish Relationships (39)
PR	PR	PR
100%	100%	100%
Jun 1998	Sep 1998	Aug 1998

Outsource

Generate Documents	Terms and Conditions (100%)	ToDoList (100%)
TSB	SP	NSC
65%	100%	100%
Feb 1999	Sep 1998	Sep 1998

Implementation (MD)

Authorisation (15)	Change Current Account for OD Line (12)	Establish Disbursement Details (35)	Establish Implementation Instruction (27)	Establish Line Implementation Details (21)	Establish Block Discounting Line Impl. (7)	Establish NIF RL Disbursement (8)	Establish Trade/Gtuarentee Line Impl. (9)	Establish FX Line Implementation (5)	Establish OD Line Implementation (13)
SP	SP	SP	SP	SP	SP	SP	SP	SP	SP
		77%	69%	89%	100%	17%	100%	100%	100%
Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999	Mar 1999

Actual Data

| Week ended	Total Features	% Completed	Features Completed	Features Not Started	Features In Progress	Features Behind Schedule	Features Inactive
27-May-98	823	26%	202	588	1	32	25
3-Jun-98	823	29%	234	574	4	11	574
10-Jun-98	823	29%	245	573	0	5	30
17-Jun-98	824	30%	250	573	0	1	30
24-Jun-98	824	30%	251	573	0	0	30
1-Jul-98	824	30%	251	573	0	0	30
8-Jul-98	824	34%	260	475	81	8	40
15-Jul-98	824	37%	276	457	72	19	47
22-Jul-98	825	40%	290	450	85	0	47
29-Jul-98	931	38%	305	534	72	20	55
5-Aug-98	932	41%	353	463	83	33	73
12-Aug-98	1085	38%	353	578	117	37	73
19-Aug-98	1085	44%	368	488	129	100	73
26-Aug-98	1085	46%	406	478	23	178	73
2-Sep-98	1087	53%	558	447	48	34	79
9-Sep-98	1107	54%	560	420	51	76	81
16-Sep-98	1107	57%	568	411	50	78	81
23-Sep-98	1107	57%	579	411	50	67	81
30-Sep-98	1119	57%	589	364	94	72	86
7-Oct-98	1122	62%	626	258	176	62	86
14-Oct-98	1122	65%	631	257	167	67	86

Actual Data

Trend Report
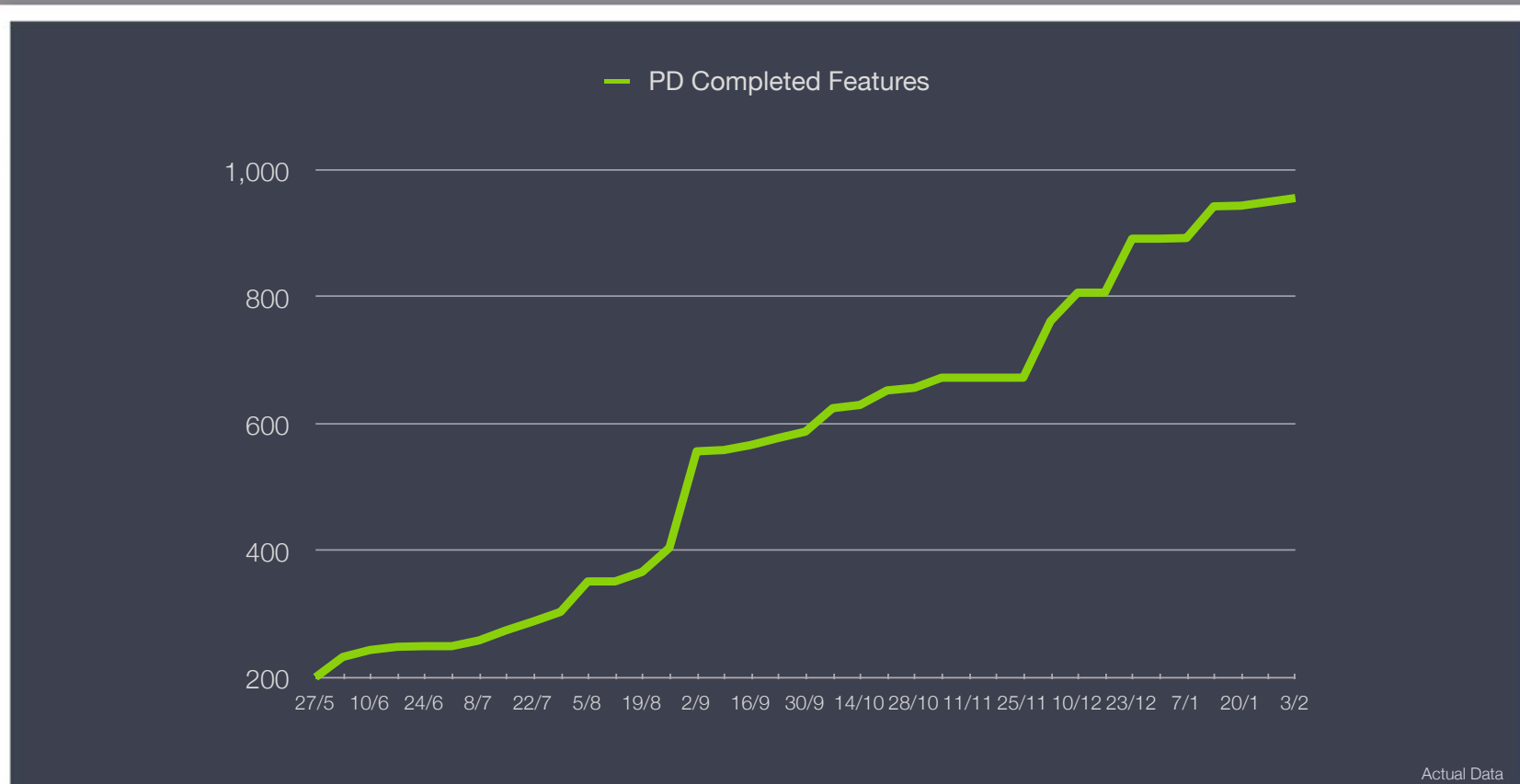
Trend Report

Comply with Diversity Constraints (13)

ID	Description	Walkthrough		Design		Design Inspection		Development		Code Inspection		Promote to Build	
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
XP077	determine *the diversity requirement for* a Pathing Step Context	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP078	determine *the diversity category of an IPPC for* Diversity Constraints	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP079	determine *other end of* an IPPC	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP080	determine *the diversity category of a pathing point for* Diversity Constraints	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP081	remove *the must-avoid IPPCs from* the list of candidate IPPCs	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP082	sort *by diversity category, weighting, and distance* the list of candidate IPPCs	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP083	generate *the notes for use of a like to avoid* Diversity Constraint	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP084	list *the diversity items of an IPPC for* Diversity Constraints	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP085	list *the diversity items of a Pathing Point for* Diversity Constraints	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP086	determine *if all must haves have been found for* Diversity Constraints	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP087	add *must have diversity items to* a Pathing Step Context	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP088	specify the *Diversity Constraints for* a Pathing Step Context	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	
XP089	determine the *Diversity Constraints for* a Pathing Step Context	05/12/2000	05/12/2000	06/12/2000	11/12/2000	07/12/2000	12/12/2000	13/12/2000		14/12/2000		15/12/2000	

Progress sum for these features in business activity "Comply with Diversity Constraints": **44%**
Expected completion date: **Mar 2001**

Actual Data

Plan View
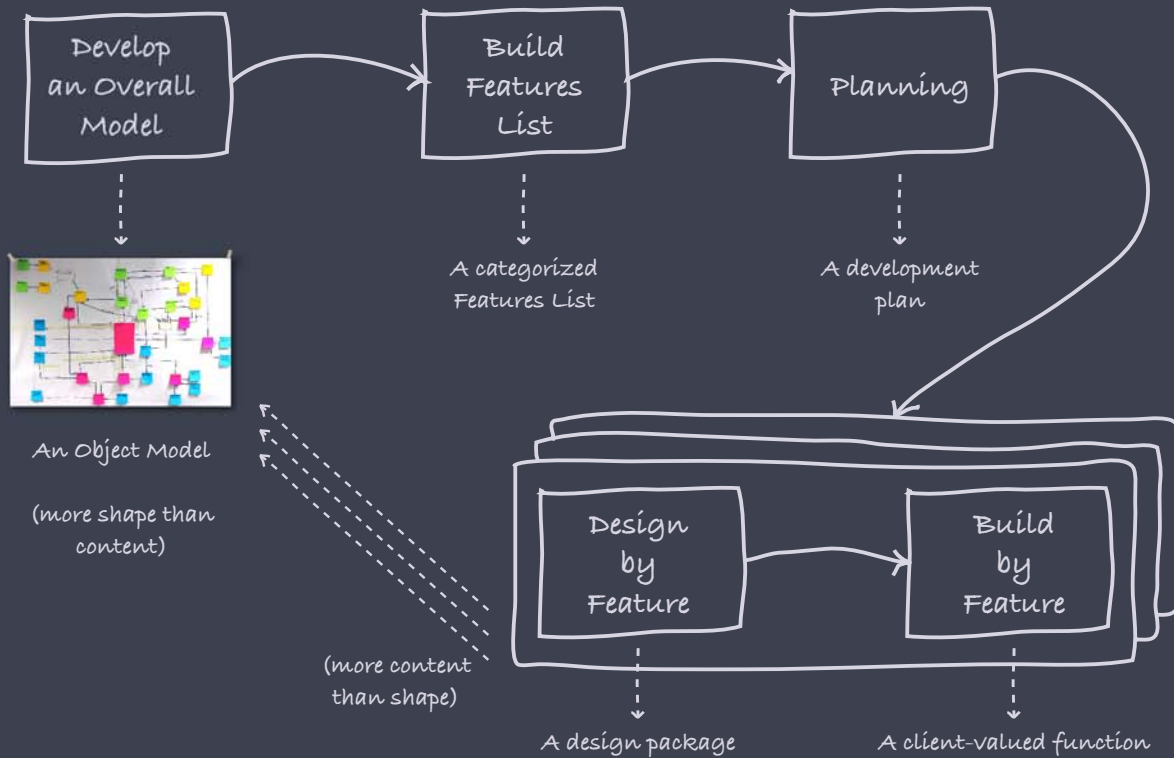
Actual Data

Plan View On The Wall

Explode Design Model (19)

ID	Description	Walkthrough		Design		Design Inspection		Development		Code Inspection		Promote to Build	
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
DP036	add an Exploded Item to an Exploded Item List	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP037	add a List of Exploded Item to an Exploded Item List	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP038	iterate through an Exploded Item List	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP039	explode the Design Items for a Design Product	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP040	determine the list of valid Design Models during an interval for a Design Product REMARKS: blocked on domain expert response REMARKS: Still blocked on ▒▒▒	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000		11/10/2000		12/10/2000	
DP041	determine if a Design Model contains any complex Design Items	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/08/2001	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP042	determine if a Design Item is complex	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP043	explode the Design Items for a simple Design Model	03/10/2000	03/10/2000	05/10/2000	06/10/2000	06/10/2000	09/10/2000	10/10/2000	10/10/2000	12/10/2000	12/10/2000	12/10/2000	12/10/2000
DP044	explode the Design Items for a simple reversible Design Model												
DP045	explode the Design Items for a complex Design Model with one complex Design Item												
DP046	list the Design Models for a complex Design Item												
DP047	explode the Design Items for a complex Design Model with two complex Design Items												
DP048	select each combination of a Pair of Design Model Lists												
DP049	generate an Exploded Item List for a combination selection												
DP050	record the Exploded Item List for a Design Model												
DP051	recall the Exploded Item List for a Design Model												
DP052	explode the Design Items for a complex Design Model with multiple complex Design Items												
DP053	iterate through each combination of multiple Design Model Lists												
DP054	select each combination in user specified order of multiple Design Model Lists												

Progress sum for these features in business activity "Explode Design Model": **39%**
Expected completion date: **Feb 2001**

Actual Data

Plan View - Example For Red

Develop an Overall Model → Build Features List → Planning

A categorized Features List

A development plan

An Object Model

(more shape than content)

(more content than shape)

Design by Feature → Build by Feature

A design package

A client-valued function

Engine-Room Processes

Resources

▶ www.featuredrivendevelopment.com

discussions, articles, FDDI (FDD interchange) specification and XML schema, photos and artwork, ...