

# *Improving Solution's Quality and **ROI** through Requirements Validation*

David Cohen, Gary Larson and Bill Ware

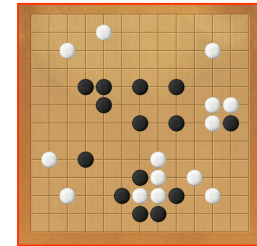
**sente** 先手  
Corporation 株式会社

[www.sente.com](http://www.sente.com)

david@sente.com  
gary@sente.com  
bill@sente.com

Beijing, October 19, 2001

**sente** means competitive initiative  
in the game “Go”



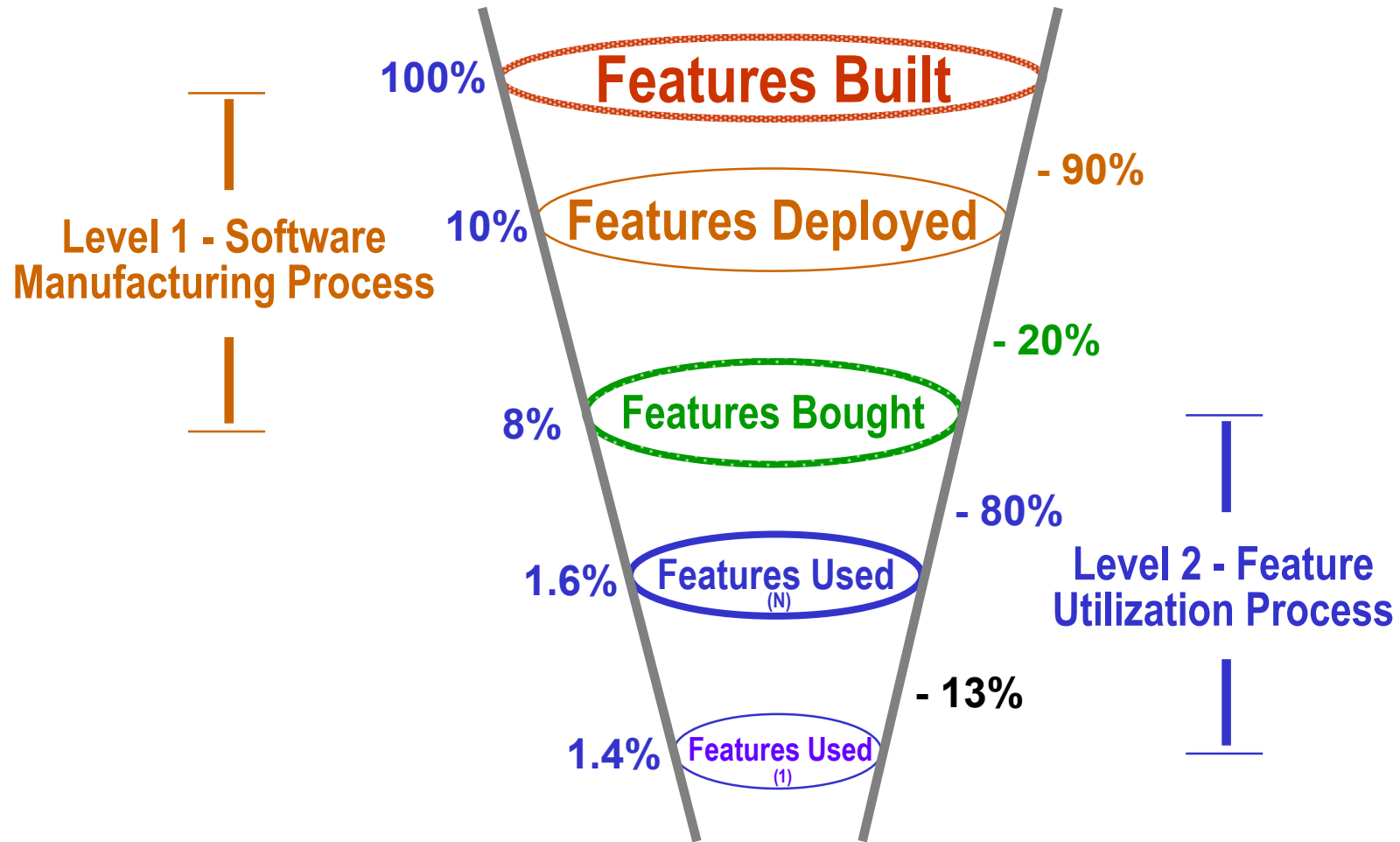
**Our focus is on productivity  
enhancements through Faster:**

- delivery of customer solutions
- delivery of information to users
- implementation of organizational changes

- 1. Software Investment Insight**
  - **Software Pollution™ Sources**
  - Role of Requirements Validation
- 2. *eccm Toolkit* Capabilities for Requirements Validation**
  - **Architecture**
  - **Configuration Management**
    - Web Based User Interface
    - Business Rules (BRs)
    - Operational Processes
  - **Center Productivity Management**
- 3. Summary**
  - **Guidelines for OSS Investment**

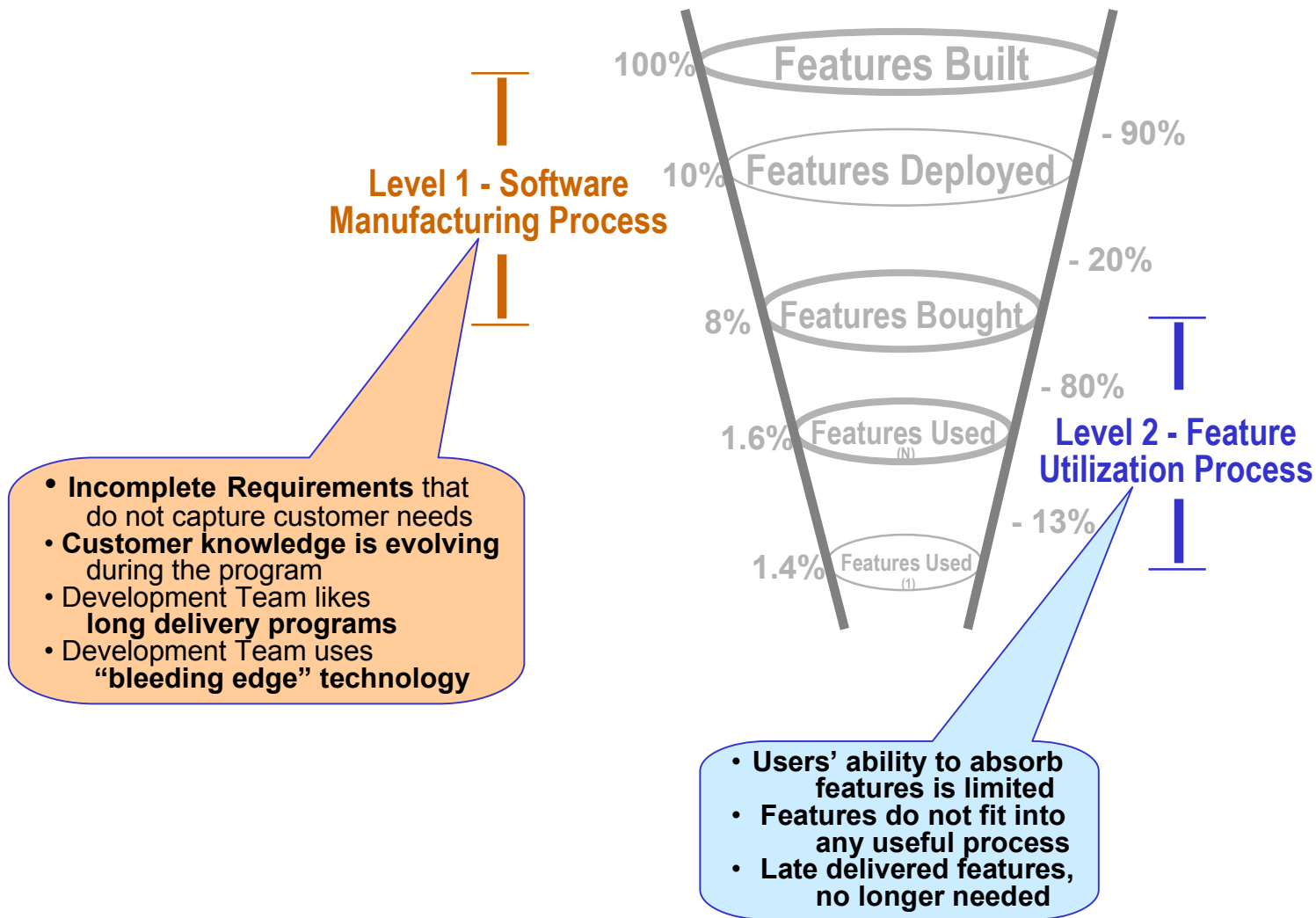
# Software Pollution™ (1/3)

## Feature Manufacturing and Utilization Analysis



# Software Pollution™ (2/3)

## Feature Manufacturing and Utilization Analysis



# Software Pollution™ (3/3)

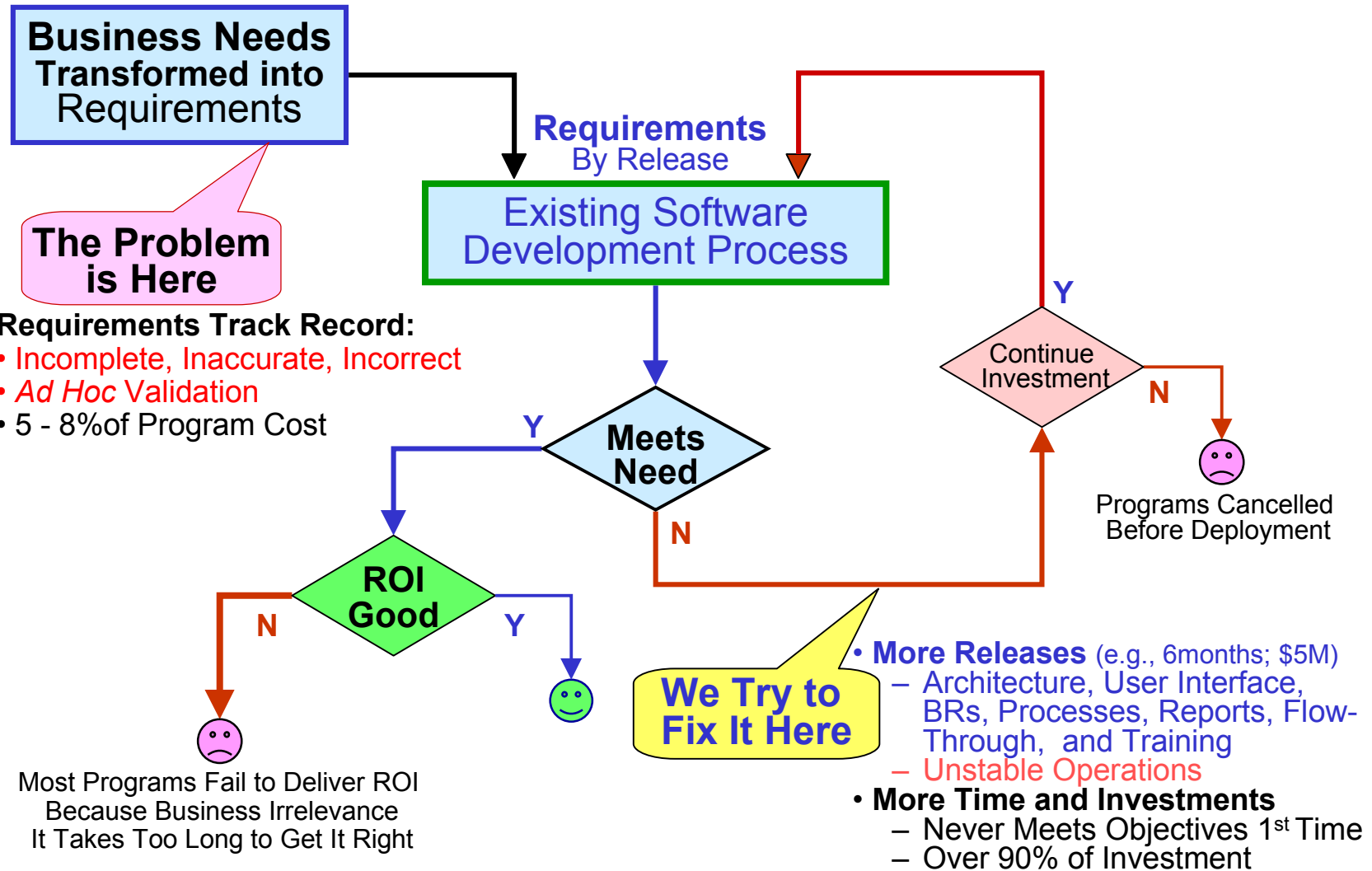
## Pollution Sources and Combat Strategies



1. **System engineering cannot capture and effectively transfer the customer need to the development organization**
  - The human barrier for information transfer
  - Requirements capture less than 20 percent of the capabilities that end up in the product
2. **Lack of sufficient input**
  - Requirements need to be validated before they are implemented; customer knowledge is evolving during the specification process
  - Need a faster - cost effective process to facilitate the learning
3. **The development organization attempts to implement a system capable of supporting a large customer base in a long, single step which is irrelevant to the business**
  - The market/customer needs evolved well beyond the requirements
4. **The development organization attempts utilization of “bleeding-edge” technology**
  - Unknowingly, the project turns into a job training program
  - The primary objective is to deliver a solution and NOT to champion technology

# Software Investment (1/4)

The Requirement Driven Paradigm Fails to Deliver ROI



# The DEAL That Worked Well for Over Half a Century

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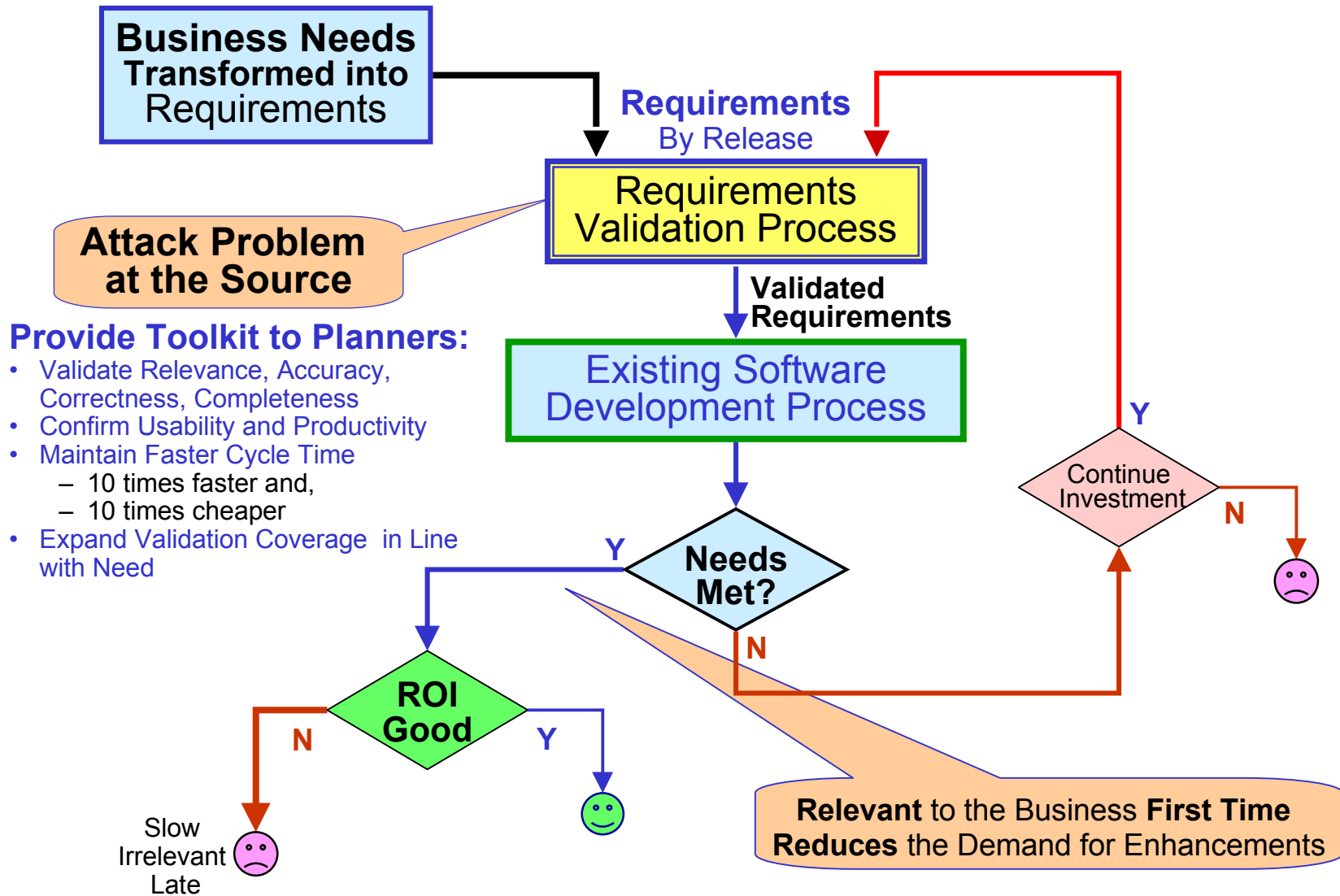


- **The Business Invests in Software Solutions Based on [Incomplete and Inaccurate] Requirements**
  - the business unit produces the requirements; therefore, it is its own fault when the solution is unsatisfactory
  - the development team sticks to the “feature coding assignment”
- **The Business Is Required to Continue Funding Enhancements to the Unsatisfactory Solution**
  - the solution is not able to keep up with the evolving business needs (new or newly learned)
  - the users are continuously living with incomplete (irrelevant) solutions; manual workarounds are the norm
- **The Development Team Is Rewarded With Ongoing Funding While It Delivers Barely Relevant Solutions**
  - not accountable for ROI and shows no interest expanding scope beyond “feature development”
  - System Integrators (SIs) are doing barely better (deliver features approved by the business unit)



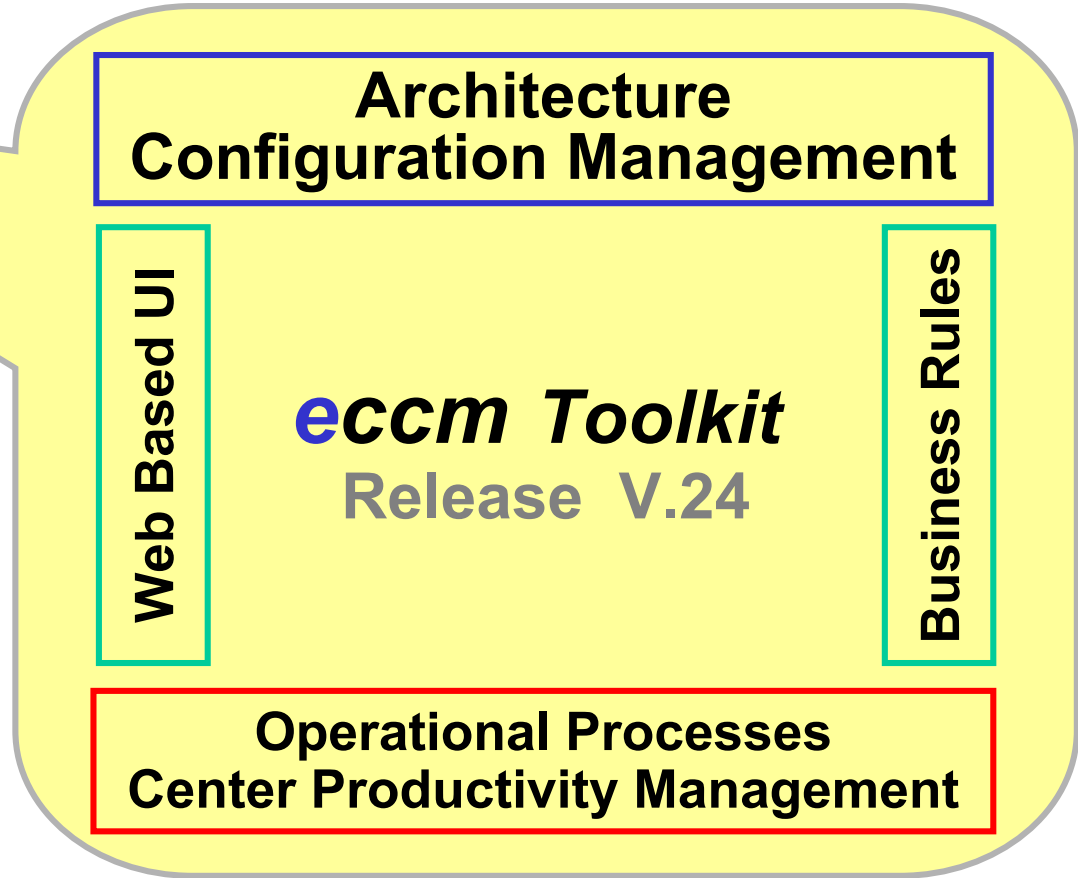
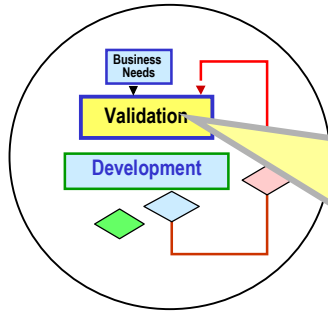
# Software Investment (2/4)

Improve Requirements Quality through Validation



# Software Investment (3/4)

Supports Validation Capabilities in Six Key Areas



The Electronic Customer Contact Management (*eccm*) Toolkit  
Delivers Cost Effectively Validated Requirements

# Wireless Center

## The Business Need

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- **Responsible for provisioning data circuits for the wireless industry**
  - connectivity between switches, antennas, etc.
- **Over 500 customers**
  - 50 Reps, 40 System Designers
- **Over 80,000 orders per year**
  - orders are received in the center through faxes and emails
  - it takes ~1.5 hours to process an order per Rep
  - including clarifies, escalations
- **Staffing growing ~30% per year in line with order growth**
  - recruiting major challenge
  - it takes 6 months to get a new Rep fully trained
  - improve Rep productivity to slow down staff growth

# User Interface Capabilities



» Home

» Logoff

## Welcome

**User:** System Administrator

**Account:** All

**User Type:**

**Session ID:** 94

## Data Entry

- [1. Orders](#)
- [2. Projects](#)

## Customer Contact Management

- [1. Clarify](#)
- [2. Escalation](#)
- Trouble Reporting

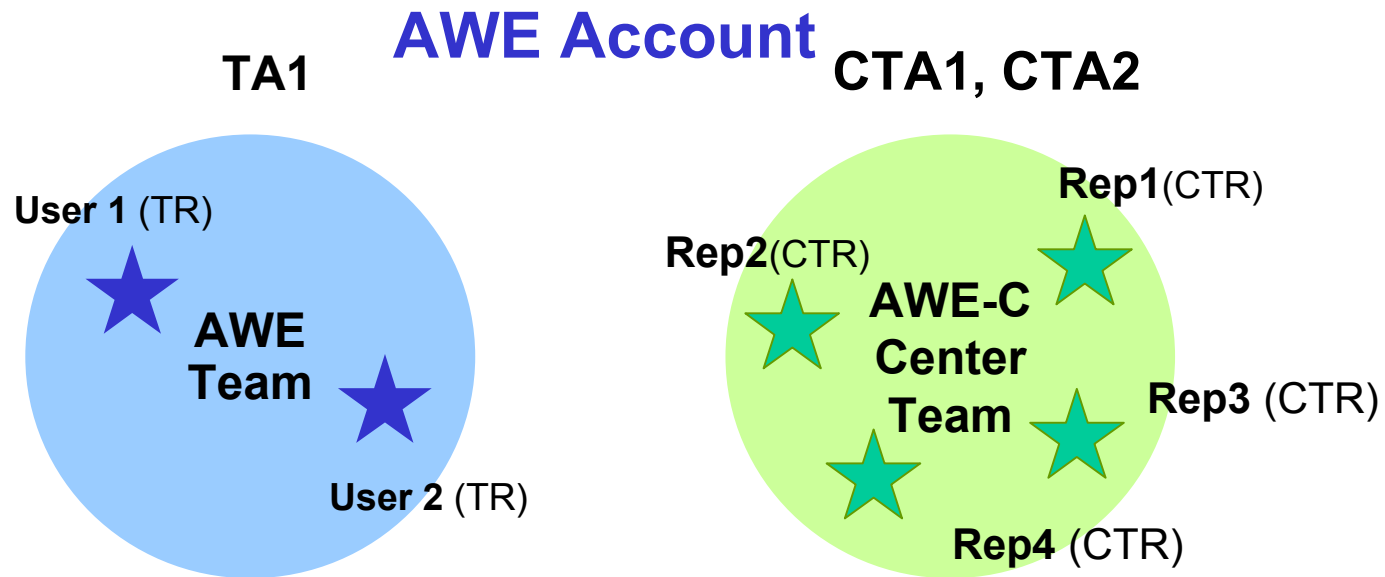
## Administration

- [1. Administer Passwords](#)
- [2. Administer Users](#)
- [3. Administer Active User Sessions](#)
- [4. Administer Backup](#)
- [5. Administer Accounts](#)
- [6. Administer Organizations](#)
- [7. Administer Fields](#)
- [8. Administer Forms](#)
- [9. Administer Parameters](#)

## Management Reports

- [1. Status of Projects](#)
- [2. Order Tracking](#)
- [3. Escalation Tracking](#)
- [4. Clarify Tracking](#)
- [5. User Session Tracking](#)
- [6. Field Business Rules](#)
- [7. State Transition Rules](#)

# Account Configuration



**SA** - SA1, SA2, SA3

**TA** - team administrator

**TR** - team Rep

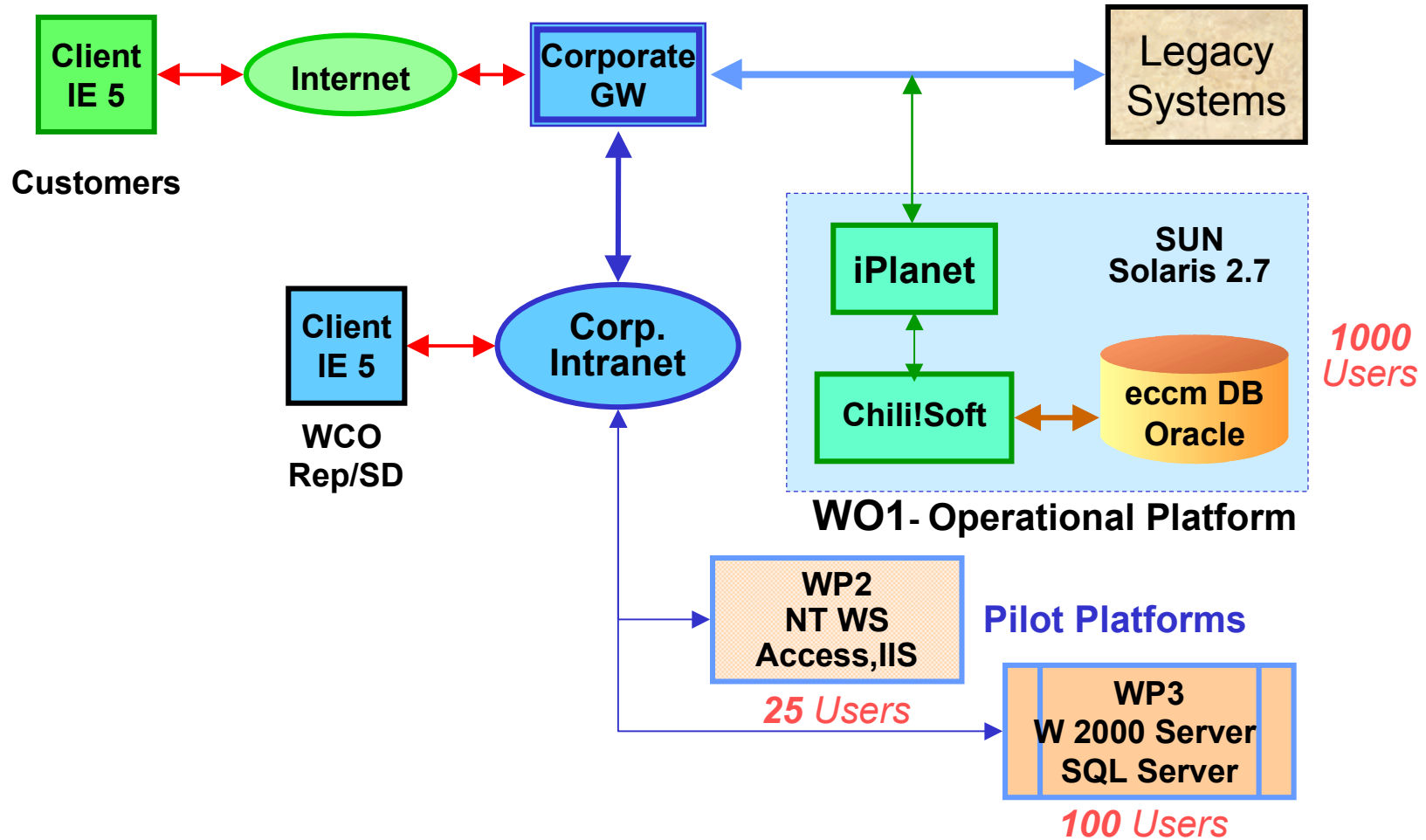
**CTA** - center team administrator

**CTR** - center team Rep

**SA** - system administrator

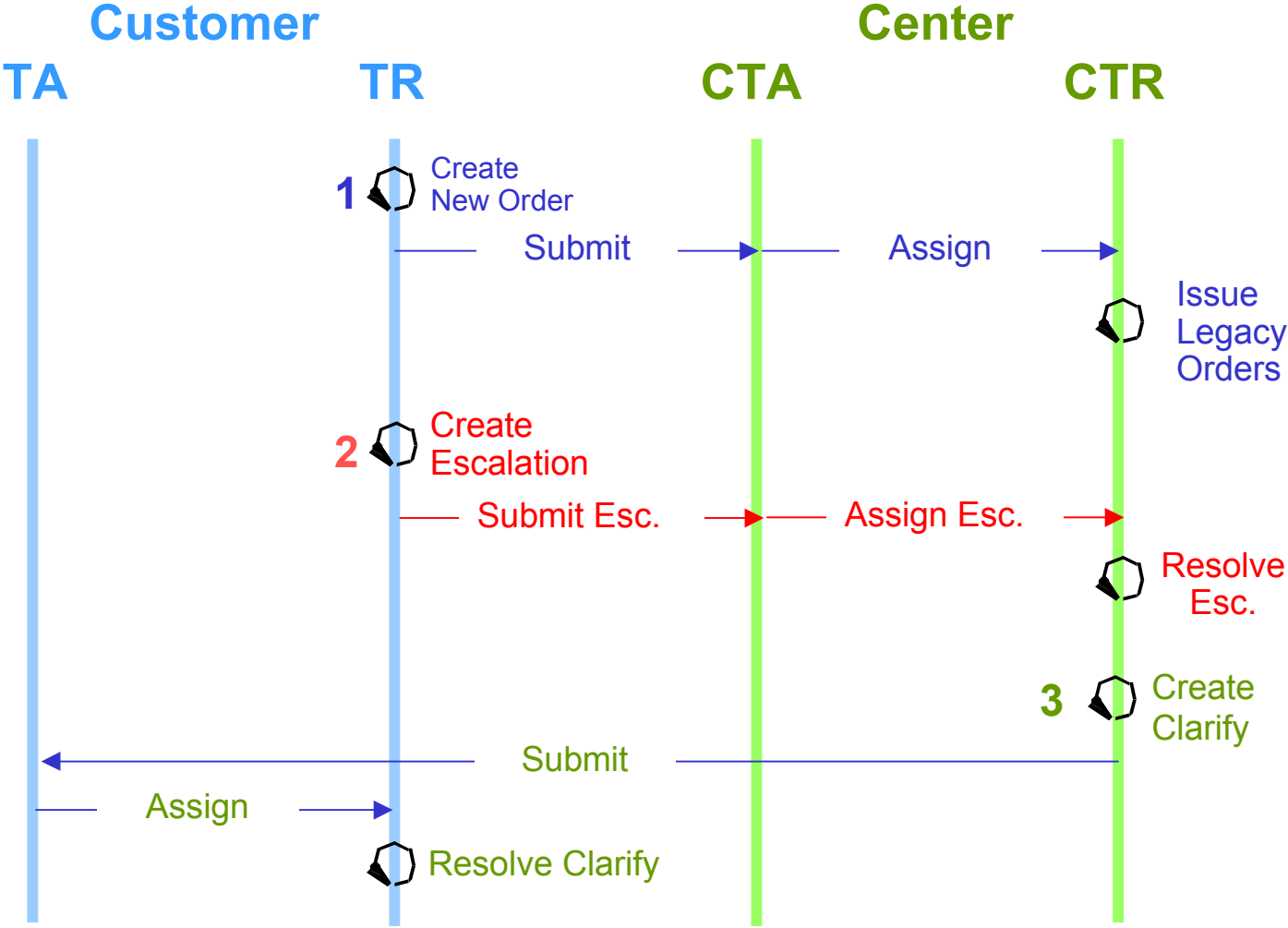
# Deployment Architecture

## Managing Change Management



# Operational Process Validation

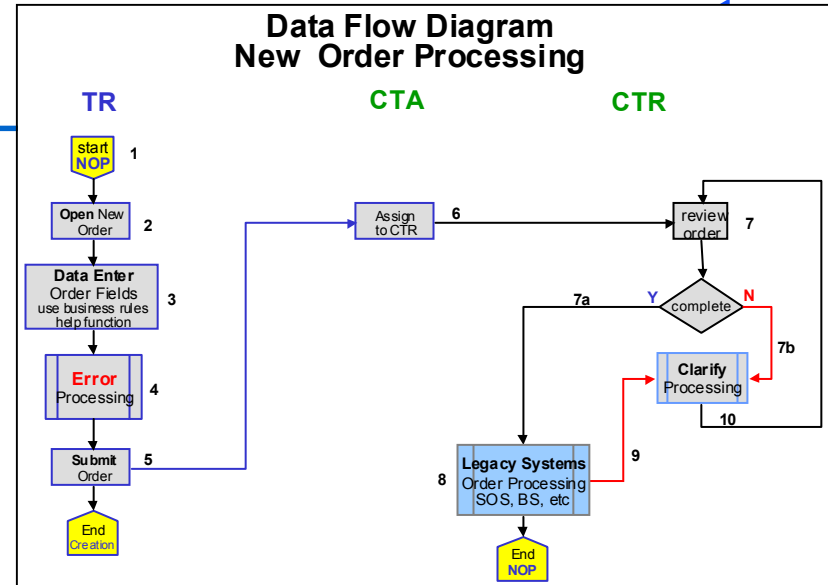
## New Order, Escalation and Clarify Processing



# Process Definitions

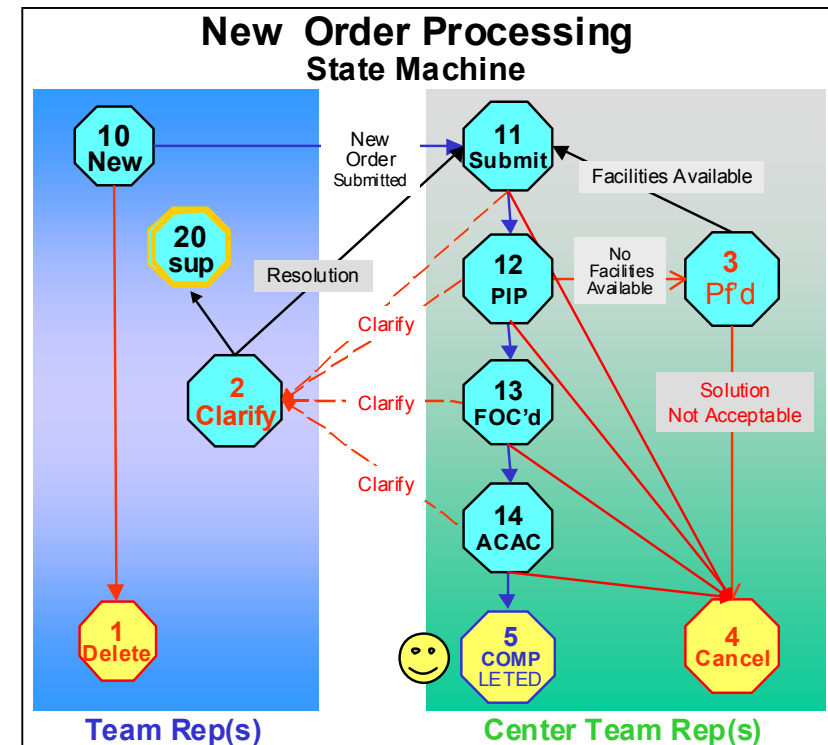
**Description**  
**New Order Processing**

- Initial Conditions: The Customer Wants to Purchase a Link (e.g., Prem to Prem) to Meet their Wireless Network Needs.  
A TR is assigned by the TA to Create a New Order in Line with the business needs.
- The TR Logs-in to the **eccm** application:
  - selects **Prem to Prem MEGALINK/Light/Plus**
  - selects **Create New Order**
- The TR Data Enters the details of the new order - one field at a time
  - periodically the TR saves the content of the order
  - periodically the TR may verify completeness of the order
    - error messages will be presented in a separate window
    - errors can be fixed incrementally or once the data entry was completed
  - if necessary the session can be terminated and the data entry operation can be renewed at a later time
- The TR makes all the error corrections
  - clicking on each error message will position the cursor at the right field for correction
  - required and conditionally required business rules are enforced
  - data integrity business rules (telephone number, date, email) are enforced
  - any attempt to submit an incomplete order results in automatic verification with all defects presented in the error window
- The TR Submits the verified (completed) order to the CTA
  - the order status is changed from New to Submitted
  - the TR no longer can make changes to the order unless a Sup Order is created
- The CTA Assigns the New Order to appropriate CTR
  - If the order is not complete issues a Clarify to the TR
- Initiate Legacy System Processing



**Screen Layouts**  
**New Order Processing (1/23)**

The screenshot shows a web application interface with a navigation bar (Home, Logoff), a user welcome message (Jason Nelson), and a 'Data Entry' section. The main area displays an 'Order Form: Prem to Prem MEGALINK/Light/Plus' with a table of search results and a detailed order form on the right. Red arrows point to specific elements like the 'Data Entry' section, the 'Create New' button, and the order form details.





# New Order Processing

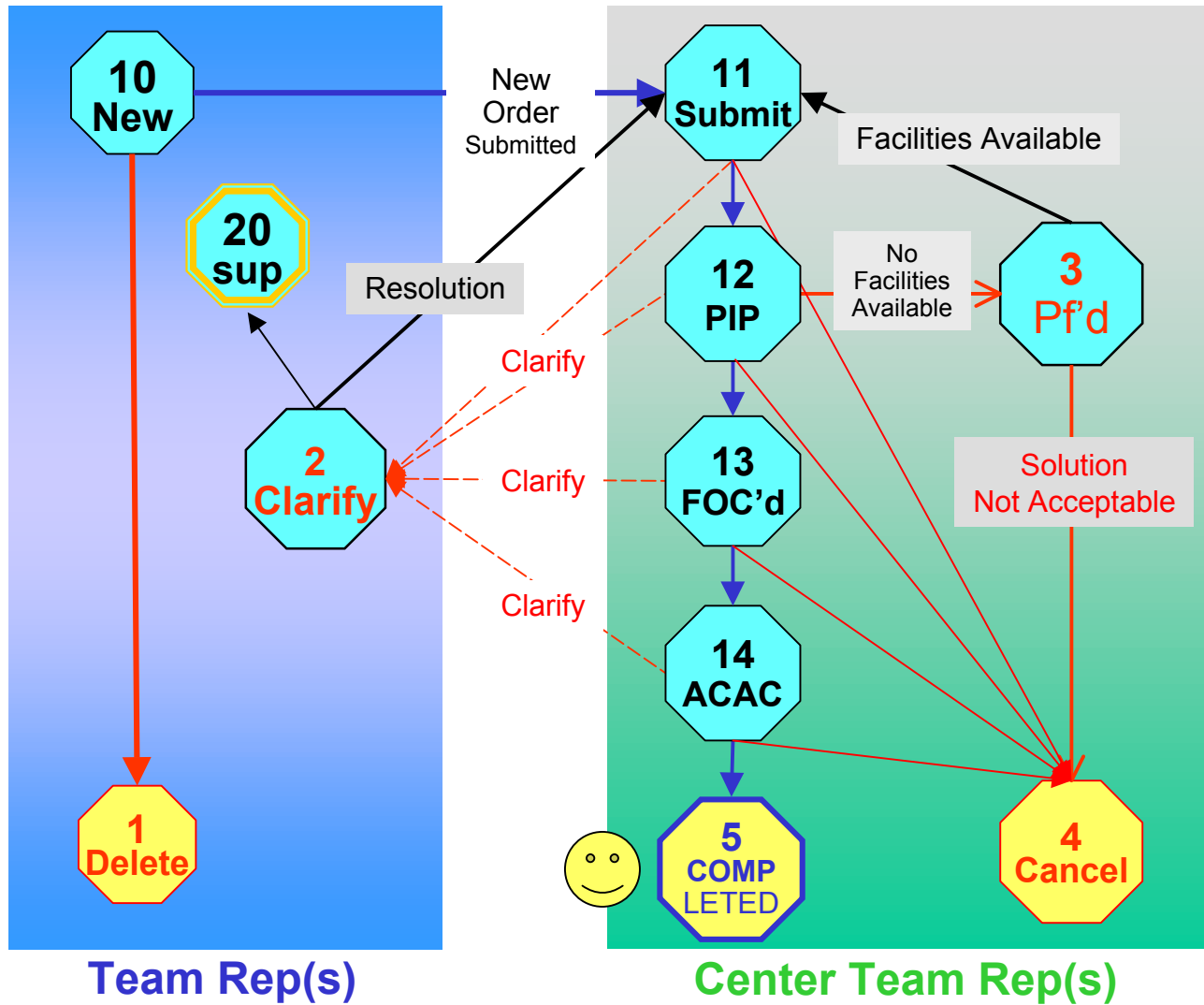
## Description

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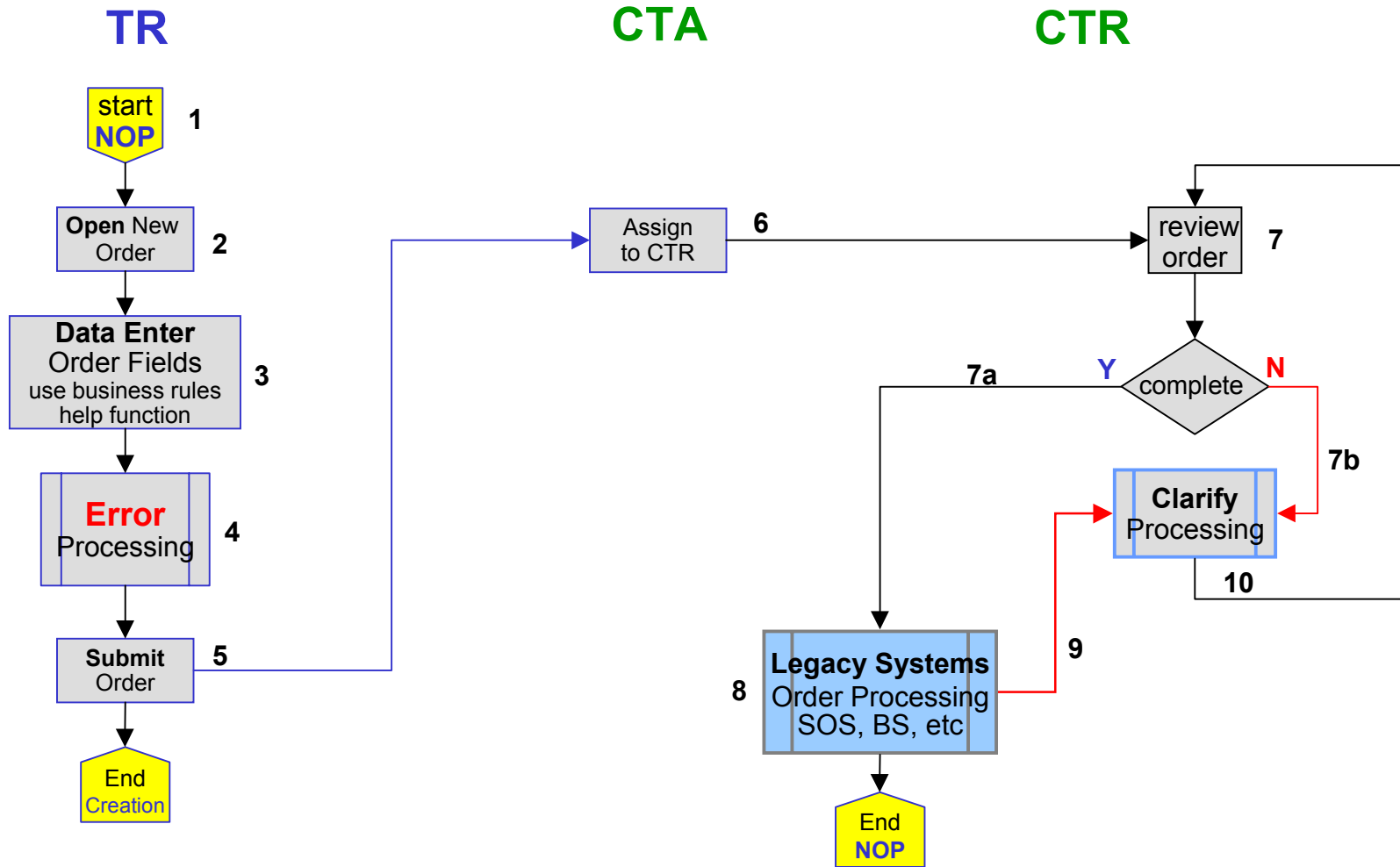


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2. The TR Logs-in to the **eccm** application:
  - selects Prem to Prem MEGALINK/Light/Plus
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  - periodically the TR saves the content of the order
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  - required and conditionally required business rules are enforced
  - data integrity business rules (telephone number, date, email) are enforced
  - any attempt to submit an incomplete order results in automatic verification with all defects presented in the error window
5. The TR Submits the verified (completed) order to the CTA
  - the order status is changed from New to Submitted
  - the TR no longer can make changes to the order unless a Sup Order is created
6. The CTA Assigns the New Order to appropriate CTR
7. The CTR Reviews Order for completeness
  - If the order is not complete issues a Clarify to the TR
8. Initiate Legacy System Processing

# New Order Processing State Machine



# New Order Processing Data Flow Diagram



# New Order Processing (1/23)

## Screen Layouts



» Home      » Logoff

**Welcome**  
**Jason Nelson**

**Team:**  
AWE  
Customer  
AT&T Win

Data Entry

1. Prem to Prem MEGALINK/Light/Plus
2. Mini MEGALINK/Channelized/DS1/Light/Plus

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### Order Form: Prem to Prem MEGALINK/Light/Plus

➔
Create New
Create Disconnect

**2 Order forms meet t**

ID	Active	Current Status	Status	Date
11	Y	Created		10/17/2
10	Y	Submitted		10/17/2

**Prem to Prem MEGALINK/Light/Plus Contents**

[Overview \[0 - 8\]](#)  
[Section A: Administrative \[9 -17\]](#)  
[Section B: Circuit Locations \[18-46\]](#)  
[Location A \(Originating Customer Prem\) \[19-32\]](#)  
[Location B \(Terminating Customer Prem\) \[33-46\]](#)  
[Section C: Options for Prem to Prem Megalink \[47\]](#)  
[Section D: Billing/Contract Information \[48-61\]](#)  
[Section E: Remarks/Driving Directions \[62-64\]](#)  
[End](#)

**Order ID:**  
**Version:**  
**Order Status:**  
**Days in Status:**  
**Prior Order Status:**

**Assigned To:**  
AWE:

Create/edit a Prem to Prem MEGALINK/Light/Plus

---

**Overview [0 - 8]**

0a. Rate Quote Requested  O

0b. Service  Check Yes or No. Absence of any indication will mean No.

0c. Originator  O

0d. Pre-assigned Order Number  O

0e. FOC Order Number  O

1. State  R

2. Date  R

3. PON  O

4. Related PON  O

5. From  R

6a. TN  R

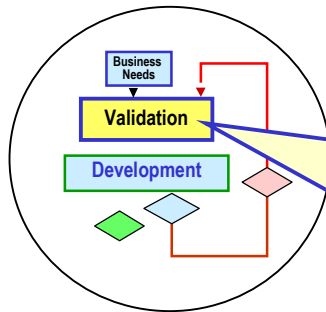
6b. Fax No.  C

6c. E-mail  C

Save Exit Verify Submit

# Software Investment

## *eccm* Validation Capabilities (Six Key Areas)



***eccm***  
Release V. 24

**The *eccm* Toolkit  
Delivers Cost Effectively  
Validated Requirements**

### • **Architecture**

- cost effective implementation of learning cycles through daily/weekly SW releases
- scalability (25, 100, 1000 users)
- new-release related, center disruption-management (operational and trial versions concurrently in deployment)
- integrated order management with clarify and escalation processing
- incremental and targeted flow-thru automation

### • **Configuration Management**

- over 200 configurable options *without coding* (robust solution) (new product, fields, BRs, navigation, process definition, etc.)
- customer and center collaborative order management

### • **Easy Web Based UI and Training**

- custom display and search functions
- business-rules knowledge-based help function
- supports all order transactions through a uniform user interface (intelligent edit filters)
- context sensitive action buttons
- integrated training and operational databases
- management of Rep proficiency during training process

### • **Business Rules (BRs)**

- the development of a consistent baseline
- the integration with the create/edit functions
- the uniform application of BRs to all user activities (e.g., clarifies, escalations)

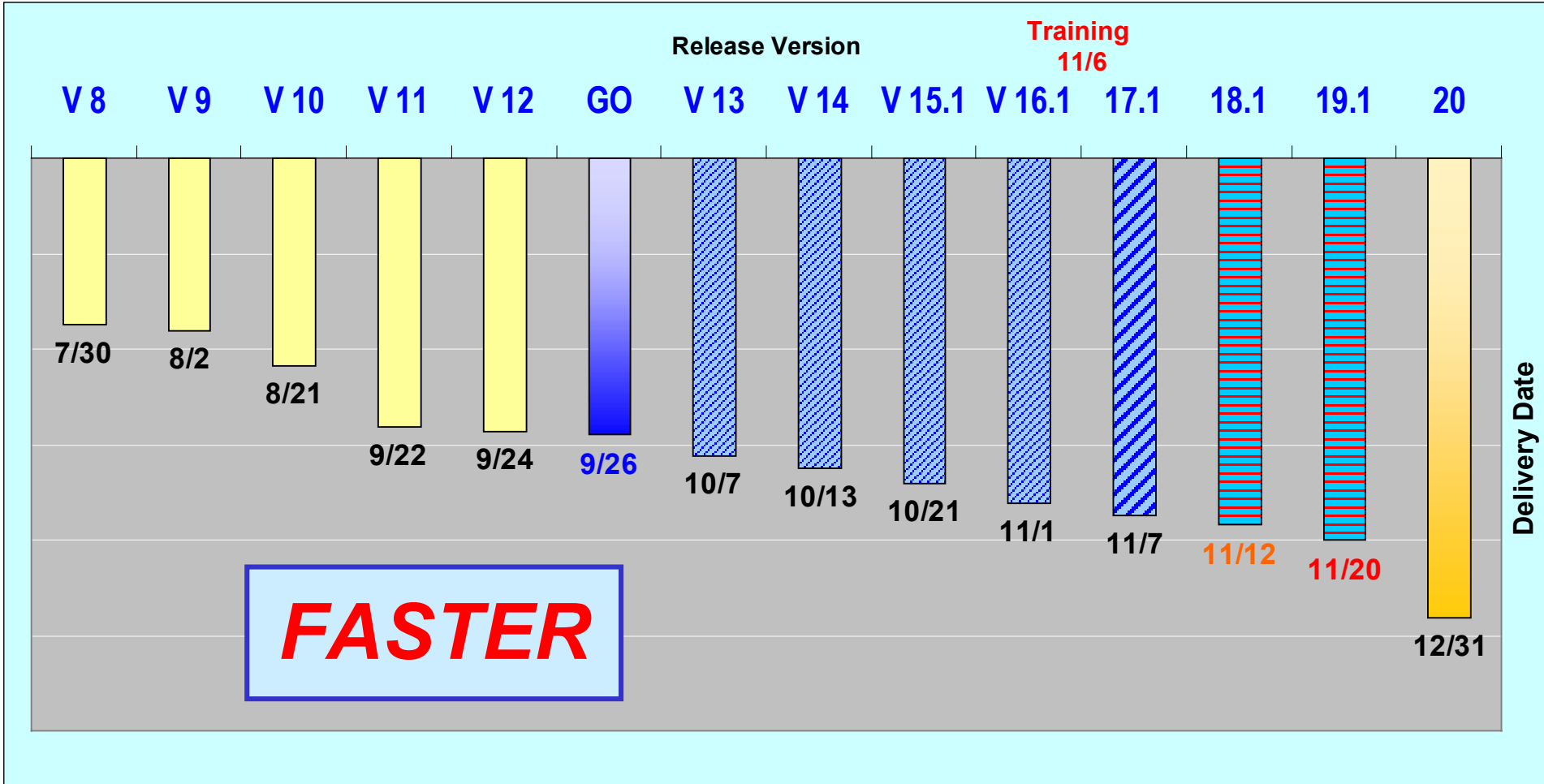
### • **Operational Processes**

- a rigorous 4-way definition and baseline
- a table driven implementation
- increased accountability through process transparency

### • **Center Productivity Management**

- Rep, team, and account level productivity, quality and throughput reports (real time, weekly, monthly)
- session and order life cycle analysis
- historical and cause analysis (reduce center load)
- intelligent work list management

# *eccm* Software Releases



# Summary CM Capabilities

Fields, Forms and System Parameters



## Administer Users and Teams

1. Administer Passwords
2. Administer Users
3. Administer Active User Sessions
4. Administer Backup
5. Administer Teams
6. Administer Organizations
7. Administer Fields ←
8. Administer Forms ←
9. Administer Parameters ←

*How the Steak is Cooked*

**FASTER**

# Data Entry User Interface



Prem to Prem MEGALINK/Light/Plus  
(New/Supp) Contents

[Overview \[0 - 8\]](#)  
[Section A: Administrative \[10 -17\]](#)  
[Section B: Circuit Locations \[18-46\]](#)  
[Location A \(Originating Customer Prem\) \[19-32\]](#)  
[Location B \(Terminating Customer Prem\) \[33-46\]](#)  
[Section C: Options for Prem to Prem Megalink \[47\]](#)  
[Section D: Billing/Contract Information \[48-61\]](#)  
[Section E: Remarks/Driving Directions \[62-64\]](#)

**Project ID:**  
**Project Name:**  
**Order ID:** 10  
**Version:** 1  
**Order Status:** Created  
**Days in Status:** 111  
**Prior Order Status:** New

**Assigned To:**  
AWE: Jason Nelson

**Created By:**  
AWE: Jason Nelson

**Order History:**  
**Modified** 2/1/01 12:38:47 PM, JN  
**Modified** 11/4/00 5:38:07 PM, JN  
**Modified** 10/28/00 6:30:06 PM, DJ  
**Modified** 10/13/00 2:32:55 PM, JN  
**Modified** 10/13/00 2:28:35 PM, JN  
**Created** 10/13/00 2:23:35 PM, JN

**Required Field Error Summary**  
No Required or Conditionally Required errors.

Create/edit: Prem to Prem MEGALINK/Light/Plus (New/Supp)

**Overview [0 - 8] [545]**

0a. Rate Quote Requested [238] Yes

0b. Service Type [239] Megalink  R

0c. Originator [240] Sales  O

0d. Pre-assigned Order Number [241]

0e. FOC Order Number [242]

1. State [243] Georgia  R

2. [244]

3. PON [245] 4567893  O

4. Related PON [246] 4567894  O

5. From [247] Bill Ware  R

6a. TN [248] 972 267-7555  R

6b. Fax No. [249] 972 267-7444  C

6c. E-mail [250]  C

7a. FOC Case Name [251] David Cohen  O

Fax TN or email must be provided for preparer of request, if this is not populated, then 6c must be or form will not be released.

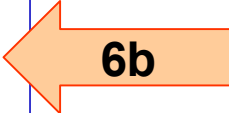
Save Exit Verify Submit Copy Delete



# Business Rules Knowledge Base Integrated with the Browser



6a. TN	<input type="text"/>	R
6b. Fax No.	<input type="text"/>	C
6c. E	Fax TN or email must be provided for preparer of request, if this is not populated, then 6c must be or form will not be released.	
7a. FOC Cust Name	<input type="text"/>	
7b. FOC TN	<input type="text"/>	O



13. Order Firm or Inquiry	<input type="text" value="Firm Order"/>	R
14a. Order Type	<input type="text"/>	C
14b. Explain	If Firm order=yes, then this is a required field	



# List of Orders - User Interface



[» Home](#)      [» Logoff](#)

### Search

Status

Active Status

Days in Status - GT (>)

- LE (<=)

Project ID

Team

Assigned To

Service Type

Order Type

PON

Inactive Status Displayed For <= 30 Days

### Mini MEGALINK (New/Supp) Form

[Create New](#)      [Add/Remove Project](#)

6 Order forms meet the search criteria:

ID	V	A	C	S	D	P	P	T	A	#	#	#	#	S	O	P	
	e	c	t	t	a	r	r	e	s	E	E	C	C	S	S	S	
	r	s	s	s	t	s	s	t	u	S	S	L	L	-	-	-	
	s	i	s	s	a	t	t	a	o	S	R	S	R				
	n	n	s	s	e									Service	Order	PON	
	e													Type	Type		
	#																
<a href="#">6</a>	1	Y	PIP	9/22/00 8:26:51 PM	239.3	SubmitAsg			AW-C	Morgan, Ella	0	0	0	0	Megalink	New Service	111122
<a href="#">9</a>	1	Y	SubmitNew	9/22/00 8:22:25 PM	239.3	Create			AW-C	***, ***	0	0	0	0	Plus	New Service	111133
<a href="#">4</a>	1	Y	FOC	9/22/00 8:18:41 PM	239.3	PIP			AW-C	Logan, Kathy	0	0	0	0	Megalink	New Service	111114
<a href="#">7</a>	1	Y	Create	9/22/00 8:14:02 PM	239.3	New			AW	Lord, Kevin	0	0	0	0	Megalink		
<a href="#">5</a>	1	Y	SubmitAsg	9/22/00 8:07:03 PM	239.3	SubmitNew			AW-C	Easley, Alice	0	0	0	0	Light	New Service	111120
<a href="#">3</a>	1	Y	Create	9/22/00 8:05:28 PM	239.3	New			AW	Nelson, Jason	0	0	0	0	Light	New Service	111113

# Business Rules Validation



**Prem to Prem MEGALINK/Light/Plus Contents**

[Overview \[0 - 8\]](#)  
[Section A: Administrative \[9 -17\]](#)  
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[Location B \(Terminating Customer Prem\) \[33-46\]](#)  
[Section C: Options for Prem to Prem Megalink \[47\]](#)  
[Section D: Billing/Contract Information \[48-61\]](#)

**Order ID:** 13  
**Version:** 1  
**Order Status:** Created  
**Days in Status:** 0  
**Prior Order Status:** New

**Assigned To:**  
AWE: Jason Nelson

**Created By:**  
AWE: Jason Nelson

**Order History:**  
**Modified** 10/21/00 1:28:04 PM, JN  
**Modified** 10/21/00 12:29:52 PM, JN  
**Modified** 10/21/00 12:29:24 PM, JN  
**Created** 10/21/00 12:24:24 PM, JN

**Required Field Error Summary**

Total Errors: 16 **16 errors**  
The following fields are Required (R) or Conditionally Required (C):

[0b. Service Type \(R\)](#) ← 1  
[1. State \(R\)](#) ← 2  
[9. CMRS Provider Name \(R\)](#)

Create/edit a Prem to Prem MEGALINK/Light/Plus

---

**Overview [0 - 8]**

0a. Rate Quote Requested  O

0b. Service Type  R ← 1

0c. Originator  O

0d. Pre-assigned Order Number  O

0e. FOC Order Number  O

1. State  R ← 2

2. Date  R

3. PON  O

4. Related PON  O

5. From  R

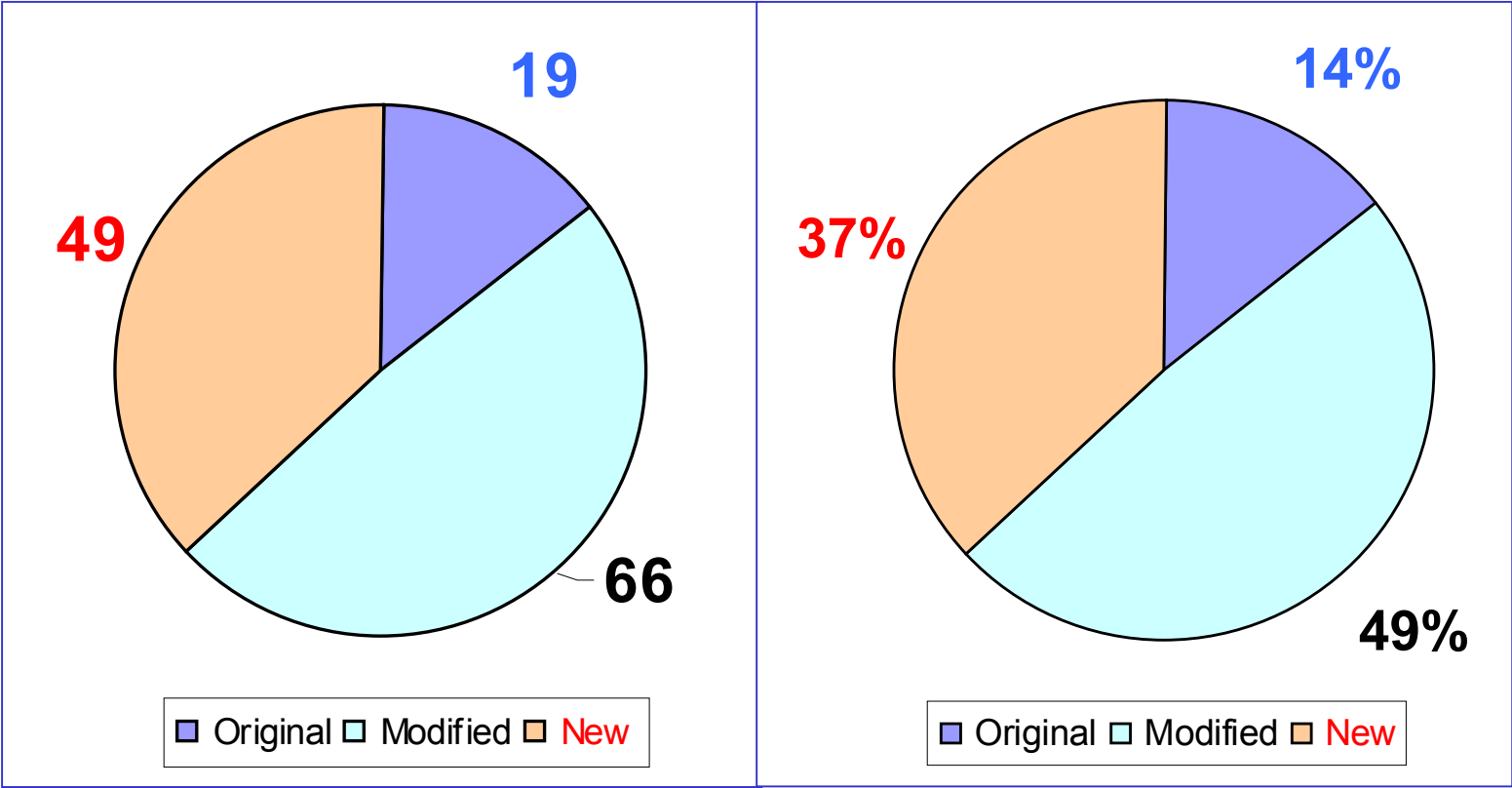
6a. TN  R

6b. Fax No.  C

6c. E-mail  C

Buttons: Save, Exit, **Verify**, Submit, Escalate, Copy, Delete

# Prem to Prem MEGALINK Business Rules - Validation Results



# Administer Forms (1/2)



>> Home >> Logoff

Welcome System Administrator  
Team:

**Data Entry**

1. [Prem to Prem MEGALINK/Light/Plus \(New/Supp\)](#)
2. [Prem to Prem MEGALINK/Light/Plus \(Disconnect\)](#)
3. [Mini MEGALINK \(New/Supp\)](#)
4. [Mini MEGALINK \(Disconnect\)](#)

>> Home >> Logoff

### Search

Form Name

Form Type

### Forms

[Create New](#)

9 forms meet the search criteria:

Seq #	ID	Form Name	Type
1	<a href="#">6</a>	Prem to Prem MEGALINK/Light/Plus (New/Supp)	Order
2	<a href="#">8</a>	Prem to Prem MEGALINK/Light/Plus (Disconnect)	Disconnect
3	<a href="#">5</a>	Mini MEGALINK (New/Supp)	Order
4	<a href="#">9</a>	Mini MEGALINK (Disconnect)	Disconnect
5	<a href="#">3</a>	MEGALINK/Channelized/DS1/Light/Plus	Order
6	<a href="#">2</a>	SmartRing	Order
7	<a href="#">1</a>	T1 Channelized	Order
8	<a href="#">7</a>	Clarify	Clarify
9	<a href="#">4</a>	Escalation	Escalation

# Administer Forms (2/2)


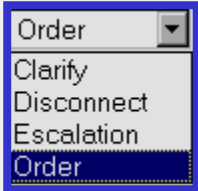


» Home      » Logoff

### Create/Edit: Forms

**Form ID: 6**  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)

Form Name:

Form Type:   

Form Sequence Number:

Form Hidden in User Listings:

Field ID Hidden in User Edit Form Screens:


» Home      » Logoff

### Create/Edit: Forms

**Form ID: 2**  
**Form Name:** SmartRing

Form Name:

Form Type:

Form Sequence Number:  

Form Hidden in User Listings:

Field ID Hidden in User Edit Form Screens:

» Home      » Logoff

**Welcome System Administrator**  
Team:

**Data Entry**

- [1. Prem to Prem MEGALINK/Light/Plus \(New/Supp\)](#)
- [2. Prem to Prem MEGALINK/Light/Plus \(Disconnect\)](#)
- [3. Mini MEGALINK \(New/Supp\)](#)
- [4. Mini MEGALINK \(Disconnect\)](#)
- [5. Projects](#)

# Administer Fields (1/11)



» Home      » Logoff

**Welcome System Administrator**  
Team:

**Administer Fields**

- [1. Prem to Prem MEGALINK/Light/Plus \(New/Supp\)](#) ←
- [2. Prem to Prem MEGALINK/Light/Plus \(Disconnect\)](#)
- [3. Mini MEGALINK \(New/Supp\)](#)
- [4. Mini MEGALINK \(Disconnect\)](#)

» Home      » Logoff

**Prem to Prem MEGALINK/Light/Plus (New/Supp) Form** ←

[Create New](#) ←

143 Order form fields meet the search criteria: [\(Bottom\)](#)

Seq #	ID	Field Hdr	Field Name	Type	RCO	Cond'l Expressions
1	<a href="#">545</a>		Overview [0 - 8]	HEADER	O	
2	<a href="#">238</a>		0a. Rate Quote Requested	SELECT	O	
3	<a href="#">239</a>		0b. Service Type	SELECT	R	
4	<a href="#">240</a>		0c. Originator	SELECT	O	
5	<a href="#">241</a>		0d. Pre-assigned Order Number	TEXT	O	
6	<a href="#">242</a>		0e. FOC Order Number	TEXT	O	
7	<a href="#">243</a>	1. State		SELECT	R	
8	<a href="#">244</a>	2.		COMMENT	O	
9	<a href="#">245</a>	3. PON		TEXT	O	
10	<a href="#">246</a>	4. Related PON		TEXT	O	
11	<a href="#">247</a>	5. From		TEXT	R	
12	<a href="#">248</a>	6a. TN		PHONE	R	
13	<a href="#">249</a>	6b. Fax No.		PHONE	C	[6c. E-mail] EQ ""
14	<a href="#">250</a>	6c. E-mail		TEXT	C	[6b. Fax No.] EQ ""

**Search**

Field Name

Field Type

Field Req'd/Cond'l/Opt'l (RCO)

# Administer Fields (2/11)

## Header Type



>> Home >> Logoff

### Create/Edit: Fields

**Field ID:** 545  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)  
**Form ID:** 6

Field Name:

Field Description:

Field Type:

Field Sequence Number:

Field Level:

- HEADER
- BOOLEAN
- COMMENT
- DATE
- EMAIL
- HEADER
- PHONE
- SELECT
- TEXT
- TEXTLONG



# Create/Edit Fields (3/11)



>> Home >> Logoff

### Create/Edit: Fields

**Field ID:** 250  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)  
**Form ID:** 6

Field Name: 6c. E-mail

Field Description: Fax number or e-mail must be populated for preparer of request. Fi

Field Type: TEXT

Field Size:

Field Max Characters:

Field Sequence Number: 14

Field Level: 0

Required/Conditional: C

Conditionally Required Expression(Change): [6b. Fax No.] EQ ""

Field Initial Value:

Field Searchable:

Field Shown in Listing:

Field Enabled Prior to Submit:

Field Enabled Post Submit:

Save Exit Delete Copy

# Administer Fields (4/11)

Select Type - Required or Conditionally Required or Optional



>> Home >> Logoff

### Create/Edit: Fields

**Field ID:** 239  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)  
**Form ID:** 6

Field Name: 0b. Service Type

Field Description: Must indicate Megalink or Megalink Light. Form will not be release

Field Type: SELECT

Field Selections (Change): Megalink

Field Sequence Number: 3

Field Level: 0

Required/Conditional: R

Field Initial Value:

Field Searchable:

Field Shown in Listing:

Field Enabled Prior to Submit:

Field Enabled Post Submit:

Buttons: Save Exit Delete Copy

# Administer Fields (5/11)

## Select Type - Add Selection



>> Home >> Logoff

**Field ID:** 243  
**Field Name:** 1. State  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)  
**Form ID:** 6

### Create/Edit: Field Values

ID	Field Value	
85	North Carolina	Delete
86	South Carolina	Delete
87	Tennessee	Delete
79	Alabama	Delete
80	Florida	Delete
81	Georgia	Delete
82	Kentucky	Delete
83	Lousiana	Delete
84	Mississippi	Delete

Save Exit Create ←

### Create/Edit: Field Values

ID	Field Value	
85	North Carolina	Delete
86	South Carolina	Delete
87	Tennessee	Delete
79	Alabama	Delete
80	Florida	Delete
81	Georgia	Delete
82	Kentucky	Delete
83	Lousiana	Delete
84	Mississippi	Delete
190	Texas	Delete

Save Exit Create

# Administer Fields (6/11)

## Phone Type



>> Home      >> Logoff

### Create/Edit: Fields

<b>Field ID:</b> 249	Field Name:	6b. Fax No.
<b>Form Name:</b> Prem to Prem MEGALINK/Light/Plus (New/Supp)	Field Description:	Fax TN or email must be provided for preparer of request, Fax No.
<b>Form ID:</b> 6	Field Type:	PHONE
	Field Sequence Number	13
	Field Level:	0
	Required/Conditional:	<input checked="" type="checkbox"/>
	Conditionally Required Expression( <a href="#">Change</a> ):	[6c. E-mail] EQ ""
	Field Initial Value	
	Field Searchable:	<input type="checkbox"/>
	Field Shown in Listing:	<input type="checkbox"/>
	Field Enabled Prior to Submit:	<input checked="" type="checkbox"/>
	Field Enabled Post Submit:	<input checked="" type="checkbox"/>

Save    Exit    Delete    Copy

# Conditionally Required Business Rules (7/11)



» Home      » Logoff

### Create/Edit: Fields

**Field ID:** 250  
**Field Name:** 6c. E-mail  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)  
**Form ID:** 6

**1. Current Copy of Conditionally Required Expression (for comparison):**  
[6b. Fax No.] EQ ""

**2. Working Copy of Conditionally Required Expression:**  
(Select an underlined phrase in the following for insert/replace/remove)  
[6b. Fax No.] EQ "" {T}

{B}: Boolean Field Phrase Type  
{S}: Select List Field Phrase Type  
{T}: Text Field Phrase Type (includes TEXT, TEXTLONG, DATE, PHONE Data Types)

**2.1. Insert/Replace Phrase in Working Copy**

**2.1.1. Select Mode:**

**2.1.2 Select One of the Following Two Phrase Types to Insert/Replace:**

2.1.2.1 Field Phrase Type:

2.1.2.2 Operator Phrase Type:

**2.1.3 Or Select One of the Following Three Options when doing a Replace of one of the following elements in a Field Phrase:**

# Administer Fields (8/11)

## Navigation Capabilities - Table of Content Model



» Home      » Logoff

### Mini MEGALINK (New/Supp) Form

[Create New](#)

9 Order form fields meet the search criteria: [\(Bottom\)](#)

#	ID	Field Hdr	Field Name	Type	RCO	Cond'l Expressions
1	<a href="#">566</a>	1.	Mini MEGALINK Information	HEADER	O	
2	<a href="#">126</a>	1.1.	Service Type	SELECT	R	
3	<a href="#">127</a>	1.2.	Order Type	SELECT	R	

» Home      » Logoff

### Create/Edit: Fields

Field ID: 566  
 Form Name: Mini MEGALINK (New/Supp)  
 Form ID: 5

Field Name: Mini MEGALINK Information  
 Field Description:  
 Field Type: HEADER  
 Field Sequence Number: 1  
 Field Level: 1

» Home      » Logoff

### Create/Edit: Fields

Field ID: 127  
 Form Name: Mini MEGALINK (New/Supp)  
 Form ID: 5

Field Name: Order Type  
 Field Description:  
 Field Type: SELECT  
 Field Selections (Change):  
 Field Sequence Number: 3  
 Field Level: 2

# Administer Fields (9/11)

## Navigation Capabilities - Table of Content Model



<p><b>Mini MEGALINK (New/Supp) Contents</b></p> <ul style="list-style-type: none"><li>1.) <a href="#">Mini MEGALINK Information</a> ←</li><li>2.) <a href="#">Remarks</a></li></ul> <p><a href="#">End</a></p>	<p><b>Create/edit: Mini MEGALINK (New/Supp)</b></p> <hr/> <p><b>1.) Mini MEGALINK Information [566]</b> ←</p> <p>1.1.) Service Type [126] <input type="text" value="Megalink"/></p> <p>1.2.) Order Type [127] <input type="text" value="New Service"/> ←</p> <p>1.2.1.) Explain Other [128] <input type="text"/></p> <p>1.3.) PON [129] <input type="text" value="111114"/></p> <hr/> <p><b>2.) Remarks [567]</b> ←</p>
<p><b>Project ID:</b> <b>Project Name:</b> <b>Order ID:</b> 4 <b>Version:</b> 1 <b>Order Status:</b> ACAC <b>Days in Status:</b> 1 <b>Prior Order Status:</b> FOCed</p>	

# Administer Fields (10/11)

## Field ID Hidden - Selected



>> Home >> Logoff

### Create/Edit: Forms

**Form ID:** 6  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)

Form Name: Prem to Prem MEGALINK/Light/Plus (New/Supp)  
Form Type: Order  
Form Sequence Number: 1  
Form Hidden in User Listings:   
Field ID Hidden in User Edit Form Screens:

**Overview [0 - 8]**

0a. Rate Quote Requested: No  
0b. Service Type: Megalink  
0c. Originator: Customer  
0d. Pre-assigned Order Number:   
0e. FOC Order Number:   
1. State: Louisiana  
2.   
3. PON: nl2455039-118  
4. Related PON:   
5. From: CLARE BOWERS  
6a. TN: 770 454-2938  
6b. Fax No.: 678 277-2497  
6c. E-mail: CLAIRE.BOWERS@BRIDGE.BELLSOUTH.COM



# Administer Fields (11/11)

Field ID Hidden - NOT Selected



>> Home >> Logoff

### Create/Edit: Forms

**Form ID:** 6  
**Form Name:** Prem to Prem MEGALINK/Light/Plus (New/Supp)

Form Name:   
Form Type:   
Form Sequence Number:   
Form Hidden in User Listings:   
Field ID Hidden in User Edit Form Screens:

**Overview [0 - 8] [545]**

0a. Rate Quote Requested [238]	<input type="text" value="No"/>
0b. Service Type [239]	<input type="text" value="Megalink"/>
0c. Originator [240]	<input type="text" value="Customer"/>
0d. Pre-assigned Order Number [241]	<input type="text"/>
0e. FOC Order Number [242]	<input type="text"/>
1. State [243]	<input type="text" value="Louisiana"/>
2. [244]	<input type="text"/>
3. PON [245]	<input type="text" value="nl2455039-118"/>
4. Related PON [246]	<input type="text"/>
5. From [247]	<input type="text" value="CLARE BOWERS"/>
6a. TN [248]	<input type="text" value="770 454-2938"/>
6b. Fax No. [249]	<input type="text" value="678 277-2497"/>
6c. E-mail [250]	<input type="text" value="CLARE.BOWERS@BELL.SOUTH.COM"/>
7a. FOC Case Name [251]	<input type="text" value="TREVOR SUTCLIFFE"/>

Fax TN or email must be provided for preparer of request, Fax No. Format: NPA NXX-XXXX

# UNDO Status Change



**Project ID:**  
**Project Name:**  
**Order ID:** 4  
**Version:** 1  
**Order Status:** ACAC ←  
**Days in Status:** 1  
**Prior Order Status:** FOCed

**Assigned To:**  
AWE Center: Kathy Logan

**Created By:**  
AWE: Jason Nelson

**Order History:**  
**Modified** 2/3/01 12:15:32 PM, KL2

**1.) Mini MEGALINK Information [566]**

1.1.) Service Type [126] Megalink

1.2.) Order Type [127] New Service

1.2.1.) Explain Other [128]

1.3.) PON [129] 111114

**2.) Remarks [567]**

**Status must be beyond Submit State:**  
PF, PIP, FOC, ACAC, Complete, Cancelled  
Can be executed by the **CTR** or **CTA**  
**The Challenge to Keep Reports Consistent**

Save Exit **Verify** Complete Escalate Clarify **Cancel** Assign Undo



# Administer State Machine

## Standard Reports (1/4)



» Home

» Logoff

**Welcome**  
**Jason Nelson**

**Team:**  
AWE

**Customer:**  
AT&T Wireless

### State Transition Rules

**By Control** ←

- [1. Order](#)
- [2. Disconnect](#)
- [3. Clarify](#)
- [4. Escalation](#)

**By Current Status** ←

- [1. Order](#)
- [2. Disconnect](#)
- [3. Clarify](#)
- [4. Escalation](#)

# Process State Transition Table (control button) (2/4)



Exit

Order Form State Transition Rules (by Control) Report

#	Input						Output						
	Control Button	Current Status	Center Enable	Customer Enable	Orig Acct	User Admin	Next Status	Verify Enable	Change UserType	Activity Logged	NextAux Form	NextAux Status	AuxActivity Logged
1	ACAC	FOC	Y				ACAC	Y		ACAC			
2	Assign	ACAC	Y			Y	ACAC			AssignBy AssignTo			
3	Assign	Clarify	Y			Y	Clarify			AssignBy AssignTo			
4	Assign	CreateNew	Y	Y	Y	Y	CreateNew			By AssignTo			
13	Assign	CreateSupp	Y	Y		Y	CreateSupp			AssignBy AssignTo			
5	Assign	FOC	Y	Y		Y	FOC			AssignBy AssignTo			
6	Assign	PF	Y	Y		Y	PF			AssignBy AssignTo			
7	Assign	PIP	Y	Y		Y	PIP			AssignBy AssignTo			
8	Assign	SubmitAsg	Y	Y		Y	SubmitAsg			AssignBy AssignTo			
9	Assign	SubmitCla	Y	Y		Y	SubmitCla			AssignBy AssignTo			
10	Assign	SubmitNew	Y			Y	SubmitAsg			AssignBy AssignTo SubmitAsg			

# Process State Transition Table (current status) (3/4)



Exit

Order Form State Transition Rules (by Current Status) Report

Input							Output						
#	Current Status	Control Button	Center Enable	Customer Enable	Orig Acct	User Admin	Next Status	Verify Enable	Change UserType	Activity Logged	NextAux Form	NextAux Status	Aux Activity Logged
2	ACAC	Assign	Y	Y		Y	ACAC			AssignBy AssignTo			
14	ACAC	Cancel	Y				Cancel			Cancel			
22	ACAC	Clarify	Y				ACAC				Clarify	New	
31	ACAC	Compl	Y				Complete	Y		Complete			
32	ACAC	Copy	Y	Y	Y		ACAC				Order	NewCopy	
47	ACAC	Escal	Y	Y			ACAC				Escalation	New	
62	ACAC	Save	Y				ACAC			Save			
82	ACAC	Supp	Y	Y			ACAC				Order	NewSupp	
91	ACAC	Undo	Y				XPS			XPS			
97	ACAC	Verify	Y				ACAC	Y					
33	Cancel	Copy	Y	Y	Y		Cancel				Order	NewCopy	
92	Cancel	Undo	Y				XPS			XPS			
3	Clarify	Assign	Y	Y		Y	Clarify			AssignBy AssignTo			
34	Clarify	Copy	Y	Y	Y		Clarify				Order	NewCopy	
154	Clarify	Escal	Y	Y			Clarify				Escalation	New	
76	Clarify	Submit	Y				SubmitCla	Y		SubmitCla			
155	Clarify	Supp	Y	Y			Clarify				Order	NewSupp	
98	Clarify	Verify	Y				Clarify	Y					
35	Complete	Copy	Y	Y	Y		Complete				Order	NewCopy	
93	Complete	Undo	Y				XPS			XPS			

# Clarify Process State Machine (4/4)



Clarify Form State Transition Rules (by Current Status) Report

1 → Input							Output ← 2					
#	Current Status	Control Button	Center Enable	Customer Enable	Orig Team	Team Admin	Next Status	Verify Enable	Activity Logged	NextAux Form	NextAux Status	Aux Activity Logged
125	Complete	Undo	Y				XPS		XPS			
112	Create	Assign	Y			Y	Create		AssignBy AssignTo			
116	Create	Delete	Y				Delete		Delete			
118	Create	Save	Y				Create		Save			
123	Create	Submit	Y				SubmitNew	Y	Transfer SubmitNew	Order	Clarify	Clarify
126	Create	Verify	Y				Create	Y				
119	New	Save	Y				Create		Save			
124	New	Submit	Y				SubmitNew	Y	Create Transfer SubmitNew	Order	Clarify	Clarify
127	New	Verify	Y				New	Y				
120	NewCopy	Save	Y				Create		Save			
115	Resolve	Compl	Y				Complete	Y	Complete			
151	Resolve	Undo		Y			XPS		XPS			
113	SubmitAsg	Assign		Y		Y	SubmitAsg		AssignBy AssignTo			
117	SubmitAsg	Resolve		Y			Resolve	Y	Resolve			
121	SubmitAsg	Save		Y			SubmitAsg		Save			
128	SubmitAsg	Verify		Y			SubmitAsg	Y				

# Center Management Process - Evaluation

## Interval Analysis: Orders, Escalations and Clarifies



### Order Tracking Reports

#### Weekly Reports

- [1. Created Orders By Week](#)
- [2. Submitted Orders By Week](#)
- [3. Completed Orders By Week](#)
- [4. Create-Submit Order Duration By Week](#)
- [5. Submit-FOC Order Duration By Week](#)
- [6. FOC-Complete Order Duration By Week](#)
- [7. Clarify Order Density by Week](#)
- [8. Escalation Order Density by Week](#)
- [9. Supplement Order Density by Week](#)

#### Monthly Reports

- [10. Created Orders By Month](#)
- [11. Submitted Orders By Month](#)
- [12. Completed Orders By Month](#)
- [13. Create-Submit Order Duration By Month](#)
- [14. Submit-FOC Order Duration By Month](#)
- [15. FOC-Complete Order Duration By Month](#)
- [16. Clarify Order Density by Month](#)
- [17. Escalation Order Density by Month](#)
- [18. Supplement Order Density by Month](#)

#### Current View Reports

- [19. Current Active Order Status](#)
- [20. Current Inactive Order Status](#)

### Clarify Tracking Reports

#### Weekly Reports

- [1. Created Clarifies By Week](#)
- [2. Submitted Clarifies By Week](#)
- [3. Completed Clarifies By Week](#)

### Escalation Tracking Reports

#### Weekly Reports

- [1. Created Escalations By Week](#)
- [2. Submitted Escalations By Week](#)
- [3. Completed Escalations By Week](#)
- [4. Create-Submit Escalation Duration By Week](#)
- [5. Submit-Complete Escalation Duration By Week](#)

#### Monthly Reports

- [6. Created Escalations By Month](#)
- [7. Submitted Escalations By Month](#)
- [8. Completed Escalations By Month](#)
- [9. Create-Submit Escalation Duration By Month](#)
- [10. Submit-Complete Escalation Duration By Month](#)

#### Current View Reports

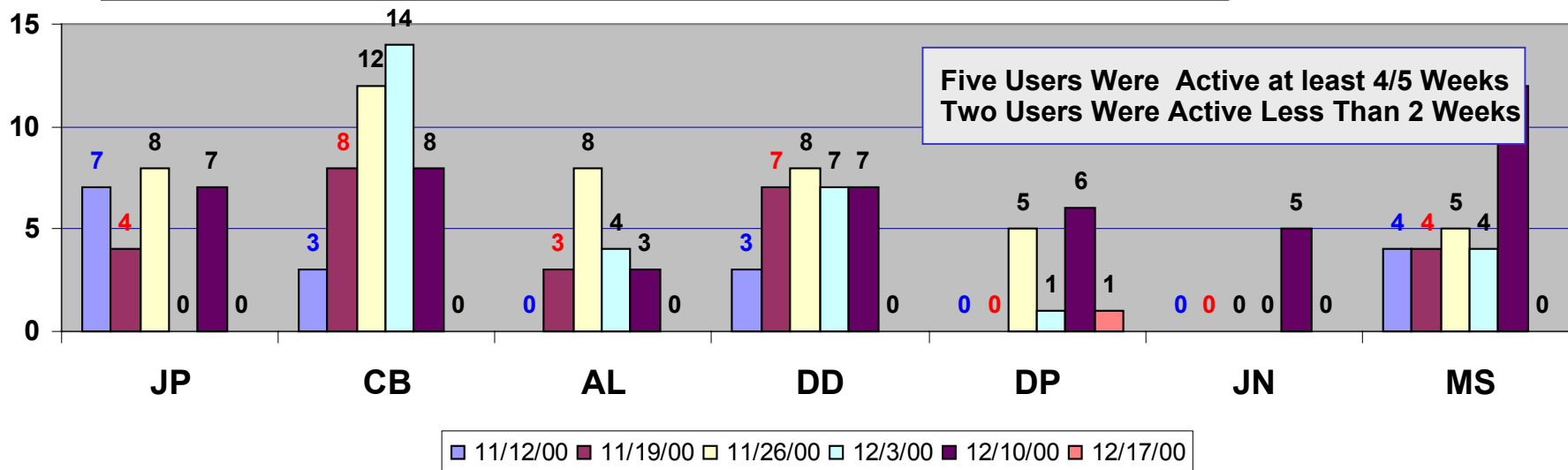
- [11. Current Active Escalation Status](#)
- [12. Current Inactive Escalation Status](#)

# Application Utilization (1/7)

## Number of Sessions per Week per User (user centric)



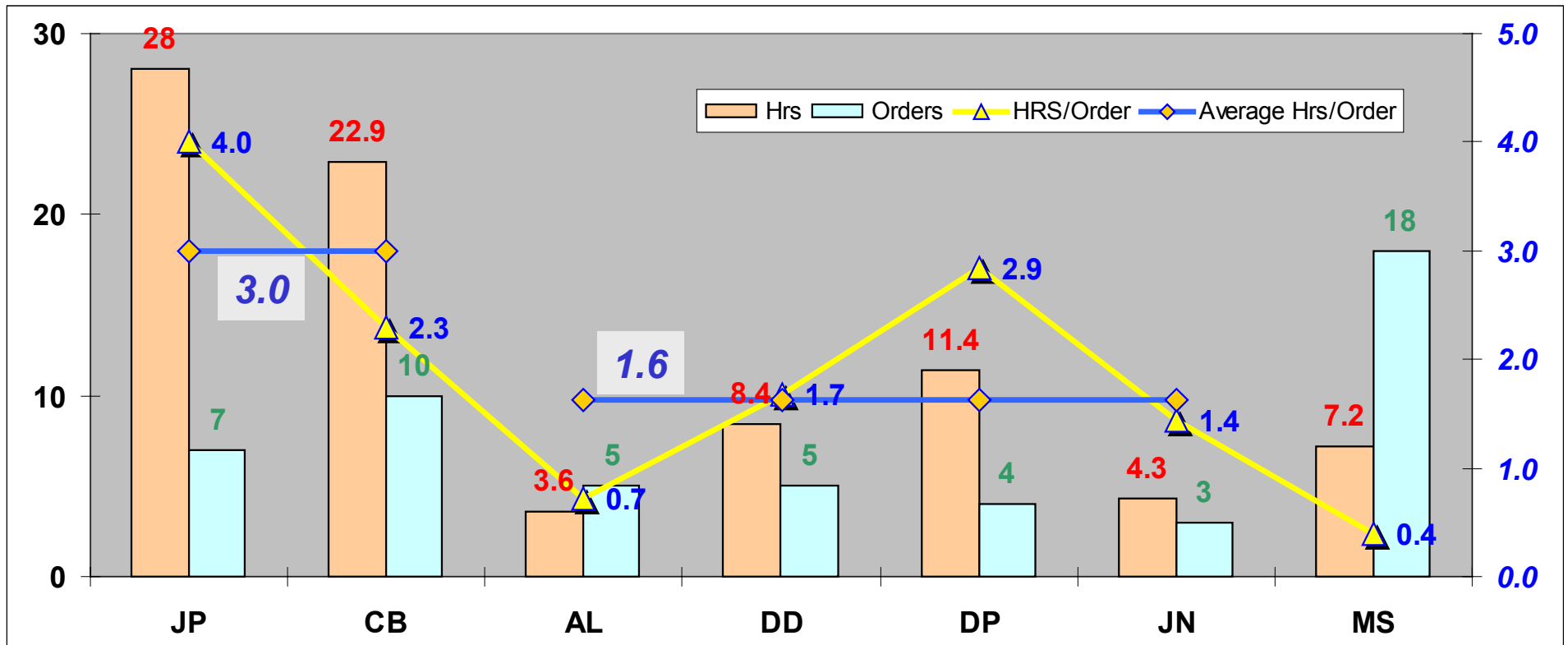
Team Rep	12/17/2000	12/10/2000	12/3/2000	11/26/2000	11/19/2000	11/12/2000	Total
Bowers	0	8	14	12	8	3	45
MacFarlane	0	0	0	0	0	2	2
Phagan	0	7	0	8	4	7	26
Presley	0	0	0	0	0	0	0
Ware	2	3	4	2	0	0	11
Reps Total	2	18	18	22	12	12	84
DiDonato	0	7	7	8	7	3	32
grier	0	3	0	0	0	0	3
Lugg	0	3	4	8	3	0	18
Nimmons	0	5	0	0	0	0	5
Portl	1	6	1	5	0	0	13
Saulny	0	9	4	5	4	4	26
Stephenson	0	0	0	0	0	0	0
Reps Total	1	33	16	26	14	7	97
Reps Total	3	51	34	48	26	19	181





# eccm System Utilization (2/7)

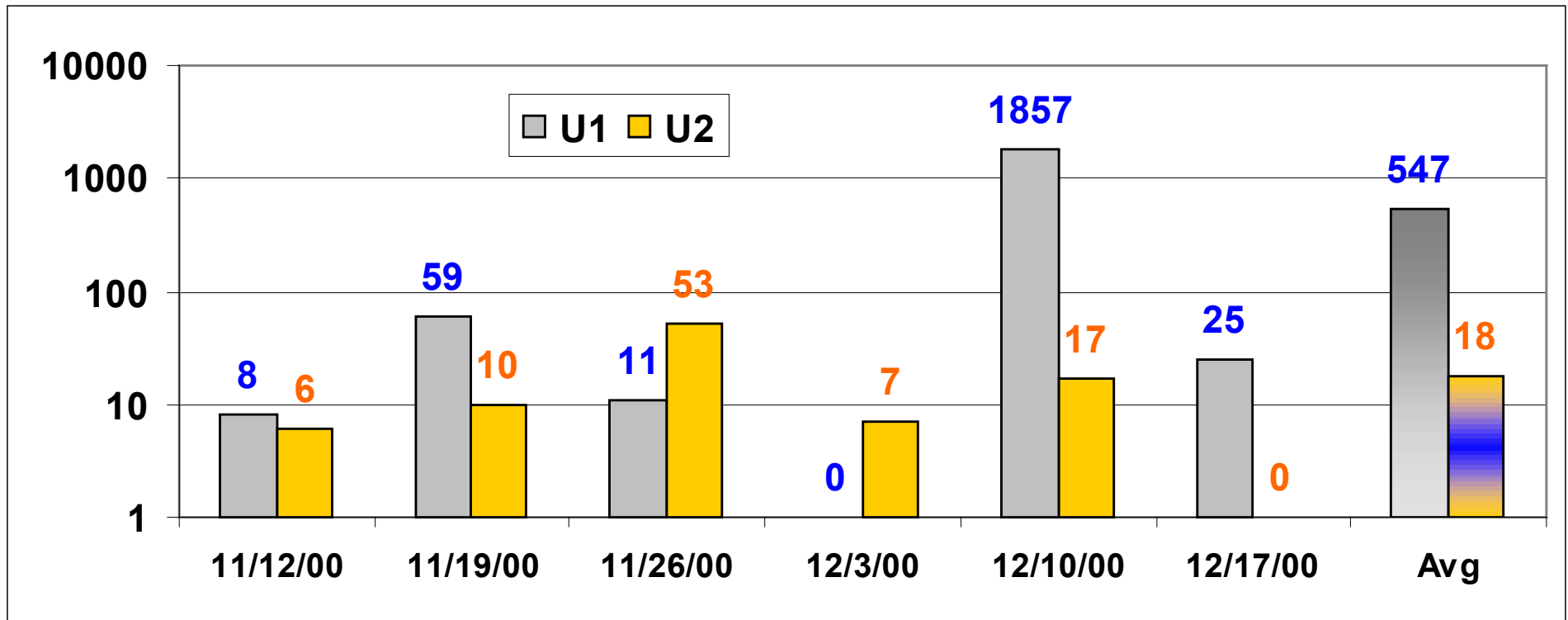
Activity Period, # Orders, Avg. Duration per Order, Team Avg. (hours)



Effective Analysis of Individual Engagement  
References Established for both Sales and Center Teams

# Order Tracking (3/7)

Average [Create - Submit] Interval (minutes)



# Historical Analysis of Order #22 (4/7)

**Order Assigned to JN2 Is Not Processed For 3 Days  
The Order is Reassigned to DP and it is Processed within 28 hours**



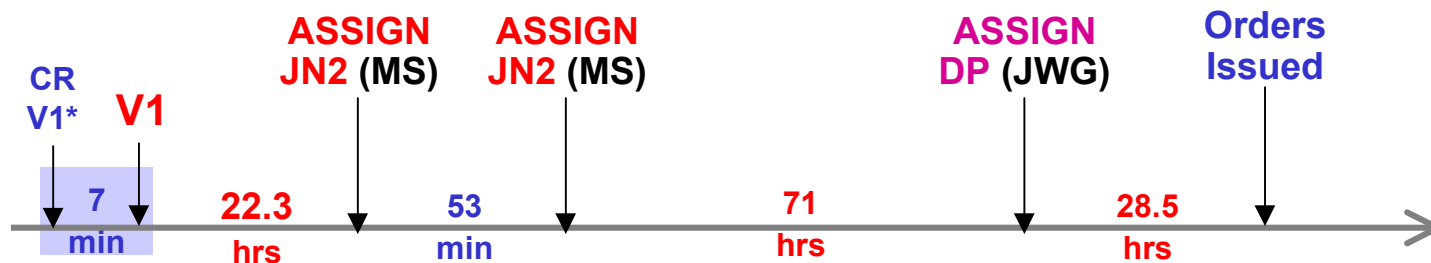
**Order ID:** 22  
**Version:** 1  
**Order Status:** ProvInProg  
**Days in Status:** 28  
**Prior Order Status:** Submitted

**Assigned To:**  
 Sprint Center: Dena Portl

**Created By:**  
 Sprint: Clare Bowers

**Order History:**  
**ProvInProg** 12/19/00 2:26:47 PM, DP  
**AssignedTo** 12/18/00 10:00:37 AM, DP  
**AssignedBy** 12/18/00 10:00:37 AM, JWG  
**AssignedTo** 12/15/00 10:52:33 AM, JN2  
**AssignedBy** 12/15/00 10:52:33 AM, MS  
**AssignedTo** 12/15/00 9:59:41 AM, JN2  
**AssignedBy** 12/15/00 9:59:41 AM, MS  
**TransferredTo** 12/14/00 11:37:19 AM, \*\*\*  
 \* **Submitted** 12/14/00 11:37:19 AM, CB  
**Created** 12/14/00 11:36:30 AM, CB

Submitted - 12/14/00 11:37 A.M.  
 Assigned by **MS** to **JN2** - 12/15/00 9:59 A.M.  
 Assigned by **MS** to **JN2** - 12/15/00 10:52 A.M.  
**Vacations: MS on 12/15 Fri. JN on 12/18 Mon.**  
 Reassigned by **JWG** to **DP** - 12/18/00 10:00 A.M.  
 Orders Issued within ~28 hours by DP  
 Order PIP - 12/19/00



# Integrated Historical Analysis (5/7)

Session ID, Action, Form Type and State Change Information



User Session Details  
(1/30/2001 11:48:47 AM)  
Customer: Sprint

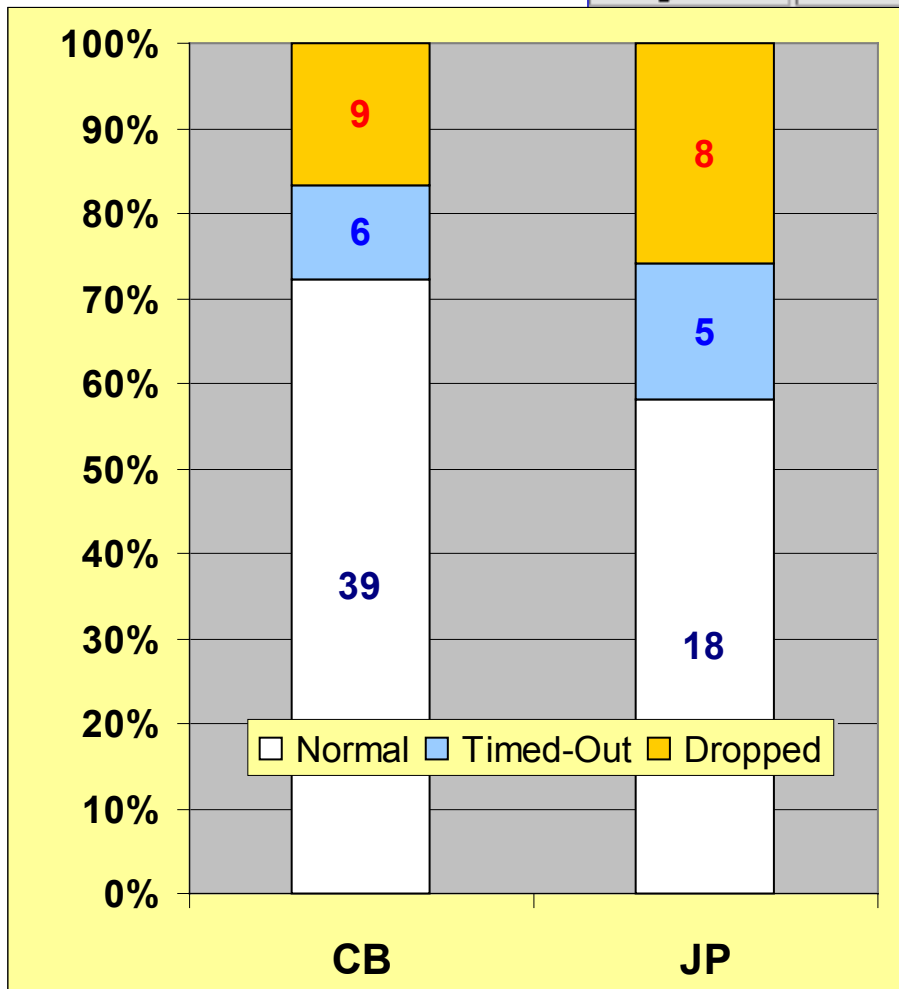
Ref #	Team	Team Rep	Sess Cnt	Sess ID	Action	Time	Form ID	Form Vsn	Form
1	Sprint	Bowers	1	16	Logon	11/16/2000 10:42:53 AM			
2	Sprint	Bowers	1	16	Logoff	11/16/2000 11:26:25 AM			
3	Sprint	Bowers	2	20	Logon	11/16/2000 3:11:59 PM			
4	Sprint	Bowers	2	20	Logoff	11/16/2000 3:21:38 PM			
5	Sprint	Bowers	3	29	Logon	11/17/2000 2:04:27 PM			
6	Sprint	Bowers	3	29	Logoff	11/17/2000 2:07:01 PM			
7	Sprint	Bowers	4	39	Logon	11/20/2000 11:06:07 AM			
9	Sprint	Bowers			Modified	11/20/2000 11:21:18 AM	3	1	Clarify
10	Sprint	Bowers			Modified	11/20/2000 11:30:42 AM	3	1	Clarify
11	Sprint	Bowers			AssignedBy	11/20/2000 11:31:00 AM	3	1	Clarify
12	Sprint	Bowers			AssignedTo	11/20/2000 11:31:00 AM	3	1	Clarify
13	Sprint	Bowers			Completed	11/20/2000 11:31:32 AM	3	1	Clarify
13	Sprint	Bowers	4	39	Logoff	11/20/2000 11:32:08 AM			
14	Sprint	Bowers	5	42	Logon	11/20/2000 1:29:47 PM			
15	Sprint	Bowers	5	42	Logoff	11/20/2000 2:07:31 PM			
16	Sprint	Bowers	6	49	Logon	11/21/2000 12:36:46 PM			
18	Sprint	Bowers			Created	11/21/2000 12:43:30 PM	5	1	Prem to Prem MEGALINK/Light/Plus (New/Supp)
19	Sprint	Bowers			Submitted	11/21/2000 1:00:19 PM	5	1	Prem to Prem MEGALINK/Light/Plus (New/Supp)
19	Sprint	Bowers	6	49	Timeout	11/21/2000 1:00:41 PM			
20	Sprint	Bowers	7	52	Logon	11/21/2000 1:30:14 PM			
21	Sprint	Bowers	7	52	Timeout	11/21/2000 1:59:10 PM			
22	Sprint	Bowers	8	55	Logon	11/21/2000 2:47:18 PM			
23	Sprint	Bowers	8	55	Drop	11/21/2000 2:47:22 PM			

# Application Utilization Session Termination Analysis (6/7)

Normal, Timed-Out and Dropped

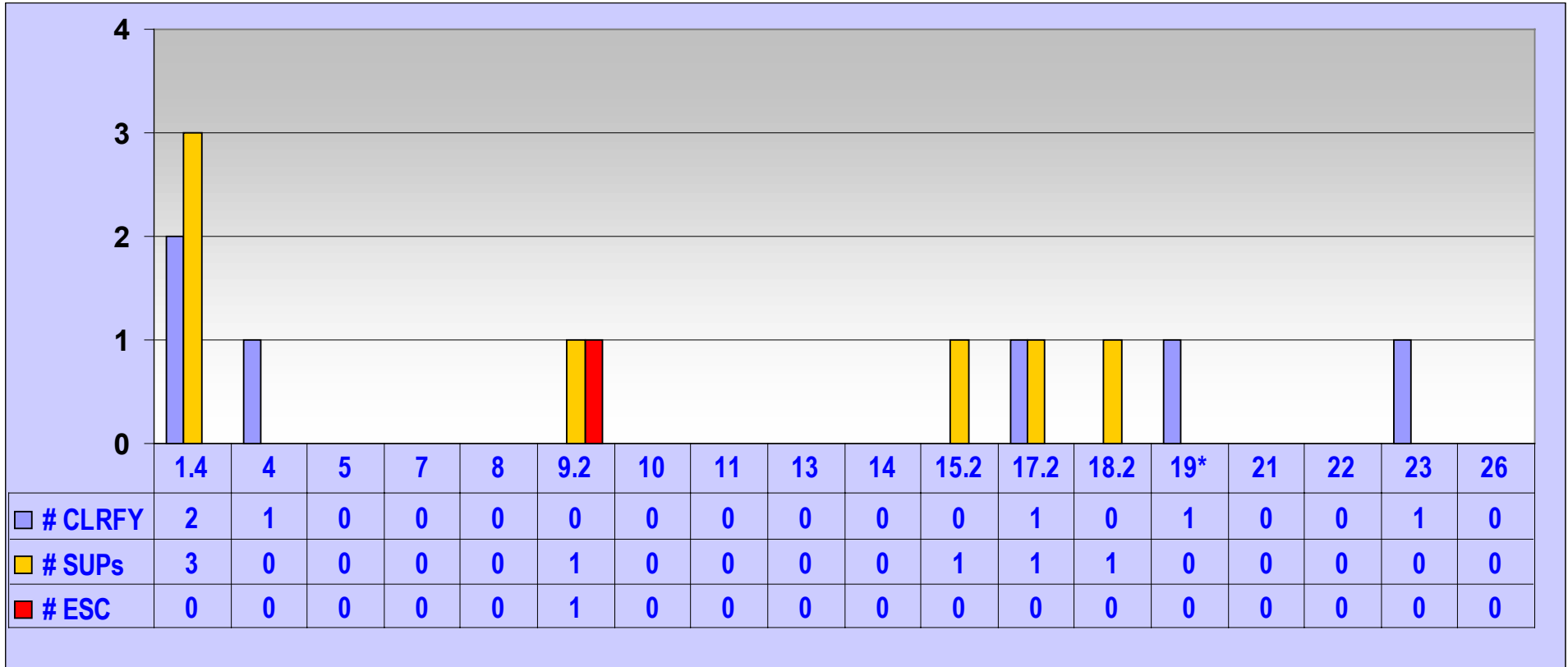


Team Rep	12/1/2000	11/1/00	10/1/00	9/1/00	8/1/00	7/1/00	Total
Bowers	34	20	0	0	0	0	54
MacFarlane	0	2	0	0	0	0	2
Phagan	13	18	0	0	0	0	31
	0	0	0	0	0	0	0
	11	1	0	0	0	0	12
	58	41	0	0	0	0	99
	17	17	0	0	0	0	34
	11	0	0	0	0	0	11
	23	5	0	0	0	0	28
	8	0	0	0	0	0	8
	15	2	0	0	0	0	17
	13	13	0	0	0	0	26
	0	0	0	0	0	0	0
	87	37	0	0	0	0	124
	145	78	0	0	0	0	223



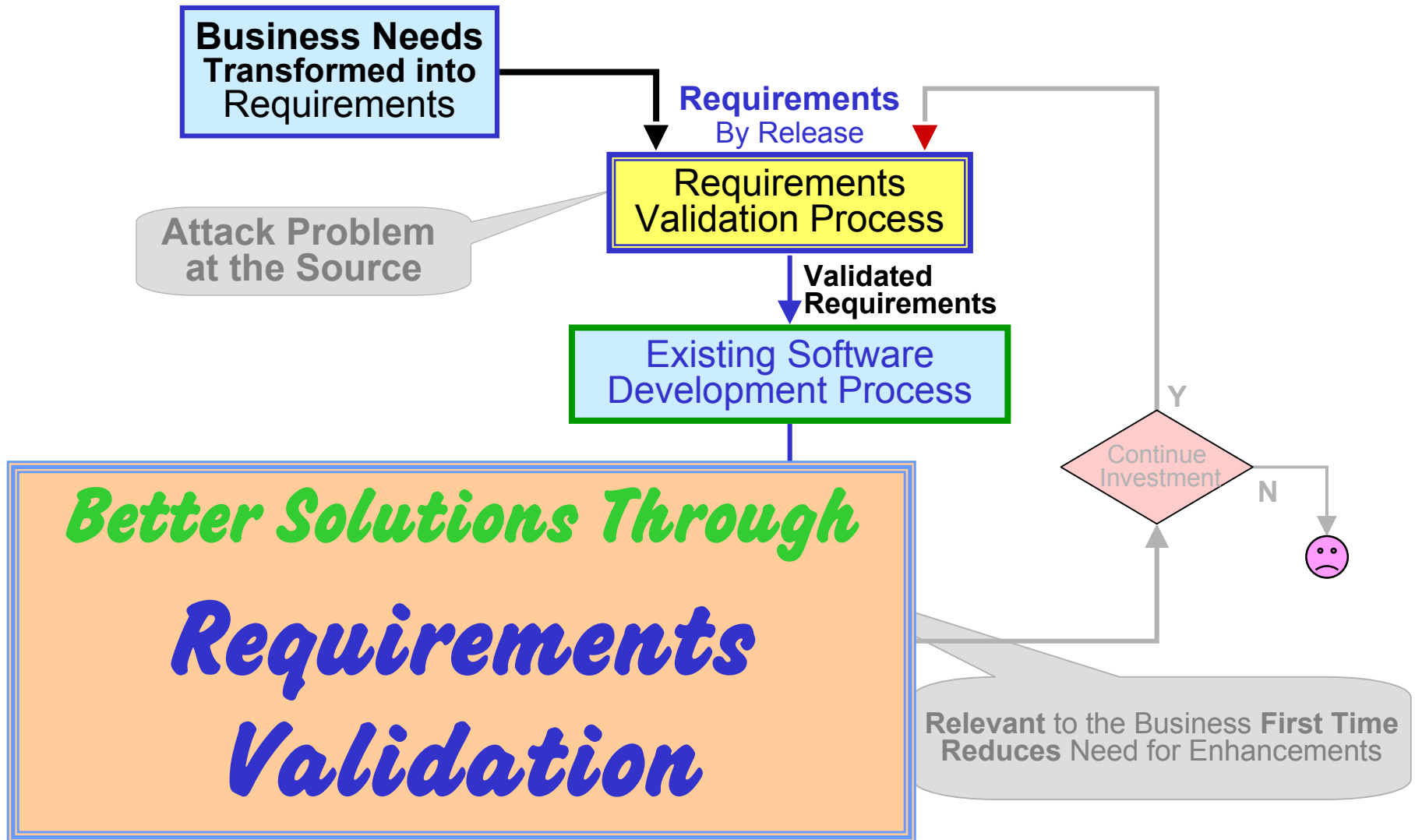
# Clarify, Supplements and Escalations

## Distribution per Order ID (7/7)



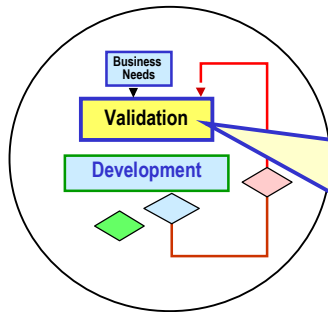
# Summary (1/3)

Improve Solution Quality and ROI through Validation



# Summary (2/3)

## Validation Capabilities



**eccm**  
Release V. 24

The **eccm** Toolkit  
Delivers Cost Effectively  
Validated Requirements

### • Architecture

- cost effective implementation of learning cycles through daily/weekly SW releases
- scalability (25, 100, 1000 users)
- new-release related, center disruption-management (operational and trial versions concurrently in deployment)
- integrated order management with clarify and escalation processing
- incremental and targeted flow-thru automation

### • Configuration Management

- over 200 configurable options *without coding* (robust solution) (new product, fields, BRs, navigation, process definition, etc.)
- customer and center collaborative order management

### • Easy Web Based UI and Training

- custom display and search functions
- business-rules knowledge-based help function
- supports all order transactions through a uniform user interface (intelligent edit filters)
- context sensitive action buttons
- integrated training and operational databases
- management of Rep proficiency during training process

### • Business Rules (BRs)

- the development of a consistent baseline
- the integration with the create/edit functions
- the uniform application of BRs to all user activities (e.g., clarifies, escalations)

### • Operational Processes

- a rigorous 4-way definition and baseline
- a table driven implementation
- increased accountability through process transparency

### • Center Productivity Management

- Rep, team, and account level productivity, quality and throughput reports (real time, weekly, monthly)
- session and order life cycle analysis
- historical and cause analysis (reduce center load)
- intelligent work list management



### Operations Support Investment Priorities:



*The requirement specifications paradigm to capture user needs is imperfect at best*