

How to get a Software Specification?

One Facet: Printed forms as a driving force

A decorative graphic on the left side of the slide, consisting of a vertical black line intersecting a horizontal black line, with a blue square above the intersection, a red square to the left, and a yellow square below.

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A decorative graphic consisting of overlapping yellow, red, and blue squares with a black crosshair.

Contents

- Introduction / Metals Projects
- Specification and business processes
- Example:
 - Business process "Scrap receipt"
 - Printed form "Delivery Acceptance Document" and software specification
- Generalization and Conclusions

Introduction / Metals Projects

- My interest:
Relationship between academic software engineering concepts and the practice in commercial software projects
- Case studies in metals industry
2011: a tube plant in Russia
2012: a steel-making factory near Moscow

PSI 



PSI Metals production management solution for electrical steel production from scrap.

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Specification and Business Processes

- A PSI Metals specification is a text document having a defined structure
 - Introduction to the Project
 - Business Processes
 - User Interface
 - Interfaces to other Systems
 - Hardware, System Software and System Administration
 - Project Management

- Chapter “Business Processes”
 - Kernel of the specification
 - Refers to GUI screens and messages that must be exchanged with partner systems

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Business Process "Scrap Receipt"

Participating IT Systems



Interface:
Set of messages to be exchanged

Message:
Well-defined structured data record

Business Process “Scrap Receipt”

Actions

- Truck's arrival
 - FACS sends data of the shipping documents to PSI PM
 - PSI PM decides to accept the truck based on the list of SAP Purchase Orders
- Accepted truck in factory
 - Registration of its gross weight - PSI PM
 - Unloading and quality control
 - Registration of tare weight and calculation of the net weight - PSI PM
- PSI PM software creates and prints *Delivery Acceptance Document*
 - A very important commercial document
 - Predefined by Russian law and specific rules of the steel trust
 - Significant for specification: all contained data must be available on time in PSI PM



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Delivery Acceptance Document

An important printed form

ПРИЕМОСДАТОЧНЫЙ АКТ № 004511 от _____ г.

ПОСТАВКИ АВТОТРАНСПОРТОМ

Получатель лома и отходов: ОАО "..."

Цех	21
Код	2

Сдатчик лома и отходов: ООО "ТОРГОВЫЙ ДОМ" "..."

ИНН сдатчика лома и отходов: 7705605953

Банковские реквизиты сдатчика лома и отходов: КПП: ... ОКПО: ... р/с 40702810502000000181 в Московском филиале ОАО "..." г. Москва, к/с: ... БИК: ...

Основание возникновения права собственности у сдатчика лома и отходов на сдаваемый лом и отходы черных металлов: **Эфферт/ТД-2-001 с ЛОП ООО "Эфферт"**

Транспорт (марка, номер): **МАЗ С5480У48**

Краткое описание лома и отходов черных металлов: Детали с/х техники не более 800x500x500 мм; толщина 8 мм и более

Наименование (вид лома и отходов) по ОКПО:	Код лома:	Вес брутто, т	Вес тары, т	Засор, %	Вес нетто, т	Цена, руб.	Сумма, руб.
ЗА	2 03	23,390	13,060	2	10,120		
Итого:		23,390	13,060	2	10,120		

Вес брутто (прописью) Двадцать три т. Триста девяносто кг

Вес нетто (прописью) Десять т. Сто двадцать кг

Итого на сумму

В том числе НДС

За предоставление недостоверных данных об ответственности предупрежден.

Достоверность представленных сведений подтверждаю. Сдачу лома и отходов произвел и акт получил (Подпись сдатчика лома и отходов)

Указанный металлолом подготовлен согласно ГОСТу 2787-75, проверен пиротехником, обезврежен (закл. №), признан взрывобезопасным (удост. №) и может быть допущен к переработке и переплавке.

Особые отметки:

Подпись ответственного лица от копрового цеха за проверку лома и отходов на взрывобезопасность

Подпись лица, ответственного за приемку лома и отходов

ContractId

TruckType TruckId

Эфферт/ТД-2-001 с ЛОП ООО "Эфферт"
МАЗ С5480У48

GrossWeight TareWeight NetWeight

Вес брутто, т	Вес тары, т	Засор, %	Вес нетто, т
23,390	13,060	2	10,120

Signatures of different persons in charge.

Responsible for Quality and Security check:
Responsible for receipt:

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Delivery Acceptance Document Work through its Definition

Steps concerning creation of specification:

1. For each data field find out its source system
 - SAP, FACS or PSI PM
2. For each field coming from SAP or FACS
 - Find out which interface message contains the field
→ SAP or FACS interfaces might be extended
3. For each field having its source in PSI PM
 - Find out on which PM screen the field occurs, either as input field or as calculated field
→ PM screen might be modified

The next three slides illustrate these steps

Delivery Acceptance Document Work through Step 1

For each field find out its source system: SAP, FACS or PSI PM

DAD Fields	Data Source
TruckID	FACS
TruckType	FACS
ContractID	FACS
...	
Supplier	SAP
...	
ScrapType	PM
GrossWeight	PM
TareWeight	PM
NetWeight	PM (c)
...	

Conclusion

- FACS must send the values via message interface to PSI PM
- SAP must send the values via message interface to PSI PM
- Values must be typed in via PSI PM screens or can be calculated (c) inside PSI PM

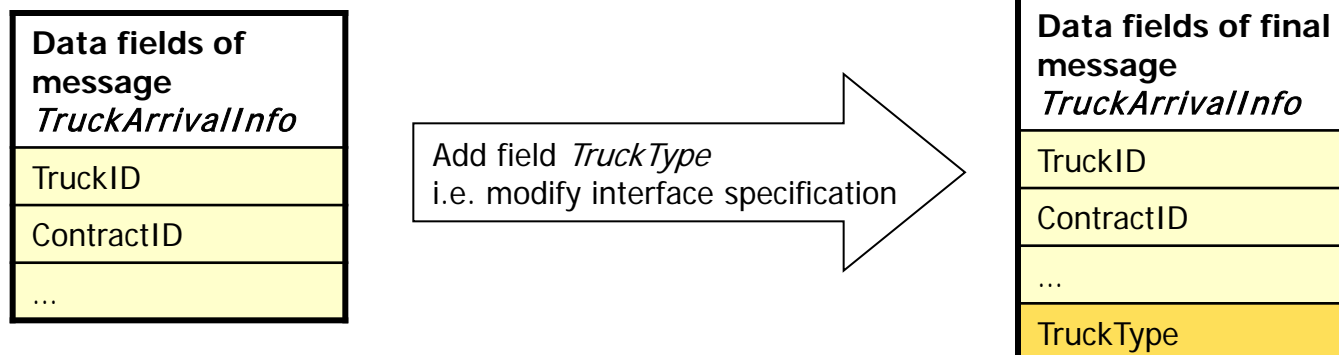
Delivery Acceptance Document Work through Step 2

For each field having its source in SAP or FACS

- Find out which interface message contains the field
- If a field of DAD can't be found, it must be added to an appropriate message

Example

- *TruckId* and *ContractId* are found in the message *TruckArrivalInfo* FACS → PM
- No message of interface FACS → PM contains the field *TruckType*
- Thus a new data field *TruckType* is added to the message *TruckArrivalInfo*



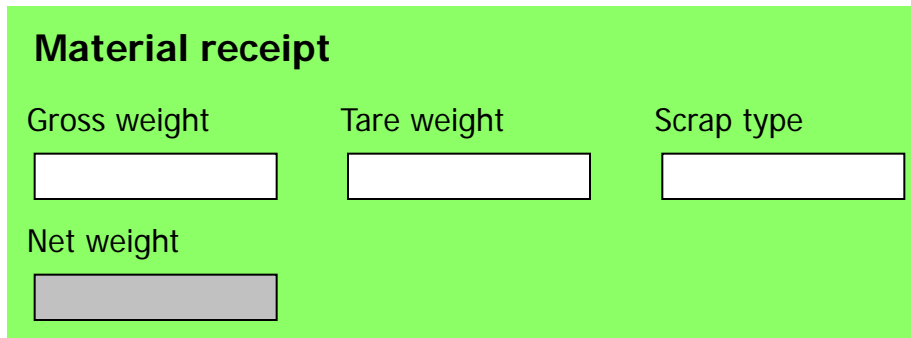
Delivery Acceptance Document Work through Step 3

For each field having its source in PSI PM

- Find out on which PM GUI screen the field occurs either as input field or as calculated field
- If a field of DAD can't be found, it must be added to an appropriate PM GUI screen

Example

- *GrossWeight* and *TareWeight* are input fields on screen *MaterialReceipt*
- *NetWeight* is a calculated field on the same screen
- *ScrapType* is missing; thus it should be added as an input field on that screen

A screenshot of a "Material receipt" form on a green background. It contains four input fields: "Gross weight", "Tare weight", "Scrap type", and "Net weight". The "Gross weight", "Tare weight", and "Scrap type" fields are white with black borders. The "Net weight" field is a solid grey rectangle.

Material receipt

Gross weight	Tare weight	Scrap type
<input type="text"/>	<input type="text"/>	<input type="text"/>
Net weight		
<input type="text"/>		

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Generalization and Conclusions

- The described procedure of work through printed documents is a recurring standard pattern in the creation of specifications
- Content of documents which have to be printed generally influences
 - Interfaces to partner systems
 - GUI screens of PM
- Experience in many projects: customers discuss more about printed forms than about screens
- Best Practice: regard printed documents early. Clients like it!
- Printed documents are a driving force in the creation of software specifications

