Conceptual design and simulated operation of economies of scope and scale manufacturing enterprises

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Engineer air-conditioners to customer orders

- DM1 Customers
- DM2 Suppliers
- DM3 Sellers
- DM4 Marketers
- DM5 Product Designers
- DM6 A/C Producers
- DM7 Business Managers
- DM8 Logistics Providers
- DM9 Production Supporters

Project Title: Improvement of productivity and planning at Shenling A/C
Created: 15/07/08
Updated: 2008-8-3
Modelled by: Shenling project team

Flow Control Logic:
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay
DP1
Provide orders (Customers)

DP3
Prepare sales contract (Sales)

Approved contract

DP5
Create designs and BOMs

Drawings & BOMs

BP6.1
Fabricate metal sheet

BP6.2
Produce heat exchanger parts

BP7.1
Realize purchases

Purchase list

Part-finished A/Cs

BP6.3
Assemble small sized A/Cs

BP6.4
Assemble large sized A/Cs

BP6.5
Assemble finished A/Cs

Finished A/Cs

DP8
Transport Air-conditioners

General Blocks

Resources

Flow Control Logic

Flow Type

Operation Type

CIMOSA Domain
Non-CIMOSA Domain
Activity
External Link
Event
Information
HR
Physical
Finance
Conditional
OR
AND
Sub-Process
Chained Process
Delay
Flow of Resource
Flow of Process
Alternative Flow
Direct Generation
Direct Supportive
Indirect Supportive

Loughborough University

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Project Title:

Page: 3 OF 44

Version: 1

Modelled by:
zc

Created:
09/07/08

Revised by:
Updated:
2010-1-22
structure diagram for sales - structure diagram dp3

Modelled by: Shenling Project team
Created: 15/07/2008

BP3.1 Obtain & process orders
- EA 3.1.1 Identify customers
- EA 3.1.2 Negotiate sales
- EA 3.1.3 Verify contract terms
- EA 3.1.4 Get contract documents signed
- EA 3.1.5 Distribute contract documents

BP3.2 Arrange delivery of finished A/Cs
- EA 3.2.1 Verify completion date
- EA 3.2.2 Check customer details
- EA 3.2.3 Arrange transportation
- EA 3.2.4 Print customer details and delivery documents

BP3.3 Provide after sales services
- EA 3.3.1 Verify customer product identity
- EA 3.3.2 Analyse complaint/faults
- EA 3.3.3 Provide technical support

DP3 Prepare sales contract
BP5.1 Produce designs

- EA 5.1.1 Select scheme design
- EA 5.1.2 Modify scheme designs
- EA 5.1.3 Create detail designs
- EA 5.1.4 Check detail designs
- EA 5.1.5 Modify detail designs and update PDM file
- EA 5.1.6 Distribute

DP5 Create designs and BOMs

BP5.2 Generate BOMs

- EA 5.2.1 Study designs
- EA 5.2.2 Check available material list
- EA 5.2.3 Modify existing BOMs
- EA 5.2.4 Update PDM file
- EA 5.2.5 Attach BOM to drawings and lock PDM file
- EA 5.2.6 Distribute

General Blocks
- CIMOSA Domain
- Non-CIMOSA Domain
- Activity
- External Link
- Event

Resources
- Information
- HR
- Physical
- Finance

Flow Control Logic
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay

Flow Type
- Flow of Resource
- Flow of Process
- Alternative Flow

Operation Type
- Direct Generation
- Direct Supportive
- Indirect Supportive

Project Title: Structure diagram for design

Created: 15/07/2008

Created by: Shenling Project team

Updated: 2008-8-3
**Structure Diagram for Production DP6**

**BP6.1** Fabricate metal sheet
- EA6.1.1 Un-coil metal sheet
- EA6.1.2 Cut and Drill
- EA6.1.3 Curling
- EA6.1.4 Welding
- EA6.1.5 Sanding
- EA6.1.6 Acid wash
- EA6.1.7 Spray
- EA6.1.8 Froth
- EA6.1.9 Store

**BP6.2** Produce heat exchanger parts
- BP6.2.1 Make air cooled heat exchangers
- BP6.2.2 Make water cooled heat exchangers

**BP6.3** Assemble small sized A/Cs
- BP6.3.1 Assemble terminal A/Cs
- BP6.3.2 Assemble air cooled A/Cs
- BP6.3.3 Assemble water cooled A/Cs
- BP6.3.41 Assemble electronic control systems

**BP6.4** Assemble large sized A/Cs
- BP6.4.1 Assemble framework
- BP6.4.2 Assemble system components & weld pipework
- BP6.4.3 Install electrical system & controller
- BP6.4.4 Functionally test
- BP6.4.5 Pack finished A/Cs

**BP6.5** Store materials
- BP6.5.1 Store WIP
- BP6.5.2 Store purchased items / unused parts

**BP6.6** Maintain machines
- BP6.6.1 Develop maintenance plans
- BP6.6.2 Perform machine maintenance

**BP6.7** Store materials
- BP6.7.1 Store WIP
- BP6.7.2 Store purchased items / unused parts

**General Blocks**
- CIMOSA Domain
- Non-CIMOSA Domain
- Activity
- External Link
- Event
- Information
- HR
- Physical
- Finance
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay
- Flow of Resource
- Flow of Process
- Alternative Flow
- Direct Generation
- Direct Supportive
- Indirect Supportive

**Resources**
- Fabricate metal sheet
- Produce heat exchanger parts
- Assemble small sized A/Cs
- Assemble large sized A/Cs
- Store WIP
- Store purchased items / unused parts

**Flow Type**
- Flow of Resource
- Flow of Process
- Alternative Flow

**Modelled by:** Shenling project team
**Created:** 15/07/2008
**Updated:** 2009-4-30

**Project Title:** BP6.1 Fabricate metal sheet
- EA6.1.1 Un-coil metal sheet
- EA6.1.2 Cut and Drill
- EA6.1.3 Curling
- EA6.1.4 Welding
- EA6.1.5 Sanding
- EA6.1.6 Acid wash
- EA6.1.7 Spray
- EA6.1.8 Froth
- EA6.1.9 Store
sub-interaction diagram for production dp6

- BP6.1 Fabricate metal sheets
- BP6.2 Produce heat exchanger parts
- BP6.3 Assemble small sized A/Cs
- BP6.4 Assemble large sized A/Cs
- BP6.5 Store materials
- BP6.6 Maintain machines
- BP6.7 Prepare production and purchasing plans
- BP6.8 Assemble electronic control units

Resources:
- Drawings, BOMs, production methods
- Production plans
- Material plans
- Purchased materials and components
- Machine breakdown history, maintenance plans
- Materials and components

Flow Control Logic:
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay

Flow Type:
- Flow of Resource
- Flow of Process
- Alternative Flow

Operation Type:
- Direct Generation
- Direct Supportive
- Indirect Supportive

Project Title: Create designs and BOMS
Modelling by: Shenling project team
Created: 15/07/2008

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[Diagram depicting various processes and their interactions]
DP7.1 Realize purchases

BP7.1.1 Order materials

BP7.1.2 Manage supplier payments

BP7.1.3 Identify new suppliers

DP7.4 Control quality

BP7.41 Study product design, specs and reports

BP7.42 Conduct in-process product quality inspection

BP7.43 Inspect & release final product

DP7.3 Manage human resources

BP7.3.1 Recruit staff

BP7.3.2 Train staff

BP7.3.3 Manage support staff and services

DP7.2 Control finance

BP7.2.1 Prepare departmental budgets

BP7.2.2 Update product cost

BP7.2.3 Control cash flow

Project Title: Realize purchases

BP7.1.1 Order materials
BP7.1.2 Manage supplier payments
BP7.1.3 Identify new suppliers

BP7.4 Control quality
BP7.41 Study product design, specs and reports
BP7.42 Conduct in-process product quality inspection
BP7.43 Inspect & release final product

DP7.3 Manage human resources
BP7.3.1 Recruit staff
BP7.3.2 Train staff
BP7.3.3 Manage support staff and services

DP7.2 Control finance
BP7.2.1 Prepare departmental budgets
BP7.2.2 Update product cost
BP7.2.3 Control cash flow
sub-interaction diagram for manage business

1. DP7.1 Realize purchases
   - Purchase list
   - Purchase orders
   - Materials/Components
   - Produce A/Cs

2. DP7.2 Control finance
   - Payment documents
   - Payments
   - Quality reports

3. DP7.3 Manage human resources
   - Train plans, recruitment list and policies
   - New staff, trained staff, etc

4. DP7.4 Control quality
   - Staff requirements, needs and development
   - Train plans, recruitment list and policies

5. BP 6.6.3 Derive purchase list
   - Purchase list
   - Purchase orders
   - Materials/Components
   - Produce A/Cs

6. Derive purchase list
   - BP 6.6.3
   - Purchase list
   - Purchase orders
   - Materials/Components
   - Produce A/Cs

Flow Control Logic:
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay

Flow Type:
- Flow of Resource
- Flow of Process
- Alternative Flow

Operation Type:
- Direct Generation
- Direct Supportive
- Indirect Supportive
Realize purchases

BP7.1.1 Order materials

BP7.1.2 Manage supplier payments

EA 7.1.1.1 Study purchase list

EA 7.1.1.2 Create initial purchase request (PR)

EA 7.1.1.3 Obtain quotes and samples

EA 7.1.1.4 Check quality of samples

EA 7.1.1.5 Evaluate, negotiate and select supplier

EA 7.1.1.6 Raise Purchase orders (POs)

EA 7.1.1.7 Approve POs

EA 7.1.1.8 Send POs to approved Suppliers

EA 7.1.3.1 Send new production requirements to various suppliers

EA 7.1.3.2 Investigate suppliers potential

EA 7.1.3.3 Check samples and validate supplier identity

EA 7.1.3.4 Select supplier and update supplier list

EA 7.1.2.1 Request for payment

EA 7.1.2.2 Check transaction

EA 7.1.2.3 Approve payment

EA 7.1.2.4 Authorize payment

Project Title: BP7.1

Order materials

Manage supplier payments

Realize purchases

Study purchase list

Create initial purchase request (PR)

Obtain quotes and samples

Check quality of samples

Evaluate, negotiate and select supplier

Raise Purchase orders (POs)

Approve POs

Send POs to approved Suppliers

Send new production requirements to various suppliers

Investigate suppliers potential

Check samples and validate supplier identity

Select supplier and update supplier list

Request for payment

Check transaction

Approve payment

Authorize payment

Created: 15/07/2008

Updated: 2008-8-3

Shenling project team

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BP9.1 Produce and maintain tools

- EA 9.1.1 Create tool designs
- EA 9.1.2 Inspect tool designs
- EA 9.1.3 Make tools
- EA 9.1.4 Repair tools
- EA 9.1.5 Inspect tools
- EA 9.1.6 Store or release tools to production

BP9.2 Document existing production method

- EA 9.2.1 Study product design
- EA 9.2.2 Inspect production method
- EA 9.2.3 Document existing production method

BP9.4 Inspect production method

- EA 9.4.1 Verify existing production method
- EA 9.4.2 Rectify production method
- EA 9.4.3 Train production staff

BP9.3 Specify product design & production method

- EA 9.3.1 Inspect product design
- EA 9.3.2 Specify production method
- EA 9.3.2 Document & print new production method

BP9.5 Monitor production

- EA 9.1.1 Create tool designs
- EA 9.1.2 Inspect tool designs
- EA 9.1.3 Make tools
- EA 9.1.4 Repair tools
- EA 9.1.5 Inspect tools
- EA 9.1.6 Store or release tools to production

BP9.1 Produce and maintain tools

- EA 9.1.1 Create tool designs
- EA 9.1.2 Inspect tool designs
- EA 9.1.3 Make tools
- EA 9.1.4 Repair tools
- EA 9.1.5 Inspect tools
- EA 9.1.6 Store or release tools to production

BP9.2 Document existing production method

- EA 9.2.1 Study product design
- EA 9.2.2 Inspect production method
- EA 9.2.3 Document existing production method

BP9.4 Inspect production method

- EA 9.4.1 Verify existing production method
- EA 9.4.2 Rectify production method
- EA 9.4.3 Train production staff

BP9.3 Specify product design & production method

- EA 9.3.1 Inspect product design
- EA 9.3.2 Specify production method
- EA 9.3.2 Document & print new production method

BP9.5 Monitor production
activity diagram for sales (part 2) bp3.2

General Blocks

Resources

Flow Control Logic

Flow Type

Operation Type

CIMOSA Domain
Non-CIMOSA Domain
Activity
External Link
Event
Information
HR
Physical
Finance
Conditional
OR
AND
Sub-
Process
Chained
Process
Delay
Flow of Resource
Flow of Process
Alternative Flow
Direct Generation
Direct Supportive
Indirect Supportive

Project Title: activity diagram for sales (part 2) bp3.2
Modelled by: Shenling Project team
Created: 15/07/2008
Page: 17 OF 44
Version: 1
Revised by: Z.Cui
Updated: 2008-8-3
Customer complaints

Sales Officer

Customer complaints

EA3.3.1 Verify customer product identity

Product type and fault

EA3.3.2 Analyse fault

After sales Engineer

EA3.3.3 Provide technical support

Fault analysis, cost, implementation dates

Technical support report

EA3.3.1 Verify customer product identity

Customer complaints

Sales Officer

Product type and fault

After sales Engineer

Fault analysis, cost, implementation dates

Technical support report

EA3.3.1 Verify customer product identity

Customer complaints

Sales Officer

Product type and fault

After sales Engineer

Fault analysis, cost, implementation dates

Technical support report
activity diagram for design (part 1) bp5.1

Modelled by: Shenling Project team
Created: 15/07/2008

Project Title:...
Page: 19 OF 44
Version: 1
Revised by: Z.Cui
Updated: 2008-8-3
activity diagram for design (part 2) bp5.2

Project Title: Contract document, detailed drawings

Resources:
- Product Design Engineer
- Drawings, material list
- CAD software

Flow Control Logic:
- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay

Flow Type:
- Flow of Resource
- Flow of Process
- Alternative Flow

Operation Type:
- Direct Generation
- Direct Supportive
- Indirect Supportive

Project Title: EA5.2.1 Study designs
- EA5.2.2 Check available material list
- EA5.2.3 Modify existing BOMs
- EA5.2.4 Update PDM file
- EA5.2.5 Attach BOM to drawings and lock PDM file

Flow Type:
- Flow of Resource
- Flow of Process
- Alternative Flow

Operation Type:
- Direct Generation
- Direct Supportive
- Indirect Supportive

Created: 15/07/2008
Updated: 08-8-3

Modelled by: Shenling Project team
Revised by: Z.Cui

activity diagram for air cooled heat exchanger bp6.2.1

- EA6.2.1.1 Slit metal sheet
  - Machinist
  - Slitter

- EA6.2.1.2 Curl pipe
  - Pipe bender

- EA6.2.1.3 Assemble strips and pipes
  - OR
  - Sub assy 1

- EA6.2.1.4 Expand tubes
  - Pallet truck
  - Heat exchanger unit

- EA6.2.1.5 Transfer products
  - Small sized Curler
  - Machinist

- EA6.2.1.6 Dry product
  - Dry product
  - Belt dryer

- EA6.2.1.7 Machine small sized U-tubes
  - Machine small sized U-tubes
  - Press fitted sub assy1

- EA6.2.1.8 Weld sub assy 1 and U tubes together
  - Gas Welder
  - Welding machine

- EA6.2.1.9 Pressure-test unit
  - Heat exchanger unit
  - N2 gas

- EA6.2.1.10 Transfer unit to waiting area
  - Pallet truck

- EA6.2.1.11 Test for stress
  - QC Officer
  - N2 gas

- EA6.2.1.12 Label and pack product
  - Test operators 1
  - Certified heat exchanger unit

- EA6.2.1.13 Control quality
  - Heat exchanger unit
  - Labelled heat exchanger unit

- EA6.2.1.14 Control quality
  - Heat exchanger unit
  - Certified sub assy 1
activity diagram for make water cooled heat exchanger bp 6.2.2

CIMOSA Domain
Non-CIMOSA Domain
Activity
External Link
Event
Information
HR
Physical
Finance
Conditional
OR
AND
Sub-Process
Chained Process
Delay
Flow Type
Flow of Resource
Flow of Process
Alternative Flow
Operation Type
Direct Generation
Direct Supportive
Indirect Supportive

Project Title: Shenling Air-Conditioning Equipment Co.Ltd Project
Page: 23 OF 44
Version: 1
Revised by: Z.Cui
Updated: 2008-8-4

Created: 15/07/2008

Modelled by: Shenling Project team
activity diagram for assemble large size ACs-bp6.4

- **General Blocks**
  - CIMOSA Domain
  - Non-CIMOSA Domain
  - Activity
  - External Link
  - Event

- **Resources**
  - Information
  - HR
  - Physical
  - Finance

- **Flow Control Logic**
  - Conditional
  - OR
  - AND
  - Sub-Process
  - Chained Process
  - Delay

- **Flow Type**
  - Flow of Resource
  - Flow of Process
  - Alternative Flow

- **Operation Type**
  - Direct Generation
  - Direct Supportive
  - Indirect Supportive

**Modelled by:** Shenling Project team

**Created:** 20/07/08

**Updated:** 2009-4-30

**Project Title:** activity diagram for assemble large size ACs-bp6.4

**Page:** 26 OF 44

**Version:** 1

**Revised by:** Z.Cui

**Updated:** 2009-4-30
EA6.6.1.1 Study maintenance manuals

EA6.6.1.2 Prepare draft preventive maintenance plan

EA6.6.1.3 Modify maintenance plan

Production Supervisor

Manuals

Parts

Historical maintain data

Initial ideas about machine maintenance requirement

Machine failure report

Draft maintenance plans

Adjusted maintenance plans

Production

Modified plan

Resources

General Blocks

Flow Control Logic

Flow Type

Operation Type

CIMOSA Domain
Non-CIMOSA Domain
Activity
External Link
Event
Information
HR
Physical
Finance
Conditional
OR
AND
Sub-Process
Chained Process
Delay
Flow of Resource
Flow of Process
Alternative Flow
Direct Generation
Direct Supportive
Indirect Supportive

Project Title: activity diagram for develop maintenance plan-bp6.6.1
Modelled by: Shenling Project team
Created: 15/07/2008

Page: 27

Version: 1

Revised by: Z.Cui
Updated: 28/07/08
activity diagram for purchase-order materials-bp7.1.1

**General Blocks**

- CIMOSA Domain
- Non-CIMOSA Domain
- Activity
- External Link
- Event

**Resources**

- Information
- HR
- Physical
- Finance

**Flow Control Logic**

- Conditional
- OR
- AND
- Sub-Process
- Chained Process
- Delay

**Flow Type**

- Flow of Resource
- Flow of Process
- Alternative Flow

**Operation Type**

- Direct Generation
- Direct Supportive
- Indirect Supportive

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**Loughborough University**

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**Project Title:**  
activity diagram for purchase-order materials-bp7.1.1

**Modelled by:**  
Shenling Project team

**Created:**  
15/07/2008

**Page:** 32

**Version:** 1

**Revised by:** Z.Cui

**Updated:** 8-4-2008
Activity diagram for purchase-indentify new suppliers 7.1.3

1. **New production requirements**
   - Purchasing Officer
   - Input: New production requirements

2. **Send new production requirements to various suppliers**
   - EA7.1.3.1
   - Output: Supplier profile, Samples, Proforma invoices, Purchase request

3. **Investigate suppliers potential**
   - EA7.1.3.2
   - Input: Supplier profile

4. **Check samples and validate supplier identity**
   - EA7.1.3.3
   - Input: Samples and supplier identity confirmation

5. **Select Supplier and update supplier list**
   - EA7.1.3.4
   - Input: Updated supplier list

6. **Source**
7. **Destination**
8. **Updated supplier list**

**Flow Control Logic**
- Conditional
- OR
- AND
- Sub-process
- Chained process
- Delay

**Flow Type**
- Flow of Resource
- Flow of Process
- Alternative flow

**Operation Type**
- Direct Generation
- Direct Supportive
- Indirect Supportive

**Resources**
- Information
- HR
- Physical
- Finance

**General Blocks**
- CIMOSA Domain
- Non-CIMOSA Domain
- Activity
- External Link
- Event

**Modelled by:** Shenling Project team

**Created:** 15/07/2008

**Updated:** 2008-8-4
EA7.2.1.1 Obtain departmental budgets

Available and expected income level of company

Other sundry expenses

Compiled departmental budgeted figures

Approved budget figures for departments

EA7.2.1.2 Adjust departmental budgets

Finance Officer

Departmental budgets

EA7.2.1.3 Update departmental budget list and report

Final budgeted figures
activity diagram for manage human resource-recruit stuff-bp7.3.1 & Bp7.3.2

EA7.3.1.1 Plan for recruitment

EA7.3.1.2 Advertise for personnel

EA7.3.1.3 Interview

EA7.3.1.4.1 Organise & conduct exams

EA7.3.1.4.2 Second interview

New recruited people

BP7.3.2 Train stuff

Every department

HR department

Training plans

Trained new stuffs

HR officers

Finance

Payment for training

General Blocks

Resources

Flow Control Logic

Flow Type

Operation Type


- Staff requirements
- Staff needs & development
- IT support for R & D
- Exhibit at graduate recruitment events
- Websites
- Every department
- HR officers
- Recruitment plan
- Potential new staff list
- EA7.3.1.1 Plan for recruitment
- EA7.3.1.2 Advertise for personnel
- EA7.3.1.3 Interview
- EA7.3.1.4.1 Organise & conduct exams
- EA7.3.1.4.2 Second interview
- New recruited people
- BP7.3.2 Train stuff
- Every department
- HR officers
- Training budget
- Finance
- Payment for training

Created: 15/07/2008
Updated: 2008-8-7

Modelled by: Shenling Project team

Project Title: Loughborough University

Page: 38 OF 44
Version: 1
Revised by: Z.Cui
Updated: 2008-7-
activity diagram for manage human resource-manage support stuff and service-bp7.3.3

- **BP7.3.3.1 Management Support**
  - Accommodation report
  - Security report
  - Info on uniforms
  - Daily management records
- **EA7.3.3.2 Establish own policy**
- **EA7.3.3.3 Create General HR report**
- **EA7.3.3.4 Implement policy**
- **Senior managers and directors**

**Resources**
- **HR data for each dep**
- **HR stuffs**
- **Accommodation report**
- **Security report**
- **Info on uniforms**
- **Daily management records**
- **ISO certificate etc**

**Flow Control Logic**
- **Conditional**
- **OR**
- **AND**
- **Sub-process**
- **Chained Process**
- **Delay**

**Flow Type**
- **Flow of Resource**
- **Flow of Process**
- **Alternative Flow**

**Operation Type**
- Direct Generation
- Direct Supportive
- Indirect Supportive
BP7.4.1
Study product drawings, specs and reports

BP7.4.2
Conduct in-process product quality inspection

BP7.4.3
Inspect and release final product

Quality Officer

Product drawings and specs

Product failure reports

Quality action list

Products in process

Quality stickers

Quality reports

Certified WIPs

Released final products

Final quality reports

source

destination

source

destination

CIMOSA Domain
Non-CIMOSA Domain
Activity
External Link
Event
Information
HR
Physical
Finance
Conditional
OR
AND
Sub-Process
Chained Process
Delay
Flow of Resource
Flow of Process
Alternative Flow
Flow Type
Direct Generation
Direct Supportive
Indirect Supportive
Operation Type
EA9.2.1 Study product designs

Process Controller

Product drawings and specifications

Draft production method

EA9.2.2 Inspect production method

Shop floor production method

EA9.2.3 Document existing production method

Existing production method

tech design

destination

-- Activity Diagram for Support Production (part2) - Document Existing Production Methods - bp9.2

Project Title: Loughborough University

Created: 20/07/08

Updated: 2008-8-4

Revised by: Z.Cui

Modelled by: Shenling Project team

Project Title: activity diagram for support production (part2) - document existing production methods - bp9.2

Page: 42 OF 44

Version: 1

Operation Type:

- Direct Generation
- Direct Supportive
- Indirect Supportive
activity diagram for support production (part3)-Specify new production methods-bp9.3

- **Process Controller**
- **New product designs**
- **Draft production method**
- **EA9.3.1** Inspect product designs
- **EA9.3.2** Specify production method
- **EA9.3.3** Document and print new production method

**Resources**
- **Resources**
  - **Information**
  - **HR**
  - **Physical**
  - **Finance**

**Flow Control Logic**
- **Conditional**
- **OR**
- **AND**
- **Sub-Process**
- **Chained Process**
- **Delay**

**Flow Type**
- **Flow of Resource**
- **Flow of Process**
- **Alternative Flow**

**Operation Type**
- **Direct Generation**
- **Direct Supportive**
- **Indirect Supportive**

**General Blocks**
- **CIMOSA Domain**
- **Non-CIMOSA Domain**
- **Activity**
- **External Link**
- **Event**

**Created**: 20/07/08
**Updated**: 2008-8-4

**Modelled by**:
- Shenling Project team
EA9.4.1 Verify existing production method

Observed differences in production methods

EA9.4.2 Rectify production method

Improved production methods and solutions

Production staff

EA9.4.3 Train production staff

Standardized production methods

Trained production staff