

Web Design Methods:

IDM Model – part 2 (P-IDM)

Franca Garzotto

Page design in IDM: Goal

Starting from L-IDM specs, to define at abstract (conceptual) level the complete “navigation architecture” and the main elements within a page

Warning!

Visual design (i.e., graphics and look&feel) is NOT part of page design as intended in IDM

What is inside pages?

CONTENT

+

LINKS

+

ORIENTATION INFO

P-IDM (Page-IDM): primitives

■ PAGE

- Topic Page
 - Entry Page
- Transition Page
- Introductory page
- Home page

■ LINK

- Structural link
- Transition Link
- Group Link
- Landmark

■ ORIENTATION INFO

■ NAVIGATION PATTERN

P-IDM main concept:PAGE

atomic **presentation unit**

visual **container** of

CONTENT (text, images, animation,
video, audio)

AND

LINKS

Categories of pages

■ **Topic Pages:**

- The place where users consume contents about a given single topic or topic of a given kind
- Derived from at least one or more content dialogue acts

■ **Transition Page**

- The place where users see what is related to what

■ **Introductory page**

- The place where users understand what are a group is about, and what are its members, and decide to go on
- Derived from introductory act(s)

Entry Page of a Topic

- A “special” Topic Page
- **The** page about a topic where the user arrives when (s)he moves to that topic by effect of link traversing
- The **default** destination of any link to that topic

Example: Topic Page



What's New
Newsletters
Calendar
Recent Acquisitions
Videos & Podcasts
About the Gallery
Canaletto
Gauguin

The Collection
Exhibitions
Plan a Visit
Programs & Events
Online Tours
Education
Resources
Gallery Shop
Support the Gallery
NGAkids

Search the Site



Domenico Veneziano (artist)
Italian, c. 1410 - 1461

Saint John in the Desert, c. 1445/1450

tempera on panel

overall: 28.4 x 31.8 cm (11 3/16 x 12 1/2 in.) framed: 40.6 x 44.1 x 5.1 cm (16 x 17 3/8 x 2 in.)

Samuel H. Kress Collection

1943.4.48

[On View](#)

From the Tour: The Early Renaissance in Florence
Object 3 of 8

This panel and *Saint Francis Receiving the Stigmata* are from one of Domenico's major works, a large altarpiece in the church of Santa Lucia de' Magnoli in Florence. They formed part of its *predella*, the lower tier of small scenes that typically illustrated events in the lives of the saints who appeared in the larger central altar panel above.

Domenico's John the Baptist is unusual. Earlier artists had shown him as an older, bearded man with matted hair and clad in animal skins. Here, though, we see a youthful John at the very moment he is casting off the fine clothes of worldly life for a spiritual existence. His graceful figure, nude and modeled like an ancient statue, is one of the first embodiments of the Renaissance preoccupation with the art of ancient Greece and Rome. The figure is convincingly three-dimensional because the tones Domenico used for his flesh are graduated, one color blending continuously into the next. The landscape around the saint, however, belongs to an earlier tradition. Its sharp, stylized forms increase our appreciation for the desolation John is about to embrace in the stony wilderness; they dramatize his decision and give his action greater significance.

[full screen image](#)

[artist information](#)

[bibliography](#)

[exhibition history](#)

[location](#)

[provenance](#)

« [back to gallery](#) » [continue tour](#)

Landmarks

Orientation info

Content
From Content Dialogue Act

Structural
Links

Group Links

Transition Links

Example: Introductory Page

Landmarks

what's New
Newsletters
Calendar
Recent Acquisitions
Videos & Podcasts
About the Gallery
Canaletto
Gauguin
The Collection
Exhibitions
Plan a Visit
Programs & Events
Online Tours
Education
Resources
Gallery Shop
Support the Gallery
NGAkids

Search the Site



Tour: The Early Renaissance in Florence

[Overview](#) | [Start Tour](#)



1



4



2



5



3



6

» [next](#)

« [back to Italian Painting of the 15th century](#)

Overview

In fifteenth-century Florence, many people believed themselves to be living in a new age. The term "Renaissance," already coined by the sixteenth century, describes the "rebirth" from the dark ages of intellectual decline that followed the brilliance of ancient civilization. In Italy, especially, the Renaissance was spurred by a revival of Greek and Roman learning. Works by classical authors, lost to the West for centuries, were rediscovered, and with them a new, humanistic outlook that placed man and human achievement at the center of all things. [\(continue\)](#)

Captions

1.

1 Masolino da Panicale, The Annunciation, c. 1423/1424

2 Florentine 15th Century, Matteo Olivieri (?), 1430s

3 Domenico Veneziano, Saint John in the Desert, c. 1445/1450

Group
Links

Content
From Introductory
Dialogue Act

Example: Topic Page



What's New
Newsletters

Calendar

Recent Acquisitions

Videos & Podcasts

About the Gallery

Canaletto

Gauguin

The Collection

Exhibitions

Plan a Visit

Programs & Events

Online Tours

Education

Resources

Gallery Shop

Support the Gallery

NGAkids

Search the Site



THE COLLECTION

NATIONAL GALLERY OF ART

Domenico Veneziano

Italian, c. 1410 - 1461

The earliest certain document concerning Domenico is a letter written by the painter from Perugia on 1 April 1438, addressed to the twenty-two-year-old Piero de' Medici. Its contents, in which the artist, at the time busy painting frescoes in the Umbrian city, offers his services to the son of Cosimo the Elder, indicate clearly that he was on familiar terms not only with that illustrious family (whom he could have met during the Medici's exile in Venice between 1433 and 1434), but also with the Florentine art world. This circumstance, as well as the confidence in the use of Brunelleschian perspective and the reflections of Donatello's art evident in Domenico's earliest known works, suggest that he probably arrived in Florence a few years before 1438 and completed his artistic training there. There seems to be no real justification in trying to find elements derived from Gentile da Fabriano in his painting, as has been supposed in the past. Instead of following this great master of late Gothic painting to Florence (where Gentile was active between 1420 and 1425), Domenico could instead have come to Tuscany with Filippo Lippi when the latter returned to Florence around 1435 after a stay in Venice. Domenico's early training in Venice or perhaps in Padua, close to artists like Giovanni d'Alemagna, left its mark in his attentive observations from nature, readily seen in his earliest works. Of these the first seems to be according to Vasari's account[1] but also on the basis of its style the decoration of the Carnesecchi tabernacle in Florence, which bears his signature (the frescoes, now detached, are in the National Gallery in London). Shortly after this work, characterized by the bold but not totally successful foreshortening of the throne, is the tondo of the *Adoration of the Magi* (Gemäldegalerie, Berlin), probably executed for the Medici after the artist's return to Florence, in which solid handling of the perspective is enlivened by minute description of nature in the landscape, recalling probable Flemish prototypes and perhaps also memories of the artist's early training in the Veneto. From the same period is a vigorous portrait of a young man in the museum in Chambéry (no. 364), usually attributed to Paolo Uccello.

In a subsequent phase the painter reveals his interest not only in the artistic language of Filippo Lippi but also in the sculpture of Donatello and Luca della Robbia. The sculptural quality of the

[Works by Domenico Veneziano](#)

Transition Link

Landmarks

Content
from Content Dialogue Act

Example: Transition Page



THE COLLECTION

NATIONAL GALLERY OF ART

What's New
Newsletters
Calendar
Recent Acquisitions
Videos & Podcasts
About the Gallery

[Canaletto](#)
[Gauguin](#)

The Collection
Exhibitions
Plan a Visit
Programs & Events
Online Tours
Education
Resources
Gallery Shop
Support the Gallery
[NGAkids](#)

Search the Site

Artist

Domenico Veneziano

Also known as Domenico di Bartolo da Venezia
Italian, c. 1410 - 1461

[Biography](#)
[Bibliography](#)

Painting

- [Madonna and Child](#), c. 1445/1450, 1939.1.221 ([image available](#))
- [Saint Francis Receiving the Stigmata](#), c. 1445/1450, 1939.1.140 ([image available](#))
- [Saint John in the Desert](#), c. 1445/1450, 1943.4.48 ([image available](#))

Drawing

- [A Young Man Sitting on a Stool Reading a Book \(recto\); The Fall of Man \(a fragment of the lower part\) \(verso\)](#), c. 1450, 2009.91.1 ([image available](#))

Orientation info

Transition Links

How are pages derived from L-IDM specifications?

MAPPING DIALOGUE ACTS INTO PAGE

“Default” mapping: 1-1 mapping from the set of Dialogue Acts to the set of pages

- 1 Content dialogue act → 1 Page
- 1 1-N relationship → 1 Page
- 1 Introductory Act → 1 Page

Observation

Using the default rules:

if N is the set of Dialogue Acts defined in the L-IDM schema, the Pages defined in the P-IDM schema are $N+1$ (the HOME page)

BUT

sometimes there are also other as pages e.g.,
“operational pages” (to perform operations such as payment, reservation), “data entry” pages - not modeled in IDM

Other content mappings

- N Content dialogue acts for the **same** topic
→ 1 Page
- Transition Act → NO separate Page: all transition links EMBEDDED in a Topic page; in this case:

Content Dialogue Act + Transition act → 1 Page

- Example

- One act=> multiple pages: to avoid! plan organization in advance - in C and L-IDM - as much as possible!

Other content mappings

- Multiple Introductory Acts → 1 Page

- Example 1: Introductory Act for a Father Group + N Introductory Act for the Son Groups → 1 Page

- Example 2: 1 “Introductory Act for an “Important” Group + Other “related” Introductory Acts → 1 Page

- example

In some cases, multiple parametric groups are merged in a single page listing all parameters; group items are dynamically displayed when a user selects a parameter

Mappings can be dynamic...

INTRODUCTORY ACT

Coming from collection
“Domestic Interiors”

Coming from collection
“Children”

**Content Dialogue act
 (“Painting Intro”)**

Warning! Usability...?

The image displays two screenshots of the Rijksmuseum website, illustrating dynamic mappings between collections and introductory acts. The top screenshot shows the 'Domestic Interiors' collection, with a red box highlighting the 'Domestic Interiors' collection and a red box highlighting the 'Isaac Blessing Jacob' page. The bottom screenshot shows the 'Children' collection, with a red box highlighting the 'Children' collection and a red box highlighting the 'Isaac Blessing Jacob' page. Arrows indicate the dynamic mapping between the collection and the introductory act.

Isaac Blessing Jacob
Read this page

Isaac Blessing Jacob

An elderly blind man feels for the head of his son. He is old and wants to bless him before he dies. This is a biblical story. The young man is Jacob and the elderly couple on the right are his parents, Isaac and Rebecca. Govert Flinck was a pupil of Rembrandt until 1636. He painted this canvas shortly after leaving, in 1638. It clearly reveals the influence of the artist's teacher.

Title
Isaac Blessing Jacob

Year
1638

Artist
Govert Flinck

Technique
Oil on canvas

Dimensions
117 x 141 cm

Extra large view of the image

Isaac Blessing Jacob
Read this page

Isaac Blessing Jacob

An elderly blind man feels for the head of his son. He is old and wants to bless him before he dies. This is a biblical story. The young man is Jacob and the elderly couple on the right are his parents, Isaac and Rebecca. Govert Flinck was a pupil of Rembrandt until 1636. He painted this canvas shortly after leaving, in 1638. It clearly reveals the influence of the artist's teacher.

Title
Isaac Blessing Jacob

Year
1638

Artist
Govert Flinck

Technique
Oil on canvas

Dimensions
117 x 141 cm

Object number
SK-A-110

Next

LINKS

Structural Links

Transition Links

Group Links

Landmarks

STRUCTURAL LINKS

- To other dialogue acts of the same topic
 - In the same page
 - In different pages
- They keep the user within the same topic (same “cognitive space”)

TRANSITION LINKS

**to move the user from a topic to a
DIFFERENT topic (“cognitive
jump”)**

GROUP LINKS

- To support navigation across pages derived from the groups the topic belongs to
- **Static** (always available)
- **Dynamic** (i.e., depending on the navigation state)
 - Dynamic Group Links should be carefully designed: risk of usability problems

LANDMARKS

Links available in all pages

- General rule: all (or some of) the links available from the Home Page
- Small-Medium applications : landmarks are the same everywhere
- Some (very) large applications : few landmarks on every page and additional “section landmarks”, different for each section

ORIENTATION INFO

- **Dynamic**” Content:
- **Role:** to clarify to the users the current position in the website “Where am I?” How did I get here?”
- Depends on the navigation context (the pages traversed so far)
- In simple cases “bread crumbs” work; in general cases they do not work
- Orientation info require advanced implementation skills and must be carefully designed to avoid usability problems

NAVIGATION PATTERNS

Navigation patterns

Compact specifications of some general “typical” navigation strategies

Inspired to the concept of **design patterns** (used in architecture and sw eng (see MVC-Model View-Control pattern))

A design pattern “... describes a *problem* which occurs over and over again in our environment, and then describes the core of the *solution* to that problem, in such a way that you can use this solution a million times over, without ever doing it the same way twice” [Alexander, 1979]. It provides a descriptive structure for integrating the analysis and the solution of a recurring problem, in a way that is sensitive to context, is informed by theory and evidence, and is *re-usable with a minimum degree of customization*. (C. Alexander, 1979)

Navigation Patterns

- General **Topologies** of nodes (pages) and arcs (links) that have been proved effective and usable for navigation in large hypermedia structures

3 main navigational patterns :

- GUIDED TOUR
 - INDEX
 - ALL-TO-ALL
- Can be intermixed and combined
 - See paper

Garzotto F., Paolini P., Bolchini D., Valenti S. *Modeling-by-Patterns" of Web Applications*. In Proc. WWWCM'99 - World-Wide Web and Conceptual Modeling, ER'99 Workshop, Paris (Fr), Nov. 1999, Springer, 1999, Lecture Notes in Computer Science, 1823/1999

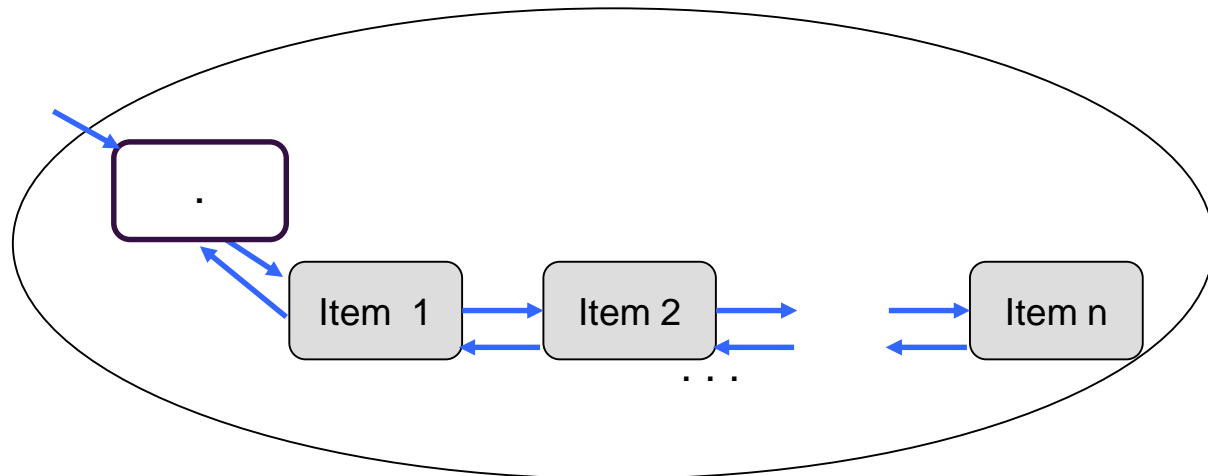
Guided tour pattern

Guided Tour
(GT)

When to adopt this pattern?

Problem: To provide “easy-to-use” access to a small group of objects, assuming the user has no reason (or is unable) to select one of them.

Solution: The solution consists of identifying an order among the group members, and creating sequential bidirectional links among them.

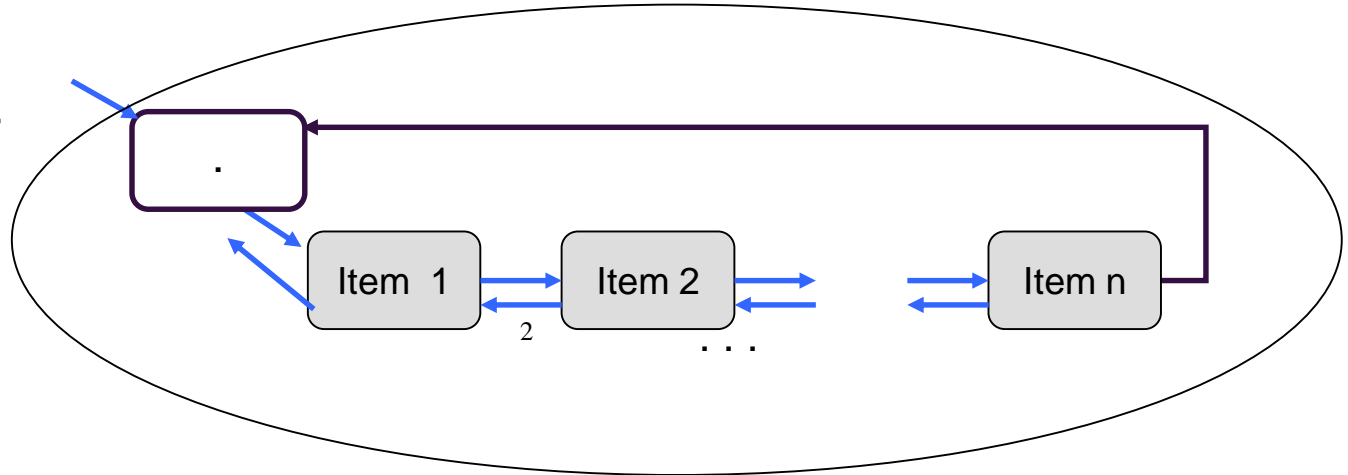


Guided Tour Pattern: variants

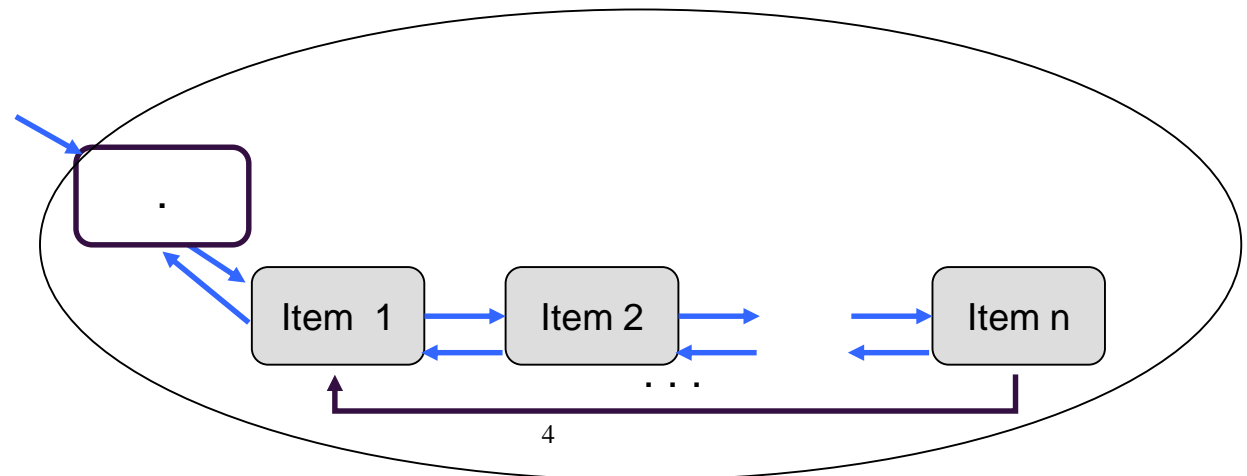
3

A GT variant is the circular guided tour, where the last member is linked to the first (or to the second, if the first is an introduction to the group).

Circular Guided Tour
(C-GT) – version 1



Circular Guided Tour
(C-GT) – version 2

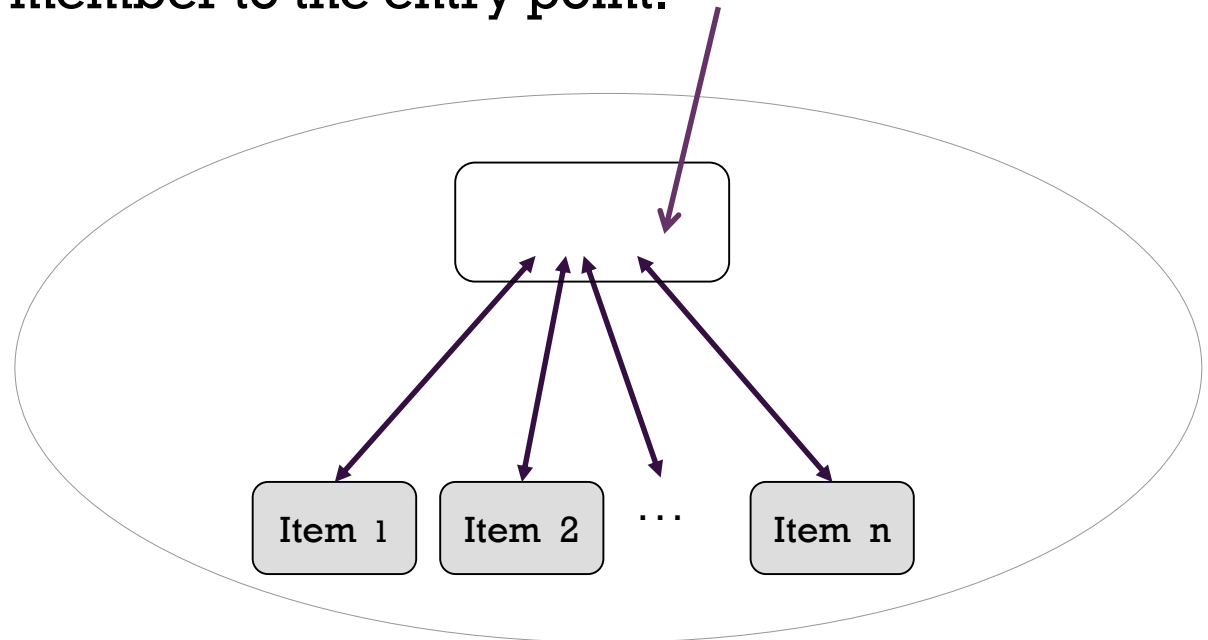


Index Pattern

When to adopt this pattern?

Problem: To provide fast access to a group of objects for users who are interested in one or more of them and are able to make a choice.

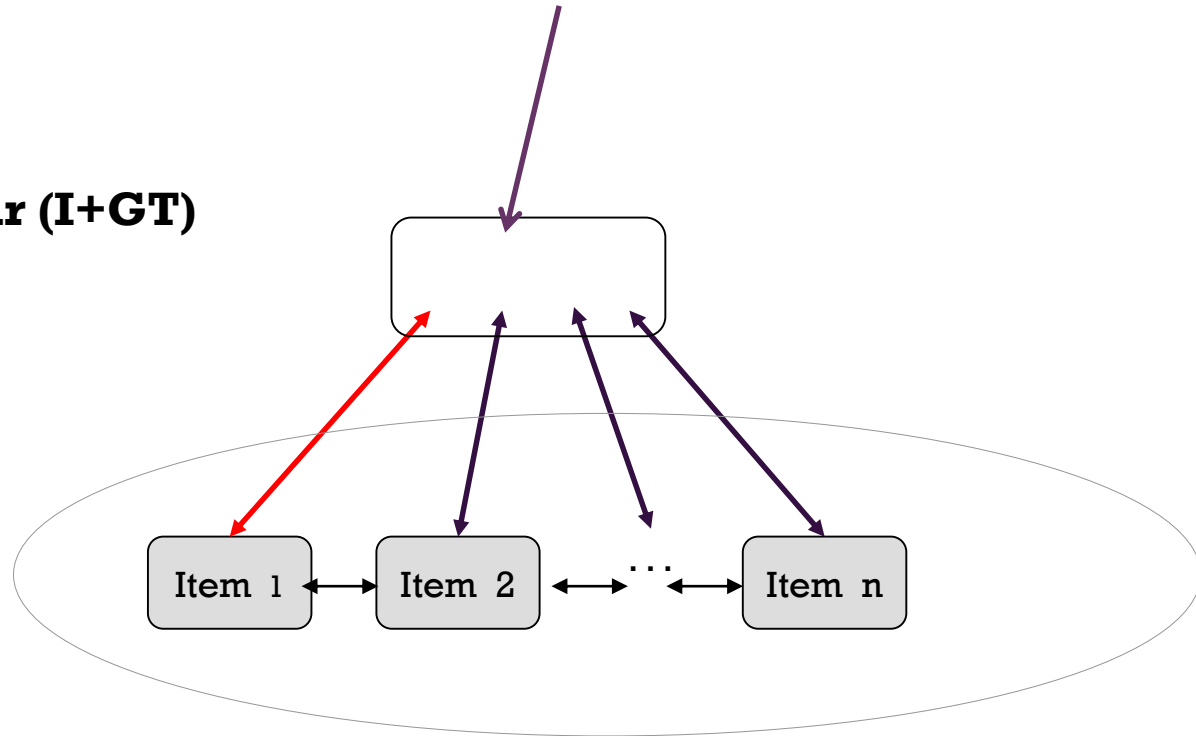
Solution: The core solution consists of defining links from the entry point of the group collection (the introductory page in IDM) *to each member, and from each member to the entry point.*



Index (I)

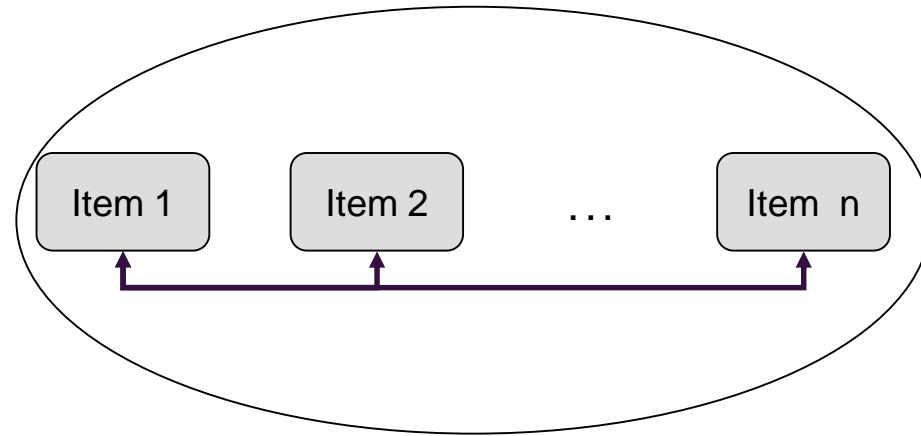
Combining Patterns: Index + Guided Tour Pattern

Index + Guided Tour (I+GT)



All-to-all Pattern

ALL-To-ALL (A2A)



Problem: To speed up navigation in a group of objects, so that the user can jump directly from one member to another without returning to the collection entry point.

Solution: linking each member of the group to all other members of the collection,

How to use navigation patterns

- Navigation patterns provide an intensional, compact representation for a set of links among groups of pages
- They improve readability of documentation: by “attaching” a pattern name to a group of pages, we specify all possible navigation paths and avoid defining each link explicitly and intensionally

LINKS inside a TOPIC page

Structural Links (in Topic Pages only)

+

Transition Links (in Topic and Transition Pages)

+

Group Links (in Topic and Introductory Pages)

+

Landmarks (in all pages)

LINKS inside a TOPIC page

Structural Links

One for each Dialogue Act of the Topic

Sometime missing if all Dialogue Acts are EMBEDDED in the same page:
navigation mechanism replaced by scrolling (usability problems!)

LINKS inside a TOPIC page

TRANSITION LINKS

- For each outgoing “**1-1 relation**” (max cardinality = 1)
 - a **direct link** leading to the **default page** for the “target” topic

- For each outgoing “**1-N relation**” (max cardinality > 1)

Two possibilities:

1. A link leading to a “**transition page**”
2. A “**list of links**” leading to **all** the **default pages** of the “target” topic (see next slide)

- NB: in the second case the transition act is embedded in the topic page - [See Example](#)

LINKS inside a TOPIC page

Group Links

UP; NEXT/PREVIOUS: depend on the **navigation pattern**

- 1) “UP”: To the Introductory Page of the Group the topic belongs to
 - 2) NEXT-PREVIOUS: to the Default Page of the next/previous member in the CURRENT group
- **Static** (always available)
 - **Dynamic** (i.e., depending on the navigation state, i.e., current group)

LINKS inside an INTRODUCTORY page

Group Links

- 1) **DOWN**: To the default pages of the group members:
 - To ALL group members
 - or/and to the **first** group member
- 2) **UP**: To the Introductory page of the FATHER group
- 3) **NEXT/PREVIOUS**: To the Introductory Pages of the SIBLING groups

LINKS inside a TRANSITION Page

TRANSITION LINKS

TO the Topic pages which has the chosen relationship with the Topic page the user is coming from

RETURN TO the Topic page the user is coming from

**Design Issues and refocusing
some concepts**

Topic Page: Structure

- **Title**: what the page is about (from a user point of view)
 - as defined in logical design
- **Content** : as defined in logical design
- **Structural Links** : (*static*) links to other dialogue acts of the same topic
- **Transition Links**: (*static*) a link for each “outgoing” relation
- **Landmarks**: (*static*) as defined from the Home Page or the section the page belongs to
- **Orientation Info** (*often dynamic*): where am I? How did I get here?
- **Group Links**: (*often dynamic*) to move within the current group

Transition Page: Structure

Transition Page = a page with a list of links corresponding to a relation

- E.G. Teacher → Course (min=1, max=10)
 - **Title**: “courses taught by Franca Garzotto”
 - **List of Links**: a link to each target of the relation
 - e.g. (for each course taught by Garzotto) “name, subtitle, starting date “→
 - NOTE: the “order” of the courses should be decided by the designer and made clear to the user
- **Landmarks**: as defined from the Home Page
- **Orientation Info** (*often dynamic*): where am I?

Transition Page: Design Issues

- Each link is associated to some pieces of content – to be decided during L-IDM or postponed to P-IDM

e.g. a list of Paintings Masterpieces

Painting: Name?, date?, style?, technique? Comment?

Thumbnail?

Design issues:

- Issue 1: **communicability** - which pieces of information better represent the links?
- Issue 2: **orienting the user** - are we dealing with a user who knows what is looking for or the user is just browsing around or do we want to attract the user toward specific items.....?
- Issue 3: **ordering** - what's the best order for the links (from a user point of view)?

“Missing” Transition Links

- For optional relations (cardinality $[0..1]$ or $[0..N]$) sometimes there is no link
- Three possibilities:
 - No link is shown (it can be confusing for the user)
 - A “non active” link is shown (it can be annoying for the user)
 - A “shaded” link (not active) is shown (it must convey the message that in this specific case the link is not there, but in other similar pages you may find it)

Introductory Pages: Structure

- **Title**: e.g. “OUR BEST COURSES”
- **Introductory content** (OPTIONAL): something to explain what are we talking about, to attract the user attention, to promote going “in depth”...
- **List of items**:
 - Each item
 - Some descriptive info (e.g. to the identify/characterize the course)
 - A group link
 - NOTE: designer should be very conscious into choosing the proper decsriptive info and properly ordering the items
- + **Landmarks, Orientation Info, (“GO ON” link)**

Introductory Page: Design Issues

- “introductory” page: a way to start navigation to a group of topics
- The purpose of an Introductory Page is to present the members of the group of topics

2 Possibilities:

- Textual representation (Index): listing all the members in a given order
- Graphic representation: e.g. an interactive map
- A combination of both

Additional elements in Introductory Pages

Optional navigation elements can be found in an introductory page

- *User Controlled Ordering* : letting users to control the ordering of the list of items (suggested for long lists of items)
- *User Controlled Filtering*: letting users to search within the list of items and/or filter their visualization according to some selection criteria (suggested for very long lists of items)

“Nested” Introductory Pages

Derived from Multiple Group of Topics

e.g. Paintings by Subject (portrait, religion, countryside, ..)

Typical structure

■ Parameter Introductory Page

- Title (e.g. “Paintings by subject”) + List of items = parameter values
 - Portrait →(link)
 - Religion →(link)
 - ..
- + Landmarks, *Orientation Info*, (“GO ON”)

■ [Parametrized Introductory Page

- Title (e.g. “Portrait Paintings”) + List of items : corresponding to the parameter choice
 - Portrait-1 →(link)
 - Portrait-2 →(link)
 -
- + Landmarks, *Orientation Info*

HOME PAGE

- It is a Cover, an Index, an Introduction, a Brand communication, ...
- Specific Content
- GROUP Links

Homepage

The **FIRST** page has many different purposes:

- It establishes the “Brand” a b c d
- It offers the index/overview of the web site content
- It is the invitation (“please, come in”: don’t miss this opportunity”)
- It is the “appetizer” “this is an example of what you’re going to get”

Often a mix of all the above aspects

- Example:

Homepage

- When to design the “home-page”?
- Interaction Designers: At the starting of the design process
 - +setting the brand and the graphic style
 - many things (almost everything) are still unknown
- Information Engineers: At the end of the design process
 - +the rest of the site is clear and the homepage may carefully reflect it

Documentation & Notation

P-Design: OUTPUT

- **Graphical description: “Site Map”**
(graphical P-IDM schema)
- + **(optional) textual comments**

P-IDM graphical notation: TOPIC PAGE and HOME page

Topic Page containing **ONE**
Content Dialogue act



Topic Page containing **SEVERAL**
Content Dialogue acts for the same
topic



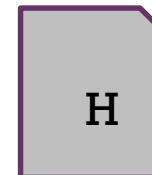
To put a Transition Act **INSIDE** a Topic
Page



Example:



Home page



P-IDM graphical notation: TOPIC PAGE

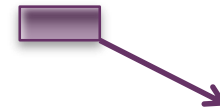
Set of pages corresponding to all Content Dialogue Acts of a SINGLE Topic



Set of pages corresponding to all Content Dialogue Acts of a MULTIPLE Topic

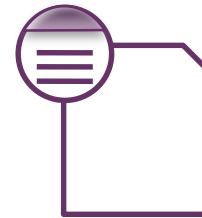


Entry Point “Marker” (where navigation within a topic starts from)



P-IDM graphical notation: INTRODUCTORY and TRANSITION PAGE

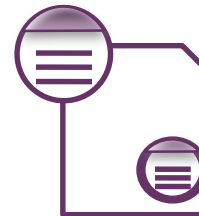
Introductory Page corresponding to the Introductory Dialogue Act of a single group



Introductory Page corresponding to the Introductory Dialogue Act of a Multiple group



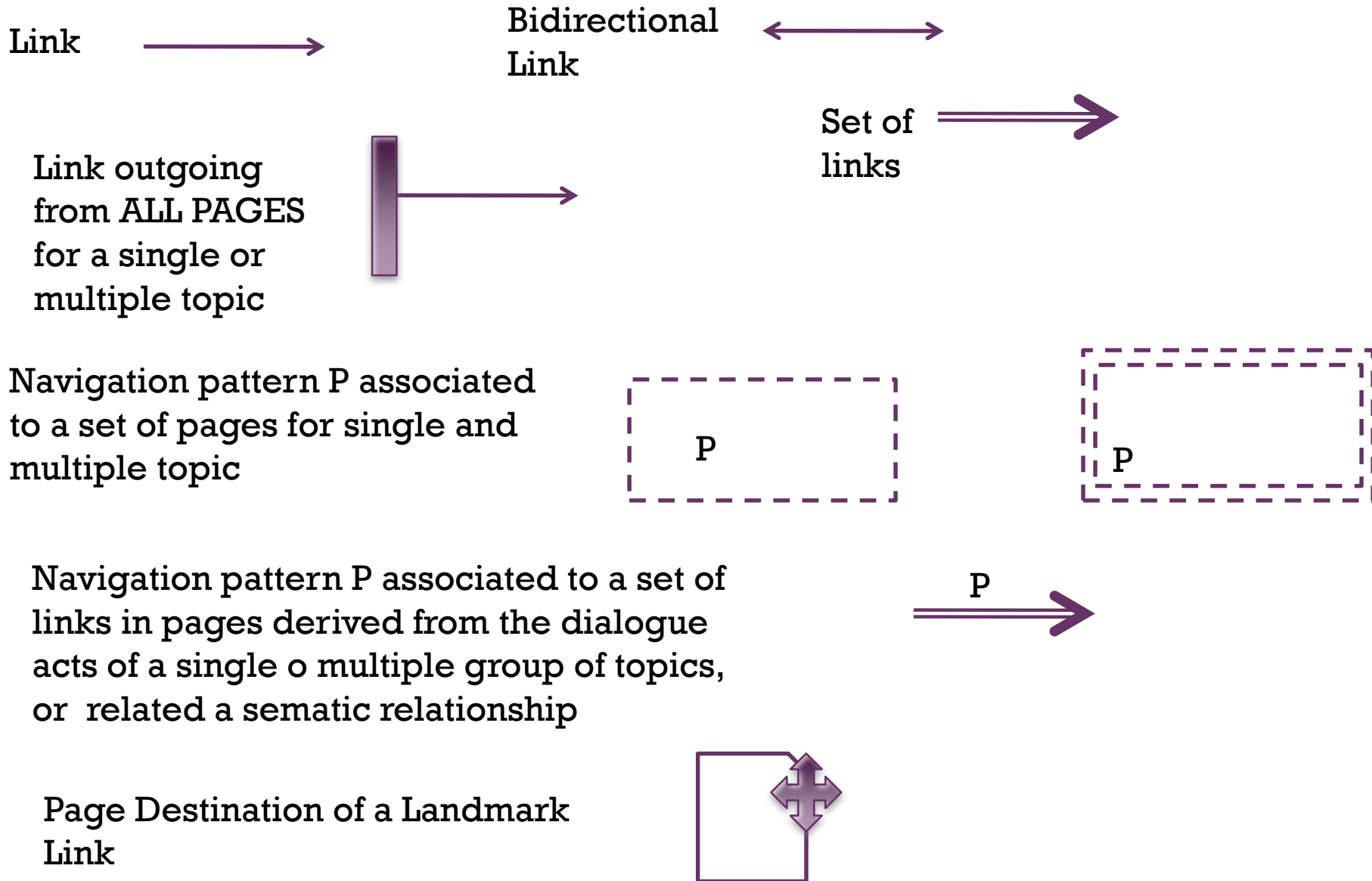
Introductory Page merging several Introductory Acts



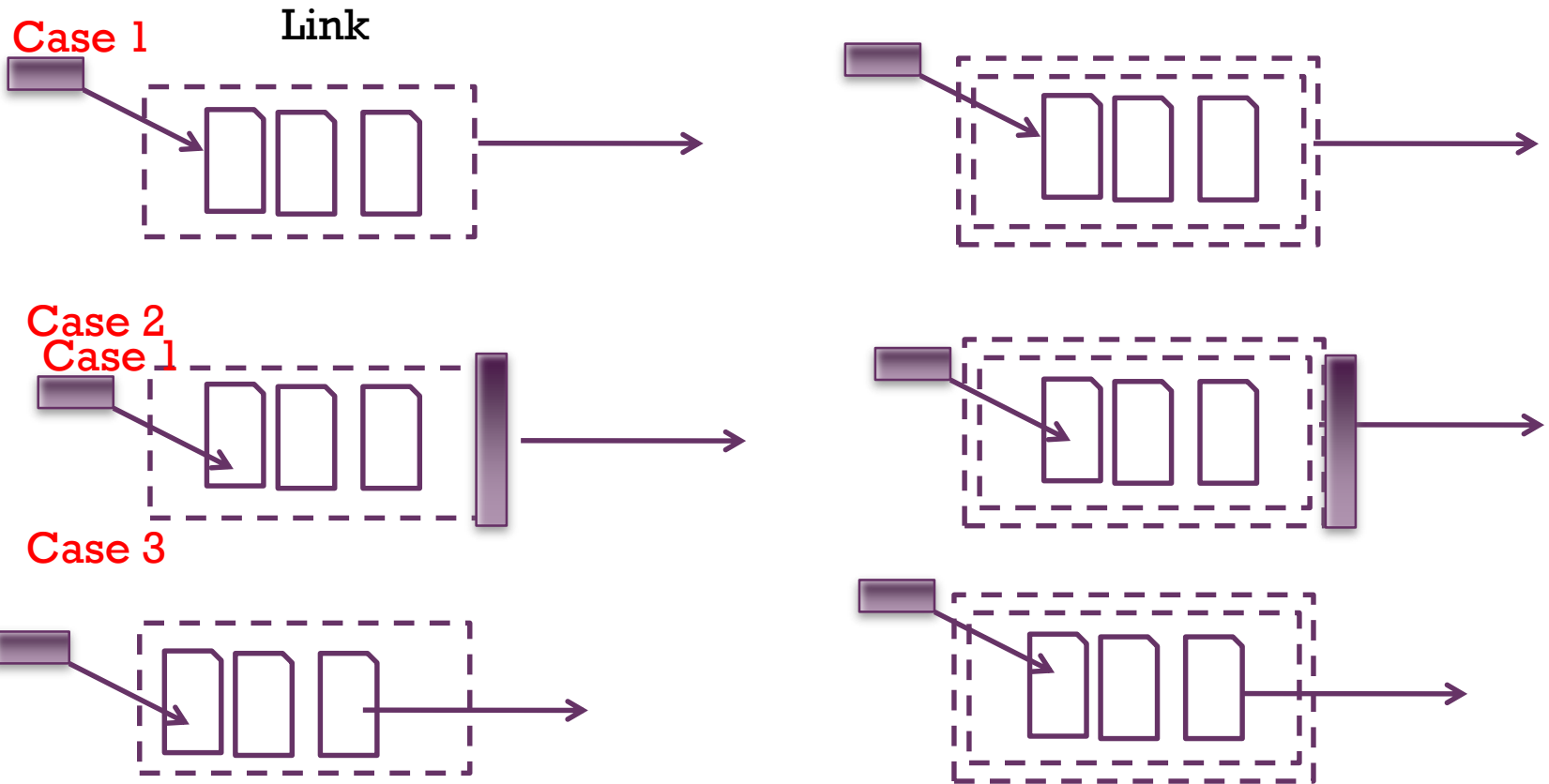
Transition Page



P-IDM graphical notation: LINKS, LANDMARKS, and PATTERNS



P-IDM graphical notation: Anchoring LINKS



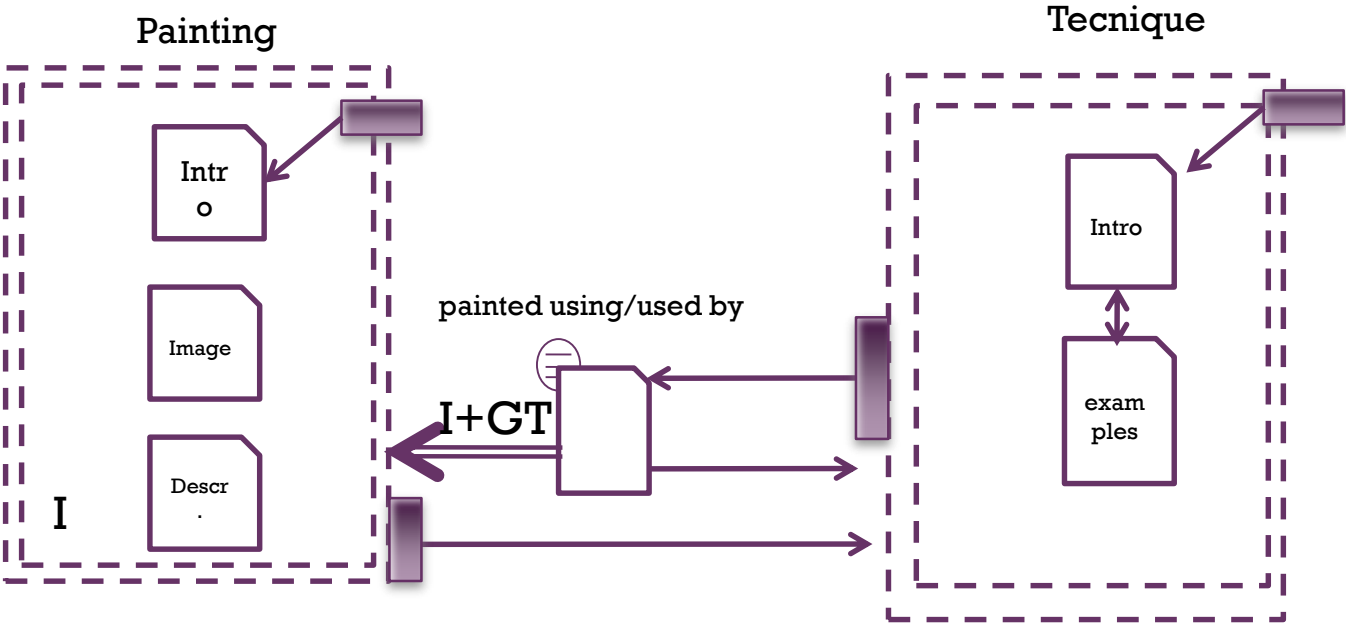
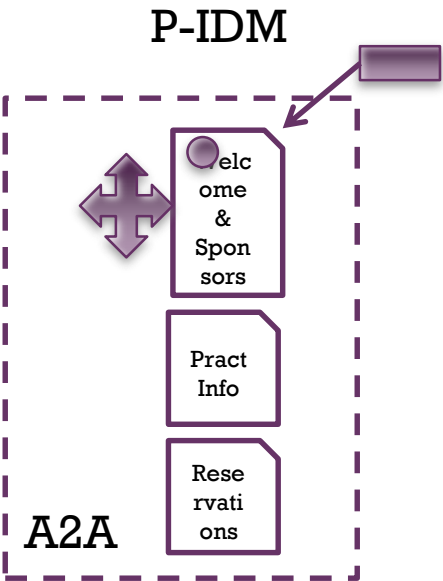
Case 1: By default, a link anchored to a set of Topic pages ougoes from the Entry Point ony

Case 2: A link outgoing from ALL topic pages

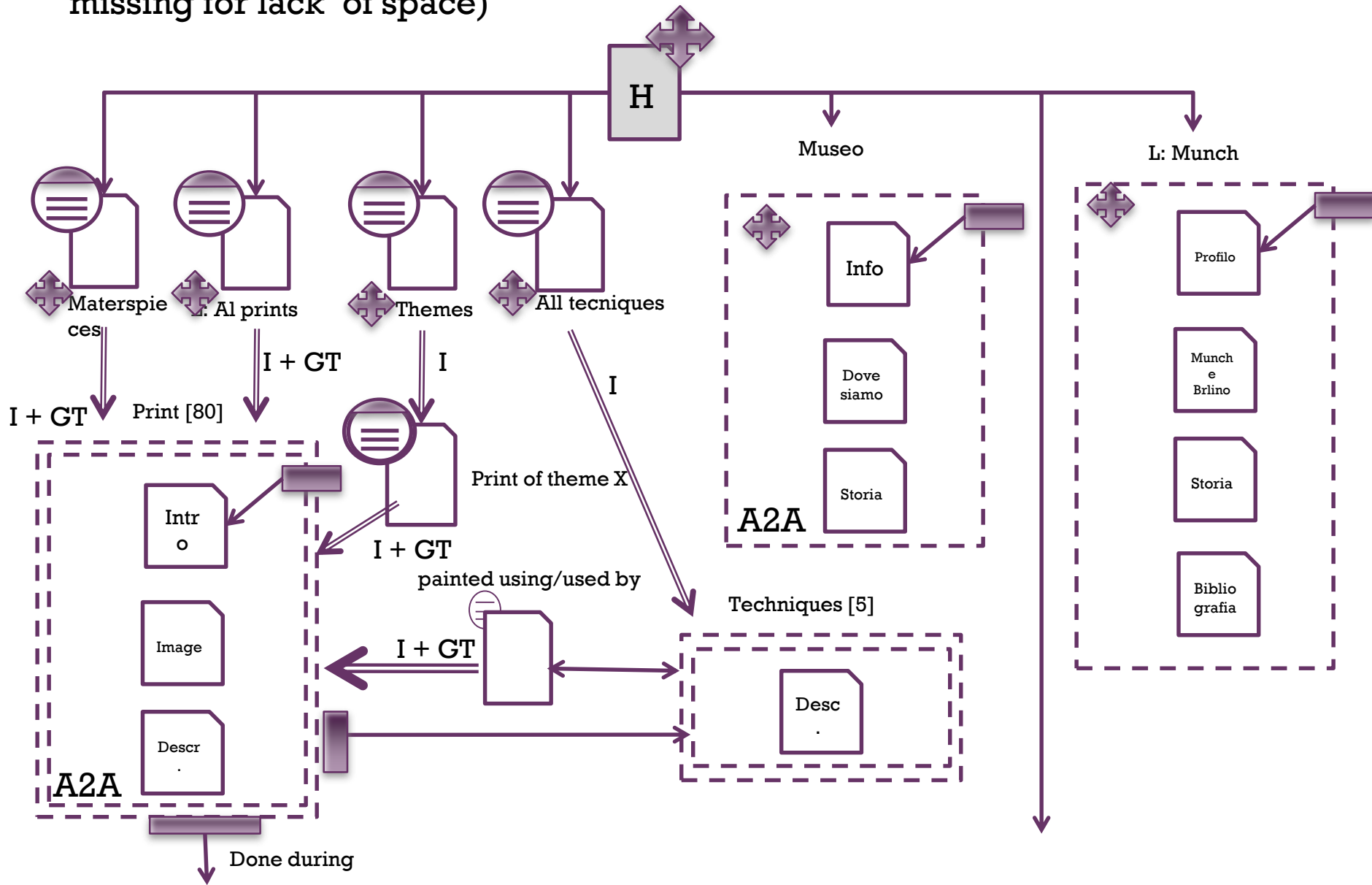
Case 3: A link ougoing from a topic page different from the entry point

Examples

L-IDM Exhibition

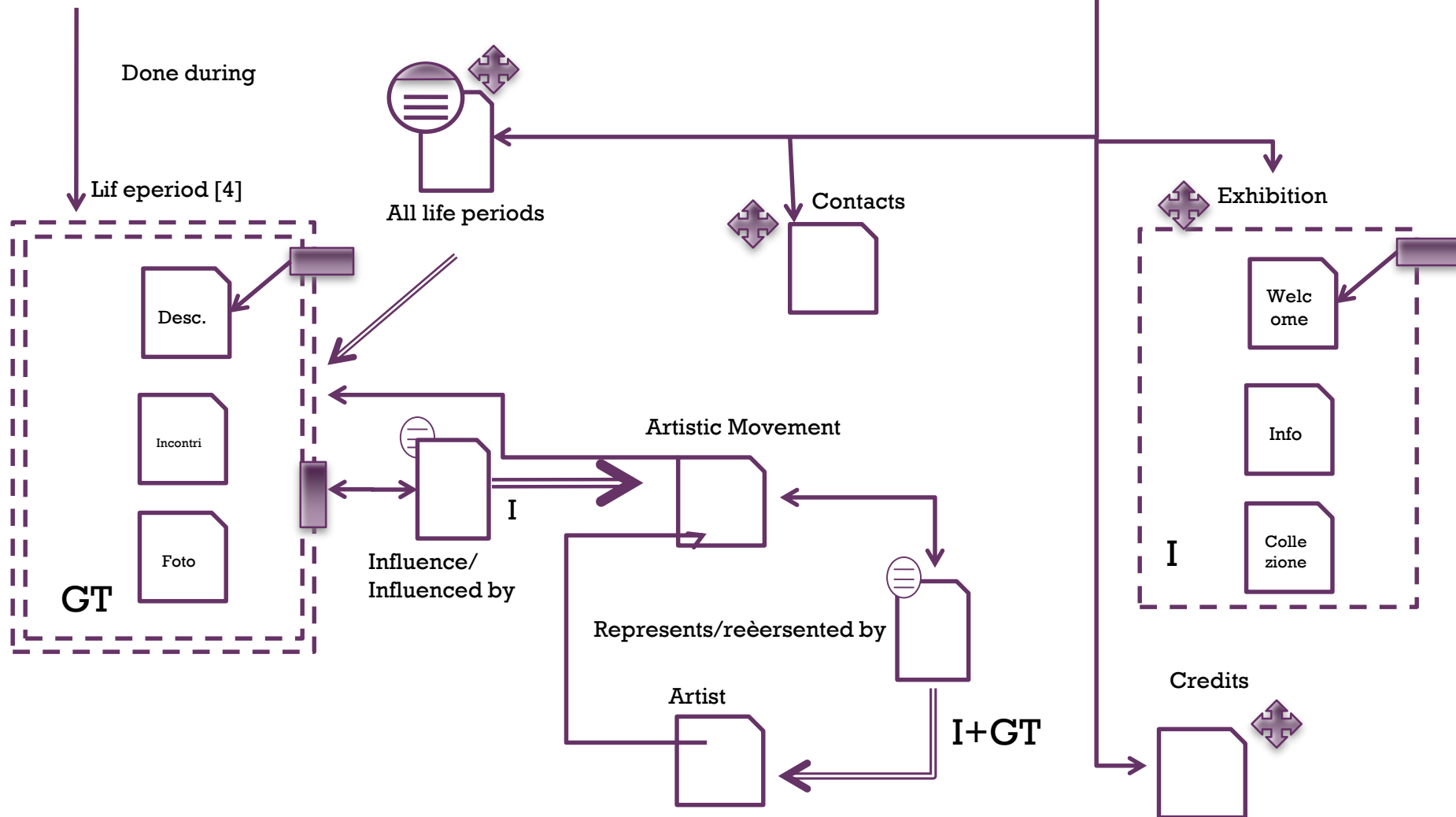


P-IDM site map: example (1)_(note: some cardinalities missing for lack of space)



P-IDM site map: example (cont)

(note: some cardinalities missing for lack of space)



Exercises

- Perform reverse design of <https://www.yoox.com/it/donna> and create
 - C-IDM map
 - L-IDM map
 - P-IDM map
- Discover navigation patterns in
 - <http://www.nga.gov>
 - <http://www.rijksmuseum.nl/>
 - <http://amazon.com>

