



Analyzing Knowledge Flow on Social Networks : from Night of Museums to ExpoDelacroix

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Scientific Context : ANR project Labex PASP13-Com-Num (2013-2019)

- Interdisciplinary collaborations : SIC, digital humanities (Dacos et al., 2014), data processing, analysis and visualization using statistical and textual analysis computer tools.

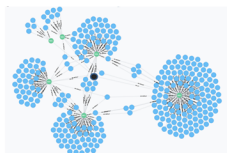
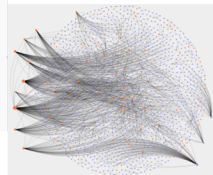
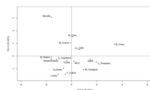


Figure 5. Network of the Ministry of Culture



The profound ongoing changes in the museum context

- Questions raised by the **engagement of cultural institutions** in digital media and tools
 - **A transversal process of "modernization"**, increased attention to the lay public (Freeman et al., 2016 ; Gottesdiener et Davallon, 2013 ; Poulot, 2014), new museology (Mairesse, 2000), changes in processes and devices (*Culture et musées journal*)
 - **Cultural marketing** (Greffret et al., 2017) and market dimension
- **The "eventualization" of culture** : the "shift of the heritage institution into the logic of flow media" (Jacobi, 2013)

Interdisciplinary research for the study of communication practices on social media

- Analysis of practices of cultural institutions and audiences on social media
- Participatory museums (Simon, 2010)
- Participative and digital museology (Andreacola et al., 2014)
- Forms of engagement of visitors and forms of participation of the lay public (Cantalapiedra, 2015; Fantoni et al., 2012; Langa, 2014; Krebs, 2017); Night of Museums (Juanals et al., 2017)

Interdisciplinary research for studying communication practices on social media

- Computing and Natural Language Processing
- Prediction in Information Sciences (Djemili et al., 2014, Foucault et al., 2016)
- Advertising detection (Yamasaki, 2011)
- Dialogical analysis in linguistics (Boyd et al, 2010)
- Tweet classifications (Shiri, 2013, Stvilia, 2014, Smyrnaiois et al., 2013, Lovejoy et al., 2012, Kothari et al., 2013, Shou-De et al., 2014, Courtin et al., 2014, Sriram et al., 2010, Kouloumpis et al., 2011, Malandrakis et al., 2014)

Question the forms of engagement, participation and relationships between cultural institutions, organizations and audiences.

- A mission to democratizing culture aiming at a wide audience ? An educational mission ? A marketing and promotion operation ?
- What forms of mediation to culture on the social web ?

Design, in an inter-institutional cultural space, a model for the circulation of message flows on a DSN platform

- Describe and analyze the informational and communicational dynamics at work on DSN
- Analyze the modes of interaction and the modes of circulation of message flows between participants in a cultural event

Two transversal axes of analysis of a cultural event

- The organizational and media framework of the cultural event
 - Organizational framework of the cultural event
 - Media framework (digital media) and editorial devices.
 - Identifying stakeholders, analysing their modes of participation, interaction patterns and relationships.
- The articulation between the info-communication logics of the stakeholders and the modes of circulation of message flows
 - Analyzing content of messages and forms of cultural mediation.
 - Analyzing the circulation modes of message flows

Building an instrumented methodology : an heuristic exploration process

Instrumented methodology relying on digital humanities

- The methodology instrumented as a process of description and analysis of the corpus



 **Nuit des Musées**
22 mai 2016 · €

Vous avez été plus de 2 millions à participer à la Nuit des musées en France hier soir. Un immense MERCI à tous !

Quelques chiffres :

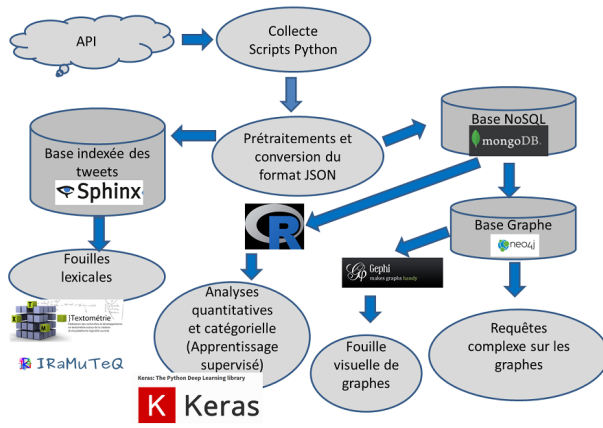
- La Nuit des mystères à Mulhouse : 28 500 visiteurs
- Les musées de Strasbourg : 21 974 visiteurs
- Le Centre Pompidou : 16 638 visiteurs
- Le musée d'Orsay : 12 016 visiteurs
- Le musée du quai Branly : 10 026 visiteurs
- Le musée des Augustins à Toulouse : 7 947 visiteurs
- Le musée Carnavalet : 6 105 visiteurs
- Le musée des Confluences à Lyon : 5 985 visiteurs
- Les musées d'Angers : 5 759 visiteurs
- Le MuCEM à Marseille : 4 900 visiteurs
- La Piscine de Roubaix : 4 422 visiteurs
- Le Centre Pompidou-Metz : 3 257 visiteurs
- Le musée du Louvre Lens : 2 796 visiteurs
- Le musée national Jean-Jacques Henner à Paris : 1 450 visiteurs

Ailleurs en Europe :

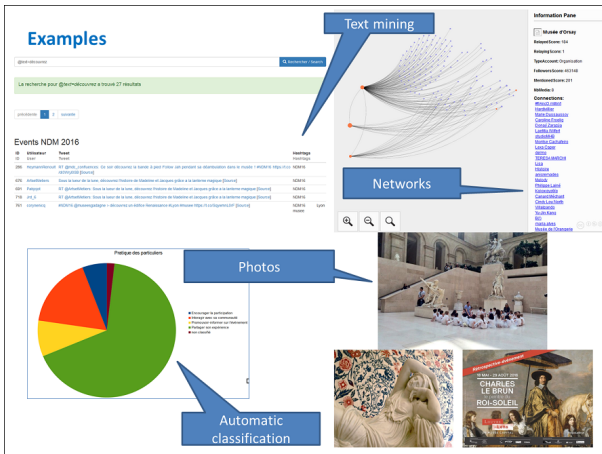
- Les 83 musées de Barcelone : 191 701 visiteurs
- Les musées de Iasi (Roumanie) : 43 181 visiteurs
- Les musées de Belgrade : 21 000 visiteurs

- How can we observe the joint participation of museums and audiences on Twitter?
- What elements of observation?
- What kind of message processing?
- What visual representation tools?
- Quantitative analyses, text mining, graph mining, visualizations, lexical analyses, categorical analyses by automatic categorization of tweets content.

A software processing workflow



Quantitative, Lexical analysis, Automatic classification



Terminology : Tweet and account

- Original tweet
- Retweet
- Private account
- Organizational account

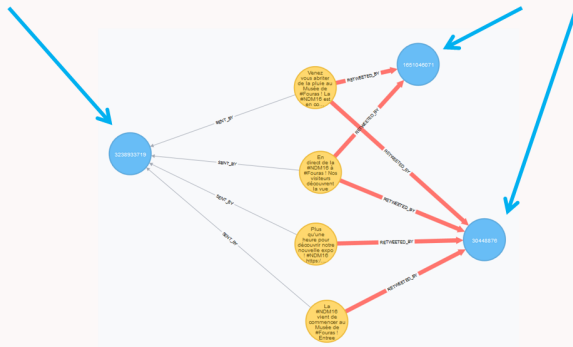
Qualifying account

- Participant
- Producer
- Mentioned
- Relayed
- Relaying
- Passing

Relayed and Relaying account

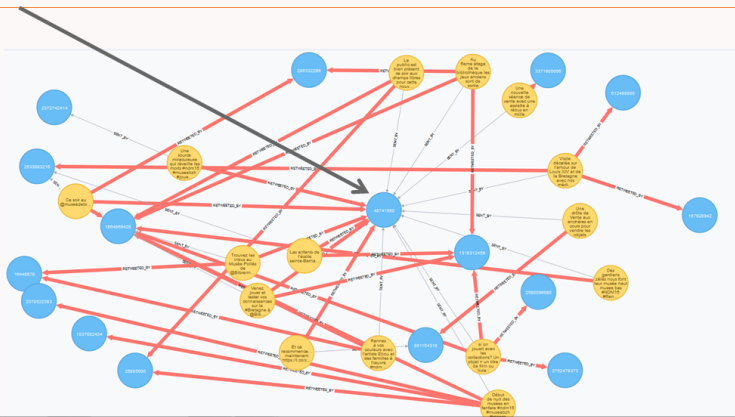
Relayed Account: An account whose tweets are relayed or mentioned

Relaying account: An account which retweets or mentions tweets of other accounts



Passing account

Passing account: An account which is both relayed and relaying



Scoring accounts with six attributes

Attribute	Method
Participant	0 (no participation in the considered period of time) or 1
Producer	Total amount of tweets and retweets
Relayed	Total number of accounts which relayed his/her original tweets
Relaying	Total number of accounts she/he relayed
Mentioned	Total number of mention of the account in text tweets
Passing	Product of relayed score by relaying score

The MediaContext (digital media) of this cultural event



NuitdesMusées ✓

@NuitdesMusees

Vivez la Nuit européenne des musées 2016 en ligne ! Tweetez la Nuit avec **#NDM16** et rendez-vous le 21 mai prochain !

[nuitdesmusees.fr](#)

Inscrit en février 2010



Type de lieu

Arts décoratifs + Art contemporain +

Société et civilisation +

Sciences et techniques +

Château, Hotel urbain, Palais, manoir +

Insolites + Beaux Arts +

Type d'événement

Atelier + Projection + Concert +

Exposition + Spectacle + Circuit +

Lecture + Conférence + Visite libre +

Visite commentée +

Démonstration de savoir-faire +

Fouille archéologique +

Nuit des Musées
21 mai 2016 · 🌐

La Nuit des musées, c'est ce soir ! Pensez à partager votre soirée sur les réseaux sociaux 😊.

Un tweetwall sera projeté dans de nombreux musées participants. N'oubliez pas d'utiliser **#NDM16** pour voir vos contenus apparaître !

Sur Instagram, un concours photo est organisé avec @lgersFrance : les quatre gagnants remporteront des catalogues Paris Musées. N'oubliez pas d'utiliser le double mot-dièse **#NDM16** et **#GF_NDM16** et de suivre les comptes @lanuitdesmusees @lgersFrance et @parismusees.

Excellente Nuit des musées à tous !

nuitdesmusees.fr

Identifying stakeholders : The cultural, pedagogical and scientific sphere

The collage features several elements:

- Museum Logos:** MuCEM (Museum of European and Mediterranean Civilisations and Histories), Jardin des sciences, CANOPÉ (Centre National de l'Éducation), and Musée des Augustins (Museum of the Fine Arts of Toulouse).
- Art and Exhibitions:** A poster for 'La Nuit des MYSTERES' (The Night of Mysteries) with the tagline 'TOUT SON CINEMA!' and '14 mai 2016'. A photograph of a museum interior with white sculptures. A photograph of a person holding a smartphone with a face on the screen, similar to the 'Scribe Accroupi' artwork.
- Social Media Posts:** A tweet from 'Marianne Escalier' (@mariettescalier) with a profile picture of a woman. A tweet from 'Scribe Accroupi' (@scribeaccroupi) with a profile picture of a person holding a smartphone. A tweet from 'Chartres en Lumières' (@ChartresLumiere) with a profile picture of a circular logo.
- Other Text:** 'Jardin des sciences' logo, 'CANOPÉ de Beauvais' logo, 'Musée d'Orsay' logo, and a red box with 'MUSÉE DES AUGUSTINS' and 'MUSÉE DES BEAUX-ARTS DE TOULOUSE'.

Identifying territorial and political stakeholders

The image displays a grid of social media profiles for various French territories and cultural organizations. Each profile includes a profile picture, a name, a handle, and a brief description of the account's purpose.

- Isère** (@CDIsere): Twitter OFFICIEL DU Département de l'Isère | iseremag.fr | isere-culture.fr |
- Ville de Nantes** (@nantestr): Compte Twitter officiel de la Ville de Nantes. Toute l'actualité nantaise à
- CherbourgenCotentin** (@CherbourgenCot): Twitter officiel de la Ville de #Cherbourg-en-Cotentin. #CommuneNouvelle de la #Manche. #Normandie. A suivre aussi!
- Ville de COMMERCY** (@VCommercy): commercy.fr
- Metz Métropole** (@MetzMetro): Compte officiel de la Communauté d'Agglomération de Metz Métropole. Un CM est à votre écoute et essaie de vous répondre :) Notre page FB on.fb.me
- NPDC_tourisme** (@tourisme_npdc): Le #NordPasdeCalais, des expériences uniques, à vivre au gré de vos envies !
- Bordeaux&Vous** (@BordeauxEtVous): Découvrez Bordeaux & la Gironde à travers nos diverses activités : Bien-Être,
- la grande radio.fr** (@LaGrandeRadio): WEB RADIO À LA DEMANDE [BORDEAUX | GIRONDE]
- Bordeaux Culture** (@BDX_Culture): Un + à l'agenda bordeaux.fr pour vous présenter le meilleur de l'actualité
- OT Salins-les-Bains** (@OTSalins): Compte officiel de l'Office de Tourisme de Salins-les-Bains (39-Jura), ville thermale et touristique.

Quantitative Analysis

- Flows
- Lexical analysis
- Categorization of tweets

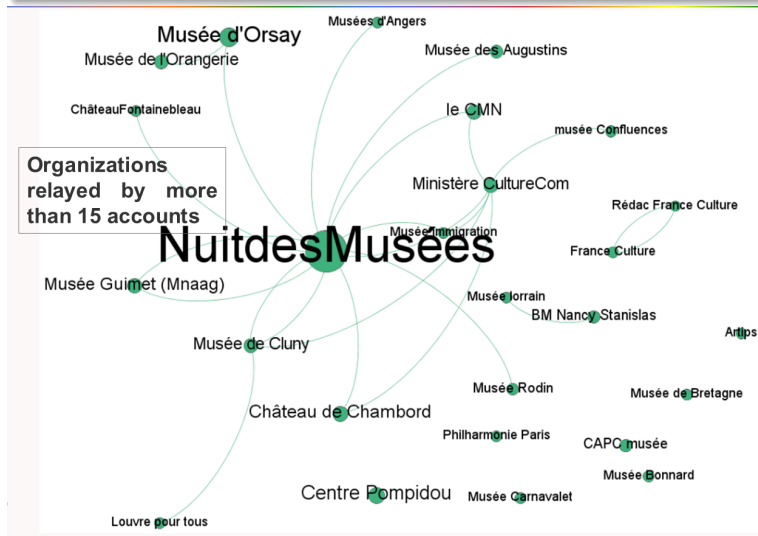
Main and Specific Figures

- 11 264 tweets (in French)
- 4 012 participants

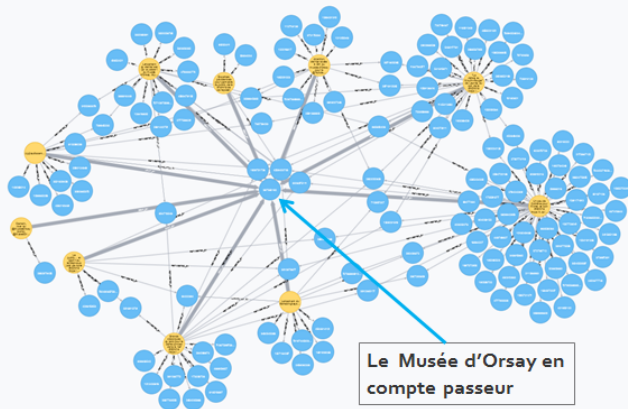
	Pourcentage de tweets originaux	Pourcentage de retweets
Comptes des organisations (411)	56%	44%
Comptes des particuliers (3601)	25%	75%

Passing Accounts (Key Influential Users)

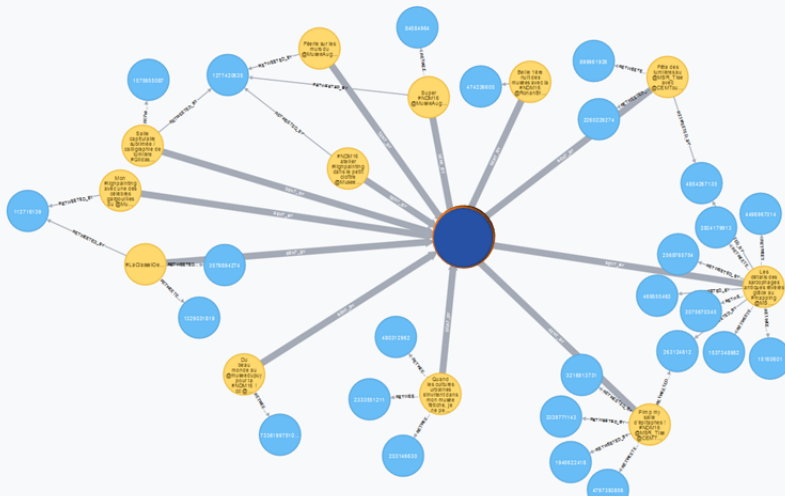
Name	Type of accounts retweeted	Retweeted by	Followers
NuitdesMusées	Mainly organizational	Mainly private	22 422
MarietteEscalier	Organizational	Mainly private	1 842
MuséeCluny	Half organizational, half private	Mainly private	44 839
MinistèreCultureCom	Organizational	Private	184 521
AlainJuppé	Two Organizational	Private	352 837
MuséeOrsay	MuséeOrangerie	Private	463 184
LeCMN	Organizational	Mainly Private	27 856
MusédesAugustins	Private	Mainly Private	4 774
MuséGuimet	Half organizational, half private	Private	29 500
MuséBretagne	Half private	Private	7 708



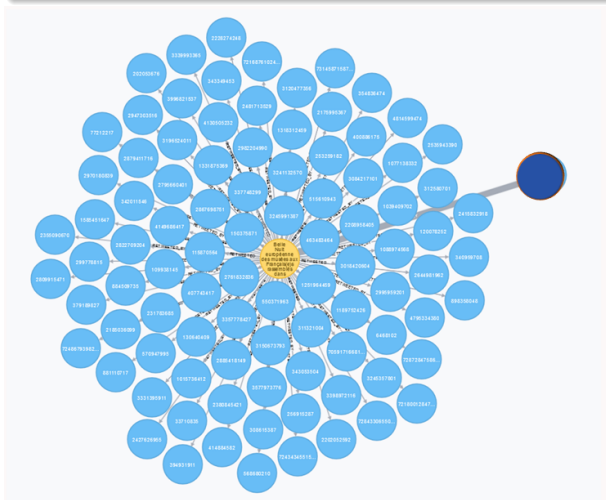
Musée d'Orsay account



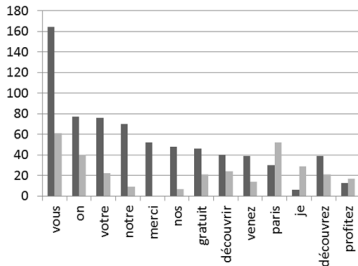
Mariette Escalier account



Juppé account



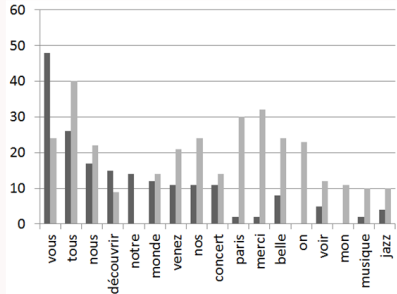
Lexical analysis



During the event



← Before the event



Automatic classification

Machine learning

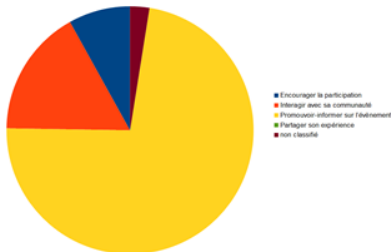
- SVM, Naive Bayes and Random Forest
- Unanimous vote

Deep learning

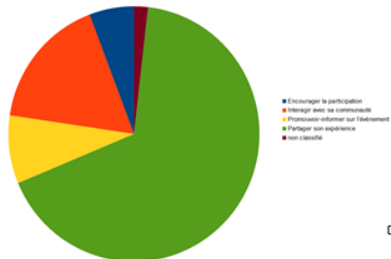
- CNN and Word2Vec

Categorization

Pratiques des organisations



Pratique des particuliers



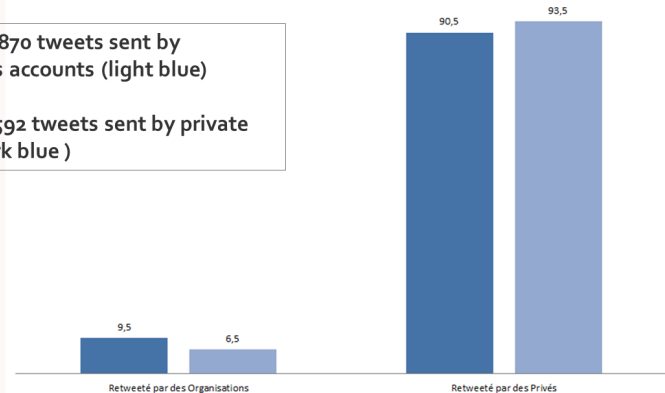
Categorization

Retweets

■ tweets envoyés par des privés ■ tweets envoyés par des Organisations

Retweets of 870 tweets sent by organizations accounts (light blue)

Retweets of 592 tweets sent by private accounts (dark blue)



First lessons

- A methodology to analyze forms of engagement, participation and relationships between cultural institutions, organizations and audiences
- A model based on six attributes to qualify accounts according to their modes of participation
- Only one private account played a major role in disseminating information
- Cultural events have a political and socio-economic dimension
- A software processing workflow

The Media Context (digital media) of Delacroix Exhibition

- Temporality : From March to July 2018
- One organization : Le Louvre
- Events : Conferences, concerts, etc.
- Blogs, Twitter and Facebook

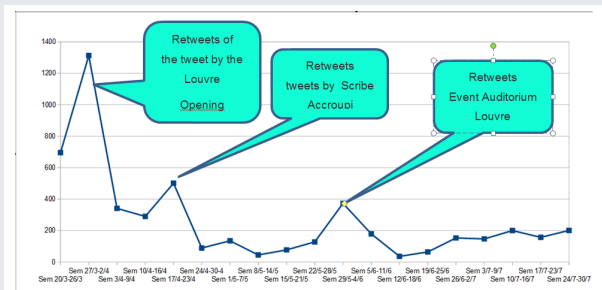


Flows

- 5 778 tweets from 2 975 accounts
- 28 posts on Facebook
- 279 916 views on the Website

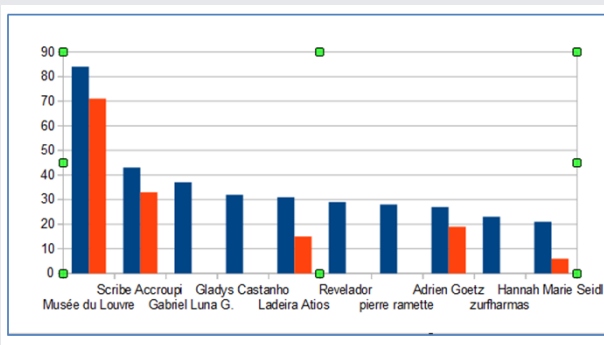
Twitter Analysis

- 5 778 tweets from 2 975 accounts
- 5 212 French tweets
- 50 organizational accounts
- Reminder : 1,47 M followers



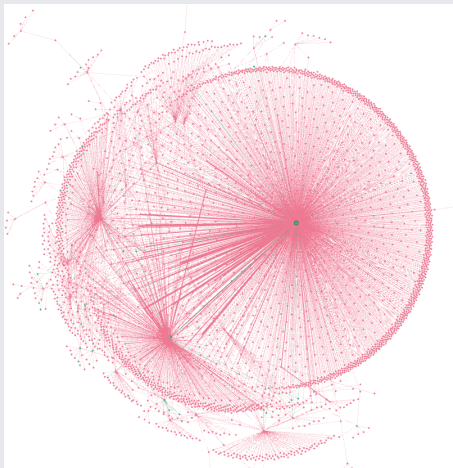
Twitter : Flows

- Few original tweets (441)
- Four Passing accounts (tweets and retweets)
- 68% of accounts sent only one tweet



Twitter : Communities

- Key influencers with distinct communities



Twitter : Communities

- Key influencers with distinct communities

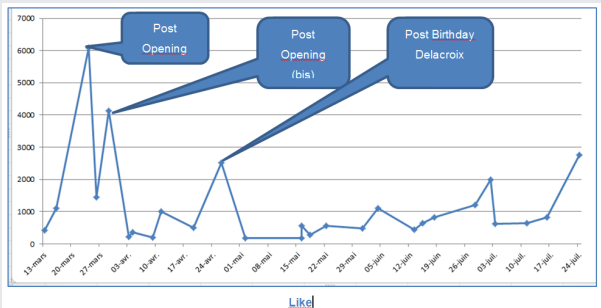
Passing account A	Passing account B	Number of shared accounts
Musée du Louvre	Scribe Accroupi	139
Musée du Louvre	Adrien Goetz	83
Musée du Louvre	Hannah Marie Seidl	18
Scribe Accroupi	Adrien Goetz	53
Scribe Accroupi	Hannah Marie Seidl	10
Adrien Goetz	Hannah Marie Seidl	7

Twitter : Lexical Analysis

- Very few emotional words (versus NDM2016)
- Mainly about the exhibitions “expositions, rétrospective, visite”
- Consistent with the type of tweeting accounts

Facebook Analysis

- 28 posts on Le Louvre account



Facebook Analysis

- Peak post



Musée du Louvre
24 mars · 🌐

🇫🇷 DELACROIX (1798-1863)

Le Musée du Louvre, en collaboration exceptionnelle avec [The Metropolitan Museum of Art, New York](#), vous invite à la première rétrospective consacrée au grand maître de la peinture française depuis 1963 ! Rendez-vous au Louvre du 29 mars au 23 juillet !

🇺🇸 Réservez vos billets pour l'exposition ici 🖱️ bit.ly/expoDelacroix

🌐 DELACROIX (1798-1863)

The Louvre, in an exceptional collaboration with [The Metropolitan Museum of Art, New York](#), invite you to the first retrospective since 1963 dedicated to the master of French painting! Save the date from 29th March to 23rd July!

🇺🇸 Book your tickets for the exhibition here 🖱️ bit.ly/DelacroixExhibition

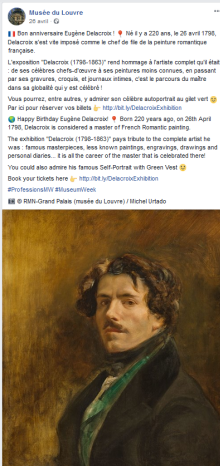
Du 29 mars au 23 juillet 2018

DELACROIX
1798-1863

72K likes, 200 commentaires, 2.2K partages

Facebook Analysis

- Birthday post



Musée du Louvre
25 avril · G

🎂 **Bon anniversaire Eugène Delacroix!** 🎂 Né il y a 220 ans, le 26 avril 1798, Delacroix s'est vite imposé comme le chef de file de la peinture romantique française.

L'exposition "Delacroix (1798-1863)" rend hommage à l'artiste complet qu'il était : de ses célèbres chefs-d'œuvre à ses peintures moins connues, en passant par ses gravures, croquis, et journaux intimes, c'est le parcours du maître dans sa globalité qui y est célébré!

Vous pourrez, entre autres, y admirer son célèbre autoportrait au gilet vert 🟢
Par ici pour réserver vos billets 📄: <http://bit.ly/DelacroixExhibition>


🟢 Happy Birthday Eugène Delacroix! 🎂 Born 220 years ago, on 26th April 1798, Delacroix is considered a master of French Romantic painting.

The exhibition "Delacroix (1798-1863)" pays tribute to the complete artist he was : famous masterpieces, less known paintings, engravings, drawings and personal diaries... It is all the career of the master that is celebrated there!

You could also admire his famous Self-Portrait with Green Vest 🟢

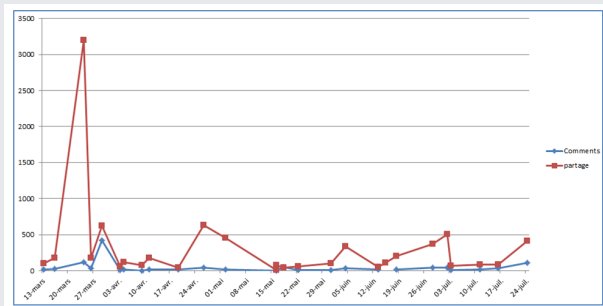
Book your tickets here 📄: <http://bit.ly/DelacroixExhibition>
#ProfessionN°1 #MuseumWeek

📍 @ RMN-Grand Palais (musée du Louvre) / Michel Ortelio



Facebook Analysis

- A peak of "Like" at the opening
- Very few comments



New Lessons

- Little involvement of lay public
- Influencers' communities
- Facebook' API is no longer working

Possible research perspectives

- We intend to dig deeper on the social web
- We are working on two others exhibitions organized by Le Louvre

Publications

- Our publications are available on Open Archive HAL-SHS :
 - <https://cv.archives-ouvertes.fr/brigitte-juanals>
 - <https://cv.archives-ouvertes.fr/jean-luc-minel>

[1]



Thank you for your attention



Juanals, B., Minel, J. : Information flow on digital social networks during a cultural event : Methodology and analysis of the european night of museums 2016 on twitter. In : Proceedings of the 8th International Conference on Social Media & Society. ACM (2017)

